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NEOEN

YATHROO WIND FARM

Detailed and Targeted Flora and Vegetation Assessment

FINAL

July 2025

YATHROO WIND FARM

Detailed and Targeted Flora and Vegetation Assessment

FINAL

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

Project Director: Cormac Collins
Project Manager: Thomas De Silva
Technical Director: David Coultas
Technical Manager: Kyler Rowson
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1.0 Introduction

1.1 Project Overview

Neoen Australia Pty Ltd (Neoen) is proposing the development of the Yathroo Wind Farm (the Project) located approximately 120 kilometres (km) north of Perth in the Shire of Dandaragan. The Project is expected to comprise of up to 65 Wind Turbine Generators (WTG), a Battery Energy Storage System (BESS) and associated ancillary infrastructure.

Umwelt were commissioned by Neoen in 2024 to undertake a flora and vegetation assessment to support approvals for the Yathroo Wind Farm. This report encompasses the results of the desktop assessment, the winter Reconnaissance survey and the Spring Detailed and Targeted flora and vegetation surveys, with the fauna survey results for these phases presented in a separate report.

1.1.1 Project Location

The Project is located within the Shire of Dandaragan, approximately 120 km north of Perth. The Project is situated across several freehold properties around Brand Highway and Dandaragan Road, between Dandaragan, Cataby and Regan's Ford. The Project will tie into existing 132 / 330 kV double circuit transmission infrastructure, which is scheduled to be upgraded to dual circuit 330 kV. This will provide network access and intersects the western portion of the Project.

The Project is located within the Intensive Land Use Zone, as defined by the Department of Primary Industries and Regional Development (DPIRD, 2016). Namming Nature Reserve and Moore River National Park are located west and south of the Project.

1.1.2 Study Area Definitions

The Project Area (YTO-PRJ-PA-008), as provided by Neoen on 1 November 2024, is 17,212.7 ha in size. For the purpose of the flora and vegetation assessment, a 'Survey Area' was produced by removing several portions of remnant vegetation that were presumed to be in 'Good' or better condition^ and that can be avoided by the Project. The Survey Area is approximately 15,834.9 ha in size and encompasses properties surveyed across the Reconnaissance, Detailed and Targeted surveys of the flora and vegetation assessment. Finally, a Detailed and Targeted Survey Area, hereafter referred to as the "D&T Survey Area", was developed to encompass intact remnant vegetation that may be impacted by the Project. The D&T Survey Area largely encompasses the road verge vegetation of Brand Highway and Walyer Walyer Road.

For the purpose of the desktop assessment, including interrogation of databases and searches for relevant literature, a Desktop Study Area was defined. The Desktop Study Area encompasses a 20 km buffer of the original Project Area (20240501 New Project Area) provided by Neoen on 1 May 2024.

Table 1.1 provides a summary of the study areas associated with the Yathroo Wind Farm Project. These boundaries are presented in **Figure 1.1**.

.

Table 1.1 Study Areas of the Project

Name	Description	Area Extent
Project Area	YTO-PRJ-PA-008, provided by Neoen on 1 November 2024.	17,212.7 ha
Survey Area	The Project Area, with nominated areas of intact native vegetation removed where they can be avoided. Encompasses the D&T Survey Area, as well as the areas within which Reconnaissance Survey was conducted.	15,834.9 ha
D&T Survey Area	A subset of the Survey Area within which Detailed and Targeted survey was undertaken.	130.5 ha
Desktop Study Area	A 20 km buffer on the Project Area provided on 1 May 2024 (20240501 New Project Area).	20 km buffer

^Vegetation condition as per the scale for the Southwest and Interzone Botanical Provinces in the Environmental Protection Authority (EPA) Technical Guidance (2016b)

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FIGURE 1.1

Project Location

Legend

- Project Area
- Survey Area
- D&T Survey Area
- Desktop Study Area
- Railway
- Road
- Watercourse
- Waterbody

340000 350000 360000 370000 380000 390000 400000 410000

6610000 6600000 6590000 6580000 6570000 6560000

WONGONDERRAH RD
MOUNT JETTY CREEK
WADDI RD
MUTHAWANDERY RD
NORTH WEST RD
PRIGES RD
DALAROO
CATABY RD
WOONDINE GULLY
BUNGALONG RD
STRATHMORE RD
BABGINGARA RD
DANDARAGAN RD
KOLBURN RD
CHELSEA RD
GOONDOO RIVER
MILING-MOORA RD
PRIOR RD
WOLBA RD
MOORA
LONG ST
ORTON RD
MULLERING BROOK
COOLJARLOO RD
MULLERING RD
DANDARAGAN
YADGENA BROOK
MIDLANDS RD
AIRSTRIP RD
WEBB ST
BALAROONG RD
WOOLKA RD
KAYANABA RD
MINYULO BROOK
MINYULO RD
CATABY RD
ROWES RD
CATABY
CARO RD
CATABY BROOK
WANDAWALLAH RD
WANERY BROOK
BARBERTON EAST RD
BINDOON-MOORA RD
YANDIN RD
YATHROO
BARBERTON WEST RD
BIDGERABBIE RD
MEADOWS RD
CARO BROOK
KOOJAN
ERALLIA BROOK
BULBARNET RD
CAPITELA RD
KOOJAN WEST RD
KOOJAN POOL RD
BEACON RD
BOOTOO RD
BOUNDARY RD
BOXHALL RD
THOMPSON RD
INDIAN OCEAN DR
DINGO RD
NAMMEGARRA RD
KELLY RD
GOONANUGO CREEK
MIMEGARRA RD
GILLINGARRA RD
OCEAN FARM RD
NILGEN RD
WOODBINE RD
MOORE RIVER
HUNTER RD
REGANS FORD
ROGERS RD
MOCUMBER RD WEST
SYKES RD
ORANGE SPRINGS RD
FYNES RD
LANCELIN
SAPPERS RD
COWALLA RD
MARRI HEIGHTS RD
MOORE RIVER EAST
COCKING RD
LANCELIN RD
KIW RD
BARAMBA RD
RED GULLY RD
OLD LEDGE POINT RD
LEDGE POINT
GARBANUP RD
RED GULLY CREEK
WHITFIELD BROOK
WEST POINT RD
NORTH RD
KILDARE RD
ZIEMA RD
WARRAROO RD
RED GULLY CREEK SOUTH
CLEWLEYS RD
BENNIES RD
DOUGLAS RD
WANNAMAL RD WEST
WANNAMAL
HAY FL



0 5 10

Kilometres

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GDA2020 MGA Zone 50

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1.2 Aims and Objectives

The primary aim of the flora and vegetation assessment was to define the ecological values of the Survey Area and its surrounding environment.

The specific objectives include to:

- Identify, map and describe Vegetation Types (VTs) that occur within the Survey Area.
- Map the condition of the vegetation in accordance with EPA Technical Guidance, using the Southwest and Interzone Botanical Provinces scale (EPA, 2016b).
- Assess the likelihood of the following occurring within the Survey Area:
    - **Significant flora**: flora taxa that belong to one of the following categories as defined by 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 (2023a)):
        - 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 (*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 (2016a, 2016b) (note that definitions, categories and criteria used by DBCA for significant vegetation in WA are presented in DBCA (2023d)):
        - 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, as defined above.

- Provide recommendations for appropriate mitigations to support approvals for the Project.

Note that this assessment does not attempt to record a full census of vascular flora taxa that occur in the Survey Area (i.e. those areas outside the D&T Survey Area).

1.3 Level of Assessment

The flora and vegetation survey of the Survey Area involved Reconnaissance, Detailed and Targeted survey as defined in Section 4.1, Section 4.2 and Section 4.3 respectively, of the *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b).

Detailed and Targeted survey in all areas of remnant vegetation in the Survey Area (i.e. within the D&T Survey Area) is considered the appropriate level of survey, based on the location of the Project within the Swan Coastal Plain (SCP) and Dandaragan Plateau and the presence of intact vegetation in 'Good' or better condition (as per the rating scale for the South-West and Interzone Botanical Provinces presented by EPA (2016b)). The SCP and Dandaragan Plateau is known to support a high diversity of flora and vegetation relative to other areas of the State, including significant flora taxa and vegetation (EPA, 2016b).

Reconnaissance survey within all other parts of the Survey Area is considered appropriate, given the high level of disturbance in this area and the relative lack of native vegetation in 'Good' or better condition. These areas are less likely to support significant flora or vegetation.

The survey and reporting works comply with the following documents:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a)

- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b).

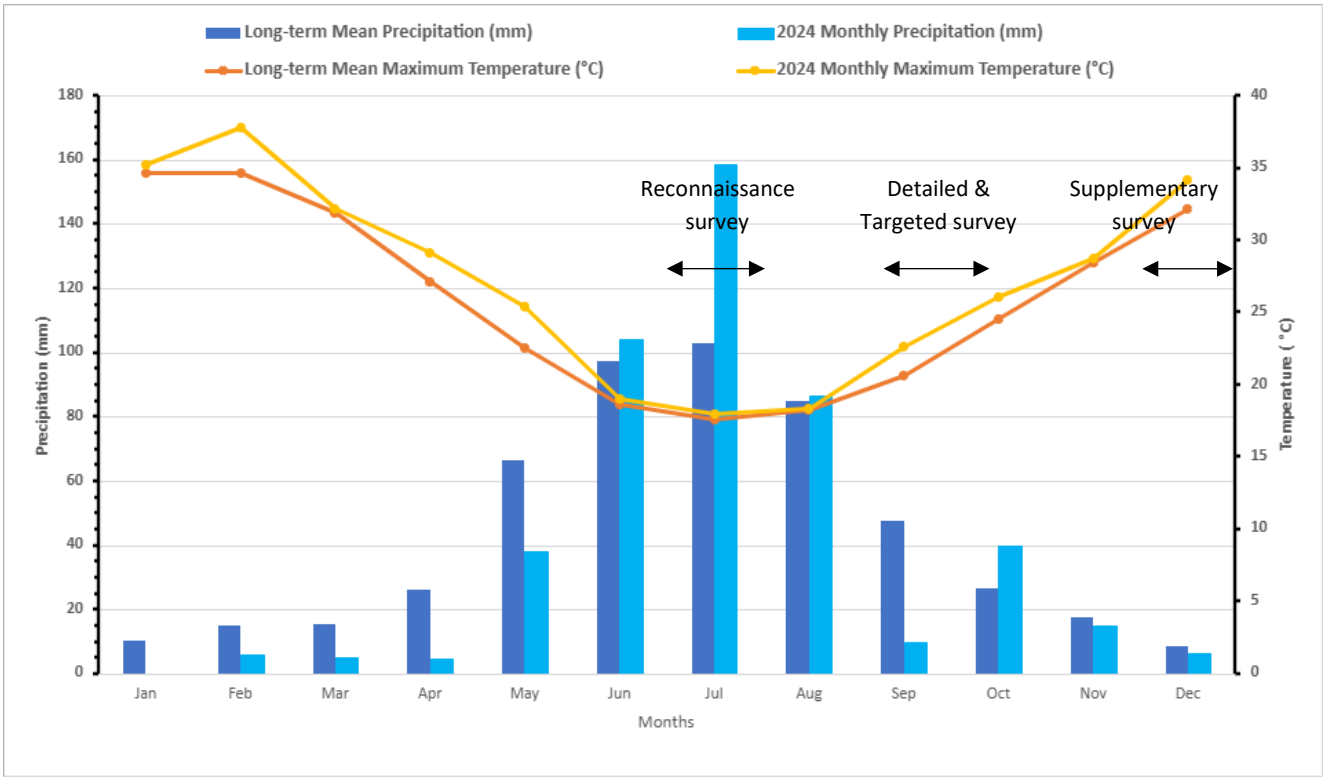
2.0 Background

2.1 Climate

The majority of the Project Area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, with the north-western corner of the Project Area intersecting the Geraldton Sandplains IBRA bioregion. More specifically, the Project Area is located across three IBRA subregions – Perth SWA02, Dandaragan Plateau SWA01 and Lesueur Sandplain GE02 ((DCCEEW, 2023d, 2023f)). The SCP IBRA Bioregion (including the Perth and Dandaragan Plateau IBRA Subregions), and the southern portion of the Geraldton Sandplain IBRA Bioregion, generally correspond with the Drummond Botanical Subdistrict as defined by Beard (2015). The Drummond Botanical Subdistrict experiences a warm Mediterranean climate with predominantly winter rainfall (600–1,000 millimetres (mm) annually) and five to six dry months per year (Beard, 2015).

Graph 2.1 presents the monthly precipitation totals and monthly maximum temperature statistics for 2024, as well as long-term average monthly precipitation and maximum temperature data recorded at Bureau of Meteorology (BoM) Badgingarra station (station number 9037) (BoM, 2024), located approximately 46 km northwest of the Project Area.

Throughout 2024, the maximum temperatures were slightly higher than the average maximum temperature for each month (**Graph 2.1**) Although the total rainfall of 2024 was below the long-term average (473.6 mm for 2024, long-term average of 517.7 mm), the total rainfall in the months *before* the Detailed and Targeted surveys (January–August 2024) was above slightly average (417.7 mm, the long-term average for this period being 403.0 mm). Thus, the Spring months (September–December) were drier than average.



Graph 2.1 Climate Statistics for Badgingarra Research Station (9037)

(BoM, 2024)

2.2 Geology, Landform and Soils

As previously mentioned, the Project Area is located within the Perth, Dandaragan Plateau and Lesueur Sandplain subregions. The Perth subregion (SWA02) is composed of colluvial and aeolian sands, alluvial river flats and coastal limestone (Mitchell et al., 2002). The Dandaragan Plateau subregion (SWA01) is composed of cretaceous marine sediments, mantled by sands and laterites (Desmond, 2001). The Lesueur Sandplain subregion is comprised of coastal Aeolian and limestones, Jurassic siltstones and sandstones (often highly laterised) and alluvials associated with drainage systems (Desmond & Chant, 2002).

Soil landscape mapping of WA has been compiled from the results of various surveys across WA by the Department of Agriculture (now DPIRD (2025)). The Project Area is located across 32 separate soil-landscape units, as summarised in **Table 2.1** and presented in **Figure 2.1**. The most commonly occurring soil-landscape units are the Dandaragan 3 Subsystem (27.0%), the Dandaragan 2 yellow Phase (16.1%), and the Rowes 3 pale Phase (10.2%).

Table 2.1 Soil Landscape Mapping of the Project Area

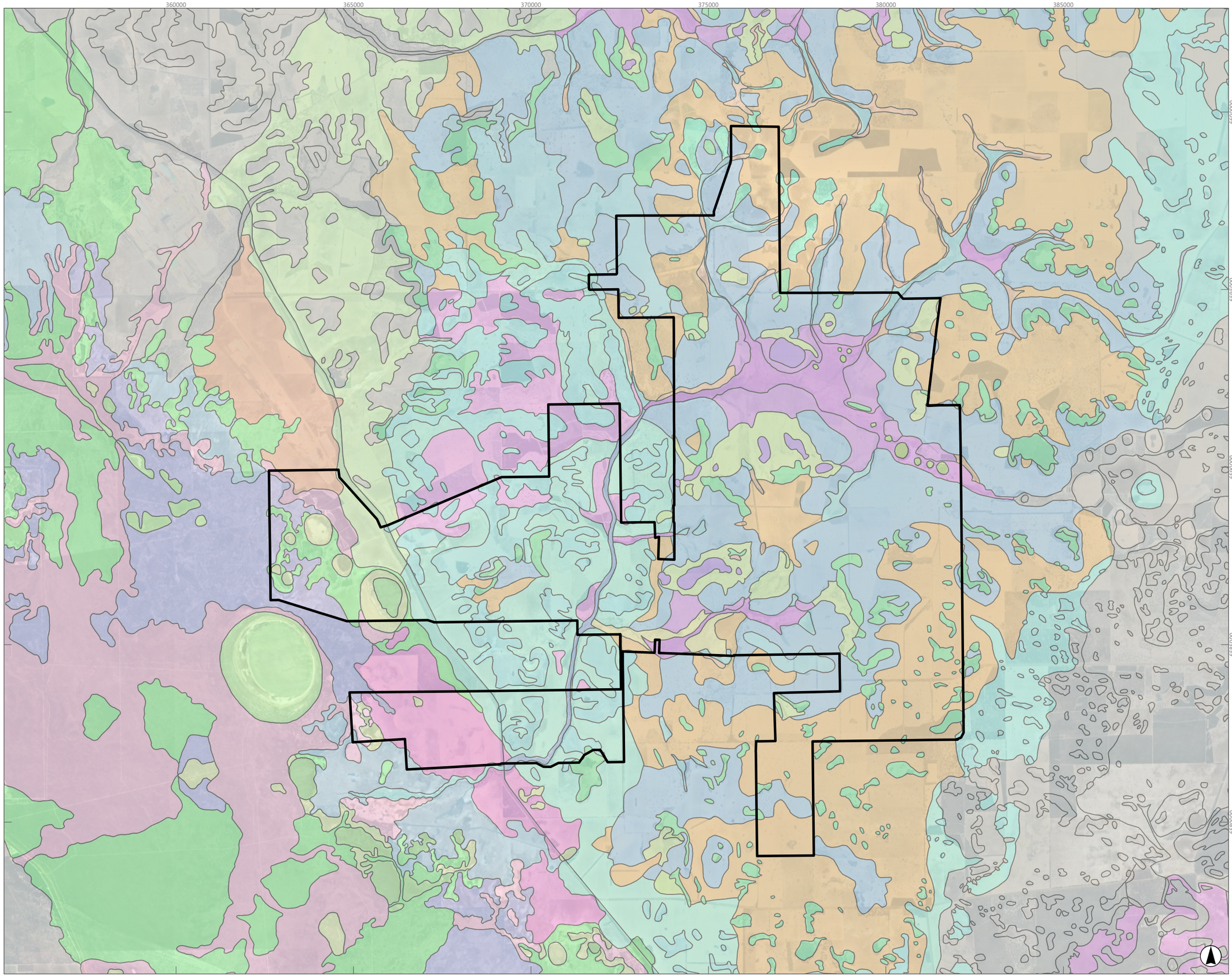
Soil System	Soil Unit	Description^	Mapped Extent in Project Area (ha)
Bassendean	Bassendean 1 subsystem	Undulating to flat sandplain and minor swamps; pale to yellow deep sands.	328.5 (1.9%)
	Bassendean 3 subsystem	Low dunefields; deep, pale grey or white sands.	189.5 (1.1%)
	Bassendean 4 subsystem	Plain, often poorly drained; semi-wet soil, pale shallow sands over pan, sandy duplexes, wet soil.	250.2 (1.5%)
	Bassendean 5 subsystem	Complex pattern of dunes or low sandy rises, poorly drained plains, (Complex of Bs1, Bs4 and Bs6; Bs4 or Bs6 dominant); saline depressions and swamps.	304.6 (1.8%)
	Bassendean 7 subsystem	Plain, occasionally seasonally wet, and numerous sandy rises. Complex of Bs1, Bs4 and Bs6. Bs1 dominant.	15.6 (0.1%)
	Bassendean 8 subsystem	Gently undulating sandplain; yellow deep sand.	598.0 (3.5%)
	Bassendean 9 subsystem	Permanent or semi-permanent swamps.	60.7 (0.4%)
	Bassendean 12 subsystem	Drainage line and adjacent very gently inclined footslopes; mainly sandy duplexes, brown deep sand and brown sandy earth.	1.1 (0.006%)
Capitella	Capitella 2 pale yellow phase	Very gently to gently inclined hillslopes, and minor valleys, associated with Cp1b and Rw2a; pale and yellow deep sands.	471.9 (2.7%)
Dandaragan	Dandaragan 1 crest phase	Hillcrests and very gently to gently inclined hillslopes; red to pale sandy gravels, shallow red to pale sands over duricrust, some red to yellow deep sands.	679.7 (3.9%)
	Dandaragan 1 small crest phase	Small hillcrests associated with rejuvenation; loamy gravel, loamy earths, duplex sandy gravel.	22.5 (0.1%)
	Dandaragan 1 stripped slope phase	Gently to moderately inclined small breakaway slopes; red sandy and loamy gravels.	1.1 (0.006%)
	Dandaragan 1 plateau phase	Plateau remnant, plain some hillcrests; shallow red to brown sands over gravel and duricrust, red sandy gravels.	233.4 (1.4%)
	Dandaragan 2 yellow phase	Very gently to gently inclined hillslopes, some hillcrests and plateau remnants; yellow and brown deep sands, some sandy earths.	2774.4 (16.1%)
	Dandaragan 2 pale phase	Hillcrests and very gently to gently inclined upper hillslopes; pale and yellow deep sands, gravelly pale deep sand.	39.9 (0.2%)
	Dandaragan 3 subsystem	Colluvial slopes, very gently to gently inclined hillslopes; red to brown and yellow deep sands, some sandy gravels and sandy earths.	4643.1 (27.0%)
	Dandaragan 4 slopes phase	Very gently to gently inclined upper hillslopes, partially stripped; loamy and sandy duplexes, loamy earths, red deep sand, loamy gravel.	1017.3 (5.9%)

Soil System	Soil Unit	Description^	Mapped Extent in Project Area (ha)
	Dandaragan 4 breakaway phase	Gently to moderately inclined upper hillslopes, minor breakaway slopes; loamy duplexes, loamy gravel, red deep sand.	3.3 (0.02%)
	Dandaragan 5 subsystem	Stripped slopes, very gently inclined hillslopes and hillcrests on chalk outcrops; shallow calcareous loams.	188.1 (1.1%)
	Dandaragan 6 subsystem	Fans, very gently inclined footslopes and hillslopes; sandy duplexes, loamy earths, red deep sand, some sandy gravels.	783 (4.5%)
	Dandaragan 7 dry phase	Very gently inclined footslopes and open depressions; pale and yellow deep sands, sandy duplexes.	124.9 (0.7%)
	Dandaragan 7 wet phase	Narrow open depressions; wet soil, sandy and loamy duplexes, deep sands.	222 (1.3%)
	Dandaragan 8 typical phase	Alluvial plain and sand filled open depressions; wet soil, sandy and loamy duplexes (often over pan or bog iron), pale deep sand, shallow loams on pans.	695.5 (4.0%)
	Dandaragan 8 Lower reaches phase	Alluvial plain, apparently regional groundwater connected; Sandy duplexes, often wet soil.	162.1 (0.9%)
	Dandaragan 9 subsystem	Playas; shallow sands and loams over pans, often wet soil.	38.1 (0.2%)
Rowes	Rowes 2 subsystem	Plateau residuals, hillcrests and very gently to gently inclined hillslopes; sandy gravels, gravelly pale deep sand, some duricrust.	1168.5 (6.8%)
	Rowes 3 typical phase	Colluvial slopes, very gently to gently inclined hillslopes and sand filled minor valleys; yellow deep sand, some sandy earths.	4.9 (0.3%)
	Rowes 3 pale phase	Colluvial slopes, very gently to gently inclined hillslopes and sand filled minor valleys; yellow and pale deep sands.	1749.8 (10.2%)
	Rowes 4 subsystem	Narrow drainage line; deep sand, sandy duplexes, some wet soil.	111.3 (0.6%)
Boothendarra	Boothendarra 4 subsystem	Gently to very gently inclined hillslopes and footslopes; sandy duplexes, deep sands and sandy gravels.	229 (1.3%)
	Boothendarra 7 steep slope phase	Steeply inclined breakaway slopes; loamy gravel, loamy duplexes (over pallid zone clays), rock outcrops.	16.4 (0.1%)
	Boothendarra 9 subsystem	Floodplain, discharge of Cataby creek on coastal plain; sandy duplexes, some wet soil.	84.2 (0.5%)
Total			**17,212.7**

^Source: DPIRD (2025).

FIGURE 2.1

Soil Landscape Mapping of the Project Area



Legend

- Project Area

Soil Landscape Mapping (DPIRD 2025)

- Bassendean 1 subsystem
- Bassendean 12 subsystem
- Bassendean 3 subsystem
- Bassendean 4 subsystem
- Bassendean 5 subsystem
- Bassendean 7 subsystem
- Bassendean 8 subsystem
- Bassendean 9 subsystem
- Boothendarra 4 subsystem
- Boothendarra 7 steep slope phase
- Boothendarra 9 subsystem
- Capitella 2 pale yellow phase
- Dandaragan 1 crest phase
- Dandaragan 1 plateau phase
- Dandaragan 1 small crest phase
- Dandaragan 1 stripped slope phase
- Dandaragan 2 pale phase
- Dandaragan 2 yellow phase
- Dandaragan 3 subsystem
- Dandaragan 4 breakaway phase
- Dandaragan 4 slopes phase
- Dandaragan 5 subsystem
- Dandaragan 6 subsystem
- Dandaragan 7 dry phase
- Dandaragan 7 wet phase
- Dandaragan 8 Lower reaches phase
- Dandaragan 8 typical phase
- Dandaragan 9 subsystem
- Rowes 2 subsystem
- Rowes 3 pale phase
- Rowes 3 typical phase
- Rowes 4 subsystem
- Other Types not within Project Area

0 2.5 5

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Neoen (2024), DPIRD(2025)

2.3 Regional Vegetation

As previously mentioned, the Project Area is located within the Perth and Dandaragan IBRA subregions (SWA01, SWA02), as well as the southern edge of the Lesueur Sandplain subregion (GES02) (DCCEEW, 2023c, 2023e). The Perth subregion (SWA02) is a low lying coastal plain, mainly covered with woodlands. It is dominated by Banksia or Tuart on sandy soils, *Casuarina obesa* on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah (*Eucalyptus marginata*) woodland. The outwash plains, once dominated by *Casuarina obesa-Corymbia calophylla* (Marri) woodlands and Melaleuca shrublands, are extensive only in the south (Mitchell et al., 2002). The Dandaragan Plateau subregion (SWA01) is characterised by Banksia woodland, Jarrah – Marri woodland, Marri woodland and by scrub heaths on laterite pavement and on gravelly sandplains (Desmond, 2001). Lastly, the Lesueur Sandplain subregion (GES02) comprises shrub-heaths rich in endemics on a mosaic of lateritic mesas, sandplains, coastal sands and limestones. Heath occurs on lateritised sandplains along the subregion's north-eastern margins (Desmond & Chant, 2002).

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 created (DPIRD, 2019). The Government of Western Australia (GoWA) has released vegetation statistics for VSAs that include pre-European extent, current extent, current extent remaining and current extent protected for conservation (DBCA, 2019). This information has not been updated since 2018, even with the availability of the updated Native Vegetation Extent (DPIRD, 2023) and DBCA Legislated Lands and Waters (DBCA, 2024a) spatial data. Umwelt has intersected IBRA regions, Pre-European Vegetation Mapping (DPIRD, 2019), Native Vegetation Extent (DPIRD, 2023) and DBCA Legislated Lands and Waters (DBCA, 2024a) shapefiles to re-create the same information as DBCA (DBCA, 2019), resulting in less than ± 0.5% difference between both GoWA's current extent remaining and extent protected for conservation percentages (DBCA, 2019) and the re-created percentages. Therefore, the DBCA (2019) data has been presented in **Table 2.2**. The threshold level of retention for pre-European extent of each VSA within a local area and bioregion is considered to be 30% or more (DER, 2014).

The Project Area occurs across seven VSAs, with Dandaragan_999 occurring across 74.9% of the Project Area (**Table 2.2, Figure 2.2**). This VSA has only 9.4% of its pre-European extent remaining within the Dandaragan Plateau IBRA subregion, with only 1.2% currently protected for conservation.

Table 2.2 Vegetation System Associations of the Project Area

IBRA Subregion	VSA	Description	Proportion of VSA Mapped in Project Area (ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent Protected for Conservation (%)
Swan Coastal Plain	**BASSENDEAN_1030**	Low woodland; *Banksia attenuata* & *Banksia menziesii*	1,912.7 (11.1%)	79,560.9	69.7	13.9
	BASSENDEAN_1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath	1,892.6 (11.0%)	394.9	8.6	0
	BASSENDEAN_125	Bare areas; salt lakes	257.3 (1.5%)	355.3	23.1	5.0
Dandaragan Plateau	**DANDARAGAN_1030**	Low woodland; *Banksia attenuata* & *Banksia menziesii*	130.6 (0.8%)	570.5	41.2	0
	DANDARAGAN_1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath	19.0 (0.1%)	339.8	10.1	0
	DANDARAGAN_999	Medium woodland; marri	12,890.9 (74.9%)	8477.4	9.4	1.2
Leseur Sandplains	**LESUEUR_1031**	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath	109.7 (0.6%)	73457.3	32.7	37.8

Source: DBCA (2019), DPIRD (2019).

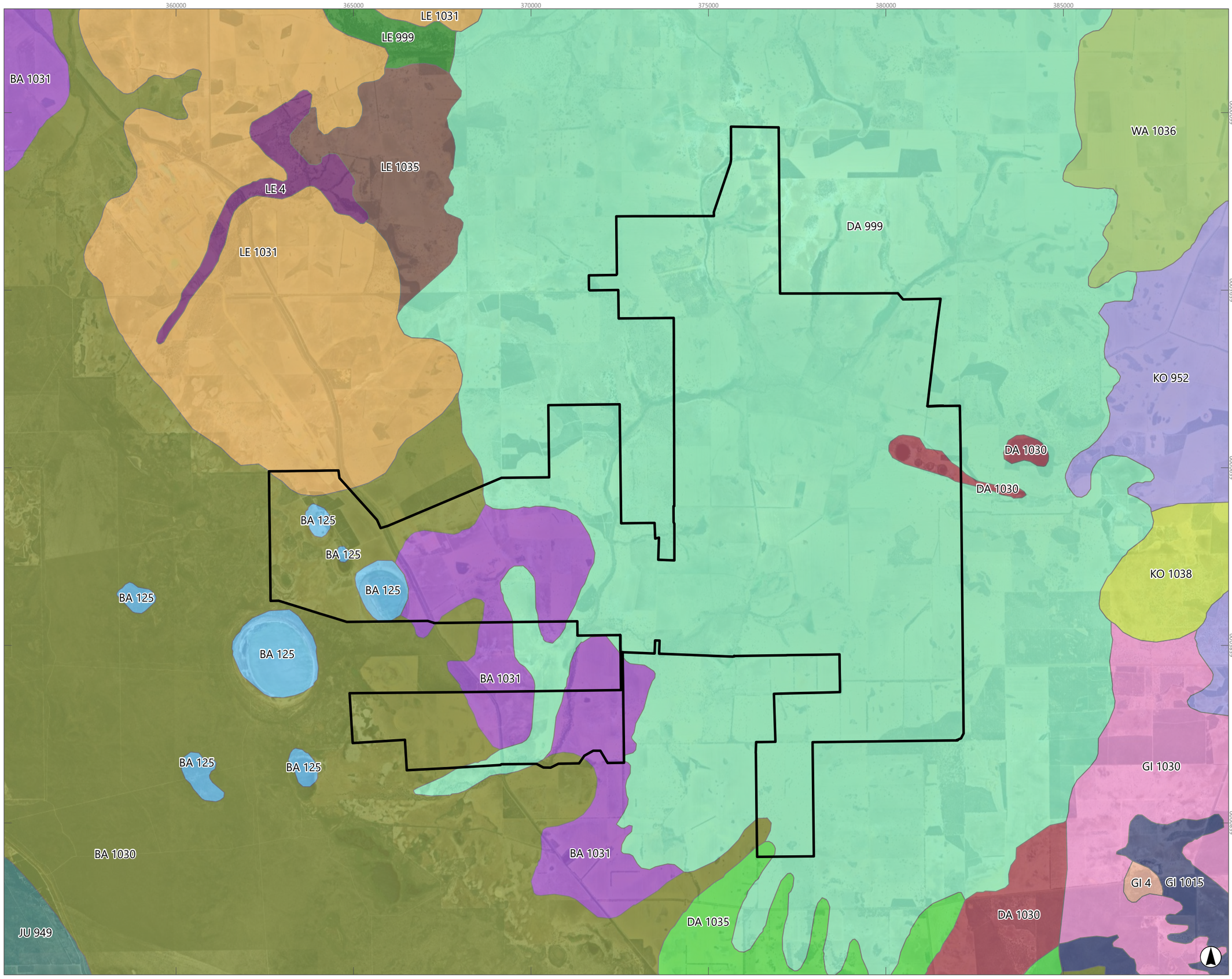


FIGURE 2.2

Vegetation System Associations of the Project Area

Legend

- Project Area

Pre-European Vegetation (DPIRD 2019)

- BA 1030 : BASSENDEAN_1030
- BA 1031 : BASSENDEAN_1031
- BA 125 : BASSENDEAN_125
- DA 1030 : DANDARAGAN_1030
- DA 1035 : DANDARAGAN_1035
- DA 999 : DANDARAGAN_999
- GI 1015: GINGIN_1015
- GI 1030 : GINGIN_1030
- GI 4 : GINGIN_4
- JU 949 : JURIEN_949
- KO 1038 : KOOJAN_1038
- KO 952 : KOOJAN_952
- LE 1031 : LE SUEUR_1031
- LE 1035 : LE SUEUR_1035
- LE 4 : LE SUEUR_4
- LE 999 : LE SUEUR_999
- WA 1036 : WARRO_1036

0 2.5 5

Kilometres

Scale: 1:100,000 at A3
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Neoen (2024), DPIRD(2022)

2.4 Hydrology Values

The Project Area lies across three groundwater catchment areas within the Moore-Hill Rivers Basin. The Nambung River catchment intersects the Project Area by a small portion in the north, while Moore River catchment intersects the Project Area by a small portion in the south. The majority of the Project Area falls within the Minyulo-Caren Caren catchment.

The Nambung River catchment is situated from the Dandaragan plateau and ends a few kilometres inland from Cervantes. With no opening to the Indian Ocean, the catchment drains internally into the limestone dominated geology. Flowing westward for approximately 22 km, its three tributary sub-catchments (Bibby Creek, Mount Jetty Creek and the upper catchment in the east) comprise a total area of 3,000 km^2 (DWER, 2025). The Minyulo-Caren Caren catchment includes the large saline/brackish lake, Lake Guraga, and a second saline lake, Namming Lake, located 3 km south of Lake Guraga. Water recharge occurs through direct precipitation, ongoing waterflow from the Caren Caren Brook system (originating 25 km north-east of Lake Guraga) and connecting streams, also passing through Crackers Swamp (DBCA, 2008). Moore River catchment flows southward from Perenjori, Carnamah and Dalwallinu Shires through to Coorow, Dandaragan and Moora Shires, meeting the Gingin Brook where the catchment flows out to the Indian Ocean via Guilderton (Moore River Catchment Council, 2020).

The Project Area intersects the Caren Caren Brook, which flows in a north-south direction through the approximate centre of the Project Area. It is a non-perennial drainage line and is considered a minor river (Landgate, 2024).

Guraga Lake, which is listed on the Directory of Important Wetlands (DBCA-045) (DBCA, 2018), is located approximately 1.4 km west of the Project Area. There are no Ramsar sites located within the Desktop Study Area (DBCA, 2017a).

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 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) 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 the SCP and Geraldton Sandplain regions, and checked plant identifications undertaken by less experienced personnel for accuracy.

Table 3.1 Personnel and Licensing Information

Personnel	Experience	Flora Collecting Permit	Role
Thomas De Silva BSc Environmental Biology and Marine Science (Hons)	14 years	NA	Project Management
David Coultas BSc (Environmental Biology) (Hons)	>15 years	FB62000051-2 TFL 131-2122	Technical Director Field Team Leader Plant Identifications Reporting
Kyler Rowson BSc (Marine Biology and Biological Sciences)	3.5 years	FB62000399 TFL 2223-0139	Technical Manager Field Team Leader Reporting
Melissa White BSc (Botany)	1.5 years	FB62000612 TFL 2425-0078	Field Team Member
Tom Jones BSc (Botany and Zoology)	1.5 years	FB62000537 TFL 2425-0079	Field Team Member
Monika Hrubanova BSc (Hons) (Botany), MGr (MSc equivalent) (Botany)	4 years	FB62000375-2 TFL 2425-0077	Field Team Leader
Bethea Loudon BSc (Biology)	>15 years	NA	Plant Identifications
Marlee Starcevich Bsc (Environmental Science) (Hons)	9 years	NA	Floristic Classification Analyses

3.2 Desktop Assessment

Prior to commencement of the 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 Survey 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.

Where TECs or PECs were identified by the desktop assessment, appropriate DBCA or Department of Climate Change, Energy, the Environment and Water (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 DBCA (2024d).

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

Source	Search Attributes	Purpose
DBCA NatureMap (DBCA, 2024e)	Desktop Study Area. Search undertaken 17 June 2024, reference 18-0624NM	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, 2024c)	Desktop Study Area boundary. Search undertaken 19 April 2024, reference 15-0424FL	Obtain records of DBCA-listed significant flora taxa within the Desktop Study Area
DBCA Threatened and Priority Ecological Communities Database (DBCA, 2024b)	Desktop Study Area boundary. Search undertaken 19 April 2024, reference 12-0424EC	Obtain records of DBCA-listed TECs and PECs within the Desktop Study Area
DBCA TEC and PEC lists (DBCA, 2023b, 2023c)	Manual review of current DBCA TECs and PECs listed for the midwest DBCA region	Identify whether there are any DBCA-listed TECs or PECs that could occur within the Survey Area
DBCA TEC and PEC records spatial data (DBCA-038) (DBCA, 2024f)	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
DCCEEW Species Profile and Threats (SPRAT) Database (interrogated using the Protected Matters Search Tool) (DCCEEW, 2024)	Database interrogated using Desktop Study Area boundary. No additional buffer applied. Search undertaken 20 April 2024	Identify Matters of National Environmental Significance (MNES), including Threatened flora and TECs listed under the EPBC Act, that occur or have the potential to occur within the Desktop Study Area
IBSA database (DWER, 2024)	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 Survey 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 Survey Area
2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (report 3b) (DBCA, 2019) and Pre-European Vegetation spatial data (DPIRD, 2019)	Project Area boundary	Identify extent of Vegetation System Associations (VSAs) within the Project Area

3.3 Aerial Photograph Interpretation and Survey Design

The design of the 2024 survey complies with the requirements of EPA Technical Guidance (EPA, 2016b) and is consistent with the methods used for other similar flora and vegetation assessments conducted within the vicinity of the Survey Area (**Section 5.1.1**).

Initial interpretation of ortho-rectified aerial photography at a scale of 1:5,000 was conducted to determine preliminary vegetation patterns present within the Survey Area, including any areas of restricted or unusual landforms and types. This review considered the size of vegetated areas and visible vegetation patterns in the Survey Area. Quadrat and relevé locations were proposed based on this review to ensure that a minimum of three quadrats sampled each major discernible vegetation pattern; for smaller patterns, fewer quadrats and relevés were allocated based on the size of the pattern polygon, while for widespread vegetation patterns, quadrats and relevés were allocated across their geographic range.

Data from quadrats established within the D&T Survey Area in 2024 were utilised for the floristic analysis (see **Section 3.6**) and for building a taxon inventory for the Survey Area (see **Section 5.2.1**).

3.4 Field Survey Methods

3.4.1 Survey Timing and Access

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

The timing of the Detailed and Targeted survey was selected to coincide with what is considered to be the most appropriate time to undertake a Primary survey in the South West province; as per EPA Technical Guidance (2016b), this is spring (September to November), as most flora taxa in this region flower at this time. This includes the majority of significant flora taxa that potentially occur in the Survey Area (**Section 5.1.2**).

Table 3.3 Survey Timing of the Flora and Vegetation Surveys

Trip Number and Survey Type	Date and Duration	Personnel
Trip 1 – Reconnaissance	3 days 2–4 July 2024	David Coultas Kyler Rowson
Trip 2 – Detailed and Targeted	4 days 24–27 September 2024	Kyler Rowson Melissa White
Trip 3 - Detailed	4 days 1–4 October 2024	Monika Hrubanova Tom Jones
Trip 4 – Reconnaissance	1 day 11 December 2024	Kyler Rowson

3.4.2 Detailed Field Survey

Data was collected in the Survey Area by establishing quadrats, relevés and vegetation mapping notes, where appropriate. A comparison and summary of what was recorded at each data point is presented in **Table 3.4.**

3.4.2.1 Quadrats

The quadrat size utilised for the survey is the indicative size for flora and vegetation surveys in the SCP IBRA Bioregion, as per Table 1 of the EPA Technical Guidance (2016b). All quadrats measured 10 m × 10 m, encompassing a total area of 100 m^2. Quadrat boundaries were demarcated using handheld Global Positioning System (GPS) units and surveying tape measures. Quadrat locations were selected to ensure that at least three quadrats sampled each vegetation pattern initially identified from aerial photograph interpretation, where possible (as per **Section 3.3**). Vegetation boundaries or transition zones were avoided. Additional quadrats were established in areas that were not identified by the initial aerial photograph interpretation but were observed in the field to differ from pre-identified areas, or areas of unusual habitat.

The final quadrat locations were moved away from or adjusted from the initial proposed locations where:

- variations in floristic patterning were observed, including placing additional quadrats in areas of unusual habitat
- the vegetation had been obviously recently disturbed
- the vegetation had been recently burnt (<2 years) (where possible)
- access or safety issues were encountered.

All vascular flora taxa (native and introduced) that were visually identifiable within each quadrat were recorded. At least one reference specimen of most taxa encountered (excluding common, distinctive taxa) was collected for verification and identification purposes (see **Section 3.5**).

A total of 17 flora and vegetation survey quadrats were established in the D&T Survey Area.

3.4.2.2 Relevés

Flora and vegetation survey quadrats are not considered to be the most appropriate sampling method in all instances. Where areas of vegetation in relatively degraded condition are encountered, or if areas of vegetation are too small or narrow to allow for the establishment of quadrats (e.g. narrow road verges), the establishment and survey of relevés rather than quadrats is considered more appropriate. Relevés were also established in vegetation patterns that had already been adequately surveyed by at least three quadrats.

Relevés surveyed an area within a radius of approximately 20 m around a central point. Most of the data recorded for quadrats was also recorded for relevés (**Table 3.4**); however, only dominant taxa of each stratum level were recorded, as well as any significant flora taxa or taxa not previously observed elsewhere.

A total of eight relevés were recorded within the Survey Area.

3.4.2.3 Vegetation Mapping Notes

Notes on vegetation pattern boundaries and distribution were also taken while traversing the Survey Area. These notes included a GPS location at the point where the notes were taken, and a brief description of the vegetation, including dominant and characteristic taxa, vegetation condition, and landform information (**Table 3.4**). The notes were used to aid in mapping polygons of vegetation patterns that were not surveyed by quadrats or relevés. Not all vegetation pattern polygons received quadrats or relevés; however, polygons could be relatively confidently allocated to a final VT using a combination of field mapping notes and aerial photograph interpretation. Changes in vegetation condition, and additional flora taxa (significant, opportunistic and introduced taxa) were also recorded opportunistically in the Survey Area during traverses between quadrats and relevés.

A total of 282 vegetation mapping notes were recorded within the Survey Area.

Table 3.4 Information Recorded at Each Data Recording Point

Information	Quadrat	Relevé	Vegetation Mapping Note
Personnel	X	X	X
Unique site name	X	X	X
Survey date	X	X	X
GPS coordinates at centre point of note (recorded using handheld global positioning system (GPS) devices) (Geocentric Datum of Australia (GDA2020) Zone 50)		X	X
GPS coordinates at each corner of site (recorded using handheld global positioning system (GPS) devices) (Geocentric Datum of Australia (GDA2020) Zone 50)	X		
Bearings / Orientation of site	X		
Size of sample site (10 m x 10 m)	X		
Fire history	X	X	
Notes on disturbance	X	X	X
Site photograph	X	X	
Topography	X	X	X
Soil colour and type (including the presence of any rock outcropping and surface stones)	X	X	
Vegetation condition (as per EPA Technical Guidance (2016b)) for the South West and Interzone Botanical Provinces)	X	X	X
Dominant taxa within each vegetation stratum		X	X
Complete list of taxa within the site	X		
Average heights/foliage cover of dominant taxa		X	
Average heights/foliage cover of all taxa within site	X		

All traverses made during the 2024 field survey are mapped as track logs in **Figure 3.1,** along with quadrat, relevé and vegetation mapping note locations.

3.4.3 Targeted Field Survey

The majority of significant flora taxa identified by the desktop assessment were considered to be theoretically identifiable during the Detailed and Targeted field surveys (**Section 5.1.2**). In addition, all significant vegetation communities identified by the desktop assessment were considered to be identifiable irrespective of time of survey (**Section 5.1.3**). Therefore, all such taxa and vegetation were targeted during the survey.

Information relating to identifying characteristics, flowering period and habitat of these taxa, and relating to dominant taxa, soil and landform characteristics for significant vegetation, was provided to all field team members prior to undertaking the 2024 survey. In addition, known locations of significant flora taxa were visited prior to survey, where possible, to familiarise personnel with these taxa.

Systematic targeted survey was undertaken within the entirety of the D&T Survey Area, with the exception of the swamp vegetation located south of Stockyard Road. Targeted searching was generally conducted in a grid pattern, at 20 m spacing.

The following information was recorded during traverses of the Survey Area when significant flora taxa or vegetation were encountered opportunistically:

- location (including GPS coordinates and datum, recorded using handheld GPS units), taxon and count of any significant flora encountered at location within a radius of approximately 5 m from GPS coordinates,
- location (including GPS coordinates and datum, recorded using handheld GPS units), community name and extent of any significant vegetation encountered within a radius of approximately 5 m from GPS coordinates,
- comments on habitat, including landform and soils, dominant or characteristic taxa, vegetation condition, description of disturbances, and any apparent correlation between vegetation and landform features, as necessary.

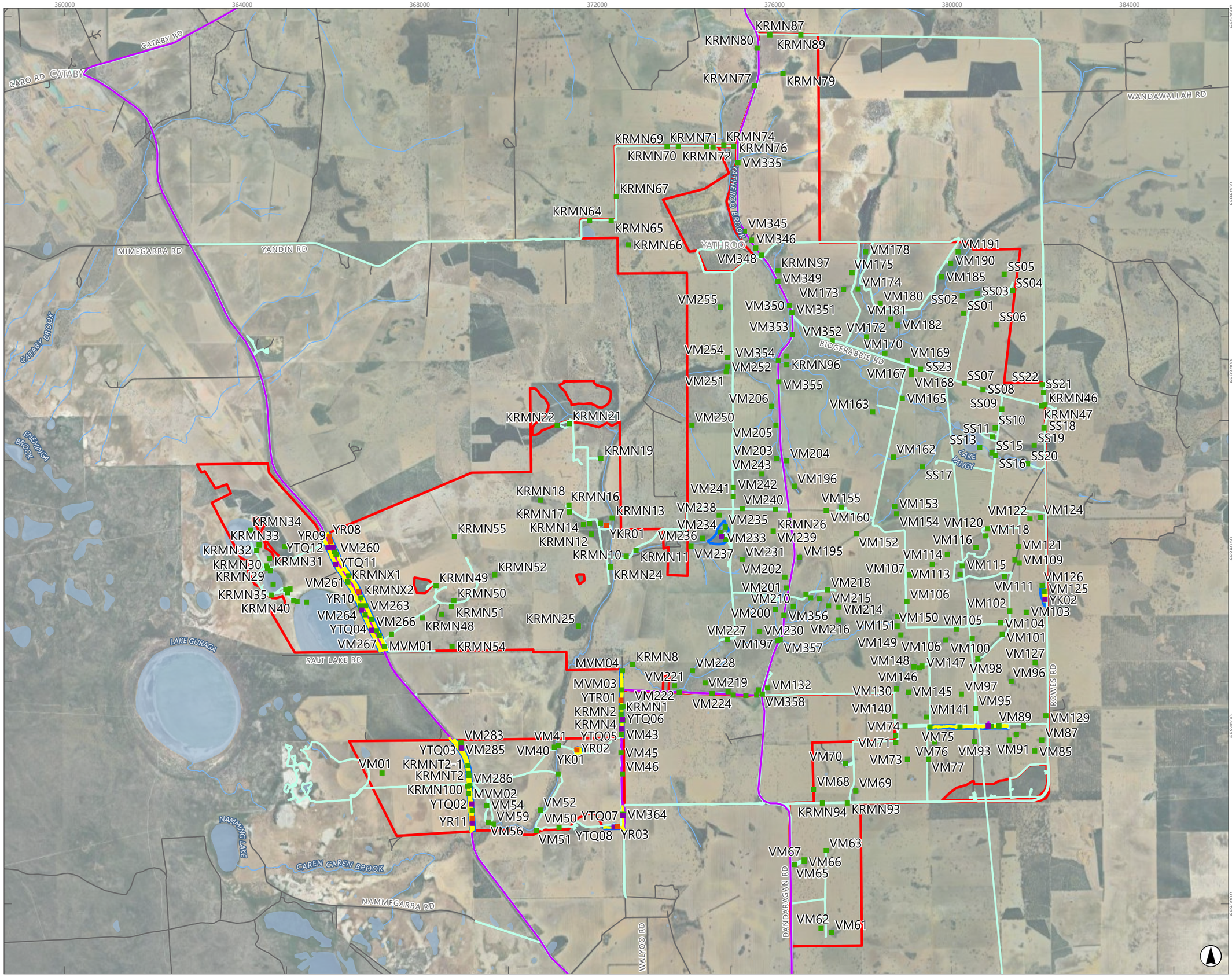
If new locations of significant flora taxa were identified, a representative collection of material was made (see **Section 3.5**).

Significant flora and vegetation searching was also undertaken opportunistically while traversing the broader Survey Area. Information recorded at such locations was the same as that recorded during targeted searching.

All traverses made during the 2024 Targeted survey are mapped as track logs in **Figure 3.1**.

FIGURE 3.1

Sample Sites and Track logs



Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

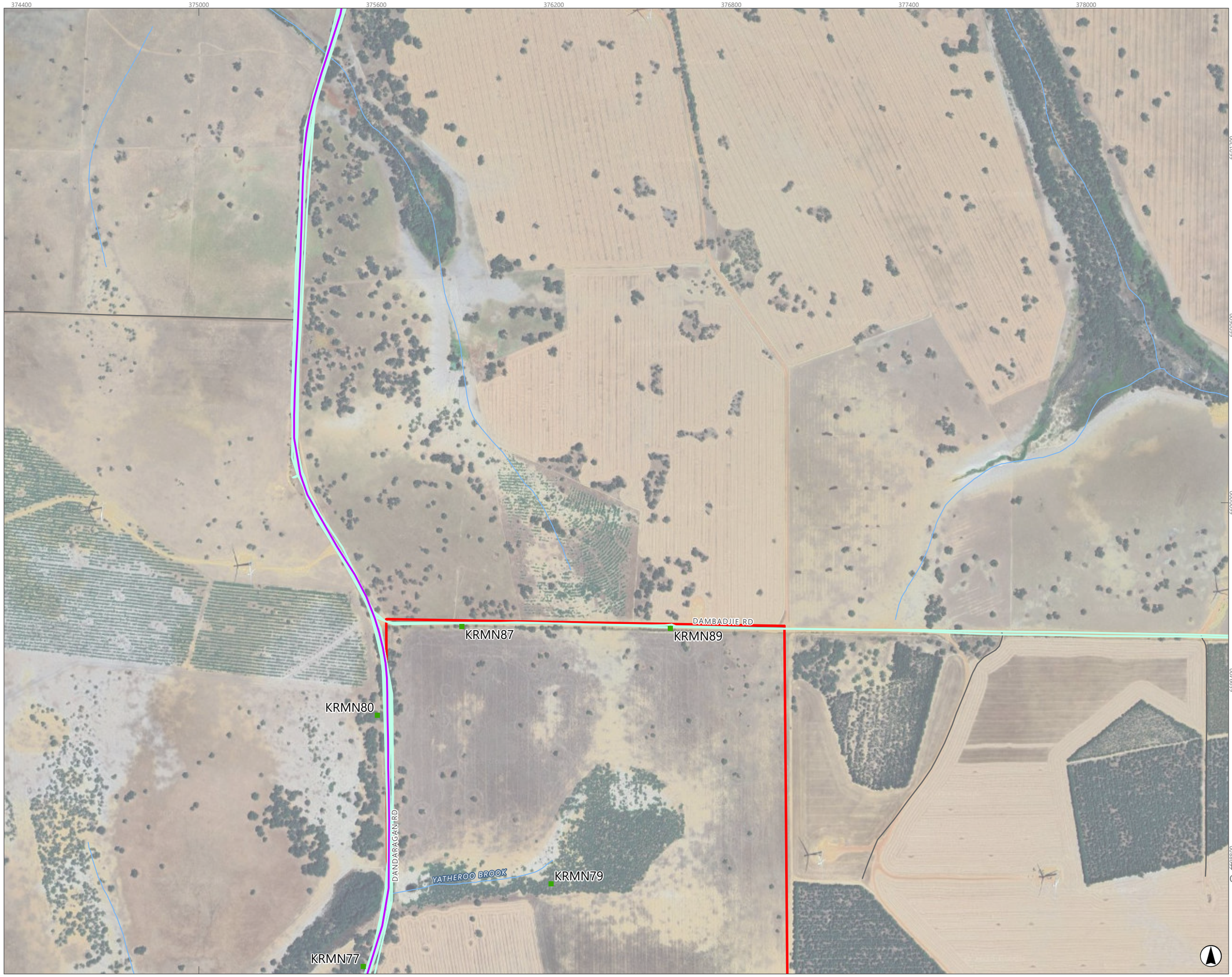
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GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Umwelt (2025)

FIGURE 3.1.1

Sample Sites and Track logs

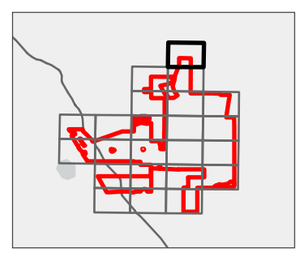


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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FIGURE 3.1.2

Sample Sites and Track logs

370800 371400 372000 372600 373200 373800

6598200 6597600 6597000 6596400 6595800 6595200

MENARDIE RD

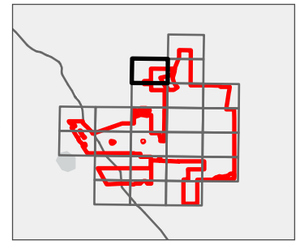
KRMN69 KRMN70 KRMN67 KRMN64 KRMN65

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Umwelt (2025)

FIGURE 3.1.3

Sample Sites and Track logs

374400 375000 375600 376200 376800 377400 378000

6598200 6597600 6597000 6596400 6595800 6595200

KRMN74 KRMN71 KRMN72 KRMN76 VM335 VM345

YATHEROO BROOK

DANDARAGAN RD

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

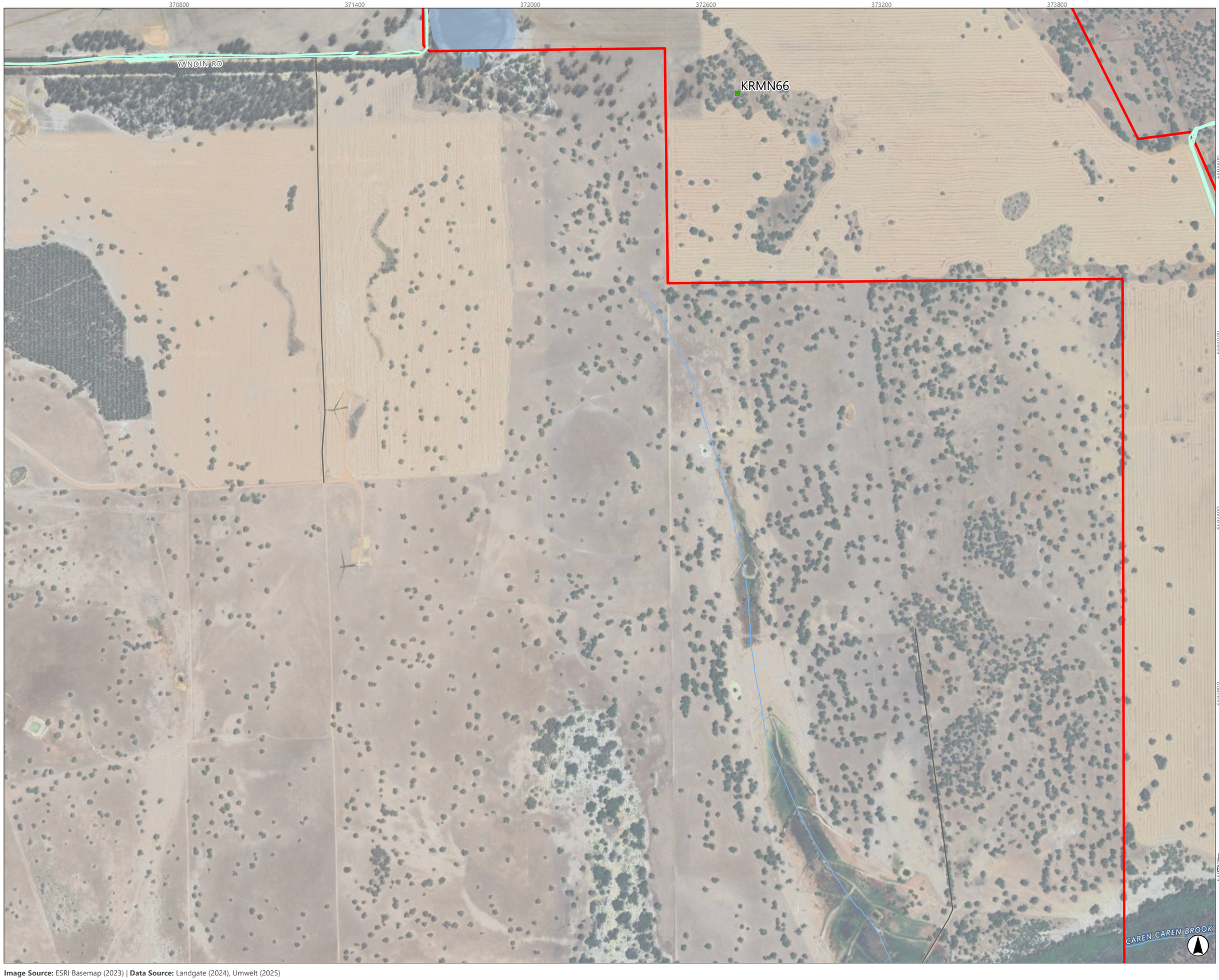
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FIGURE 3.1.4

Sample Sites and Track logs

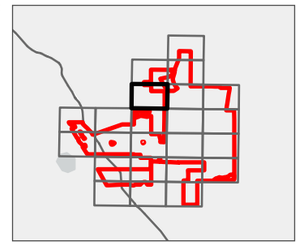


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 3.1.5

Sample Sites and Track logs

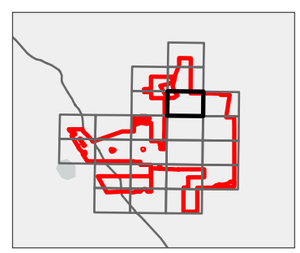


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 3.1.6

Sample Sites and Track logs

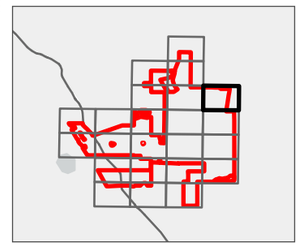


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0.3 0.6

Kilometres

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Umwelt (2025)

362400 363000 363600 364200 364800 365400 366000

6591600
6591000
6590400
6589800
6589200

FIGURE 3.1.7

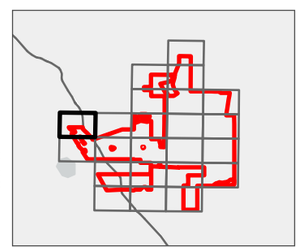
Sample Sites and Track logs

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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C:\Users\SachaHobbes\AUMWELT AUSTRALIA PTY LTD\24360 - 03 SWV30_Project\24360_R03_DraftReport_v2.aprx

366600 367200 367800 368400 369000 369600 370200

6591600
6591000
6590400
6589800
6589200

FIGURE 3.1.8

Sample Sites and Track logs

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

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GDA2020 MGA Zone 50

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C:\Users\Sarah.Hebbes\AUMWELT AUSTRALIA PTY LTD\24360 - 03 SWV00_Project\24360_R03_FaunaReport_v2.aprx

umwelt

FIGURE 3.1.9

Sample Sites and Track logs

370800 371400 372000 372600 373200 373800

6591600 6591000 6590400 6589800 6589200

KRMN22 KRMN21 KRMN19 KRMN18 KRMN16 KRMN17 KRMN13 VM250

GAREN CAREN BROOK

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

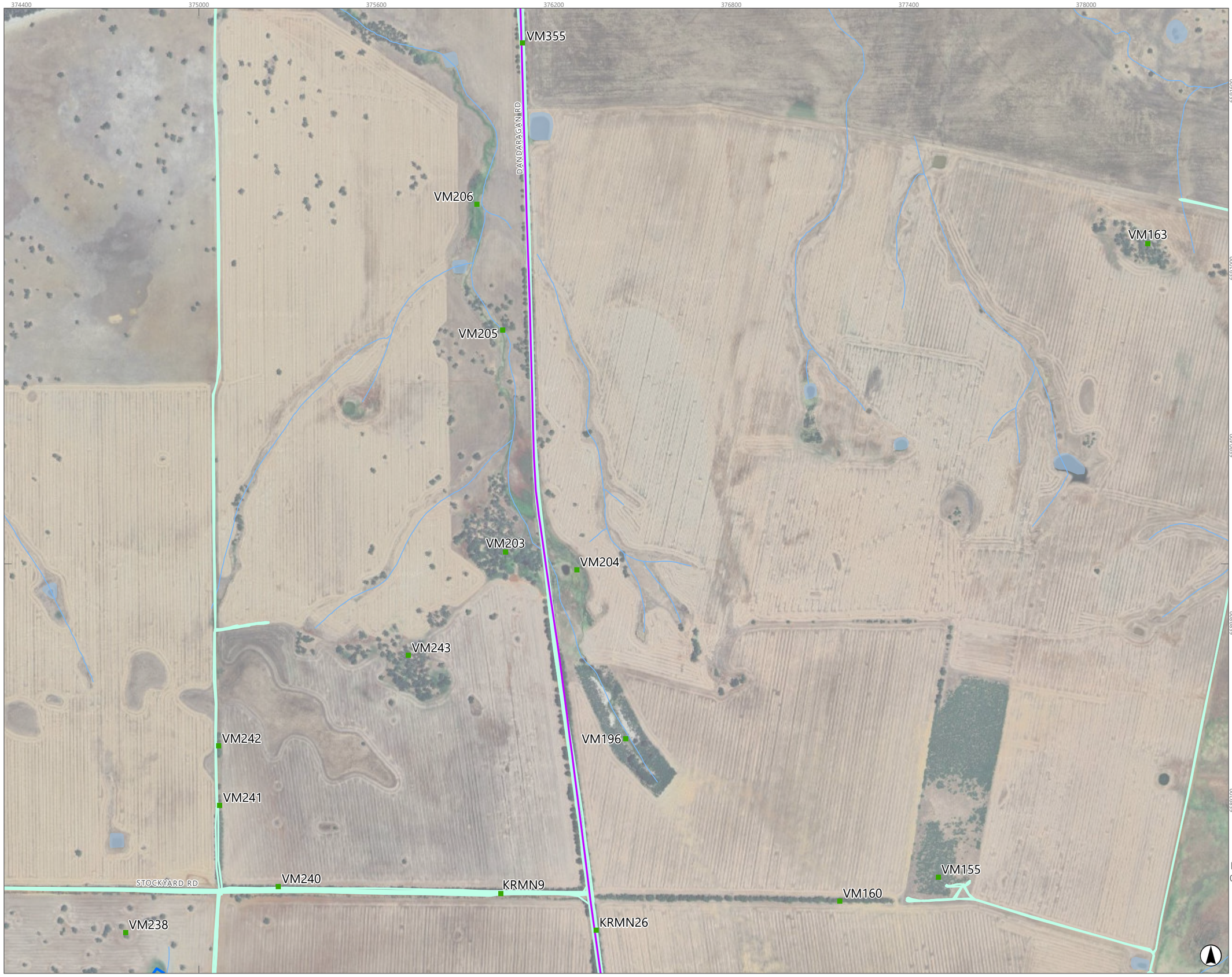
Scale: 1:12,000 at A3
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FIGURE 3.1.10

Sample Sites and Track logs

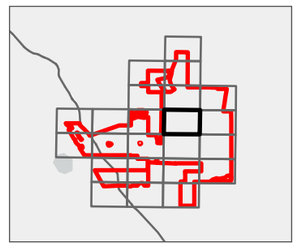


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

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FIGURE 3.1.11

Sample Sites and Track logs

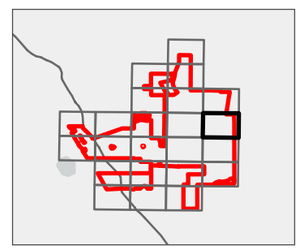


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

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FIGURE 3.1.12

Sample Sites and Track logs

362400 363000 363600 364200 364800 365400 366000

6588600 6588000 6587400 6586800 6586200 6585600

KRMN34 KRMN33 KRMN32 KRMN31 KRMN30 KRMN29 KRMN28 KRMN27 KRMN36 KRMN38 KRMN39 KRMN35 KRMN40 KRMN41 KRMN42

YR08 YR09 YTQ13A YTQ12

LAKE GURAGA

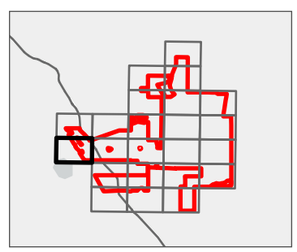
SALT LAKE RD

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

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366600 367200 367800 368400 369000 369600 370200

6588000 6587400 6586800 6586200 6585600

KRMN55
KRX
VM260
YTQ11
BRAND HWY
VM261
KRMNX1
KRMN52
KRMN49
YR10
YTQ10
KRMNX2
KRMN50
VM263
KRMN51
KRMNXXX
VM264
YTQ09
KRMNXXX3
KRMN49
KRMN48
VM266
KRMN4X
YTQ04
VM267
KRMN47
MVM01
KRMN54
SALT LAKE RD

FIGURE 3.1.13

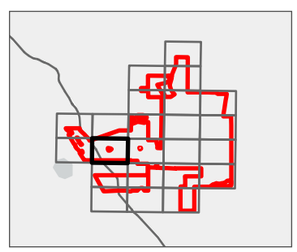
Sample Sites and Track logs

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

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FIGURE 3.1.14

Sample Sites and Track logs

370800 371400 372000 372600 373200 373800

6588600 6588000 6587400 6586800 6586200 6585600

KRMN14 KRMN15 KRMN23 YKR01 KRMN12 KRMN11 KRMN10 KRMN24 KRMN25 KRMN8 VM237

CAREN CAREN BROOK

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

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FIGURE 3.1.15

Sample Sites and Track logs

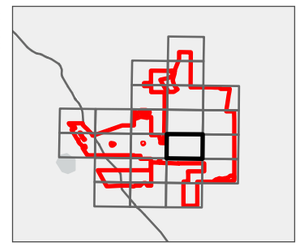


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 3.1.16

Sample Sites and Track logs

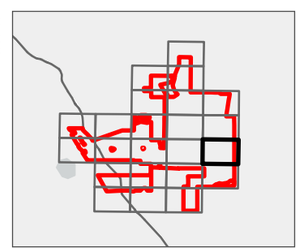


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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FIGURE 3.1.17

Sample Sites and Track logs

366600 367200 367800 368400 369000 369600 370200

6585000 6584400 6583800 6583200 6582600

VM283
VM285
YTQ03
KRMNT2-1
VM01
KRMNT2
KRMN100
VM286
MVM02
BRAND HWY
YTQ02
VM54
KRMNTT

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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370800 371400 372000 372600 373200 373800

6585000 6584400 6583800 6583200 6582600

MVM04 MVM03 YTR01 KRMN7 KRMN1 KRMN2 KRMN3 YTQ06 KRMN4 KRMN5 YTQ05 VM43 VM41 VM40 YK01 YR02 VM45 VM46 VM52 VM221 VM222 VM228 CAREN CAREN BROOK

FIGURE 3.1.18

Sample Sites and Track logs

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

0 0.3 0.6

Kilometres

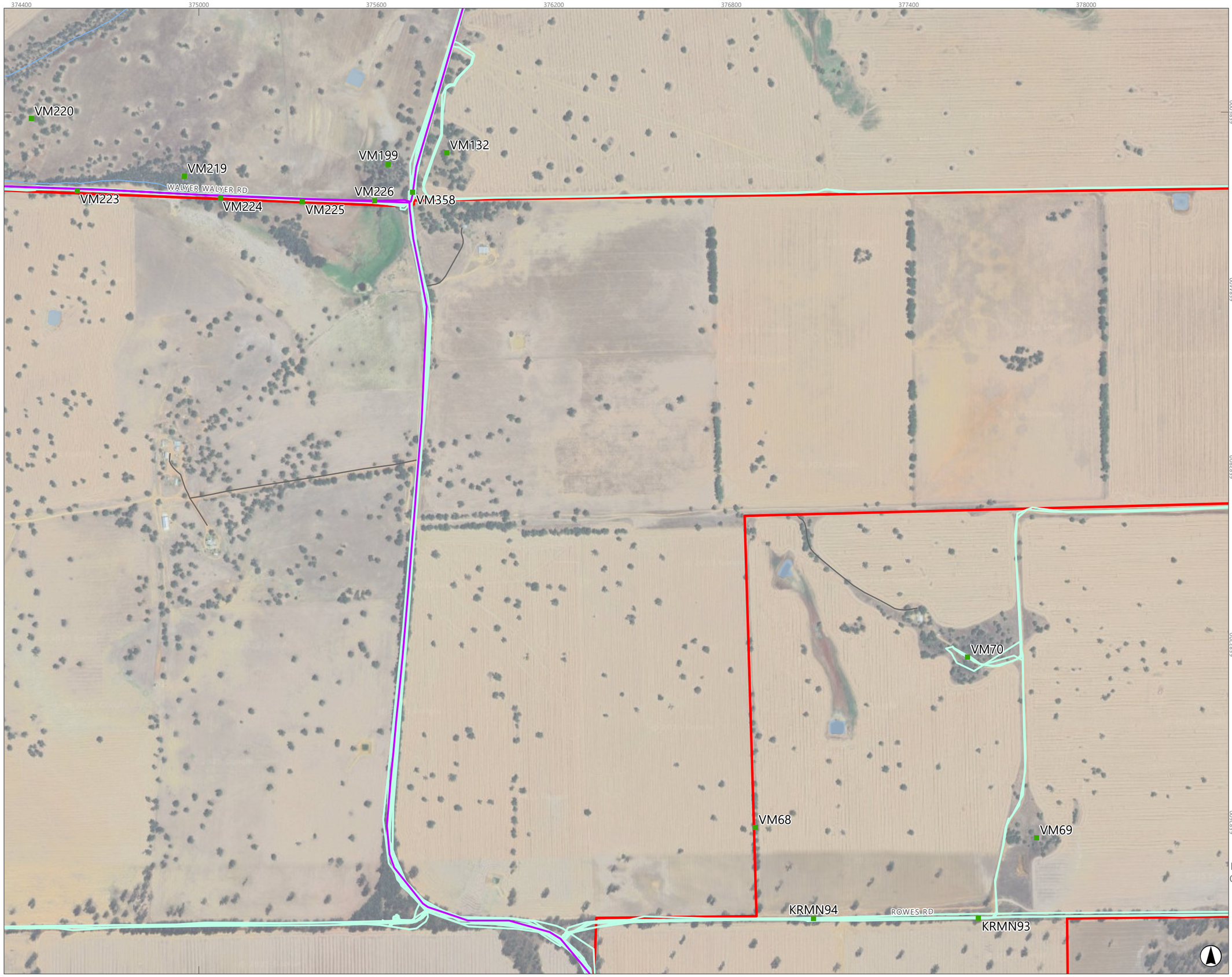
Scale: 1:12,000 at A3
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FIGURE 3.1.19

Sample Sites and Track logs

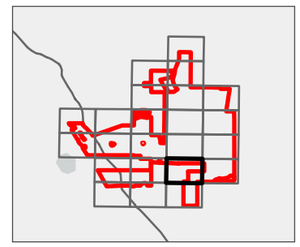


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

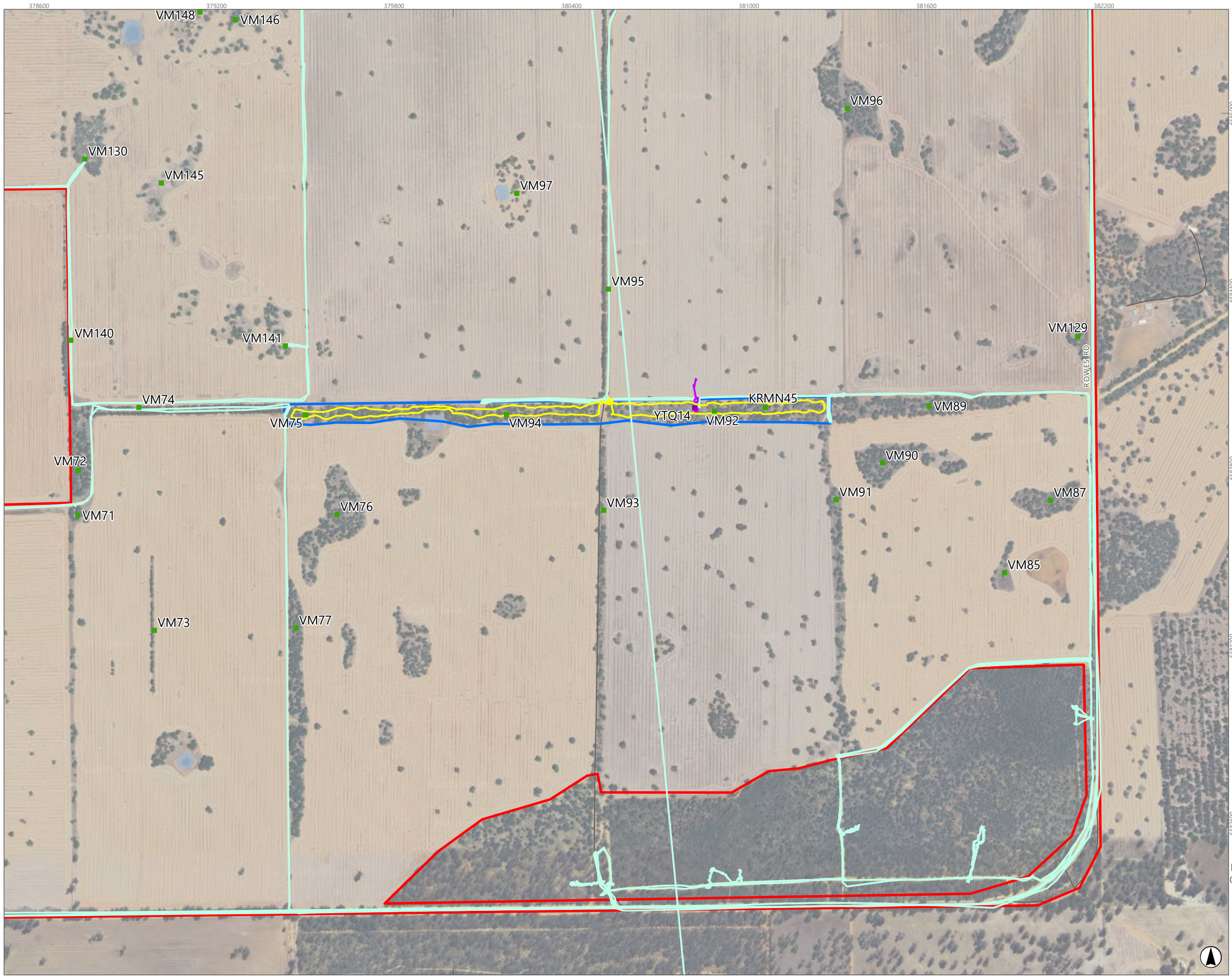
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FIGURE 3.1.20

Sample Sites and Track logs



Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 3.1.21

Sample Sites and Track logs

366600 367200 367800 368400 369000 369600 370200

6582000 6581400 6580800 6580200 6579600 6579000

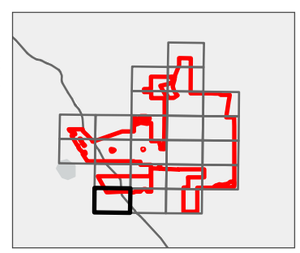
YR11
YTQ01
VM56
VM59
CAREN CAREN BROOK
NAMMEGARRA RD

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 3.1.22

Sample Sites and Track logs

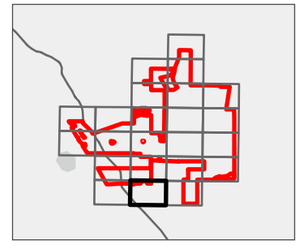


Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

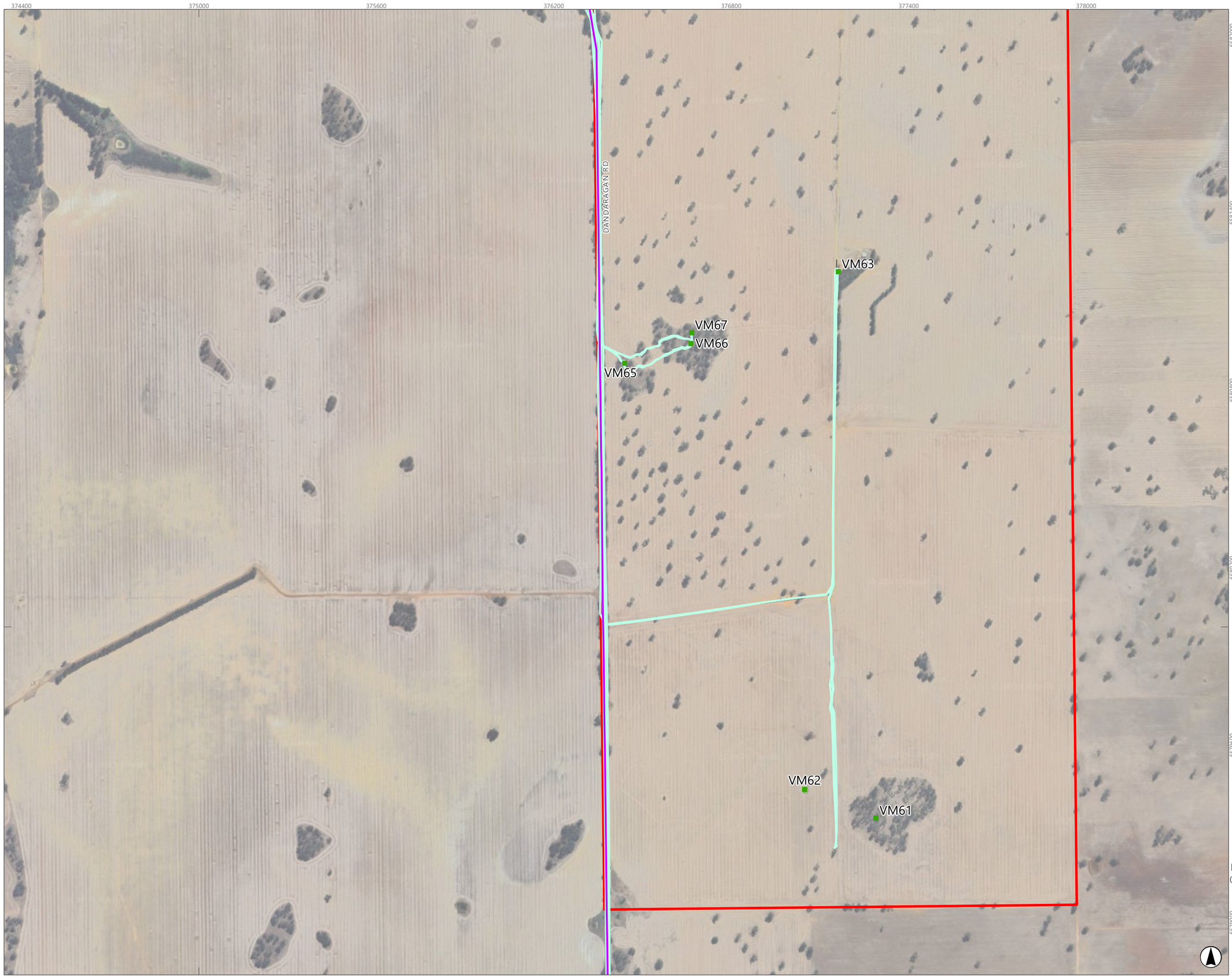
Kilometres

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FIGURE 3.1.23

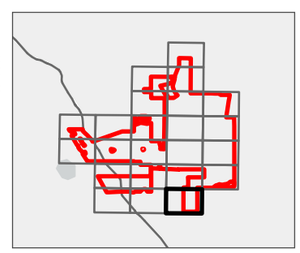
Sample Sites and Track logs

Legend

- Survey Area
- D&T Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Quadrat track logs
- Targeted Searching track logs
- Reconnaissance track logs

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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3.5 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 (>15 years) in plant identifications for flora of the Dandaragan Plateau region (**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, 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).

3.6 Survey Area Floristic Classification Analyses

Floristic agglomerative hierarchical clustering analysis of data from the 17 quadrats established in the Survey Area (**Section 3.4.2.1**) was performed to inform the groupings of quadrats.

The floristic classification analysis was undertaken by a botanist with previous experience in undertaking and interpreting floristic analysis results and was reviewed by a senior botanist with extensive previous experience (nine years) in analyses of the Swan Coastal Plain and Geraldton Sandplain regions.

Taxa belonging to the below categories were removed prior to the classification analysis:

- Introduced Taxa: introduced taxa were removed as their distributions are generally defined by the presence of disturbance (e.g. clearing, animal movement etc.) rather than natural ecological drivers. Vegetation type must be determined independently of vegetation condition for the purposes of impact assessment; therefore, including weeds in the classification analyses introduces the risk of VTs allocated by the analysis being based on condition (presence/absence of introduced species) rather than native taxon presence/absence.
- Hybrids: hybrids are usually the result of random reproductive events that produce small numbers (often only one) of sterile offspring and are often not associated with particular habitat types

- Indeterminate taxa: taxa were removed from the analysis where identification was unclear due to poor material available in the field. However, is such a taxon was known to be unique within the dataset (i.e. although not identifiable to species level, there was enough material to indicate it representing a unique taxon), and the taxon had multiple records in the dataset, it was included in the analysis (e.g. *Drosera* sp.).

- Singletons: taxa that occur only once in the dataset were removed, as published studies indicate that they provide little information in the dataset; e.g. Markey & Dillon (2008).

All taxa removed from the classification analysis (excluding taxa belonging to the above mentioned categories) are presented in **Appendix A**. Also presented in **Appendix A** are taxa that were amalgamated in the classification analysis; this was done, for example, where different infra-taxa could not be consistently positively identified at all quadrats due to inadequate material. The dataset contained 147 species following the removal and/or amalgamation of the above noted taxa.

Prior to undertaking agglomerative hierarchical clustering, a principal component analysis (PCA) using R Statistical Software (R Core Team, 2024) was undertaken on a single-layer data matrix consisting of presence/absence species data. Three analyses were then undertaken to determine the optimal number of clusters, with the minimum number of these three metrics being considered to capture the majority of variation in the quadrat data:

- Determining the “elbow” of the curve of a PCA scree plot and retaining all components before this point,

- The point where the principal components contribute 5% of the standard deviation and the principal components cumulatively contribute 90% of the standard deviation,

- The point where the percent change in variation between consecutive principal components is less than 0.1%.

The same presence-absence data matrix was then used in the classification analysis, with the classification and ordination analysis of the data matrix undertaken using the ‘vegan’ (Oksanen et al., 2025) and ‘cluster’ (Maechler & Rousseeuw, 2024). The Bray-Curtis coefficient was used to generate an association matrix for the classification analysis. This association matrix consisted of pairwise coefficients of dissimilarities between quadrats based on floristic data. Agglomerative hierarchical clustering, using flexible Unweighted Pair Group Method with Arithmetic Mean (UPGMA) (ß = - 0.1), was used to generate a quadrat classification dendrogram using the ‘factoextra’ R package (Kassambara & Mundt, 2020).

A two-way table showing species presence in quadrats within clusters was also produced. Dissimilarity indices using the Bray-Curtis coefficient were generated for taxa as for quadrats, with the ‘dendextend’ R package (Galili, 2015) then used to split quadrats and taxa into clusters (as presented in the dendrogram). The ‘pheatmap’ package (Kolde, 2019) was subsequently used to produce the two way table.

In addition to the dendrogram, a cluster plot was generated using the ‘factoextra’ R package (Kassambara & Mundt, 2020). Prior to generating the cluster plot, PCA was performed to reduce the number of dimensions such that the data can be represented by clusters in a two-dimensional space. The data was then plotted according to the first two principal components that explain the majority of the variance in the dataset. This plot was utilised to assist in determining the feasibility of clusters and quadrat placement in the dendrogram.

3.7 Vegetation Type Definition, Mapping and Description

The classification analysis of the Survey Area floristic data aggregated quadrats and taxa into clusters according to the optimal number of cluster analysis (**Section 3.6**). The resulting dendrogram and two-way table were initially examined at this level to determine the plausibility of quadrat groupings with regard to taxon groups, in combination with field observations. This process determined a final number of groups, which were considered to represent VTs.

Following this process, floristic and structural data recorded at relevés was examined to determine whether vegetation sampled by such relevés, such as in the case where vegetation condition may not support classification analysis, was analogous to any of the VTs defined by floristic composition classification. Any such vegetation that was not considered to be analogous with any of the VTs defined by floristic classification was considered to represent a discrete VT.

VT descriptions have been adapted from the National Vegetation Information System (NVIS) Australian Vegetation Attribute Manual (NVIS Technical Working Group, 2017). The use of the NVIS system for VT descriptions is stipulated by EPA Technical Guidance (2016b), however it is worthy of note that the latest version (7.0) was published in 2017, subsequent to the release of the current EPA Technical Guidance. The NVIS model follows nationally-agreed guidelines to describe and represent VTs, so that comparable and consistent data are produced nation-wide. It should be noted that the NVIS system utilises vegetation descriptions derived from structural characteristics of the individual community units, while quadrat-derived VTs presented in this report are defined based on the results of a floristic classification analysis, excluding any structural data. Such VTs therefore may include multiple structural types. Considering the effect of disturbance factors such as fire on vegetation structure, this approach is designed to provide a map of VTs that reflect taxon composition and the influences of the physical and chemical environment, rather than disturbance history.

For each VT, indicator taxa were defined via Indicator Taxon Analysis (INDVAL). This was conducted using the 'labdsv' R package (Roberts, 2023) via the method of Dufrêne and Legendre (1997). This generates INDVAL values (a measure of taxon fidelity to a given VT) that range from 0 to 100; an INDVAL value of 100 indicates that a taxon is present in all quadrats within a particular VT and absent from all other quadrats included in the analysis. The INDVAL values were then tested for significance of the indicator taxa using a Monte Carlo permutation test. Indicator taxa were defined as taxa with a significance p value of either <0.05, <0.01 or <0.001. The same taxa exclusions (i.e. introduced taxa and hybrids) and amalgamations that were used for the Survey Area floristic classification analysis (as per **Appendix A**) were employed for the indicator species analysis. Note that only VTs sampled with more than one quadrat can be analysed for indicator species.

Locations of quadrats and/or relevés within each VT were used in conjunction with aerial photograph interpretation and vegetation mapping notes to develop VT mapping polygon boundaries. Mapping boundaries were then developed using aerial Light Detection and Ranging (LiDAR) imagery, provided by Neoen on 21 January 2025. Detections of vegetation were extracted from the LiDAR and converted into polygons using Geographic Information System (GIS) software. This data was then manually inspected at a maximum scale of 1:5,000 and alterations to polygons were made where the LiDAR mapping did not accurate reflect the actual vegetation boundaries (as per aerial imagery interpretation by an experienced botanist).

3.8 Vegetation Condition Mapping

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 survey at all data point locations. Vegetation condition category polygon boundaries were developed using this information in conjunction with introduced flora taxa location data and were digitised using GIS software as for VT polygon boundaries.

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.

3.9 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 Survey Area are discussed in **Section 5.2.3** with reference to the above categories. Point locations, individuals and populations of significant flora known from the Survey 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, 2017b); 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 (DBCA, 2023a).

3.10 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 Survey Area was manually compared to TEC/PEC descriptions by a Botanist, and reviewed by the Principal Botanist, 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 Survey Area.

Determination of BC Act listed TECs was undertaken by review of the survey and determination criteria as per DBCA (2023d). 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 Survey Area.

The remaining significant vegetation criteria other than "being identified as a TEC and PEC" were applied to VTs mapped in the Survey 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 Survey Area. Significant vegetation is discussed further in **Section 5.2.9**.

Definitions, categories and criteria for TECs and PECs in WA are presented on the DBCA Threatened species and communities website (DBCA, 2023d).

3.11 Likelihood of Occurrence

A likelihood of occurrence (LoO) assessment for significant flora taxa and significant vegetation that were identified by the desktop assessment was undertaken post survey using the following categories:

- **Unlikely**: Species or community unlikely to occur in the Survey Area due to lack of suitable preferred habitat; or combination of survey undertaken during correct survey period for identification, adequate survey intensity and/or vegetation condition deemed insufficient for species or community to occur.
- **Potential:** Suitable habitat present in the Survey Area; no known locations in proximity to Survey Area (> 10 km); not recorded during the Survey, however survey intensity not sufficient to reduce likelihood of occurrence to Unlikely.
- **Possible:** Suitable habitat present in the Survey Area; known locations in close proximity to Survey Area (< 10 km); not recorded during the Survey, however survey intensity not sufficient to reduce likelihood of occurrence to Unlikely.
- **Known**: Species or community known to occur in the Survey Area, either through historical records or through the findings of this survey.

4.0 Adequacy and Limitations of Survey

4.1 Adequacy of Survey

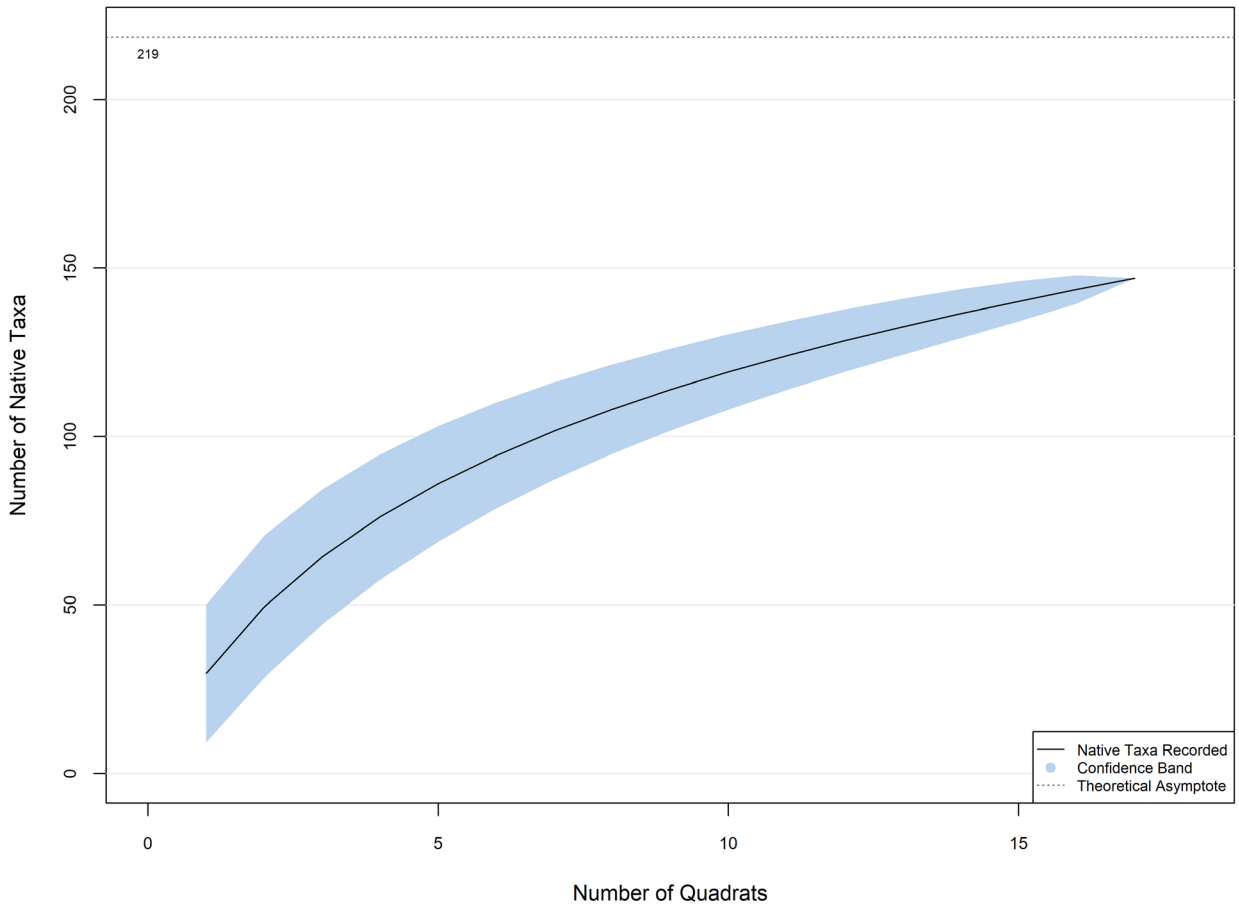
The D&T Survey Area covers 130.5 ha, within which 17 quadrats were established during the 2024 Detailed survey. Quadrats were established in all preliminary vegetation patterns discernible by initial aerial photograph interpretation (**Section 3.3** and **Section 3.4.2**), both to adequately sample variation in vegetation throughout the D&T Survey Area, and to ensure adequacy of sampling for vascular plants.

The number of quadrats established in the D&T Survey Area is considered to be acceptable given the relatively low diversity of topography and soil types noted in the D&T Survey Area, as well as its size (approximately 1 quadrat established per 7.6 ha).

To provide an indication of the adequacy of the Detailed survey, a taxon accumulation curve was produced with the 'vegan' R package (Oksanen et al., 2025) using R statistical Software (R Core Team, 2024). Taxon accumulation curves represent a theoretical model of the relationship between sampling intensity and taxon accumulation; when sampling intensity is increased, taxon accumulation is reduced, and the taxon accumulation curve becomes asymptotic.

The taxon accumulation curve for quadrat data in the D&T Survey Area was generated using all native taxa (both annual and perennial) recorded within each quadrat. Taxon accumulation calculations were then undertaken using the 'SpadeR' R package (Chao et al., 2016), utilising the Chao -2 estimation for species richness (bias corrected form) (Chao, 1987) and compared to the actual number of taxa recorded in the D&T Survey Area. This provides an indication as to whether sufficient quadrats were surveyed to adequately sample the species richness in the D&T Survey Area. Note that as the generation of taxon accumulation curves includes quadrat data only, and not opportunistically recorded taxa or taxa recorded at relevés, the indication of adequacy of survey is considered to be conservative.

Graph 4.1 presents the native taxon accumulation curve generated from quadrat data from the D&T Survey Area. Using the Chao-2 estimator, the recorded number of native taxa within quadrats (147 taxa) is equivalent to 67% of the estimated native taxon richness in the D&T Survey Area. It is important to note that this test of survey adequacy is conservative in that it does not consider taxa recorded opportunistically outside quadrats. Including this data, 248 native taxa were recorded in the D&T Survey Area, which is greater than the number estimated by the Chao -2 estimator (219).



Graph 4.1 D&T Survey Area Quadrat Data Native Taxon Accumulation Curve

Another adequacy of survey measure is that developed by Mueller-Dombois & Ellenberg, (1974), who suggest that a cut off point might be when a 10% increase in quadrats surveyed results in a ≤5% increase in taxa recorded. This measure was also calculated using all native flora taxa recorded within each quadrat. The number of quadrats established by the field survey satisfies this adequacy measure, with the final native taxon increase value of 3.7% recorded following a 10% increase in quadrats.

4.2 Assessment of Limitations

Table 4.1 presents an assessment of the potential limitations of the flora and vegetation assessment of the Survey Area, in accordance with the requirements of EPA Technical Guidance (2016b).

Table 4.1 Potential Limitations of the Flora and Vegetation Survey

Limitation	Outcome	Comment
Effort and Extent	Not a limitation	A Reconnaissance, Detailed and Targeted survey was undertaken across the Survey Area over a combined 12 days. A Detailed and Targeted survey was undertaken across the D&T Survey Area. Seventeen quadrats and fifteen relevés were recorded within the broader Survey Area. Mapping of vegetation boundaries was undertaken within the broader Survey Area using a combination of aerial photography and information collected at relevés and vegetation observation points. No constraints prevented appropriate sampling techniques (quadrat and relevé establishment, foot traverses) being employed. All areas were easy to access using roads and tracks. Data reliability is therefore considered to be relatively high.
Competency/experience of the team carrying out the survey	Not a limitation	The field team leader for the Reconnaissance field survey has >18 years' experience conducting flora and vegetation surveys in the region and the field team leader of the Detailed and Targeted field survey has >3 years' experience in conducting flora and vegetation surveys in the region. Senior personnel provided guidance to less experienced botanists throughout the survey where necessary. Information relating to identifying characteristics of both significant flora taxa and vegetation identified by the desktop assessment as potentially occurring in the Survey Area was provided to all field team members prior to undertaking the field survey. The plant identifications were undertaken by Principal Botanists with >15 years' experience in plant identification for flora of the region.
Proportion of flora identified, recorded and/or collected	Not a limitation	All vascular groups that were present in the sample sites (quadrats, relevés and vegetation mapping notes) within the Survey Area were sampled. A high proportion of perennial vascular taxa were recorded based on the intensity and method of survey. The majority of annual vascular taxa that were sampled were identifiable, as the survey was conducted in Spring; it is considered likely that the majority of annual flora taxa that would be present in the Survey Area were recorded by the survey. Any unknown vascular taxa were collected and identified by a Principal Botanist.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data	Not a limitation	Good contextual information for the Survey Area was available prior to the survey. Sources of information used included government databases (DBCA, DCCEEW), flora and vegetation surveys previously conducted in the Desktop Study Area, as well as numerous general sources pertaining to the climate, geomorphology, flora and vegetation of the region.
Timing/weather/ season/cycle	Not a limitation	The Detailed and Targeted field survey was conducted in September and early October 2024. This corresponds with the optimum time to undertake a Primary survey in the SCP bioregion (Spring), and the flowering period of most taxa in the region. The total rainfall received in the year of survey (2024) was below average overall (473.6 mm in comparison to long-term average of 517.7 mm); however, the total rainfall received from January–August 2024 (the months prior to the Detailed and Targeted survey) was higher than average (417.7 mm in comparison to average of 403.0 mm).

Limitation	Outcome	Comment
Disturbances (e.g. fire, flood, accidental human intervention etc.), which affected results of survey	Not a limitation	There was evidence of significant impacts to vegetation composition and structure in the majority of the Survey Area as a result of human activities, including clearing for agriculture and very high levels of introduced (weed) taxa. However, this is a reflection of the land use history in the region and is not specific to the Survey Area; consequently, this is not considered to be a limitation of the survey. These disturbances did not affect the results of the survey, with the vegetation able to be confidently described and mapped, and flora taxa mature enough to be easily identified or collected. No areas impacted by recent fire were observed.
Remoteness and/or access problems	Not a limitation	The Survey Area was accessed either via publicly accessible roads or farm tracks, and on foot. Appropriate landowner permissions were obtained prior to survey, and there were no access issues. This allowed high intensity of sampling across the Survey Area. Therefore, this is not a limitation of this assessment.

5.0 Results

5.1 Desktop Assessment

5.1.1 Local Flora and Vegetation Surveys

Four previous flora and vegetation surveys were identified within the Desktop Study Area as summarised in **Table 5.1**. Included in **Table 5.1** are the key flora and vegetation results recorded by these assessments, such as the presence of significant flora and vegetation, as well as Declared Pests and Weeds of National Significance (WoNS). Note that the nomenclature and conservation status of the taxa presented in **Table 5.1** have been updated where required, and taxa that are no longer listed as significant are not presented.

Table 5.1 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
Yandin Wind Farm Flora, Vegetation and Avifauna Assessment (ecologia, 2017)	Southeast of Cataby Immediately adjacent to the north of the Project Area	18 September 2017	117 vascular plant taxa from 35 families were recorded. One Priority flora taxon was recorded: *Hypocalymma tetrapterum* (P3).	16 vegetation units described and mapped. The vegetation over 91.2% of the study area comprised *Corymbia calophylla* or *Eucalyptus todtiana* trees over pasture weeds in 'Completely Degraded' condition. Five patches of the 'Banksia Woodlands of the Swan Coastal Plain' TEC were identified within the study area. Each of these patches were considered to qualify as the TEC according to the 'Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain Ecological Community' (DoEE, 2016). Good–Excellent condition Banksia woodland made up 201.91 ha (1.3%) of the study area. Good condition Banksia woodland made up 10.10 ha (0.1%) of the study area.
Wind Prospect Pty Ltd, Yandin Wind Farm Supplementary Flora and Vegetation Survey (ecologia, 2018)	Southeast of Cataby Immediately adjacent to the north of the Project Area	16–17 October 2018	151 taxa representing 43 families and 96 genera were recorded. Four Priority flora taxa were recorded: *Eucalyptus macrocarpa* subsp. *elachantha* (P4), *Hypocalymma tetrapterum* (P3), *Persoonia filifolia* (P3), and *Stylidium aeonioides* (P4). No EPBC Act listed flora were recorded. 23 introduced plant taxa were recorded, none of which were Declared Pests or WoNS.	All vegetation types were considered typical of the broader area and were not considered to be representative of any known TEC or PEC. Much of the vegetation was mapped as 'Excellent' condition (25.5 ha, 84.5%), with no or minimal weed cover (<5%). Parkland and cleared areas were mapped as 'Completely Degraded' and comprised 4.8 ha (15.5%) of the study area.

Report and Author	Parameters	Survey Date	Key Findings – Flora	Key Findings – Vegetation
Brand Highway Passing Lanes Survey for Listed Threatened and Priority Flora Taxa (Woodman Environmental, 2018)	Multiple locations along Brand Highway, including northwest of Cataby – approximately 17 km northwest of the Project Area	6–10 November 2017	22 Priority flora taxa were recorded: *Anigozanthos humilis* subsp. *chrysanthus* (P4), *Arnocrinum gracillimum* (P2), *Beaufortia bicolor* (P3), *Catacolea enodis* (P2), *Comesperma rhadinocarpum* (P3), *Conostephium magnum* (P4), *Desmocladus biformis* (P3), *Desmocladus elongatus* (P4), *Desmocladus microcarpus* (P2), *Grevillea rudis* (P4), *Grevillea saccata* (P4), *Guichenotia alba* (P3), *Haemodorum loratum* (P4), *Hensmania stoniella* (P3), *Hypocalymma serrulatum* (P3), *Hypolaena robusta* (P4), *Jacksonia anthoclada* (P3), *Lyginia excelsa* (P1), *Persoonia filiformis* (P3), *Phlebocarya pilosissima* subsp. *pilosissima* (P3), *Schoenus griffinianus* (P4), *Tetratheca angulata* (P3). No Threatened flora taxa were recorded. 11 significant flora taxa known from the area could not be surveyed due to the timing of the survey not aligning with the flowering period of those taxa.	Vegetation was not assessed as part of the survey.
Targeted Flora and Vegetation Survey of Yandin Road Area (Terratree, 2019)	Immediately north of Project Area	29 October – 2 November 2019	2 Priority flora species recorded: *Banksia dallanneyi* subsp. *?pollosta* (P3) and *Anigozanthos humilis* subsp. *chrysanthus* (P4). No Threatened flora species were recorded. None of the weed species recorded were Declared Weeds or WoNS.	Community Type 2 was consistent with the description of the 'Banksia Woodlands of the Swan Coastal Plain' TEC as detailed in the Approved Conservation Advice (DoEE, 2016).

5.1.2 Significant Flora Taxa

The interrogation of the DBCA WA Herbarium (WAHerb) Specimen Database and TPFL Database (DBCA, 2024c) returned a total of 125 listed significant vascular flora taxa that have records in the Desktop Study Area (**Table 5.2**). A search of the DBCA NatureMap database (DBCA, 2024e) was also undertaken as part of the desktop assessment to check for any recently added records and to confirm the records returned from the DBCA WA Herbarium Specimen Database and TPFL Database search. An additional 12 taxa were returned by the NatureMap search (**Table 5.2**).

The search of the DCCEEW SPRAT Database (DCCEEW, 2024) for MNES listed under the EPBC Act identified an additional 34 flora taxa listed as Threatened species, or habitat for such species, that may occur in the Desktop Study Area (**Appendix B**). However, it is worthy of note that the SPRAT database search is based on Threatened flora taxa known from regional areas as opposed to actual records (as per 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. Therefore, the interrogation of the SPRAT database returns flora taxa known from a wider area than the DBCA database searches.

Asterolasia nivea (T) was returned from the DCCEEW SPRAT search. This taxon was synonymised under *Asterolasia grandiflora*, which is listed as Priority 4, in 2017 (Wege, 2017). The examination of a range of specimens of both formerly distinct taxa provided evidence that the morphology of these taxa was much more variable than first thought. As such, the two taxa were amalgamated under the name *Asterolasia grandiflora* (P4). Therefore, *Asterolasia nivea* (T) is not presented in **Table 5.2**, and *Asterolasia grandiflora* (P4) has been included. However, it is to be noted that *Asterolasia nivea* (T) is still listed under the EPBC Act (DCCEEW, 2025). The records that were previously attributable to *Asterolasia nivea* (T) are now considered to represent an ecological variant of *Asterolasia grandiflora* (P4), rather than a distinct taxonomic entity. Consequently, the accepted range of this consolidated entity under this new treatment has resulted in a considerable expansion compared to the previously accepted range *Asterolasia nivea* (T), with *Asterolasia grandiflora* (P4) extending from near Mogumber in the north to Wandoo National Park in the south, and being relatively common within that range (WA Herbarium, 1998-). Therefore, this taxon may no longer meet the criteria to be listed under the EPBC Act.

As per **Section 5.1.1,** Woodman Environmental (2018) recorded 22 significant flora during their survey along Brand Highway. Of these 22 taxa, four were not returned from the above database searches, but have been included in **Table 5.2**.

In summary, a total of 177 flora taxa were returned by the database assessment (DBCA, 2024c, 2024e; DCCEEW, 2024). Of the 177 taxa, a total of 55 are listed as Threatened under the BC and/or EPBC Acts, including four orchids (**Table 5.2**).

Figure 5.1 presents the locations of the listed significant flora taxa returned from the DBCA database searches (DBCA, 2024c), within the Desktop Study Area. Eleven taxa returned from the DBCA database search have historical records within the Project Area – *Babingtonia delicata* (P1), *Banksia dallanneyi* subsp. *pollosta* (P3), *Calytrix ecalycata* subsp. *brevis* (P3), *Dampiera tephrea* (P3), *Grevillea drummondii* (P4), *Grevillea olivacea* (P4), *Haemodorum loratum* (P3), *Hypocalymma* x *proliferum* (P1), *Lepidobolus quadratus* (P3), *Stylidium milleri* (P2) and *Thysanotus glaucus* (P4) (**Figure 5.1**).

Table 5.2 Significant Flora Taxa Known from the Desktop Study Area

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Acacia aristulata	T	EN	September to December	Ridges and hills with chert, brown or red clayey sand.	DCCEEW
Acacia cummingiana	P3		May to June, August	Sandplains, lateritic breakaways with grey or yellow sand and lateritic gravel.	DBCA TPFL, DBCA WAHerb, NatureMap
Acacia denticulosa	T	VU	September to December	Rock outcrops of greenstone or granite, clay loam.	DBCA WAHerb, NatureMap
Acacia epacantha	P3		July to August	Breakaways, slopes, flats and along drainage lines with gravelly sand or clay loam over laterite.	DBCA WAHerb, NatureMap
Acacia forrestiana	T	VU	November to December	Gullies, hills, breakaways.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Acacia plicata	P3		August to October	Hillslopes and drainage lines with loamy and clayey soils, often over sandstone or siltstone.	DBCA WAHerb, NatureMap
Acacia ridleyana	P3		April, November to December	White or brown or yellow or grey sand or loam or gravel.	NatureMap
Acacia splendens	T	EN	May, August	Laterite breakaways, brown sandy loam, sometimes alluvial flats.	DBCA WAHerb, DCCEEW, NatureMap
Allocasuarina grevilleoides	P3		September to November	Slopes, outcrops and plains with rocky or gravelly brown sand or clay loam over laterite or granite.	DBCA WAHerb, NatureMap
Allocasuarina ramosissima	P3		May to September	Breakaways, slopes and plains with gravelly grey, brown or white sand or loam over laterite.	NatureMap
Andersonia gracilis	T	EN	August to November	Winter-wet areas, near swamps. White-grey sand, sandy clay and gravelly loam.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
***Andersonia* sp. Mysosma (E.A. Griffin 2213)**	P2		September to November	Habitat includes grey sand on hills, breakaways and slopes with laterite.	DBCA WAHerb, NatureMap
Angianthus micropodioides	P3		September to November	Saline flats, winter-wet depressions and adjacent dunes. Grey or brown clay loam or sand.	DBCA WAHerb, NatureMap
***Anigozanthos humilis* subsp. Badgingarra (S.D. Hopper 7114)**	P2		September to December	Slopes, plains, flats and winter-wet areas with white or grey sand. Banksia woodland, low wet heath.	DBCA TPFL, DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Anigozanthos humilis* subsp. *chrysanthus	P4		August to November	Slopes, plains and winter-wet areas with white, grey or yellow sand. Banksia woodland, low wet heath.	DBCA TPFL, DBCA WAHerb, NatureMap, Terratree (2019), Woodman (2018)
Anigozanthos viridis* subsp. *terraspectans	T	VU	August to September	Grey sand, clay loam. Winter-wet depressions.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Arnocrinum gracillimum	P2		October to November	Flats and plains with white, grey, yellow or lateritic sand over laterite.	Woodman (2018)
Asterolasia drummondii	P4		July to September	Lateritic hills, sandplains and breakaways with lateritic gravel and sand or loam.	DBCA TPFL, DBCA WAHerb, NatureMap
Asterolasia grandiflora	P4	VU	September to October	Slopes, gullies and breakaways of laterite, with brown loam.	DCCEEW (listed as *Asterolasia nivea*)
Babingtonia delicata	P1		November	Winter-wet closed depressions, wetlands and lakes with white, yellow or grey clayey sand.	DBCA TPFL, DBCA WAHerb, NatureMap
Babingtonia urbana	P3		December to March	Wetlands with clay, winter-wet flats.	DBCA WAHerb, NatureMap
Banksia catoglypta	T	VU	June to July	Hillslopes and breakaways with grey sand and laterite.	DCCEEW
Banksia chamaephyton	P4		October to December	Slopes, breakaways and flats with grey or white sand over laterite.	DBCA WAHerb, NatureMap
Banksia dallanneyi* subsp. *pollosta	P3		August to September	Grey/yellow sand. Flats, lateritic rises.	DBCA TPFL, DBCA WAHerb, NatureMap
Banksia fuscobractea	T	CR	September to February	Laterite hills and rises, grey sand or brown loam.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Banksia kippistiana* var. *paenepeccata	P3		October to November	Hills and slopes with white-yellow or grey sand over laterite.	DBCA WAHerb, NatureMap
Banksia mimica	T	EN	September to January	Flats or gentle slopes with grey sand.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Banksia nana	P3		October	Hills with white/grey sand and/or gravel over laterite.	DBCA WAHerb, NatureMap
Banksia prionophylla	T	not fed listed!	July	Dry grey sand with laterite.	DBCA TPFL, DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Banksia pteridifolia* subsp. *vernalis	P3		September to October	White/grey sand over laterite, usually on plains or lower slopes.	DBCA WAHerb, NatureMap
Banksia serratuloides* subsp. *perissa	T	CR	August to September	Hillsides, slopes and breakaways with white/grey sand or brown loam with laterite.	DCCEEW
Banksia serratuloides* subsp. *serratuloides	T	VU	August to October	Lateritic sandy clay flats, slopes and valleys.	DCCEEW
Beaufortia bicolor	P3		November to December	Sandplains with white sand over laterite.	NatureMap, Woodman (2018)
Beaufortia eriocephala	P3		June, September to December	Ridges, low rises and flats with brown, grey or white sand or sandy clay and lateritic gravel over laterite or sometimes granite.	DBCA TPFL, DBCA WAHerb, NatureMap
Boronia ericifolia	P2		April to September	Breakaways with greenstone, slopes with brown loam and laterite.	DBCA WAHerb, NatureMap
Boronia scabra* subsp. *condensata	P2		August	Upper slopes and lateritic breakaways with grey/brown sandy clay or loam with laterite.	DBCA WAHerb, NatureMap
Caladenia multiplex	P2		Mid-August to September. Latest record from 13 September.	Red to brown loam, slopes and creeklines, winter wet areas.	DBCA WAHerb, NatureMap
Caladenia speciosa	P4		Late August to October. Latest record from 25 October	Flats, swampy areas with black sand; clay pans. Also grey sand.	NatureMap
Calectasia elegans	T	not fed listed!	September to October	Plains with deep grey or pale yellow sand.	DBCA TPFL, DBCA WAHerb, NatureMap
Calothamnus accedens	P4		September to January	Slopes or rises with brown clay loam.	DBCA WAHerb, NatureMap
Calothamnus brevifolius	P4		Jan to Feb or April	White/grey or yellow sand.	DBCA WAHerb, NatureMap
Calothamnus pachystachyus	P4		September to November	Hills and breakaways with laterite, sandy slopes with laterite.	DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Calytrix ecalycata* subsp. *brevis	P3		August to September	Sandplains and low rises with white/grey or yellow sand.	DBCA WAHerb, NatureMap
Catacolea enodis	P2		Unknown	Deep white sand over laterite. Flats.	Woodman (2018)
Chamaescilla gibsonii	P3		August to November	Brown or grey sandy clay. Winter-wet clay pans and flats.	NatureMap
Chamelaucium lullfitzii	T	EN	September to December	Hilltops, slopes and undulating plains with gravelly sand.	DCCEEW
***Chamelaucium* sp. Cataby (G.J. Keighery 11009)**	T	VU	September to December	Lateritic breakaways.	DBCA TPFL, DBCA WAHerb, NatureMap
Chordifex reseminans	P2		March to May	Flats and winter-wet depressions with white-grey sand over laterite.	DBCA WAHerb, NatureMap
Chorizema humile	T	EN	August to September	Plains with granite, Rock outcrops of granite with red-brown soil.	DCCEEW
Comesperma rhadinocarpum	P3		October to November	Undulating plains, valley slopes and flats with grey, brown or yellow sandy loam or sand.	DBCA WAHerb, NatureMap, Woodman (2018)
Conospermum densiflorum* subsp. *unicephalatum	T	EN	September to December	Plains with red-brown soil, laterite.	DCCEEW
Conostephium magnum	P4		July to September	Sand dunes and slopes with white-grey sand.	DBCA WAHerb, NatureMap, Woodman (2018)
Cristonia biloba* subsp. *pubescens	P2		June to July	Hillslopes and ridges with white sand or brown loam and gravel.	NatureMap
Dampiera tephrea	P3		August to October	Flats, riverbanks and slopes with sand or loam, often with limestone.	DBCA TPFL, DBCA WAHerb, NatureMap
Darwinia acerosa	T	EN	August to September	Granite outcrops with brown soils.	DBCA WAHerb, DCCEEW, NatureMap
Darwinia carnea	T	EN	October to November	Breakaways, brown loamy sand over laterite.	DBCA WAHerb, DCCEEW, NatureMap
Daviesia dielsii	T	EN	July	Sandy, often gravelly soils.	DCCEEW

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Desmocladus biformis	P3		September to October	Hills, slopes and undulating plains with white or brown sand or sandy clay over laterite.	DBCA WAHerb, NatureMap, Woodman (2018)
Desmocladus elongatus	P4		August to December	Slopes, plains and uplands with white or grey sand over laterite.	NatureMap, Woodman (2018)
Desmocladus microcarpus	P2		August to October	Slopes with grey or cream sand over laterite.	DBCA TPFL, DBCA WAHerb, NatureMap, Woodman (2018)
Desmocladus nodatus	P3		October to November	Moist sites in open woodland with shrubs.	DBCA WAHerb, NatureMap
Dillwynia dillwynioides	P3		August to January	Saline flats, winter wet depressions and wetlands. Grey, brown or black sandy loam, sometimes peaty.	DBCA TPFL, DBCA WAHerb, NatureMap
Diplolaena andrewsii	T	EN	August to November	Brown sandy loam over granite. Granite outcrops and slopes.	DCCEEW
Dodonaea hackettiana	P4		April to October	Limestone ridges, dunes, plains and low rises. Grey sand over limestone.	NatureMap
Drakaea elastica	T	EN	October to November	Winter-wet depressions. Grey sand.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Drosera leioblastus	P1		September to October	White siliceous sand with laterite.	DBCA WAHerb, NatureMap
Drosera prophylla	P3		June to July	Hilltops, lateritic breakaways and ridges and slopes with gravelly sand over laterite.	DBCA TPFL, DBCA WAHerb, NatureMap
Eleocharis keigheryi	T	VU	August to November	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
***Eremaea* sp. Cairn Hill (B. Morgan 532)**	P2		October to November	White to light brown sand, plains with laterite.	DBCA WAHerb, NatureMap
Eremophila glabra* subsp. *chlorella	T	EN	July to November	Winter-wet depressions, lake edges and flats with grey-white sandy clay or sand.	DBCA WAHerb, DCCEEW, NatureMap
Eremophila scaberula	T	EN	August to November	Plains with sandy clay, laterite.	DCCEEW
Eucalyptus abdita	P2		February	Laterite, sandy clay with gravel over laterite. Slopes, breakaways.	DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Eucalyptus absita	T	EN	May	Flats with sandy loam or grey sand.	DCCEEW
Eucalyptus annuliformis	P1		July	Laterite hills.	DBCA TPFL, DBCA WAHerb, NatureMap
Eucalyptus argutifolia	T	VU	Year round	Limestone outcrops on hills and breakaways with brown-orange sand.	DCCEEW
Eucalyptus crispata	T	VU	March to June	Lateritic breakaways and slopes with brown-grey sand or loam with lateritic gravel.	DCCEEW
Eucalyptus dolorosa	T	EN	February	Lateritic slopes and breakaways with gravelly/rocky brown loam.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Eucalyptus leprophloia	T	EN	July to November	Breakaways and slopes with grey or white sand or sandy clay over laterite.	DCCEEW
Eucalyptus macrocarpa **subsp. *elachantha***	P4		August to December	Hillslopes, ridges, sandplains with white or grey sand over laterite.	DBCA TPFL, DBCA WAHerb, ecologia (2018), NatureMap
Eucalyptus pruiniramis	T	EN	December to Feb	Skeletal soils over sandstone or laterite. Rocky hillslopes.	DCCEEW
Eucalyptus recta	T	EN	January	Pale yellow or white sand, low rises with laterite.	DCCEEW
Eucalyptus x balanites	T	EN	February, June to July	Plains with brown sandy loam.	DCCEEW
Eucalyptus x carnabyi	P4		October to November	Grey sand, sandy loam. Lateritic ridges.	DBCA TPFL, DBCA WAHerb, NatureMap
Gastrolobium hamulosum	T	EN	August to October	Flats, slopes, ridges with sandy, often gravelly soils or clay.	DCCEEW
Gastrolobium nudum	P2		October to December	Hilltops and ridges with clay and laterite.	DBCA WAHerb, NatureMap
Glyceria drummondii	T	EN	July to October	Seasonally flooded clay pans within clay plains, in hollows. Brown or red-brown clay.	DCCEEW
Gompholobium gairdnerianum	P3		September to November	Hills, slopes and ridges with white, brown or grey sandy clay or sand over laterite or occasionally sandstone.	DBCA WAHerb, NatureMap
Goodenia arthrotricha	T	EN	November to March	Granite slopes with brown loam clay.	DCCEEW
Gratiola pedunculata	P2		November to March	Grey black clay. Edges of swamps and winter wet areas.	NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Grevillea calliantha	T	EN	April, August to October	Plains and lower slopes with sandy loam over laterite or occasionally ironstone.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Grevillea christineae	T	EN	July to September	Laterite hills and slopes.	DCCEEW
Grevillea curviloba	T	EN	August to October	Grey, white or brown sand or sandy loam. Flats, drainage lines and lower slopes.	DCCEEW
Grevillea drummondii	P4		June to September	Laterite hills with brown loam.	DBCA TPFL, DBCA WAHerb, NatureMap
Grevillea florida	P3		July to September	Sandplains and slopes with brown sand, sandy clay and lateritic gravel.	DBCA TPFL, DBCA WAHerb, NatureMap
Grevillea gillingarra	T	CR	September	Red lateritic loam, creek edges and steep slopes.	DBCA WAHerb, NatureMap
Grevillea olivacea	P4		June to September	White or grey sand. Coastal dunes, limestone rocks.	DCCEEW
Grevillea pythara	T	EN	August to October	Slopes. Brown or yellow sandy or gravelly loam.	DBCA WAHerb, NatureMap, Woodman (2018)
Grevillea rudis	P4		April to January	Hills and slopes with white, grey, yellow or red sand, often with gravel and laterite.	DBCA TPFL, DBCA WAHerb, NatureMap, Woodman (2018)
Grevillea saccata	P4		April, June to November	Hills and slopes with yellow or brown sand or loam, often with gravel and laterite.	DCCEEW
***Grevillea synapheae* subsp. A Flora of Australia (S.D. Hopper 6333)**	P1		September	Laterite breakaways.	DBCA TPFL, DBCA WAHerb, NatureMap
Grevillea synapheae* subsp. *minyulo	P1		September to October	Slopes with yellow brown or grey gravelly sand. Laterite.	DBCA TPFL, DBCA WAHerb, NatureMap
Grevillea thyrsoides* subsp. *thyrsoides	P3		February, August to September	Hills and plains with grey, white or brown sand or clay loam, often with laterite.	DBCA WAHerb, NatureMap
Guichenotia alba	P3		July to August	Sandy and gravelly soils. Low lying flats, depressions.	DBCA WAHerb, NatureMap, Woodman (2018)
***Gyrostemon* sp. Mogumber (T.J. Hawkeswood 250)**	P1		Unknown	Unknown.	DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Haemodorum loratum	P3		November	Uplands and sandplains with grey, white or yellow sand and gravel.	DBCA TPFL, DBCA WAHerb, NatureMap, Woodman (2018)
Hakea longiflora	P3		June to July	High in landscape; hills, breakaways and plains with white, grey or yellow gravelly sand or sandy loam over laterite or occasionally sandstone.	DBCA WAHerb, NatureMap
Hakea megalosperma	T	VU	April to June	High in landscape; hills, breakaways, slopes and flats with white, grey or brown sand or sandy loam over laterite.	DBCA WAHerb, DCCEEW, NatureMap
Haloragis platycarpa	T	CR	October to December	Cracking clay, winter-wet, margins of wetlands or plains with brown loam.	DCCEEW
Hemiandra gardneri	T	EN	August to November	Plains with yellow or grey sand or clayey sand.	DCCEEW
Hemigenia curvifolia	P2		September to October	Plains with white or yellow sand.	DBCA WAHerb, NatureMap
Hensmania stoniella	P3		September to November	Flats and slopes with white, grey or lateritic sand, sometimes winter-wet.	DBCA WAHerb, NatureMap, Woodman (2018)
Hypocalymma lateriticola	P1		August to September	Laterite plains with grey or yellow sand.	DBCA WAHerb, NatureMap
Hypocalymma quadrangulare	P3		July to October	Slopes and plains with sand.	DBCA WAHerb, NatureMap
Hypocalymma serrulatum	P2		April to July, November, January	Drainage lines, edges of and slopes above winter-wet depressions with grey sand.	DBCA WAHerb, NatureMap, Woodman (2018)
Hypocalymma tetrapterum	P3		August	Grey sand, loam, lateritic gravel. Riverbanks, breakaways.	DBCA TPFL, DBCA WAHerb, ecologia (2017), ecologia (2018), NatureMap
Hypocalymma x proliferum	P1		August to September	Sandy plains over clay, riverbanks, slopes.	DBCA TPFL, DBCA WAHerb, NatureMap
Hypolaena robusta	P4		October to November	Flats, grey sand. Banksia to *Eucalyptus todtiana* woodland.	DBCA WAHerb, NatureMap, Woodman (2018)
Isopogon autumnalis	P3		February, April	Sandplains with white/grey sand.	DBCA TPFL, DBCA WAHerb, NatureMap

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Isotropis cuneifolia* subsp. *glabra	P3		August to October	Low rises and winter-wet depressions and flats with grey or brown sand or clay.	DBCA TPFL, DBCA WAHerb, NatureMap
Jacksonia anthoclada	P3		November	Slopes with brown, yellow or white sand over laterite.	Woodman (2018)
Jacksonia carduacea	P3		July, November to December	Plains and flats with white, grey or yellow sand, sometimes over laterite.	DBCA WAHerb, NatureMap
Lasiopetalum rupicola	P1		August to September	Hilltops with laterite and brown loam.	DBCA TPFL, DBCA WAHerb, NatureMap
Lechenaultia galactites	P3		June, September to October	Yellow or brown sand over laterite, plains.	DBCA WAHerb, NatureMap
Lepidobolus quadratus	P3		August to September	Dry kwongan, hillslopes and rises with grey-white sand and lateritic gravel.	DBCA WAHerb, NatureMap
Lepidosperma rostratum	T	EN	June to December	Peaty sand or clay. Winter-wet swamps.	DCCEEW
Lepyrodia curvescens	P2		September to November	Seasonally inundated swamplands, depressions and flats with white/grey sand or peaty sand.	DBCA WAHerb, NatureMap
Leucopogon foliosus	P3		September to November	Uplands and slopes with yellow/white sand with gravel, over laterite.	DBCA WAHerb, NatureMap
Leucopogon squarrosus* subsp. *trigynus	P2		June to September	Coastal habitats. Grey sand, low lying flats.	DCCEEW
Lyginia excelsa	P2		March to November	Undulating plains, flats and depressions with white/grey sand.	DBCA WAHerb, NatureMap
Macarthuria keigheryi	T	EN	September to October	Dunes, plains and low rises above winter-wet areas with white, brown or grey sand or clay loam. Banksia woodland, recently burnt areas.	DBCA WAHerb, NatureMap, Woodman (2018)
Meionectes tenuifolia	P3		October to December	Seasonally inundated areas, Edge of wetlands. Clay or clayey loam over laterite.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Melaleuca sciotostyla	T	EN	August to October	Hills and Breakaways, bases of ridges. Clay loam with laterite.	NatureMap
Paracaleana dixonii	T	EN	Late October to Late November	Flats, plains and slopes with grey sand, sometimes with laterite gravel.	DCCEEW

Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Persoonia filiformis	P3		November to December	Plains and slopes with yellow or white sand over laterite.	DBCA TPFL, NatureMap
Persoonia rudis	P3		September to January	Flats and slopes with white, grey or yellow sand, often over laterite.	DBCA WAHerb, ecologia (2018), NatureMap, Woodman (2018)
Petrophile biternata	P3		August to September	Lateritic hills, ridges.	DBCA TPFL, DBCA WAHerb, NatureMap
Petrophile clavata	P2		September	Hilltops, slopes and ridges with grey sand and laterite.	DBCA WAHerb, NatureMap
Phlebocarya pilosissima subsp. ***pilosissima***	P3		August to October	Slopes with sand over laterite.	DBCA WAHerb, NatureMap
Platysace ramosissima	P3		October to November	Undulating plains and flats with yellow, brown or grey sand.	DBCA WAHerb, NatureMap, Woodman (2018)
Podotheca pritzelii	P3		September to October	Salt lakes and saline habitats.	DBCA WAHerb, NatureMap
Ptychosema pusillum	T	VU	September to October	Low plains, slopes and dunes with white or grey sand. Banksia woodland on margins of seasonal wetlands.	DBCA WAHerb, NatureMap
Regelia megacephala	P4		November to February	Quartz hills.	DBCA TPFL, DBCA WAHerb, DCCEEW, NatureMap
Rhetinocarpha suffruticosa	P1		December to January	Low rises with gravelly clay loam over laterite.	DBCA WAHerb, NatureMap
Roycea pycnophylloides	T	EN	September to October	Salt lakes and saline habitats.	DBCA WAHerb, NatureMap
Rumex drummondii	P4		August to November	Creeklines with black peaty sandy clay over limestone; winter wet depressions.	DCCEEW
Schoenus griffinianus	P4		September to October	Undulating sandplains, lower slopes, flats and depressions with grey sand.	DBCA WAHerb, NatureMap
Schoenus pennisetis	P3		August to September	Low lying areas, edge of wetlands. Grey/brown sand or sandy loam.	DBCA WAHerb, NatureMap, Woodman (2018)
Spirogardnera rubescens	T	EN	August to January	Slopes and plains, gravelly sandy loam.	DBCA WAHerb, NatureMap
Stylidium aceratum	P3		September to November	Claypans, winter-wet flats. Brown clay.	DCCEEW

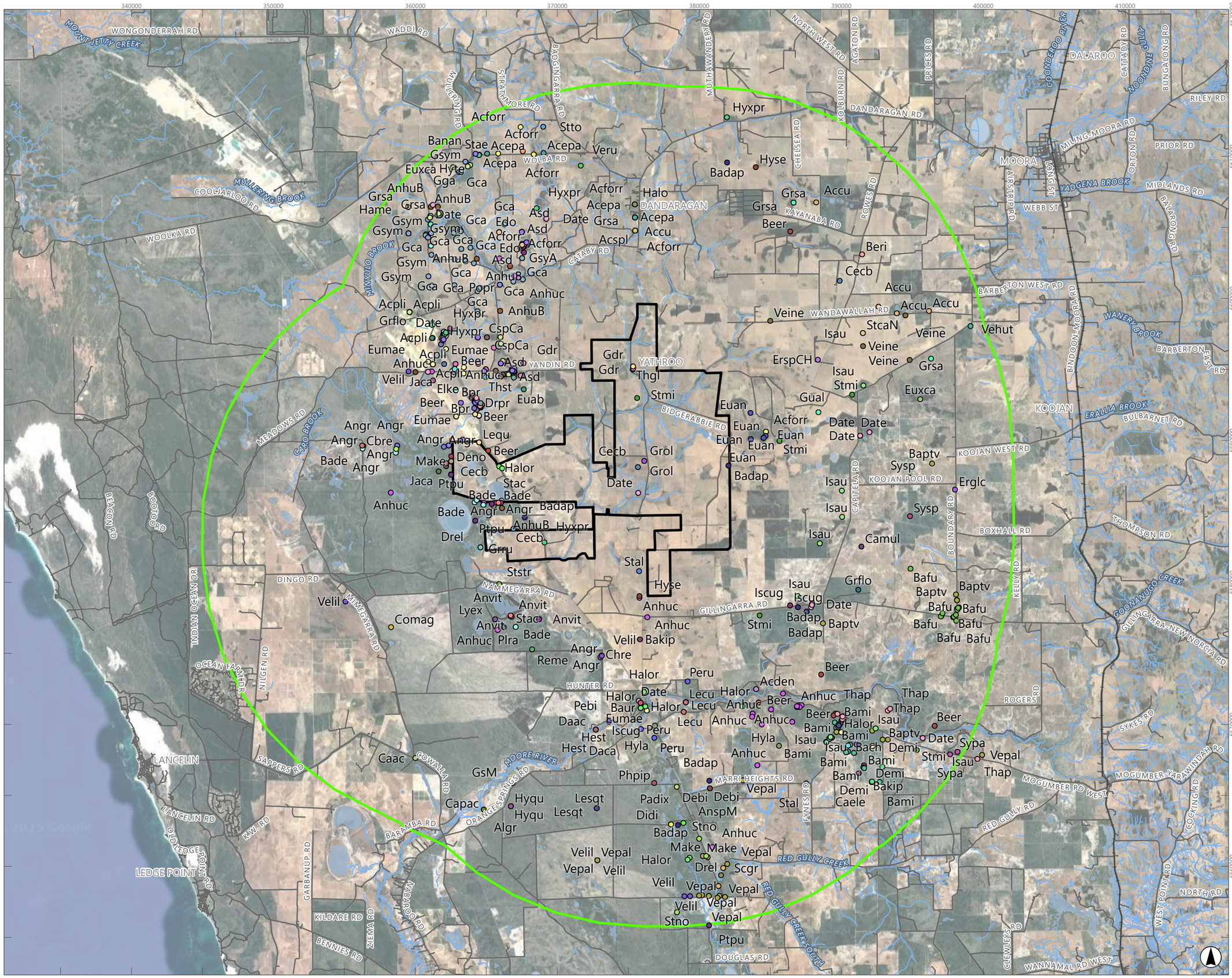
Taxon	Status# (WA)	Status# (EPBC)	Flowering Period*	Habitat*	Source^
Stylidium aeonioides	P4		September to November	Hillsides and breakaways, low heath and open woodland with sandy clay loam over laterite.	DBCA WAHerb, NatureMap
***Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490)**	P1		September to October	Hillslopes and plains with white-grey sand and lateritic gravel.	DBCA TPFL, DBCA WAHerb, ecologia (2018), NatureMap
Stylidium hymenocraspedum	P3		September to October	Sand over laterite. Hillslopes. Heath, Banksia and Eucalyptus low open woodland.	DBCA WAHerb, NatureMap
Stylidium longitubum	P4		July to November	Seasonal damplands, brown clay loam.	NatureMap
Stylidium milleri	P2		September to October	Grey sand over laterite, plains.	NatureMap
Stylidium nonscandens	P3		September to November	Sand over laterite. Hillslopes and crests. Banksia woodland, heath, mallee shrubland.	DBCA WAHerb, NatureMap
Stylidium periscelianthum	P3		September to October	Wet flats, low granitic hills with loamy clay, moist soils pockets.	DBCA WAHerb, NatureMap
***Stylidium* sp. Moora (J.A. Wege 713)**	P2		September to November	Sand or clay loam hills and slopes over laterite or granite.	DBCA WAHerb, NatureMap
Stylidium striatum	P4		September to December	Brown or yellow sandy clay with laterite. Slopes and flats.	DBCA WAHerb, NatureMap
Stylidium torticarpum	P3		September to November	Adjacent to drainage lines, depressions, and beneath breakaways, heath or mallee shrubland on sandy clay or clay loam over laterite.	DBCA WAHerb, NatureMap
Stylidium vinosum	P1		September to November	White or yellow sand over laterite.	DBCA WAHerb, NatureMap
Styphelia allittii	P3		April to June	Slopes with brown soils over laterite, gullies and creeks.	DBCA WAHerb, NatureMap
Styphelia obtecta	T	EN	October to November	Plains with white, grey or yellow sand.	DBCA WAHerb, NatureMap
Synaphea endothrix	P3		July to October	Ridges and hills with brown, yellow or white gravelly sand over laterite.	NatureMap
Synaphea panhesya	P1		November	Laterite. Slopes.	DBCA TPFL, DBCA WAHerb, NatureMap
Synaphea quartzitica	T	EN	July to September	Chert slopes, rocky quartz gullies.	DCCEEW

Taxon	Status[#] (WA)	Status[#] (EPBC)	Flowering Period*	Habitat*	Source^
Synaphea sparsiflora	P2		August to September	Slopes / crests of hills and lateritic ridges with grey / brown sand.	DBCA TPFL, DBCA WAHerb, NatureMap
Tetratheca angulata	P3		September to December	Low hill crests, breakaways with massive laterite boulders with sandy to gravelly laterite soils.	Woodman (2018)
Thelymitra apiculata	P4		June to July	Hillslopes with grey sand, lateritic gravel and laterite.	DBCA TPFL, DBCA WAHerb, NatureMap
Thelymitra dedmaniarum	T	EN	November to January	Grey loam. Granite.	DCCEEW
Thelymitra stellata	T	EN	September to November	Ridges and tops of lateritic hills with grey or brown sand or loam and lateritic gravel.	DBCA TPFL, DCCEEW, NatureMap
Thysanotus glaucus	P4		October to March	White, grey or yellow sand, sandy gravel.	DBCA TPFL, DBCA WAHerb, NatureMap
Trithuria australis	P4		October to November	Clay. Swamps and winter-wet flats.	NatureMap
Verticordia huegelii* var. *tridens	P3		October to November	Flats, clay loam, over laterite.	DBCA TPFL, DBCA WAHerb, NatureMap
Verticordia insignis* subsp. *eomagis	P3		August to November	Sandplains and rocky rises with sandy soils over laterite.	DBCA TPFL, DBCA WAHerb, NatureMap
Verticordia lindleyi* subsp. *lindleyi	P4		May to January	Sand, sandy clay, winter wet depressions.	DBCA TPFL, DBCA WAHerb, NatureMap
Verticordia paludosa	P4		January, April, August	Grey sand, open depressions, winter-wet flats, drainage lines.	DBCA TPFL, DBCA WAHerb, NatureMap
Verticordia rutilastra	P3		September to November	Lateritic breakaways and slopes with white or brown gravelly sand or sandy loam.	DBCA WAHerb, NatureMap

^ Sources are: DBCA TPFL and DBCA WAHERB (DBCA, 2024c), DCCEEW (2024), ecologia (2018), NatureMap (DBCA, 2024e), Terratree (2019), Woodman Environmental (2018).

**Source: Florabase (WA Herbarium, 1998-).*

[#]As defined by DBCA (DBCA, 2023a).


340000
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410000
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6580000
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6560000
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MOUNT JETTY CREEK
WADDI RD
STRATHMORE RD
BADGINGARRA RD
MUTHAWANDERRY RD
NORTH WEST RD
AGATON RD
KOLBURN RD
PRICES RD
COONDEROO RIVER
DALAROO
CATTADY RD
NOONDINE GULLY
BUNGALONG RD
RILEY RD
DANDARAGAN RD
CHELSEA RD
MILLING-MOORA RD
PRIOR RD
ORTON RD
MOORA
AIRSTRIP RD
LONG ST
WEBB ST
YADGENA BROOK
MIDLANDS RD
BALAROONG RD
ROWES RD
KAYANABA RD
MULLERING BROOK
COOLJARLOO RD
WOOLKA RD
WOLBA RD
CATABY RD
NAMMILO BROOK
DANDARAGAN
YATHROO
YANDIN RD
BIDGERABBIE RD
BARBERTON WEST RD
WANDAWALLAH RD
BINDOON-MOORA RD
WANERY BROOK
BARBERTON EAST RD
KOOJAN
ERALLIA BROOK
BULBARNET RD
KOOJAN WEST RD
KOOJAN POOL RD
CAPITELLA RD
BOUNDARY RD
BOXHALL RD
THOMPSON RD
KELLY RD
GOONAMUGO CREEK
GILLINGARRA-NEW NORCIA RD
ROGERS RD
SYKES RD
MOGUMBER RD WEST
MOGUMBER-YARRAWINDAH RD
COCKING RD
RED GULLY RD
RED GULLY CREEK
RED GULLY CREEK SOUTH
FYNES RD
MARRI HEIGHTS RD
GILLINGARRA RD
NAMMEGARRA RD
MEADOWS RD
CARO BROOK
BEACON RD
BOOTOO RD
INDIAN OCEAN DR
DINGO RD
NILGEN RD
OCEAN FARM DR
NIMEGARRA RD
HUNTER RD
MOORE RIVER
ORANGE SPRINGS RD
GOWALLA RD
SAPPERS RD
LANCELIN
LANCELIN RD
OLD LEDGE
LEDGE POINT RD
KW RD
BARAMBA RD
GARBANUP RD
KILDARE RD
BENNIES RD
ZIEMA RD
KABAROO RD
DOUGLAS RD
CLEWLEYS RD
WANNAMAL RD WEST
WEST POINT RD
NORTH RD
HOOKER RD
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Padix
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Capac
Hyqu
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Jaca
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Velil
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Eumae
Acpli
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Poprr
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Grflo
Bafu
Baptv
Anhuc
Velil
Bakip
Chre
Reme
Angr

Legend

DBCA Significant Flora

- *Acacia cummingiana* (P3)-Accu
- *Acacia denticulosa* (T)-Acden
- *Acacia epacantha* (P3)-Acepa
- *Acacia forrestiana* (T)-Acforr
- *Acacia plicata* (P3)-Acpli
- *Acacia splendens* (T)-Acspl
- *Allocasuarina grevilleoides* (P3)-Algr
- *Andersonia gracilis* (T)-Angr
- *Andersonia* sp. Mysosma (E.A. Griffin 2213) (P2)-AnspM
- *Angianthus micropodioides* (P3)-Anmicr
- *Anigozanthos humilis* subsp. *chrysanthus* (P4)-Anhuc
- *Anigozanthos humilis* subsp. Badgingarra (S.D. Hopper 7114) (P2)-AnhuB
- *Anigozanthos viridis* subsp. *terraspectans* (T)-Anvit
- *Asterolasia drummondii* (P4)-Asd
- *Babingtonia delicata* (P1)-Bade
- *Babingtonia urbana* (P3)-Baur
- *Banksia chamaephyton* (P4)-Bach
- *Banksia dallanneyi* subsp. *pollosta* (P3)-Badap
- *Banksia fuscobractea* (T)-Bafu
- *Banksia kippistiana* var. *paenepeccata* (P3)-Bakip
- *Banksia mimica* (T)-Bami
- *Banksia nana* (P3)-Banan
- *Banksia prionophylla* (T)-Bpr
- *Banksia pteridifolia* subsp. *vernalis* (P3)-Baptv
- *Beaufortia eriocephala* (P3)-Beer
- *Boronia ericifolia* (P2)-Beri
- *Boronia scabra* subsp. *condensata* (P2)-Boscc
- *Caladenia multiplex* (P2)-Camul
- *Calectasia elegans* (T)-Caele
- *Calothamnus accedens* (P4)-Caac
- *Calothamnus brevifolius* (P4)-Cbre
- *Calothamnus pachystachyus* (P4)-Capac
- *Calytrix ecalycata* subsp. *brevis* (P3)-Cecb
- *Chamelaucium* sp. Cataby (G.J. Keighery 11009) (T)-CspCa
- *Chordifex reseminans* (P2)-Chre
- *Comesperma rhadinocarpum* (P3)-Corh
- *Conostephium magnum* (P4)-Comag
- *Dampiera tephrea* (P3)-Date
- *Darwinia acerosa* (T)-Daac
- *Darwinia carnea* (T)-Daca
- *Desmocladus biformis* (P3)-Debi
- *Desmocladus microcarpus* (P2)-Demi
- *Desmocladus nodatus* (P3)-Deno
- *Dillwynia dillwynioides* (P3)-Didi
- *Drakaea elastica* (T)-Drel
- *Drosera leioblastus* (P1)-Drlei
- *Drosera prophylla* (P3)-Drpr
- *Eleocharis keigheryi* (T)-Elke
- *Eremaea* sp. Cairn Hill (B. Morgan 532) (P2)-ErspCH
- *Eremophila glabra* subsp. *chlorella* (T)-Erglc
- *Eucalyptus abdita* (P2)-Euab
- *Eucalyptus annuliformis* (P1)-Euan
- *Eucalyptus dolorosa* (T)-Edo
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4)-Eumae
- *Eucalyptus x carnabyi* (P4)-Euxca
- *Gastrolobium nudum* (P2)-Ganu
- *Gompholobium gairdnerianum* (P3)-Gga
- *Grevillea calliantha* (T)-Gca
- *Grevillea drummondii* (P4)-Gdr
- *Grevillea florida* (P3)-Grflo
- *Grevillea olivacea* (P4)-Grol
- *Grevillea rudis* (P4)-Grru
- *Grevillea saccata* (P4)-Grsa
- *Grevillea synapheae* subsp. *minyulo* (P1)-Gsym
- *Grevillea synapheae* subsp. A Flora of Australia (S.D. Hopper 6333) (P1)-GsyA
- *Grevillea thyrsoides* subsp. *thyrsoides* (P3)-Grtht
- *Guichenotia alba* (P3)-Gual
- *Gyrostemon* sp. Mogumber (T.J. Hawkeswood 250) (P1)-GsM
- *Haemodorum loratum* (P3)-Halor
- *Hakea longiflora* (P3)-Halo
- *Hakea megalosperma* (T)-Hame
- *Hemigenia curvifolia* (P2)-Hecu
- *Hensmania stoniella* (P3)-Hest
- *Hypocalymma lateriticola* (P1)-Hyla
- *Hypocalymma quadrangulare* (P3)-Hyqu
- *Hypocalymma serrulatum* (P2)-Hyse
- *Hypocalymma tetrapterum* (P3)-Hyte
- *Hypocalymma x proliferum* (P1)-Hyxpr
- *Hypolaena robusta* (P4)-Hyro
- *Isopogon autumnalis* (P3)-Isau
- *Isotropis cuneifolia* subsp. *glabra* (P3)-Iscug
- *Jacksonia carduacea* (P3)-Jaca
- *Lasiopetalum rupicola* (P1)-Lrup
- *Lechenaultia galactites* (P3)-Lega
- *Lepidobolus quadratus* (P3)-Lequ
- *Lepyrodia curvescens* (P2)-Lecu
- *Leucopogon foliosus* (P3)-Lefo
- *Leucopogon squarrosus* subsp. *trigynus* (P2)-Lesqt
- *Lyginia excelsa* (P2)-Lyex
- *Macarthuria keigheryi* (T)-Make
- *Paracaleana dixonii* (T)-Padix
- *Persoonia filiformis* (P3)-Pefi
- *Persoonia rudis* (P3)-Peru
- *Petrophile biternata* (P3)-Pebi
- *Petrophile clavata* (P2)-Pecl
- *Phlebocarya pilosissima* subsp. *pilosissima* (P3)-Phpip
- *Platysace ramosissima* (P3)-Plra
- *Podotheca pritzelii* (P3)-Popr
- *Ptychosema pusillum* (T)-Ptpu
- *Regelia megacephala* (P4)-Reme
- *Rhetinocarpha suffruticosa* (P1)-Rhsu
- *Rumex drummondii* (P4)-Rudr
- *Schoenus griffinianus* (P4)-Scgr
- *Schoenus pennisetis* (P3)-Scpe
- *Stylidium aceratum* (P3)-Stac
- *Stylidium aeonioides* (P4)-Stae
- *Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490) (P1)-StcaN
- *Stylidium milleri* (P2)-Stmi
- *Stylidium nonscandens* (P3)-Stno
- *Stylidium perisceliantum* (P3)-Sper
- *Stylidium striatum* (P4)-Ststr
- *Stylidium torticarpum* (P3)-Stto
- *Stylidium vinosum* (P1)-Stvi
- *Stylidium* sp. Moora (J.A. Wege 713) (P2)-SspM
- *Styphelia allittii* (P3)-Stal
- *Synaphea panhesya* (P1)-Sypa
- *Synaphea sparsiflora* (P2)-Sysp
- *Thelymitra apiculata* (P4)-Thap
- *Thelymitra stellata* (T)-Thst
- *Thysanotus glaucus* (P4)-Thgl
- *Verticordia huegelii* var. *tridens* (P3)-Vehut
- *Verticordia insignis* subsp. *eomagis* (P3)-Veine
- *Verticordia lindleyi* subsp. *lindleyi* (P4)-Velil
- *Verticordia paludosa* (P4)-Vepal
- *Verticordia rutilastra* (P3)-Veru

FIGURE 5.1

DBCA Significant Flora Taxa Known from the Desktop Study Area

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5.1.3 Significant Vegetation

The interrogation of DBCA's TEC and PEC Database (DBCA, 2024b) returned two listed significant vegetation communities with records within the Desktop Study Area (**Table 5.3**). Of these two communities, one has historical records within the Project Area – The Banksia Woodlands of the Swan Coastal Plains TEC (Priority 3 WA PEC, Endangered Commonwealth TEC). Indicative locations of these communities are presented on **Figure 5.2**; 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, 2024b)). As such, these may not represent verified extents of this community.

The searches of the DCCEEW SPRAT database with regard to MNES listed under the EPBC Act (DCCEEW, 2024) returned five Commonwealth-listed TECs that are likely to/may occur within the Desktop Study Area, as presented in **Table 5.3**. The full results of the DCCEEW database searches are presented in **Appendix B**.

A manual review of current DBCA TEC and PEC lists (DBCA, 2023c, 2023b) did not identify any additional significant vegetation communities that may occur within the Project Area.

In summary, a total of six significant vegetation communities have been identified as occurring or having the potential to occur within the Desktop Study Area, including one community with historical records within the Project Area (**Table 5.3**).

Table 5.3 Significant Vegetation Known from Within the Desktop Study Area

Status (EPBC)	Status (WA)	Description	Source^
Banksia Woodlands of the Swan Coastal Plain ecological community TEC – Endangered	Banksia Woodlands of the Swan Coastal Plain PEC – P3	Canopy is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other Banksia species that can dominate in the community are *B. prionotes* or *B. ilicifolia*. It typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands; it is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau and, in other less common scenarios. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this PEC.	DBCA, DCCEEW ('likely' to occur – in feature area), ecologia (2017), Terratree (2019)
	SCP23b: Swan Coastal Plain *Banksia attenuata – Banksia menziesii* woodlands PEC – P3	These woodlands occur in the Bassendean system, from Melaleuca Park to Gingin. Occurs in reasonably extensive Banksia woodlands north of Perth.	DBCA
Clay Pans of the Swan Coastal Plain **TEC – Critically Endangered**	-	The clay pan communities occur where clay substrate is low in the landscape and forms an impermeable layer close to the surface. These wetlands that rely on rainfall and local surface drainage to fill are considered unlikely to be connected to groundwater. The clay pans then dry out to form a relatively impervious substrate in summer. A suite of perennial plants that propagate by underground bulbs, tubers or corms (geophytes), and annual herbs flower sequentially as the clay pans dry out. The clay pans are the most diverse of the SCP wetlands and contain a number of local endemic flora.	DCCEEW ('likely' to occur – buffer area only)
Empodisma peatlands of southwestern Australia **TEC – Endangered**	-	The assemblage of plants, animals and other organisms associated with a type of freshwater, peat-based wetland that is found in the High Rainfall Province of the south-west of Western Australia. It is typically a sedgeland to shrubland vegetation complex on peaty substrates that almost always includes the perennial grass-like twig rush *Empodisma gracillimum* (tanglefoot). Empodisma peatlands provide habitat for a diverse range of hydrophilic species, including threatened, regionally endemic, and relictual flora and fauna species.	DCCEEW ('may' occur – buffer area only)

Status (EPBC)	Status (WA)	Description	Source^
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion **TEC – Critically Endangered**	*Melaleuca huegelii – M. systena* shrublands of limestone ridges (floristic community type 26a as originally described in Gibson et al. 1994) TEC	The community is known from shallow soils over limestone or massive limestone ridges of Tamala Limestone between Yanchep north of Perth, and south of Perth near Lake Clifton. The community generally comprises species-rich thickets, heaths and scrubs dominated by *Melaleuca huegelii* (chenille honeymyrtle), *Melaleuca systena* (coastal honeymyrtle) and *Banksia sessilis* (parrot bush), commonly over *Grevillea preissii* (spider net grevillea), *Spyridium globulosum* (basket bush), and *Acacia lasiocarpa* (pajang). A suite of herbs commonly occurs under the shrub layer.	DCCEEW ('may' occur – buffer area only)
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community **TEC – Critically Endangered**	Tuart (*Eucalyptus gomphocephala*) Woodlands of the Swan Coastal Plain PEC - P3	Mostly confined to Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa*, *Banksia grandis, Banksia attenuata, Eucalyptus marginata;* and less commonly, *Corymbia calophylla, Banksia menziesii* and *Banksia prionotes*. An understorey of native plants is typically present, which may include grasses, herbs and shrubs. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this PEC.	DCCEEW ('likely' to occur – in project area)

^Sources are: DBCA (2024b), DCCEEW (2024), ecologia (2017), Terratree (2019).

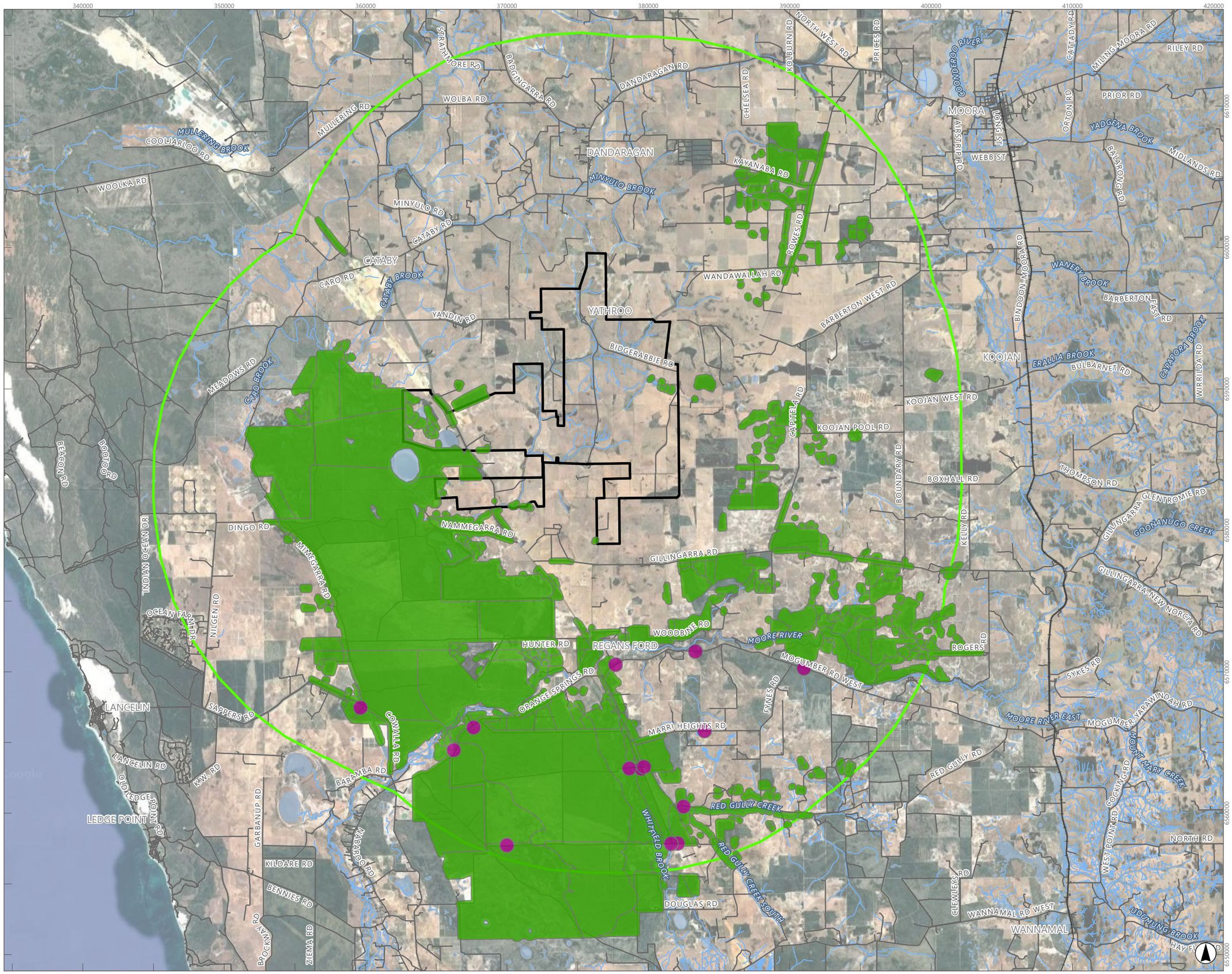


Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), DBCA (2025), Neoen (2024) Umwelt (2024)

umwelt

FIGURE 5.2

DBCA Significant Vegetation Records from the Desktop Study Area

Legend

- Project Area
- Desktop Study Area
- Railway
- Road
- Watercourse
- Waterbody

DBCA Ecological Community

- Banksia Woodlands of the Swan Coastal Plain ecological community (PEC – P3) (TEC – Endangered)
- Swan Coastal Plain *Banksia attenuata* - *Banksia menziesii* woodlands (SCP 23b) (PEC – P3) (TEC – Endangered)

0 5 10

Kilometres

Scale: 1:250,000 at A3
GDA2020 MGA Zone 50

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5.2 Field Survey

5.2.1 Flora Census

A total of 248 discrete flora taxa, including 45 introduced taxa (18.1% of all taxa recorded), were recorded in the Survey Area by the 2024 survey. The 248 flora taxa represent a total of 53 families and 146 genera. The most well-represented families were Myrtaceae (36 taxa), Fabaceae (24 taxa), Proteaceae (23 taxa), Poaceae (17 taxa) and Asteraceae (16 taxa). A full list of vascular flora taxa recorded by the 2024 survey is presented in **Appendix C**.

Note that as discussed in **Section 1.3**, a Reconnaissance assessment was undertaken in areas outside the D&T Survey Area, and therefore the above numbers do not necessarily represent a full census of all vascular flora taxa that occur in the Survey Area.

Within quadrats established in the D&T Survey Area, average taxon richness per quadrat (including introduced and native non-endemic taxa (i.e. cultivated or cultivation escapees) was 39.9 (± 11.3), and average native endemic taxon richness per quadrat was 31.7 (± 11). Quadrat YTQ11 had the greatest number of taxa recorded in a single quadrat (57 taxa, 51 of which are native endemic and the remaining 6 as introduced species), while quadrat YK03 had the lowest (8 taxa, five of which are native endemic and 3 as introduced species). The raw quadrat and relevé data are presented in **Appendix D**.

Note that several collections could not be identified to species level due to poor material. Some are known to be distinct taxa relative to other taxa recorded by the survey, and therefore have been included in the totals presented above and in **Appendix C** (e.g. *Typha* sp.). Other collections may represent distinct taxa relative to other taxa recorded by the survey; however, it is more likely that they represent taxa already recorded elsewhere, with the quality of the material such that this distinction cannot be made (e.g. *Pterostylis* sp.). Such collections are not included in the totals above or presented in **Appendix C**.

5.2.2 Significant Flora Taxa

5.2.2.1 Overview

Table 5.5 presents a summary of data relating to significant flora taxa recorded by the 2024 survey in the Survey Area at quadrats/relevés or opportunistically. A total of five significant flora taxa were recorded, including one Threatened taxon listed under the BC and EPBC Acts (*Grevillea curviloba*). However, *Grevillea curviloba* (T), was found to be planted outside of its natural range, in an area of disturbed, revegetated bushland along Brand Highway, and as such, has been excluded from **Table 5.5** and is not discussed further in this report in a significant flora context. *Grevillea curviloba* (T) has a restricted distribution, with the northernmost records located along the entrance road to RAAF Gingin, and the southernmost records located in Ellenbrook. It has a very narrow east-west distribution, occurring in a line between Gingin and Ellenbrook (WA Herbarium, 1998-). This taxon is also a common cultivar and is often planted outside of its range throughout Perth and the southwest.

Note that for the purpose of **Table 5.5,** the number of individuals at locations where plant counts were not recorded (e.g. within quadrats) has been attributed a value of 1. **Table 5.5** also includes a summary of the VTs within which each significant flora taxon was recorded (VT descriptions provided in **Section 5.2.6**).

An overview of locations of significant flora taxa recorded in the Survey Area by the 2024 survey are presented in **Figure 5.3.** A detailed description and summary of information for each taxon recorded in the Survey Area is provided in **Section 5.2.2.2** to **Section 5.2.2.6**, and location coordinates are presented in **Appendix E**. The likelihood of occurrence of further occurrences of significant flora taxa within the Survey Area are discussed in **Section 5.2.4.**

Table 5.4 Summary of Significant Flora Taxa Recorded in the Survey Area

Taxon	Status (WA)	Number of Locations	Number of Individuals	VTs*
Calytix ecalycata subsp. brevis	P3	1	5	VT3
Eucalyptus macrocarpa* subsp. *elachantha	P4	4	14	VT1, VT3, PE
Haemodorum loratum	P3	13	29	VT1, VT2, VT3
Poranthera moorokatta	P2	2	24	VT3

Refer to **Section 5.2.6 for VT descriptions.*

[redacted]

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FIGURE 5.3

Significant Flora Taxa Recorded in the Survey Area

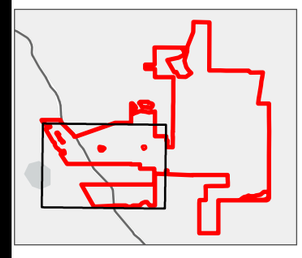
Legend

- Survey Area
- Railway
- Road
- Watercourse
- Waterbody

Taxon,WA Status

- *Calytrix ecalycata* subsp. *brevis* (P3) (CAEC)
- *Eucalyptus macrocarpa* subsp. *elachantha* (P4) (EUMA)
- *Grevillea curviloba* (T) (GRCU)
- *Haemodorum ?loratum* (P3) (HA?LO)
- *Haemodorum loratum* (P3) (HALO)
- *Poranthera moorokatta* (P2) (POMO)

GOVERNMENT AGENCY REFERENCE ONLY NOT FOR PUBLIC DISSEMINATION CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA



0 0.5 1

Kilometres

[redacted]

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5.2.2.2 *Calytrix ecalycata* subsp. *brevis* (P3)

Calytrix ecalycata subsp. *brevis* (P3) is an upright shrub growing to 1 m high (**Photo 5.1**) occurring on sandplains and low rises with yellow sand (WA Herbarium, 1998-). This taxon is known to occur over a range of approximately 95 km in WA, from south-east of Cataby in the south to Coorow in the north (WA Herbarium, 1998-). This taxon is known from 12 WA Herbarium records representing 10 localities, two of which occur within DBCA-managed tenure, including Manaling Nature Reserve and Lesueur National Park (WA Herbarium, 1998-).

[redacted]



Photo 5.1 *Calytrix ecalycata* subsp. brevis (P3)

(Photo source - Umwelt)

5.2.2.3 *Eucalyptus macrocarpa* subsp. *elachantha* (P4)

Eucalyptus macrocarpa subsp. *elachantha* (P4) is a spreading mallee growing up to 4 m high (**Photo 5.2**) occurring on hillslopes, ridges and sandplains with white or grey sand, over laterite (WA Herbarium, 1998-). It is known to occur over a range of approximately 240 km in WA from south-east of Geraldton in the north to near Regans Ford in the south. This taxon is known from 59 WA Herbarium records representing 44 localities, four of which occur within DBCA-managed tenure, including Fynes Nature Reserve and South Eneabba Nature Reserve (WA Herbarium, 1998-).

[redacted]



Photo 5.2 ***Eucalyptus macrocarpa*** **subsp.** ***elachantha*** **(P4)**

(Photo source – Umwelt)

5.2.2.4 *Haemodorum loratum* (P3)

Haemodorum loratum (P3) is a bulbaceous perennial herb growing up to 1.2 m high (**Photo 5.3**), and occurs on grey or yellow sand, often with lateritic gravel, on flats and slopes (WA Herbarium, 1998-). It is known to occur over a range of approximately 300 km in WA from south-east of Dongara in the north to Forrestfield in the south. This taxon is known from 25 WA Herbarium records representing 16 localities, six of which occur within DBCA-managed tenure, including Coomallo Nature Reserve, Lesueur National Park and Moore River National Park (WA Herbarium, 1998-).

[redacted]



Photo 5.3 *Haemodorum loratum* (P3)

(Photo source - Umwelt)

5.2.2.5 *Poranthera moorokatta* (P2)

Poranthera moorokatta (P2) is a small annual herb growing to 4 cm high (**Photo 5.4**), occurring on sandy soils, mainly in Banksia woodlands (WA Herbarium, 1998-). This taxon is known to occur over a range of approximately 345 km in WA, from Tutunup in the south to Cataby in the north (WA Herbarium, 1998-). This taxon is known from 16 WA Herbarium records representing 15 localities, three of which occur within DBCA-managed tenure, including Lot 2091 (known as Ioppolo Road) and Millbrook State Forest (WA Herbarium, 1998-).

[redacted]



Photo 5.4 *Poranthera moorokatta* (P2)

(Photo source - Umwelt)

5.2.2.6 Other Flora Taxa of Interest

One collection of a *Hypocalymma* species was made during the 2024 survey, from Quadrat YTQ07, located within the road reserve of Walyoo Road. This entity was initially identified by Umwelt as *Hypocalymma lateriticola* (P1), however, the specimen was sterile. Without reproductive material, this taxon could not be identified with confidence. The specimen was sent to the WA Herbarium for further investigation and identification, and was reviewed by Michael Hislop. Hislop noted that the vegetative morphology of this specimen was not typical of any taxon known to be in the Cataby-Dandaragan area.

Therefore, this entity is considered to be potentially significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b) (**Section 1.2**). No further collections were made of this taxon, and further investigation is recommended to determine whether this taxon is an undescribed species. Collections of fertile material are required for formal identification of this entity.

This taxon was collected in VT 3, on yellow-grey sands on undulating plains.



Photo 5.5 *Hypocalymma* sp. Scanned Specimen

(Photo source – Umwelt)

5.2.3 Introduced Flora Taxa

A high percentage of introduced taxa were recorded in the areas assessed (18.1% of the total number of taxa recorded), which is representative of the high levels of human impact evident throughout the Survey Area. Note that nine taxa included in this list are taxa that are native to Australia, but planted outside their natural range, and thus are classified as introduced in this context. These taxa, with the exception of the nine Australian natives, planted outside of their natural distributions, are listed in **Table 5.5**, along with ecological impact and invasiveness ratings as per the *Ecological Impact and Invasiveness Ratings from the Department of Parks and Wildlife for the Midwest Region* (DBCA, 2014). One Declared Pest listed under the BAM Act (**Zantedeschia aethiopica*) was recorded in the Survey Area.

Of the 36 introduced flora taxa recorded in the Survey Area (excluding non-endemic Australian natives), seven have not been rated for ecological impact by DBCA (2014) (**Table 5.5**). As noted above, only **Zantedeschia aethiopica* is listed as a Declared Pest (under section 22(2) of the BAM Act). According to Hussey et al. (2007), while many of the remaining weeds are common and widespread in WA, they are not noted as being serious environmental weeds.

Eleven introduced flora taxa recorded in the Survey Area are rated as having 'High' ecological impact (**Table 5.5**). Taxa with this ecological impact rating are considered significant weeds capable of causing acute disruption of ecological processes, as well as dominating and/or significantly altering the vegetation structure, composition and function of ecosystems (DBCA, 2014). Of note is **Gladiolus caryophyllaceus*, which is considered a 'serious invader of relatively undisturbed Banksia woodland' (Brown & Brooks, 2002).

Twenty-six of the introduced flora taxa recorded in the Survey Area are rated as having 'Rapid' invasiveness in native vegetation (**Table 5.5**). This describes the rate of spread of a weed in native vegetation, encompassing factors of establishment (including the ability to outcompete and the requirement for disturbance to establish), reproduction factors (including time to seeding and seed/vegetative production) and long distance dispersal mechanisms (>100 m) (DBCA, 2014). Taxa with 'Rapid' invasiveness ratings are typically disturbance opportunists and are relatively common around disturbance areas, on road verges, and along drainage lines and other areas of periodic inundation.

Table 5.5 Introduced Flora Taxa Recorded in the Survey Area

Taxon	Common Name	Ecological Impact^	Invasiveness^
Aira caryophyllea	Silvery Hairgrass	High	Rapid
Aira cupaniana	Hairgrass, Silvery Hairgrass	High	Rapid
Arctotheca calendula	Capeweed	High	Rapid
Avellinia festucoides		Unrated	Unrated
Briza maxima	Blowfly Grass	Unknown	Rapid
Briza minor	Shivery Grass	Unknown	Rapid
Bromus diandrus	Great Brome	High	Rapid
Corynephorus fasciculatus		Unrated	Unrated
Ehrharta calycina	Perennial Veldtgrass	High	Rapid
Ehrharta longiflora	Annual Veldtgrass	Unknown	Rapid
Eragrostis curvula	African Love Grass	High	Rapid
Erodium botrys	Long Storksbill	Low	Rapid
Ficinia marginata		Unrated	Unrated
Galium divaricatum	Slender Goosegrass	Unknown	Rapid
Gladiolus caryophyllaceus	Pink Gladiolus	High	Rapid
Hypochaeris glabra	Flatweed, Smooth Catsear	Low	Rapid
Juncus acutus* subsp. *acutus	Sharp Rush	High	Rapid
Lactuca serriola	Prickly Lettuce	Low	Rapid
Lolium rigidum	Annual Ryegrass	Unknown	Rapid
Lotus subbiflorus	Hairy Birdsfoot Trefoil	Unknown	Moderate
Lysimachia arvensis	Scarlet Pimpernel	Low	Rapid
***Mentha* sp.**	Mint	Unrated	Unrated
Ornithopus compressus	Yellow Serradella	Low	Rapid
Parentucellia latifolia	Red Bartsia	Medium	Rapid
Pentameris airoides* subsp. *airoides	False Hairgrass	Unknown	Rapid

Taxon	Common Name	Ecological Impact^	Invasiveness^
Petrorhagia dubia	Velvet Pink	Low	Rapid
***Pinus* sp.**	Pine	Unrated	Unrated
Polycarpon tetraphyllum	Allseed, Fourleaf Allseed	Low	Moderate
Romulea rosea	Guildford Grass	High	Rapid
Sonchus oleraceus	Common Sowthistle	Unknown	Rapid
Trifolium campestre* var. *campestre	Hop Clover	High	Moderate
Ursinia anthemoides* subsp. *anthemoides	Ursinia	High	Rapid
Vitis vinifera	Grape	Unrated	Unrated
Vulpia bromoides	Squirrel's Tail Fescue	Unknown	Rapid
Wahlenbergia capensis	Cape Bluebell	Unknown	Rapid
Zantedeschia aethiopica	Arum Lily	Unrated	Unrated

^Source: DBCA (2014).

5.2.4 Likelihood of Occurrence of Further Significant Flora Taxa

As discussed in **Section 5.1.2**, a total of 177 significant flora taxa were identified as occurring (or potentially occurring) within the Desktop Study Area prior to the 2024 survey. Theoretically, these taxa were likely all identifiable during the 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. **Appendix F** presents the likelihood of each taxon occurring within both the D&T Survey Area (subject to Detailed and Targeted survey) and the wider Survey Area (subject to Reconnaissance survey only). The likelihood of occurrence assessments were undertaken following review of species' habitats and distributions. **Table 5.6** presents a summary of the likelihood of occurrence assessments for both the D&T Survey Area, and the Survey Area.

It should be noted that suitable habitat has predominantly been determined utilising details recorded from known locations of specimens lodged with the WA Herbarium (WA Herbarium, 1998-). However, for many taxa known within the general vicinity of the Survey 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 Survey Area.

Table 5.6 Summary of the Likelihood of Occurrence Assessments

Category	Count of Significant Flora Taxa	
	D&T Survey Area	Survey Area
Unlikely	173	96
Potential	-	-
Possible	-	77
Known	5 (Including the planted taxon *Grevillea curviloba* (T))	5 (Including the planted taxon *Grevillea curviloba* (T))

5.2.5 Distribution Extensions and Distribution Gaps

Table 5.7 presents a list of flora taxa collected in the Survey Area, for which the collections represent extensions (greater than approximately 20 km) to the known distributions of such taxa, or otherwise fill gaps within their known distributions, according to Florabase (WA Herbarium, 1998-).

Collections of nine taxa made during the 2024 survey represent range extensions or fill gaps within their known distributions. Specimen material from these taxa will be lodged at the WA Herbarium by Umwelt as per the requirements of EPA Technical Guidance (EPA, 2016b), where such material is of sufficient quality.

Note that although collections of taxa that are 'representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)' can be considered significant taxa as per EPA definitions (EPA, 2016a, 2016b), none of the taxa listed in **Table 5.7** are considered to be significant taxa in this context, as they are all known from wide distributions (with the exception of the significant flora taxa discussed in **Section 5.2.3**).

Table 5.7 Summary of Flora Taxa Where Collections Represent Range Extensions or Fill Distribution Gaps

Taxon	Description
Amyema miquelii	Locality hole^
Drosera eneabba	Range extension to the south-east
Centella asiatica	Locality hole
Hydrocotyle callicarpa	Locality hole
Machaerina preissii	Range extension to the north
****Polycarpon tetraphyllum***	Locality hole
***Poranthera moorokatta* (P2)**	Locality hole
Rhodanthe laevis	Locality hole
Styphelia erubescens	Range extension to the north-east

^Locality hole: defined as a gap, or 'hole' within the known distribution of a taxon.

5.2.6 Vegetation of the Survey Area

PCA of the Survey Area quadrat dataset determined that three clusters may be appropriate to capture the majority of the variation in the dataset; the 'elbow' of the scree plots as presented in **Appendix G** indicates where the eigenvalues level off, and hence the principal components to the left of this point should be retained as significant. Also presented in **Appendix G** are the 2D cluster plots (clusters denoted by different colours and symbology), taxon group matrices (clusters denoted by vertical and horizontal spacings) and clustering dendrograms (clusters denoted by grey hashed boxes); these plots were generated using the number of clusters indicated by PCA as being appropriate for the dataset. All plots were initially examined at this level, to determine the plausibility of clusters with regard to taxon groups, as well as field observations.

The process described above determined that the three clusters were appropriate for this dataset. This was supported by review of the 2D cluster plots and taxon group matrices (**Appendix G**).

In addition, quadrat YK03 was determined to represent a discrete vegetation community. This quadrat was not included in the analysis, on the basis that all taxa recorded within the quadrat were singletons in the dataset. This VT is widespread throughout the Survey Area, however the condition of the vegetation was deemed too poor for additional sampling, thus preventing replication of quadrats within the VT.

Therefore, the 17 quadrats in the Survey Area are considered to be representative of four VTs, as described above. The review of relevé and vegetation mapping note data identified an additional four VTs (VTs 5–8) outside the D&T Survey Area in the wider Survey Area, where vegetation condition was considered too poor for sampling via quadrats.

Table 5.8 presents a description of each of the eight VTs mapped in the Survey Area, including location, area mapped, sampling regime, significant flora recorded, average taxon richness and a description of variation found within the VT. **Figure 5.4** presents the vegetation mapping. Raw quadrat and relevé data and parameters are presented in **Appendix D**. **Appendix H** presents a species-by-community matrix (for VTs determined by floristic analysis) and **Appendix I** presents the results of the indicator taxa analysis.

5.2.7 Other Areas Mapped

Seven Highly Modified Areas (HMAs) were identified during the 2024 survey (**Table 5.8**, **Figure 5.4**). These consist of areas where natural vegetation has been almost or entirely removed, cleared, or replaced with introduced or non-endemic taxa.

Isolated remnant trees (IT) were mapped across 185.4 ha of the Survey Area (1.2%), largely consisting of native remnant paddock and road verge trees and shrubs.

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 ‘PD’ (where discernible at 1:5,000 scale). This category mainly consists of paddocks, with infrastructure, tracks and firebreaks providing a minor proportion of this area. A total of 14,228.1 ha of PD was mapped, representing 89.9% of the Survey Area

A further 301.4 ha (1.9%) of the Survey Area comprises planted vegetation, where the natural vegetation has been cleared and replaced. These areas were mapped as PP (Pine plantations), PE (Planted *Eucalyptus* spp.) and TP (Tagasaste or Grape plantations),

Water bodies (WB) were also mapped in the Survey Area, consisting of artificial dams and natural or artificial lakes and pooling water. This category comprises 101.0 ha of the Survey Area.

Table 5.8 Vegetation Types of the Survey Area

VT	Description	Representative Photo
1	**Description:** Low isolated trees to open woodland of *Corymbia calophylla,* occasionally with *Eucalyptus todtiana*, occasionally with a tall shrubland of *Banksia hewardiana* over mid open shrubland of *Hakea trifurcata, Xanthorrhoea preissii, Allocasuarina humilis,* and *Calothamnus sanguineus* over low isolated shrubs of *Babingtonia grandiflora* and *Hibbertia hypericoides* subsp. *hypericoides* over low isolated tussock grasses of *Austrostipa elegantissima* and occasionally *Neurachne alopecuroidea* over low isolated sedges of *Morelotia octandra* occasionally over low open rushland of *Lepidosperma* cf. *pubisquameum* or *Lepidosperma apricola* and/or *Desmocladus asper* over low isolated clumps of forbs of *Opercularia vaginata*, occasionally with *Chamaescilla corymbosa, Trachymene pilosa* and *Podotheca gnaphalioides;* on undulating plains with grey/yellow/white sand-sandy loam or on slopes with red/brown clay loam and laterite pebbles. **Location:** Widespread across the Survey Area **Area Mapped (Proportion of Survey Area):** 254.6 ha (1.6%) **Definition Method:** floristic composition classification **Sample Sites:** YK01, YK02, YTQ05, YTQ06, YTQ09, YTQ14, YR02, YTR01, KRMN1, KRMN2, KRMN3, KRMN4, KRMN5, KRMN7, KRMN16, KRMN41, KRMN45, KRMN50, KRMN52, KRMN54, KRMN64, KRMN65, KRMN66, KRMN67, KRMN70, KRMN72, KRMN76, KRMN87, KRMNT2, KRMNT2-1, MVM03, VM43, VM54, VM61, VM65, VM66, VM67, VM70, VM71, VM72, VM75, VM76, VM77, VM85, VM87, VM89, VM90, VM92, VM94, VM96, VM98, VM100, VM101, VM104, VM111, VM112, VM115, VM125, VM126, VM129, VM132, VM173, VM223, VM264, VM283, VM285, VM335, VM358. **Indicator Taxa:** *Austrostipa elegantissima, Babingtonia grandiflora, Chamaescilla corymbosa, Corymbia calophylla, Opercularia vaginata* **Significant Taxa:** *Eucalyptus macrocarpa* subsp. *elachantha* (P4), *Haemodorum loratum* (P3) **Average Taxon Richness per Quadrat:** 40 ± 9 **Variation:** There is a lateritic variant with a tall shrubland layer of *Banksia hewardiana* (quadrat YK02)	 **YTQ09 – Typical VT 1**  **YK02 – Laterite Variant**

VT	Description	Representative Photo
2	**Description:** Occasional low woodland of *Banksia prionotes,* sometimes with *Eucalyptus todtiana*, over tall open shrubland to shrubland of *Acacia blakelyi* over mid sparse shrubland of *Allocasuarina humilis, Calothamnus quadrifidus* subsp. *quadrifidus* and *Xanthorrhoea preissii* over low sparse shrubland of *Dianella revoluta* and *Conostylis aculeata* subsp. *aculeata* over low isolated grasses of *Austrostipa macalpinei* over low clumps of sedges of *Mesomelaena pseudostygia* over low isolated forbs of *Calandrinia corrigioloides, Centrolepis drummondiana, Drosera erythrorhiza, Poranthera microphylla* and *Trachymene pilosa;* on sand plains with grey/yellow/brown sand. **Location:** the southern portion of the south section of Brand Highway, and one small patch approximately in the centre of the Survey Area. **Area Mapped (Proportion of Survey Area):** 16.5 ha (0.1%) **Definition Method:** floristic composition classification **Sample Sites:** YTQ01, YTQ02, YTQ10, YR10, YR11, VM286, MVM02, KRMN19, KRMNX1, KRMNTT, KRMN100 **Indicator Taxa:** *Acacia blakelyi, Calandrinia corrigioloides, Centrolepis drummondiana, Conostylis aculeata* subsp. *aculeata*, *Drosera erythrorhiza, Gompholobium tomentosum* **Significant Taxa:** *Haemodorum loratum* (P3) **Average Taxon Richness per Quadrat:** 38 ± 6 **Variation:** No notable variation observed.	 **YTQ01**

VT	Description	Representative Photo
3	**Description:** Occasional low open woodland of *Eucalyptus todtiana, Banksia attenuata* and *Banksia menziesii*, sometimes with *Banksia prionotes,* occasionally with a mid shrubland of *Leptospermopsis erubescens*, over mid sparse shrubland of *Xanthorrhoea preissii* and *Jacksonia floribunda* over low sparse shrubland of *Banksia dallanneyi* subsp. *dallanneyi* var. *dallanneyi*, *Hibbertia hypericoides* subsp. *hypericoides*, *Melaleuca ciliosa* and *Petrophile macrostachya* over low isolated clumps of grasses of *Austrostipa elegantissima* and *Austrostipa macalpinei* over low sparse sedgeland to isolated clumps of sedges of *Mesomelaena pseudostygia, Schoenus clandestinus* and *Schoenus nanus* over isolated clumps of rushes of *Lepidobolus preissianus* subsp. *preissianus* and *Caustis dioica* over low isolated clumps of forbs of *Burchardia congesta, Drosera erythrorhiza, Phyllangium divergens, Podotheca gnaphalioides* and *Trachymene pilosa*, on sand plains with white/grey/yellow sand. **Location:** forms the majority of the north section of Brand Highway, and some remnant patches occur to the west of Brand Highway. **Area Mapped (Proportion of Survey Area):** 79.4 ha (0.5%) **Definition Method:** floristic composition classification **Sample Sites:** YTQ03, YTQ04, YTQ07, YTQ08, YTQ11, YTQ12, YTQ13A, YR03, YR08, YR09, KRMN29, KRMN31, KRMN35, KRMN40, VM260, VM261, VM263, VM266, VM267, VM364, MVM01. **Indicator Taxa:** *Banksia attenuata, Banksia menziesii, Caustis dioica, Conostylis teretifolia* subsp. *teretifolia, Haemodorum laxum, Mesomelaena pseudostygia, Phyllangium divergens, Schoenus clandestinus* **Significant Taxa:** *Calytrix ecalycata* subsp. *brevis* (P3), *Eucalyptus macrocarpa* subsp. *elachantha* (P4), *Haemodorum loratum* (P3), *Poranthera moorokatta* (P2) **Average Taxon Richness per Quadrat:** 45 ± 6 **Variation:** A variant of this VT exists without the presence of the *Banksia* overstorey.	 **YTQ07 – Typical VT 3**  **YTQ04 – No Banksia Variant**

VT	Description	Representative Photo
4	**Description:** Low open woodland of *Eucalyptus rudis* subsp. *rudis* over tall open shrubland of *Melaleuca rhaphiophylla* over mid closed rushland of *Lepidosperma longitudinale* and *Machaerina preissii*, on drainage lines and open depressions with brown loam. **Location:** Widespread through the Survey Area. **Area Mapped (Proportion of Survey Area):** 428.0 ha (2.7%) **Definition Method:** floristic composition classification **Sample Sites:** YK03, YKR01, SS01, SS11, SS13, SS16, SS20, KRMN10, KRMN11, KRMN13, KRMN24, KRMN33, KRMN34, KRMN95, KRMN96, KRMN97, VM40, VM51, VM52, VM59, VM130, VM146, VM147, VM148, VM149, VM150, VM153, VM162, VM163, VM170, VM173, VM178, VM180, VM181, VM182, VM197, VM199, VM200, VM202, VM203, VM211, VM212, VM219, VM221, VM224, VM230, VM231, VM232, VM233, VM234, VM236, VM237, VM243, VM251, VM252. **Indicator Taxa:** *Eucalyptus rudis* subsp. *rudis*, *Melaleuca rhaphiophylla, Lepidosperma longitudinale, Machaerina preissii.* **Significant Taxa:** NA **Average Taxon Richness per Quadrat:** 8 **Variation:** No notable variation observed.	 **YK03**

VT	Description	Representative Photo
5	**Description:** Low woodland of *Melaleuca preissiana* and/or *Melaleuca rhaphiophylla* occasionally over low isolated sedges of *Schoenus subfascularis* over low closed grassland of pasture weeds, on open depressions, sometimes with standing water, with brown loam. **Location:** north-eastern portion of Survey Area. **Area Mapped (Proportion of Survey Area):** 32.4 ha (0.2%) **Definition Method:** structural vegetation classification **Sample Sites:** VM190, VM191, KRMN36. **Variation:** No notable variation observed.	 **VM190**
6	**Description:** Low isolated trees to low open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over low closed grassland of pasture weeds, on plains or slopes with grey/brown loam. **Location:** north-eastern portion of Survey Area. **Area Mapped (Proportion of Survey Area):** 5.3 ha (0.03%) **Definition Method:** structural vegetation classification **Sample Sites:** VM141, SS05, SS22. **Variation:** No notable variation observed.	**No Photo Available**

VT	Description	Representative Photo
7	**Description:** Isolated low trees to low open woodland of *Eucalyptus todtiana* over low closed grassland of pasture weeds, on plains and slopes or grey/brown sand or loam. **Location:** sporadic across the northeastern section of the Survey Area, as well as the approximate centre of the Survey Area. **Area Mapped (Proportion of Survey Area):** 3.6 ha (0.02%) **Definition Method:** structural vegetation classification **Sample Sites:** KRMN48, SS04. **Variation:** No notable variation observed.	**No Photo Available**
8	**Description:** Isolated mid shrubland of *Xanthorrhoea* ?*drummondii* over low open shrubland of *Acacia pulchella* and *Hibbertia hypericoides* subsp. *hypericoides* over low open sedgeland of *Mesomelaena pseudostygia*, *Schoenus brevisetis, Schoenus clandestinus* and *Morelotia octandra,* over isolated low tussock grasses of *Amphipogon turbinatus*, on slopes of yellow-grey sand or red-brown clay loam with laterite. **Location:** two isolated locations within the southwest of the Survey Area. **Area Mapped (Proportion of Survey Area):** 1.5 ha (0.01%) **Definition Method:** structural vegetation classification **Sample Sites:** VM50. **Variation:** No notable variation observed.	 **VM50**

VT	Description	Representative Photo
Highly Modified Areas		
IT	**Description:** Isolated remnant trees and shrubs, sometimes low open woodlands, typically with *Corymbia calophylla, Eucalyptus rudis* subsp. *rudis, Eucalyptus todtiana, Jacksonia sternbergiana* and *Acacia saligna*. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 185.4 ha (1.2%) **Sample Sites:** KRMN39, KRMN46, KRMN47, KRMN49, KRMN69, KRMN72, KRMN89, KRMN93, VM140, VM165, VM168, VM225, VM226, VM238, VM350.	 **VM62**
PP	**Description:** Plantations of **Pinus* sp. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 168.0 ha (1.1%) **Sample Sites:** VM113, VM195, VM239, KRMN18, KRMN12, KRMN21, KRMN22, KRMN23, KRMN25, KRMN27, SS19.	 **VM195**

VT	Description	Representative Photo
PE	**Description:** Planted trees of *Eucalyptus* spp., of either native or exotic origin. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 45.2 ha (0.3%) **Sample Sites:** KRMN09, KRMN15, KRMN26, KRMN47, KRMN55, SS09, VM68, VM74, VM95, VM107, VM118, VM121, VM152, VM169, VM214, VM218, VM240, VM241, VM242, VM346.	 **KRMN09**
TP	**Description:** Plantations of **Chamaecytisus palmensis* or **Vitis vinifera*. **Location:** Occasional, but widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 88.2 ha (0.6%) **Sample Sites:** KRMN14, KRMN17, KRMN30, KRMN79, VM41, VM116, VM155, VM196.	**No Photo Available**

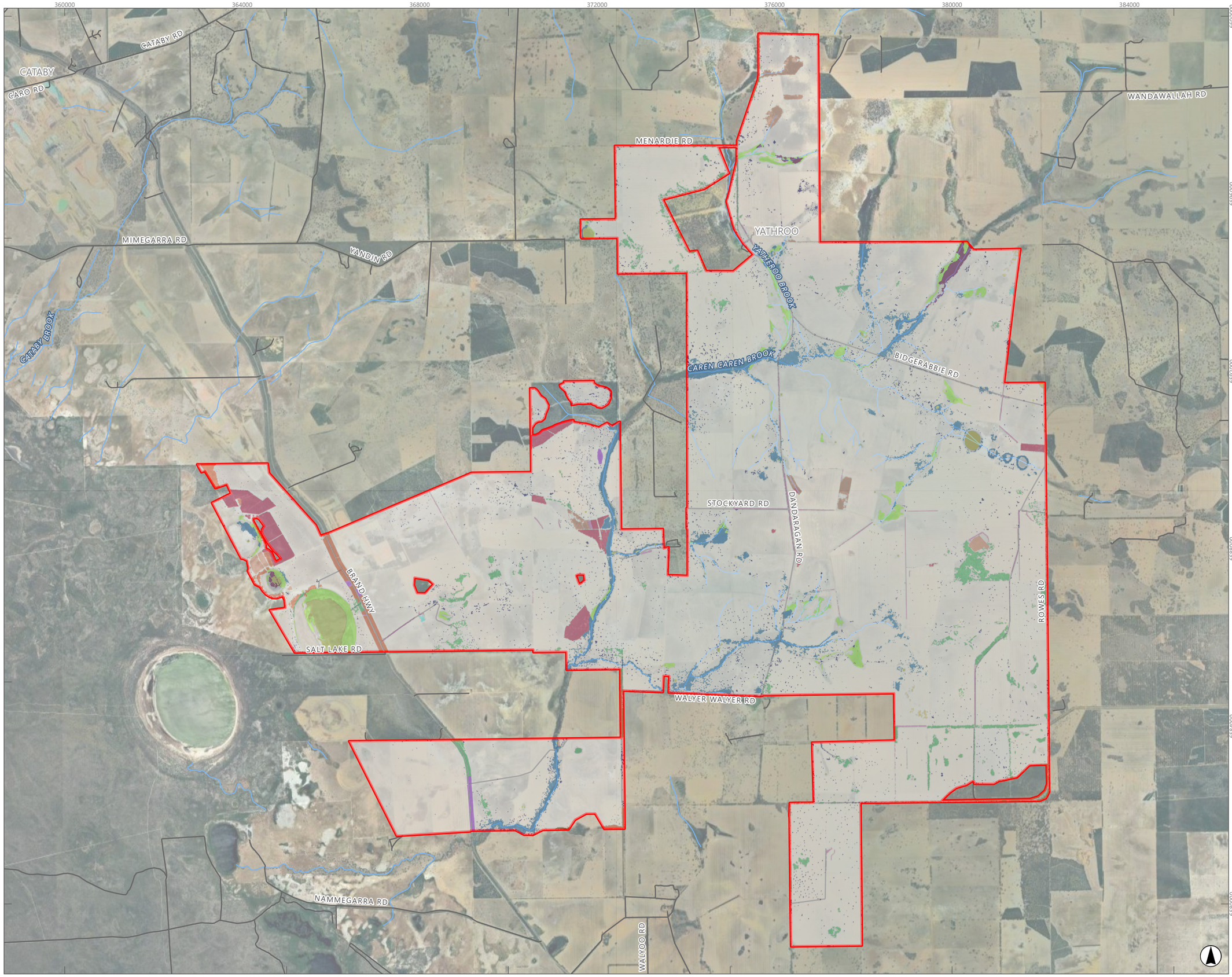
VT	Description	Representative Photo
JD	**Description:** Mid to tall sedgeland to open sedgeland of **Juncus acutus* over low closed grasslands of pasture weeds, on drainage lines and sump areas. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 197.7 ha (1.2%) **Sample Sites**: KRMN28, KRMN32, KRMN42, KRMN49, VM154, VM185, VM210, VM213, VM215, VM216, VM235, SS03.	 **VM01**
PD	**Description:** Paddocks and infrastructure, cleared land. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 14,228.1 ha (89.9%) **Sample Sites:** NA	

VT	Description	Representative Photo
WB	**Description:** Water Bodies and Artificial Dams. **Location:** Widespread across the Survey Area. **Area Mapped (Proportion of Survey Area):** 101.0 ha (0.6%) **Sample Sites:** NA	

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FIGURE 5.4

Vegetation Types of the Survey Area



Legend

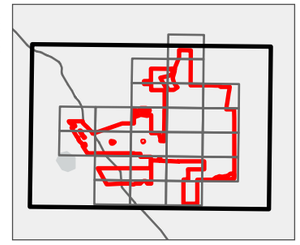
- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB



0 2 4

Kilometres

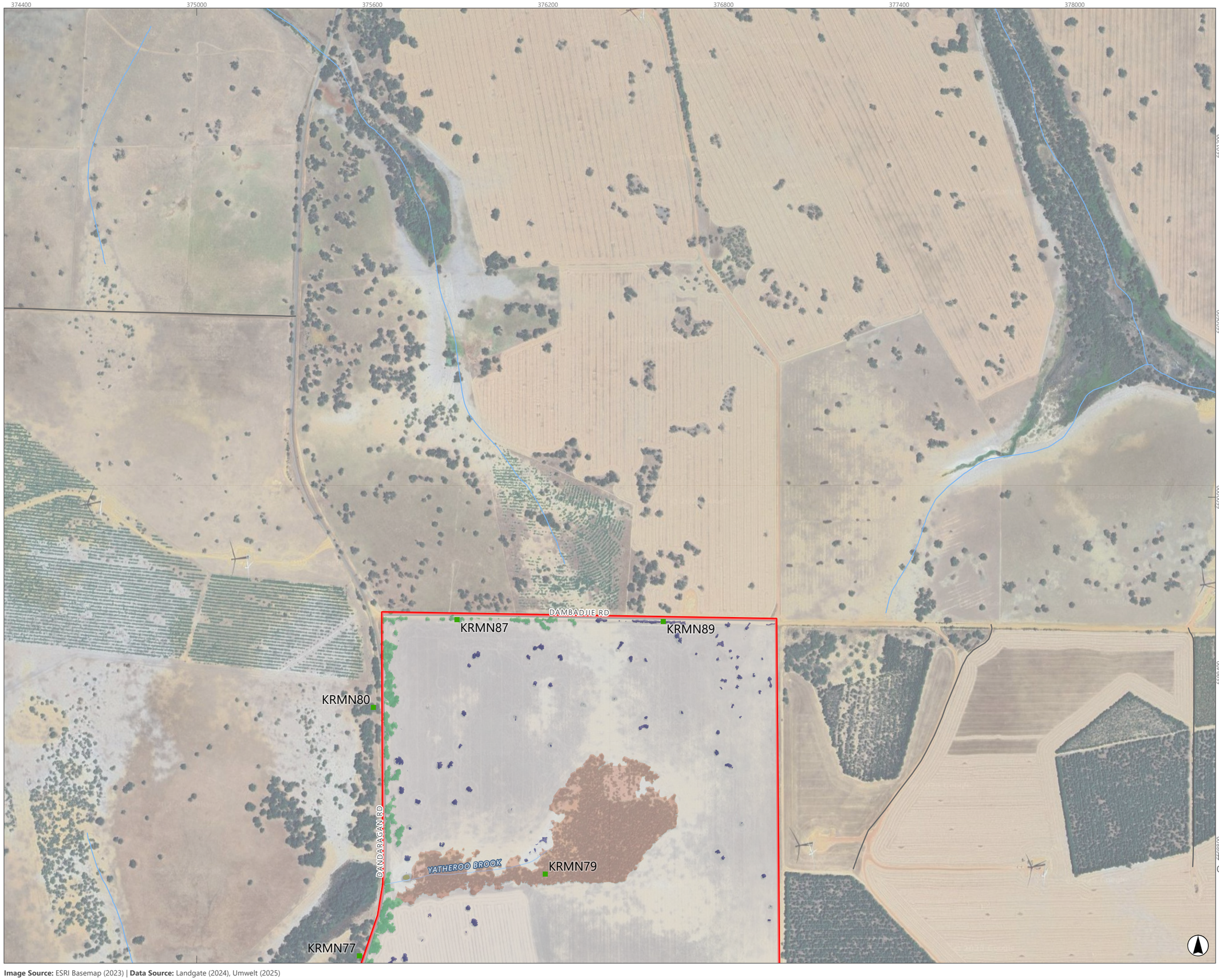
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FIGURE 5.4.1

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

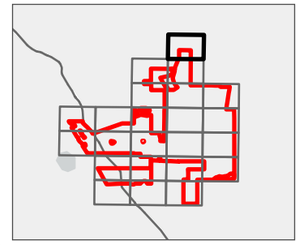
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

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370800 371400 372000 372600 373200 373800

6598200 6597600 6597000 6596400 6595800 6595200

MENARDIE RD

KRMN69

KRMN70

KRMN67

KRMN64

KRMN65

FIGURE 5.4.2

Vegetation Types of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note

0 0.3 0.6

Kilometres

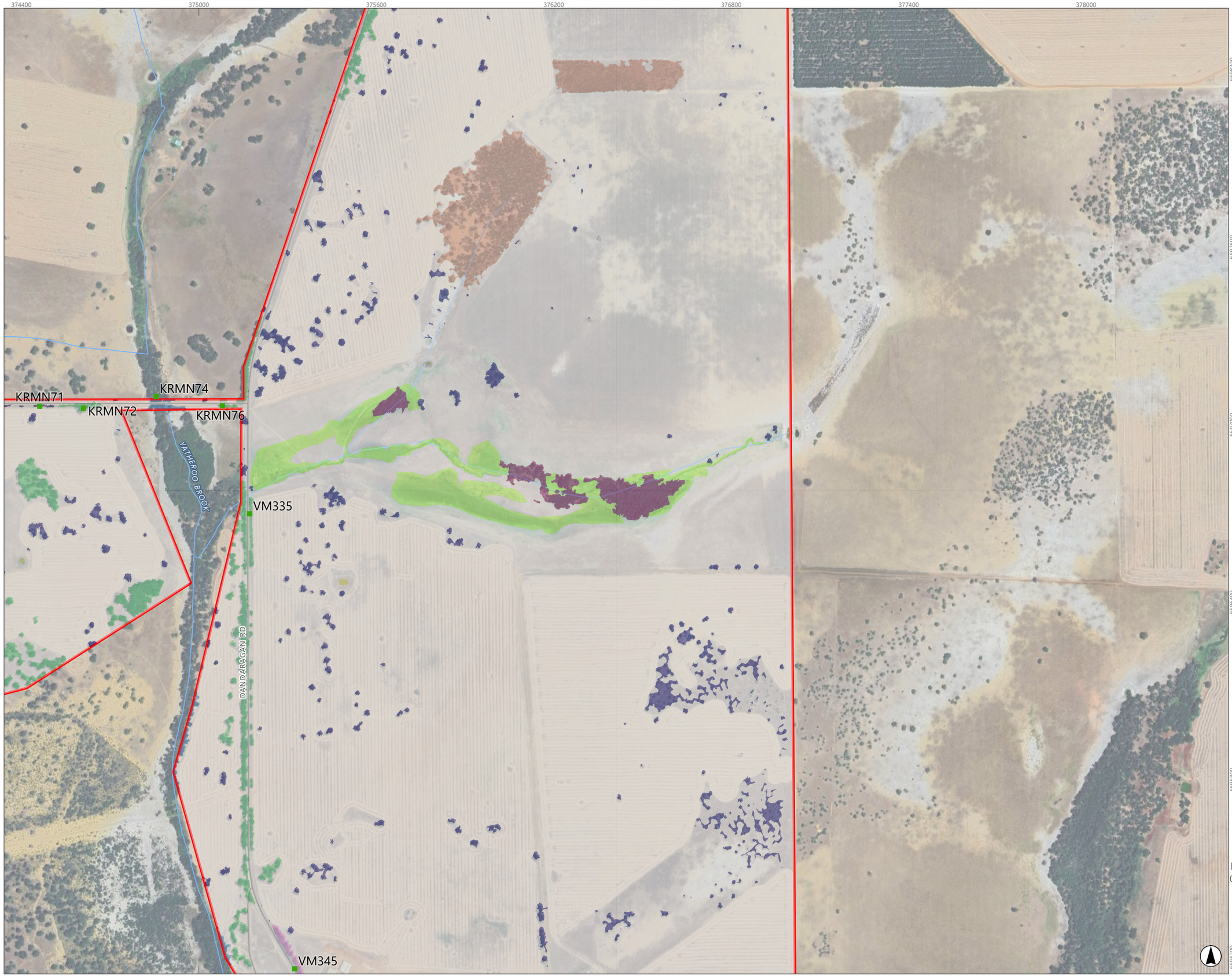
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FIGURE 5.4.3

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

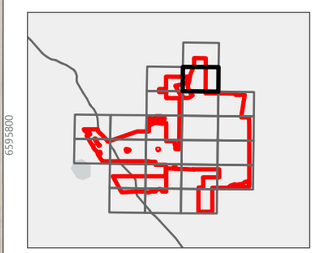
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

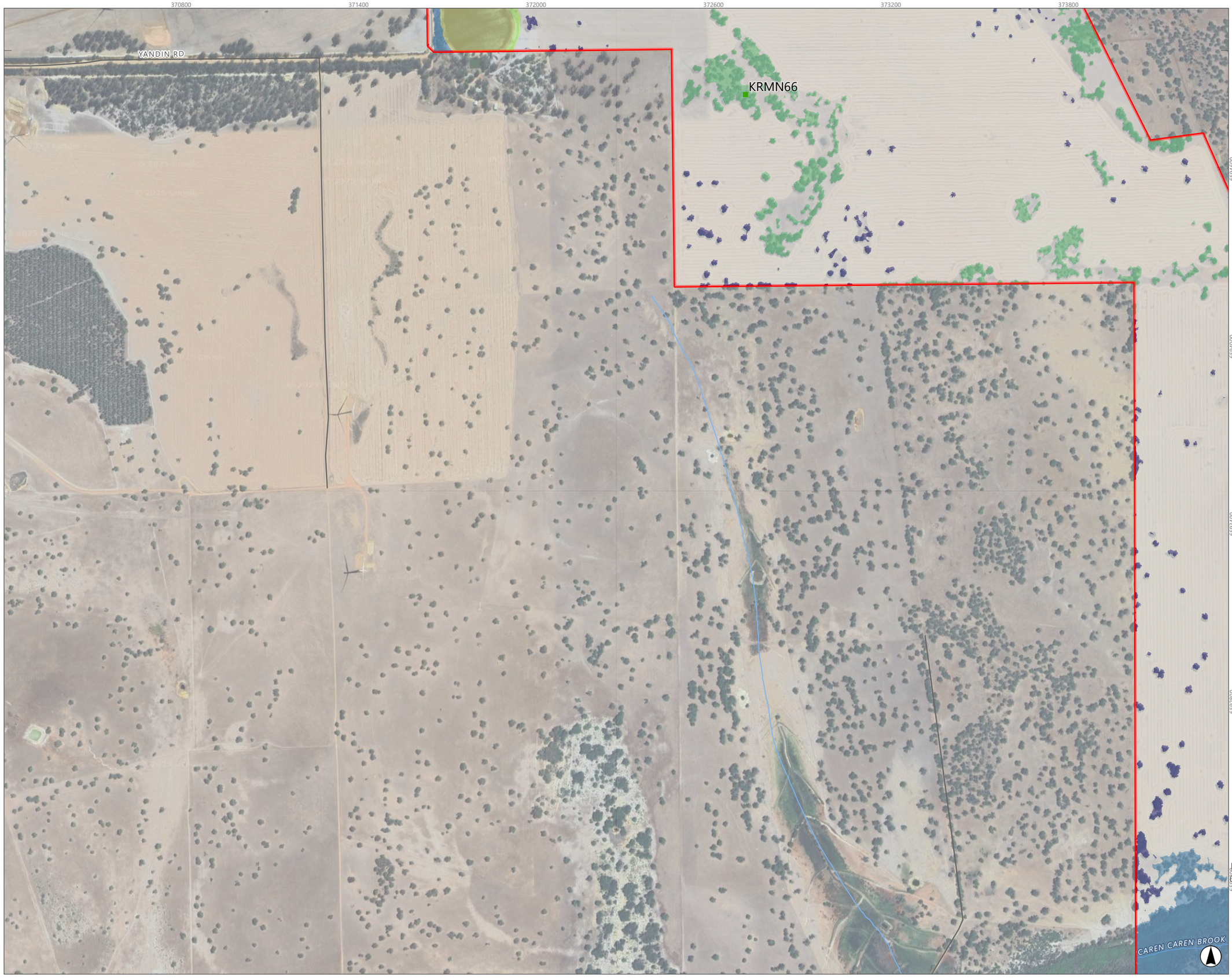
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FIGURE 5.4.4

Vegetation Types of the Survey Area



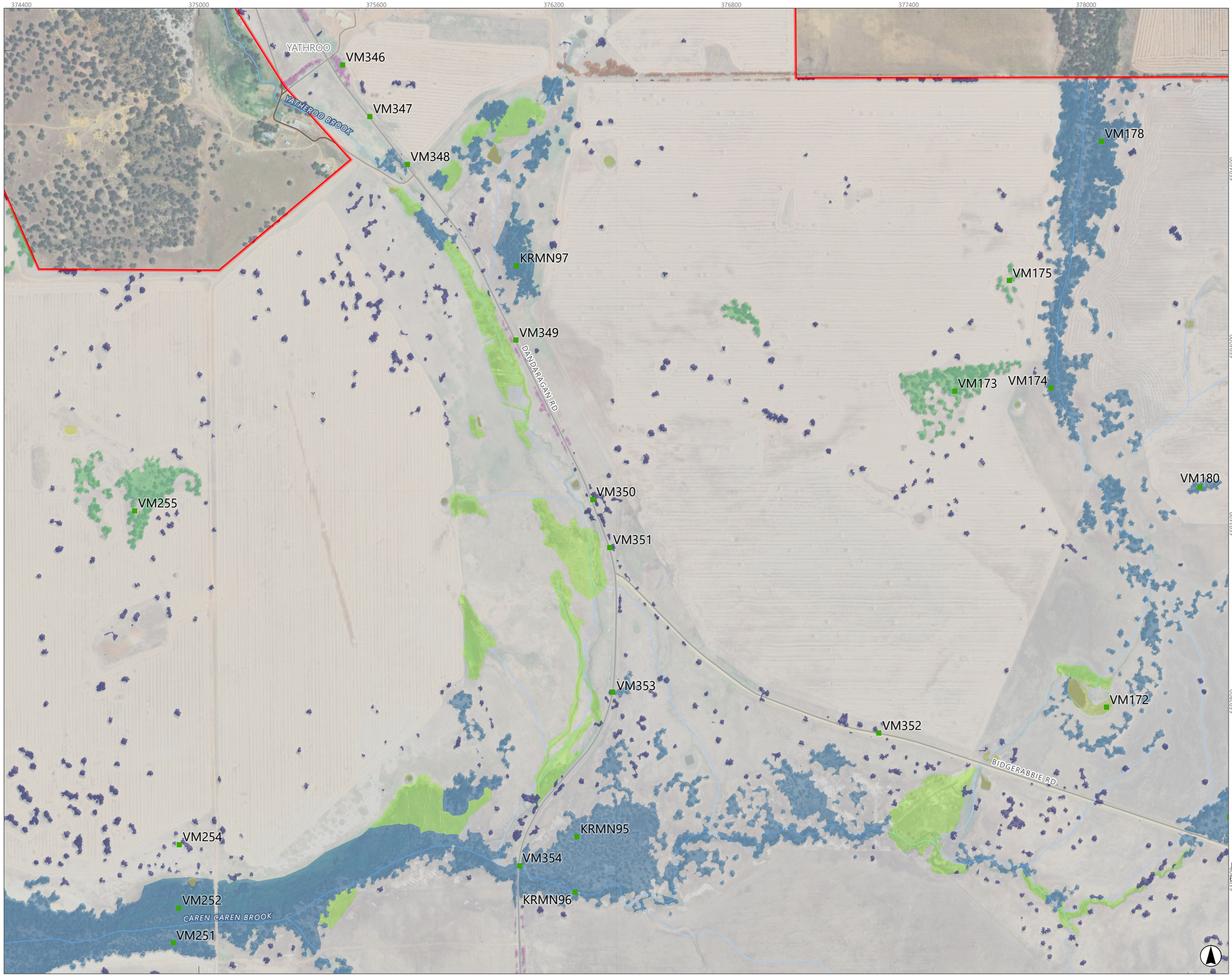
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FIGURE 5.4.5

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

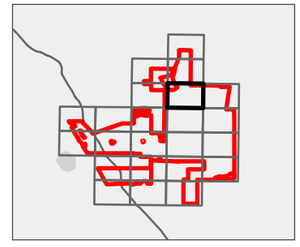
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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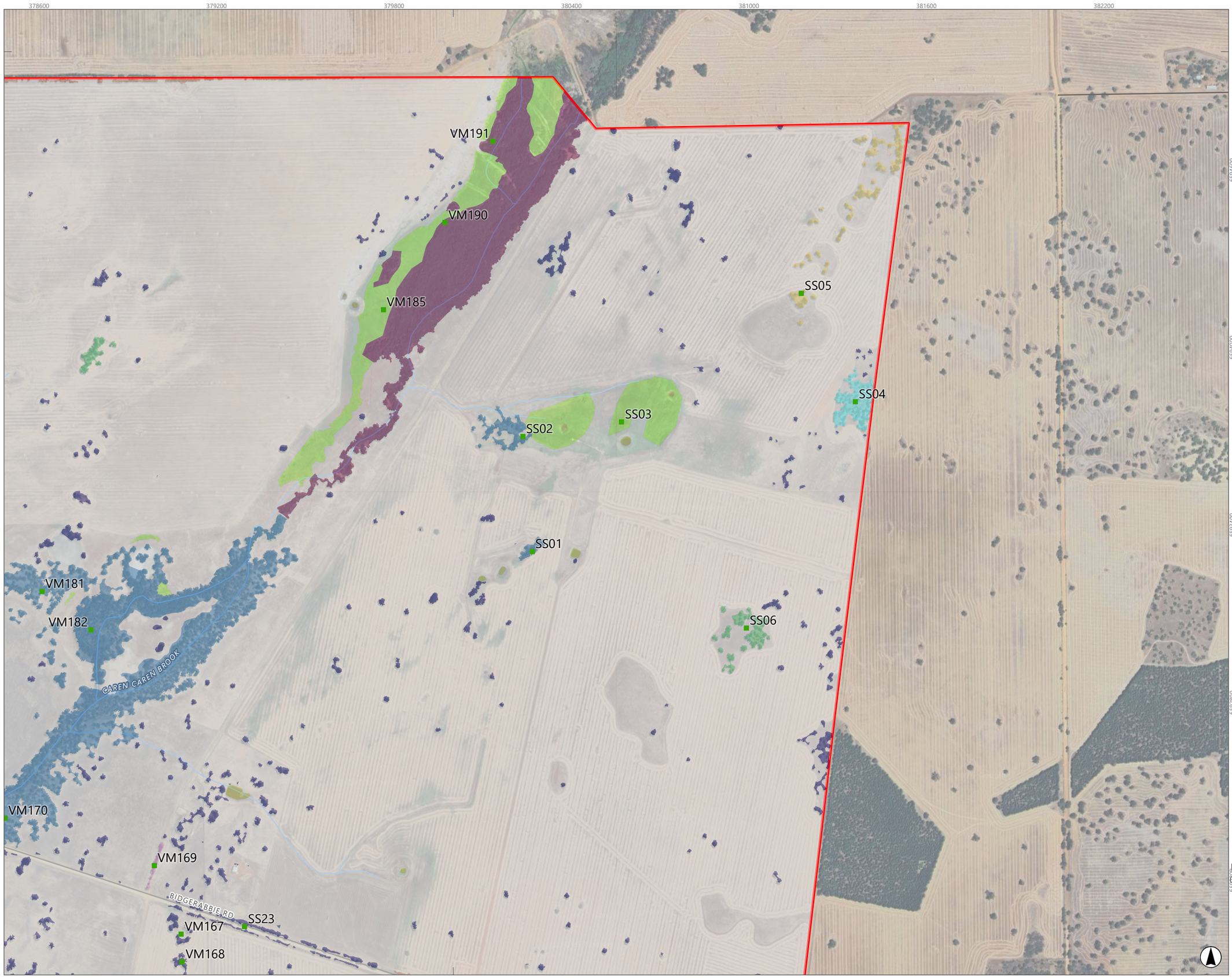
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FIGURE 5.4.6

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

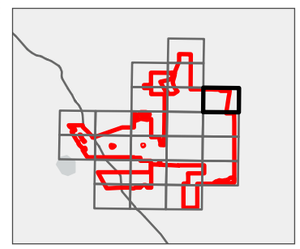
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0.3 0.6

Kilometres

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362400 363000 363600 364200 364800 365400 366000

6591600
6591000
6590400
6589800
6589200

FIGURE 5.4.7

Vegetation Types of the Survey Area

Legend

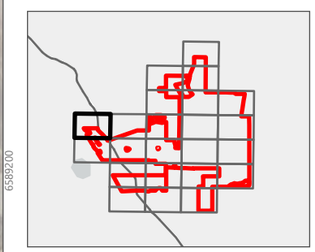
- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB



0 0.3 0.6

Kilometres

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366600 367200 367800 368400 369000 369600 370200

6591600
6591000
6590400
6589800
6589200

FIGURE 5.4.8

Vegetation Types of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

0 0.3 0.6

Kilometres

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FIGURE 5.4.9

Vegetation Types of the Survey Area

370800 371400 372000 372600 373200 373800

6591600 6591000 6590400 6589800 6589200

KRMN22 KRMN21 KRMN19 KRMN18 KRMN16 KRMN17 KRMN13 VM250

CAREN CAREN BROOK

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

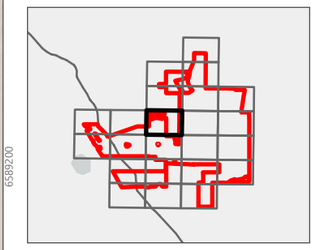
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

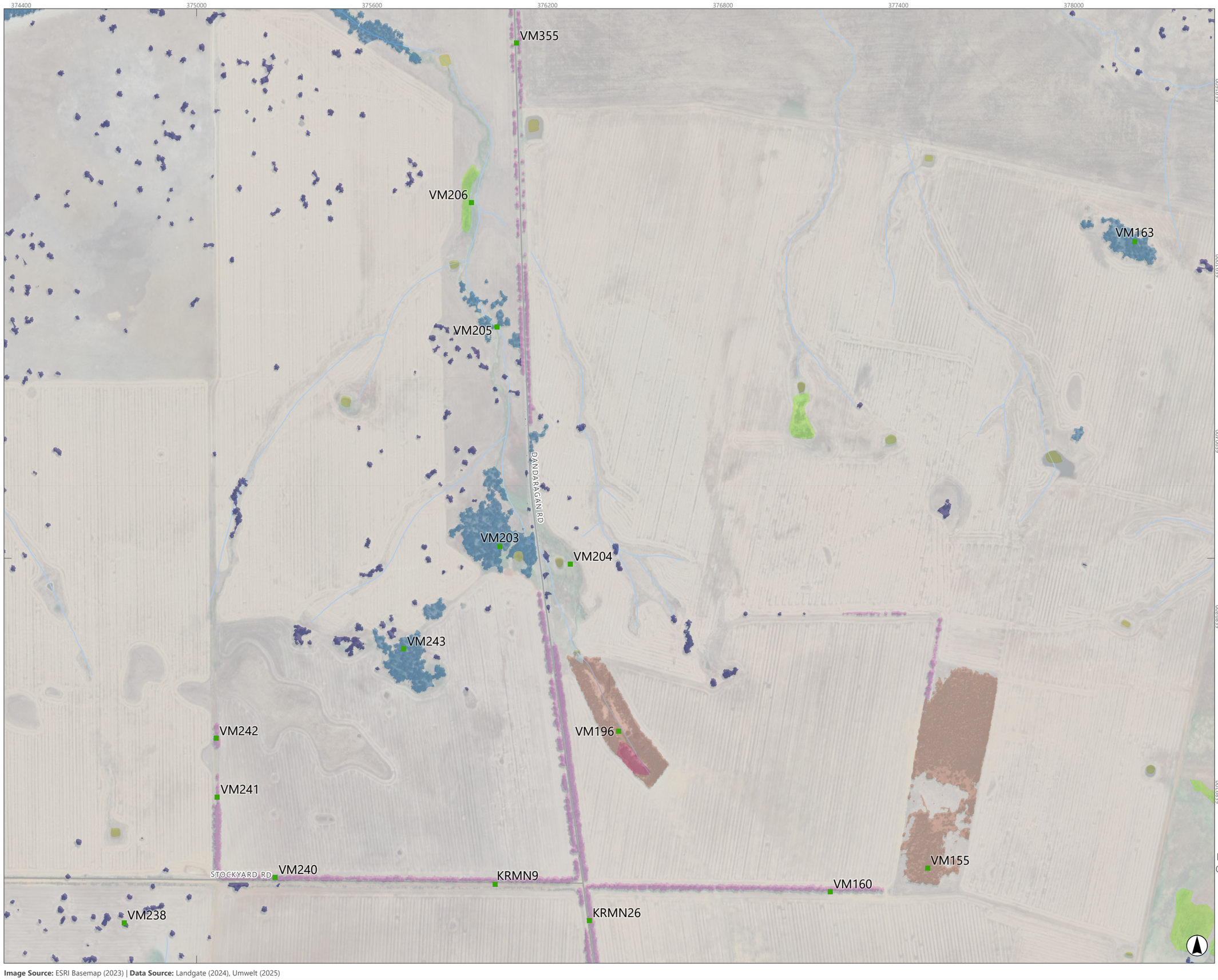
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FIGURE 5.4.10

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

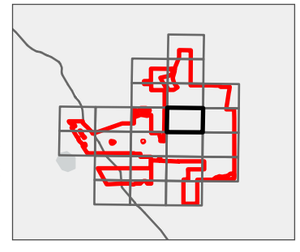
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.4.11

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

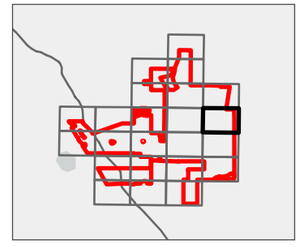
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

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FIGURE 5.4.12

Vegetation Types of the Survey Area

362400 363000 363600 364200 364800 365400 366000

6588600 6588000 6587400 6586800 6586200 6585600

KRMN34 KRMN33 KRMN32 KRMN27 KRMN31 KRMN30 KRMN29 KRMN28 KRMN36 KRMN38 KRMN39 KRMN35 KRMN40 KRMN41 KRMN42 YR08 YR09 YTQ13A YTQ12

SALT LAKE RD

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

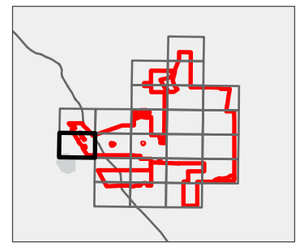
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.4.13

Vegetation Types of the Survey Area

366600 367200 367800 368400 369000 369600 370200

6588000 6587400 6586800 6586200 6585600

KRMN55
KRX
VM260
YTQ11
VM261
KRMNX1
KRMN52
KRMN49
YR10
YTQ10
KRMNX2
KRMN50
KRMNXXX
VM263
VM264
KRMN51
YTQ09
KRMNXXX3
KRMN49
KRMN48
VM266
YTQ04
KRMN4X
VM267
KRMN47
MVM01
KRMN54
BRAND HWY
SALT LAKE RD

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

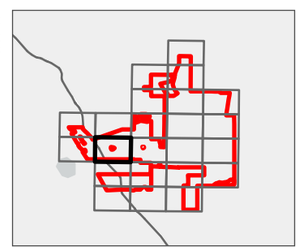
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.4.14

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

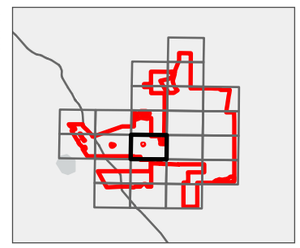
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Releve



0 0.3 0.6

Kilometres

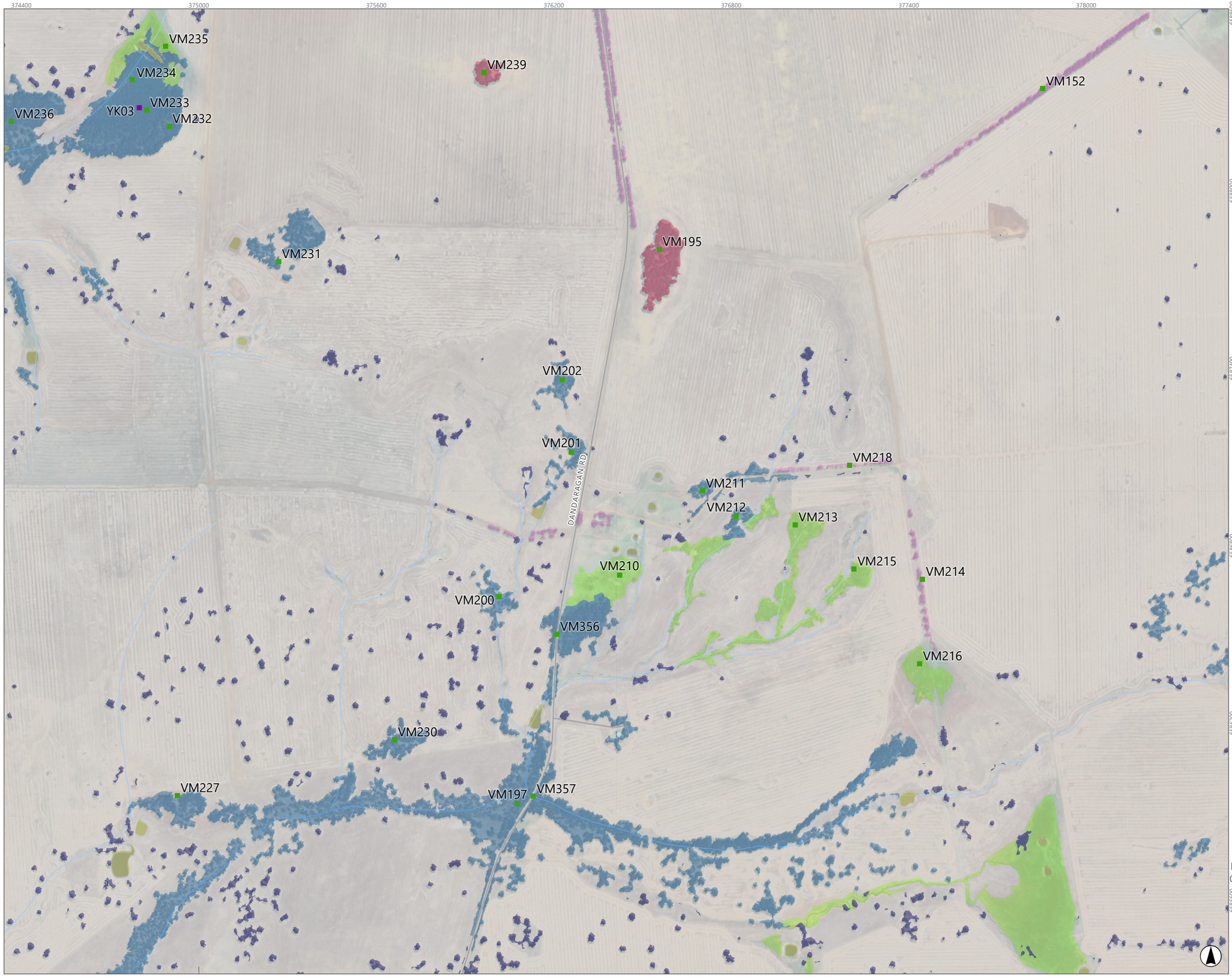
Scale: 1:12,000 at A3
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FIGURE 5.4.15

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

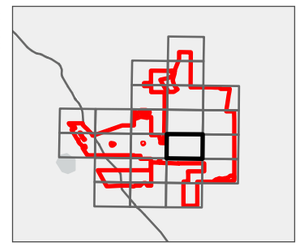
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat



0 0.3 0.6

Kilometres

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FIGURE 5.4.16

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

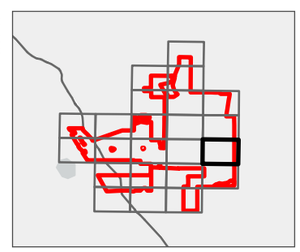
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat



0 0.3 0.6

Kilometres

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366600 367200 367800 368400 369000 369600 370200

6585000 6584400 6583800 6583200 6582600

VM283
VM285
YTQ03
KRMNT2-1
VM01
KRMNT2
KRMN100
VM286
BRAND HWY
MVM02
YTQ02
VM54
KRMNTT

FIGURE 5.4.17

Vegetation Types of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat

0 0.3 0.6

Kilometres

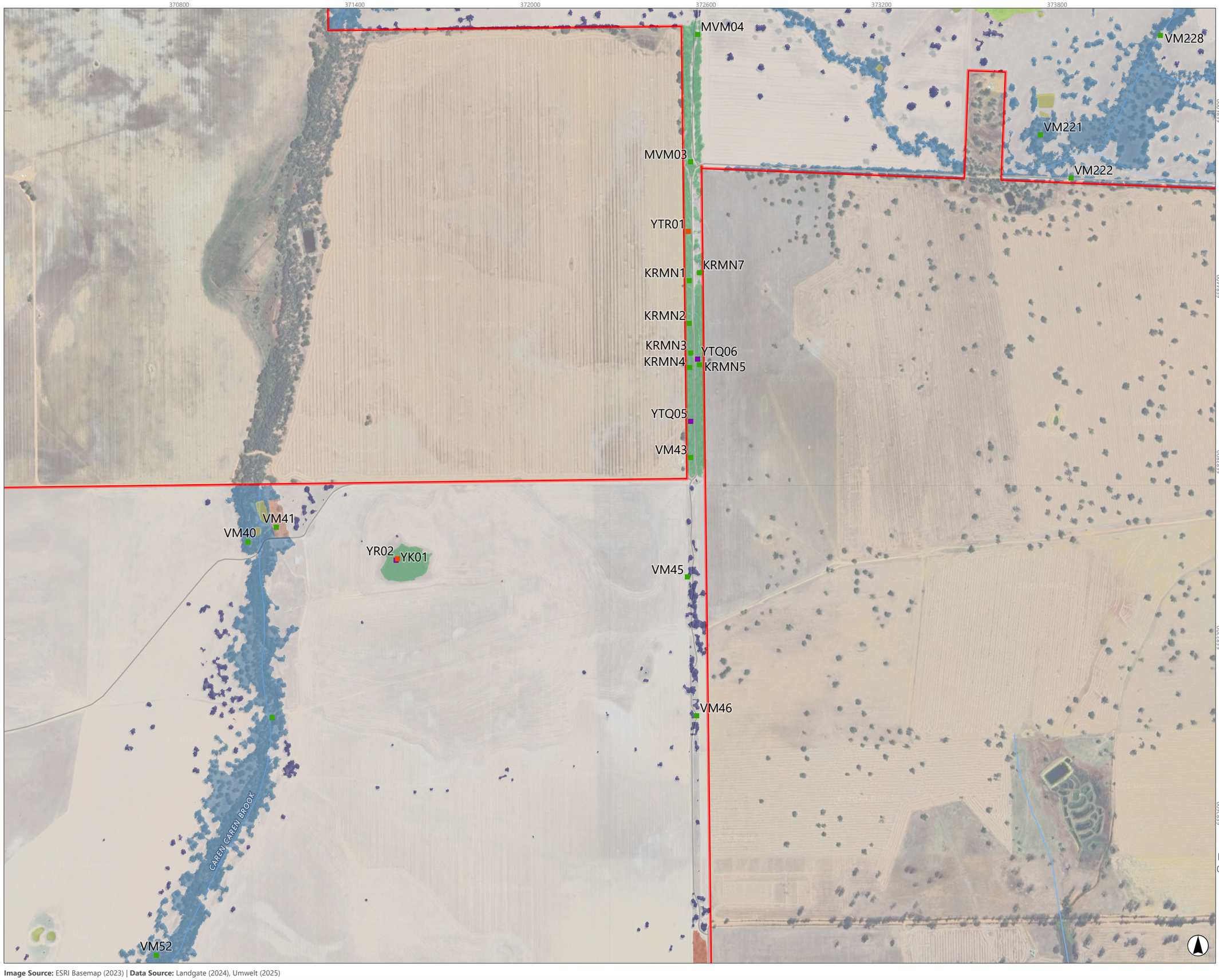
Scale: 1:12,000 at A3
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FIGURE 5.4.18

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

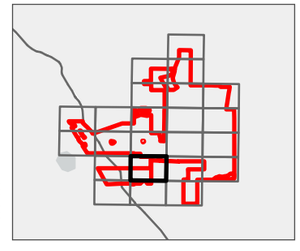
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

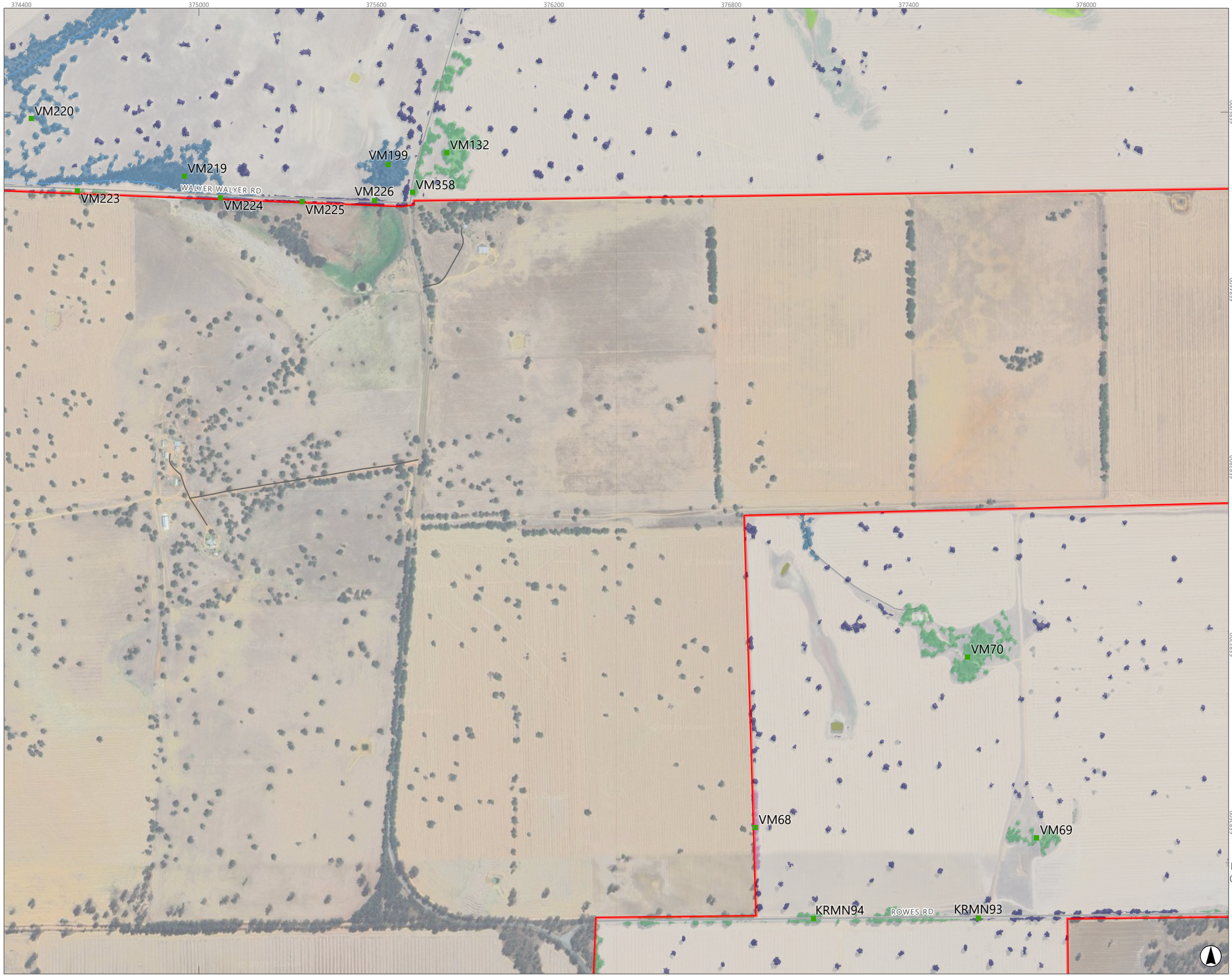
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FIGURE 5.4.19

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

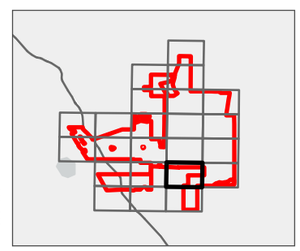
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

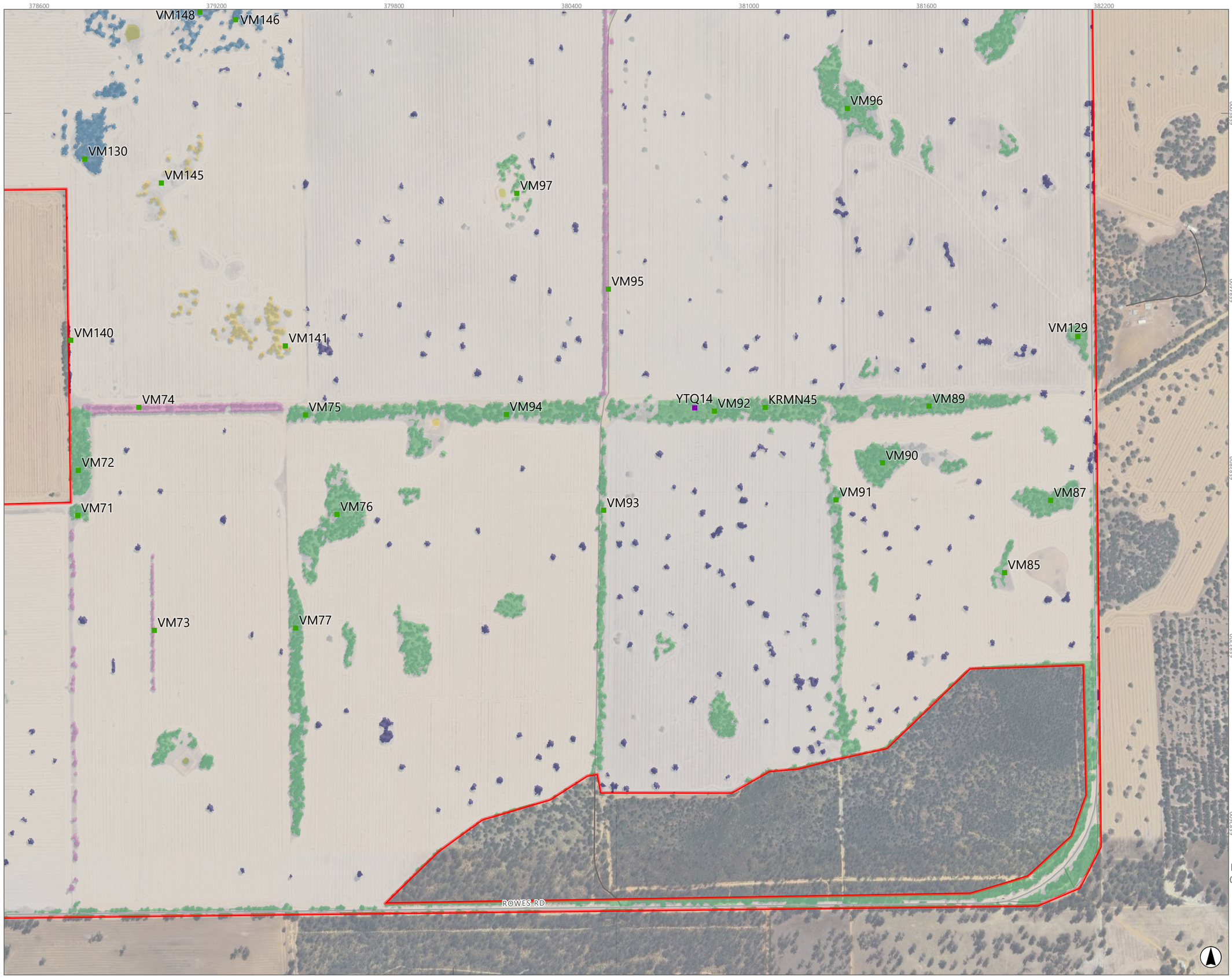
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umwelt

FIGURE 5.4.20

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

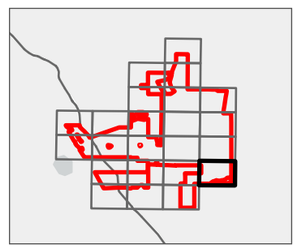
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat



0 0.3 0.6

Kilometres

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FIGURE 5.4.21

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

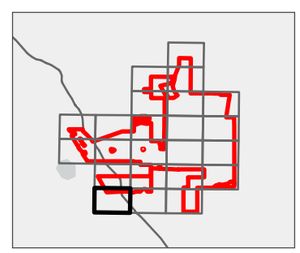
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.4.22

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

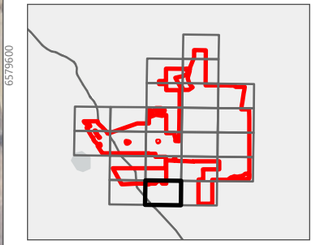
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note
- Quadrat
- Releve



0 0.3 0.6

Kilometres

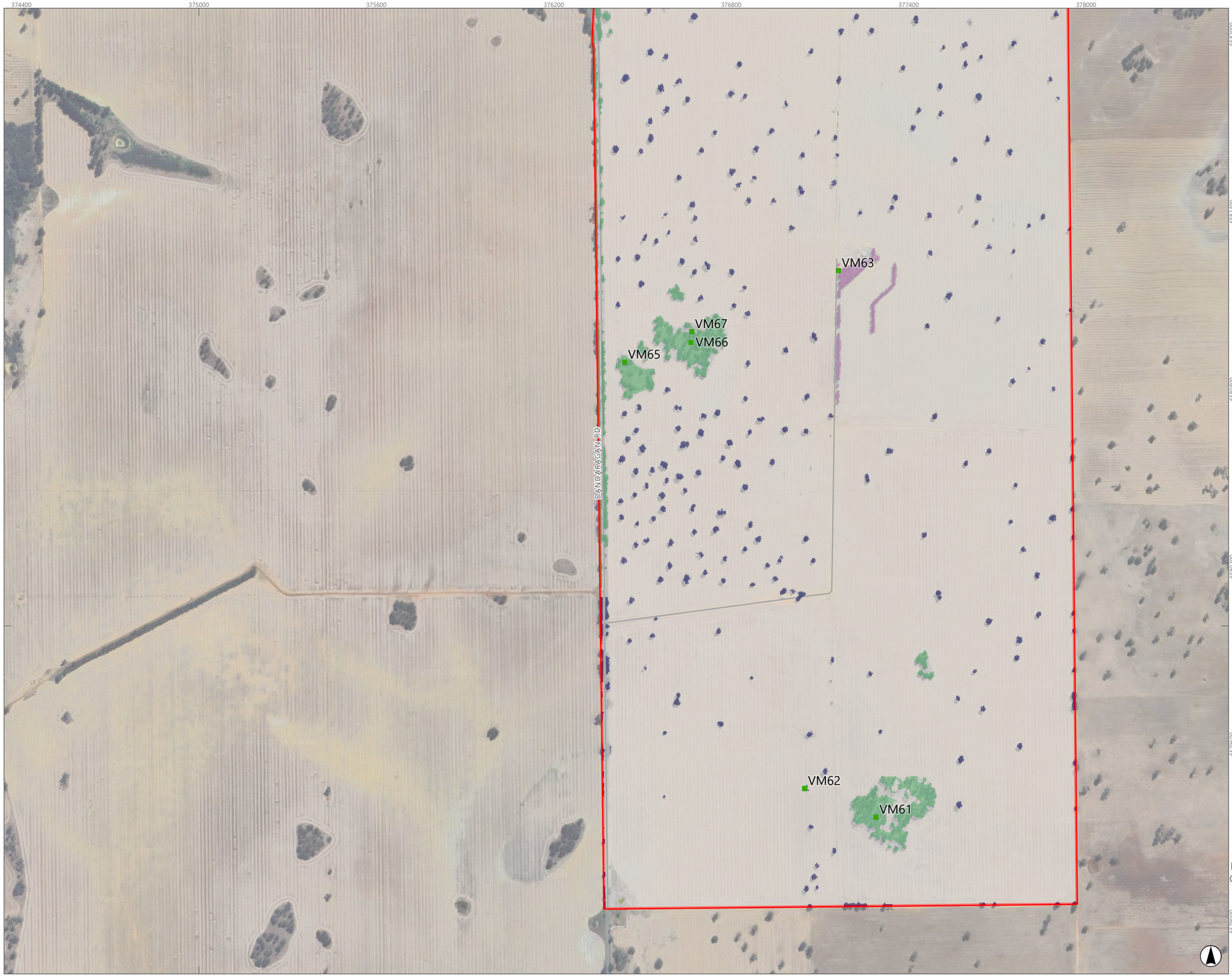
Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.4.23

Vegetation Types of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Types

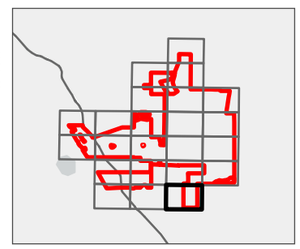
- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB

Site Type

- Vegetation Mapping Note



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024), Umwelt (2025)

Legend

Vegetation Types

- VT1 Low isolated trees to open woodland of *Corymbia calophylla*, occasionally with *Eucalyptus todtiana*, occasionally with a tall shrubland of *Banksia hewardiana* over mid open shrubland of *Hakea trifurcata*, *Xanthorrhoea preissii*, *Allocasuarina humilis*, and *Calothamnus sanguineus* over low isolated shrubs of *Babingtonia grandiflora* and *Hibbertia hypericoides* subsp. *hypericoides* over low isolated tussock grasses of *Austrostipa elegantissima* and occasionally *Neurachne alophecuroidea* over low isolated sedges of *Morelotia octandra* occasionally over low open rushland of *Lepidosperma* cf. *pubisquameum* or *Lepidosperma apricola* and/or *Desmocladus asper* over low isolated clumps of forbs of *Opercularia vaginata*, occasionally with *Chamaescilla corymbosa*, *Trachymene pilosa* and *Podotheca gnaphaloides*; on undulating plains with grey/yellow/white sand-sandy loam or on slopes with red/brown clay loam and laterite pebbles.
- VT2 Occasional low woodland of *Banksia prionotes*, sometimes with *Eucalyptus todtiana*, over tall open shrubland to shrubland of *Acacia blakelyi* over mid sparse shrubland of *Allocasuarina humilis*, *Calothamnus quadrifidus* subsp. *quadrifidus* and *Xanthorrhoea preissii* over low sparse shrubland of *Dianella revoluta* and *Conostylis aculeata* subsp. *aculeata* over low isolated grasses of *Austrostipa macalpinei* over low clumps of sedges of *Mesomelaena pseudostygia* over low isolated forbs of *Calandrinia corriguloides*, *Centrolepis drummondiana*, *Drosera erythrorhiza*, *Poranthera microphylla* and *Trachymene pilosa*; on sand plains with grey/yellow/brown sand.
- VT3 Occasional low open woodland of *Eucalyptus todtiana*, *Banksia attenuata* and *Banksia menziesii*, sometimes with *Banksia prionotes*, occasionally with a mid shrubland of *Leptospermopsis erubescens*, over mid sparse shrubland of *Xanthorrhoea preissii* and *Jacksonia floribunda* over low sparse shrubland of *Banksia dallanneyi* subsp. *dallanneyi* var. *dallanneyi*, *Hibbertia hypericoides* subsp. *hypericoides*, *Melaleuca ciliosa* and *Petrophile macrostachya* over low isolated clumps of grasses of *Austrostipa elgantissima* and *Austrostipa macalpinei* over low sparse sedgeland to isolated clumps of sedges of *Mesomelaena pseudostygia*, *Schoenus clandestinus* and *Schoenus nanus* over isolated clumps of rushes of *Lepidobolus preissianus* subsp. *preissianus* and *Caustis dioica* over low isolated clumps of forbs of *Burchardia congesta*, *Drosera erythrorhiza*, *Phyllangium divergens*, *Podotheca gnaphaloides* and *Trachymene pilosa*, on sand plains with white/grey/yellow sand.
- VT4 Low open woodland of *Eucalyptus rudis* subsp. *rudis* over tall open shrubland of *Melaleuca rhaphiophylla* over mid closed rushland of *Lepidosperma longitudinale* and *Machaerina preissii*, on drainage lines and open depressions with brown loam.
- VT5 Low woodland of *Melaleuca preissiana* and/or *Melaleuca rhaphiophylla* occasionally over low isolated sedges of *Schoenus subfascularis* over low closed grassland of pasture weeds, on open depressions, sometimes with standing water, with brown loam.
- VT6 Low isolated trees to low open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over low closed grassland of pasture weeds, on plains or slopes with grey/brown loam.
- VT7 Isolated low trees to low open woodland of *Eucalyptus todtiana* over low closed grassland of pasture weeds, on plains and slopes or grey/brown sand or loam.
- VT8 Isolated mid shrubland of *Xanthorrhoea* ?*drummondii* over low open shrubland of *Acacia pulchella* and *Hibbertia hypericoides* subsp. *hypericoides* over low open sedgeland of *Mesomelaena pseudostygia*, *Schoenus brevisetis*, *Schoenus clandestinus* and *Morelotia octandra*, over isolated low tussock grasses of *Amphipogon turbinatus*, on slopes of yellow-grey sand or red-brown clay loam with laterite.

Highly Modified Areas

- IT Isolated remnant trees and shrubs, sometimes low open woodlands, typically *Corymbia calophylla*, *Eucalyptus rudis* subsp. *rudis*, *Eucalyptus todtiana*, *Jacksonia sternbergiana* and *Acacia saligna*.
- PP Plantations of *Pinus* sp.
- PE Planted trees of *Eucalyptus*, of either native or exotic taxa.
- TP Plantations of **Chamaecytisus palmensis* or **Vitis vinifera*.
- JD Mid to tall sedgeland to open sedgeland of **Juncus acutus* over low closed grasslands of pasture weeds, on drainage lines and sump areas.
- PD Paddocks and Infrastructure, cleared land.
- WB Water Bodies and Artificial Dams.

FIGURE 5.4

Vegetation Types of the Survey Area

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5.2.8 Vegetation Condition

The area of each VT and corresponding condition rating (as per EPA (2016b)) mapped in the Survey Area is presented in **Table 5.9**. The vegetation condition mapping of the Survey Area is presented in **Figure 5.5**.

The majority of the Survey Area has been mapped as 'Completely Degraded' (14,912.6 ha, 94.2%) (**Table 5.9**, **Figure 5.5**). This largely consists of HMAs mapped as PD, PE, PP, TP and JD, where the land has been cleared for pasture or cropping. Little to no native vegetation remains in these areas, although isolated remnant trees may occur. A total of 4.6% of the Survey Area was mapped as being in 'Degraded' condition (728.9 ha) (**Table 5.9**, **Figure 5.5**); these areas predominately consisted of native trees over no or very little understorey taxa, and high levels of introduced (weed) taxa.

A small portion of the Survey Area was mapped as being in 'Good' condition (65.4 ha, 0.4% of the Survey Area) (**Table 5.9**, **Figure 5.5**). This comprised the majority of the D&T Survey Area, along Brand Highway, Walyer Walyer Road and Walyoo Road, with some small portions occurring within the remnant vegetation within the Survey Area. An even smaller portion of the Survey Area was mapped as being in 'Very Good' condition (27.1 ha, 0.2% of the Survey Area) (**Table 5.9**, **Figure 5.5**). This condition rating was given to portions of the Brand Highway road verge in the northern section, as well as a small portion of VT4, located south of Stockyard Road.

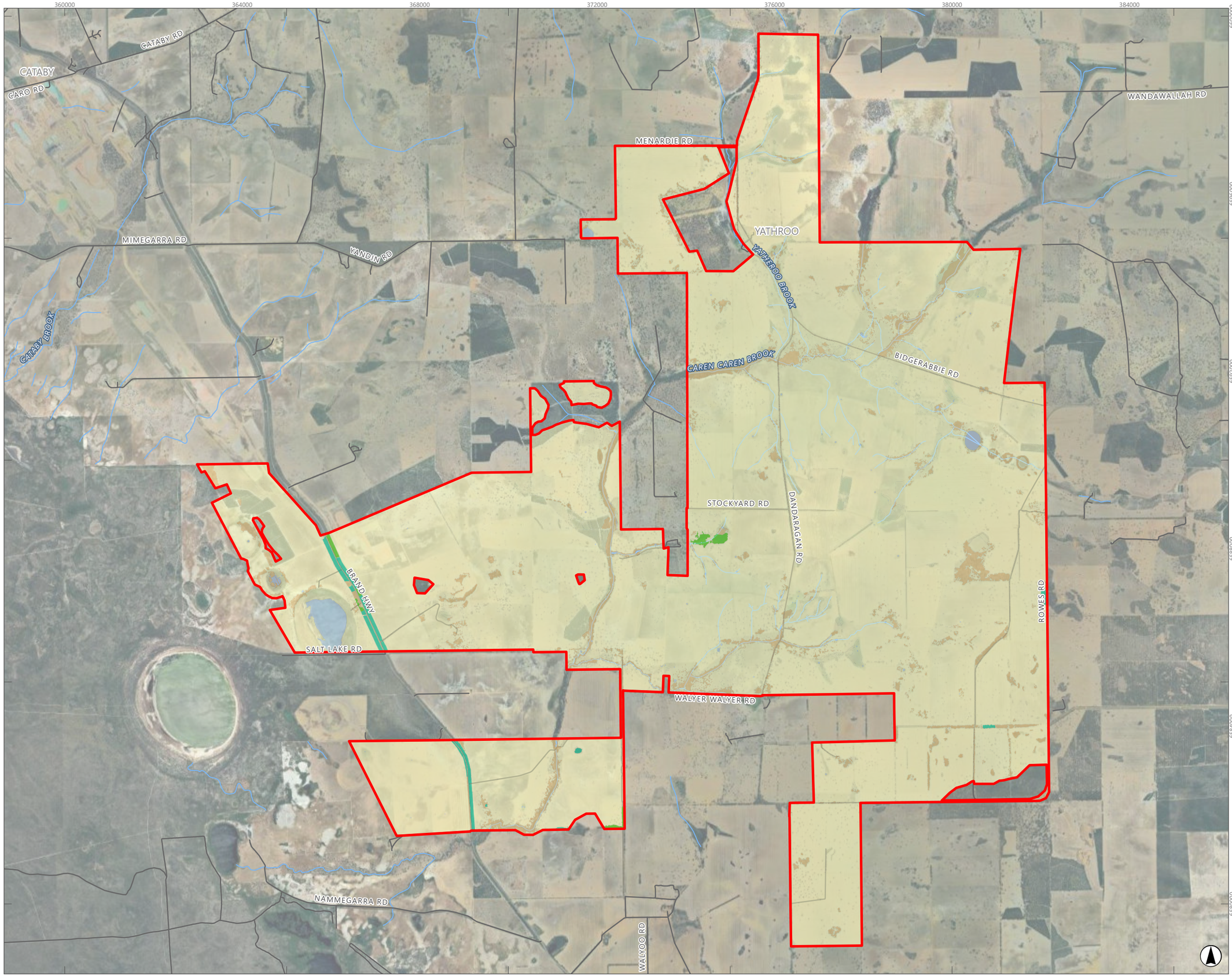
Due to the history of clearing, logging and grazing in the Survey Area, there was no vegetation observed that was considered to be in 'Pristine' or 'Excellent' condition.

Table 5.9 Vegetation Condition of the Survey Area

VT / HMA	Vegetation Condition					Total
	Completely Degraded	Degraded	Good	Very Good	NA	
VT1	-	233.8	19.3	1.6	-	254.7
VT2	-	6.7	8.3	1.5	-	16.5
VT3	-	33.1	36.3	10.0	-	79.4
VT4	-	414.0	-	14.0	-	428.0
VT5	-	32.4	-	-	-	32.4
VT6	-	5.3	-	-	-	5.3
VT7	-	3.6	-	-	-	3.6
VT8	-	-	1.5	-	-	1.5
IT	185.4	-	-	-	-	185.4
JD	197.7	-	-	-	-	197.7
PD	14,228.1	-	-	-	-	14,228.1
PE	45.2	-	-	-	-	45.2
PP	168.0	-	-	-	-	168.0
TP	88.2	-	-	-	-	88.2
WB	-	-	-	-	101.0	101.0
Total	**14,912.6**	**728.9**	**65.4**	**27.1**	**101.0**	**15,834.9**

FIGURE 5.5

Vegetation Condition of the Survey Area

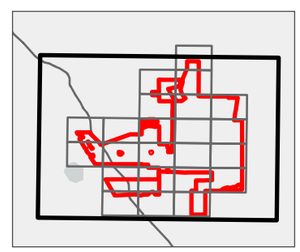


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 2 4

Kilometres

Scale: 1:80,000 at A3
GDA2020 MGA Zone 50

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374400 375000 375600 376200 376800 377400 378000

6601200 6600600 6600000 6599400 6598800

DAMBADJIE RD

DANDARAGAN RD

YATHEROO BROOK

FIGURE 5.5.1

Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA

0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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370800 371400 372000 372600 373200 373800

6598200 6597600 6597000 6596400 6595800 6595200

MENARDIE RD

FIGURE 5.5.2

Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA

0 0.3 0.6

Kilometres

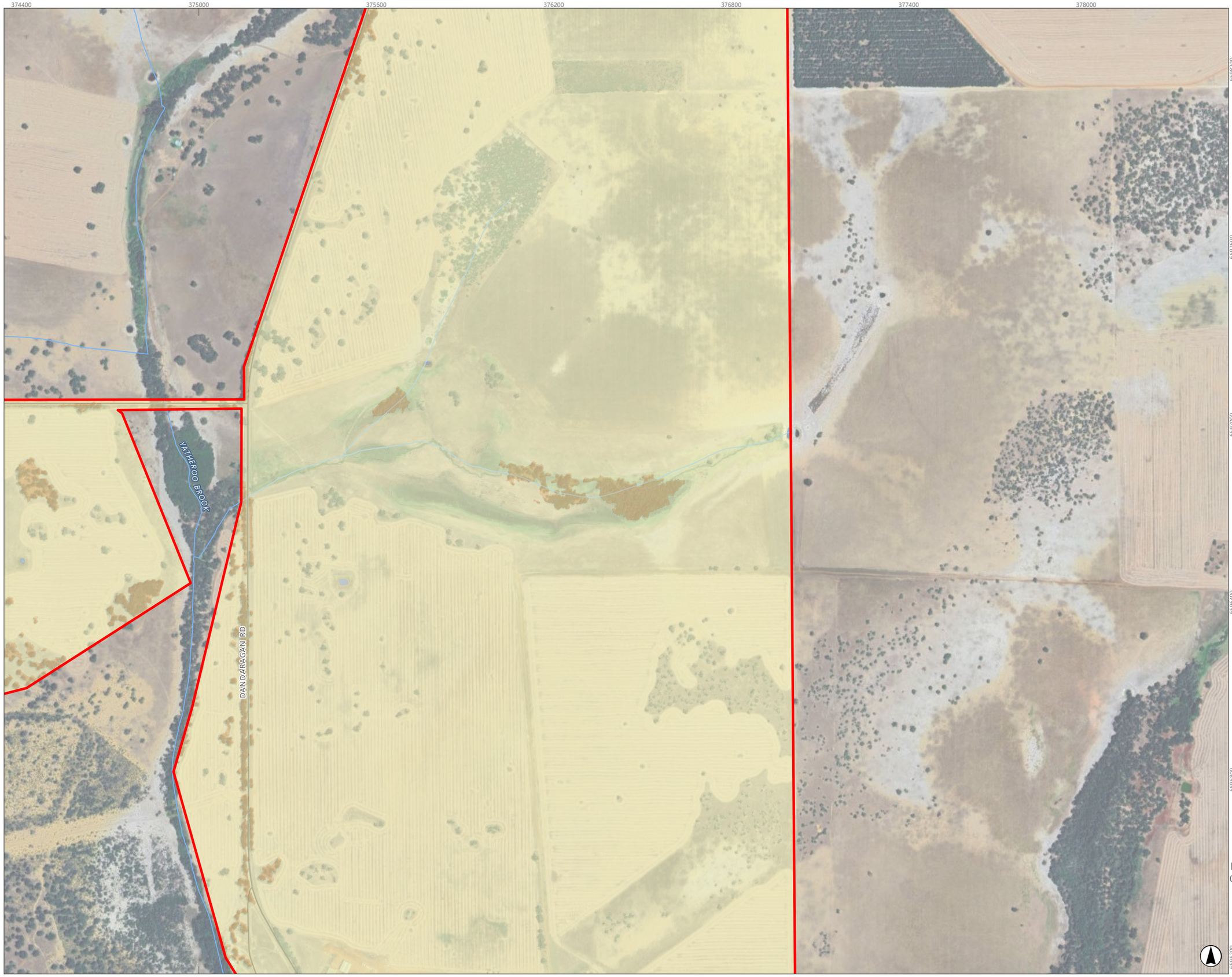
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FIGURE 5.5.3

Vegetation Condition of the Survey Area

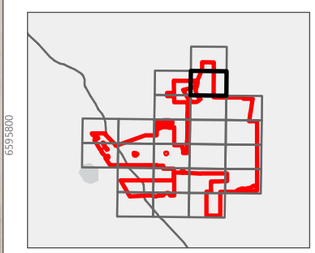


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

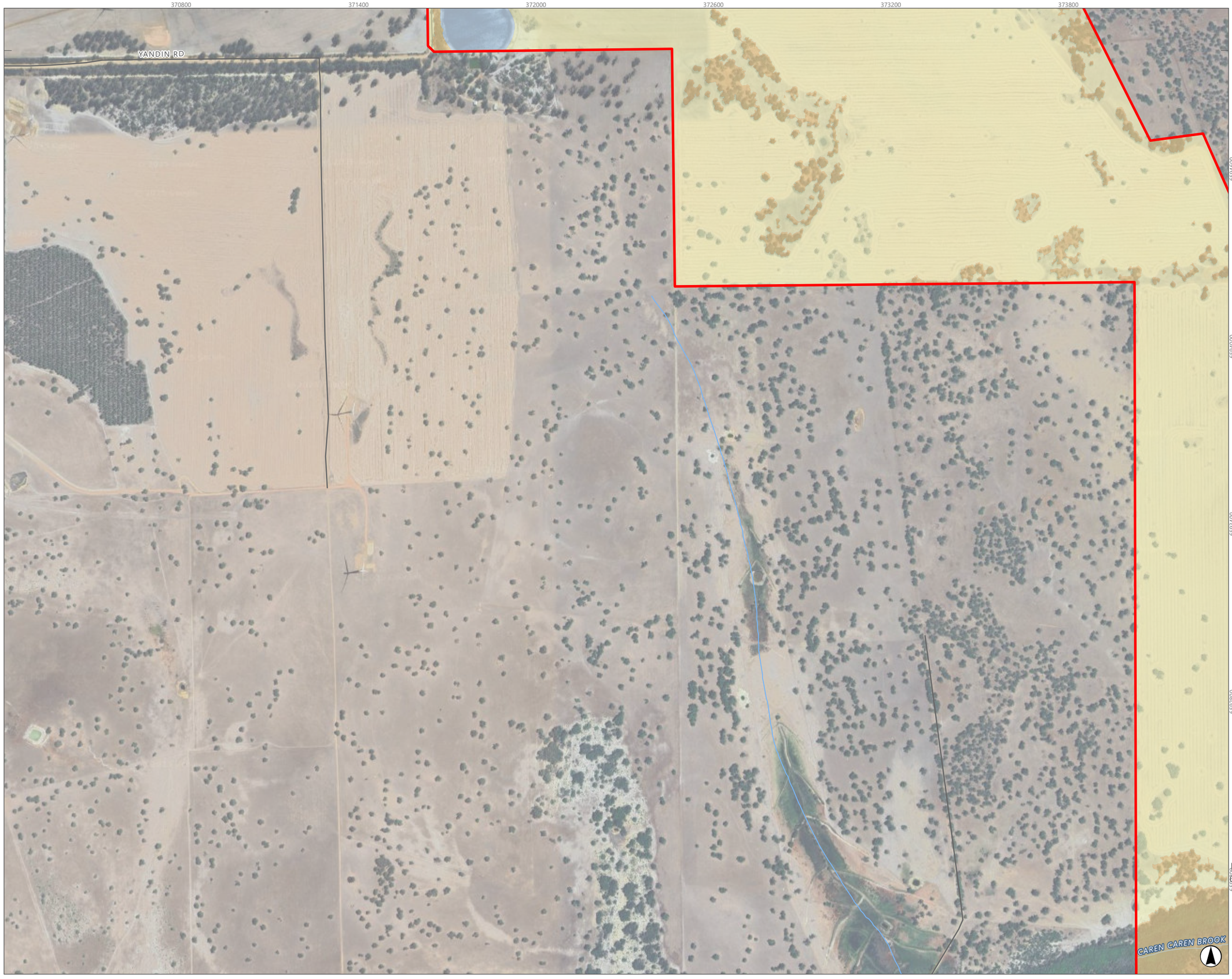
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FIGURE 5.5.4

Vegetation Condition of the Survey Area



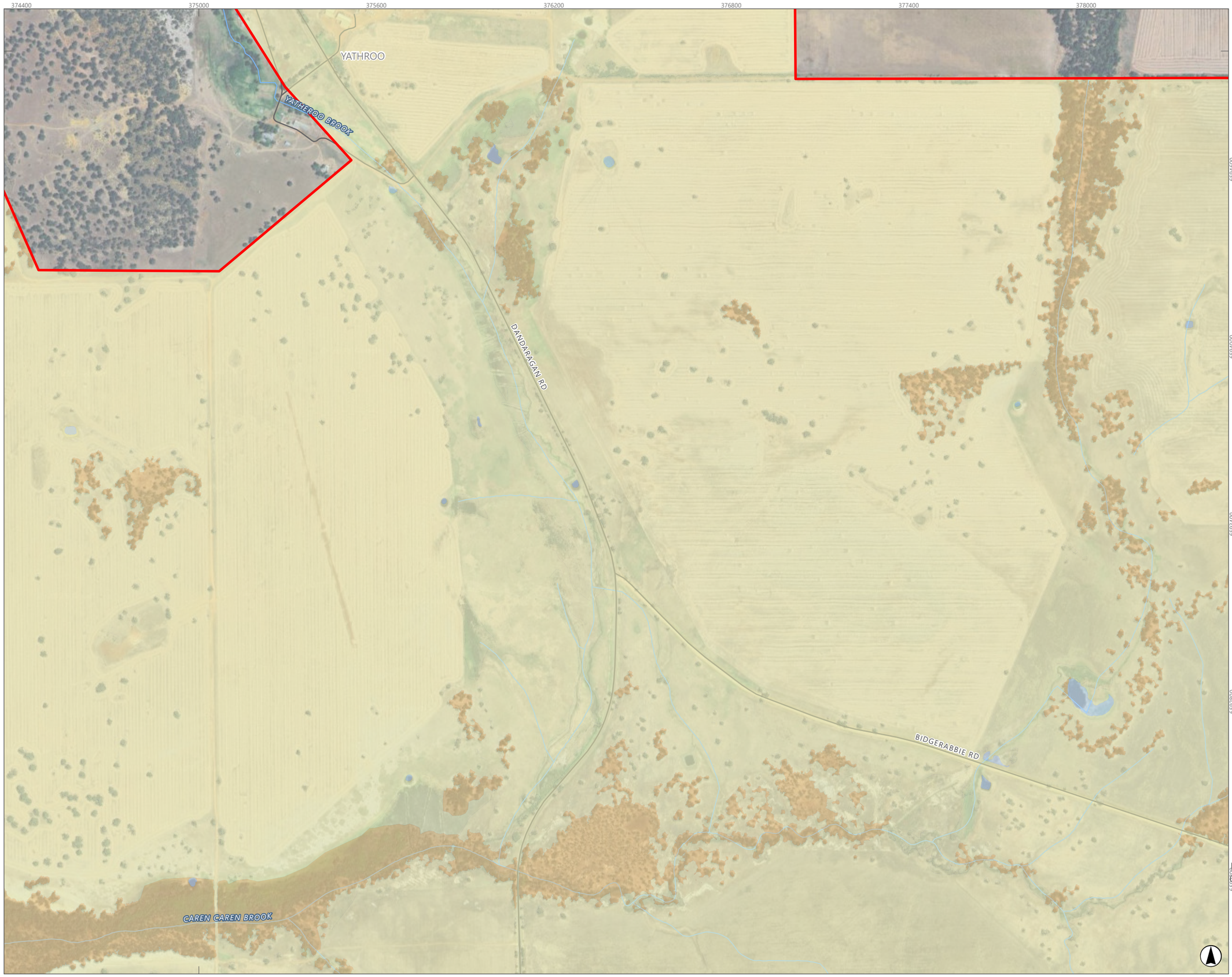
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FIGURE 5.5.5

Vegetation Condition of the Survey Area

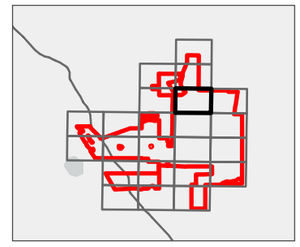


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0.3 0.6

Kilometres

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FIGURE 5.5.6

Vegetation Condition of the Survey Area

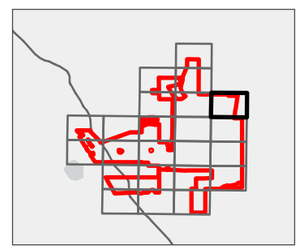


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0.3 0.6

Kilometres

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362400 363000 363600 364200 364800 365400 366000

6591600
6591000
6590400
6589800
6589200

FIGURE 5.5.7

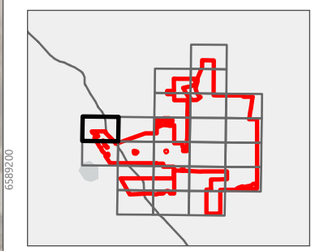
Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

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366600 367200 367800 368400 369000 369600 370200

6591600
6591000
6590400
6589800
6589200

FIGURE 5.5.8

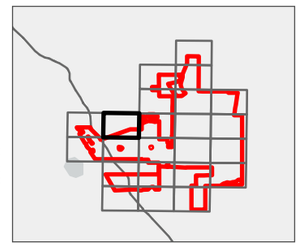
Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

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370800 371400 372000 372600 373200 373800

6591600
6591000
6590400
6589800
6589200

GAREN CAREN BROOK

FIGURE 5.5.9

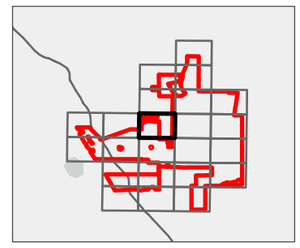
Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

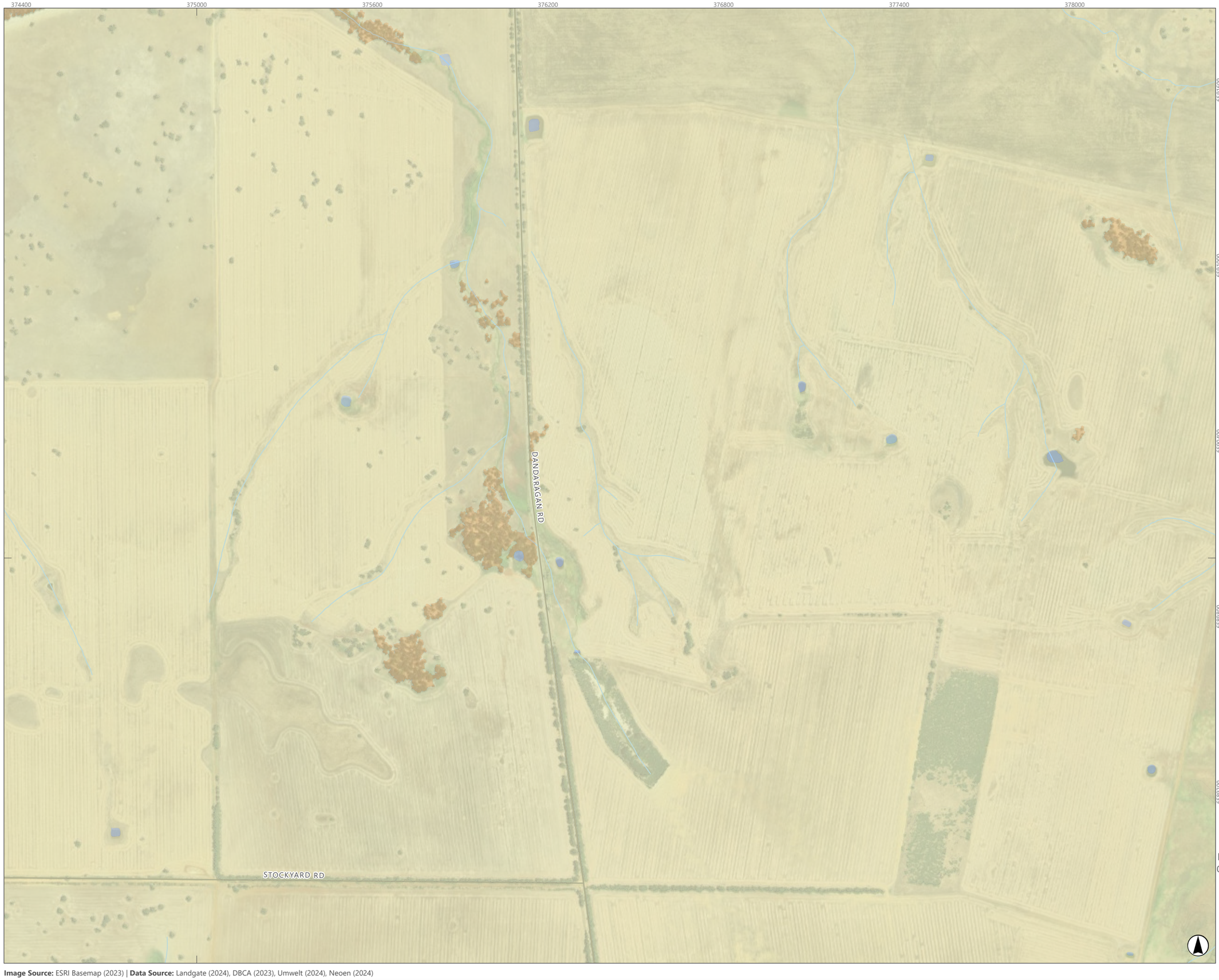
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FIGURE 5.5.10

Vegetation Condition of the Survey Area

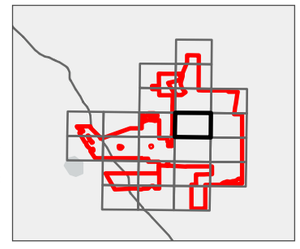


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

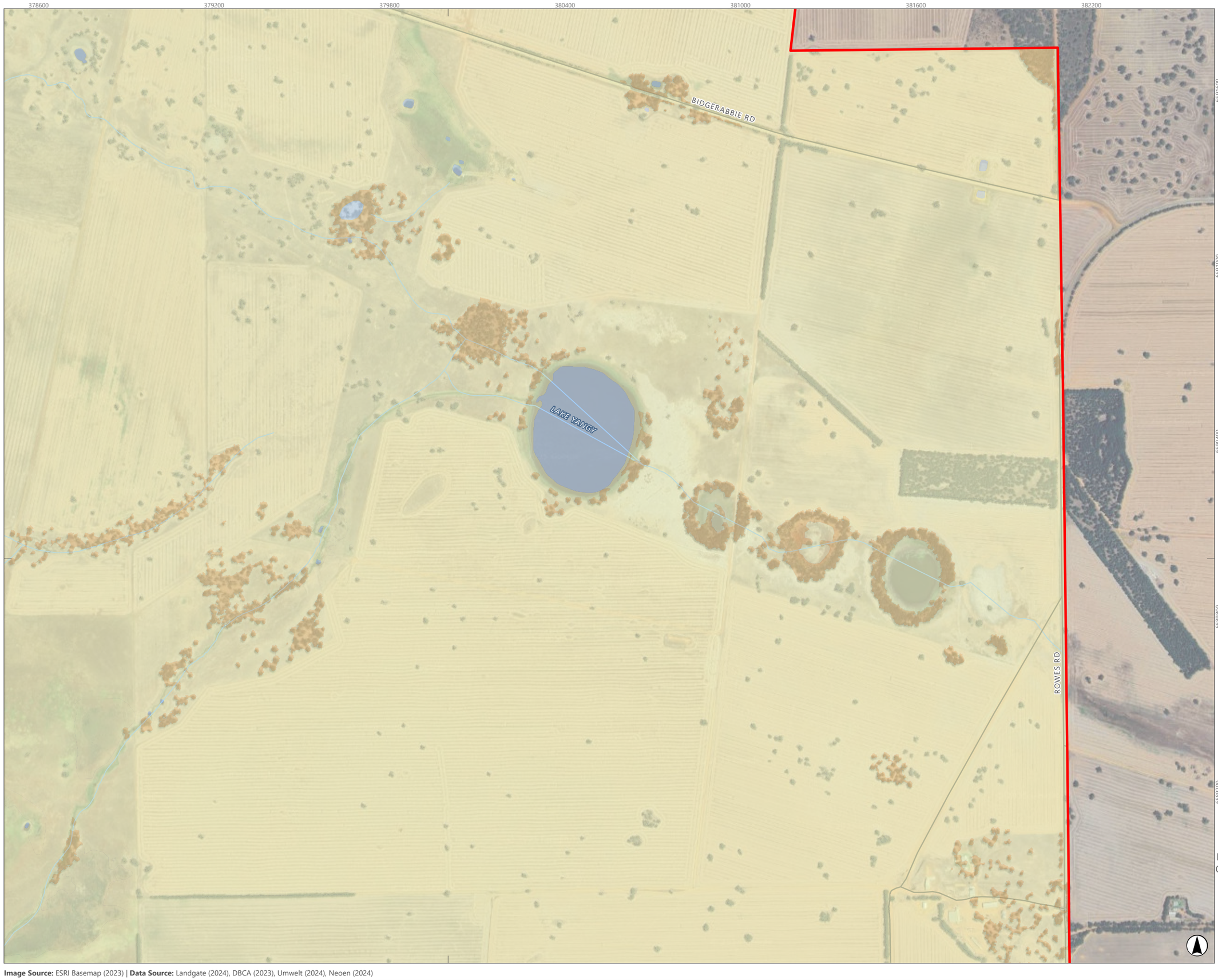
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FIGURE 5.5.11

Vegetation Condition of the Survey Area

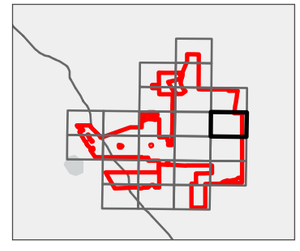


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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FIGURE 5.5.12

Vegetation Condition of the Survey Area

362400 363000 363600 364200 364800 365400 366000

6588600 6588000 6587400 6586800 6586200 6585600

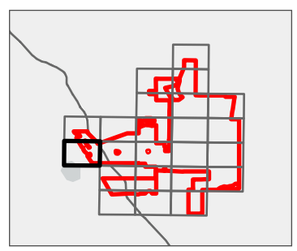
SALT LAKE RD

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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366600 367200 367800 368400 369000 369600 370200

6588000
6587400
6586800
6586200
6585600

BRAND HWY

SALT LAKE RD

FIGURE 5.5.13

Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA

0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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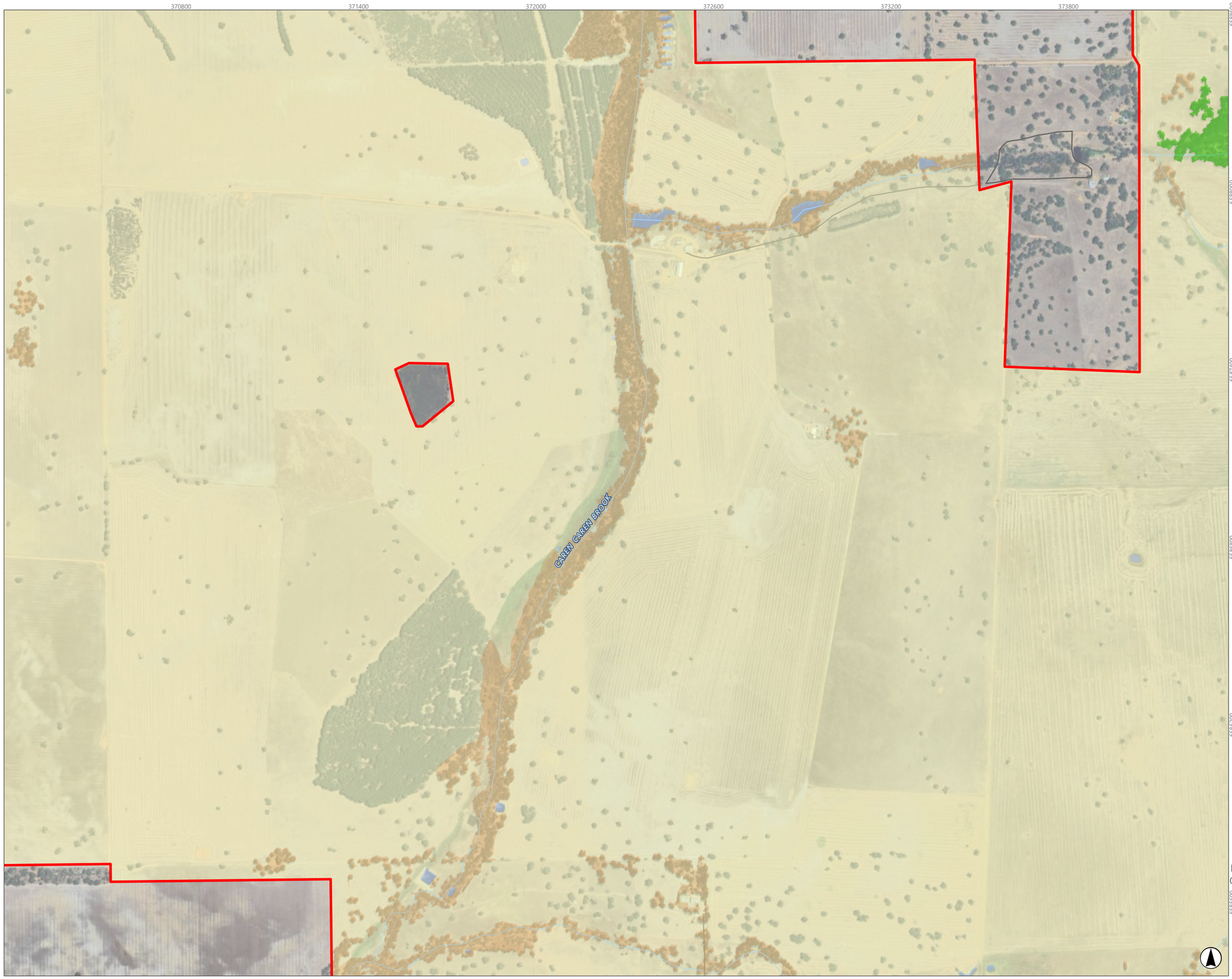
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FIGURE 5.5.14

Vegetation Condition of the Survey Area

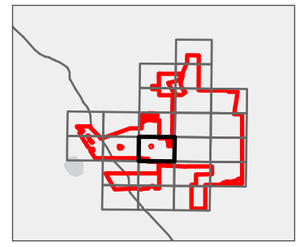


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
GDA2020 MGA Zone 50

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FIGURE 5.5.15

Vegetation Condition of the Survey Area

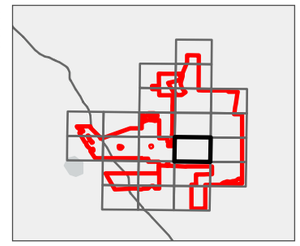


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

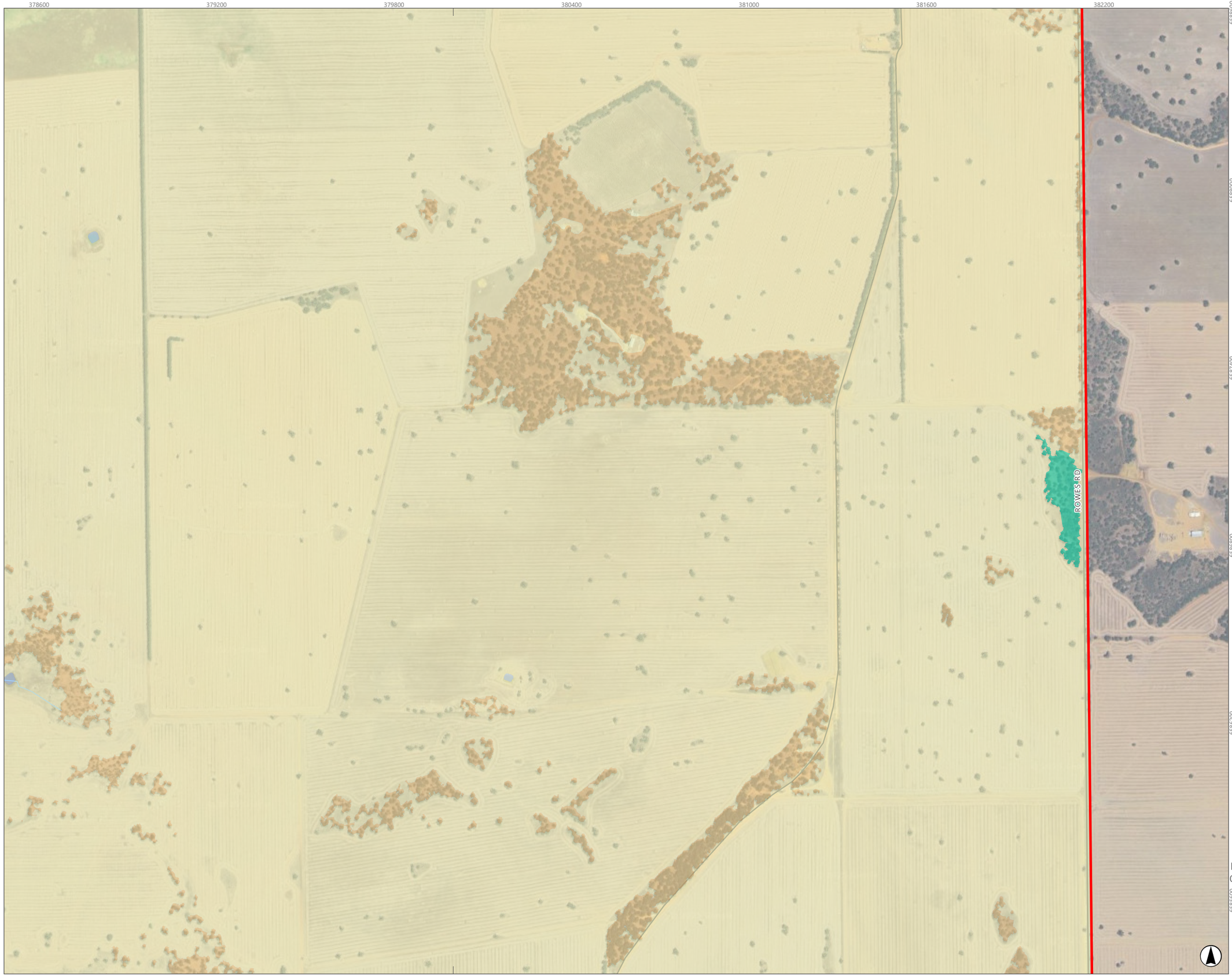
Scale: 1:12,000 at A3
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FIGURE 5.5.16

Vegetation Condition of the Survey Area

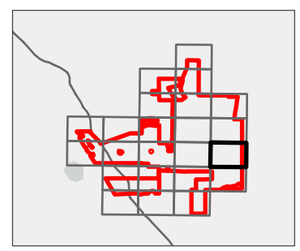


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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366600 367200 367800 368400 369000 369600 370200

6585000
6584400
6583800
6583200
6582600

BRAND HWY

FIGURE 5.5.17

Vegetation Condition of the Survey Area

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA

0 0.3 0.6

Kilometres

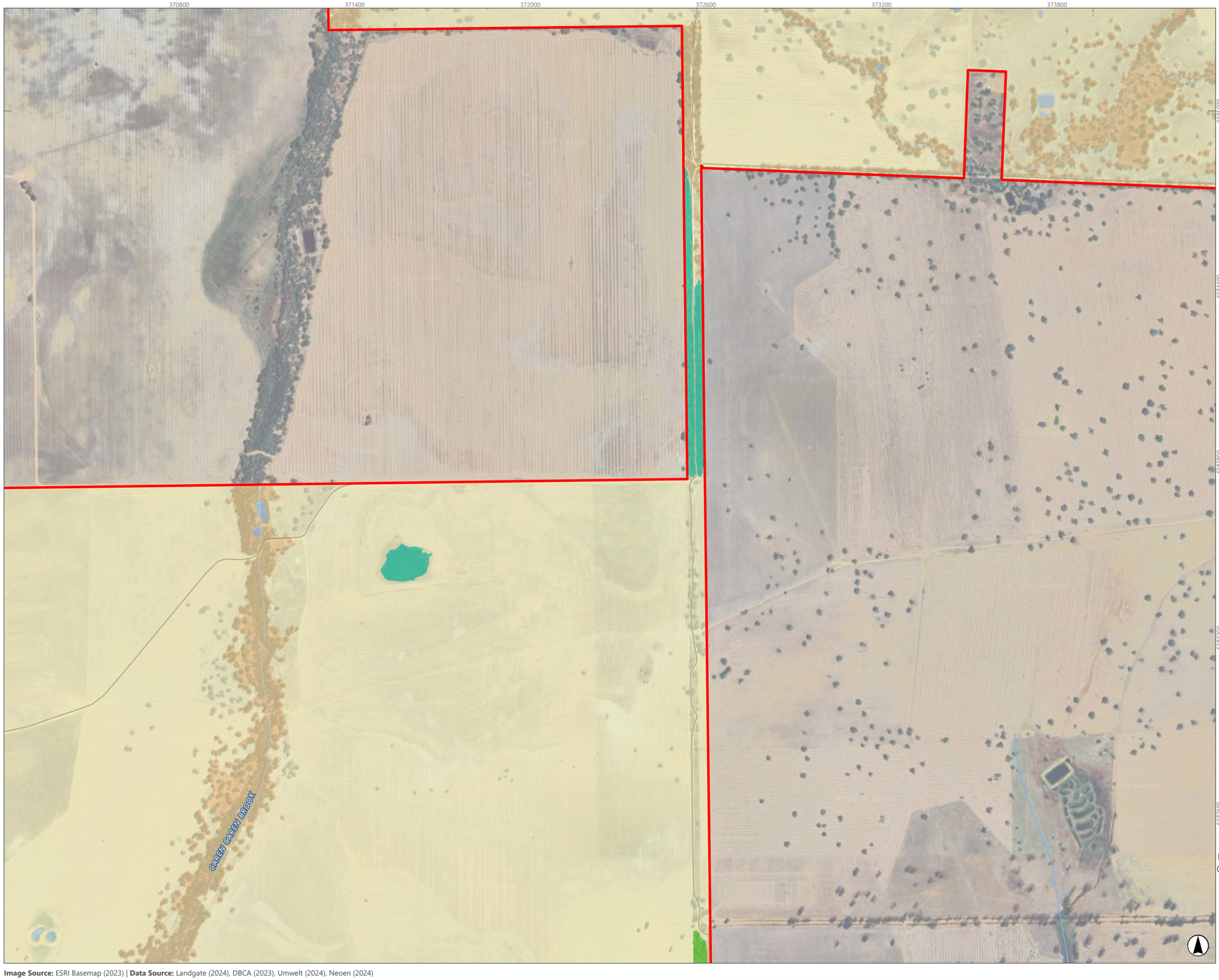
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FIGURE 5.5.18

Vegetation Condition of the Survey Area

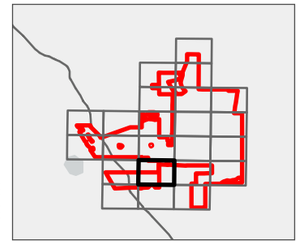


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

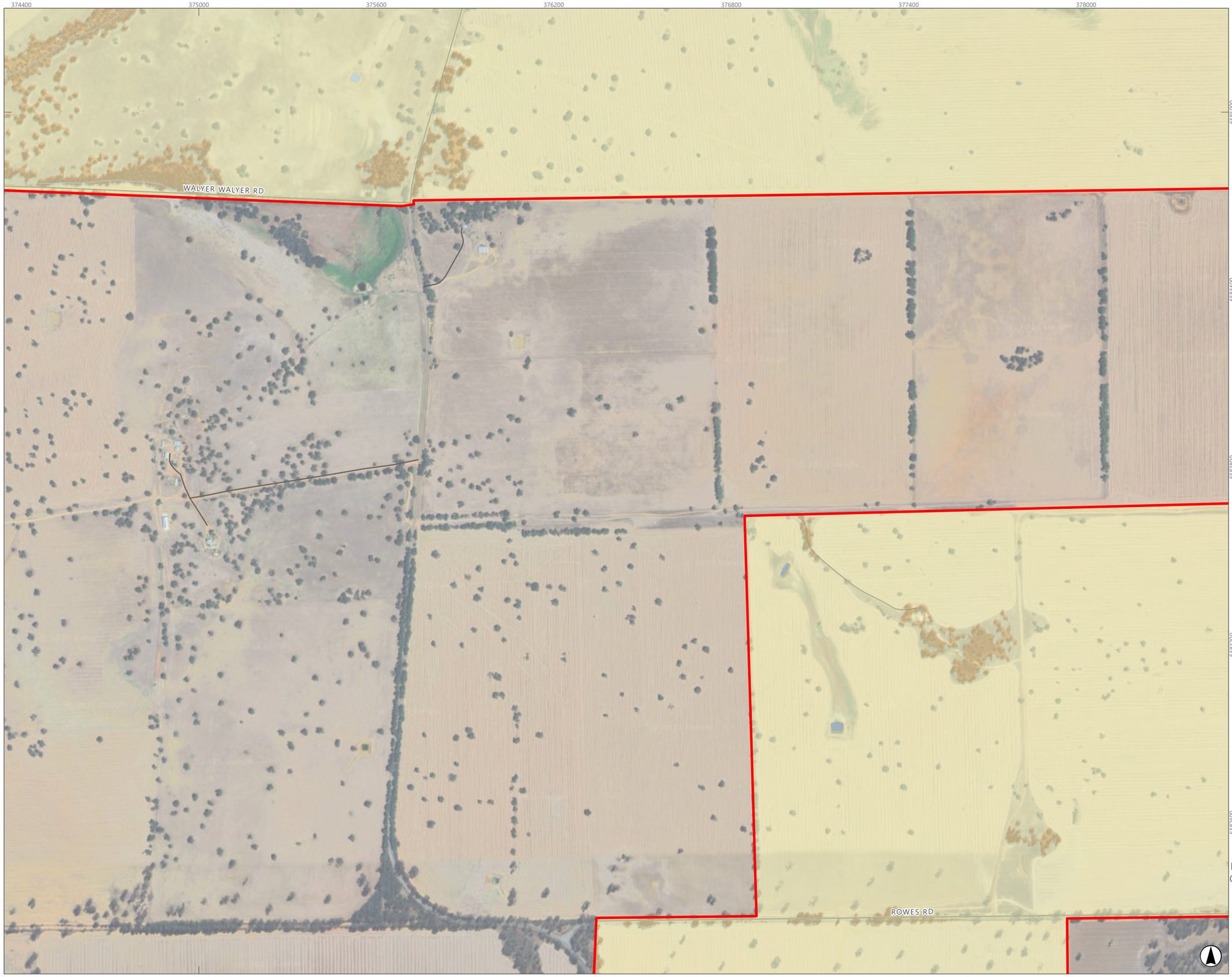
Scale: 1:12,000 at A3
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FIGURE 5.5.19

Vegetation Condition of the Survey Area

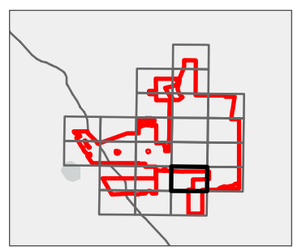


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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FIGURE 5.5.20

Vegetation Condition of the Survey Area

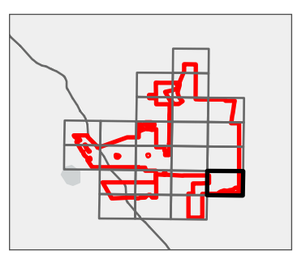


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

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C:\Users\Sarah.Hebbes\AppData\Local\Temp\Temp1_Archive.zip\Project\ID24360_03_SAV\02_Project\ID24360_R03_FloraReport_v2.aprx

umwelt

FIGURE 5.5.21

Vegetation Condition of the Survey Area

366600 367200 367800 368400 369000 369600 370200

6582000 6581400 6580800 6580200 6579600 6579000

CAREN CAREN BROOK

NAMMEGARRA RD

Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA

0 0.3 0.6

Kilometres

Scale: 1:12,000 at A3
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FIGURE 5.5.22

Vegetation Condition of the Survey Area

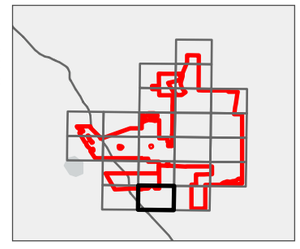


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

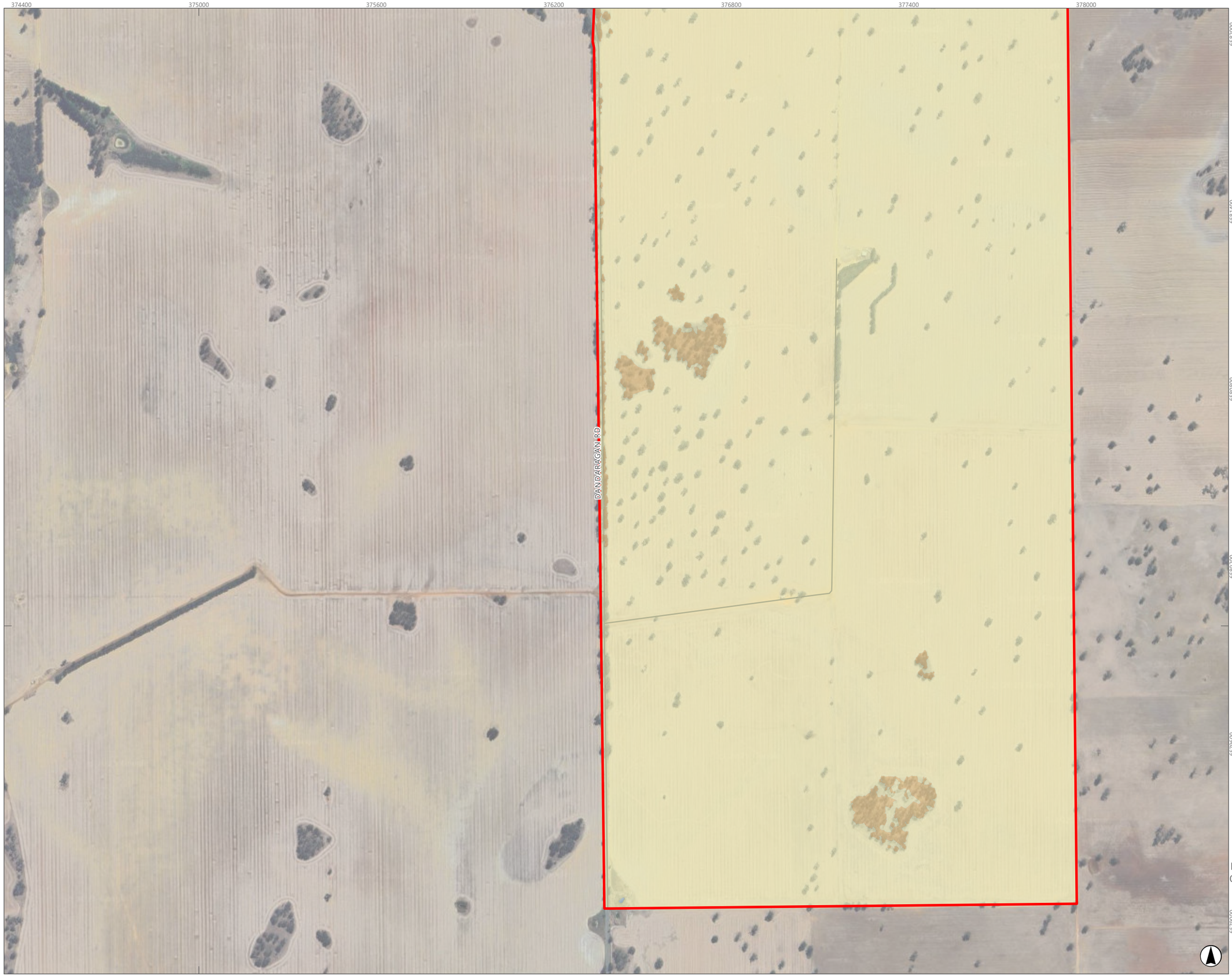
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FIGURE 5.5.23

Vegetation Condition of the Survey Area

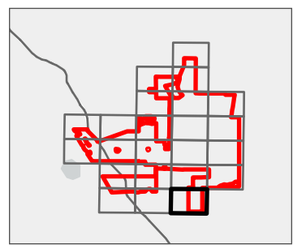


Legend

- Survey Area
- Railway
- Road
- Watercourse

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA



0 0.3 0.6

Kilometres

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5.2.9 Significant Vegetation

5.2.9.1 Listed Significant Vegetation

The desktop assessment identified six listed significant vegetation communities that have records (or could potentially occur) within the Desktop Study Area (**Section 5.1.3**). Of these, the 'Banksia Woodlands of the Swan Coastal Plain' TEC is considered to occur in the Survey Area.

The 'Banksia Woodlands of the Swan Coastal Plain' is listed as a P3 PEC in WA, and as an Endangered TEC under Commonwealth legislation. DBCA state that the description, area and condition thresholds that apply to the EPBC-listed TEC also apply to the PEC (DBCA, 2023b); therefore, these are discussed together in the context of the EPBC-listed TEC. Note that a number of other DBCA-listed TECs and PECs (based on SCP FCTs from the Gibson et al. (1994) study on the southern SCP) also form components of the EPBC-listed TEC; these other communities are discussed in **Section 5.2.9.2**.

The 'Banksia Woodland of the Swan Coastal Plain' TEC is an ecological community largely confined to the Perth and Dandaragan Plateau IBRA subregions of the SCP IBRA region, extending from near Jurien in the north to Dunsborough in the south, as well as in immediately adjacent pockets on the Whicher and Darling Scarps. The TEC is mainly located on the deep Bassendean and Spearwood sands, and occasionally Quindalup sands (typically on the eastern edge), on shallow sands overlying more complex stratigraphic sequences on the foothills of the Ridge Hill Shelf, Whicher Scarp and Gingin/Dandaragan Scarp. This TEC occurs within an annual rainfall band of approximately 535 to 900 mm, often with summer droughts and high temperatures. This strong seasonal variation in climate results in the TEC being a fire-prone environment, and therefore supports species with a range of life history traits that allow them to persist in fire-prone environments (DoEE, 2016).

This TEC was once continuously distributed across a large region. Currently, it is fragmented into numerous small and scattered patches. It was ranked under Criterion 1 (Decline in geographic distribution) as eligible for listing as Vulnerable; under Criterion 2 (small geographic distribution coupled with demonstratable threat) as eligible for listing as Endangered; and under Criterion 4 (Reduction in community integrity) as eligible for listing as Endangered (DoEE, 2016). Critical habitat for the TEC includes all patches that meet the diagnostic characteristics and condition thresholds for the community, as well as buffer zones, particularly where these zones contain native vegetation. Areas that do not meet minimum condition threshold may also be critical to the survival of the TEC depending upon factors such as size and shape and linkages. As of March 2019, approximately 22.5% of the extant extent of the TEC in the Perth IBRA subregion was in lands managed for conservation (IUCN category I-IV reserves) (DoEE, 2016).

The Approved Conservation Advice for this community (DoEE, 2016) stipulates a stepwise process for identifying occurrences of the TEC community, as presented in **Appendix J**. These steps are followed in the context of identifying whether vegetation of the Survey Area represents this TEC, as outlined below.

The first step involves key diagnostic characteristics (location and physical environment, soils and landform, structure, and composition). The Survey Area satisfies the first two key diagnostic characteristics, as it partially occurs within the SCP IBRA bioregion (albeit at the northern end), and contains areas of well drained, low nutrient soils on sandplain landforms. With regard to the remaining two key diagnostic characteristics, only VT2 and VT3 are considered to possess these characteristics, as the vegetation of VT3 almost always has a basic structure that includes a low woodland dominated by *Banksia attenuata* and *Banksia menziesii*. In the case of VT2, *Banksia prionotes* was sometimes dominant, and contains other

emergent trees such as *Eucalyptus todtiana* and/or *Nuytsia floribunda*. The overstorey of both VTs occurs over a relatively diverse understorey that includes sclerophyllous shrubs and a herbaceous ground layer. It is acknowledged that in some of these areas, *Banksia attenuata* and/or *Banksia menziesii* are not dominant, and may occur as isolated trees only, or may be completely absent. However, as outlined in the Approved Conservation Advice under the fourth step of the identification process (further information to assist in determining the presence of the community), this form variation often occurs in patches of the TEC, and therefore does not preclude such areas from being included as part of a larger occurrence of the TEC.

The next steps involve applying condition and size (spatial area) thresholds to potential patches of vegetation that meet the key diagnostic characteristics; a patch is defined as a discrete and mostly continuous area of the TEC, typically with any breaks (i.e. tracks, roads, or vegetation that does not represent the TEC, being less than 30 m in distance). Where there is a break in native vegetation cover from the edge of the tree canopy of 30 m or more (e.g. due to permanent artificial structures, wide roads or other barriers; or due to water bodies typically more than 30 m wide) then the gap typically indicates that separate patches are present. A total of 27 potential patches of the Banksia Woodland TEC were defined within the Survey Area using this definition; this took into account any patches of vegetation that are intersected by the Survey Area boundary but clearly form part of contiguous vegetation outside the Survey Area, determined via aerial imagery interpretation and existing mapped DBCA TEC extents (DBCA, 2024b).

The Approved Conservation Advice then specifies that a patch of the TEC must meet the 'Good' vegetation condition category as per Gibson et al. (1994) to be considered a patch of the TEC under the EPBC Act; this is the same vegetation condition scale presented in EPA Technical Guidance (2016b) that has been used by this current assessment. It then defines minimum patch sizes for each condition rating ('Good' and higher). However, as outlined under the fourth step of the Approved Conservation Advice, it is stipulated that a patch can vary in condition, and can include vegetation with a lower condition rating than Good; such areas may still retain important natural values and may be critical to protecting those portions of a patch that meet the condition threshold. In these cases, the condition rating mapped over the largest portion of the patch was used when assessing the patch against the minimum patch size requirements. DoEE also stipulates that vegetation occurring outside the area of study, in this case the Survey Area, needs to be considered when calculating patch sizes within the area of study, in cases where vegetation outside the area of study is contiguous with that inside. As aforementioned, this was also considered when determining the number and size of potential patches.

The assessment of the 27 potential patches against the key diagnostic characteristics is presented in **Appendix K**. In summary, 13 patches of the TEC are considered to occur within the Survey Area, as presented in **Figure 5.6**; of these, only three patches met both the patch size and vegetation condition criteria, while the remaining 10 patches did not meet the patch size criteria and/or the vegetation condition criteria for their mapped extents in the Survey Area, but they represent vegetation that is contiguous with the occurrence of the TEC immediately outside the Survey Area. The remaining 14 patches do not meet the patch size criteria, and are not considered to contribute significantly to the overall function of the ecological community; they are therefore not considered to be patches of the TEC.

The 13 patches of the TEC comprise a total area of 41.9 ha. No patches (either wholly or partially) of the TEC were considered to be in 'Pristine' or 'Excellent' condition.

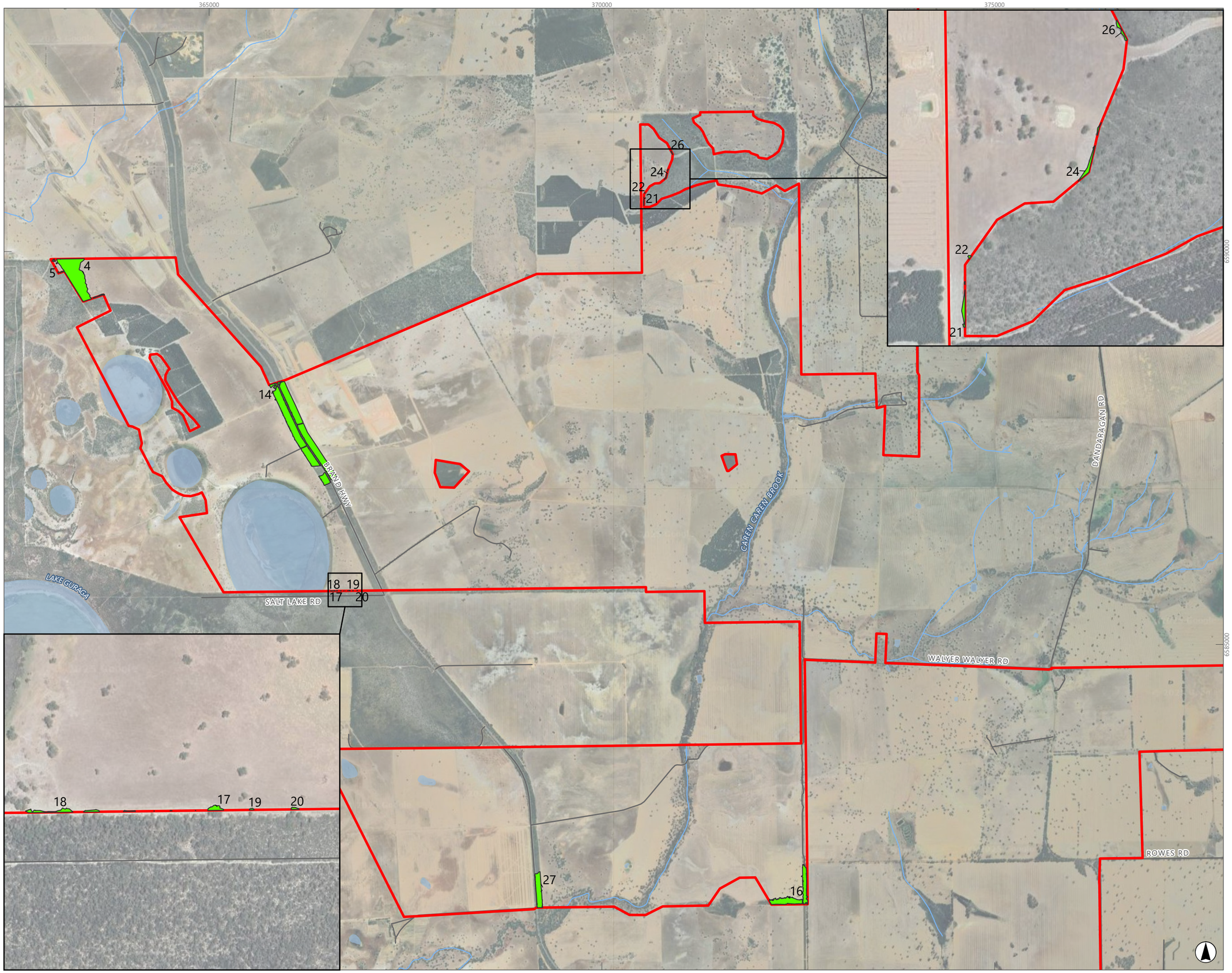
The ‘Banksia Woodlands of the Swan Coastal Plain’ TEC is already known to occur within the Survey Area based on records from DBCA’s TEC and PEC Database (DBCA, 2024b). As mentioned in **Section 5.1.3**, the records provided by this search are generally polygons that were determined by overlaying broad-scale vegetation over remnant vegetation polygons. Ground-truthing by DBCA has not been undertaken to confirm occurrences in this dataset in most cases, and they are therefore considered to be indicative only, with on-ground assessment required to determine the actual extent of the TEC (if it is present at all). Therefore, the TEC as presented in **Figure 5.6** is considered to represent a more accurate extent in the Survey Area than the occurrences contained in DBCA’s TEC and PEC database. Consequently, no attempt has been made to correlate the extent of the TEC as defined above and presented in **Figure 5.6** with DBCA’s occurrences.

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umwelt

FIGURE 5.6

Significant Vegetation of the Survey Area



Legend

- Survey Area
- Railway
- Road
- Watercourse
- Waterbody
- Banksia Woodlands of the Swan Coastal Plain ecological community (TEC – Endangered)

0 1 2

Kilometres

Scale: 1:45,000 at A3
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5.2.9.2 Floristic Community Types of the Swan Coastal Plain

The vegetation described by the study of the southern SCP by Gibson et al. (1994), together with supplementary vegetation description published by the Government of Western Australia (2000) (with the latter dataset being made available by Keighery et al. (2012)), is the current baseline used when assessing the significance of vegetation on the southern SCP (as per DBCA's *Vegetation survey methods and analysis to determine floristic community types on the southern Swan Coastal Plain* (DBCA, 2024d). The vast majority of terrestrial TECs and PECs that occur on the southern SCP are Floristic Community Types (FCTs) described by the Gibson et al. (1994) study. This includes multiple FCTs that form components of the 'Banksia Woodland of the Swan Coastal Plain' and 'Clay pans of the Swan Coastal Plain' TECs.

The quadrat datasets associated with both of these studies sampled throughout the southern SCP, and included some upland sites associated with the Darling Scarp. However, the studies did not go as far north on the SCP as the Survey Area, which is located on the very northeastern end of the SCP. Given the SCP and Geraldton Sandplains regions have a very high turnover of species and vegetation communities, it is highly likely the vegetation of the Survey Area is not well represented in the SCP dataset. Therefore, it is not considered appropriate to undertake floristic analyses with the SCP datasets, or otherwise draw comparisons between the vegetation of the Survey Area and the FCTs of the southern SCP.

5.2.9.3 Other Significant Vegetation

As discussed in **Section 5.2.9.1**, portions of VT2 and VT3 are considered representative of the 'Banksia Woodland of the Swan Coastal Plain' TEC and are consequently considered significant in a regional context. No additional VTs are considered potentially significant in a local and/or regional context for reasons other than formal listing (as per EPA guidance (2016a, 2016b) (**Section 1.2**).

5.2.9.4 Likelihood of Occurrence of Further Significant Vegetation

As discussed in **Section 5.1.3**, six listed significant vegetation communities were identified as potentially occurring in the Desktop Study Area. Of these, the 'Banksia Woodlands of the Swan Coastal Plain' TEC is considered to occur in the Survey Area (**Section 5.2.9.1**). **Table 5.10** presents an assessment of the potential presence of the remaining five significant vegetation communities in the Survey Area.

In summary, none of the remaining five listed significant vegetation communities are considered to occur in the Survey Area, however, two communities are unable to be assessed for presence, for reasons previously discussed in **Section 5.2.9.2.**

Table 5.10 Likelihood of Occurrence of Further Significant Vegetation in the Survey Area

Status (EPBC)	Status (WA)	Description	Nearest Known Location	Comment
Banksia Woodlands of the Swan Coastal Plain ecological community **TEC – Endangered**	Banksia Woodlands of the Swan Coastal Plain PEC – P3	Canopy is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other Banksia species that can dominate in the community are *B. prionotes* or *B. ilicifolia*. It typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands; it is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau and, in other less common scenarios. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this PEC.	Within Survey Area	**Considered to be Present** See **Section 5.2.9.1**.
	SCP23b: Swan Coastal Plain *Banksia attenuata – Banksia menziesii* woodlands PEC – P3	These woodlands occur in the Bassendean system, from Melaleuca Park to Gingin. Occurs in reasonably extensive Banksia woodlands north of Perth.	16 km southeast	**Unable to be assessed for presence** As per **Section 5.2.9.2**, the Survey Area is located north of the range assessed by Gibson et al. (1994) and Keighery et al. (2012). Given the SCP and Geraldton Sandplains regions have a very high turnover of species and vegetation communities, it is highly likely the vegetation of the Survey Area is not well represented in the SCP dataset. Therefore, it is not considered appropriate to undertake floristic analyses with the SCP datasets, or otherwise draw comparisons between the vegetation of the Survey Area and the FCTs of the southern SCP.

Status (EPBC)	Status (WA)	Description	Nearest Known Location	Comment
Clay Pans of the Swan Coastal Plain **TEC – Critically Endangered**	-	The clay pan communities occur where clay substrate is low in the landscape and forms an impermeable layer close to the surface. These wetlands that rely on rainfall and local surface drainage to fill are considered unlikely to be connected to groundwater. The clay pans then dry out to form a relatively impervious substrate in summer. A suite of perennial plants that propagate by underground bulbs, tubers or corms (geophytes), and annual herbs flower sequentially as the clay pans dry out. The clay pans are the most diverse of the SCP wetlands and contain a number of local endemic flora.	NA	**Unable to be assessed for presence** There are no records of this vegetation community in the Desktop Study Area. This TEC corresponds with five separate ecological community types, four of which (SCP07, 08, 09 and 10a) correspond to FCTs on the southern SCP as defined by Gibson et al. (1994), and the fifth being the 'Clay pans with shrubs over herbs' community (117) (DSEWPC, 2012). As discussed in **Section 5.2.9.2**, the SCP FCTs on the southern SCP cannot be assessed for presence in the Survey Area, as the Survey Area is located on the northern SCP, outside the range of the two studies that defined these FCTs. Additionally, no clay pans were recorded within the Survey Area.
Empodisma peatlands of southwestern Australia **TEC - Endangered**	-	The assemblage of plants, animals and other organisms associated with a type of freshwater, peat-based wetland that is found in the High Rainfall Province of the south-west of Western Australia. It is typically a sedgeland to shrubland vegetation complex on peaty substrates that almost always includes the perennial grass-like twig rush *Empodisma gracillimum* (tanglefoot). Empodisma peatlands provide habitat for a diverse range of hydrophilic species, including threatened, regionally endemic, and relictual flora and fauna species.	NA	**Not considered to be present** There are no records of this vegetation community in the Desktop Study Area. The key diagnostics in the Approved Conservation Advice (DCCEEW, 2023b) are not satisfied by the vegetation within the Survey Area, as *Empodisma gracillimum* was not recorded by the 2024 survey.

Status (EPBC)	Status (WA)	Description	Nearest Known Location	Comment
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion **TEC – Critically Endangered**	*Melaleuca huegelii – M. systena* shrublands of limestone ridges (floristic community type 26a as originally described in Gibson et al. 1994) TEC	The community is known from shallow soils over limestone or massive limestone ridges of Tamala Limestone between Yanchep north of Perth, and south of Perth near Lake Clifton. The community generally comprises species-rich thickets, heaths and scrubs dominated by *Melaleuca huegelii* (chenille honeymyrtle), *Melaleuca systena* (coastal honeymyrtle) and *Banksia sessilis* (parrot bush), commonly over *Grevillea preissii* (spider net grevillea), *Spyridium globulosum* (basket bush), and *Acacia lasiocarpa* (pajang). A suite of herbs commonly occurs under the shrub layer.	NA	**Not considered to be present** There are no records of this vegetation community in the Desktop Study Area. The key diagnostic characteristics in the Approved Conservation Advice (DCCEEW, 2023a) are not satisfied by the vegetation within the Survey Area, as none of the VTs have shrub layers dominated by *Melaleuca huegelii* or *Melaleuca systena*. Additionally, the Survey Area is located north of Yanchep, which is the northern boundary of this TEC.
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community **TEC – Critically Endangered**	Tuart (*Eucalyptus gomphocephala*) Woodlands of the Swan Coastal Plain PEC - P3	Mostly confined to Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa*, *Banksia grandis, Banksia attenuata, Eucalyptus marginata;* and less commonly, *Corymbia calophylla, Banksia menziesii* and *Banksia prionotes*. An understorey of native plants is typically present, which may include grasses, herbs and shrubs. The description, area and condition thresholds that apply to the EPBC-listed TEC of the same name, also apply to this Priority ecological community.	NA	**Not considered to be present** There are no records of this vegetation community in the Desktop Study Area. This TEC/PEC is strongly associated with calcareous soils of the western part of the SCP, including those very close to the coast (DoEE, 2019); soils matching this description were not observed in the Survey Area, and do not correlate with the soil landscape mapping for the Survey Area (**Section 2.2**). The Approved Conservation Advice for this community (DoEE, 2019) lists key diagnostic criteria that must be met in order for patches of vegetation to be considered part of this TEC. The first criterion states that the patch of vegetation must occur within the SCP IBRA bioregion; therefore, this criterion is met. The second criterion relates to soils and landform.

Status (EPBC)	Status (WA)	Description	Nearest Known Location	Comment
				The community primarily occurs on the Spearwood and Quindalup dune systems, but can also occur on the Bassendean dunes, the Pinjarra Plain, and on the banks of rivers and wetlands. Part of the Survey Area occurs on the Bassendean system (**Section 2.2**), and therefore this criterion is met. The third criterion, and the primary defining feature of the community, relates to the presence and density of *Eucalyptus gomphocephala* trees. This species was recorded in the Survey Area, however at only one location where it was planted with *Eucalyptus camaldulensis* along a private driveway. Although this satisfies the third criterion, this patch of vegetation does not meet condition and patch size requirements. The mapped extent of this vegetation is 1.9 ha, in 'Poor' condition (as per the scale presented by DoEE (2019)). Thus, the criterion is not met, and the TEC is not considered to occur.

6.0 Conclusions and Recommendations

A Reconnaissance flora and vegetation assessment was completed for the Project over the Survey Area, with Detailed and Targeted assessments conducted within the D&T Survey Area only. The assessments provide a broad understanding of the ecological values and potential constraints in the area. The assessment mapped and described VTs and vegetation condition across the Survey Area, and identified the likelihood of significant flora and vegetation occurring in both the D&T Survey Area and the broader Survey Area.

Conclusions and recommendations from this assessment are summarised below:

- The majority of the Survey 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 represent intact remnant vegetation. The vegetation condition of these areas was 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).

- Areas where natural vegetation has been completely and apparently permanently removed, with no (or very scattered) native taxa remaining, were mapped as 'PD' (Paddocks and Infrastructure) where discernible at 1:5,000 scale. This includes paddocks, tracks, firebreaks, roads and infrastructure. A total of 14,228.1 ha of PD was mapped, representing 89.9% of the Survey Area. Small areas of vegetation were also mapped as PE (Planted Eucalyptus), PP (Pine Plantations), and TP (Tagasaste and Grape Plantations), representing a total of 301.4 ha (1.9%) of the Survey Area.

- A total of eight Vegetation Types (VTs) were identified in the Survey Area by the Detailed and Reconnaissance survey (four determined by the floristic classification analysis, and four determined by additional reconnaissance data). VT4 represents the largest portion of remnant vegetation in the Survey Area (4.7%). The second largest VT is VT1, covering 1.6% of the Survey Area, and the third largest is VT3 at 0.5%.

- A Targeted flora and vegetation survey was conducted systematically within the D&T Survey Area. A total of five significant flora taxa were located during the targeted surveys. One of these taxa (*Grevillea curviloba* (T)) is considered to be planted or a garden escape, as it is not known from the area, and was found in a patch of disturbed vegetation. Another taxon (*Poranthera moorokatta* (P2)) was not returned by the desktop assessment. All significant flora taxa were located within the Brand Highway road verges, with the exception of one occurrence of *Haemodorum loratum* (P3) located on remnant vegetation in the southwest of the Survey Area.

- A dual likelihood of occurrence assessment was completed for the remaining 173 significant flora taxa returned by the desktop assessment, with all 173 considered to be unlikely to occur within the D&T Survey Area. Seventy-seven of these taxa may possibly occur within the broader Survey Area, where a Targeted assessment was not completed, although it should be noted that none of these significant taxa were found within areas of Very Good and Good vegetation, and the remainder of the Survey Area is primarily Degraded or Completely Degraded. The remaining 96 taxa are considered unlikely to occur.

- A total of 13 patches of the Banksia Woodlands of the Swan Coastal Plain TEC were identified by the 2024 survey, totalling 41.9 ha. All patches occur within mapped areas of VT2 and VT3, and are in either 'Good' or 'Degraded' condition. Those that are in 'Degraded' condition are considered to be contiguous with adjacent vegetation located outside the Survey Area that is representative of the TEC. The patches of 'Good' condition form parts of the Brand Highway road verges, as well as Walyoo Road. No other significant vegetation is considered to occur within the Survey Area.

- Impact to vegetation mapped as 'Very Good' and 'Good' condition in the Survey 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 the relatively scarcity of vegetation in 'Good' or better condition in the Survey Area and general landscape.

- Remnant 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 extents remaining, and provides ecological linkages for terrestrial fauna and bird species. Clearing of any native vegetation in WA, 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 'IT' (Isolated Trees and Shrubs), and 'PD' (Paddocks and Infrastructure).

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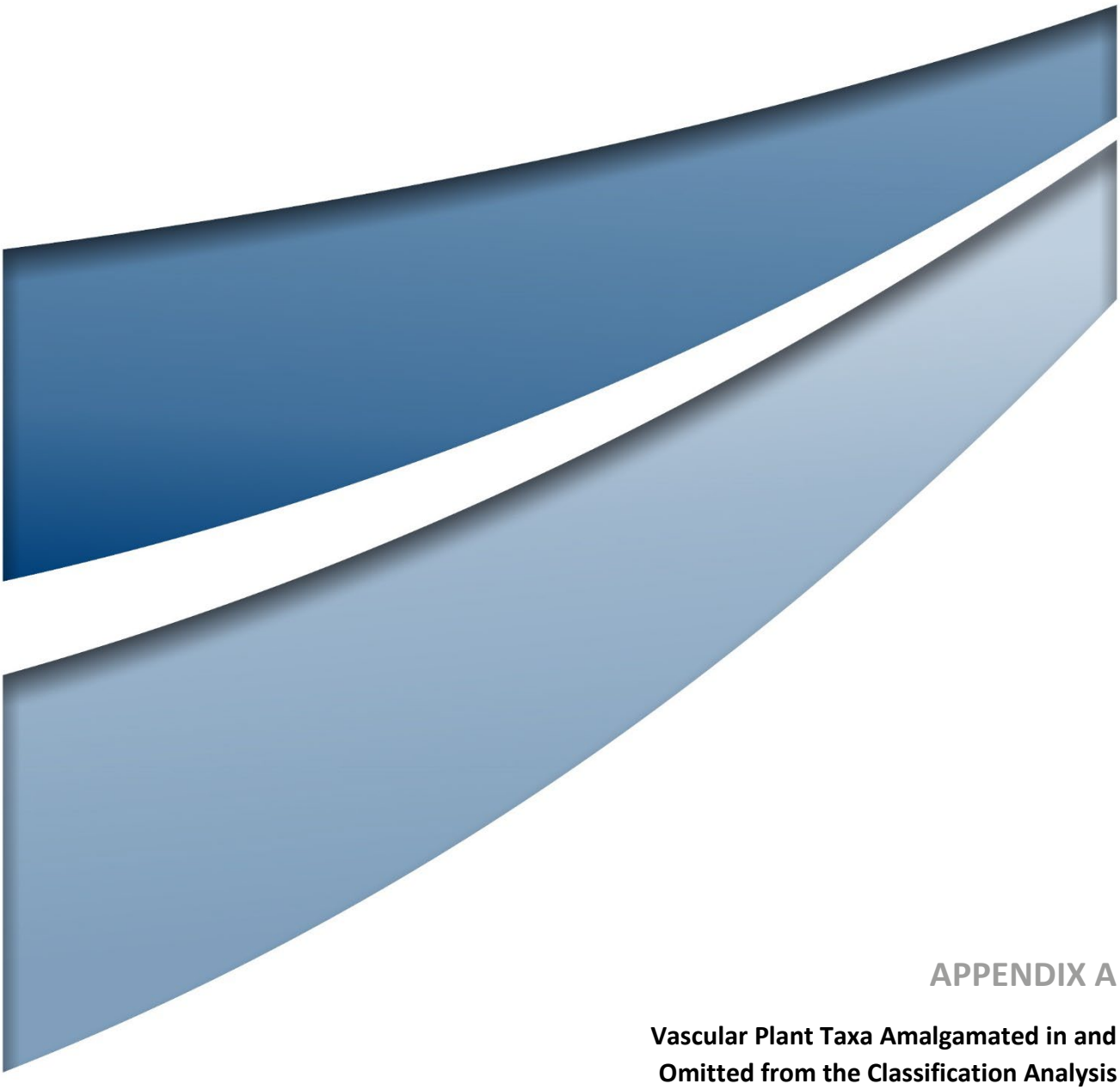
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APPENDIX A

Vascular Plant Taxa Amalgamated in and Omitted from the Classification Analysis

Table A.1 Flora Taxa Amalgamated in the Floristic Classification Analysis

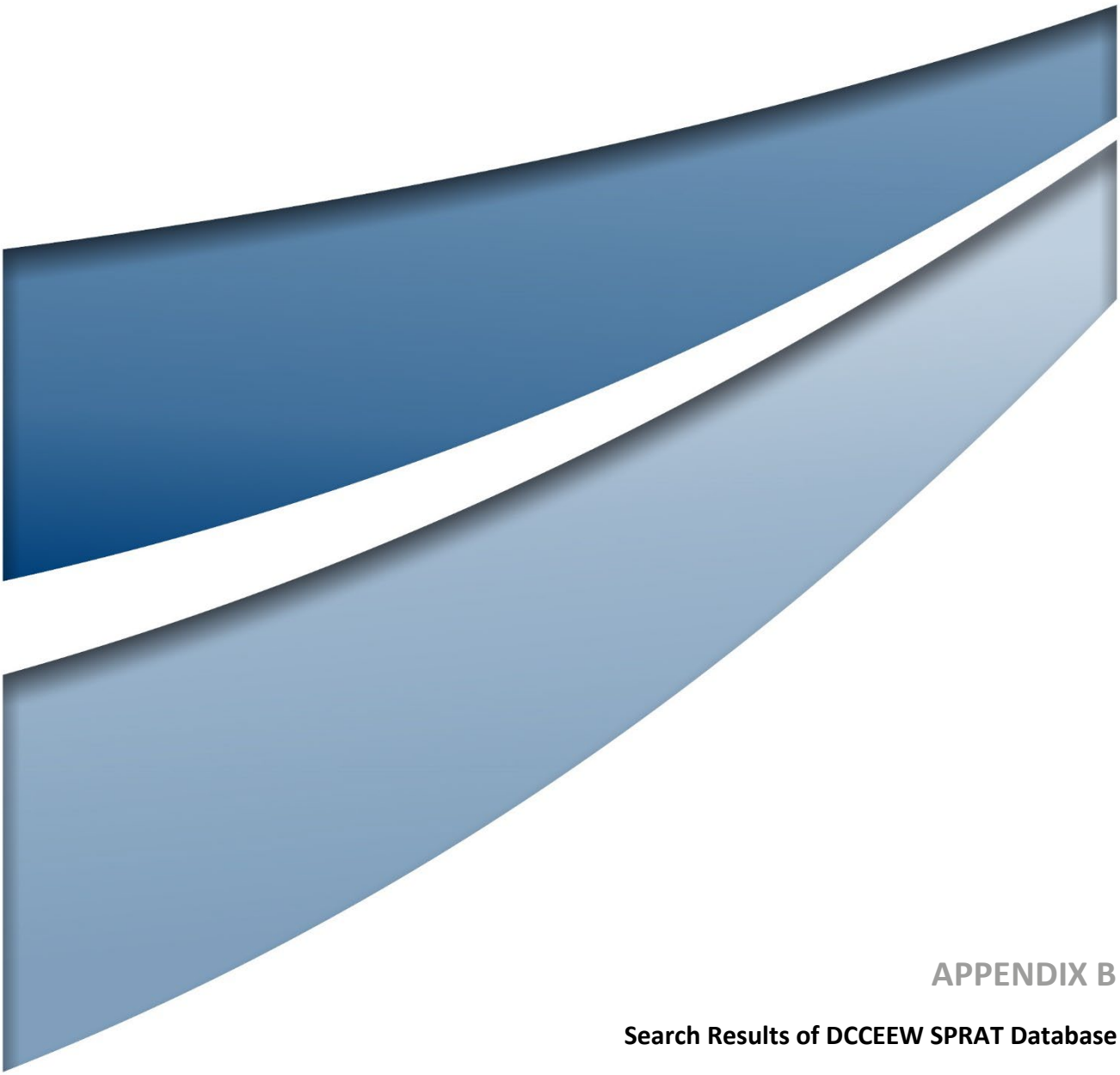
Taxa	Reason for Amalgamation
Acacia pulchella ***Acacia pulchella* var. *glaberrima***	Likely represent the same entity
Caladenia flava ***Caladenia flava* subsp. *flava***	Likely represent the same entity
Calothamnus quadrifidus ***Calothamnus quadrifidus* subsp. *quadrifidus***	Likely represent the same entity
Daviesia nudiflora ***Daviesia nudiflora* subsp. *nudiflora***	Likely represent the same entity
Eremaea pauciflora ***Eremaea pauciflora* var. *lonchophylla*** ***Eremaea pauciflora* var. ?*lonchophylla***	Varieties are difficult to distinguish if material is inadequate, however these also likely represent the same entity
Hibbertia hypericoides ***Hibbertia hypericoides* subsp. *hypericoides***	Likely represent the same entity
Thysanotus manglesianus ***Thysanotus patersonii***	Taxa can be difficult to distinguish when material is inadequate
Tricoryne elatior ***Tricoryne ?elatior***	Likely represent the same entity

Note: **Table A.2** does not include taxa belonging to the following categories that were removed prior to the classification analysis (as per **Section 3.6**):

- Introduced taxa
- Hybrids
- Singletons.

Table A.2 Flora Taxa Omitted from the Floristic Classification Analysis

Taxon	Reason for Omission
?Goodeniaceae sp.	Indeterminate
***Microtis* sp.**	Indeterminate
***Pterostylis* sp.**	Indeterminate



APPENDIX B

Search Results of DCCEEW SPRAT Database

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: 10-Apr-2024

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

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	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	54
Listed Migratory Species:	11

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:	4
Commonwealth Heritage Places:	1
Listed Marine Species:	16
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:	19
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	17
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	In buffer area only
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In buffer area only
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community may occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Leipoa ocellata](#) Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
[Zanda latirostris listed as Calyptorhynchus latirostris](#) Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Species or species habitat known to occur within area	In feature area
FISH			
[Nannatherina balstoni](#) Balston's Pygmy Perch [66698]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
[Dasyurus geoffroii](#) Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Parantechinus apicalis](#) Dibbler [313]	Endangered	Species or species habitat may occur within area	In feature area
PLANT			
[Acacia forrestiana](#) Forest's Wattle [17235]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Acacia splendens](#) Splendid Wattle, Dandaragan Wattle [81510]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Andersonia gracilis](#) Slender Andersonia [14470]	Endangered	Species or species habitat known to occur within area	In feature area
[Anigozanthos viridis subsp. terraspectans](#) Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Asterolasia nivea](#) Bindoon Starbush [8225]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Banksia fuscobractea](#) Dark-bract Banksia [83059]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Banksia mimica](#) Summer Honeypot [82765]	Endangered	Species or species habitat known to occur within area	In feature area
[Banksia serratuloides subsp. perissa](#) Northern Serrate Dryandra [82767]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Banksia serratuloides subsp. serratuloides](#) Southern Serrate Dryandra [82768]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Caleana dixonii listed as Paracaleana dixonii](#) Sandplain Duck Orchid [87944]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chamelaucium lullfitzii listed as Chamelaucium sp. Gingin (N.G.Marchant 6)			
Gingin Wax [92777]	Endangered (listed as Chamelaucium sp. Gingin	Species or species habitat likely to occur within area	In feature area
Chamelaucium sp. Cataby (G.J.Keighery 11009)			
Griffin's Waxflower [82509]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Conospermum densiflorum subsp. unicephalatum			
One-headed Smokebush [64871]	Endangered	Species or species habitat likely to occur within area	In feature area
Darwinia acerosa			
Fine-leaved Darwinia [9004]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Darwinia carnea			
Mogumber Bell, Narrogin Bell [9736]	Endangered	Species or species habitat may occur within area	In buffer area only
Daviesia dielsii			
Diels' Daviesia [19617]	Endangered	Species or species habitat may occur within area	In buffer area only
Drakaea elastica			
Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	In feature area
Eleocharis keigheryi			
Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eremophila scaberula			
Rough Emu Bush [16729]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus absita			
Badgingarra Box [24260]	Endangered	Species or species habitat may occur within area	In buffer area only
Eucalyptus dolorosa			
Dandaragan Mallee, Mount Misery Mallee [56709]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus leprophloia Scaly Butt Mallee, Scaly-butt Mallee [56712]	Endangered	Species or species habitat may occur within area	In feature area
Eucalyptus pruiniramis Midlands Gum, Jingymia Gum [56403]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Goodenia arthrotricha [12448]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grevillea calliantha Foote's Grevillea, Cataby Grevillea, Black Magic Grevillea [56339]	Endangered	Species or species habitat known to occur within area	In buffer area only
Grevillea christineae Christine's Grevillea [64520]	Endangered	Species or species habitat may occur within area	In buffer area only
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area	In buffer area only
Hakea megalosperma Lesueur Hakea [10505]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hemiandra gardneri Red Snakebush [7945]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucopogon obtectus Hidden Beard-heath [19614]	Endangered	Species or species habitat may occur within area	In buffer area only
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat known to occur within area	In feature area
Ptychosema pusillum Dwarf Pea [11268]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Spirogardnera rubescens			
Spiral Bush [15667]	Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra dedmaniarum			
Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra stellata			
Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Egernia stokesii badia			
Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area	In feature area
Pseudemydura umbrina			
Western Swamp Tortoise [1760]	Critically Endangered	Translocated population known to occur within area	In buffer area only
SHARK			
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In buffer area only
SPIDER			
Idiosoma nigrum			
Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Defence		

Commonwealth Land Name	State	Buffer Status
Defence - LANCELIN - AIR SAFETY MARKER [50236]	WA	In buffer area only
Unknown		
Commonwealth Land - [52217]	WA	In buffer area only
Commonwealth Land - [52001]	WA	In feature area
Commonwealth Land - [52118]	WA	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Natural			
Lancelin Defence Training Area	WA	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In buffer area only
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Thinornis cucullatus as Thinornis rubricollis](#) Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bashford	Nature Reserve	WA	In buffer area only
Bundarra	Nature Reserve	WA	In buffer area only
Dandarangan	NRS Addition - Gazettal in Progress	WA	In buffer area only
Eneminga	Nature Reserve	WA	In buffer area only
Jam Hill	Nature Reserve	WA	In buffer area only
Minyulo	Nature Reserve	WA	In buffer area only
Moochamulla	Nature Reserve	WA	In buffer area only
Moore River	National Park	WA	In buffer area only
Namming	Nature Reserve	WA	In buffer area only
NTWA Bushland covenant (0048)	Conservation Covenant	WA	In buffer area only
NTWA Bushland covenant (0057)	Conservation Covenant	WA	In buffer area only
Quins Hill	Nature Reserve	WA	In buffer area only
South Mimegarra	Nature Reserve	WA	In buffer area only
Unnamed WA21164	5(1)(g) Reserve	WA	In buffer area only
Unnamed WA25591	Nature Reserve	WA	In buffer area only
Unnamed WA27993	Nature Reserve	WA	In buffer area only
Unnamed WA39571	Nature Reserve	WA	In buffer area only
Unnamed WA46899	Nature Reserve	WA	In buffer area only
Unnamed WA47808	Nature Reserve	WA	In buffer area only

Nationally Important Wetlands

[Resource Information]

Wetland Name	State	Buffer Status
Guraga Lake	WA	In buffer area only
Karakin Lakes	WA	In buffer area only

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Bidaminna Project	2022/09360		Assessment	In buffer area only
Caravel Copper Project	2022/09422		Assessment	In buffer area only
Waddi Wind Farm	2023/09639		Assessment	In buffer area only
Controlled action				
Brand Highway Widening and Passing Lanes Project 34.83-164.3 SLK	2017/7864	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Agricultural Lime Sands Route Upgrade, near Calingiri, WA	2019/8609	Not Controlled Action	Completed	In buffer area only
Brand Hway road formation and seal widening, WA	2016/7740	Not Controlled Action	Completed	In buffer area only
Development of the Dandaragan Wind Farms	2011/6006	Not Controlled Action	Completed	In feature area
Extension of horticulture Farming	2012/6318	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Nilgen Wind Farm	2009/4694	Not Controlled Action	Completed	In buffer area only
Northern Looping project, Karratha to Gingin	2005/2251	Not Controlled Action	Completed	In buffer area only
Upgrade of Orange Springs Road	2019/8478	Not Controlled Action	Completed	In buffer area only
Waddi Wind and Solar Farm, near Dandaragan, WA	2018/8352	Not Controlled Action	Completed	In buffer area only
Walyering 3D Seismic Survey, Cataby, WA	2017/7982	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Mineral Sands Mine	2005/2001	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Transmission Line Rebuild and Extension	2009/5105	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Transmission Line Rebuild and Extension	2009/4972	Referral Decision	Completed	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

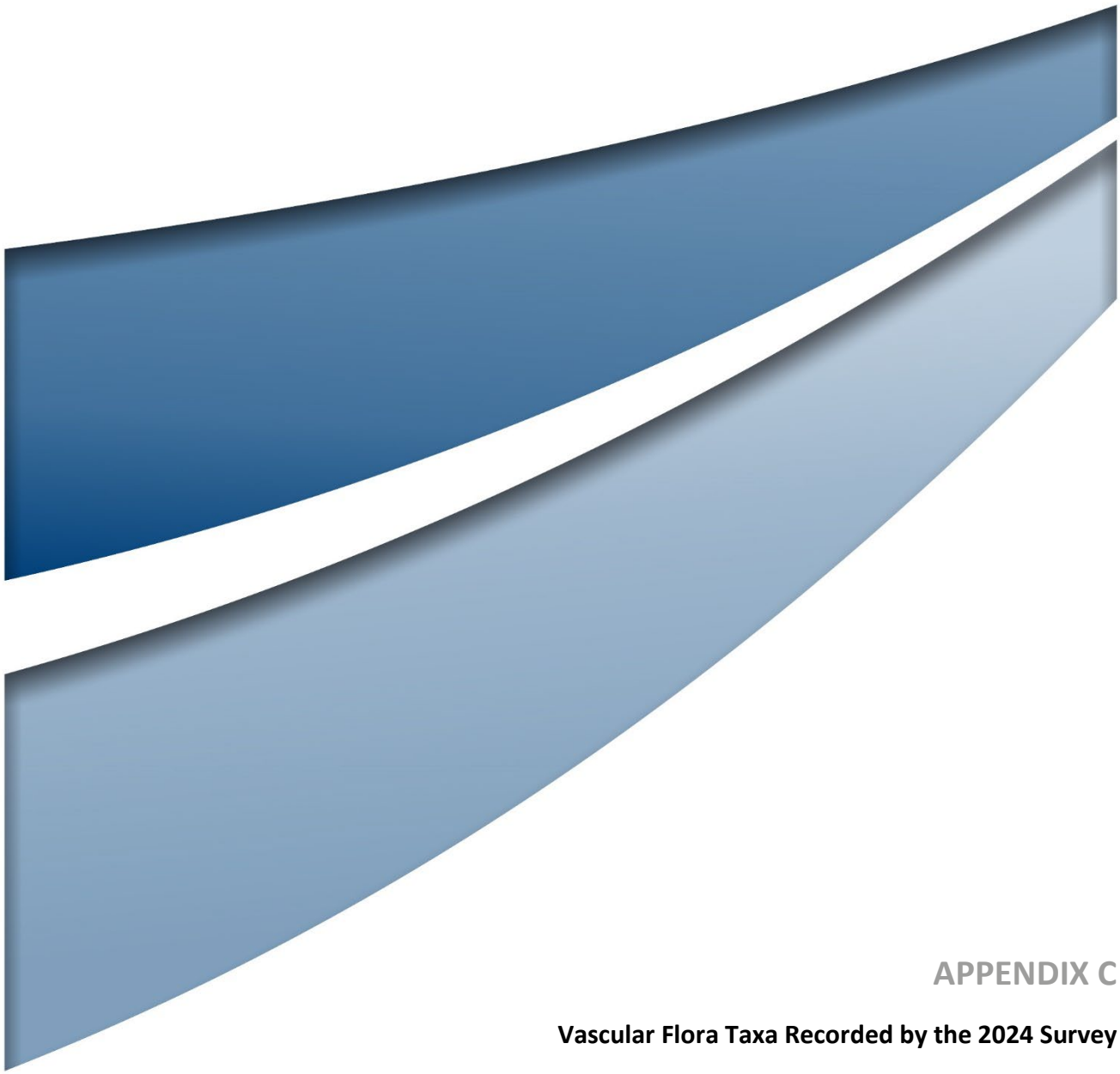
This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

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

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

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Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111



APPENDIX C

Vascular Flora Taxa Recorded by the 2024 Survey

Family	Taxon
Amaranthaceae	*Ptilotus manglesii*
	**Ptilotus polystachyus*
Anarthriaceae	*Lyginia imberbis*
Apiaceae	*Xanthosia huegelii*
Araceae	**Zantedeschia aethiopica*
Araliaceae	*Hydrocotyle callicarpa*
	Trachymene pilosa
Asparagaceae	*Acanthocarpus preissii*
	Lomandra caespitosa
	Lomandra hermaphrodita
	Lomandra micrantha subsp. *micrantha*
	Lomandra preissii
	Thysanotus ?*dichotomus*
	Thysanotus ?*multiflorus*
	Thysanotus manglesianus
	Thysanotus patersonii
	Thysanotus sp. Coastal plain (N.H. Brittan 66/63)
	Thysanotus sparteus
	Thysanotus patersonii
Asteraceae	**Arctotheca calendula*
	**Hypochaeris glabra*
	**Lactuca serriola*
	**Sonchus oleraceus*
	**Ursinia anthemoides* subsp. *anthemoides*
	Brachyscome ?*iberidifolia*
	Hyalosperma cotula
	Olearia paucidentata
	Panaetia lessonii
	Podolepis aristata subsp. *aristata*
	Podotheca angustifolia
	Podotheca gnaphalioides
	Pterochaeta paniculata
	Rhodanthe citrina
	Rhodanthe laevis
	Waitzia suaveolens var. *suaveolens*
Campanulaceae	**Wahlenbergia capensis*
	Wahlenbergia preissii
Caryophyllaceae	**Petrorhagia dubia*
	**Polycarpon tetraphyllum*

Family	Taxon
Casuarinaceae	*Allocasuarina humilis*
	Casuarina obesa
Celastraceae	*Stackhousia pubescens*
	Tripterococcus brunonis
Centrolepidaceae	*Centrolepis drummondiana*
Colchicaceae	*Burchardia congesta*
Crassulaceae	*Crassula colorata*
	Crassula closiana
Cyperaceae	**Ficinia marginata*
	Ammothryon grandiflorum
	Lepidosperma apricola
	Lepidosperma cf. *pubisquameum*
	Lepidosperma longitudinale
	Machaerina juncea
	Machaerina preissii
	Mesomelaena pseudostygia
	Mesomelaena tetragona
	Morelotia octandra
	Schoenus brevisetis
	Schoenus clandestinus
	Schoenus nanus
	Schoenus pleiostemoneus
	Schoenus subfascicularis
Dilleniaceae	*Hibbertia hypericoides* subsp. *hypericoides*
	Hibbertia racemosa
	Hibbertia striata
Droseraceae	*Drosera eneabba*
	Drosera erythrorhiza
	Drosera glanduligera
	Drosera menziesii
	Drosera pallida
Ericaceae	*Conostephium pendulum*
	Styphelia retrorsa
	Styphelia serratifolia
	Styphelia erubescens
Fabaceae	**Acacia iteaphylla*
	**Lotus subbiflorus*
	**Ornithopus compressus*
	**Trifolium campestre* var. *campestre*
	Acacia blakelyi

Family	Taxon
	Acacia costata
	Acacia pulchella var. *glaberrima*
	Acacia saligna
	Acacia stenoptera
	Acacia auronitens
	Bossiaea eriocarpa
	Chamaecytisus palmensis
	Daviesia angulata
	Daviesia decurrens
	Daviesia divaricata subsp. *divaricata*
	Daviesia nudiflora subsp. *nudiflora*
	Gompholobium tomentosum
	Isotropis cuneifolia
	Jacksonia floribunda
	Jacksonia furcellata
	Jacksonia nutans
	Jacksonia sternbergiana
	Kennedia prostrata
	Mirbelia trichocalyx
Geraniaceae	**Erodium botrys*
Goodeniaceae	*Goodenia berardiana*
	Goodenia convexa
	Goodenia reinwardtii
	Lechenaultia biloba
	Lechenaultia linarioides
	Scaevola canescens
Gyrostemonaceae	*Gyrostemon subnudus*
Haemodoraceae	*Anigozanthos humilis* subsp. *humilis*
	Conostylis aculeata subsp. *aculeata*
	Conostylis androstemma
	Conostylis aurea
	Conostylis candicans
	Conostylis teretifolia subsp. *teretifolia*
	Haemodorum laxum
	Haemodorum loratum (P4)
	Haemodorum paniculatum
	Haemodorum spicatum
	Haemodorum venosum
Hemerocallidaceae	*Caesia* sp. Wongan (K.F. Kenneally 8820*)*
	Chamaescilla corymbosa

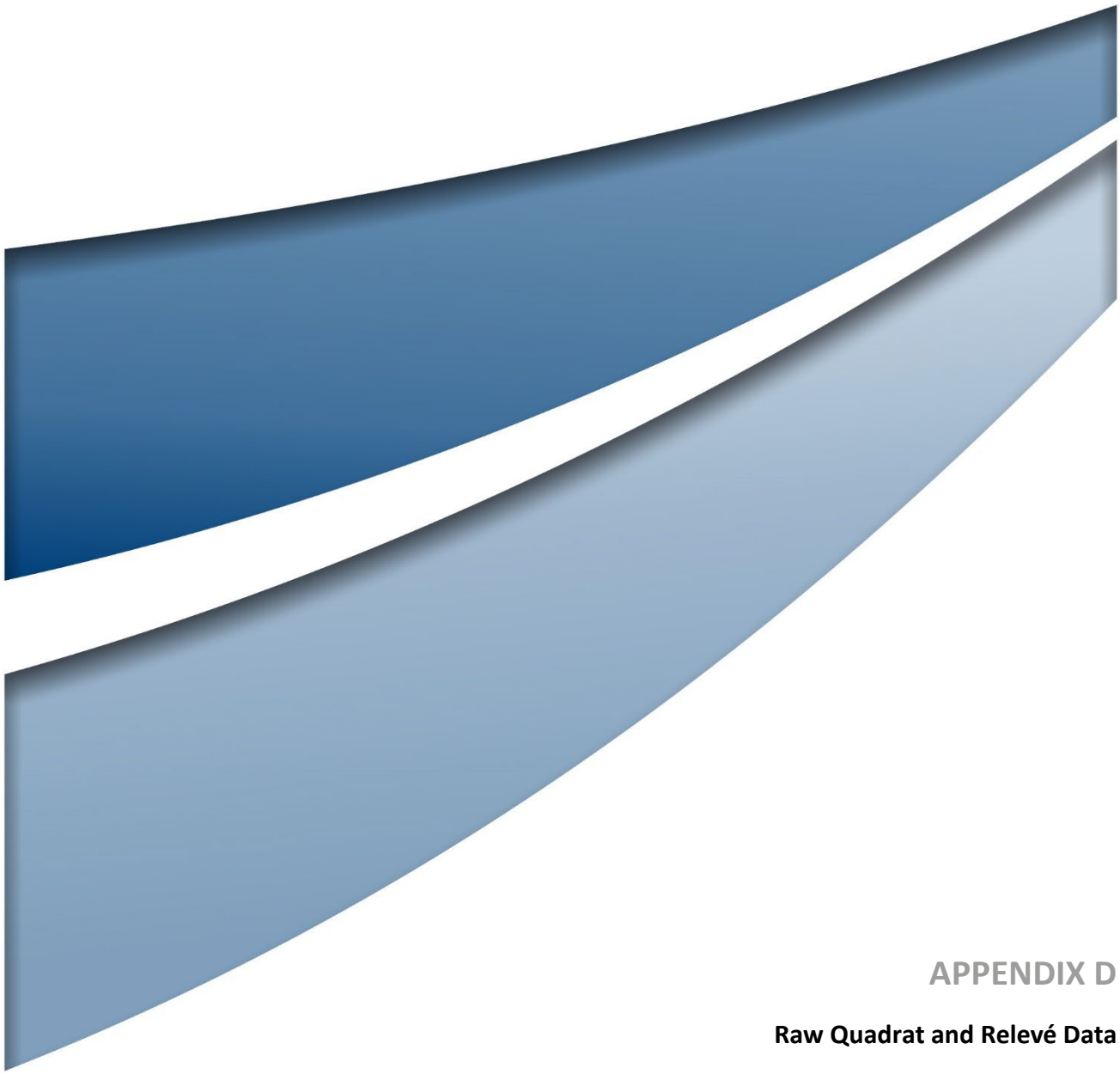
Family	Taxon
	Dianella revoluta
	Sowerbaea laxiflora
	Tricoryne elatior
Iridaceae	**Gladiolus caryophyllaceus*
	**Romulea rosea*
	Orthrosanthus laxus var. *laxus*
	Patersonia occidentalis
Juncaceae	**Juncus acutus* subsp. *acutus*
	Juncus pallidus
Lamiaceae	**Mentha* sp.
Loganiaceae	*Orianthera spermacocea*
	Phyllangium divergens
Loranthaceae	*Amyema miquelii*
	Nuytsia floribunda
Malvaceae	*Guichenotia sarotes*
Montiaceae	*Calandrinia corrigioloides*
	Calandrinia granulifera
Myrtaceae	^*Corymbia maculata*
	^*Eucalyptus sideroxylon*
	^*Agonis flexuosa*
	^*Callistemon* sp.
	^*Eucalyptus camaldulensis*
	^*Eucalyptus gomphocephala*
	^*Eucalyptus occidentalis*
	Apectospermum spinescens
	Babingtonia camphorosmae
	Babingtonia grandiflora
	Calothamnus hirsutus
	Calothamnus quadrifidus subsp. *quadrifidus*
	Calothamnus sanguineus
	Calytrix ecalycata subsp. *brevis* (P3)
	Calytrix leschenaultii
	Corymbia calophylla
	Eremaea pauciflora var. *lonchophylla*
	Ericomyrtus serpyllifolia
	Eucalyptus loxophleba subsp. *loxophleba*
	Eucalyptus macrocarpa subsp. *elachantha* (P4)
	Eucalyptus marginata subsp. *thalassica*
	Eucalyptus rudis subsp. *rudis*
	Eucalyptus todtiana

Family	Taxon
	Hypocalymma angustifolium
	Hypocalymma balbakiae
	Hypocalymma sp.
	Hypocalymma angustifolium
	Hypocalymma xanthopetalum
	Kunzea glabrescens
	Leptospermopsis erubescens
	Melaleuca clavifolia
	Melaleuca preissiana
	Melaleuca rhaphiophylla
	Melaleuca ciliosa
	Scholtzia laxiflora
	Scholtzia parviflora
Orchidaceae	*Caladenia flava* subsp. *flava*
	Diuris tinkeri
	Microtis media subsp. *media*
	Pterostylis vittata
	Pyrorchis nigricans
Orobanchaceae	**Parentucellia latifolia*
Phyllanthaceae	*Lysiandra calycina*
	Poranthera microphylla
	Poranthera moorokatta (P2)
Pinaceae	**Pinus* sp.
Pittosporaceae	*Billardiera fraseri*
Poaceae	**Aira caryophyllea*
	**Aira cupaniana*
	**Avellinia festucoides*
	**Briza maxima*
	**Briza minor*
	**Bromus diandrus*
	**Corynephorus fasciculatus*
	**Ehrharta calycina*
	**Ehrharta longiflora*
	**Eragrostis curvula*
	**Lolium rigidum*
	**Pentameris airoides* subsp. *airoides*
	**Vulpia bromoides*
	Amphipogon turbinatus
	Austrostipa elegantissima
	Austrostipa macalpinei

Family	Taxon
	Neurachne alopecuroidea
Polygalaceae	*Comesperma integerrimum*
Primulaceae	**Lysimachia arvensis*
Proteaceae	*Banksia attenuata*
	Banksia carlinoides
	Banksia dallanneyi subsp. *dallanneyi*
	Banksia hewardiana
	Banksia menziesii
	Banksia prionotes
	Banksia shuttleworthiana
	Conospermum stoechadis subsp. *stoechadis*
	Grevillea biformis subsp. *biformis*
	Grevillea curviloba (T)
	Grevillea eriostachya
	Grevillea vestita subsp. *vestita*
	Hakea conchifolia
	Hakea costata
	Hakea incrassata
	Hakea lissocarpha
	Hakea prostrata
	Hakea stenocarpa
	Hakea trifurcata
	Petrophile brevifolia
	Petrophile macrostachya
	Stirlingia latifolia
	Synaphea spinulosa
Pteridaceae	*Cheilanthes austrotenuifolia*
Restionaceae	*Alexgeorgea nitens*
	Caustis dioica
	Chordifex sinuosus
	Desmocladus asper
	Desmocladus lateriticus
	Lepidobolus preissianus subsp. *preissianus*
Rhamnaceae	*Polianthion wichurae*
Rubiaceae	**Galium divaricatum*
	Opercularia vaginata
Rutaceae	*Boronia scabra* subsp. *scabra*
Stylidiaceae	*Levenhookia murfetii*
	Levenhookia stipitata
	Stylidium adpressum

Family	Taxon
	Stylidium calcaratum
	Stylidium stenosepalum
Thymelaeaceae	*Pimelea floribunda*
Typhaceae	*Typha* sp.
Violaceae	*Pigea calycina*
Vitaceae	**Vitis vinifera*
Xanthorrhoeaceae	*Xanthorrhoea drummondii*
	Xanthorrhoea preissii
Zamiaceae	*Macrozamia fraseri*

^indicates a non-endemic Australian native, planted taxon.
**indicates an introduced taxon.*



APPENDIX D

Raw Quadrat and Relevé Data

GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA

Site Name:	YK01
Site Type:	QUADRAT
Dimensions:	10m x 100m
Survey Date:	26/09/2024
GPS Location:	GDA94 Zone 50 371540.4157E 6583463.969N
Orientation:	90/180
Community:	1
Landform Type:	Upper Slope
Slope Class:	Gently Inclined (3°)
Aspect:	W
Soil Type:	Clay Loam
Soil Colour:	Red-Brown
Soil Condition:	Dry
Rock Outcrop:	Laterite, <2% bedrock exposed
CF Abundance:	50-90%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Fire:	>20 years
Habitat:	Tall closed shrubland of Banksia hewardiana over isolated shrubs of Allocasuarina humilis over isolated sedges of Lepidosperma apricola, over pasture weeds.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	371540	6583464	
Corner 2	371554	6583462	
Corner 3	371556	6583455	
Corner 4	371542	6583454	

DOMINANT TAXA IN VEGETATION STRATA

Mid Stratum 1:	*Allocasuarina humilis*, *Banksia hewardiana*, *Lepidosperma apricola*
Mid Stratum 2:	*Xanthorrhoea preissii*
Lower Stratum 1:	*Lepidosperma apricola*
Lower Stratum 2:	**Aira cupaniana*, **Bromus diandrus*, **Ehrharta longiflora*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella	0.5		0.1	
**Aira cupaniana*	0.2		5	
Allocasuarina humilis	1.4		2	
**Arctotheca calendula*	0.1		0.1	
Austrostipa elegantissima	0.8		0.2	
Austrostipa macalpinei	0.2		0.2	
**Avellinia festucoides*	0.2		0.1	
Babingtonia grandiflora	1.2		0.1	
Banksia hewardiana	2		65	
**Briza maxima*	0.3		0.1	
**Bromus diandrus*	0.3		2.5	
Burchardia congesta	0.4		0.1	
Calothamnus hirsutus				
Chamaescilla corymbosa	0.1		0.1	
Corymbia calophylla				
Daviesia angulata	0.6		0.2	
Drosera glanduligera	0.1		0.1	
**Ehrharta calycina*	0.6		0.1	
**Ehrharta longiflora*	0.6		5	
**Galium divaricatum*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.4		0.1	
Hibbertia hypericoides subsp. *hypericoides*	0.4		0.2	
Hyalosperma cotula	0.1		0.3	
**Hypochaeris glabra*	0.2		0.1	
Lepidosperma apricola	0.3		2	
**Lysimachia arvensis*	0.1		0.1	
Morelotia octandra	0.3		0.1	
Opercularia vaginata	0.2		0.1	
Patersonia occidentalis	0.4		0.2	
Poranthera microphylla	0.1		0.1	
**Sonchus oleraceus*	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.2	
**Wahlenbergia capensis*	0.3		0.1	
Xanthorrhoea preissii	0.8		0.5	

PHOTOS



Site Name:	YK02
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	26/09/2024
GPS Location:	GDA2020 Zone 50 382089.881341686E 6586859.91176252N
Community:	1
Landform Type:	Upper Slope
Slope Class:	Gently Inclined (3°)
Aspect:	W
Soil Type:	Clay Loam
Soil Colour:	Red
Soil Condition:	Dry
Rock Outcrop:	Laterite, <2% bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Laterite
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, Clearing, Grazing
Fire:	10-20 Years
Comments:	Very weedy. Lots of understorey lost.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	382090	6586860	
Corner 2	382088	6586873	
Corner 3	382104	6586874	
Corner 4	382107	6586859	

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia calophylla*
Mid Stratum 1:	*Banksia hewardiana*
Lower Stratum 1:	**Aira cupaniana*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella	0.6		0.2	
**Aira cupaniana*	0.1		5	
**Arctotheca calendula*	0.1		0.1	
Austrostipa elegantissima	0.8		0.2	
Austrostipa macalpinei	0.2		0.2	
Babingtonia grandiflora	0.5		0.1	
Banksia hewardiana	1.8		25	
**Briza maxima*	0.2		0.1	
**Briza minor*	0.1		0.1	
Caladenia flava	0.1		0.1	
Centrolepis drummondiana	0.1		0.1	
Chamaescilla corymbosa	0.1		0.2	
Cheilanthes austrotenuifolia				
Corymbia calophylla	5		1.5	
Desmocladus lateriticus	0.1		0.1	
Drosera menziesii			0.1	
**Ehrharta longiflora*	0.4		0.3	
**Gladiolus caryophyllaceus*	0.4		0.2	
Goodenia berardiana				
Haemodorum venosum	0.2		0.1	
Hibbertia racemosa				
Hydrocotyle callicarpa	0.1		0.1	
**Hypochaeris glabra*	0.1		0.1	
Levenhookia stipitata	0.1		0.1	
**Lolium rigidum*	0.3		0.1	
**Lysimachia arvensis*	0.1		0.1	
Morelotia octandra	0.5		0.1	
Neurachne alopecuroidea	0.2		0.2	
Opercularia vaginata	0.2		0.2	
Orthrosanthus laxus var. *laxus*	0.2		0.1	
Panaetia lessonii	0.2		0.3	
**Parentucellia latifolia*	0.1		0.1	
**Petrorhagia dubia*	0.3		0.1	
Podotheca gnaphalioides	0.2		0.1	
Poranthera microphylla	0.1		0.1	
Pterostylis vittata	0.2		0.1	
Ptilotus manglesii	0.1		0.2	

Schoenus nanus	0.1		0.1	
Sowerbaea laxiflora				
Stylidium calcaratum	0.1	30	0.1	
Thysanotus manglesianus			0.1	
Trachymene pilosa	0.2		0.2	
Tricoryne ?elatior	0.3		0.4	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.3	
**Wahlenbergia capensis*	0.4		0.1	
Wahlenbergia preissii	0.3		0.1	

PHOTOS



Site Name:	YK03
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	27/09/2024
GPS Location:	GDA2020 Zone 50 374798.139924268E 6588280.72660851N
Community:	4
Landform Type:	Open Depression
Slope Class:	Level (0°)
Aspect:	None
Soil Type:	Loam
Soil Colour:	Brown
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - VG - Very Good
Disturbance:	Animal
Fire:	> 20 Years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	374798	6588281	
Corner 2	374808	6588285	
Corner 3	374808	6588275	
Corner 4	374796	6588272	

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Eucalyptus rudis* subsp. *rudis*
Mid Stratum 1:	*Melaleuca rhaphiophylla*
Lower Stratum 1:	*Lepidosperma longitudinale*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Eucalyptus rudis subsp. *rudis*	8		5	
Lepidosperma longitudinale	0.5		90	
**Lotus subbiflorus*	0.1		0.1	
**Lysimachia arvensis*	0.1		0.1	
Machaerina juncea				
Machaerina preissii	0.8		0.2	
Melaleuca rhaphiophylla	5		8	
**Zantedeschia aethiopica*	0.1		0.1	

PHOTOS



Site Name:	YKR01
Site Type:	RELEVE
Survey Date:	24/09/2024
GPS Location:	GDA94 Zone 50 372213.5266E 6588526.497N
Landform Type:	Plain
Slope Class:	Level (0°)
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 5 - Degraded
Disturbance:	Grazing, Clearing, Weeds, Animal, (other) - Rubbish dumping, ?historical logging.
Fire:	>20 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	372214	6588526	

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia calophylla*
Upper Stratum 2:	*Banksia attenuata*
Mid Stratum 1:	*Kunzea glabrescens*
Mid Stratum 2:	*Xanthorrhoea preissii*
Lower Stratum 1:	**Ehrharta longiflora*, *Podotheca gnaphalioides*, **Ursinia anthemoides* subsp. *anthemoides*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
**Acacia iteaphylla*				
Anigozanthos humilis subsp. *humilis*	0.4	1	0.1	
Banksia attenuata	6		2	
Banksia menziesii				
**Chamaecytisus palmensis*				
Corymbia calophylla	8		1.8	
**Ehrharta longiflora*	0.4		2	
**Gladiolus caryophyllaceus*	0.3		0.1	
Haemodorum spicatum				
**Hypochaeris glabra*				
Jacksonia furcellata				
Kunzea glabrescens	3		8	
Macrozamia fraseri				
Podotheca gnaphalioides	0.2		2	
Scholtzia parviflora				
**Ursinia anthemoides* subsp. *anthemoides*	0.2		10	
Xanthorrhoea preissii	0.6		0.5	

PHOTOS



Site Name:	YKR02
Site Type:	RELEVE
Survey Date:	27/09/2024
GPS Location:	GDA2020 Zone 50 368971.250756568E 6594917.90413524N
Landform Type:	Plain
Slope Class:	Level (0°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, (other)
Fire:	10-20 Years
Comments:	Road verge.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	368971	6594918	
Corner 2			
Corner 3			
Corner 4			

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Banksia attenuata*, *Eucalyptus todtiana*
Mid Stratum 1:	*Adenanthos cygnorum* subsp. *cygnorum*
Mid Stratum 2:	*Allocasuarina humilis*, *Xanthorrhoea preissii*
Lower Stratum 1:	*Chordifex sinuosus*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Adenanthos cygnorum subsp. *cygnorum*	2.5		8	
**Aira cupaniana*				
Allocasuarina humilis	1.6		0.5	
Austrostipa elegantissima				
Austrostipa macalpinei				
Banksia attenuata	4		2	
Blancoa canescens				
Bossiaea eriocarpa				
Burchardia congesta				
Chordifex sinuosus	0.4		1	
**Ehrharta longiflora*				
Eucalyptus todtiana	5		1.5	
**Gladiolus caryophyllaceus*				
Hibbertia hypericoides subsp. *hypericoides*				
Jacksonia floribunda				
**Sonchus oleraceus*				
Stirlingia latifolia				
Trachymene pilosa				
**Wahlenbergia capensis*				
Xanthorrhoea preissii	0.5		0.5	

PHOTOS



Site Name:	YKR03
Site Type:	RELEVE
Survey Date:	27/09/2024
GPS Location:	GDA2020 Zone 50 369469.986621868E 6594925.36587208N
Landform Type:	Plain
Slope Class:	Level (0°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, (other)
Fire:	10-20 Years
Comments:	Road verge

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	369470	6594925	
Corner 2			
Corner 3			
Corner 4			

DOMINANT TAXA IN VEGETATION STRATA

Upper Stratum 1:	*Corymbia calophylla*
Mid Stratum 1:	*Allocasuarina humilis*
Mid Stratum 2:	*Xanthorrhoea preissii*
Lower Stratum 1:	*Hibbertia hypericoides* subsp. *hypericoides*

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella				
Allocasuarina humilis	1.8		1.5	
Anigozanthos humilis subsp. *humilis*				
Bossiaea eriocarpa				
**Briza maxima*				
Burchardia congesta				
Corymbia calophylla	8		5	
**Ehrharta longiflora*				
**Gladiolus caryophyllaceus*				
Gompholobium tomentosum				
Hibbertia hypericoides subsp. *hypericoides*	0.4		7	
**Hypochaeris glabra*				
Lyginia imberbis				
Macrozamia fraseri				
Podotheca gnaphalioides				
Sowerbaea laxiflora				
Stirlingia latifolia				
**Ursinia anthemoides* subsp. *anthemoides*				
**Wahlenbergia capensis*				
Xanthorrhoea preissii	1.2		3	

PHOTOS



Site Name:	YR02
Site Type:	RELEVE
Survey Date:	02/07/2024
GPS Location:	GDA2020 Zone 50 371545.515069376E 6583470.07162438N
Landform Type:	Mid Slope
Slope Class:	Moderately Inclined (10°)
Aspect:	W
Soil Type:	Sandy Loam
Soil Colour:	Brown
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	50-90%
CF Sizes:	2-6mm, 20-60mm, 6-20mm, 60-200mm
CF Types:	Laterite
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, Grazing
Fire:	10-20 Years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	371546	6583470	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella	0.8		0.1	
Allocasuarina humilis	2.5		3	
Banksia hewardiana	2.5		35	
Calothamnus sanguineus	1		0.3	
Chamaescilla corymbosa	0.1		0.1	
Conostylis androstemma	0.3		0.1	
Corymbia calophylla	10		1	
Daviesia angulata	0.4		0.2	

Daviesia decurrens	0.6		0.5	
**Gladiolus caryophyllaceus*	0.3		0.1	
Lepidosperma apricola	0.4		5	

PHOTOS



Site Name:	YR03
Site Type:	RELEVE
Survey Date:	02/07/2024
GPS Location:	GDA2020 Zone 50 372461.674294251E 6581744.22248537N
Landform Type:	Lower Slope
Slope Class:	Gently Inclined (3°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Yellow
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, Grazing
Fire:	10-20 Years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	372462	6581744	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Anigozanthos humilis subsp. *humilis*	0.2		0.1	
Banksia attenuata	6		7	
Banksia menziesii	3		2	
Caustis dioica	0.4		0.3	
Daviesia divaricata subsp. *divaricata*	2		0.5	
Daviesia nudiflora subsp. *nudiflora*	0.6		0.2	
Eucalyptus todtiana	6		2	
Hibbertia hypericoides subsp. *hypericoides*	0.5		0.1	
Jacksonia floribunda	1.3		1	

Lepidobolus preissianus	0.3		0.3	
Mesomelaena pseudostygia	0.5		3	
Morelotia octandra	0.5		0.3	
Synaphea spinulosa	0.5		0.2	
Xanthorrhoea preissii	1.5		10	

PHOTOS



Site Name:	YR08
Site Type:	RELEVE
Survey Date:	04/07/2024
GPS Location:	GDA2020 Zone 50 365965.771756447E 6588266.35758033N
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	20-50%
CF Sizes:	2-6mm, 6-20mm, 20-60mm
CF Types:	Laterite
Vegetation Condition:	Combined Vegetation Condition - VG - Very Good
Disturbance:	Weeds
Fire:	10-20 Years
Comments:	Very drought affected, lots dead.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	365966	6588266	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Allocasuarina humilis	0.6		5	
Banksia carlinoides	0.6		0.2	
Banksia hewardiana	2		0.1	
Banksia shuttleworthiana	0.6		1	
Calothamnus sanguineus	0.5		0.5	
Caustis dioica	0.4		1	
Conostylis androstemma	0.2		0.1	

Conostylis teretifolia subsp. *teretifolia*	0.1		0.1	
Daviesia angulata	0.6		1	Check DC
Daviesia nudiflora subsp. *nudiflora*	0.6		0.5	
Eucalyptus todtiana	3		1	
Hakea conchifolia	0.6		0.2	
Hakea incrassata	0.6		2	
Hakea lissocarpha	0.6		2	
Hakea stenocarpa	0.6		2	
Hakea trifurcata	0.6		1	
Hibbertia hypericoides subsp. *hypericoides*	0.5		10	
Mesomelaena pseudostygia	0.4		1	
Mesomelaena tetragona	0.4		1	
Scaevola canescens	0.2		0.1	
Schoenus clandestinus	0.2		0.2	
Xanthorrhoea drummondii	2		4	

PHOTOS



Site Name:	YR09
Site Type:	RELEVE
Survey Date:	04/07/2024
GPS Location:	GDA2020 Zone 50 365986.640259035E 6588161.46169432N
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds, Clearing
Fire:	10-20 Years
Comments:	Drought affected.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	365987	6588161	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella	0.6		0.2	
Allocasuarina humilis	1		0.3	
Banksia attenuata	4		2	
Banksia menziesii	4		5	
Banksia prionotes	6		10	
Banksia shuttleworthiana	0.5		1	
Calothamnus sanguineus	0.6		0.2	
Caustis dioica	0.5		4	
Daviesia divaricata subsp. *divaricata*	0.5		0.2	

Daviesia nudiflora subsp. *nudiflora*	0.5		0.2	
Eremaea pauciflora	1.5		5	
Eucalyptus todtiana	5		3	
Hibbertia hypericoides subsp. *hypericoides*	0.5		2	
Jacksonia floribunda	1.5		2	
Lepidobolus preissianus	0.4		0.5	
Leptospermopsis erubescens	1.5		0.5	
Mesomelaena pseudostygia	0.5		5	
Orianthera spermacocea	0.2		0.1	
Schoenus clandestinus	0.1		0.3	
Xanthorrhoea preissii	2		1	

PHOTOS



Site Name:	YR10
Site Type:	RELEVE
Survey Date:	04/07/2024
GPS Location:	GDA2020 Zone 50 366622.759973868E 6587032.46392114N
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Grey
Soil Condition:	Moist - Lateritic influences below?
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Weeds, Animal, Clearing
Fire:	10-20 Years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366623	6587032	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Allocasuarina humilis	1.5		5	
Banksia shuttleworthiana	0.6		1	
Calothamnus quadrifidus subsp. *quadrifidus*	1.2		10	
Calothamnus sanguineus	0.5		0.2	
Daviesia angulata	1		0.5	
Daviesia nudiflora subsp. *nudiflora*	0.5		1	
Eremaea pauciflora	0.6		0.5	
Eucalyptus todtiana	4		2	
Hakea incrassata	0.6		2	

Hibbertia hypericoides subsp. *hypericoides*	0.5		8	
Jacksonia sternbergiana	2.5		0.2	
Lepidobolus preissianus	0.3		1	
Mesomelaena pseudostygia	0.4		1	
Morelotia octandra	0.3		0.2	
Nuytsia floribunda	3		0.1	
Petrophile macrostachya	0.5		0.2	
Xanthorrhoea preissii	2.5		1	

PHOTOS



Site Name:	YR11
Site Type:	RELEVE
Survey Date:	04/07/2024
GPS Location:	GDA2020 Zone 50 369185.87399449E 6581936.88496627N
Landform Type:	Plain
Slope Class:	Level (0°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Yellow
Soil Condition:	Moist
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Combined Vegetation Condition - G - Good
Disturbance:	Animal, Weeds
Fire:	10-20 Years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	369186	6581937	
Corner 2			
Corner 3			
Corner 4			

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia blakelyi	8		2	
Ammothryon grandiflorum	0.6		0.1	
Banksia prionotes	8		35	
Drosera erythrorhiza	0.1		0.1	
**Ehrharta calycina*	0.4		2	
Eucalyptus todtiana	8		2	
Hibbertia hypericoides subsp. *hypericoides*	0.5		1	
Lepidobolus preissianus	0.3		1	
Macrozamia fraseri	1		1	

Mesomelaena pseudostygia	0.5		15	

PHOTOS



Site Name:	YTQ01
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	01/10/2024
GPS Location:	GDA94 Zone 50 369179.6851E 6581821.797N
Orientation:	60, 150
Community:	2
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	N
Soil Type:	Sand
Soil Colour:	brown/yellow (other)
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Habitat:	Low open woodland over mid sparse shrubland over clumps of sedges and herbs.

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	369180	6581822	NW corner
Corner 2	369184	6581815	SW corner
Corner 3	369193	6581819	SE corner
Corner 4	369189	6581827	NE corner

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia blakelyi	2.1		5	
**Arctotheca calendula*	0.2		0.1	
Austrostipa macalpinei	0.3		0.1	
Banksia prionotes	6		15	
**Briza maxima*	0.3		0.1	
Caladenia flava	0.1		0.1	
Calandrinia corrigioloides	0.1		0.1	

Centrolepis drummondiana	0.1		0.1	
Conostylis aculeata subsp. *aculeata*	0.3		1.5	
Desmocladus asper	0.2		0.2	
Dianella revoluta				
Drosera erythrorhiza	0.1		0.1	
**Ehrharta calycina*	0.2		0.1	
Eucalyptus todtiana	3.2		0.5	
**Ficinia marginata*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.9		1	
Hibbertia hypericoides	0.2		0.1	
**Hypochaeris glabra*	0.3		1	
Lepidobolus preissianus subsp. *preissianus*	0.2		0.1	
Macrozamia fraseri	1.4		1	
Mesomelaena pseudostygia	0.6		1.5	
Microtis sp.	0.5		0.1	
**Ornithopus compressus*	0.2		0.1	
Podotheca gnaphalioides	0.2		0.1	
Poranthera microphylla	0.1		0.1	
Ptilotus polystachyus	0.2		0.1	
**Sonchus oleraceus*	0.3		0.1	
Trachymene pilosa	0.2		2	
**Ursinia anthemoides* subsp. *anthemoides*	0.4		7.5	
**Wahlenbergia capensis*	0.3		0.1	
Xanthorrhoea preissii	0.7		0.2	

PHOTOS



Site Name:	YTQ02
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	01/10/2024
GPS Location:	GDA94 Zone 50 369171.61E 6582246.27N
Orientation:	90, 180
Community:	2
Landform Type:	Undulating Plain
Slope Class:	Level (0°)
Soil Type:	Sand
Soil Colour:	brown/yellow (other)
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	369172	6582246	NW corner
Corner 2	369181	6582246	NE corner
Corner 3	369181	6582236	SE corner
Corner 4	369171	6582236	SW corner

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia blakelyi	3		17	
Acacia pulchella var. *glaberrima*	0.5		0.2	
Allocasuarina humilis	1.6		2	
**Arctotheca calendula*	0.1		0.1	
Austrostipa macalpinei	0.2		0.1	
**Avellinia festucoides*	0.2		0.1	
**Briza maxima*	0.3		0.1	
Caladenia flava	0.2		0.1	

Calandrinia corrigioloides	0.1		0.1	
Calothamnus quadrifidus subsp. *quadrifidus*	1.3		7.5	
Centrolepis drummondiana	0.1		0.1	
Conostylis aculeata subsp. *aculeata*	0.3		1	
Crassula colorata	0.1		0.1	
Daviesia divaricata subsp. *divaricata*	1.7		0.3	
Drosera erythrorhiza	0.1		0.1	
**Ehrharta calycina*	0.4		0.1	
**Gladiolus caryophyllaceus*	0.6		0.2	
Gompholobium tomentosum	0.2		0.1	
Hibbertia striata	0.3		0.1	
**Hypochaeris glabra*	0.1		0.1	
Jacksonia sternbergiana	3		0.1	
Lechenaultia linarioides	0.5		0.6	
Levenhookia stipitata	0.1		0.1	
**Lysimachia arvensis*	0.1		0.1	
Melaleuca clavifolia	1.2		0.1	
Mirbelia trichocalyx	0.4		0.1	
Nuytsia floribunda	0.3		0.1	
Opercularia vaginata	0.1		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Pigea calycina	0.3		0.1	
Podotheca gnaphalioides	0.2		0.3	
Poranthera microphylla	0.1		0.1	
Scholtzia laxiflora	1		2.5	
Thysanotus ?dichotomus	0.4		0.2	
Thysanotus manglesianus			0.1	
Trachymene pilosa	0.1		0.2	
**Ursinia anthemoides* subsp. *anthemoides*	0.4		1	
**Wahlenbergia capensis*	0.5		0.1	

PHOTOS



Site Name:	YTQ03
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	01/10/2024
GPS Location:	GDA94 Zone 50 368937.9407E 6583515.464N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	SW
Soil Type:	Sand
Soil Colour:	grey/yellow (other)
Soil Condition:	Dry
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 3 - Very Good
Disturbance:	Weeds, Animal - rabbits
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	368938	6583515	NW corner
Corner 2	368947	6583517	NE corner
Corner 3	368948	6583507	SE corner
Corner 4	368938	6583508	SW corner

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Amyema miquelii			0.5	
**Arctotheca calendula*	0.2		0.1	
Austrostipa elegantissima	1		2.5	
Austrostipa macalpinei	0.2		0.1	
Banksia dallanneyi subsp. *dallanneyi*	0.3		0.1	
**Briza maxima*	0.2		0.1	
**Briza minor*	0.1		0.1	

Calothamnus quadrifidus	1		2.5	
Daviesia nudiflora				
Desmocladus asper	0.4		1	
Drosera erythrorhiza	0.1		0.1	
**Ehrharta calycina*	0.4		0.1	
Eucalyptus todtiana	4		1	
**Ficinia marginata*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.7		0.1	
Haemodorum laxum	0.3		0.1	
Hibbertia hypericoides	0.6		0.3	
Hydrocotyle callicarpa	0.1		0.1	
Hypocalymma angustifolium	0.5		0.1	
**Hypochaeris glabra*	0.3		0.2	
Jacksonia sternbergiana	1		0.01	
Lepidobolus preissianus subsp. *preissianus*	0.3		0.6	
Levenhookia stipitata	0.1		0.1	
**Lysimachia arvensis*	0.1		0.1	
Melaleuca ciliosa	0.5		0.5	
Mesomelaena pseudostygia	0.6		8	
Microtis sp.	0.7		0.1	
Neurachne alopecuroidea	0.1		0.1	
Opercularia vaginata	0.1		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Petrophile macrostachya				
Phyllangium divergens	0.1		0.1	
Podotheca gnaphalioides	0.1		0.1	
Poranthera microphylla	0.1		0.1	
Ptilotus manglesii	0.1		0.1	
Pyrorchis nigricans	0.1		0.1	
Rhodanthe citrina	0.1		1	
Scaevola canescens	0.4		0.1	
Schoenus clandestinus	0.1		0.1	
Schoenus nanus	0.1		0.1	
**Sonchus oleraceus*	0.1		0.1	
Sowerbaea laxiflora	0.3		0.1	
Thysanotus patersonii			0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.1	

**Vulpia bromoides*	0.1		0.1	
**Wahlenbergia capensis*	0.1		0.1	
Wahlenbergia preissii	0.3		0.1	
Waitzia suaveolens var. *suaveolens*	0.1		0.1	
Xanthorrhoea preissii	1.6		2	

PHOTOS



Site Name:	YTQ04
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	01/10/2024
GPS Location:	GDA94 Zone 50 366911.2364E 6586166.989N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Gently Inclined (3°)
Aspect:	W
Soil Type:	Sandy Clay
Soil Colour:	Grey-yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366911	6586167	Actually GDA2020
Corner 2	366921	6586167	GDA 2020
Corner 3	366922	6586159	
Corner 4	366912	6586157	GDA 2020

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Austrostipa elegantissima	0.4		0.1	
Austrostipa macalpinei	0.3		0.2	
Banksia shuttleworthiana	0.4		0.5	
Burchardia congesta	0.4		0.1	
Conostylis teretifolia subsp. *teretifolia*	0.1		0.1	
Crassula colorata	0.1		0.1	
Daviesia nudiflora	1		0.3	
Drosera menziesii	0.3		0.1	

**Gladiolus caryophyllaceus*	0.7		0.1	
Haemodorum laxum	0.4		0.1	
Hakea incrassata				
Hibbertia hypericoides	0.3		0.1	
Hydrocotyle callicarpa	0.1		0.1	
**Hypochaeris glabra*	0.1		0.1	
Lepidobolus preissianus subsp. *preissianus*	0.4		3	
Leptospermopsis erubescens	1.8		27	
Levenhookia murfetii	0.1		0.1	
Levenhookia stipitata	0.1		0.1	
Melaleuca ciliosa	0.3		0.1	
Mesomelaena pseudostygia	0.4		2.5	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Petrophile macrostachya				
Phyllangium divergens	0.1		0.1	
Podotheca angustifolia	0.1		0.1	
Podotheca gnaphalioides	0.2		0.1	
Poranthera microphylla	0.1		0.1	
Ptilotus polystachyus	0.2		0.1	
Schoenus clandestinus	0.1		0.1	
Schoenus nanus	0.1		0.1	
**Sonchus oleraceus*	0.1		0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.3	
**Wahlenbergia capensis*	0.3		0.1	
Wahlenbergia preissii	0.2		0.1	
Waitzia suaveolens var. *suaveolens*	0.2		0.1	

PHOTOS



Site Name:	YTQ05
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	02/10/2024
GPS Location:	GDA94 Zone 50 372548.084E 6583939.085N
Orientation:	90, 180
Community:	1
Landform Type:	Undulating Plain
Slope Class:	Level (0°)
Aspect:	None
Soil Type:	Sand
Soil Colour:	Black-White (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	372548	6583939	GDA 2020
Corner 2	372559	6583939	GDA2020
Corner 3	372559	6583930	2020
Corner 4	372549	6583929	GDA2020

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Allocasuarina humilis	2		3.5	
Austrostipa elegantissima	0.5		1	
Babingtonia grandiflora	0.3		0.2	
Banksia shuttleworthiana	0.1		5	
Bossiaea eriocarpa	0.3		0.1	
**Briza maxima*	0.5		3	
Burchardia congesta	0.6		1	
Calothamnus sanguineus	1		2	

Chamaescilla corymbosa	0.1		0.3	
Corymbia calophylla	7		0.1	
Desmocladus asper	0.3		0.5	
Drosera erythrorhiza	0.1		0.1	
Drosera glanduligera	0.1		0.1	
**Ehrharta calycina*	1		3	
Eremaea pauciflora	0.5		0.1	
**Gladiolus caryophyllaceus*	1		2	
Hakea incrassata	0.5		0.2	
Hakea trifurcata				
Hibbertia hypericoides	0.4		0.1	
**Hypochaeris glabra*	0.1		0.1	
Lepidosperma cf. pubisquameum	0.3		0.1	
Morelotia octandra	0.3		0.2	
Opercularia vaginata	0.2		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Podotheca gnaphalioides	0.2		0.1	
Poranthera microphylla	0.1		0.1	
**Sonchus oleraceus*	0.2		0.1	
Thysanotus patersonii			0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.4		5	
**Wahlenbergia capensis*	0.2		0.1	
Xanthorrhoea preissii	1.1		0.3	

PHOTOS



Site Name:	YTQ06
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	02/10/2024
GPS Location:	GDA94 Zone 50 372572.033E 6584151.654N
Orientation:	90, 180
Community:	1
Landform Type:	Undulating Plain
Slope Class:	Gently Inclined (3°)
Aspect:	N
Soil Type:	Sand
Soil Colour:	Black-White (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	<2%
CF Sizes:	2-6mm, 6-20mm
CF Types:	Laterite
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	372572	6584152	
Corner 2	372581	6584150	
Corner 3	372583	6584142	
Corner 4	372573	6584143	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia stenoptera	0.3		0.1	
Allocasuarina humilis	1.2		0.2	
Anigozanthos humilis subsp. *humilis*	0.2		0.1	
Austrostipa elegantissima	0.4		0.1	
Babingtonia grandiflora	0.3		0.1	

Banksia hewardiana	2		0.5	
**Briza maxima*	0.3		0.5	
Caladenia flava subsp. *flava*	0.2		0.1	
Chamaescilla corymbosa	0.1		0.1	
Corymbia calophylla	4		2	
Drosera glanduligera	0.1		0.1	
**Ehrharta calycina*	1		10	
**Erodium botrys*	0.3		2	
**Gladiolus caryophyllaceus*	0.7		0.5	
Hakea trifurcata	2.1		0.2	
Hibbertia hypericoides	0.9		0.2	
**Hypochaeris glabra*	0.2		0.1	
Lechenaultia biloba	0.2		0.1	
Lepidosperma cf. pubisquameum	0.3		0.1	
Lomandra micrantha subsp. *micrantha*	0.3		0.1	
Microtis sp.	0.8		0.1	
Opercularia vaginata	0.2		0.1	
Podotheca gnaphalioides	0.3		0.1	
**Romulea rosea*	0.1		0.1	
Schoenus nanus	0.1		0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.2		20	
**Wahlenbergia capensis*	0.2		0.1	
Xanthorrhoea preissii	1.5		1.5	

PHOTOS



Site Name:	YTQ07
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	02/10/2024
GPS Location:	GDA94 Zone 50 372582.9243E 6581982.721N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Level (0°)
Soil Type:	Sand
Soil Colour:	Grey-yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds, Animal - Kangaroo
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	372583	6581983	
Corner 2	372592	6581982	
Corner 3	372592	6581973	
Corner 4	372583	6581972	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acanthocarpus preissii	0.1		0.1	
**Aira caryophyllea*	0.1		0.1	
Anigozanthos humilis subsp. *humilis*	0.2		0.1	
**Arctotheca calendula*	0.1		0.1	
Austrostipa elegantissima	0.5		0.1	
Austrostipa macalpinei	0.2		0.1	
Banksia attenuata	4.5		1	
Banksia dallanneyi subsp. *dallanneyi*	0.2		0.1	
Banksia menziesii	0.1		0.1	

Bossiaea eriocarpa	0.3		0.1	
Burchardia congesta	0.6		0.1	
Caladenia flava subsp. *flava*	0.1		0.1	
Caustis dioica				
Conostephium pendulum	0.4		0.1	
Drosera menziesii	0.2		0.1	
Eucalyptus todtiana	5		3	
Grevillea eriostachya	0.3		2	
Haemodorum spicatum	0.3		0.2	
Hibbertia hypericoides	0.4		0.5	
Hypocalymma sp.				
**Hypochaeris glabra*	0.1		0.1	
Jacksonia floribunda	1		0.1	
Lepidosperma cf. pubisquameum	0.3		0.2	
Lomandra caespitosa	0.2		0.1	
Lomandra hermaphrodita	0.2		0.1	
Lomandra micrantha subsp. *micrantha*	0.3		0.1	
Mesomelaena pseudostygia	0.6		2	
Opercularia vaginata	0.1		0.1	
Patersonia occidentalis	0.3		0.1	
Petrophile macrostachya	0.4		0.1	
Phyllangium divergens	0.1		0.1	
Pigea calycina	0.2		0.1	
Podotheca gnaphalioides	0.2		0.3	
Schoenus clandestinus	0.1		0.1	
Stirlingia latifolia	0.4		0.1	
Thysanotus ?dichotomus	0.3		0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.2	
**Vulpia bromoides*	0.1		0.1	
**Wahlenbergia capensis*	0.2		0.1	
Xanthorrhoea preissii	1		3	

PHOTOS



Site Name:	YTQ08
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	02/10/2024
GPS Location:	GDA94 Zone 50 372381.7698E 6581735.551N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	NW
Soil Type:	Sand
Soil Colour:	Brown-Yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 3 - Very Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

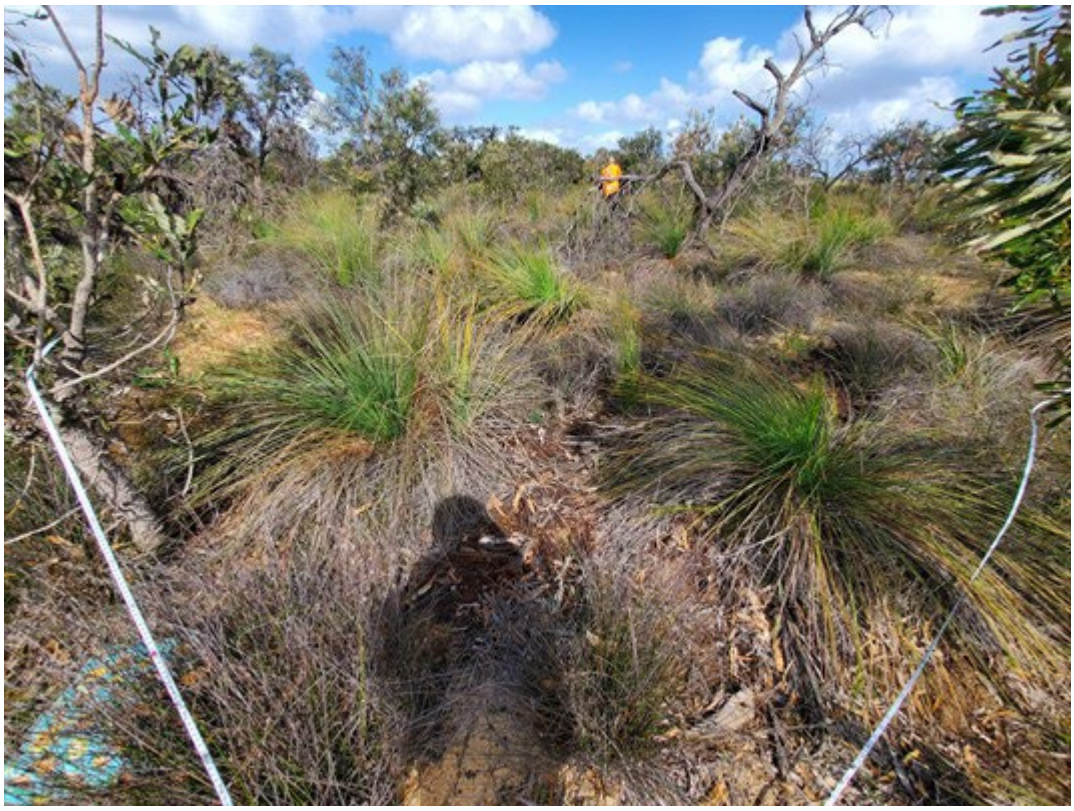
Label	Easting	Northing	Comments
Corner 1	372382	6581736	
Corner 2	372391	6581737	
Corner 3	372391	6581727	
Corner 4	372381	6581727	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
**Aira caryophyllea*	0.1		0.1	
Amphipogon turbinatus	0.1		0.1	
Anigozanthos humilis subsp. *humilis*	0.2		0.1	
**Arctotheca calendula*	0.2		0.1	
Austrostipa elegantissima	0.2		0.1	
Austrostipa macalpinei	0.2		0.1	
Banksia attenuata	2.5		3	
Banksia dallanneyi subsp. *dallanneyi*	0.4		0.1	

Banksia menziesii	2.1		0.2	
Bossiaea eriocarpa	0.3		0.1	
Calandrinia corrigioloides	0.1		0.1	
Caustis dioica	0.3		0.1	
Chordifex sinuosus	0.3		0.5	
Crassula colorata	0.1		0.1	
Drosera erythrorhiza	0.1		0.1	
Drosera menziesii	0.2		0.1	
**Ehrharta calycina*	0.2		0.2	
**Gladiolus caryophyllaceus*	0.3		0.1	
Grevillea eriostachya				
Haemodorum laxum	0.3	2	0.1	
Hibbertia striata				
**Hypochaeris glabra*	0.2		0.1	
Isotropis cuneifolia	0.1		0.1	
Jacksonia floribunda	0.2		0.1	
Lepidobolus preissianus subsp. *preissianus*	0.3		0.5	
Levenhookia stipitata	0.1		0.1	
Lomandra caespitosa	0.2		0.1	
Lomandra hermaphrodita	0.2		0.1	
Lyginia imberbis	0.3		0.5	
Mesomelaena pseudostygia	0.4		4	
Morelotia octandra	0.2		1	
Neurachne alopecuroidea	0.1		0.1	
Patersonia occidentalis	0.3		0.1	
Phyllangium divergens	0.1		0.1	
Podotheca gnaphalioides	0.2		0.2	
Schoenus clandestinus	0.1		0.1	
Schoenus nanus	0.1		0.1	
Stylidium adpressum	0.1		0.1	
Thysanotus ?multiflorus				
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		1	
**Vulpia bromoides*	0.2		0.1	
**Wahlenbergia capensis*	0.3		0.3	
Xanthorrhoea preissii	1.2		15	

PHOTOS



Site Name:	YTQ09
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	03/10/2024
GPS Location:	GDA94 Zone 50 366687.8195E 6586618.71N
Orientation:	90, 180
Community:	1
Landform Type:	Mid Slope, Undulating Plain (other)
Slope Class:	Gently Inclined (3°)
Aspect:	SW
Soil Type:	Sandy Loam
Soil Colour:	Grey-White (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	2-10%
CF Sizes:	2-6mm, 6-20mm, 20-60mm, 60-200mm
CF Types:	Laterite
Vegetation Condition:	Southern Vegetation Condition - 2 - Excellent
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366688	6586619	
Corner 2	366698	6586620	
Corner 3	366695	6586610	
Corner 4	366688	6586611	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella				
Acacia stenoptera	0.3		0.1	
Allocasuarina humilis	1.3		0.1	
Austrostipa elegantissima	0.5		0.1	
Austrostipa macalpinei	0.3		0.1	

Babingtonia grandiflora	0.3		0.1	
Banksia dallanneyi subsp. *dallanneyi*	0.2		0.2	
**Briza maxima*	0.3		0.1	
**Briza minor*	0.2		0.1	
Burchardia congesta	0.4		0.1	
Calandrinia corrigioloides	0.1		0.1	
Calothamnus quadrifidus subsp. *quadrifidus*	1		15	
Calothamnus sanguineus				
Chamaescilla corymbosa	0.1		0.1	
Corymbia calophylla	8		20	
Daviesia angulata	0.4		0.1	
Daviesia nudiflora subsp. *nudiflora*	0.3		0.1	
Desmocladus asper	0.3		5	
Drosera pallida			0.1	
**Ehrharta calycina*	0.2		0.1	
**Gladiolus caryophyllaceus*	0.4		0.4	
Haemodorum paniculatum	0.2		0.1	
Hakea incrassata	0.8		0.1	
Hakea lissocarpha	0.9		0.5	
Hakea stenocarpa	0.5		0.2	
Hakea trifurcata	1.8		0.3	
Hibbertia hypericoides	0.5		5	
Hydrocotyle callicarpa	0.1		0.1	
**Hypochaeris glabra*	0.1		0.2	
**Lactuca serriola*	0.2		0.1	
Lepidosperma cf. pubisquameum	0.3		0.2	
**Lysimachia arvensis*	0.1		0.1	
Melaleuca ciliosa	0.3		0.1	
Microtis media subsp. *media*	0.3		0.1	
Morelotia octandra	0.3		1.5	
Neurachne alopecuroidea	0.1		1	
Olearia paucidentata	0.3		0.1	
Opercularia vaginata	0.3		0.5	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Podotheca gnaphalioides	0.1		0.1	
Polianthion wichurae	0.3		0.1	
Poranthera microphylla	0.1		0.1	
Rhodanthe laevis	0.1		0.1	
Stylidium calcaratum	0.1		0.1	

Trachymene pilosa	0.2		0.3	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.1	
**Wahlenbergia capensis*	0.3		0.1	
Wahlenbergia preissii	0.2		0.1	
Xanthorrhoea drummondii	1.3		3.5	
Xanthorrhoea preissii	1.7		4.5	

PHOTOS



Site Name:	YTQ10
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	03/10/2024
GPS Location:	GDA94 Zone 50 366647.05E 6587019.5N
Orientation:	90, 180
Community:	2
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	SW
Soil Type:	Sand
Soil Colour:	Grey/White (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 3 - Very Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366647	6587019	NW corner
Corner 2	366658	6587021	
Corner 3	366657	6587010	
Corner 4	366648	6587010	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia pulchella	0.1		0.1	
Allocasuarina humilis	1.2		4	
Austrostipa macalpinei	0.3		0.2	
Banksia dallanneyi subsp. *dallanneyi*	0.2		2	
Banksia shuttleworthiana	0.3		0.5	
**Briza maxima*	0.3		0.1	
Burchardia congesta	0.3		0.1	
Calandrinia corrigioloides	0.1		0.1	

Calandrinia granulifera	0.1		0.1	
Calothamnus sanguineus	0.6		0.5	
Centrolepis drummondiana	0.1		0.1	
Conostephium pendulum	0.3		0.2	
Conostylis aculeata subsp. *aculeata*	0.2		0.3	
**Corynephorus fasciculatus*	0.3		0.1	
Desmocladus asper	0.3		0.2	
Dianella revoluta	0.8		0.5	
Drosera erythrorhiza	0.1		0.1	
**Ehrharta calycina*	0.3		0.1	
Eremaea pauciflora	1		2	
Eucalyptus todtiana	4		0.5	
**Ficinia marginata*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.4		0.1	
Gompholobium tomentosum	0.3		0.1	
Hakea incrassata	0.5		0.2	
Hibbertia hypericoides	0.5		0.2	
Hibbertia striata	0.3		0.1	
**Hypochaeris glabra*	0.1		0.1	
Lepidobolus preissianus subsp. *preissianus*	0.3		0.1	
Lyginia imberbis	0.3		0.3	
Melaleuca ciliosa	0.3		0.2	
Mesomelaena pseudostygia	0.4		0.5	
Morelotia octandra	0.3		0.2	
Patersonia occidentalis	0.3		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Petrophile brevifolia	0.3		0.1	
Petrophile macrostachya	0.4		0.2	
Poranthera microphylla	0.1		0.1	
Schoenus clandestinus	0.1		0.1	
**Sonchus oleraceus*	0.2		0.1	
Styphelia serratifolia	0.3		0.1	
Thysanotus patersonii			0.1	
Trachymene pilosa	0.1		0.1	
Tricoryne elatior	0.2		0.1	
**Vulpia bromoides*	0.2		0.1	
**Wahlenbergia capensis*	0.3		0.1	
Xanthorrhoea preissii	1.2		2.5	

PHOTOS



Site Name:	YTQ11
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	03/10/2024
GPS Location:	GDA94 Zone 50 366101E 6587650.98N
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	W
Soil Type:	Sand
Soil Colour:	brown/yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds, Drought (other)
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366101	6587651	NW corner
Corner 2	366110	6587651	
Corner 3	366111	6587641	
Corner 4	366101	6587641	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia blakelyi	1.6		0.5	
Acacia pulchella	0.1		0.1	
Amphipogon turbinatus	0.2		0.1	
Anigozanthos humilis subsp. *humilis*	0.2		0.1	
**Arctotheca calendula*	0.1		0.1	
Austrostipa elegantissima	0.4		0.2	
Austrostipa macalpinei	0.2		0.1	
Banksia dallanneyi subsp. *dallanneyi*	0.2		1.5	
Banksia menziesii	3		2	

Banksia prionotes	3		0.5	
Brachyscome ?iberidifolia	0.1		0.1	
Burchardia congesta	0.3		0.1	
Calothamnus quadrifidus subsp. *quadrifidus*	1.3		4.5	
Caustis dioica	0.3		0.1	
Centrolepis drummondiana	0.1		0.1	
Conospermum stoechadis subsp. *stoechadis*	0.8		2	
Conostylis teretifolia subsp. *teretifolia*	0.1		0.1	
Crassula colorata	0.1		0.1	
Dianella revoluta	0.3		0.1	
Drosera erythrorhiza	0.1		0.1	
Drosera pallida			0.1	
**Ehrharta calycina*	0.4		0.1	
Eremaea pauciflora var. *lonchophylla*	0.8		0.3	
Eucalyptus todtiana	3		0.1	
**Gladiolus caryophyllaceus*	0.3		0.1	
Haemodorum laxum	0.1		0.1	
Haemodorum paniculatum	0.3		0.1	
Hakea prostrata				
Hibbertia hypericoides	0.4		0.3	
Hibbertia striata	0.3		0.1	
**Hypochaeris glabra*	0.1		0.1	
Jacksonia floribunda				
Lepidobolus preissianus subsp. *preissianus*	0.3		0.1	
Levenhookia stipitata	0.1		0.1	
Lyginia imberbis	0.2		0.1	
Melaleuca ciliosa	0.3		0.1	
Mesomelaena pseudostygia	0.3		0.1	
Neurachne alopecuroidea	0.1		1	
Orianthera spermacocea	0.2		0.1	
Petrophile macrostachya				
Phyllangium divergens	0.1		0.1	
Podotheca gnaphalioides	0.2		0.1	
Poranthera microphylla	0.1		0.1	
Pterochaeta paniculata	0.1		0.1	
Pterostylis sp.	0.2		0.1	
Rhodanthe citrina	0.1		0.2	

Scaevola canescens	0.2		0.1	
Schoenus clandestinus	0.1		0.1	
Schoenus nanus	0.1		0.1	
Thysanotus patersonii			0.1	
Trachymene pilosa	0.1		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.1	
**Wahlenbergia capensis*	0.3		0.1	
Wahlenbergia preissii	0.2		0.1	
Waitzia suaveolens var. *suaveolens*	0.1		0.2	
Xanthorrhoea preissii	2		1.5	
Xanthosia huegelii	0.1		0.1	

PHOTOS



Site Name:	YTQ12
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	03/10/2024
GPS Location:	GDA94 Zone 50 365937.09E 6588028.27N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	SW
Soil Type:	Sand
Soil Colour:	Grey/White (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds, Drought (other)

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	365937	6588028	NW corner
Corner 2	365945	6588027	
Corner 3	365946	6588019	
Corner 4	365935	6588017	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia stenoptera	0.4		0.1	
Apectospermum spinescens	0.3		0.1	
**Arctotheca calendula*	0.2		0.1	
Austrostipa macalpinei	0.2		0.1	
Banksia attenuata	6		20	
Banksia dallanneyi subsp. *dallanneyi*	0.3		0.1	
Banksia menziesii	0.1		0.1	
Billardiera fraseri			0.2	
Burchardia congesta	0.3		0.1	

Caustis dioica	0.3			
Chamaescilla corymbosa	0.1		0.1	
Conospermum stoechadis subsp. *stoechadis*	0.6		0.3	
Conostylis aurea	0.2		0.1	
Conostylis teretifolia subsp. *teretifolia*	0.1		0.1	
Daviesia divaricata subsp. *divaricata*	1.2		0.2	
Daviesia nudiflora subsp. *nudiflora*	0.3		0.1	
Drosera erythrorhiza	0.1		0.1	
Drosera pallida			0.1	
Eremaea pauciflora	0.4		0.1	
Eremaea pauciflora var. ?*lonchophylla*				
Eucalyptus todtiana	3.5		5	
**Gladiolus caryophyllaceus*	0.3		0.1	
Haemodorum ?loratum	0.3		0.1	
Haemodorum paniculatum	0.1		0.1	
Hibbertia hypericoides	0.3		0.1	
Hibbertia striata	0.3		0.1	
**Hypochaeris glabra*	0.2		0.1	
Jacksonia floribunda				
Lepidobolus preissianus subsp. *preissianus*	0.3			
Levenhookia stipitata	0.1		0.1	
Melaleuca ciliosa	0.3		0.1	
Mesomelaena pseudostygia	0.3		3	
Orianthera spermacocea	0.2		0.1	
Phyllangium divergens	0.1		0.1	
Podotheca gnaphalioides	0.1		0.1	
Poranthera microphylla	0.1		0.4	
Pyrorchis nigricans	0.1		0.1	
Schoenus clandestinus	0.1		0.1	
Schoenus pleiostemoneus	0.2			
Thysanotus manglesianus	0.3		0.1	
Thysanotus sp. Coastal plain (N.H. Brittan 66/63)	0.3		0.1	
Trachymene pilosa	0.1		0.1	
Tricoryne elatior	0.1		0.1	
Xanthorrhoea preissii	1.5		4	

PHOTOS



Site Name:	YTQ13A
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	03/10/2024
GPS Location:	GDA94 Zone 50 366046.0473E 6588036.175N
Orientation:	90, 180
Community:	3
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	SSW
Soil Type:	Sand
Soil Colour:	grey/white/yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 3 - Very Good
Fire:	> 10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	366046	6588036	NW corner
Corner 2	366056	6588035	
Corner 3	366058	6588024	
Corner 4	366048	6588025	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Alexgeorgea nitens	0.2		0.1	
Allocasuarina humilis	1.8		1	
**Arctotheca calendula*	0.2		0.1	
Austrostipa macalpinei	0.1		0.1	
Banksia attenuata	4		7	
Banksia menziesii	4.5		1	
Burchardia congesta	0.3		0.1	
Caladenia flava	0.2		0.1	
Calothamnus hirsutus	1.6		0.4	

Caustis dioica	0.4		0.1	
Chamaescilla corymbosa	0.2		0.1	
Conostephium pendulum	0.3		0.1	
Conostylis teretifolia subsp. *teretifolia*	0.1		0.1	
Daviesia divaricata subsp. *divaricata*	0.7		0.1	
Daviesia nudiflora subsp. *nudiflora*	0.3		0.1	
Drosera eneabba	0.1		0.1	
Drosera erythrorhiza	0.1		0.1	
Drosera pallida			0.1	
Eremaea pauciflora var. *lonchophylla*	2		3	
Eucalyptus todtiana	4.2		10	
?*Goodeniaceae* sp.	0.2		0.1	
Haemodorum laxum	0.1		0.1	
Hibbertia hypericoides	0.5		0.5	
Jacksonia floribunda	0.2		0.1	
Lepidobolus preissianus subsp. *preissianus*	0.3		0.1	
Lepidosperma cf. pubisquameum	0.3		0.1	
Levenhookia murfetii	0.1		0.1	
Levenhookia stipitata	0.1		0.1	
Mesomelaena pseudostygia	0.3		0.2	
Petrophile macrostachya	0.1		0.1	
Phyllangium divergens	0.1		0.1	
Pigea calycina	0.3		0.1	
Podotheca gnaphalioides	0.1		0.1	
Poranthera microphylla	0.1		0.1	
Scaevola canescens	0.2		0.1	
Schoenus clandestinus	0.1		0.1	
Schoenus nanus	0.1		0.1	
Schoenus pleiostemoneus	0.2		0.1	
Thysanotus sparteus	0.4		0.1	
Trachymene pilosa	0.1		0.1	
**Trifolium campestre* var. *campestre*	0.1		0.1	
**Vulpia bromoides*	0.1		0.1	
Xanthorrhoea preissii	1.4		5.5	
Xanthosia huegelii	0.2		0.1	

PHOTOS



Site Name:	YTQ14
Site Type:	QUADRAT
Dimensions:	10m x 10m
Survey Date:	04/10/2024
GPS Location:	GDA94 Zone 50 380815.7596E 6584003.905N
Orientation:	90, 180
Community:	1
Landform Type:	Undulating Plain
Slope Class:	Very Gently Inclined (1°)
Aspect:	W
Soil Type:	Sand
Soil Colour:	grey/yellow (other)
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 5 - Degraded
Disturbance:	Weeds, farming activity (other)
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Corner 1	380816	6584004	NW corner
Corner 2	380825	6584003	
Corner 3	380826	6583994	
Corner 4	380816	6583993	

SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Acacia costata	0.4		0.1	
Acacia pulchella var. *glaberrima*	0.3		0.1	
Amphipogon turbinatus	0.2		1	
Anigozanthos humilis subsp. *humilis*	0.3		0.7	
Austrostipa elegantissima	0.1		0.1	
Austrostipa macalpinei	0.1		0.1	
**Briza maxima*	0.2		0.2	
Caladenia flava subsp. *flava*	0.2		0.1	

Centrolepis drummondiana	0.1		0.1	
Conostylis aurea	0.2		0.1	
Daviesia nudiflora	0.9		1	
Diuris tinkeri	0.3		0.1	
Drosera menziesii			0.1	
**Ehrharta calycina*	0.3		0.1	
Eucalyptus todtiana	8		7.5	
**Ficinia marginata*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.3		0.2	
Goodenia convexa	0.1		0.1	
Haemodorum ?loratum	0.2		0.1	
Hakea costata	1		0.1	
Hakea trifurcata	2		2.5	
Hydrocotyle callicarpa	0.1		0.1	
**Hypochaeris glabra*	0.1		0.1	
Kennedia prostrata				
Lepidobolus preissianus subsp. *preissianus*	0.2		0.1	
Lepidosperma cf. pubisquameum	0.3		0.1	
Leptospermopsis erubescens	0.7		0.1	
**Lysimachia arvensis*	0.1		0.1	
Mesomelaena pseudostygia	0.3		1	
Morelotia octandra	0.3		6	
Neurachne alopecuroidea	0.2		0.1	
Opercularia vaginata	0.2		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Petrophile macrostachya				
Podolepis aristata subsp. *aristata*	0.3		0.4	
Podotheca gnaphalioides	0.2		0.2	
Poranthera microphylla	0.1		0.1	
Ptilotus polystachyus	0.3		0.1	
Rhodanthe citrina	0.2		0.2	
**Romulea rosea*	0.2		0.1	
Schoenus clandestinus	0.1		0.1	
Stackhousia pubescens	0.2		0.1	
Styphelia retrorsa	0.3		0.1	
Thysanotus patersonii			0.1	
Trachymene pilosa	0.1		0.1	
Tricoryne elatior	0.2		0.1	
Tripterococcus brunonis	0.3		0.1	

**Ursinia anthemoides* subsp. *anthemoides*	0.3		0.1	
**Wahlenbergia capensis*	0.2		0.1	
Xanthorrhoea preissii	0.2		0.1	

PHOTOS



Site Name:	YTR01
Site Type:	RELEVE
Survey Date:	02/10/2024
GPS Location:	GDA94 Zone 50 372539.9593E 6584587.477N
Landform Type:	Undulating Plain
Slope Class:	Gently Inclined (3°)
Aspect:	N
Soil Type:	Sand
Soil Colour:	Yellow
Rock Outcrop:	No bedrock exposed
CF Abundance:	0%
Vegetation Condition:	Southern Vegetation Condition - 4 - Good
Disturbance:	Weeds
Fire:	>10 years

SITE POINTS

Label	Easting	Northing	Comments
Other	372540	6584587	actually GDA 2020

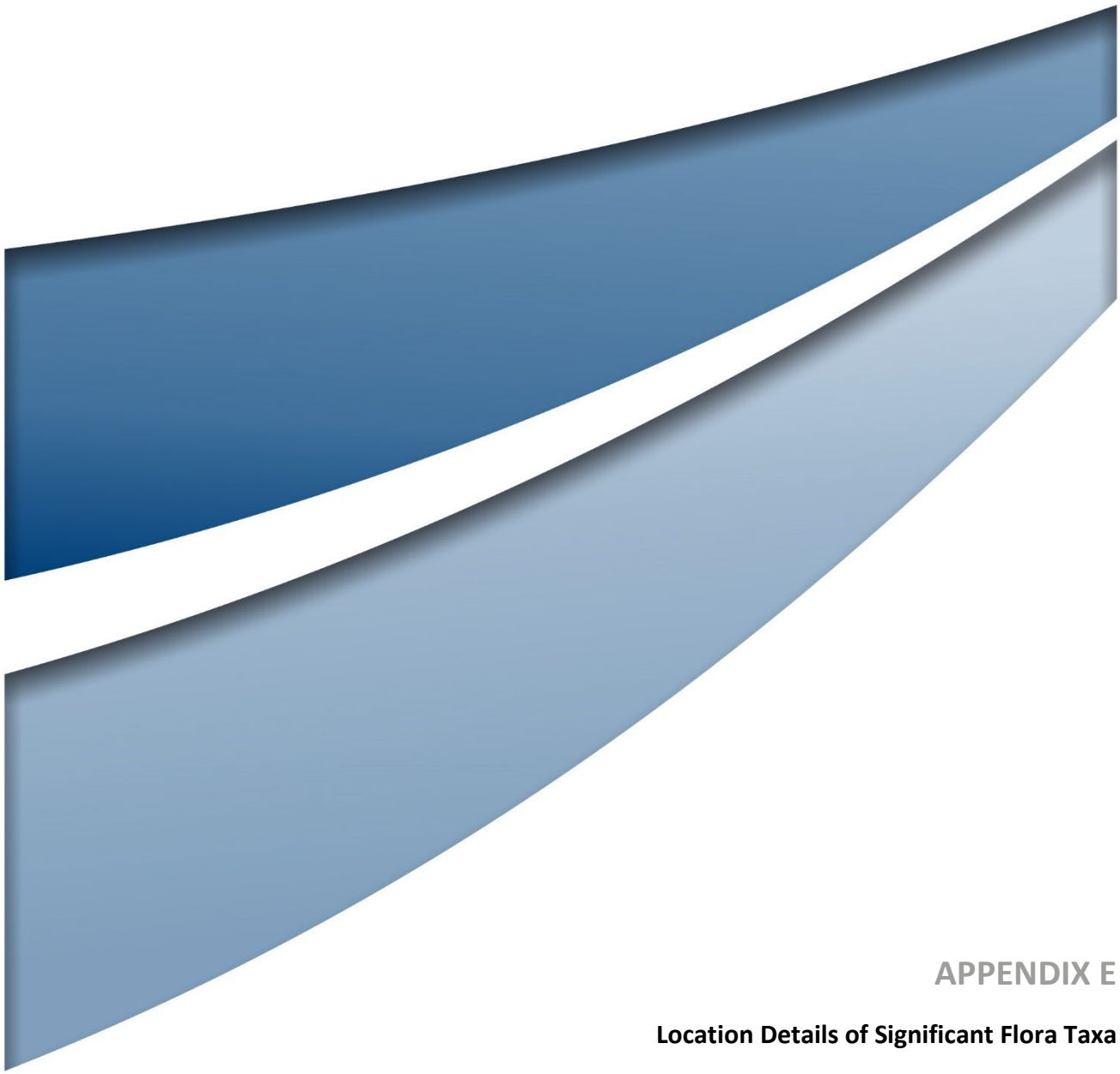
SPECIES LIST

Taxon Name	Avg. Height	Count Alive	Cover Alive	Comments
Allocasuarina humilis	1.6		5	
Austrostipa elegantissima	0.6		0.1	
Austrostipa macalpinei	0.3		0.1	
Banksia dallanneyi subsp. *dallanneyi*				
Burchardia congesta	0.3		0.1	
Calothamnus quadrifidus	1.5		0.2	
Centrolepis drummondiana	0.1		0.1	
Crassula colorata	0.1		0.1	
Daviesia decurrens	0.4		0.1	
**Ehrharta calycina*	0.8		20	
**Ficinia marginata*	0.1		0.1	
**Gladiolus caryophyllaceus*	0.6		1.5	
Hibbertia hypericoides	0.5		1	
**Hypochaeris glabra*	0.2		0.5	
Mesomelaena pseudostygia	0.4		0.2	

Opercularia vaginata	0.2		0.1	
**Pentameris airoides* subsp. *airoides*	0.1		0.1	
Podotheca gnaphalioides	0.2		0.1	
**Polycarpon tetraphyllum*	0.1		0.1	
**Sonchus oleraceus*	0.3		0.1	
**Ursinia anthemoides* subsp. *anthemoides*	0.2		5	
**Vulpia bromoides*	0.1		0.1	
Xanthorrhoea preissii	2.5		5	

PHOTOS





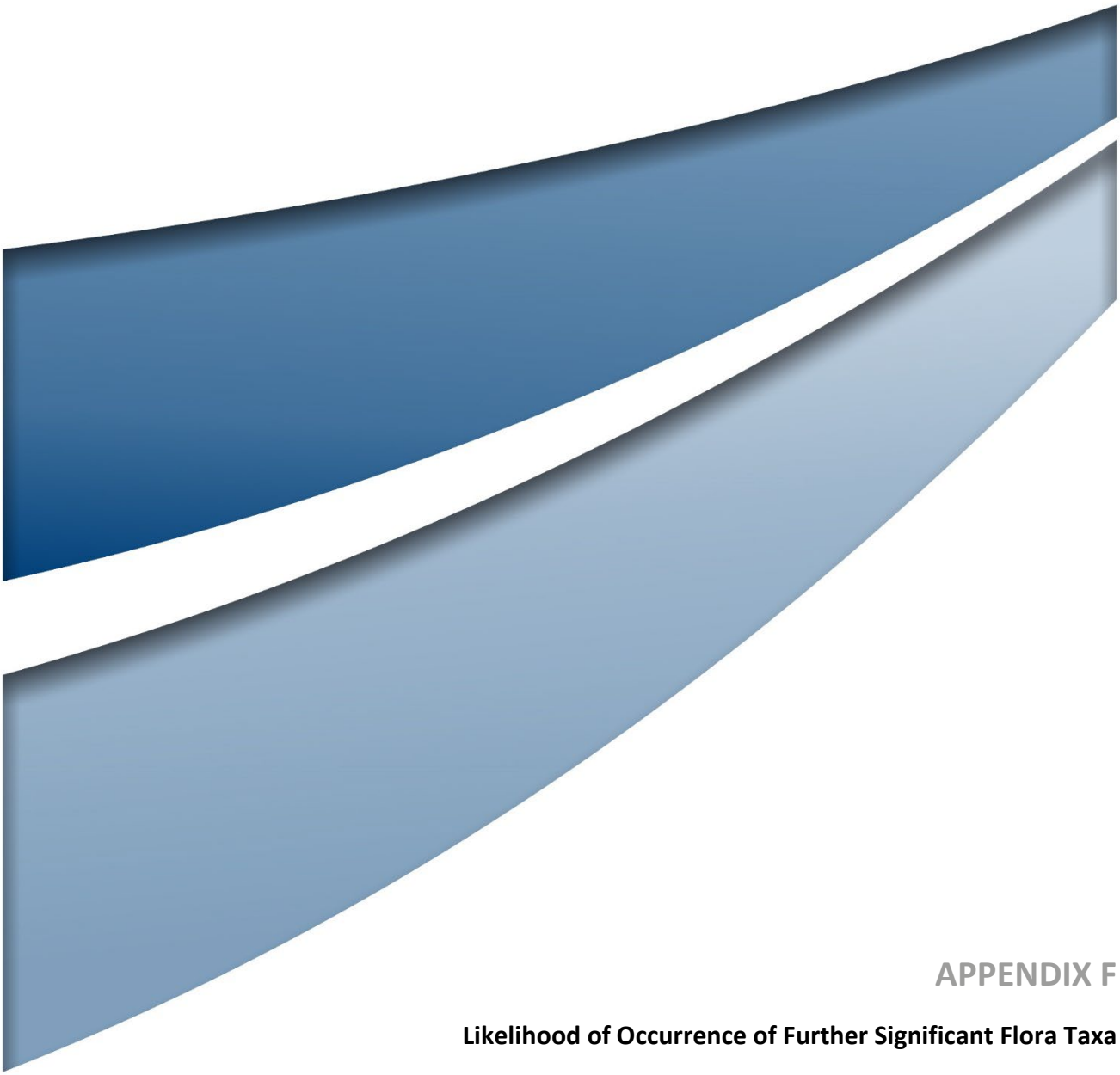
APPENDIX E

Location Details of Significant Flora Taxa

GOVERNMENT AGENCY REFERENCE ONLY
NOT FOR PUBLIC DISSEMINATION
CONTAINS LOCATIONS OF SIGNIFICANT FLORA TAXA

Date	Easting^	Northing^	Taxon	WA Status	Count	Comments
25/09/2024	367149.69	6585704.48	*Calytrix ecalycata* subsp. *brevis*	P3	5	Along firebreak.
25/09/2024	366769.41	6586503.11	*Grevillea curviloba*	T	10	Planted, outside of known range. In disturbed vegetation.
3/10/2024	365937.09	6588028.27	*Haemodorum ?loratum*	P3	-	
25/09/2024	366963.08	6586358.42	*Haemodorum loratum*	P3	8	
25/09/2024	366812.04	6586697.64	*Haemodorum loratum*	P3	2	
26/09/2024	371508.34	6583435.76	*Haemodorum loratum*	P3	6	
26/09/2024	368673.85	6583724.73	*Haemodorum loratum*	P3	2	
25/09/2024	367059.1	6586066.84	*Haemodorum loratum*	P3	1	
25/09/2024	367003.12	6586199.95	*Haemodorum loratum*	P3	1	
25/09/2024	366990.34	6586235.48	*Haemodorum loratum*	P3	1	
25/09/2024	366919.57	6586380.71	*Haemodorum loratum*	P3	1	
25/09/2024	366870.79	6586496.06	*Haemodorum loratum*	P3	1	
26/09/2024	368880.27	6583555.11	*Haemodorum loratum*	P3	2	
26/09/2024	368926.23	6583549.91	*Haemodorum loratum*	P3	2	
26/09/2024	369138.59	6582459.48	*Haemodorum loratum*	P3	1	
2/10/2024	372582.92	6581982.72	*Hypocalymma* sp.	-	-	
25/09/2024	367100.04	6585682.8	*Poranthera moorokatta*	P2	20	
25/09/2024	365982.57	6587948.8	*Poranthera moorokatta*	P2	4	
25/09/2024	366609.63	6586798.21	*Eucalyptus macrocarpa* subsp. *elachantha*	P4	3	
25/09/2024	366736.62	6586510.02	*Eucalyptus macrocarpa* subsp. *elachantha*	P4	2	
25/09/2024	366638.38	6586771.41	*Eucalyptus macrocarpa* subsp. *elachantha*	P4	4	
25/09/2024	366763.93	6586513.57	*Eucalyptus macrocarpa* subsp. *elachantha*	P4	5	

^Data presented in GDA2020, Zone 50.



APPENDIX F

Likelihood of Occurrence of Further Significant Flora Taxa

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Acacia aristulata	T	September to December	Ridges and hills with chert, brown or red clayey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area.
Acacia cummingiana	P3	May to June, August	Sandplains, lateritic breakaways with grey or yellow sand and lateritic gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record approximately 6 km northeast of Survey Area; Survey Area is within this taxon's known distribution.
Acacia denticulosa	T	September to December	Rock outcrops of greenstone or granite, clay loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 6 km southeast of Survey Area; Survey Area is outside this taxon's known distribution. Record likely cultivated population.
Acacia epacantha	P3	July to August	Breakaways, slopes, flats and along drainage lines with gravelly sand or clay loam over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 6 km north of Survey Area; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Acacia forrestiana	T	November to December	Gullies, hills, breakaways.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 3 km east of Survey Area; Survey Area is within this taxon's known distribution.
Acacia plicata	P3	August to October	Hillslopes and drainage lines with loamy and clayey soils, often over sandstone or siltstone.	Unlikely Habitat is not present within D&T Survey Area, grows almost exclusively in Wandoo woodland.	Unlikely Habitat is not present within Survey Area, grows almost exclusively in Wandoo woodland. Nearest record approximately 5 km northwest of Survey Area; Survey Area is outside this taxon's known distribution.
Acacia ridleyana	P3	April, November to December	White or brown or yellow or grey sand or loam or gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.
Acacia splendens	T	May, August	Laterite breakaways, brown sandy loam, sometimes alluvial flats.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 5 km north of Survey Area; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Allocasuarina grevilleoides	P3	September to November	Slopes, outcrops and plains with rocky or gravelly brown sand or clay loam over laterite or granite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 16 km southwest of Survey Area; Survey Area is within this taxon's known distribution.
Allocasuarina ramosissima	P3	May to September	Breakaways, slopes and plains with gravelly grey, brown or white sand or loam over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Andersonia gracilis	T	August to November	Winter-wet areas, near swamps. White-grey sand, sandy clay and gravelly loam.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record immediately adjacent to Survey Area.
***Andersonia* sp. Mysosma (E.A. Griffin 2213)**	P2	September to November	Breakaways and grey sand with lateritic boulders or gravel.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 12km south of Survey Area; Survey Area is within this taxon's known distribution.
Angianthus micropodioides	P3	September to November	Saline flats, winter-wet depressions and adjacent dunes. Grey or brown clay loam or sand.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 1 km west of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
***Anigozanthos humilis* subsp. Badgingarra (S.D. Hopper 7114)**	P2	September to December	Slopes, plains, flats and winter-wet areas with white or grey sand. Banksia woodland, low wet heath.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record immediately adjacent to Survey Area.
Anigozanthos humilis* subsp. *chrysanthus	P4	August to November	Slopes, plains and winter-wet areas with white, grey or yellow sand. Banksia woodland, low wet heath.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record immediately adjacent to Survey Area.
Anigozanthos viridis* subsp. *terraspectans	T	August to September	Grey sand, clay loam. Winter-wet depressions.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 3 km southwest of Survey Area.
Arnocrinum gracillimum	P2	October to November	Flats and plains with white, grey, yellow or lateritic sand over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record 30 km from Survey Area; Survey Area is outside this taxon's known distribution.
Asterolasia drummondii	P4	July to September	Lateritic hills, sandplains and breakaways with lateritic gravel and sand or loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record 4 km northwest of Survey Area; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Asterolasia grandiflora	P4	September to October	Slopes, gullies and breakaways of laterite, with brown loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record 60 km from Survey Area; Survey Area is outside this taxon's known distribution.
Babingtonia delicata	P1	November	Winter-wet closed depressions, wetlands and lakes with white, yellow or grey clayey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record within Survey Area, north of Salt Lake Road (2004), however this record's coordinates are erroneous, and should be located along Salt Lake Road outside the Survey Area.
Babingtonia urbana	P3	December to March	Wetlands with clay, winter-wet flats.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 5 km south of Survey Area; Survey Area is within this taxon's known distribution.
Banksia catoglypta	T	June to July	Hillslopes and breakaways with grey sand and laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record 60 km from Survey Area; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Banksia chamaephyton	P4	October to December	Slopes, breakaways and flats with grey or white sand over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 13 km southeast of Survey Area; Survey Area is within this taxon's known distribution.
Banksia dallanneyi* subsp. *pollosta	P3	August to September	Grey/yellow sand. Flats, lateritic rises.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record within Survey Area, however the locality of this record is 'Bundarra Nature Reserve, Gillingarra Road', which is not located in the Survey Area. Survey Area is within this taxon's known distribution.
Banksia fuscobractea	T	September to February	Laterite hills and rises, grey sand or brown loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Nearest record approximately 13 km southeast of Survey Area; Survey Area is outside this taxon's known distribution, and has a very restricted range.
Banksia kippistiana* var. *paenepeccata	P3	October to November	Hills and slopes with white-yellow or grey sand over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record approximately 3 km south of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Banksia mimica	T	September to January	Flats or gentle slopes with grey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Nearest record approximately 12 km southeast of Survey Area; Survey Area is outside this taxon's known distribution.
Banksia nana	P3	October	Hills with white/grey sand and/or gravel over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Suitable habitat present within Survey Area. Nearest record approximately 6 km north of Survey Area; however the Survey Area is outside this taxon's known distribution.
Banksia prionophylla	T	July	Dry grey sand with laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record approximately 3 km northwest of Survey Area; known distribution is from a single location.
Banksia pteridifolia* subsp. *vernalis	P3	September to October	White/grey sand over laterite, usually on plains or lower slopes.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat present within Survey Area. Nearest record approximately 6 km southeast of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Banksia serratuloides* subsp. *perissa	T	August to September	Hillsides, slopes and breakaways with white/grey sand or brown loam with laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 30 km from Survey Area; Survey Area is outside this taxon's known distribution.
Banksia serratuloides* subsp. *serratuloides	T	August to October	Lateritic sandy clay flats, slopes and valleys.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 30 km from Survey Area; Survey Area is outside this taxon's known distribution.
Beaufortia bicolor	P3	November to December	Sandplains with white sand over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record approximately 12 km northwest of Survey Area; however the Survey Area is outside this taxon's known distribution.
Beaufortia eriocephala	P3	June, September to December	Ridges, low rises and flats with brown, grey or white sand or sandy clay and lateritic gravel over laterite or sometimes granite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat present within Survey Area. Nearest record immediately adjacent to Survey Area on Brand Highway; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Boronia ericifolia	P2	April to September	Breakaways with greenstone, slopes with brown loam and laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 13 km northeast of Survey Area; Survey Area is outside this taxon's known distribution.
Boronia scabra* subsp. *condensata	P2	August	Upper slopes and lateritic breakaways with grey/brown sandy clay or loam with laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within Survey Area. Nearest record approximately 13 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Caladenia multiplex	P2	Mid-August to September. Latest record from 13 September.	Red-brown loam, slopes and creek lines, winter-wet areas.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Nearest record approximately 9 km east of Survey Area; however this record has erroneous coordinates, and is located further east. Survey Area is outside this taxon's known distribution.
Caladenia speciosa	P4	Late August to October. Latest record from 25 October	Flats, swampy areas with black sand; clay pans. Also grey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Calectasia elegans	T	September to October	Plains with deep grey or pale yellow sand.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record approximately 17 km Southeast of Survey Area; Survey Area is outside this taxon's known distribution.
Calothamnus accedens	P4	September to January	Slopes or rises with brown clay loam.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 17 km southwest of Survey Area; Survey Area is within this taxon's known distribution.
Calothamnus brevifolius	P4	January to February or April	White/grey or yellow sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 4 km west of Survey Area; Survey Area is within this taxon's known distribution.
Calothamnus pachystachyus	P4	September to November	Hills and breakaways with laterite, sandy slopes with laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Suitable habitat is present within Survey Area. Nearest record is approximately 16 km southwest of Survey Area; Survey area is within this taxon's known distribution.
Calytrix ecalycata* subsp. *brevis	P3	August to September	Sandplains and low rises with white/grey or yellow sand.	**Known to Occur**	**Known to Occur**

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Catacolea enodis	P2	Unknown	Deep white sand over laterite. Flats.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 25 km northwest of Survey Area; Survey Area is outside this taxon's known distribution.
Chamaescilla gibsonii	P3	August to November	Brown or grey sandy clay. Winter-wet clay pans and flats.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.
Chamelaucium lullfitzii	T	September to December	Hilltops, slopes and undulating plains with gravelly sand.	Unlikely No suitable habitat present within D&T Survey Area, and is outside the known range of this taxon.	Unlikely No suitable habitat is present within Survey Area, and is outside the known range of this taxon.
***Chamelaucium* sp. Cataby (G.J. Keighery 11009)**	T	September to December	Lateritic breakaways.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area. Nearest record is approximately 5 km west of Survey Area.
Chordifex reseminans	P2	March to May	Flats and winter-wet depressions with white-grey sand over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record approximately 3 km south of Survey Area; Survey Area is within taxon's known distribution.
Chorizema humile	T	August to September	Plains with granite, Rock outcrops of granite with red-brown soil.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Comesperma rhadinocarpum	P3	October to November	Undulating plains, valley slopes and flats with grey, brown or yellow sandy loam or sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record approximately 14 km southeast of Survey Area; Survey Area is within taxon's known distribution.
Conospermum densiflorum* subsp. *unicephalatum	T	September to December	Plains with red-brown soil and clays, laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Unlikely No suitable habitat is present with Survey Area. Nearest record is approximately 30 km from Survey Area; Survey Area is outside this taxon's known distribution.
Conostephium magnum	P4	July to September	Sand dunes and slopes with white-grey sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 7 km southwest of Survey Area; Survey Area is on boundary of this taxon's known distribution.
Cristonia biloba* subsp. *pubescens	P2	June to July	Hillslopes and ridges with white sand or brown loam and gravel.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Dampiera tephrea	P3	August to October	Flats, riverbanks and slopes with sand or loam, often with limestone.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is located within the Survey Area, however this record has erroneous coordinates; the locality description states Regans Ford, further south of the Survey Area.
Darwinia acerosa	T	August to September	Granite outcrops with brown soils.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Darwinia carnea	T	October to November	Breakaways, brown loamy sand over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Daviesia dielsii	T	July	Sandy, often gravelly soils.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat is present within Survey Area, however nearest record is approximately 30 km from Survey Area; Survey Area is outside this taxon's known distribution.
Desmocladus biformis	P3	September to October	Hills, slopes and undulating plains with white or brown sand or sandy clay over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km southeast of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Desmocladus elongatus	P4	August to December	Slopes, plains and uplands with white or grey sand over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat is present within Survey Area, however nearest record is approximately 15 km from Survey Area; Survey Area outside this taxon's known distribution.
Desmocladus microcarpus	P2	August to October	Slopes with grey or cream sand over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km southeast of Survey Area; Survey Area is within this taxon's known distribution.
Desmocladus nodatus	P3	October to November	Moist sites in open woodland with shrubs.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to Survey Area; Survey Area is on the boundary of this taxon's known distribution.
Dillwynia dillwynioides	P3	August to January	Saline flats, winter-wet depressions and wetlands. Grey, brown or black sandy loam, sometimes peaty.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat is present within Survey Area, however nearest record is approximately 13 km south of Survey Area; Survey Area is outside this taxon's known distribution.
Diplolaena andrewsii	T	August to November	Brown sandy loam over granite. Granite outcrops and slopes.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Dodonaea hackettiana	P4	April to October	Limestone ridges, dunes, plains and low rises. Grey sand over limestone.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Drakaea elastica	T	October to November	Winter-wet depressions. Grey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to Survey Area; Survey Area is within this taxon's known distribution.
Drosera leioblastus	P1	September to October	White siliceous sand with laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 7 km northwest of the Survey Area; Survey Area is on boundary of this taxon's known distribution.
Drosera prophylla	P3	June to July	Hilltops, lateritic breakaways and ridges and slopes with gravelly sand over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eleocharis keigheryi	T	August to November	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km northwest of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
***Eremaea* sp. Cairn Hill (B. Morgan 532)**	P2	October to November	White to light brown sand, plains with laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 8 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Eremophila glabra* subsp. *chlorella	T	July to November	Winter-wet depressions, lake edges and flats with grey-white sandy clay or sand.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 16 km east of the Survey Area; Survey Area is within this taxon's known distribution.
Eremophila scaberula	T	August to November	Plains with sandy clay, laterite.	Unlikely No suitable habitat present within D&T Survey Area, and is outside this taxon's known range.	Unlikely This taxon is restricted to Salmon gum woodland, which is not present within Survey Area. Nearest record is approximately 50 km from Survey Area; Survey Area is outside this taxon's known distribution.
Eucalyptus abdita	P2	February	Laterite, sandy clay with gravel over laterite. Slopes, breakaways.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Suitable habitat not present within the Survey Area. Survey Area is on the boundary of this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Eucalyptus absita	T	May	Flats with sandy loam or grey sand.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Habitat is not present within Survey Area. Nearest record is approximately 5 km north of Survey Area; Survey Area is outside this taxon's known distribution.
Eucalyptus annuliformis	P1	July	Laterite hills.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within the Survey Area. Nearest record is approximately 2 km east of Survey Area; this taxon's distribution is limited to this area.
Eucalyptus argutifolia	T	Year round	Limestone outcrops on hills and breakaways with brown-orange sand.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus crispata	T	March to June	Lateritic breakaways and slopes with brown-grey sand or loam with lateritic gravel.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus dolorosa	T	February	Lateritic slopes and breakaways with gravelly/rocky brown loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus leprophloia	T	July to November	Breakaways and slopes with grey or white sand or sandy clay over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus macrocarpa* subsp. *elachantha	P4	August to December	Hillslopes, ridges, sandplains with white or grey sand over laterite.	**Known to Occur**	**Known to Occur**

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Eucalyptus pruiniramis	T	December to Feb	Skeletal soils over sandstone or laterite. Rocky hillslopes.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus recta	T	January	Pale yellow or white sand, low rises with laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Eucalyptus x balanites	T	February, June to July	Plains with brown sandy loam.	Unlikely Suitable habitat is present within D&T Survey Area, however parent taxa (*Eucalyptus decipiens* and *Eucalyptus lane-poolei*) do not occur in the Survey Area.	Unlikely Suitable habitat is present within Survey Area, however parent taxa (*Eucalyptus decipiens* and *Eucalyptus lane-poolei*) do not occur in the Survey Area. Nearest record is approximately 70 km north of Survey Area; Survey Area is outside this taxon's known distribution.
Eucalyptus x carnabyi	P4	October to November	Grey sand, sandy loam. Lateritic ridges.	Unlikely Suitable habitat is present within D&T Survey Area, however the parent taxa do not occur in the Survey Area.	Unlikely Suitable habitat is present within Survey Area, however the parent taxa do not occur in the Survey Area. Nearest record is approximately 14 km east of Survey Area; Survey Area is outside this taxon's known distribution.
Gastrolobium hamulosum	T	August to October	Flats, slopes, ridges with sandy, often gravelly soils or clay.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 50 km northeast of Survey Area; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Gastrolobium nudum	P2	October to December	Hilltops and ridges with clay and laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Glyceria drummondii	T	July to October	Seasonally flooded clay pans within clay plains, in hollows. Brown or red-brown clay.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat present within the Survey Area. Nearest record is approximately 50 km southeast of Survey Area; Survey Area is within this taxon's known distribution.
Gompholobium gairdnerianum	P3	September to November	Hills, slopes and ridges with white, brown or grey sandy clay or sand over laterite or occasionally sandstone.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Goodenia arthrotricha	T	November to March	Granite slopes with brown loam clay.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Gratiola pedunculata	P2	November to March	Grey black clay. Edges of swamps and winter wet areas.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Survey Area is on the boundary of this taxon's known distribution.
Grevillea calliantha	T	April, August to October	Plains and lower slopes with sandy loam over laterite or occasionally ironstone.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km north-northwest of Survey Area; Survey Area is on the boundary of this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Grevillea christineae	T	July to September	Laterite hills and slopes.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Grevillea curviloba	T	August to October	Grey, white or brown sand or sandy loam. Flats, drainage lines and lower slopes.	**Known to Occur** Record within the Survey Area is likely planted or a garden escape. Survey Area is outside this taxon's known distribution.	**Known to Occur** Record within the Survey Area is likely planted or a garden escape. Survey Area is outside this taxon's known distribution.
Grevillea drummondii	P4	June to September	Laterite hills with brown loam.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat within Survey Area. Nearest record is within the Survey Area, however these records have erroneous coordinates, and are not located within the Survey Area.
Grevillea florida	P3	July to September	Sandplains and slopes with brown sand, sandy clay and lateritic gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km east of Survey Area; Survey Area is within this taxon's known distribution.
Grevillea olivacea	P4	June to September	White or grey sand. Coastal dunes, limestone rocks.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Two historical records 30 and 60 years old. No suitable habitat. Survey Area is outside this taxon's primary distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Grevillea pythara	T	August to October	Slopes. Brown or yellow sandy or gravelly loam.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Survey Area is greater than 100 km from this taxon's known distribution.
Grevillea rudis	P4	April to January	Hills and slopes with white, grey, yellow or red sand, often with gravel and laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area. Nearest record is approximately 2.5 km west of Survey Area; however this record is considered to have erroneous coordinates. Survey Area is on the boundary of this taxon's known distribution.
Grevillea saccata	P4	April, June to November	Hills and slopes with yellow or brown sand or loam, often with gravel and laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km north of Survey Area; Survey Area is on the boundary of this taxon's known distribution.
Grevillea gillingarra	T	September	Red lateritic loam, creek edges and steep slopes.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Grevillea synapheae **subsp. A Flora of Australia (S.D. Hopper 6333)**	P1	September	Laterite breakaways.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Grevillea synapheae* subsp. *minyulo	P1	September to October	Slopes with yellow brown or grey gravelly sand. Laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area. Nearest record is approximately 9 km northwest of Survey Area; Survey Area is outside this taxon's known distribution.
Grevillea thyrsoides* subsp. *thyrsoides	P3	February, August to September	Hills and plains with grey, white or brown sand or clay loam, often with laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to Survey Area (1976); Survey Area is on the boundary of this taxon's known distribution.
Guichenotia alba	P3	July to August	Sandy and gravelly soils. Low lying flats, depressions.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 4 km north of Survey Area; Survey Area is on the boundary of this taxon's known distribution.
***Gyrostemon* sp. Mogumber (T.J. Hawkeswood 250)**	P1	Unknown	Unknown.	Unlikely Known from only a single record (1980) approximately 14 km southwest of the D&T Survey Area.	Unlikely Known from only a single record (1980) approximately 14 km southwest of Survey Area.
Haemodorum loratum	P3	November	Uplands and sandplains with grey, white or yellow sand and gravel.	**Known to Occur**	**Known to Occur**

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Hakea longiflora	P3	June to July	High in landscape; hills, breakaways and plains with white, grey or yellow gravelly sand or sandy loam over laterite or occasionally sandstone.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Hakea megalosperma	T	April to June	High in landscape; hills, breakaways, slopes and flats with white, grey or brown sand or sandy loam over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Haloragis platycarpa	T	October to December	Cracking clay, winter-wet, margins of wetlands or plains with brown loam.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 40 km east of Survey Area; Survey Area is outside this taxon's known distribution.
Hemiandra gardneri	T	August to November	Plains with yellow or grey sand or clayey sand.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 40 km northeast of Survey Area; Survey Area is outside this taxon's known distribution.
Hemigenia curvifolia	P2	September to October	Plains with white or yellow sand.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area. Nearest record is approximately 5 km north of Survey Area, however this record's coordinates are erroneous; Survey Area is outside this taxon's known distribution, further east.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Hensmania stoniella	P3	September to November	Flats and slopes with white, grey or lateritic sand, sometimes winter wet.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 7 km southwest of Survey Area; Survey Area is within this taxon's known distribution.
Hypocalymma lateriticola	P1	August to September	Laterite plains with grey or yellow sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km south of Survey Area; Survey Area is within this taxon's known distribution.
Hypocalymma quadrangulare	P3	July to October	Slopes and plains with sand.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area. However, nearest record is approximately 15 km southwest of Survey Area; Survey Area is outside this taxon's known distribution, which is generally sub-coastal.
Hypocalymma serrulatum	P2	April to July, November, January	Drainage lines, edges of and slopes above winter-wet depressions with grey sand.	Unlikely Nearest record is immediately adjacent to Survey Area, however this record has erroneous coordinates and should be located in Badgingarra National Park; D&T Survey Area is outside this taxon's known, restricted distribution.	Unlikely Nearest record is immediately adjacent to Survey Area, however this record has erroneous coordinates and should be located in Badgingarra National Park; Survey Area is outside this taxon's known, restricted distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Hypocalymma tetrapterum	P3	August	Grey sand, loam, lateritic gravel. Riverbanks, breakaways.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 5 km northwest of Survey Area; Survey Area is on the boundary of this taxon's known distribution.
Hypocalymma x proliferum	P1	August to September	Sandy plains over clay, riverbanks, slopes.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area. Nearest record is approximately 10 km west of the Survey Area.
Hypolaena robusta	P4	October to November	Flats, grey sand. Banksia to *Eucalyptus todtiana* woodland.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 4 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Isopogon autumnalis	P3	February, April	Sandplains with white/grey sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km southeast of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Isotropis cuneifolia* subsp. *glabra	P3	August to October	Low rises and winter-wet depressions and flats with grey or brown sand or clay.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km southeast of Survey Area; Survey Area is within this taxon's known distribution.
Jacksonia anthoclada	P3	November	Slopes with brown, yellow or white sand over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 30 km north of Survey Area; Survey Area is outside this taxon's known distribution.
Jacksonia carduacea	P3	July, November to December	Plains and flats with white, grey or yellow sand, sometimes over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 5 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Lasiopetalum rupicola	P1	August to September	Hilltops with laterite and brown loam.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Lechenaultia galactites	P3	June, September to October	Yellow or brown sand over laterite, plains.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 6 km north of Survey Area; however this record cannot be verified, and the Survey Area is outside this taxon's current accepted distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Lepidobolus quadratus	P3	August to September	Dry kwongan, hillslopes and rises with grey-white sand and lateritic gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Although there is a record within the Survey Area, this record is from 1972 and has erroneous coordinates.
Lepidosperma rostratum	T	June to December	Peaty sand or clay. Winter-wet swamps.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely No suitable habitat is present within Survey Area. Nearest record is approximately 60 km south of Survey Area; Survey Area is outside this taxon's known distribution.
Lepyrodia curvescens	P2	September to November	Seasonally inundated swamplands, depressions and flats with white/grey sand or peaty sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 7 km west of Survey Area; Survey Area is within this taxon's known distribution.
Leucopogon foliosus	P3	September to November	Uplands and slopes with yellow/white sand with gravel, over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 3 km northwest of Survey Area; Survey Area is on the boundary of this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Leucopogon squarrosus* subsp. *trigynus	P2	June to September	Coastal habitats. Grey sand, low lying flats.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 13 km south of Survey Area; Survey Area is outside this taxon's known distribution.
Lyginia excelsa	P2	March to November	Undulating plains, flats and depressions with white/grey sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 4 km southwest of Survey Area; Survey Area is within this taxon's known distribution.
Macarthuria keigheryi	T	September to October	Dunes, plains and low rises above winter-wet areas with white, brown or grey sand or clay loam. Banksia woodland, recently burnt areas.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to west of Survey Area; Survey Area is within this taxon's known distribution.
Meionectes tenuifolia	P3	October to December	Seasonally inundated areas, Edge of wetlands. Clay or clayey loam over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.
Melaleuca sciotostyla	T	August to October	Hills and Breakaways, bases of ridges. Clay loam with laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Paracaleana dixonii	T	Late October to Late November	Flats, plains and slopes with grey sand, sometimes with laterite gravel.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely Suitable habitat not considered present within Survey Area. Nearest record approximately 13 km south of Survey Area. This record is from the DBCA TPFL Database, and does not have a vouchered specimen attached. Survey Area on edge of this taxon's known distribution.
Persoonia filiformis	P3	November to December	Plains and slopes with yellow or white sand over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 5 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Persoonia rudis	P3	September to January	Flats and slopes with white, grey or yellow sand, often over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km south of Survey Area; Survey Area is within this taxon's known distribution.
Petrophile biternata	P3	August to September	Lateritic hills, ridges.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Petrophile clavata	P2	September	Hilltops, slopes and ridges with grey sand and laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Phlebocarya pilosissima* subsp. *pilosissima	P3	August to October	Slopes with sand over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km south of Survey Area; Survey Area is within this taxon's known distribution.
Platysace ramosissima	P3	October to November	Undulating plains and flats with yellow, brown or grey sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 5 km southwest of Survey Area; Survey Area is within this taxon's known distribution.
Podotheca pritzelii	P3	September to October	Salt lakes and saline habitats.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 8 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Poranthera moorokatta	P2	September to November	Very gently inclined areas, grey/white sand. Dampland.	**Known to Occur**	**Known to Occur** Not returned by database searches, nearest record is 24 km north west of the Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Ptychosema pusillum	T	September to October	Low plains, slopes and dunes with white or grey sand. Banksia woodland on margins of seasonal wetlands.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent with west of Survey Area; Survey Area is within this taxon's known distribution.
Regelia megacephala	P4	November to February	Quartz hills.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Rhetinocarpha suffruticosa	P1	December to January	Low rises with gravelly clay loam over laterite.	Unlikely No suitable habitat present within D&T Survey Area, and is outside this taxon's known range.	Unlikely Suitable habitat is present within Survey Area. Nearest record is approximately 5 km north of Survey Area, but has erroneous coordinates; Survey Area is outside this taxon's known distribution.
Roycea pycnophylloides	T	September to October	Salt lakes and saline habitats.	Unlikely No suitable habitat present within D&T Survey Area, and is outside this taxon's known range.	Unlikely No suitable habitat is present within Survey Area. Nearest record is approximately 200 km southeast of Survey Area; Survey Area is outside this taxon's known distribution.
Rumex drummondii	P4	August to November	Creek-lines with black peaty sandy clay over limestone; winter wet depressions.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Schoenus griffinianus	P4	September to October	Undulating sandplains, lower slopes, flats and depressions with grey sand.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 15 km southeast of Survey Area; Survey Area is within this taxon's known distribution.
Schoenus pennisetis	P3	August to September	Low lying areas, edge of wetlands. Grey/brown sand or sandy loam.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 1.5 km west of Survey Area; Survey Area is within this taxon's known distribution.
Spirogardnera rubescens	T	August to January	Slopes and plains, gravelly sandy loam.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Unlikely Nearest record is approximately 60 km southeast of Survey Area; Survey Area is outside this taxon's known distribution, and is only known from two disjunct areas.
Stylidium aceratum	P3	September to November	Claypans, winter-wet flats. Brown clay.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to west of Survey Area; Survey Area is within this taxon's known distribution.
Stylidium aeonioides	P4	September to November	Hillsides and breakaways, low heath and open woodland with sandy clay loam over laterite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
***Stylidium carnosum* subsp. Narrow leaves (J.A. Wege 490)**	P1	September to October	Hillslopes and plains with white-grey sand and lateritic gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km northeast of Survey Area; Survey Area is within this taxon's known distribution.
Stylidium hymenocraspedum	P3	September to October	Sand over laterite. Hillslopes. Heath, Banksia and Eucalyptus low open woodland.	Unlikely Suitable habitat may be present within D&T Survey Area, however the Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area, however the Survey Area is outside this taxon's known distribution.
Stylidium longitubum	P4	July to November	Seasonal damplands, brown clay loam.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.
Stylidium milleri	P2	September to October	Grey sand over laterite, plains.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within the Survey Area. There is a historical record within the Survey Area, however it has vague location details and cannot be verified.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Stylidium nonscandens	P3	September to November	Sand over laterite. Hillslopes and crests. Banksia woodland, heath, mallee shrubland.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 14 km south of Survey Area; Survey Area is within this taxon's known distribution.
Stylidium periscelianthum	P3	September to October	Wet flats, low granitic hills with loamy clay, moist soils pockets.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely No suitable habitat is present within Survey Area. Nearest record is approximately 8 km northwest of Survey Area but has erroneous coordinates; Survey Area outside this taxon's known distribution.
***Stylidium* sp. Moora (J.A. Wege 713)**	P2	September to November	Sand or clay loam hills and slopes over laterite or granite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area, however, nearest record is approximately 8 km south of Survey Area and has erroneous records; Survey Area is outside this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Stylidium striatum	P4	September to December	Brown or yellow sandy clay with laterite. Slopes and flats.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area, however, nearest record is approximately 2 km southwest of Survey Area and is considered to be a misidentification of an unrelated taxon from the *S. brunonianum* group; Survey Area is outside this taxon's known distribution, which is only known from near Perth.
Stylidium torticarpum	P3	September to November	Adjacent to drainage lines, depressions, and beneath breakaways, heath or mallee shrubland on sandy clay or clay loam over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Suitable habitat may be present within Survey Area. Nearest record is approximately 14 km north of Survey Area; Survey Area is outside this taxon's known distribution.
Stylidium vinosum	P1	September to November	White or yellow sand over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 15 km southeast of Survey Area; Survey Area is on the boundary of this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Styphelia allittii	P3	April to June	Slopes with brown soils over laterite, gullies and creeks.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to Survey Area (1964); Survey Area is within this taxon's known distribution.
Styphelia obtecta	T	October to November	Plains with white, grey or yellow sand.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 100 km north of Survey Area; Survey Area is outside this taxon's known distribution.
Synaphea endothrix	P3	July to October	Ridges and hills with brown, yellow or white gravelly sand over laterite.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely No suitable habitat is present within Survey Area. Survey Area is outside this taxon's known distribution.
Synaphea panhesya	P1	November	Laterite. Slopes.	Unlikely D&T Survey Area is outside this taxon's known distribution.	Unlikely Nearest record is approximately 20 km south of Survey Area; Survey Area is outside this taxon's known distribution.
Synaphea quartzitica	T	July to September	Chert slopes, rocky quartz gullies.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Synaphea sparsiflora	P2	August to September	Slopes / crests of hills and lateritic ridges with grey / brown sand.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Tetratheca angulata	P3	September to December	Low hill crests, breakaways with massive laterite boulders with sandy to gravelly laterite soils.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Trithuria australis	P4	October to November	Clay. Pools in swamps and winter-wet flats.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.
Thelymitra apiculata	P4	June to July	Hillslopes with grey sand, lateritic gravel and laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is immediately adjacent to west of Survey Area (1981); Survey Area is within this taxon's known distribution.
Thelymitra dedmaniarum	T	November to January	Grey loam. Granite.	Unlikely No suitable habitat present within D&T Survey Area.	Unlikely No suitable habitat is present within Survey Area.
Thelymitra stellata	T	September to November	Ridges and tops of lateritic hills with grey or brown sand or loam and lateritic gravel.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area.
Thysanotus glaucus	P4	October to March	White, grey or yellow sand, sandy gravel.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. There are two historical records within the Survey Area, however these cannot be verified, and are from 1973.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Verticordia huegelii* var. *tridens	P3	October to November	Flats, clay loam, over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km north of Survey Area; Survey Area is within this taxon's known distribution.
Verticordia insignis* subsp. *eomagis	P3	August to November	Sandplains and rocky rises with sandy soils over laterite.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 6 km northeast of Survey Area; Survey Area is within this taxon's known distribution.
Verticordia lindleyi* subsp. *lindleyi	P4	May to January	Sand, sandy clay, winter wet depressions.	Unlikely Although suitable habitat may be present, the D&T Survey Area was systematically searched by the 2024 survey with no individuals of this taxon recorded.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 3 km northwest of Survey Area; Survey Area is within this taxon's known distribution.
Verticordia paludosa	P4	January, April, August	Grey sand, open depressions, winter-wet flats, drainage lines.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Nearest record is approximately 10 km south of Survey Area; Survey Area is within this taxon's known distribution.

Taxon	Status (WA)	Flowering Period^	Habitat^	Likelihood of Occurrence	
				D&T Survey Area	Survey Area
Verticordia rutilastra	P3	September to November	Lateritic breakaways and slopes with white or brown gravelly sand or sandy loam.	Unlikely No suitable habitat present within D&T Survey Area.	Possible Suitable habitat is present within Survey Area. Survey Area is within this taxon's known distribution.

^Flowering and Habitat information retrieved from Florabase (WA Herbarium, 1998-).

APPENDIX G

PCA Scree Plots, 2D Cluster Plots, and Agglomerative Hierarchical Clustering Analysis Dendrograms of Survey Area Quadrats

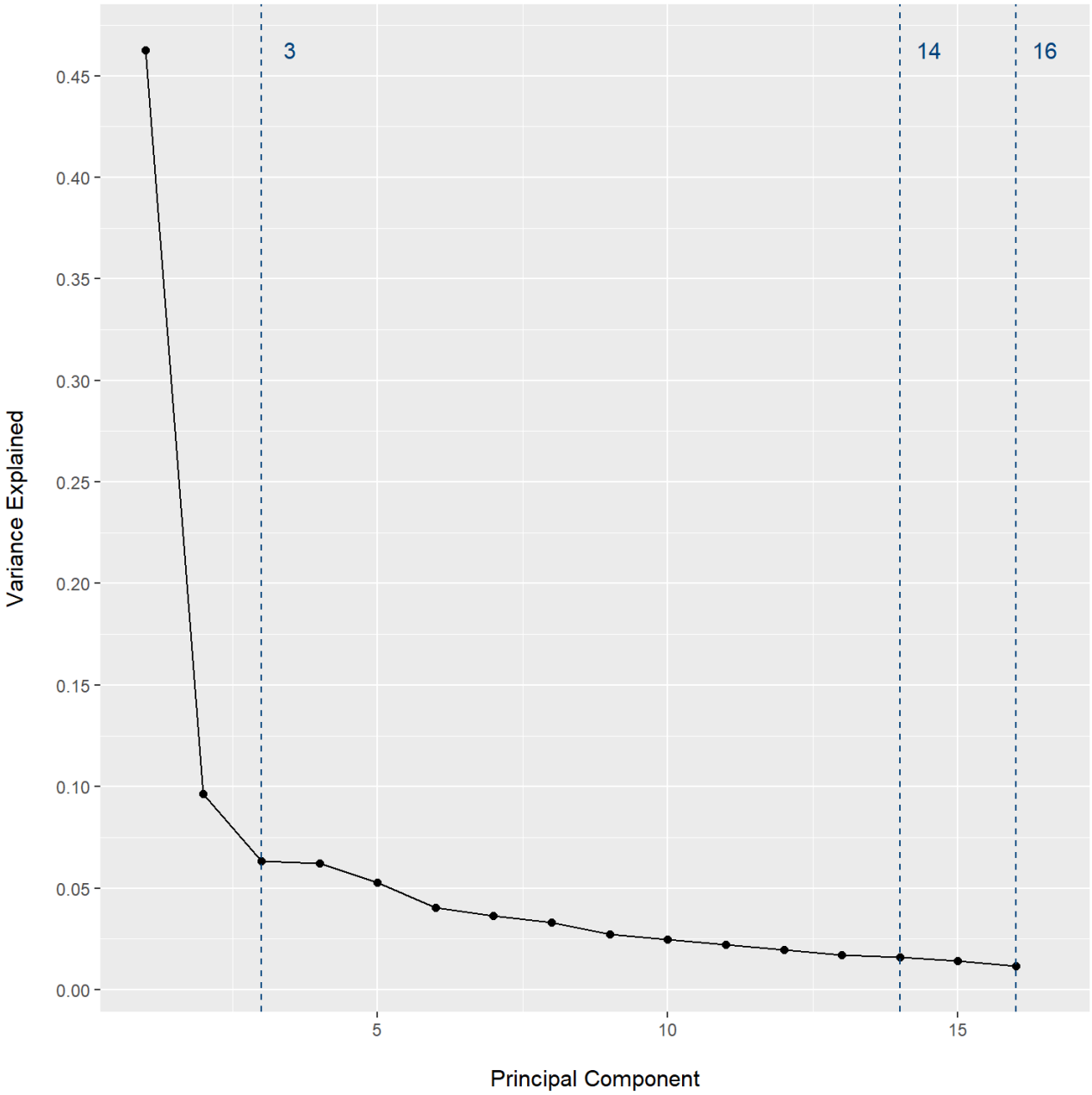


Figure G.1 PCA Scree Plot

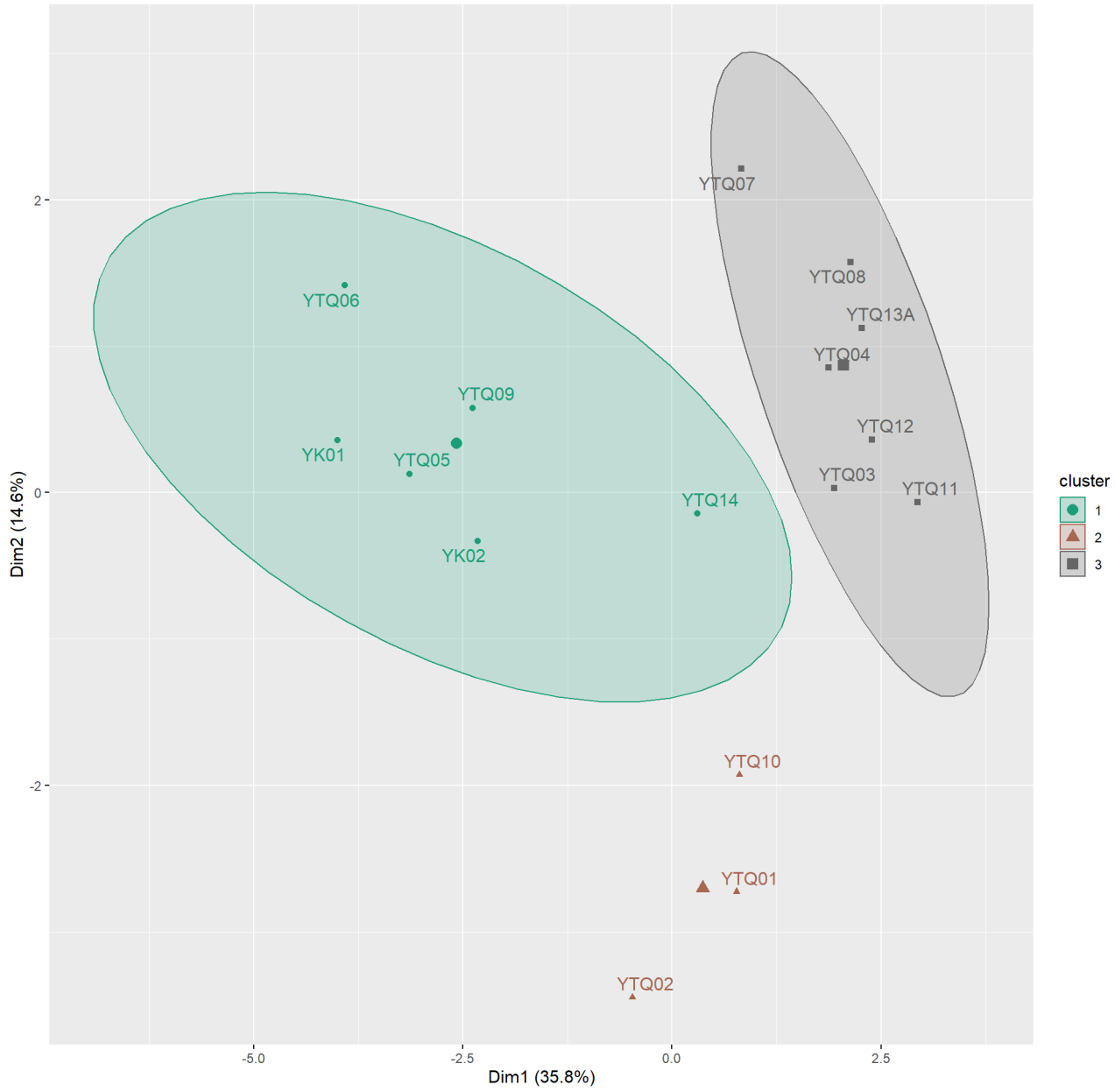


Figure G.2 2D Cluster Plot

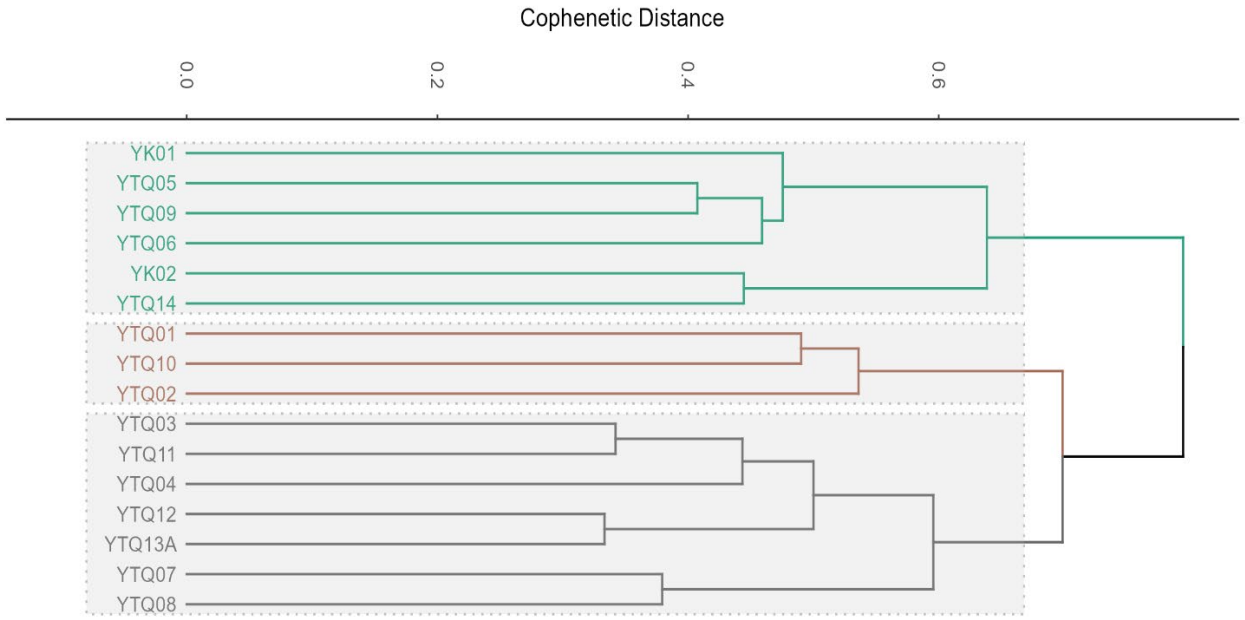


Figure G.3 Hierarchical Clustering Analysis Dendrogram

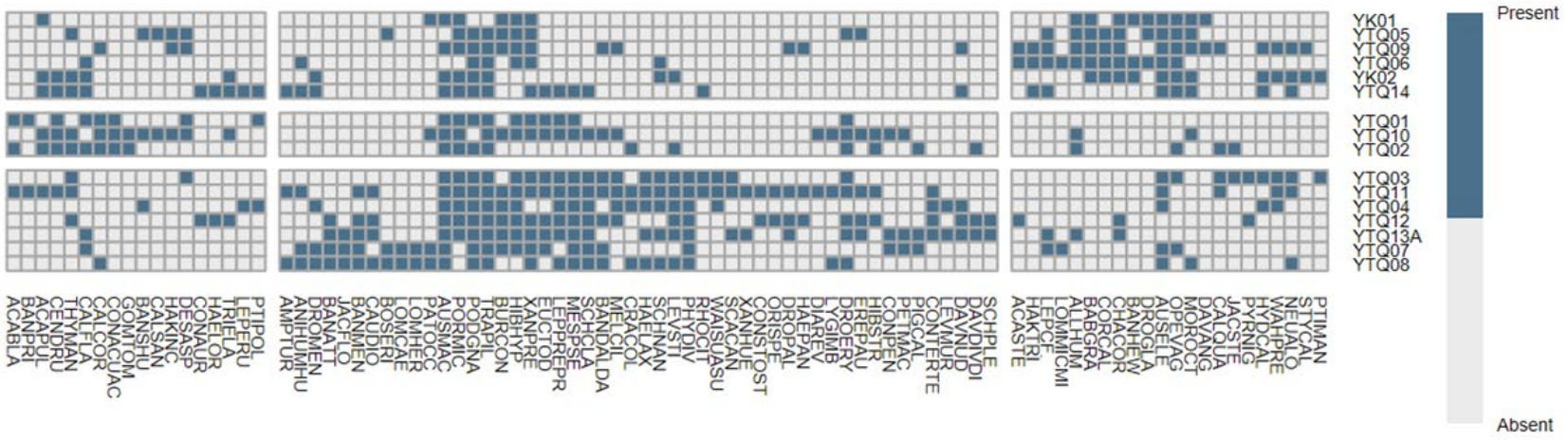
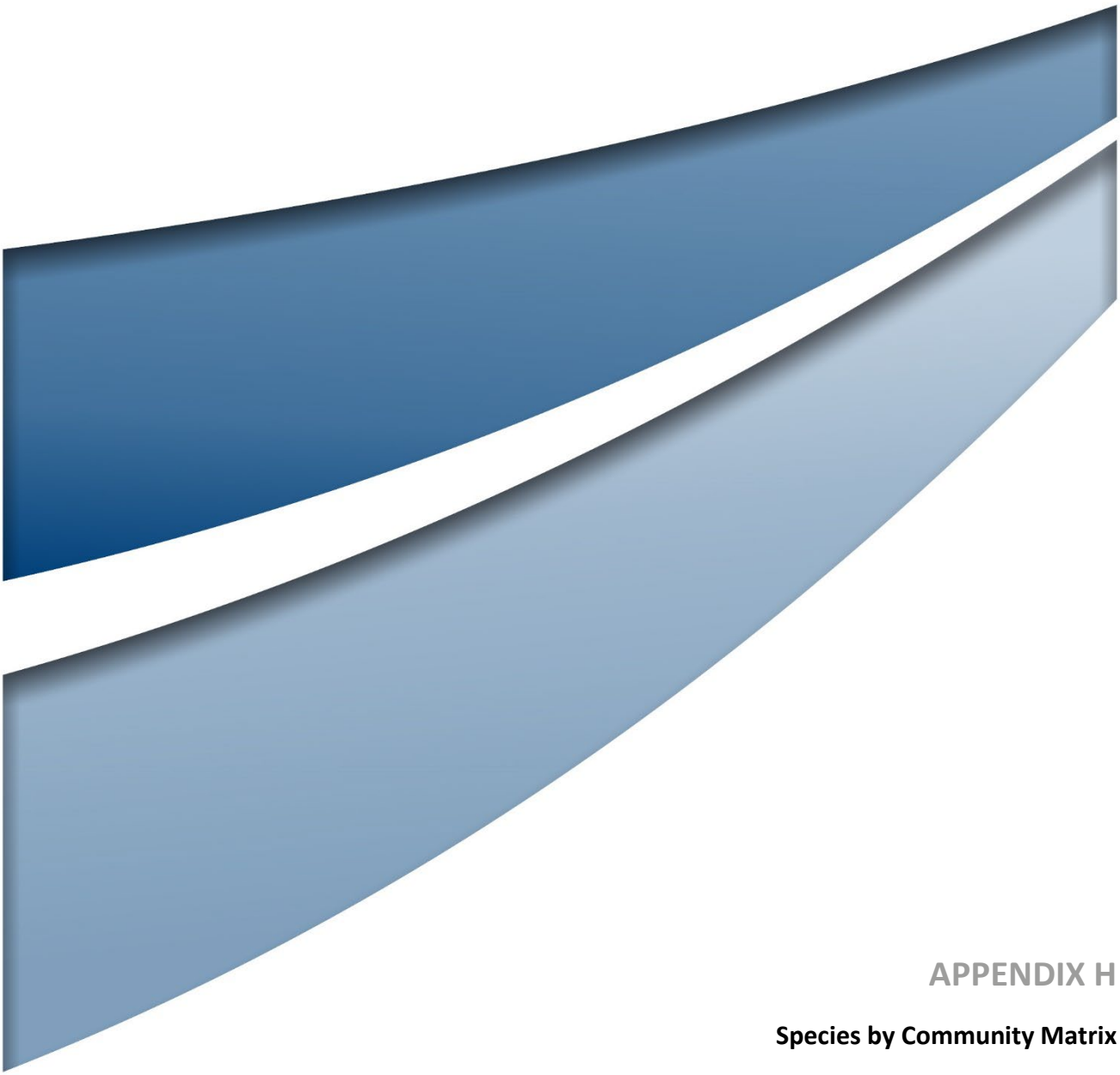


Figure G.4 Matrix of Vascular Plant Taxa Recorded within Quadrats in Each VT in the Survey Area

Note that this taxon group matrix is produced using the floristic classification analyses dataset, and therefore reflects the taxa exclusions (i.e. annual/ephemeral taxa, introduced taxa, hybrids and singletons) and amalgamations (as per Appendix A). For a comprehensive list of all taxa present within each quadrat and VT, refer to ***Appendix D*** *and* ***Appendix H****, respectively*



APPENDIX H

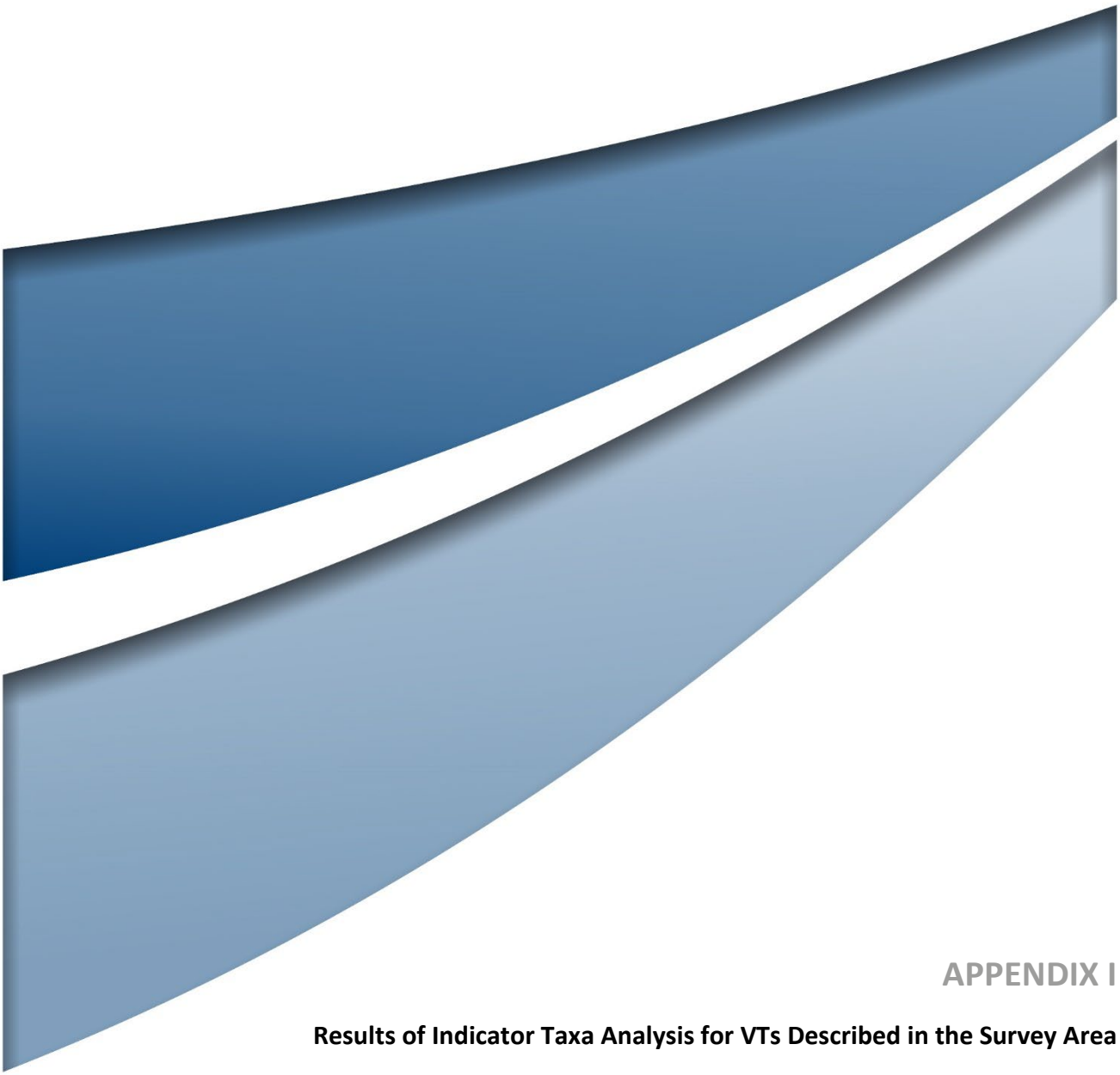
Species by Community Matrix

Taxon	Vegetation Type			
	1	2	3	4
Acacia blakelyi		X	X	
Acacia costata	X			
Acacia pulchella	X	X	X	
Acacia pulchella var. *glaberrima*	X	X		
Acacia stenoptera	X		X	
Acanthocarpus preissii			X	
Alexgeorgea nitens			X	
Allocasuarina humilis	X	X	X	
Amphipogon turbinatus	X		X	
Amyema miquelii			X	
Anigozanthos humilis subsp. *humilis*	X		X	
Apectospermum spinescens			X	
Austrostipa elegantissima	X		X	
Babingtonia grandiflora	X			
Banksia attenuata			X	
Banksia dallanneyi subsp. *dallanneyi*	X	X	X	
Banksia hewardiana	X			
Banksia menziesii			X	
Banksia prionotes		X	X	
Banksia shuttleworthiana	X	X	X	
Billardiera fraseri			X	
Bossiaea eriocarpa	X		X	
Burchardia congesta	X	X	X	
Caladenia flava	X	X	X	
Caladenia flava subsp. *flava*	X		X	
Calothamnus hirsutus			X	
Calothamnus quadrifidus			X	
Calothamnus quadrifidus subsp. *quadrifidus*	X	X	X	
Calothamnus sanguineus	X	X		
Caustis dioica			X	
Chamaescilla corymbosa	X		X	
Chordifex sinuosus			X	
Conospermum stoechadis subsp. *stoechadis*			X	
Conostephium pendulum		X	X	
Conostylis aculeata subsp. *aculeata*		X		
Conostylis aurea	X		X	
Conostylis teretifolia subsp. *teretifolia*			X	
Corymbia calophylla	X			
Daviesia angulata	X			

Taxon	Vegetation Type			
	1	2	3	4
Daviesia divaricata subsp. *divaricata*		X	X	
Daviesia nudiflora	X		X	
Daviesia nudiflora subsp. *nudiflora*	X		X	
Desmocladus asper	X	X	X	
Desmocladus lateriticus	X			
Dianella revoluta		X	X	
Drosera eneabba			X	
Drosera erythrorhiza	X	X	X	
Drosera menziesii	X		X	
Drosera pallida	X		X	
Eremaea pauciflora var. ?*lonchophylla*			X	
Eremaea pauciflora	X	X	X	
Eremaea pauciflora var. *lonchophylla*			X	
Eucalyptus rudis subsp. *rudis*				X
Eucalyptus todtiana	X	X	X	
Gompholobium tomentosum		X		
Grevillea eriostachya			X	
Haemodorum laxum			X	
Haemodorum ?*loratum*	X		X	
Haemodorum paniculatum	X		X	
Haemodorum spicatum			X	
Haemodorum venosum	X			
Hakea costata	X			
Hakea incrassata	X	X		
Hakea lissocarpha	X			
Hakea stenocarpa	X			
Hakea trifurcata	X			
Hibbertia hypericoides	X	X	X	
Hibbertia hypericoides subsp. *hypericoides*	X			
Hibbertia striata		X	X	
Hypocalymma angustifolium			X	
Hypocalymma sp.			X	
Isotropis cuneifolia			X	
Jacksonia floribunda			X	
Jacksonia sternbergiana		X	X	
Lechenaultia biloba	X			
Lechenaultia linarioides		X		
Lepidobolus preissianus subsp. *preissianus*	X	X	X	
Lepidosperma apricola	X			

Taxon	Vegetation Type			
	1	2	3	4
Lepidosperma cf. pubisquameum	X		X	
Lepidosperma longitudinale				X
Leptospermopsis erubescens	X		X	
Lomandra caespitosa			X	
Lomandra hermaphrodita			X	
Lomandra micrantha subsp. *micrantha*	X		X	
Lyginia imberbis		X	X	
Machaerina preissii				X
Macrozamia fraseri		X		
Melaleuca ciliosa	X	X	X	
Melaleuca clavifolia		X		
Melaleuca rhaphiophylla				X
Mesomelaena pseudostygia	X	X	X	
Microtis media subsp. *media*	X			
Mirbelia trichocalyx		X		
Morelotia octandra	X	X	X	
Neurachne alopecuroidea	X		X	
Nuytsia floribunda		X		
Olearia paucidentata	X			
Opercularia vaginata	X	X	X	
Orianthera spermacocea			X	
Orthrosanthus laxus var. *laxus*	X			
Patersonia occidentalis	X	X	X	
Petrophile brevifolia		X		
Petrophile macrostachya		X	X	
Pigea calycina		X	X	
Polianthion wichurae	X			
Pterostylis vittata	X			
Ptilotus manglesii	X		X	
Ptilotus polystachyus	X	X	X	
Pyrorchis nigricans			X	
Scaevola canescens			X	
Schoenus clandestinus	X	X	X	
Schoenus pleiostemoneus			X	
Scholtzia laxiflora		X		
Sowerbaea laxiflora			X	
Stackhousia pubescens	X			
Stirlingia latifolia			X	
Stylidium adpressum			X	

Taxon	Vegetation Type			
	1	2	3	4
Styphelia retrorsa	X			
Styphelia serratifolia		X		
Thysanotus ?dichotomus		X	X	
Thysanotus manglesianus	X	X	X	
Thysanotus patersonii	X	X	X	
Thysanotus sparteus			X	
Tricoryne ?elatior	X			
Tricoryne elatior	X	X	X	
Tripterococcus brunonis	X			
Xanthorrhoea drummondii	X			
Xanthorrhoea preissii	X	X	X	
Xanthosia huegelii			X	



APPENDIX I

Results of Indicator Taxa Analysis for VTs Described in the Survey Area

Note: INDVAL values are only shown for taxa that are significant at p <0.05, and for VTs that are sampled by more than one quadrat.

p values are indicated by:

* = p < 0.05
** = p < 0.01
*** = p < 0.001.

VT	Code	Species Name	INDVAL	p Value	Significance
1	AUSELE	*Austrostipa elegantissima*	0.5833	0.0068	**
	BABGRA	*Babingtonia grandiflora*	0.8333	0.0014	***
	CHACOR	*Chamaescilla corymbosa*	0.6206	0.0426	*
	CORCAL	*Corymbia calophylla*	0.6667	0.0166	*
	OPEVAG	*Opercularia vaginata*	0.6176	0.0128	*
2	ACABLA	*Acacia blakelyi*	0.549	0.0408	*
	CALCOR	*Calandrinia corrigioloides*	0.7636	0.0178	*
	CENDRU	*Centrolepis drummondiana*	0.6774	0.0378	*
	CONACUAC	*Conostylis aculeata* subsp. *aculeata*	1	0.0032	***
	DROERY	*Drosera erythrorhiza*	0.5316	0.0398	*
	GOMTOM	*Gompholobium tomentosum*	0.6667	0.0278	*
3	BANATT	*Banksia attenuata*	0.5714	0.0374	*
	BANMEN	*Banksia menziesii*	0.7143	0.0218	*
	CAUDIO	*Caustis dioica*	0.5714	0.0294	*
	CONTERTE	*Conostylis teretifolia* subsp. *teretifolia*	0.5714	0.0386	*
	HAELAX	*Haemodorum laxum*	0.7143	0.0224	*
	MESPSE	*Mesomelaena pseudostygia*	0.5455	0.0264	*
	PHYDIV	*Phyllangium divergens*	1	0.0002	***
	SCHCLA	*Schoenus clandestinus*	0.6667	0.0078	**

APPENDIX J

Diagnostic Characteristics of the 'Banksia Woodlands of the Swan Coastal Plain' EPBC-listed TEC

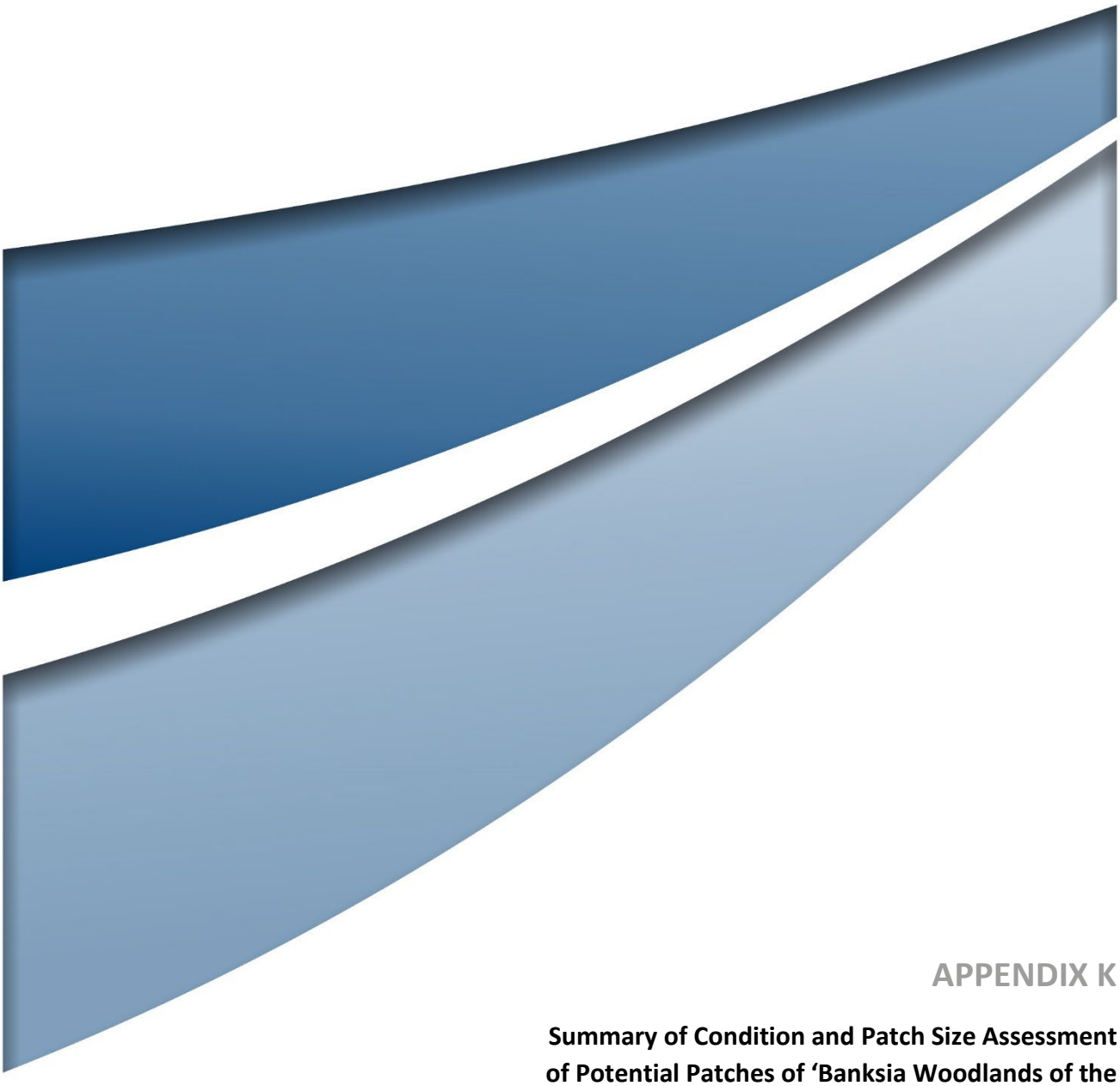
Criterion		Description
Location and Physical Environment (must satisfy criterion 1)		
1		Patch is located within the Swan Coastal Plain IBRA Bioregion
Soils and Landform (must satisfy criterion 2(a) OR 2(b))		
2	**(a)**	Patch occurs on well-drained, low nutrient soils on sandplain landforms OR
	(b)	Patch occurs on sandy colluvium and aeolian sands of the Dandaragan Plateau
Structure and Vegetation (must satisfy criteria 3(a) AND 3(b), sometimes also satisfying criteria 3(c) and 3(d))		
3	**(a)**	Is a low woodland to forest AND
	(b)	Patch includes at least one of the following Banksia species as dominant or co-dominant in the upper layer: • *Banksia attenuata* • *Banksia menziesii* • *Banksia prionotes* • *Banksia ilicifolia*
	(c)	Patch includes emergent trees of medium or tall (> 10 m) height above the Banksia canopy, often including: • *Corymbia calophylla* • *Eucalyptus marginata* • *Eucalyptus gomphocephala* • *Nuytsia floribunda* • *Allocasuarina fraseriana* • *Callitris arenaria* • *Callitris pyramidalis* • *Xylomelum occidentale*
	(d)	Patch has an often highly species-rich understorey that consists of: • a layer of sclerophyllous shrubs of various heights • a herbaceous ground layer of cord rushes, sedges and perennial and ephemeral forbs, that sometimes includes grasses
Vegetation Condition (must satisfy criterion 4(a) OR 4(b))		
4	**(a)**	Vegetation condition of patch is Pristine to Good using the following indicative measures: • Low native species diversity to native species diversity fully retained • 0 % to 50 % weed cover OR
	(b)	Vegetation condition of patch is Degraded to Very Degraded but retains important natural values
Patch Size (must satisfy criterion 5(a) OR 5(b))		
5	**(a)**	Patch size meets the minimum size according to its condition, as below: • Pristine – no minimum patch size applies • Excellent – 0.5 ha or 5,000 m^2 (e.g. 50 m x 100 m) • Very Good – 1 ha or 10,000 m^2 (e.g. 100 m x 100 m) • Good – 2 ha or 20,000 m^2 (e.g. 200 m x 100 m) OR
	(b)	Patch is smaller than the above requirements but contributes to the overall function of the ecological community (e.g. contributes ß-diversity and connectivity)

Contra-indicators	Description
1	Patch is clearly dominated by *Banksia littoralis* (indicates a different, dampland community)
2	Patch is clearly dominated by *Bankia burdettii* (indicates a tall shrubland and not the Banksia Woodlands ecological community)
3	Patch represents FCT 20c (corresponds with a separate EPBC ecological community listing, 'Shrublands and Woodlands of the eastern Swan Coastal Plain', which occurs mainly on the transitional soils of the Ridge Hill Shelf, on the Swan Coastal Plain adjacent to the Darling Scarp, but also extends marginally onto the alluvial clays deposited on the eastern fringe of the Swan Coastal Plain)

Key

Colour	Definition
	Must be satisfied
	May or may not be satisfied
	Must not be satisfied

Source: Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community (DoEE, 2016).



APPENDIX K

Summary of Condition and Patch Size Assessment of Potential Patches of 'Banksia Woodlands of the Swan Coastal Plain' TEC Within the Survey Area

Potential Patch Number	Area Mapped (ha)				Criteria Outcome		Other Considerations	Overall Outcome
	Very Good	Good	Degraded	Total	Vegetation Condition*	Patch Size^		
1	-	-	0.16	0.16	Not Met	Not Met	Does not contribute significantly to the overall function of the ecological community – small island of vegetation that does not contribute to connectivity.	Not part of the TEC
2	-	-	0.16	0.16	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet the vegetation condition requirements.	Not part of the TEC
3	-	-	1.0	1.0	Not Met	Not Met	Does not contribute significantly to the overall function of the ecological community – small island of vegetation that does not contribute to connectivity.	Not part of the TEC
4	-	-	10.70	10.70	Not Met	Met	Contributes to the overall function of the ecological community – contiguous vegetation in 'Good' or better condition occurs outside the Survey Area to the west.	**Part of the TEC**
5	-	-	0.003	0.003	Not Met	Not Met	Contributes to the overall function of the ecological community – contiguous vegetation in 'Good' or better condition occurs outside the Survey Area to the west.	**Part of the TEC**
6	-	-	0.21	0.21	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC
7	-	-	10.8	10.8	Not Met	Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC
8	-	-	0.73	0.73	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC

Potential Patch Number	Area Mapped (ha)				Criteria Outcome		Other Considerations	Overall Outcome
	Very Good	Good	Degraded	Total	Vegetation Condition*	Patch Size^		
9	-	-	0.04	0.04	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC
10	-	-	0.01	0.01	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC
11	-	-	3.30	3.30	Not Met	Met	Although the patch size criterion has been met, the vegetation condition criterion has not been met.	Not part of the TEC
12	-	-	2.25	2.25	Not Met	Met	Although the patch size criterion has been met, the vegetation condition criterion has not been met.	Not part of the TEC
13	-	-	0.30	0.30	Not Met	Not Met	Does not contribute significantly to the overall function of the ecological community – small island of vegetation that does not contribute to connectivity.	Not part of the TEC
14	4.8	17.6	0.41	22.8	Met	Met	Not required to be assessed; patch meets vegetation condition and patch size requirements.	**Part of the TEC**
15	-	-	0.34	0.34	Not Met	Not Met	Although connected to a larger patch of vegetation outside the Survey Area, the condition of the overall vegetation is considered to be 'Degraded', and thus does not meet vegetation condition requirements.	Not part of the TEC
16	5.18	-	-	5.18	Met	Met	Not required to be assessed; patch meets vegetation condition and patch size requirements.	**Part of the TEC**
17	-	-	0.01	0.01	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the south, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**

Potential Patch Number	Area Mapped (ha)				Criteria Outcome		Other Considerations	Overall Outcome
	Very Good	Good	Degraded	Total	Vegetation Condition*	Patch Size^		
18	-	-	0.02	0.02	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the south, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
19	-	-	0.0009	0.0009	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the south, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
20	-	-	0.002	0.002	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the south, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
21	-	-	0.04	0.04	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the east, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
22	-	-	0.003	0.003	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the east, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
23	-	-	0.05	0.05	Not Met	Not Met	Does not contribute significantly to the overall function of the ecological community – neighbouring patch of vegetation outside the Survey Area is considered to not meet vegetation and/or patch size requirements.	Not part of the TEC
24	-	-	0.04	0.04	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the east, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**

Potential Patch Number	Area Mapped (ha)				Criteria Outcome		Other Considerations	Overall Outcome
	Very Good	Good	Degraded	Total	Vegetation Condition*	Patch Size^		
25	-	-	0.47	0.47	Not Met	Not Met	Does not contribute significantly to the overall function of the ecological community – small island of vegetation that does not provide connectivity.	Not part of the TEC
26	-	-	0.02	0.02	Not Met	Not Met	Patch contributes significantly to the overall function of the ecological community – part of the neighbouring vegetation to the east, outside the Survey Area, that meets vegetation condition and patch size requirements.	**Part of the TEC**
27	-	3.04	-	3.04	Met	Met	Not required to be assessed; patch meets vegetation condition and patch size requirements.	**Part of the TEC**
Total	**9.98**	**20.64**	**31.06**	**61.67**				

** Criteria 4(a) and (b) of the key diagnostic characteristics (**Appendix J**).*
*^ Criteria 5(a) and (b) of the key diagnostic characteristics (**Appendix J**).*



umwelt
Environmental & Social Consultants

Umwelt (Australia) Pty Limited

T| 1300 793 267 E| info@umwelt.com.au www.umwelt.com.au