Flora and Vegetation Survey

Belvedere Mine

Prepared for Black Cat Syndicate

May 2025

Anders Environmental Consulting

FLORA AND VEGETATION SURVEY: BLACK CAT'S PAULSENS GOLD OPERATION (PGO) BELVEDERE MINE

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EXECUTIVE SUMMARY

Black Cat's Paulsens Gold Operation (PGO) is in the Ashburton region of Western Australia, approximately 200 kilometres (km) East of Onslow. PGO's tenement package covers an area of approximately 3,200km^2.

The Paulsens underground mine, located on tenements M08/099 and M08/196, commenced operation in 2004 and produced 1M ounces of gold before going into care and maintenance in 2017. Black Cat acquired PGO in 2022, recommissioned the existing camp, tails dam, underground mine, and processing facility, before recommencing operations in late 2024.

Belvedere is a gold resource located 6km east of Paulsens on tenement M08/222. Black Cat intends to develop Belvedere as an underground mine and haul ore to Paulsens for processing via a future haul road on tenement L08/15, with supporting infrastructure on tenement L08/168.

This report is to support environmental approvals for the proposed operations at Belvedere and assesses flora and vegetation on the aforementioned tenements.

The assessment followed Environmental Protection Authority (EPA) guidelines and was conducted in two phases:

- Desktop Assessment: Identification of potential conservation significant flora species and ecological communities within 50 km of the survey area using databases from Department of Biodiversity, Conservation and Attractions (DBCA) and Department of Climate Change, Energy, the Environment and Water (DCCEEW).
- Field Surveys: Detailed surveys in spring (October 2024) and autumn (March 2025), involving quadrat sampling, opportunistic flora collections, and targeted searches for conservation-significant species.
- Vegetation Mapping: Classification using National Vegetation Information System (NVIS) standards and condition assessments based on Trudgen's scale.

Flora summary:

- 56 conservation-significant flora species identified in the desktop assessment including:
  - One Threatened species listed as Vulnerable under the Environment Protection and Biodiversity Conservation Act (EPBC Act) and Biodiversity Conservation Act (BC Act)
  - Eight Priority 1 species
  - Six Priority 2 species
  - 34 Priority 3 species
  - Seven Priority 4 species
  - Two species were considered to have a high likelihood of occurrence
  - Six species were considered to have a medium likelihood of occurrence
  - 48 species were considered to have a low likelihood of occurrence.

- 187 vascular flora species including subspecies and variants
- Six weed species were recorded, with the highest concentrations in creeklines and cattle-access areas. None of which were a Weed of National Significance (WoNS) or a Declared Pest
- No Threatened flora listed under the EPBC Act or BC Act or Priority flora recorded within the survey area
- One hybrid species, *Senna artemisioides* subsp*. oligophylla × helmsii,* was commonly recorded but is not listed as a conservation-significant species.

Vegetation summary:

- Three Priority Ecological Communities (PECs) were identified in the desktop assessment. Field surveys confirmed that none were present in the survey area
- Six vegetation associations were recorded within the survey area
- Vegetation condition ranged from excellent to completely degraded, with cattle activity contributing to disturbance, erosion and weed proliferation.

TABLE OF CONTENTS

Executive summary 3
Definitions 7
1.0 Introduction 8
1.1 Background 8
1.2 Scope and objective 8
1.3 Legislative context 8
2.0 Methods 14
2.1 Requirements for flora and vegetation surveys 14
2.2 Flora and vegetation desktop assessment 14
2.3 Flora and vegetation field survey 15
2.3.1 Survey personnel 16
2.3.2 Targeted flora survey 16
2.3.3 Survey limitations 16
2.4 Vegetation mapping 17
3.0 Existing environment 19
3.1 Climate 19
3.2 IBRA bioregions 20
3.3 Geology and soils 20
3.4 Broad vegetation types 20
3.5 Conservation areas 21
4.0 Results 26
4.1 Flora results 26
4.1.1 Flora desktop assessment 26
4.1.2 Flora field assessment results 28
4.1.3 Conservation significant flora species 29
4.1.4 Weeds 31
4.2 Vegetation results 32
4.2.1 Vegetation desktop assessment 32
4.2.2 Vegetation associations 34
4.2.3 Conservation significant ecological communities 47
4.2.4 Vegetation condition 47
5.0 Discussion 50

5.1 Flora 50
5.2 Vegetation 50
References 52
Appendix A Desktop assessment results 53
Appendix B Species list 61
Appendix C Species within vegetation types 66
Appendix D Statistical analysis 71
Appendix E Quadrat data 74

DEFINITIONS

Acronym	Definition
Anders	Anders Environmental Consulting
BAM Act	*Biosecurity and Agricultural Management Act 2007*
BC Act	*Biodiversity Conservation Act 2016*
BOM	Bureau of Meteorology
Cwth	Commonwealth
DBCA	Department of Biodiversity Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPIRD	Department of Primary Industries and Regional Development
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
FCT	Floristic Community Type
ha	Hectare
IBRA	Interim Biogeographic Regionalisation of Australia
km	Kilometre
m	Metre
MNES	Matter of National Environmental Significance
NVIS	National Vegetation Information System
PEC	Priority Ecological Community
TEC	Threatened Ecological Community
WoNS	Weed of National Significance

1.0 INTRODUCTION

1.1 BACKGROUND

Black Cat's Paulsens Gold Operation (PGO) is situated in the Ashburton region of Western Australia, approximately 200km east of Onslow and approximately 702 km northeast of Geraldton (Figure 1). The operation's tenement package spans approximately 3,200km².

The Paulsens underground mine, located on tenements M08/099 and M08/196, began production in 2004, producing 1 million ounces of gold before entering care and maintenance in 2017. In 2022, Black Cat acquired PGO and undertook the recommissioning of its existing camp, tailings dam, underground mine, and processing facility, and resuming operations in late 2024.

Belvedere, a gold resource located 6km east of Paulsens on tenement M08/222, is proposed for development as an underground mine. Black Cat plans to transport ore from Belvedere Mine to Paulsens for processing via a future haul road on tenement L08/15, with supporting infrastructure established on tenement L08/168 (survey area).

Anders Environmental Consulting (Anders) was commissioned to undertake a flora and vegetation assessment of the survey area. The assessment included a desktop assessment, detailed flora and vegetation survey, and targeted flora search. The results of the assessment are provided in this report.

1.2 SCOPE AND OBJECTIVE

The purpose of the survey was to identify the flora and vegetation values. The scope of works included:

- Desktop assessment to gather contextual information
- Two phase detailed flora and vegetation survey to map the vegetation types and condition present
- Map the extent of any Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs)
- Targeted survey to map Threatened and Priority flora populations.

1.3 LEGISLATIVE CONTEXT

1.3.1 EPBC ACT

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the main piece of Commonwealth legislation protecting biodiversity in Australia. All matters of national environmental significance (MNES) are listed under the EPBC Act. These include:

- listed threatened species and ecological communities
- migratory species protected under international agreements
- Ramsar wetlands of international importance

- the Commonwealth marine environment
- World Heritage properties
- National Heritage places
- Great Barrier Reef Marine Park
- water resources in relation to coal seam gas disturbance and large coal mining disturbance
- nuclear actions.

If an action is likely to have a significant impact on a MNES this action must be referred to the Commonwealth Minister for the Environment for a decision on whether assessment and approval is required under the EPBC Act.

Species at risk of extinction are recognised at a Commonwealth level and are categorised in one of six categories as outlined in Table 1.

Table 1 Categories of species listed under the Commonwealth EPBC Act

Conservation Code	Category
Ex	Extinct Taxa
ExW	Extinct in the Wild
CE	Critically Endangered
E	Endangered
V	Vulnerable
CD	Conservation Dependent
OS	Other specially protected fauna

1.3.2 BC ACT

Threatened flora are plants which have been assessed as being at risk of extinction. Under the *Biodiversity Conservation Act 2016* (BC Act), the Western Australian Minister for the Environment may declare species of flora to be protected if they are considered to be in danger of extinction, rare or otherwise in need of special protection. Species that are considered Threatened and need to be specially protected because they are under an identifiable threat of extinction are listed under the BC Act. These categories are defined in Table 2.

Table 2 Conservation codes for species listed under the Western Australian BC Act

Code	Category
CR	Critically endangered species Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines".
EN	Endangered species Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines".
VU	Vulnerable species Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines".
EX	Extinct species Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
EW	Extinct in the wild species Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
MI	Migratory species Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).
CD	Species of species conservation interest Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).
OS	Other specially protected species Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Threatened Ecological Communities (TECs) are naturally occurring biological assemblages that occur in a particular type of habitat and that may be subject to processes that threaten to destroy or significantly modify the assemblage across its range. Vegetation communities in Western Australia are described as TECs if they have been endorsed by the Western Australian Minister for Environment following recommendations made by the TEC Scientific Committee. Categories of TECs are defined in Table 3.

Table 3 Conservation categories of Western Australian TECs

Conservation Code	Category
PD	Presumed Totally Destroyed An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future
CR	Critically Endangered An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
EN	Endangered An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.
VU	Vulnerable An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

1.3.3 DBCA PRIORITY SPECIES AND COMMUNITIES

Species that have not yet been adequately surveyed to warrant being listed under the BC Act, or are otherwise data deficient, are added to Priority Lists under Priorities 1, 2 or 3 by the Western Australian Minister for the Environment. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species are placed in Priority 4. Categories and definitions of Priority Flora species are provided in Table 4.

Table 4 Conservation categories for species listed by DBCA and endorsed by the Minister for the Environment

Conservation Code	Category
Priority One	Poorly-known species Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g., agricultural, or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority Two	Poorly-known species Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g., national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority Three	Poorly-known species Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority Four	Rare, Near Threatened and other species in need of monitoring (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

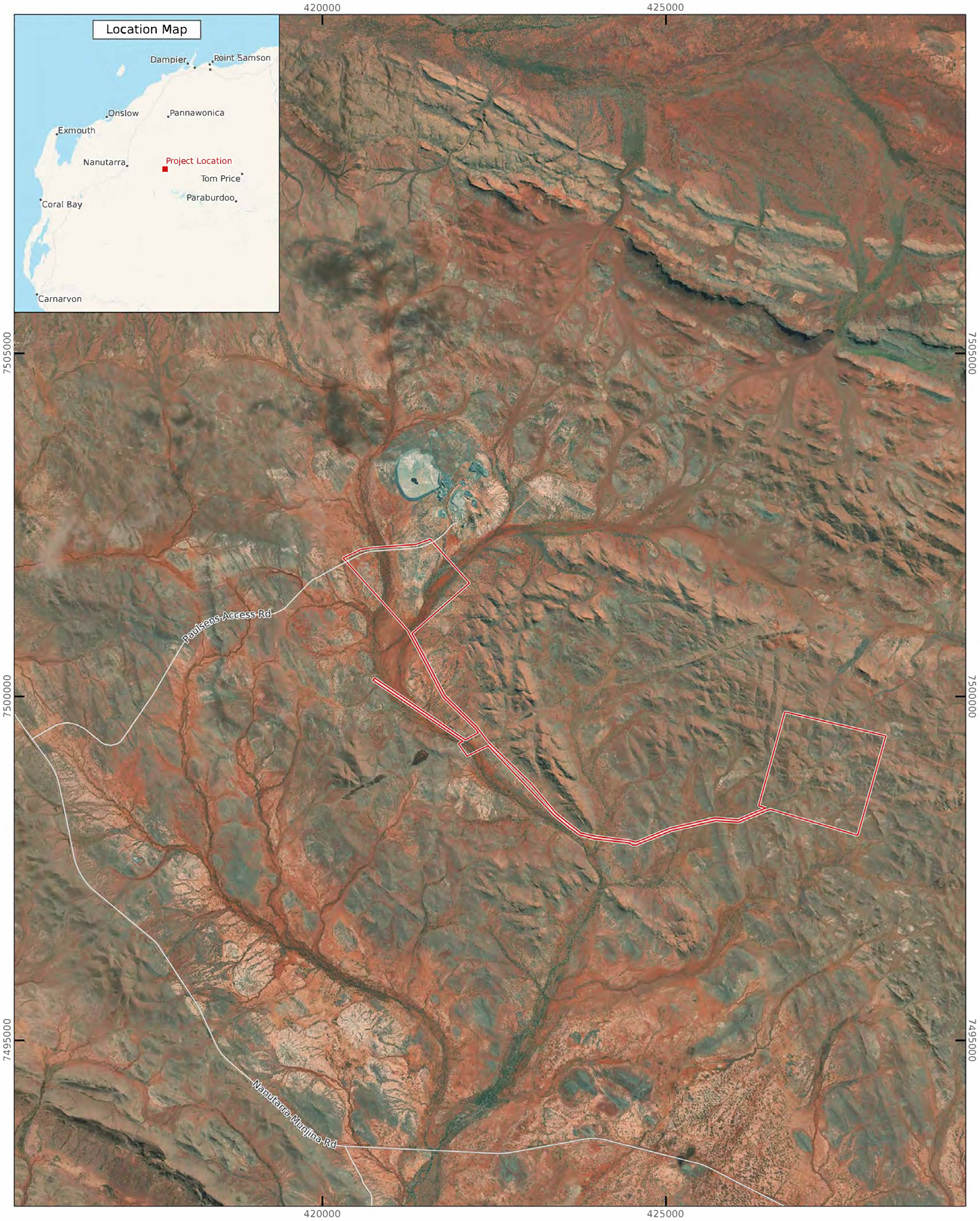


Figure 1: Survey area

0 1,000 2,000 m

GDA94 / MGA zone 50

Legend

Survey Area

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2.0 METHODS

2.1 REQUIREMENTS FOR FLORA AND VEGETATION SURVEYS

The flora and vegetation survey was conducted in accordance with the Environmental Protection Authority (EPA) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) guidelines relevant to environmental surveying and reporting in Western Australia. Key documents referenced include:

- *EPA Statement of Environmental Principles, Factors and Objectives* (EPA, 2018)
- *EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016).

2.2 FLORA AND VEGETATION DESKTOP ASSESSMENT

A comprehensive desktop assessment was conducted to identify potential conservation-significant flora species, TECs and PECs within 50 km of the survey area. Data sources reviewed are listed in Table 5.

Table 5 Information reviewed during the desktop assessment

Source	Databases and reports
Department of Biodiversity Conservation and Attractions (DBCA)	- Threatened and Priority Flora Database and Flora List (DBCA 2024a) - Western Australian Herbarium Specimen Database (DBCA 2024b) - Threatened and Priority Ecological Communities Database (DBCA 2024c)
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	- EPBC Act Protected Matters Search Tool (DCCEEW 2024a)
ENV Australia	- Paulsens Gold Mine Flora, Vegetation and Fauna Assessment (ENV 2012)

The likelihood of occurrence for TECs, PECs, and conservation-significant flora was assessed before and after the survey, using the criteria outlined in Table 6.

Table 6 Criteria for likelihood of occurrence of conservation significant flora and ecological communities

Likelihood of occurrence	Criteria prior to survey	Criteria following survey
High likelihood to be present	Known population or TEC/PEC occurs within 20 km of the survey area. Based on reviewing aerial imagery, potential habitat appears to be present. Population record is within 10 years.	Habitat is present within the survey area and the closest known record is less than 20 km from the survey area.
Medium likelihood to be present	Known population or TEC/PEC occurs within 30 km of the survey area. Based on reviewing aerial imagery, potential habitat appears to be present. Population record is within 20 years.	Habitat is present within the survey area however the closest known record is more than 20 km of the survey area.
Low likelihood to be present	Known population or TEC/PEC occurs more than 30 km from the survey area. Based on reviewing aerial imagery, potential habitat does not appear to be present. Population record is older than 20 years.	Habitat is not present within the survey area and the closest known record is more than 30 km from the survey area.

2.3 FLORA AND VEGETATION FIELD SURVEY

The field survey was conducted in two phases: spring (October 2024) and autumn (March 2025). The methodology followed *EPA Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016a).

The survey aimed to:

- Verify desktop assessment results.
- Map vegetation types and conditions.
- Record all observed flora species, and compile an inventory of species, including weeds.
- Conduct targeted searches for conservation-significant flora.

Data was collected from 25 permanent 50m × 50m quadrats, mapping notes, vegetation condition assessments, opportunistic flora collections, and observations across the survey area. Quadrats were established within intact vegetation, with a minimum of three quadrats per vegetation type where feasible. In cases where restricted vegetation types were present, areas of highest quality were selected.

Each quadrat recorded:

- Site number
- GPS coordinate from the north-west corner
- Photograph from the north-west corner
- Landform
- Soil description
- Drainage

- Leaf litter, bare ground, and rock percentage covers
- Fire history
- Vegetation condition and description of disturbances
- Vegetation structure
- Species present: estimated height and estimated foliage cover.

A specimen of all recorded flora was collected for verification and identification against specimens from the Western Australian Herbarium. Taxonomists from DBCA and the Western Australian Herbarium were consulted to confirm the identification of conservation-significant species.

2.3.1 SURVEY PERSONNEL

The survey was conducted by Western Australian botanists:

- *Catherine Krens* – Senior Botanist (October 2024 & March 2025)
- *Ben Eckermann* – Senior Botanist (March 2025)
- *Lucy Keays* – Graduate Botanist (October 2024)

The senior botanists have extensive experience conducting similar surveys within the Pilbara bioregion.

2.3.2 TARGETED FLORA SURVEY

A targeted flora survey was conducted during the autumn 2025 survey, coinciding with the peak flowering period. Searches were conducted within suitable habitat for conservation-significant species identified in the desktop assessment.

Survey transects were spaced approximately 40 to 50 meters apart, with all potential conservation-significant populations documented. Recorded data included GPS coordinates, population size, number of individuals, and photographic evidence. Survey tracks were logged using a Garmin GPS to demonstrate survey effort.

Any conservation-significant species identified during the survey were submitted to the Western Australian Herbarium for verification by specialist taxonomists.

2.3.3 SURVEY LIMITATIONS

Limitations are common in flora and vegetation surveys which may result in reduced data quality and survey effort and deviations from the EPA guidelines. An assessment of the limitations of the survey as outlined in the EPA guidelines (2016a) are addressed in Table 7.

Table 7 Limitations of the flora and vegetation survey

Limitation	Determination	Justification
Availability of contextual information at a regional and local scale	**Not a limitation**	All contextual information was available at the time of survey. Database search results and desktop assessment was completed prior to commencing the survey.
Competency/experience of the team conducting the survey, including experience in the bioregion	**Not a limitation**	The surveyors Catherine Krens and Ben Eckermann are Senior Botanists each with over 15 years' experience undertaking flora and vegetation surveys within Western Australia.
Proportion of flora recorded and collected and any identification issues	**Not a limitation**	A specimen of all flora species recorded was collected for confirmation at the Western Australian Herbarium. All species observed were recorded including opportunistic records outside quadrats.
Effort and extent - was the survey area fully surveyed	**Not a limitation**	The survey area was traversed on foot and a targeted survey was undertaken within suitable habitat. All vegetation associations were surveyed with a minimum of three quadrats established, except for two associations which were confined to a small section of the survey area.
Access restrictions within the survey area	**Not a limitation**	No access issues were encountered.
Survey timing, rainfall, season of survey	**Not a limitation**	The survey was undertaken over two phases, with the primary survey undertaken in autumn (March 2025) and the supplementary survey undertaken in spring (October 2024). Rainfall was above average for both surveys.
Disturbance that may have affected the results of survey such as fire, flood or clearing	**Minor limitation**	The survey area is currently stocked with cattle and areas around water tanks and within creeklines are heavily disturbed.

2.4 VEGETATION MAPPING

Vegetation associations were classified using the National Vegetation Information System (NVIS) standard to the sub-association level (Commonwealth of Australia, 2003). Floristic composition and vegetation classification followed the EPA (2016a) guidelines for detailed surveys, providing a structured analysis of species composition within each quadrat. To assess similarities between quadrats, a multivariate comparative (cluster) analysis was conducted.

Vegetation descriptions were refined using the NVIS standard to level V (Commonwealth of Australia, 2003), which categorizes vegetation into three traditional strata: upper, mid, and ground layers. Vegetation mapping was performed using QGIS 3.8 software, integrating aerial imagery and quadrat data to delineate vegetation units.

Floristic data was analysed using PC-Ord v7.0, applying cluster analysis to group quadrats based on similarity. The Bray-Curtis distance measure determined the dissimilarity index, ranging from 0 (identical species composition) to 1 (no shared species), with lower values indicating greater similarity. The inverse of this index was used to calculate percentage similarity for each quadrat. A dendrogram illustrating hierarchical relationships between quadrats is provided in Appendix D.

Vegetation condition across the survey area was mapped using the Trudgen (1998) scale, suitable for the Eremaean Botanical Province. Condition ratings account for vegetation structure, disturbance levels at each structural layer, and regeneration potential (EPA, 2016a). Table 8 outlines the vegetation condition scale.

Table 8 Vegetation condition ratings (Trudgen 1998)

Vegetation Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

3.0 EXISTING ENVIRONMENT

3.1 CLIMATE

The closest long-term Bureau of Meteorology (BOM) weather station with a complete dataset is Paraburdoo Aero Weather Station (Station 7185). The long-term mean temperature for Paraburdoo Aero Weather Station ranges from 25.1 (June, July) to 40.9 (January) (1974-2025) (Figure 2) (BOM 2024).

The Paraburdoo Aero Weather Station recorded 234.2 mm of rainfall in the 12 months prior to Phase 2 of the survey (October 2023 to September 2024) which was 86.2 mm below the long-term average of 320.4 mm (BOM 2024). In the three months prior to Phase 1 (July to September 2024), 51.6 mm of rainfall was recorded, which is 25.2 mm above the long-term average of 26.4 mm for the same time period (1974-2024) (BOM 2024).

In the 12 months prior to Phase 2 of the survey (March 2024 to February 2025) 500.4 mm of rainfall was recorded, which was 180 mm above the long-term average of 320.4 mm (BOM 2025). In the three months prior to Phase 1 (December 2024 to February 2025) 229.2 mm of rainfall was recorded, which is 70.3 mm above the long-term average of 158.9 mm for the same time period (1974-2025) (BOM 2024).

A comparison of the mean temperature and mean rainfall against the temperature and rainfall in the 12 months prior to the phase 1 and 2 surveys if provided in Figure 2.

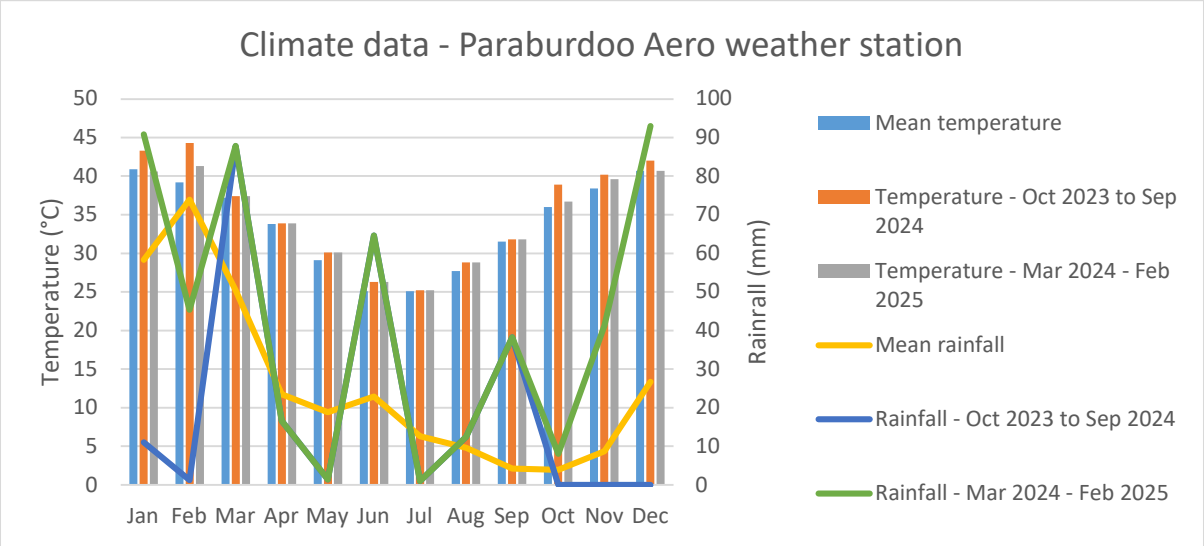


Figure 2 Climate data recorded at Paraburdoo Aero Weather Station (Rainfall and maximum temperature 12 months prior to survey Phases 1 and 2 and long-term average) (Bureau of Meteorology 2024, 2025).

3.2 IBRA BIOREGIONS

The survey area occurs within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion, specifically the Hamersley Subregion (PIL3) (Figure 3). The Pilbara bioregion consists of an Arid to Tropical climate and is characterized by Mulga low woodlands or Snappy Gum over bunch and hummock grasses (DCCEEW 2025).

The Hamersley Subregion has a Semi-desert tropical climate and is characterized by Mulga low woodland over bunch grasses on fine textured soils, and Snappy Gum over *Triodia brizoides* sandy soils (McKenzie et al., 2009).

3.3 GEOLOGY AND SOILS

The survey area is located on the Pilbara Craton, which consists of Proterozoic sedimentary ranges and plateaux dissected by basalt, shale, and dolerite gorges (McKenzie et al., 2000). There are two geological units occurring within the survey area as mapped by the 1:500,000 State interpreted bedrock geology (DPIRD 2021a) (Figure 4):

- A-FOh-xs-f – Hardey Formation: sedimentary and felsic volcanic rocks; local intrusive rocks.
- A-For-b – Mount Roe Basalt: Basaltic volcanic rock; local volcaniclastic and siliclastic rocks.

Two soil systems were identified within the survey area (Figure 5):

- Paraburdoo System: Basalt-derived stony gilgai plains and stony plains supporting snakewood and mulga shrublands with spinifex and tussock grasses.
- Rocklea System: Basalt hills, plateaux, lower slopes, and minor stony plains supporting hard (and occasionally soft) spinifex grasslands.

3.4 BROAD VEGETATION TYPES

Mapping of pre-European vegetation units within Western Australia is based on broad scale mapping by Beard (1976) at 1:3,000,000 which showed the distribution of 75 major categories of plants at the time of European settlement. Beards mapping was re-assessed by Shepherd et al. (2002) with some larger vegetation units divided into smaller units. Together, this pre-European database contains a total of 819 vegetation types recognised within Western Australia.

Two broad vegetation types are mapped within the survey area (Figure 6) The vegetation types are described below. Both vegetation types are well represented at a local, regional, and state level with at least 90% of their Pre-European extent remaining (Table 9 Broad vegetation types within the state, regional and local representation (DPIRD 2019b)

- Stuart Hills 103: Shrub-steppe; Hummock grassland with scattered shrubs or mallee Triodia spp., Acacia spp., Grevillea spp., Eucalyptus spp.

- Stuart Hills 157: Grass-steppe; Hummock grassland with Triodia spp.

Table 9 Broad vegetation types within the state, regional and local representation (DPIRD 2019b)

System Association	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent managed in DBCA lands (%)
Representation across Western Australia				
Stuart Hills 103	614,596.51	614,463.81	99.98	4.98
Stuart Hills 157	80,409.37	80,409.37	100.00	80,409.37
Representation across the Pilbara Bioregion				
Stuart Hills 103	614,056.46	613,923.76	99.98	4.99
Stuart Hills 157	80,255.35	80,255.35	100.00	2.35
Representation across the Shire of Ashburton				
Stuart Hills 103	614,596.51	614,463.81	99.98	4.98
Stuart Hills 157	80,409.37	80,409.37	100.00	2.35

3.5 CONSERVATION AREAS

Environmentally Sensitive Areas (ESAs) are declared to prevent degradation of important environmental values such as Threatened flora, TECs or significant wetlands. Exemptions contained in the Environmental Protection (Clearing of Native vegetation) Regulations 2004 for low impact land clearing do not apply in ESAs and a clearing permit is required.

No ESAs within 50 km of the survey area, and no rivers or wetlands occur within or surrounding the survey area.

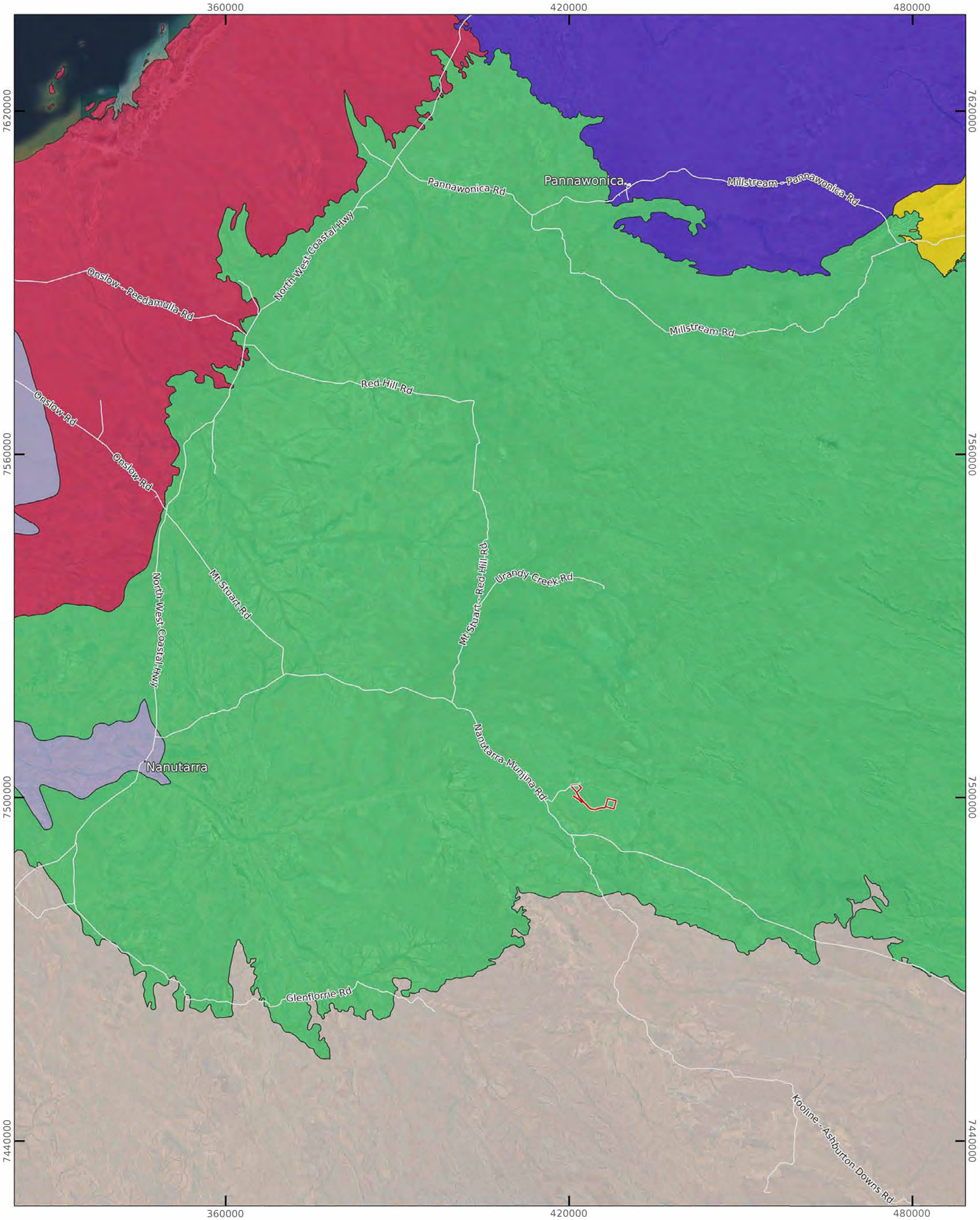


Figure 3: IBRA Regions and Subregions

0 10 20 km

GDA94 / MGA zone 50

Legend

- Survey Area

IBRA Region - Subregion

- Carnarvon - Cape Range
- Gascoyne - Ashburton
- Pilbara - Chichester
- Pilbara - Fortescue
- Pilbara - Hamersley
- Pilbara - Roebourne

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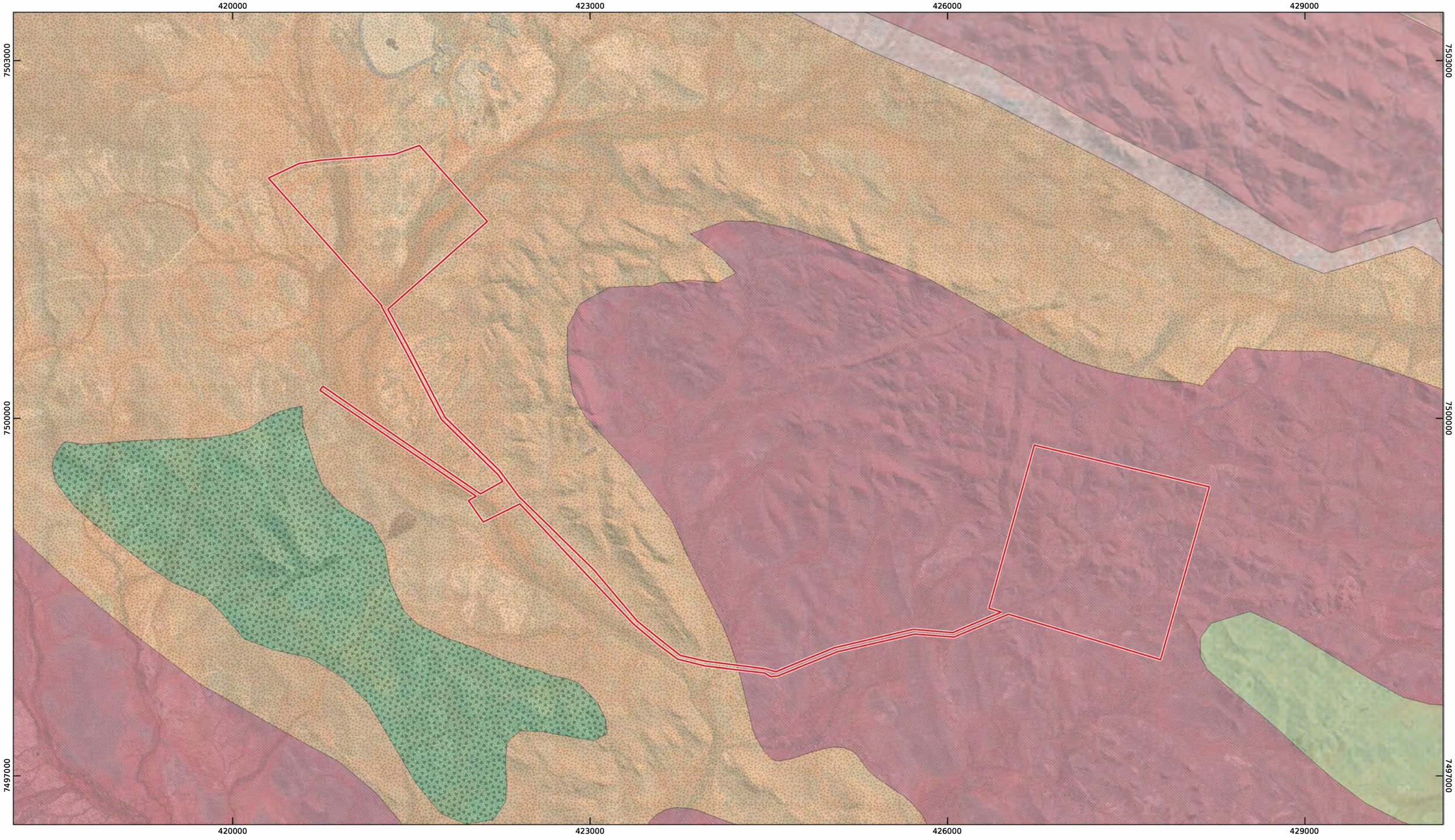


Figure 4: Geology

0 500 1,000 m

Scale 1:30,000

GDA94 - MGA Zone 50

Legend

Survey Area

Geology Code

A-FO-od

A-FOu-bbo

A-FOp-bs

A-FOo-bbo

A-FOh-xs-f

A-FOr-b

A-b-PWY

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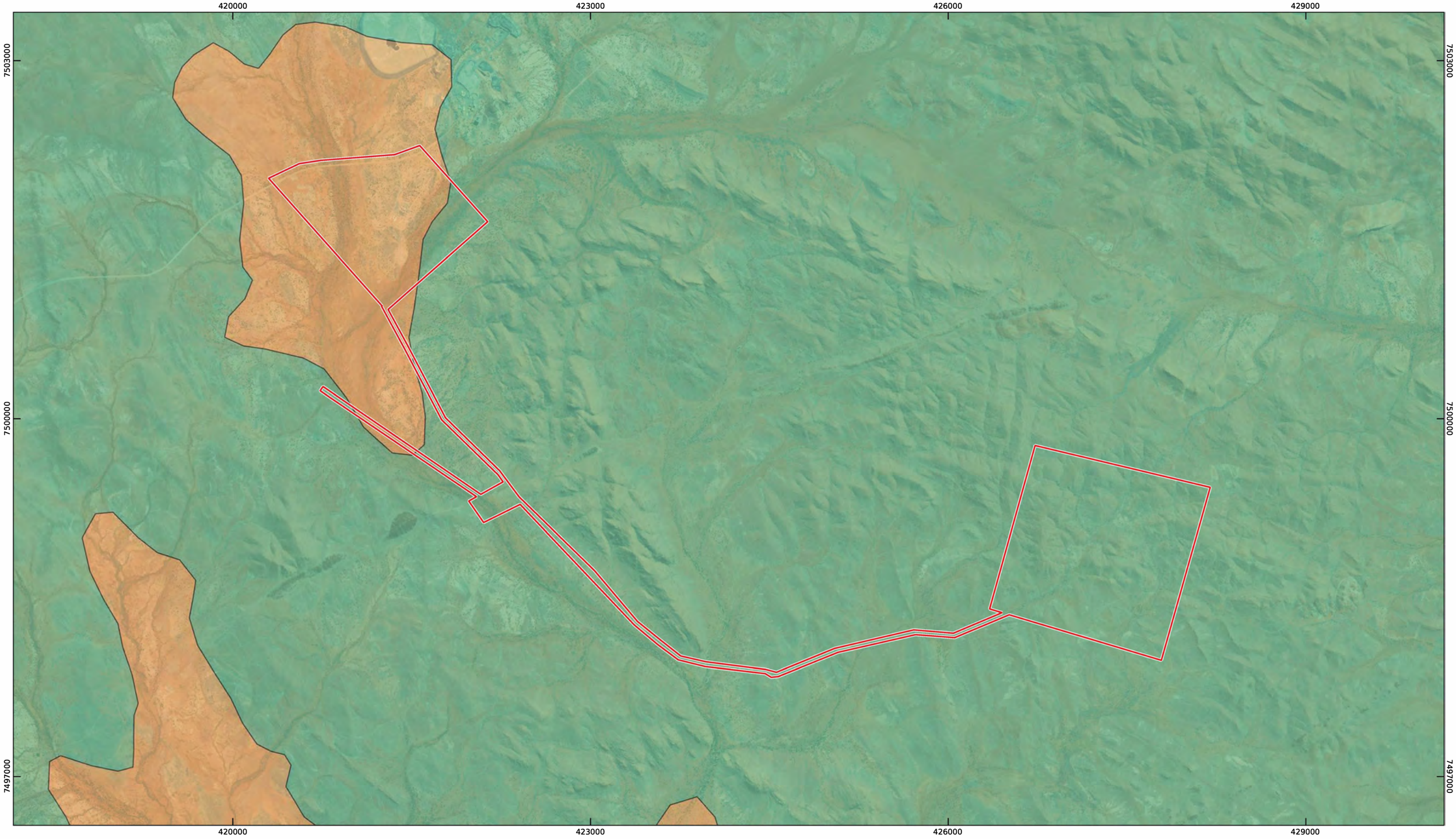


Figure 5: Soils

0 500 1,000 m

Scale 1:30,000

GDA94 - MGA Zone 50

Legend

Survey Area

Soil System

Paraburdoo System

Rocklea System

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Ref: 244_011_RevA.qgz



Figure 6: Pre-European vegetation

0 500 1,000 m

Scale 1:30,000

GDA94 - MGA Zone 50

Legend

Survey Area

Pre-European Vegetation

Stuart Hills 103

Stuart Hills 157

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Ref: 244_018_RevA.qgz

4.0 RESULTS

4.1 FLORA RESULTS

4.1.1 FLORA DESKTOP ASSESSMENT

The desktop assessment identified 56 conservation-significant flora species occurring within 50 km of the survey area. A break-down of the number of species within each conservation category is provided in Table 10.

Table 10 Number of species within each conservation category identified in the desktop assessment

Conservation status	Commonwealth listed species	State listed species
Critically Endangered	0	0
Endangered	0	0
Vulnerable	1^	1^^
Priority 1		8
Priority 2		6
Priority 3		34
Priority 4		7

Note: ^some species are also State listed
^^ some species are also Commonwealth listed

The potential occurrence of the conservation-significant species within the survey area was determined as either 'High, 'Medium' or 'Low' likelihood to be present based on the criteria set out in Table 6. Two species were considered to have a high likelihood of occurrence within the survey area:

- *Indigofera rivularis* – Priority 3
- *Solanum* sp. W Hamersley Range (S. Colwill & B. Duncan LCR99-01) – Priority 1.

Six of the species identified in the desktop assessment were considered to have a medium likelihood of occurrence within the survey area. Suitable habitat was present within the survey area; however, these species occur more than 30 km from the survey area:

- *Eremophila magnifica subsp. velutina* – Priority 3
- *Ptilotus mollis* – Priority 4
- *Rhynchosia bungarensis* – Priority 4
- *Sida* sp. Hamersley Range (K. Newbey 10692) – Priority 3
- Solanum sp. Red Hill (S. van Leeuwen et al. PBS 5415) – Priority 3
- *Triodia pisoliticola* – Priority 3.

The remaining 48 conservation significant species were considered to have a low likelihood of occurrence in the survey area. A full description of all conservation significant species identified in the desktop assessment is provided in Appendix A and the locations of conservation significant populations are mapped in Figure 7.

405000
450000
7560000
7515000
7470000
7425000
Red Hill Rd
Mt Stuart - Red Hill Rd
50km
Urandy Creek Rd
30km
Mt Stuart Rd
10km
Nanutarra-Munjina Rd
Glenflorrie Rd
Kooline - Ashburton Downs Rd

Figure 7: Conservation significant flora

0 10 20 km

GDA94 / MGA zone 50

Legend

Survey Area

Threatened Priority Flora

Priority 1

Priority 2

Priority 3

Priority 4

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4.1.2 FLORA FIELD ASSESSMENT RESULTS

The two-phase survey identified 187 vascular flora species, including subspecies and varieties, from 34 families and 97 genera. Among these, 181 were locally native, while six were introduced species. Species richness varied across quadrats, ranging from 14 to 46 species. The families with the highest species representation were Fabaceae (36 species), Poaceae (28 species), Malvaceae (20 species), Asteraceae (15 species). The most species-rich genera were Acacia (15 species), Eremophila and Sida (7 species each), and Corchorus, Ptilotus, and Senna (6 species each).

All 187 species were collected for verification and identification at the Western Australian Herbarium. The majority were successfully identified at the species level, except for 13 specimens, which lacked sufficient flowering or fruiting material for complete identification.

All recorded species occurred within the Pilbara bioregion, with no species found outside their known population range.

A summary of the recorded flora can be found in Table 11, with the full species list presented in Appendix B.

Table 11 Summary of recorded flora

Overview	
No. Families	33
No. Genera	96
No. Species (incl. subspecies & varieties)	181
No. Native Species (incl. subspecies & varieties)	175
Priority Flora	0
No. Introduced Species	6
Species of Interest	1
Speciose Families	
Asteraceae	15
Fabaceae	36
Malvaceae	20
Poaceae	28
Speciose Genera	
Acacia	15
Eremophila	7
Sida	7
Corchorus	6
Ptilotus	6
Senna	6
Flora of Conservation Significance	none

Species of Interest	
Senna artemisiodes subsp. *oligophylla x helmsii*	Hybrid
Introduced Flora	
Aerva javanica	Kapok Bush
Cenchrus ciliaris	Buffel Grass
Cenchrus setiger	Birdwood Grass
Malvastrum americanum	Spiked Malvastrum
Portulaca pilosa	Djanggara
Vachellia farnesiana	Mimosa Bush

4.1.3 CONSERVATION SIGNIFICANT FLORA

No flora species recorded within the survey area were classified as Threatened (T or X) under the BC Act or as Threatened under the EPBC Act. Additionally, no Priority flora species were identified.

Unusual species

One unusual species, *Senna artemisioides* subsp. *oligophylla* × *helmsii*, was recorded. While it is not currently listed under the EPBC Act, BC Act, or as a Priority flora species, it represents a relatively new hybrid taxa that is yet to be formally recognised within the DBCA Florabase. This taxon is a hybrid of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii*. It exhibits morphological traits from both parent species, including:

- Densely woolly-hairy leaves (a characteristic of *Senna artemisioides subsp. helmsii*).
- Leaf tips that are not crenate (a characteristic of *Senna artemisioides subsp. oligophylla*).

A targeted survey was undertaken for the 56 species identified in the desktop assessment and species considered to have a high and medium likelihood of occurrence within the survey area were the focus of the targeted survey. The targeted survey effort is shown in Figure 8.

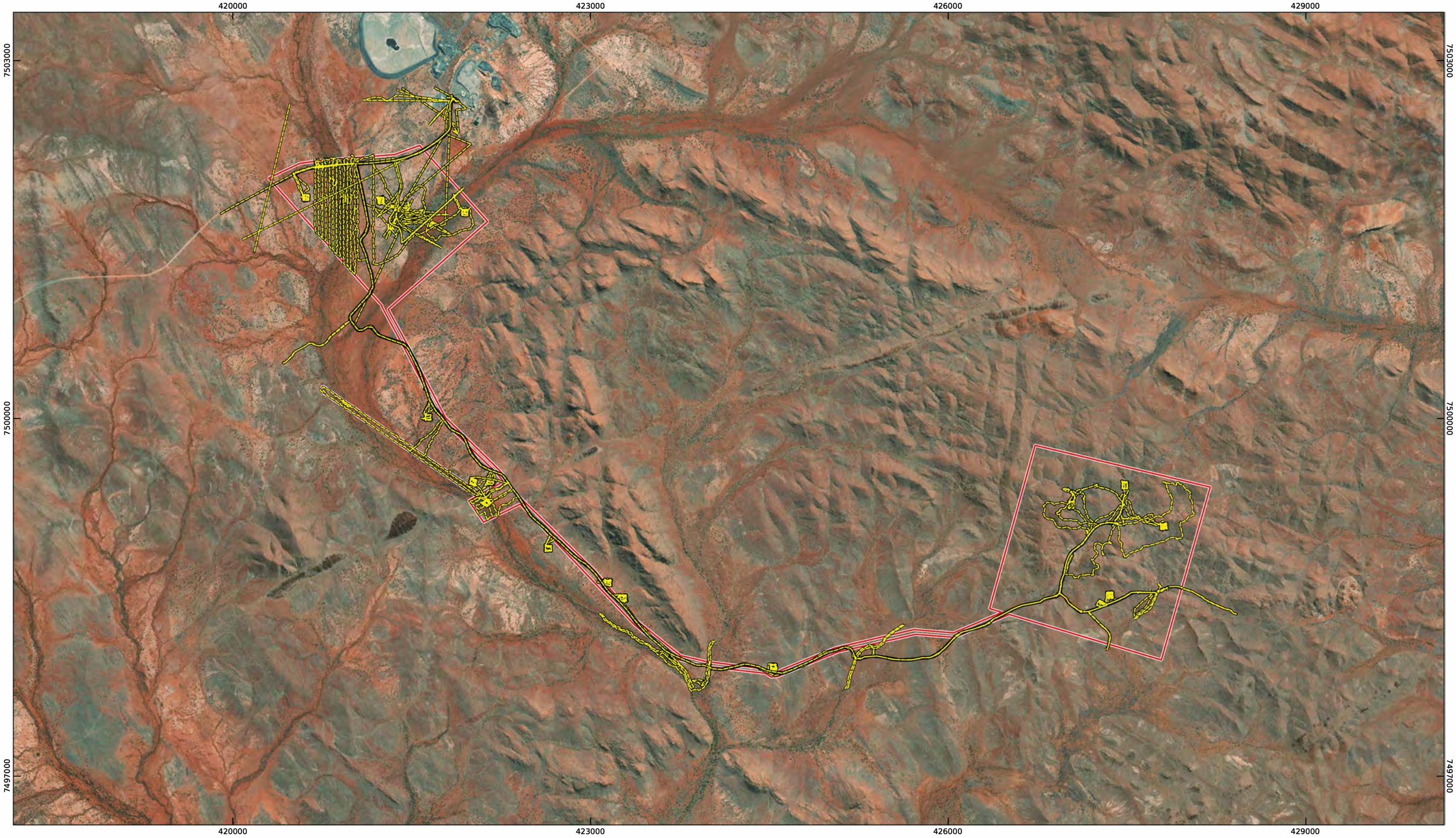


Figure 8: Survey effort

0 500 1,000 m

Scale 1:30,000

GDA94 - MGA Zone 50

Legend

Survey Tracks

Survey Area

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4.1.4 WEEDS

A total of six introduced (weed) species were recorded within the survey area:

- *Aerva javanica* (Kapok Bush, Amaranthaceae)
- *Cenchrus ciliaris* (Buffel Grass, Poaceae)
- *Cenchrus setiger* (Birdwood Grass, Poaceae)
- *Malvastrum americanum* (Spiked Malvastrum, Malvaceae)
- *Portulaca pilosa* (Djanggara, Portulacaceae)
- *Vachellia farnesiana* (Mimosa Bush, Fabaceae).

None of these species are classified as Declared Pests under the *Biosecurity and Agricultural Management Act 2007* (BAM Act) or listed as a Weed of National Significance (WoNS).

Weed cover was most prominent in creeklines, adjacent to tracks, and around cattle troughs.

4.2 VEGETATION RESULTS

4.2.1 VEGETATION DESKTOP ASSESSMENT

The desktop assessment identified three Priority Ecological Communities (PECs) and associated buffers occurring within 50 km of the survey area. No Threatened Ecological Community (TEC) listed under the EPBC Act or BC Act occurs within 50 km of the survey area. A break-down of the number of significant ecological communities within each conservation category is provided in Table 12.

Table 12 Number of ecological communities within each conservation category identified in the desktop assessment

Conservation status	Commonwealth	State
TEC	0	0
PEC – Priority 1		1
PEC – Priority 2		0
PEC – Priority 3		2
PEC – Priority 4		0

One PEC was considered to have a high likelihood of occurrence within the survey area:

- *Triodia pisoliticola* Assemblages – Priority 3.

The remaining two PECs were considered to have a low likelihood of occurrence within the survey area:

- Brockman Iron cracking clay communities – Priority 1
- Scoop Land System – Priority 3.

A full description of all conservation-significant ecological communities identified in the desktop assessment is provided in Appendix A and the locations and buffers are mapped in Figure 9.

405000
450000
7560000
7515000
7470000
7425000
Red Hill Rd
Mt Stuart - Red Hill Rd
50km
Urandy Creek Rd
30km
Mt Stuart Rd
10km
Nanutarra-Munjina Rd
Glenflorrie Rd
Kooline - Ashburton Downs Rd

Figure 9: Conservation significant ecological communities

0 10 20 km

GDA94 / MGA zone 50

Legend

Survey Area

DBCA Threatened and Priority Ecological Communities

Priority 1

Priority 3

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Ref: 244_014_RevA.qgz

4.2.2 VEGETATION ASSOCIATIONS

Six broad vegetation associations were mapped within the survey area based on vegetation structure and statistical analysis of the 25 quadrats. Two vegetation associations were restricted in size within the survey area and a limited number of quadrats were able to be established:

- VT5 - *Eucalyptus* victrix woodland represented 0.2 ha with two quadrats established
- VT6 - *Triodia epactia* grassland represented 4.7 ha with one quadrat established.

The vegetation associations occurring within the survey area are summarised in Table 13 and a full description of the vegetation associations is provided in Table 14 and mapped in Figure 10. Species occurring within the vegetation associations is provided in Appendix C, statistical analysis of the 25 quadrats is provided in Appendix D, and quadrat data is provided in Appendix E.

Table 13 Vegetation associations within the survey area

Vegetation association	Vegetation description	Landform	PEC	Conservation-significant or unusual flora	Weeds
Acacia shrubland to woodland					
VT1 – *Acacia xiphophylla* shrubland	*Acacia bivenosa*, *A. synchronicia* and *A. xiphophylla* tall open shrubland over *Triodia epactia* and *T. wiseana* low sparse hummock grassland over *Cenchrus ciliaris* and *Neurachne muelleri* low sparse tussock grassland	Floodplain	No – cracking clays	*Senna artemisioides* subsp. *oligophylla* x *helmsii*	*Cenchrus ciliaris, Cenchrus setiger, Portulaca pilosa, Vachellia farnesiana*
VT2 - *Acacia citrinoviridis* shrubland	*Acacia citrinoviridis* low open woodland over *A. bivenosa*, *A. pyrifolia* and *Melaleuca glomerata* mid open shrubland over *Cenchrus ciliaris* and *C. setiger* low tussock grassland	Creekline	No	*Senna artemisioides* subsp. *oligophylla* x *helmsii*	*Aerva javanica, Cenchrus ciliaris, Cenchrus setiger, Portulaca pilosa, Malvastrum americanum, Vachellia farnesiana*
VT3 - *Acacia bivenosa* shrubland	*Acacia xiphophylla* tall sparse shrubland over *A. bivenosa* and *A. synchronicia* mid open shrubland over `low hummock grassland	Plain	No	*Senna artemisioides* subsp. *oligophylla* x *helmsii*	*Cenchrus ciliaris, Cenchrus setiger,*
Triodia hummock grassland					
VT4 - *Triodia wiseana* hummock grassland	*Acacia arida*, *A. bivenosa* and *Senna artemisioides* subsp. *oligophylla* x *helmsii* mid sparse shrubland over *Triodia wiseana* low hummock grassland over *Aristida contorta* and *Enneapogon caerulescens* low sparse tussock grassland	Hills	No	*Senna artemisioides* subsp. *oligophylla* x *helmsii*	*Cenchrus ciliaris, Vachellia farnesiana*
VT6 - *Triodia epactia*	*Acacia synchronicia*, *A. trachycarpa* and *Eremophila longifolia* tall open shrubland over *Triodia epactia* low	Plain	No		*Cenchrus ciliaris, Cenchrus setiger, Portulaca pilosa, Vachellia farnesiana*

Vegetation association	Vegetation description	Landform	PEC	Conservation-significant or unusual flora	Weeds
hummock grassland	open hummock grassland over *Cenchrus ciliaris* low open tussock grassland				
Eucalyptus woodland					
VT5 - *Eucalyptus victrix* woodland	*Eucalyptus victrix* mid open woodland over *Acacia citrinoviridis* and *A. synchronicia* tall open shrubland over *Cenchrus ciliaris* and *C. setiger* low tussock grassland	Creekline			*Cenchrus ciliaris, Cenchrus setiger, Malvastrum americanum, Vachellia farnesiana*

Table 14 Vegetation association descriptions

Broad Floristic Formation	Acacia Shrubland
Vegetation Association	VT1- AxTwCc: *Acacia bivenosa*, *A. synchronicia* and *A. xiphophylla* tall open shrubland over *Triodia epactia* and *T. wiseana* low sparse hummock grassland over *Cenchrus ciliaris* and *Neurachne muelleri* low sparse tussock grassland
	
Area Mapped	63 ha
Quadrats Sampled	PQ01, PQ03, PR08, PQ09, PQ16, PR30, PR13
Leaf Litter Cover (%)	>10
Bare Ground Cover (%)	>70
Rock Cover (%)	Predominantly 30-70
Soils and Geology	Soils consisted of clay, sandy clay, and sandy clay loam. Rock types included quartz and basalt.
Landform	Plains, floodplains, and creeks
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	*Cenchrus ciliaris, Cenchrus setiger, Portulaca pilosa,*
Vegetation Condition	Condition ranged from Poor to Very Good
Disturbances	Weeds, fire, old tracks, vehicle tracks, rubbish, cattle
Average Fire Age	Old (>10 years)

Vegetation Structure & Floristics	Condition ranged from Poor to Very Good
Chenopod	*Atriplex semilunaris, Sclerolaena cuneata, S. eriacantha, S. lanicuspis, Maireana planifolia, M. integra, M. tomentosa, M. thesiodes, M. melanocoma*
Tussock Grass	*Cynodon prostratus, Enneapogon caerulescens, Eragrostis dielsii, E. tennellula, Dactyloctenium radulans, Neurachne muelleri, Sporobolus australascius, Aristida holathera, Eriachne mucronate, Eriachne pulchella* subsp. *pulchella, Paspalidium clementii*
Hummock Grass	*Triodia wiseana, T. epactia*
Shrub >2m	*Acacia synchronicia, A. xiphophylla, A. kempeana, A. tetragonophylla, A. bivenosa, A. pruinocarpa, A. trachycarpa, Hakea lorea* subsp. *lorea*
Shrub 0-1m	*Corchorus lasiocarpus* subsp. *parvus, Scaevola spiniscens, Senna artemisioides* subsp. *oligophylla x helmsii, Sida fibulifera, Abutilon lepidum, Acacia aptaneura, Corchorus crozophorifolius, Enchylaena tomentosa, Eremophila fraseri* subsp. *fraseri, E. cuneifolia, Indigofera monophyla, Ptilotus obovatus, Senna glutinosa* subsp. *x luerssenii, S. glutinosa* subsp. *pruinosa Hibiscus coatesii, Sida ectogama, Tribulus suberosus, Tephrosia uniovulata, Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601*), Vincetoxicum, Atriplex semilunaris, Streptoglossa bubakii*
Broad Floristic Formation	Acacia shrubland
Vegetation Association	VT2 – AcApCc: *Acacia citrinoviridis* low open woodland over *A. bivenosa, A. pyrifolia* and *Melaleuca glomerata* mid open shrubland over *Cenchrus ciliaris* and *C. setiger* low tussock grassland



Area Mapped	118.7 ha
Quadrats Sampled	PQ02, PQ21, PR28, PR27, PQ29, PR14
Leaf Litter Cover (%)	0-70
Bare Ground Cover (%)	Predominantly 10-30
Rock Cover (%)	30-70
Soils and Geology	Soils consisted of clay, sand, sandy clay, and sandy loam. Rocks were river alluvium.
Landform	Creeks, plains, and floodplains
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	*Malvastrum americanum, Aerva javanica, Cenchrus ciliaris, C. setiger, Vachellia farnesiana*
Condition	Condition ranged from Degraded to Very Good
Disturbances	Weeds, cattle, nearby tracks
Average Fire Age	Old (>10 years)
Vegetation Structure & Floristics	
Tussock Grass	*Eragrostis xerophila, E. tenellula, E. xerophila Enneapogon caerulescens*
Hummock Grass	*Triodia wiseana*

Tree <10m	*Grevillea pyramidalis* subsp. *Leucadendron, Acacia citrinoviridis*
Shrub >2m	*Acacia citrinoviridis, A. pyrifolia, A. wanyu A. bivenosa, A. kempeana, A. synchronicia, A. tetragonophylla, A. xiphophylla, Melaleuca glomerata, Jasminum didymum*
Shrub 1-2m	*Eremophila longifolia, Clerodendrum floribundum, Acacia arida, A. bivenosa, A. pyrifolia, A. synchronicia, Melaleuca glomerata, Scaevola spiniscens, Senna artemisioides* subsp. *oligophylla x helmsii*
Shrub 0-1m	*Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186*), T. uniovulata Sesbania cannabina, Indigofera linifolia, Abutilon lepidum, Acacia tetragonophylla, Corchorus crozophorifolius, Enchylaena tomentosa, Malvastrum americanum, Scaevola spiniscens, Senna artemisioides* subsp. *oligophylla x helmsii, Sida fibulifera, Solanum lasiophyllum,*
Broad Floristic Formation	Acacia shrubland
Vegetation Association	VT3 – AxAbTw: *Acacia xiphophylla* tall sparse shrubland over *A. bivenosa* and *A. synchronicia* mid open shrubland over *Triodia wiseana* low hummock grassland
	
Area Mapped	8.0 ha
Quadrats Sampled	PQ13, PQ15, PQ17, PQ37

Leaf Litter Cover (%)	0-30
Bare Ground Cover (%)	30-70
Rock Cover (%)	30-70
Soils and Geology	Soils consisted of sandy clay and sandy clay loam. Rocks included calcrete, granite, and basalt.
Landform	Floodplains and plains.
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	*Cenchrus ciliaris, C. setiger*
Condition	Condition ranged from Very Good to Excellent
Disturbances	Cattle, fire
Average Fire Age	Old (>10 years)
Vegetation Structure & Floristics	
Tussock Grass	*Aristida contorta, A. holathera, Enneapogon caerulescens, Eragrostis tenellula, Eriachne mucronate, Neurachne muelleri, Paspalidium clementii*
Hummock Grass	*Triodia epactia, T. wiseana*
Shrub >2m	*Acacia xiphophylla*
Shrub 1-2m	*Senna glutinosa* subsp. *glutinosa, Senna glutinosa* subsp. *pruinosa, Senna glutinosa* subsp. *luerssenii Acacia bivenosa, A. synchronicia, A. tetragonophylla, Abutilon amplum*
Shrub 0-1m	*Corchorus laniflorus, C. crozophorifolius, Sida* sp. Excedentifolia (J.L. Egan 1925), *S. cardiophylla, S. calyxhymenia, S. ectogama, S. fibulifera Abutilon amplum, Acacia citrinoviridis, Atriplex semilunaris, Hakea lorea* subsp. *lorea, Hibiscus coatesii, Indigofera monophylla, Ptilotus obovatus, Scaevola spiniscens, Senna glutinosa* subsp. *x luerssenii, Tribulus suberosus*
Broad Floristic Formation	Triodia hummock grassland
Vegetation Association	VT4 – AaTwAc/Ec: *Acacia arida, A. bivenosa* and *Senna artemisioides* subsp. *oligophylla x helmsii* mid sparse shrubland over T*riodia wiseana* low hummock grassland over *Aristida contorta* and *Enneapogon caerulescens* low sparse tussock grassland



Area Mapped	188.1 ha
Quadrats Sampled	PQ19, PQ26, PQ31, PQ33, PQ32
Leaf Litter Cover (%)	<10
Bare Ground Cover (%)	30-70
Rock Cover (%)	30-70
Soils and Geology	Soils consisted of sandy clay loam, sandy loam, and clay loam
Landform	Hills
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	Cenchrus ciliaris, Vachellia farnesiana
Condition	Condition ranged from Very Good to Excellent
Disturbances	Weeds, cattle, adjacent tracks
Average Fire Age	Old (>10 years)
Vegetation Structure & Floristics	
Tree <10m	*Acacia citrinoviridis, Clerodendrum floribundum*
Tussock Grass	*Eriachne pulchella* subsp. *domini, Eriachne pulchella* subsp. *pulchella, E. mucronata, Enneapogon polyphyllus, E. caerulescens, Cymbopogon ambiguus, Aristida contorta, A. holathera, Paspalidium clementii*

Hummock Grass	*Triodia wiseana*
Shrub >2m	*Acacia arida, A. bivenosa, A. synchronicia, Melaleuca glomerata*
Shrub 1-2	*Acacia arida, A. bivenosa, A. citrinoviridis, A. hamersleyensis, A. pyrifolia, A. synchronicia, A. tetragonophylla, Corchorus lasiocarpus* subsp. *parvus, Cullen leucochaites, Eremophila latrobei, Grevillea eriostachya, Hakea lorea subsp. lorea, Senna artemisioides* subsp. *oligophylla, Senna artemisiodes olygophylla x helmsii, Senna glutinosa subsp. glutinosa, Senna glutinosa* subsp. *pruinose, Vincetoxicium lineare*
Shrub 0-1m	*Abutilon lepidum, Clerodendrum floribundum, Corchorus crozophorifolius, C. laniflorus, Cullen leucochaites,, Dolichandrone occidentalis, Eremophila cuneifolia, Eremophila fraseri subsp. fraseri, Gomphrena cunninghamii, Gossypium australe, Indigofera colutea, I. monophylla, Jasminum didymium, Ptilotus obovatus, Senna artemisioides* subsp. *oligophylla, Senna artemisiodes* subsp. *oligophylla x helmsii, Sida fibulifera, Solanum cleistogamum, S. lasiophyllum, Tephrosia rosea* var. Fortescue creeks (M.I.H Brooker 2186), *T. uniovulata*
Broad Floristic Formation	Eucalyptus Woodland
Vegetation Association	VT5 – EvAcCc: *Eucalyptus victrix* mid open woodland over *Acacia citrinoviridis* and *A. synchronicia* tall open shrubland over *Cenchrus ciliaris* and *C. setiger* low tussock grassland
	
Area Mapped	0.2 ha
Quadrats Sampled	PQ18, PQ20

Leaf Litter Cover (%)	10-30
Bare Ground Cover (%)	30-70
Rock Cover (%)	10-70
Soils and Geology	Soils consisted of sandy clay. Rocks were river alluvium.
Landform	Minor Creeks (<5m)
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	*Vachellia farnesiana, Cenchrus setigera, C. ciliaris, Malvastrum americanum*
Condition	Poor
Disturbances	Weeds, cattle, adjacent tracks
Average Fire Age	Old (>10 years)
Vegetation Structure & Floristics	
Tree 10-30m	*Eucalyptus victrix*
Tussock Grass	*Chrysopogon fallax, Dactyloctenium radulans, Eragrostis tenellula, Eulalia aurea*
Hummock Grass	*Triodia epactia, T. wiseana*
Shrub >2m	*Acacia citrinoviridis, A. ligulata, A. synchronicia, Eremophila longifolia, Scaevola spinescens*
Shrub 1-2m	*Acacia bivenosa, A. wanyu, Jasminum didymium, Senna glutinosa* subsp. *pruinose, Vincetoxicum linere*
Shrub 0-1m	*Abutilon amplum, Acacia tetragonophylla, Corchorus crozophorifolius, C. laniflorus, Cullen leucochaites, Enchylaena tomentosa, Indigofera monophylla, Lepidium pedicellosum, Malvastrum americanum, Neptunia xanthonema, Scaevola spiniscens, Sesbania cannabina, Tephrosia rosea* var. Fortescue creeks (MIH. Brooker 2186*), Teucrium teucriflorum, Vincetoxicum lineare*
Broad Floristic Formation	Triodia Hummock Grassland
Vegetation Association	VT6: AsTeCc: *Acacia synchronicia, A. trachycarpa* and *Eremophila longifolia* tall open shrubland over *Triodia epactia* low open hummock grassland over *Cenchrus ciliaris* low open tussock grassland



Area Mapped	4.7 ha
Quadrats Sampled	PQ36
Leaf Litter Cover (%)	10-30
Bare Ground Cover (%)	30
Rock Cover (%)	<10
Soils and Geology	Soils consisted of sandy clay. Rocks were quartz.
Landform	Plains
Conservation Significant Ecological Community	None
Conservation Significant Flora	None
Introduced (Weed) Species	*Cenchrus ciliaris, C. setigera, Vachellia farnesiana*
Condition	Condition was poor
Disturbances	Weeds, cattle, tracks
Average Fire Age	Old (>10)
Vegetation Structure & Floristics	
Tussock Grass	*Sporobolus australasicus, Aristida contorta*
Hummock Grass	*Triodia epactia, T. wiseana*
Shrub >2m	*Acacia synchronicia, A. tetragonophylla, A. trachycarpa, Eremophila longifolia*
Shrub 1-2m	*Acacia citrinoviridis, Eremophila cuneifolia, Scaevola spiniscens*

Shrub 0-1m	*Abutilon lepidum, Corchorus crozophorifolius, C. laniflorus, Rhynchosia minima, Senna notabilis, Sida arsiniata, Solanum diversiflorum, S. lasiophyllum*

4.2.3 CONSERVATION SIGNIFICANT ECOLOGICAL COMMUNITIES

No Threatened Ecological Communities listed under the EPBC Act or BC Act or Priority Ecological Communities occurred within the survey area. Cracking clays were present within the survey area and several cracking clay PECs occur within the Pilbara bioregion including:

- West Angelas Cracking-Clays (Priority 1): this PEC occurs throughout the eastern and central Hamersley Range near Tom Price, which is more than 100 km from the survey area. Key species, particularly tussock grasses, do not occur within the cracking clays of the survey area, apart from *Sida fibulifera.*
- Brockman Iron cracking clay communities of the Hamersley Range (Priority 1): this PEC was identified in the desktop assessment as having a low likelihood of occurrence. The Brockman land system is rare and did not occur within the survey area. The key tussock species *Estrebla lappacea* was not recorded within the survey area.
- Four plant assemblages of the Wona Land System: the cracking clays in the survey area contained *Eragrostis xerophila* and *Sida fibulifera*, which are key species of the Mitchell grass and Roebourne Plain on gilgai component of this PEC. However, the Wona Land System occurs much further north near Karratha.

The cracking clays in the survey area are unlikely to correspond to any of the Pilbara PECs, as the key species associated with these communities, and the relevant land systems are absent from the survey area. Conservation significant flora are often found in cracking clays and a targeted search was conducted in these areas.

4.2.4 VEGETATION CONDITION

The vegetation condition within the survey area varied from Completely Degraded to Excellent, with no areas classified as Pristine. This is largely due to ongoing cattle stocking and the proliferation of weeds, particularly in areas frequented by cattle, such as around water troughs and along the creekline where they access water when present.

A summary of the vegetation condition within the survey area is presented in Table 15 and mapped in Figure 11.

Table 15 Vegetation condition categories within the survey area

Condition scale	Area (ha)	Percentage (%)
Excellent	171.9	43
Very Good	46.4	12
Good	71.1	18
Degraded	62.1	16
Completely Degraded	45.9	11
Total	**397.4**	**100**

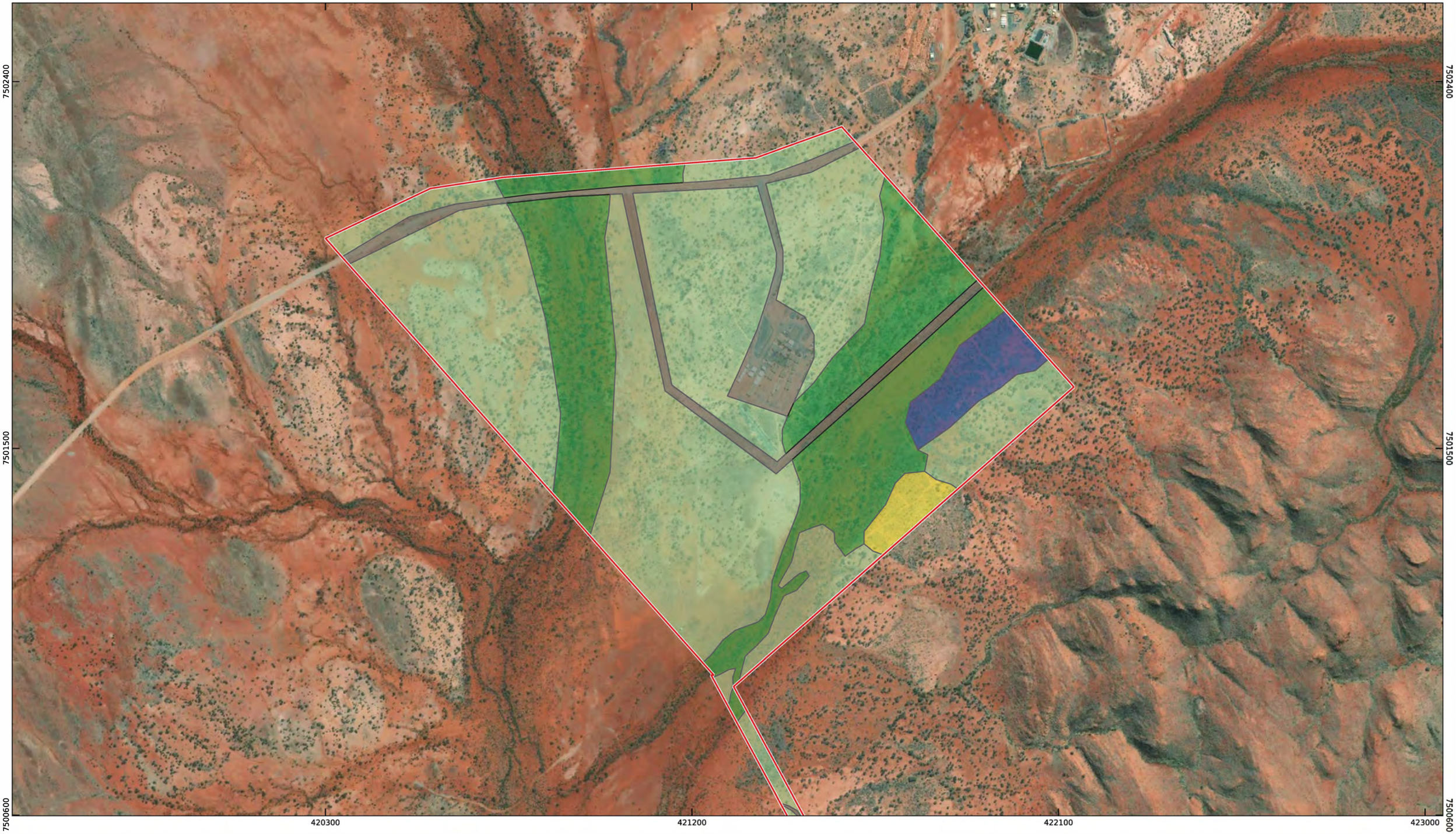


Figure 10a: Vegetation associations

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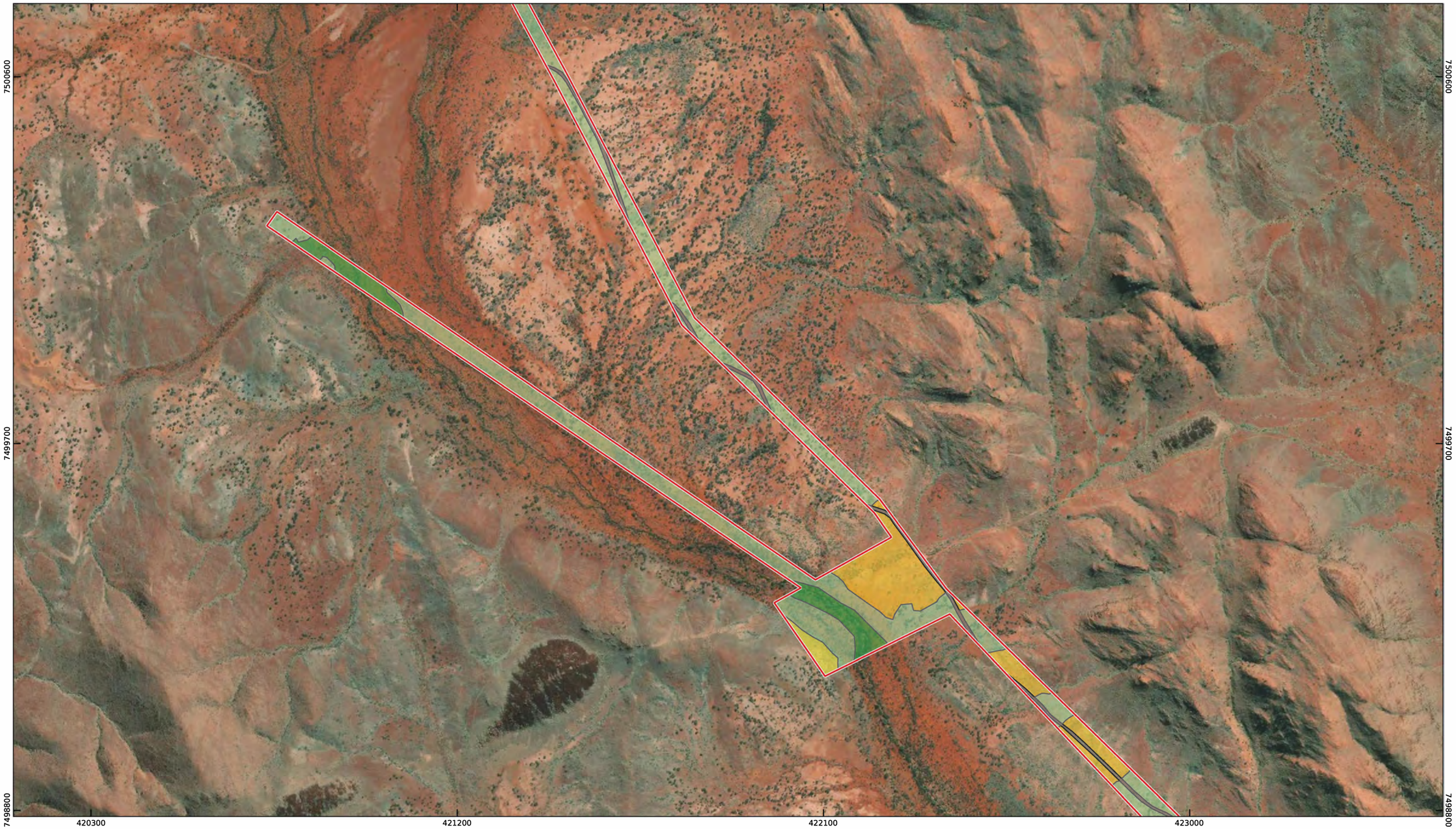


Figure 10b: Vegetation associations

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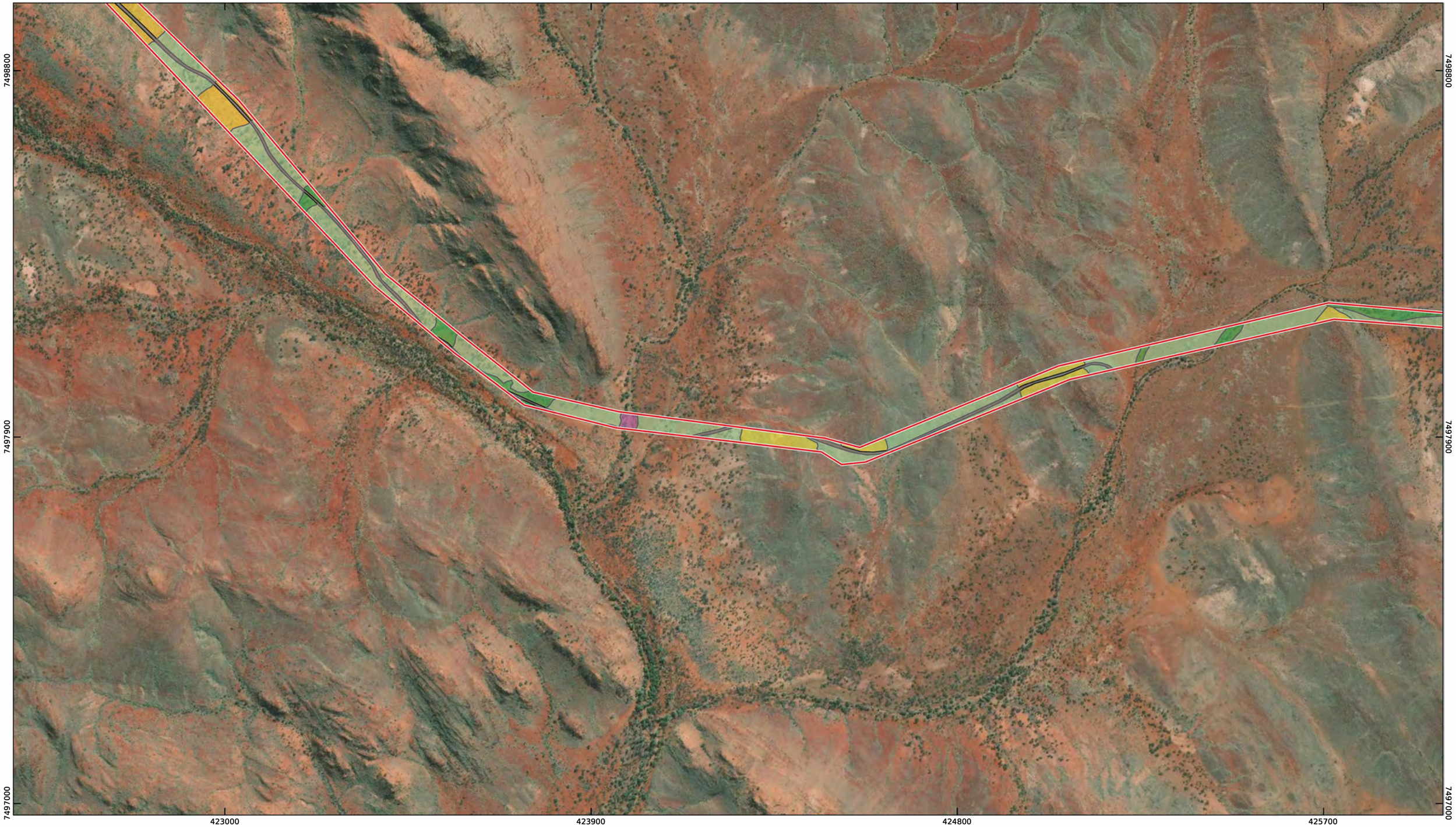


Figure 10c: Vegetation associations

0 100 200 300 m

Scale 1:8,783

GDA94 - MGA Zone 50

Legend

Survey Area

Vegetation Type

VT1 - Acacia citrinoviridus creek

VT2 - Acacia xiphophylla floodplain

VT3 - Triodia wiseana grassland

VT4 - Acacia bivenosa plain

VT5 - Eucalyptus victrix woodland

Track and infrastructure

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425700 426600 427500 428400

7499700 7499700

7498800 7498800

7497900 7497900

425700 426600 427500 428400

Figure **10d**: Vegetation associations

0 100 200 300 m

Scale 1:8,783

GDA94 - MGA Zone 50

Legend

Survey Area

Vegetation Type

VT1 - Acacia citrinoviridus creek

VT2 - Acacia xiphophylla floodplain

VT3 - Triodia wiseana grassland

VT4 - Acacia bivenosa plain

Track and infrastructure

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Figure 11a: Vegetation Condition

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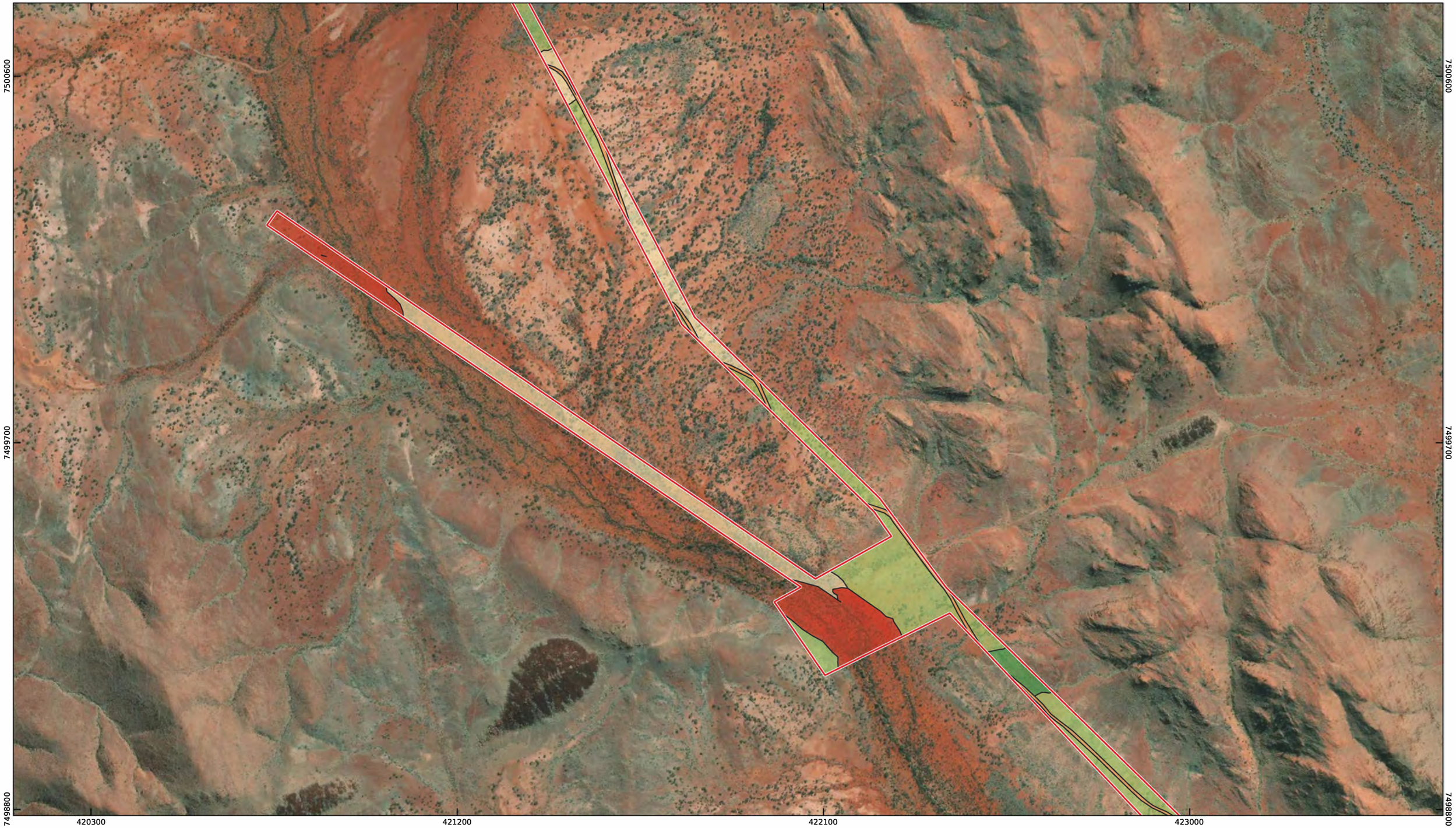


Figure 11b: Vegetation Condition

0 100 200 300 m

Scale 1:8,783

GDA94 - MGA Zone 50

Legend

- Survey Area

Vegetation Condition

- Excellent
- Very Good
- Good
- Completely Degraded
- Degraded

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Figure 11c: Vegetation Condition

0 100 200 300 m

Scale 1:8,783

GDA94 - MGA Zone 50

Legend

- Survey Area

Vegetation Condition

- Excellent
- Very Good
- Good
- Completely Degraded
- Degraded

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7497900 7497900

425700 426600 427500 428400

Figure 11d: Vegetation Condition

0 100 200 300 m

Scale 1:8,783

GDA94 - MGA Zone 50

Legend

Survey Area

Vegetation Condition

Excellent

Very Good

Good

Completely Degraded

Degraded

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5.0 DISCUSSION

5.1 FLORA

The survey was conducted in two phases—autumn and spring—to align with peak flowering periods in the Pilbara bioregion. While most species were flowering or fruiting, 13 specimens remained sterile and could not be identified to species level with certainty. Checking these specimens at the Western Australian Herbarium confirmed they were unlikely to be any of the 56 conservation-significant species identified in the desktop assessment.

The targeted survey focused on species with high and medium likelihood of occurrence, targeting specific habitats including:

- Creeklines for *Indigofera rivularis*, *Rhynchosia bungarensis*, and *Solanum* sp. W Hamersley Range
- Rocky hills and slopes for *Eremophila magnifica* subsp*. velutina*, *Ptilotus mollis*, *Sida* sp. Hamersley Range, *Solanum* sp. Red Hill, and *Triodia pisoliticola*
- Cracking clay areas for *Euphorbia inappendiculata var. inappendiculata*, *Owenia acidula*, *Paspalidium retiglume*, and *Themeda* sp. Hamersley Station.

While no conservation-listed flora were recorded in the survey area, these targeted searches provide valuable insights into habitat suitability. Following the survey the likelihood of occurrence for the 56 conservation-significant species remained the same. No Threatened or Priority flora species were recorded during the survey, reinforcing the findings of the desktop assessment.

A notable finding was the prevalence of a hybrid taxon, *Senna artemisioides subsp. oligophylla × helmsii*, which was recorded across multiple vegetation associations (*VT1–VT4*). Hybridisation among Senna is common in arid zones (R.S. Cowan 1998), but this taxon is yet to be formally recognized within DBCA Florabase.

5.2 VEGETATION

Six vegetation associations were mapped across the survey area, which broadly align with the pre-European vegetation types:

- Stuart Plains 103 – Represented by hummock grassland interspersed with scattered shrubs (Triodia spp., Acacia spp., Grevillea spp., Eucalyptus spp.), corresponding to the Acacia shrubland and Eucalyptus woodland associations (*VT1–VT3, VT5*).
- Stuart Plains 157 – Primarily Triodia hummock grassland, aligning with vegetation associations (*VT4 and VT6*).

The Stuart Plains Pre-European vegetation types are not restricted at the local, regional and state levels with at least 99% of their pre-European extent remaining.

Three PECs were identified in the desktop assessment, however none occurred within the survey area:

- Triodia pisoliticola Assemblages PEC (*Priority 3*) – Determined to have a high likelihood of occurrence, was not present due to the lack of mesas required for its key species *Triodia pisoliticola*.
- Brockman Iron Cracking Clay Communities PEC (*Priority 1*) – Had a low likelihood of occurrence. Cracking clays were present; however, this PEC occurs on the Brockman land system which did not occur within the survey area.

The survey area is currently stocked with cattle and disturbance was present around stock watering points. The creekline has experienced significant disturbance, Buffel grass (*Cenchrus ciliaris*), Birdwood grass (*Cenchrus setiger*), and *Malvastrum americanum* were the dominant invasive species. Evidence of cattle activity is prevalent in these areas, with numerous droppings, well-trodden cattle paths, and erosion along creek banks due to livestock access.

Areas less utilised by cattle exhibited lower weed levels. These were predominantly located on the eastern side of the survey area, where the proposed Belvedere Mine will be situated. The terrain in this region is steep and rocky, featuring numerous outcrops, making it less favourable for cattle movement.

Beyond cattle influence, additional human disturbances were recorded:

- Old mining shafts in the proposed Belvedere Mine.
- Mine camp infrastructure on the western side of the survey area.
- An existing track along the proposed haul road section, contributing to localised weed populations.

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APPENDIX A DESKTOP ASSESSMENT RESULTS

Results of the desktop assessment are presented below.

Table A1 Conservation significant flora species identified in the desktop assessment.

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Abutilon sp. Pritzelianum (S. van Leeuwen 5095)	Priority 3	Erect shrub to 2.5 m tall	August	88 km	Red sand, sandplains, dunes.	2002	Low
Acacia bromilowiana	Priority 4	Tree or shrub, to 12 m high, bark dark grey, fibrous; phyllodes more or less glaucous & slightly pruinose; inflorescence in spikes. Flowers yellow/pink.	July to August	64 km	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaways, scree slopes, gorges, creek beds.	2012	Low
Ampelopteris prolifera	Priority 3	Rhizomatous, perennial, herb or (fern), to 4 m high, fronds 1-pinnate, pinnae shallowly lobed; buds on pinnae can form new plants; sori lacking indusia.	~	69 km	Near water or in wet ground.	2002	Low
Aristida lazaridis	Priority 3	Tufted perennial, grass-like or herb, 0.4-1.5 m high. Flowers green/purple.	April	96 km	Sand or loam.	2020	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Aristida polyclados	Priority 1	Tufted annual, grass-like or herb, 0.3-0.4 m high. Flowers brown.	April	48 km	Alluvium. Limestone gorges.	2021	Low
Corchorus congener	Priority 3	Spreading shrub, to 0.6 m high. Flowers yellow.	April to June or August to November	89 km	Sand, red sandy loam with limestone. Sand dunes, plains.	2002	Low
Cyanthillium gracile	Priority 3	Rounded shrub to 0.4 m. Flowers purple.	May	39 km	Steep rocky slope, ironstone outcropping, mesas.	2017	Low
Dicladanthera glabra	Priority 2	Spreading perennial, herb, or shrub, to 0.6(-1) m high. Flowers white/white-blue.	April or August to October	41 km	Alluvium. Along watercourses, near rock pools.	2017	Low
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	Priority 3	Prostrate annual herb, growing up to 0.01 m tall.	~	81 km	Crabholes, mesas.	2011	Low
Eragrostis surreyana	Priority 3	Annual grass to 5cm high, prostrate.	~	100 km	Claypans, disturbed wet areas.	2017	Low
Eremophila coacta	Priority 3	Spreading shrub, 1.5-3 m high. Flowers blue-purple.	September	91 km	Laterite, shale soils. Ironstone hills, creeklines.	1986	Low
Eremophila forrestii subsp. viridis	Priority 3	Much-branched shrub, ca 1 m high. Flowers pink-cream.	August	85 km	~	2011	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Eremophila magnifica subsp. *magnifica*	Priority 4	Shrub, 0.5-1.5 m high. Flowers blue.	August to November	72 km	Skeletal soils over ironstone. Rocky screes.	2011	Low
Eremophila magnifica subsp. *velutina*	Priority 3	Shrub, 0.5-1.5 m high. Flowers blue-purple.	August to September	30 km	Skeletal soils over ironstone. Summits.	2013	Medium
Euphorbia australis var. *glabra*	Priority 3	Annual herb.	~	87 km	Creeks.	1993	Low
Euphorbia inappendiculata var. *inappendiculata*	Priority 3	Prostrate herb to 0.03 m tall.	August	86 km	Damp areas, cracking clays.	2016	Low
Fimbristylis sieberiana	Priority 3	Shortly rhizomatous, tufted perennial, grass-like or herb (sedge), 0.25-0.6 m high. Flowers brown.	May to June	81 km	Mud, skeletal soil pockets. Pool edges, sandstone cliffs.	2018	Low
Glycine falcata	Priority 3	Mat-forming perennial, herb, to 0.2 m high. Flowers blue-purple.	May or July	50 km	Black clayey sand. Along drainage depressions in crabhole plains on river floodplains.	2017	Medium
Gompholobium karijini	Priority 2	Shrub to 0.5 m tall.	~	71 km	Low undulating hills.	2012	Low
Goodenia berringbinensis	Priority 4	Ascending annual, herb, 0.1-0.3 m high. Flowers yellow.	October	84 km	Red sandy loam. Along watercourses.	2011	Low
Goodenia obscurata	Priority 3	Upright herb to 40 cm tall.	October	99 km	Summit of hills, steep slopes, ironstone outcrops.	2005	Low
Grevillea saxicola	Priority 3	Shrub 1.5 m tall.	~	79 km	Shale, hillslopes.	2019	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Gymnanthera cunninghamii	Priority 3	Erect shrub, 1-2 m high. Flowers cream-yellow-green.	January to December	92 km	Sandy soils.	2019	Low
Helichrysum oligochaete	Priority 1	Erect annual, herb, to ca 0.25 m high. Flowers Yellow.	August to November	95 km	Red clay. Alluvial plains.	1992	Low
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	Priority 1	Spindly erect shrub to 3.5 m. Flowers mauve flowers.	November	99 km	Gullies, breakaways.	2015	Low
Indigofera rivularis	Priority 3	Erect shrub to 2m tall. Bark grey with cream-coloured fissures. Leaves dull mid-green and concave. Flowers red-violet	May or July to September	7 km	Creeks, floodplains.	2019	High
Indigofera roseola	Priority 1	Shrub c. 1m high. Flowers pink.	June	77 km	Sand dunes.	2006	Low
Indigofera rotula	Priority 3	Low shrub to 20cm. Flowers mauve.	August	94 km	Sandy soils.	1961	Low
Ipomoea racemigera	Priority 3	Creeping annual, herb or climber. Flowers white.	~	60 km	Ironstone slopes.	2019	Low
Livistona alfredii	Priority 4	Tree-like monocot (palm), to 10 m high. Flowers cream.	July to September	85 km	Edges of permanent pools.	2015	Low
Owenia acidula	Priority 3	Tree, 3-8 m high. Flowers white-brown/cream.	~	49 km	Clay.	2008	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Paspalidium retiglume	Priority 2	Tufted annual, grass-like or herb, 0.1-0.5 m high.	April	50 km	Clay.	2012	Low
Ptilotus mollis	Priority 4	Compact, perennial shrub, to 0.5 m high, soft grey foliage. Flowers white/pink.	May or September	30 km	Stony hills and screes.	2013	Medium
Ptilotus subspinescens	Priority 3	Compact shrub, to 0.8 m high.	June to July	88 km	Gentle rocky slopes, screes, and the bases of screes.	2007	Low
Rhynchosia bungarensis	Priority 4	Compact, prostrate shrub, to 0.5 m high. Flowers yellow.	May to December	27 km	Pebbly, shingly coarse sand amongst boulders. Banks of flow line in the mouth of a gully in a valley wall.	2019	Medium
Rostellularia adscendens var. *latifolia*	Priority 3	Herb or shrub, 0.1-0.3 m high. Flowers blue-purple-violet.	April to May	87 km	Ironstone soils. Near creeks, rocky hills.	2010	Low
Senna sp. Barlee Range (S. van Leeuwen 1520)	Priority 2	Shrub, persistent stipules, leaves terminally crowded.	August	69 km	Slopes.	1993	Low
Sida sp. Barlee Range (S. van Leeuwen 1642)	Priority 4	Spreading shrub, to 0.5 m high. Flowers yellow.	August	53 km	Skeletal red soils pockets. Steep slope.	2015	Low
Sida sp. Hamersley Range (K. Newbey 10692)	Priority 3	Upright spindly shrub to 50 cm tall. Flowers yellow.	May or August to October	29 km	Slopes and summits, base of breakaways.	2017	Medium
Solanum octona	Priority 2	Spindly erect shrub to 1.5m. Flowers blue.	June to August	57 km	Gullies and creeklines.	1994	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Solanum pycnotrichum	Priority 2	Erect shrub to 1.3 m tall. Flowers purple-blue.	June	69 km	Creeklines, rocky hills.	2011	Low
Solanum sp. Red Hill (S. van Leeuwen et al. PBS 5415)	Priority 3	Prostrate shrub to 0.45m. Flowers purple.	March and July to August	29 km	Pisolite outcrops, mesas, and breakaways.	2018	Medium
Solanum sp. W Hamersley Range (S. Colwill & B. Duncan LCR99-01)	Priority 1	Shrub to 1.5m tall. Flowers blue.	July	16 km	Creeks and gorges.	2021	High
Stylidium weeliwolli	Priority 3	Annual, herb, 0.1-0.25 m high, throat appendages 4, rod-shaped. Flowers pink and red.	August to September	70 km	Gritty sand soil, sandy clay. Edge of watercourses.	2006	Low
Terminalia supranitifolia	Priority 3	Spreading, tangled shrub or tree, 1.5-3 m high. Flowers green-yellow.	May, July, or December	38 km	Sand. Among basalt rocks.	2017	Low
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	Priority 3	Tussocky perennial, grass-like or herb, 0.9-1.8 m high.	August	50 km	Red clay. Clay pan, grass plain.	2012	Low
Thryptomene wittweri	Vulnerable (EPBC Act and BC Act)	Spreading or rounded shrub, 0.5-1.5(-2.1) m high. Flowers white-cream.	April, July, or August	50 km	Skeletal red stony soils. Breakaways, stony creek beds.	Unknown	Low
Triodia basitricha	Priority 3	Soft hummock grass, forming hummocks to 40 cm high, non-resinous.	~	72 km	Ironstone hills, drainage lines, gorges.	2016	Low

Species	Conservation status	Description	Flowering time	Distance from survey area	Habitat	Year	Likelihood
Triodia lutiteana	Priority 1	Dark green hummock grass, 60 cm high. Copiously resinous, with woolly leaf sheaths. Large and open inflorescence, glumes with short lemma lobes.	~	48 km	Stony slopes	2019	Low
Triodia mallota	Priority 1	Non-resinous spinifex grass.	March	92 km	Lower slopes, pisolitic mesa.	2017	Low
Triodia pisoliticola	Priority 3	Hummock grass to 1m high. Non resinous.	~	22 km	Mesas, rocky hills, breakaways.	2019	Medium
Triodia sp. Pannawonica shale (P.J. Davidson PJD 2026)	Priority 1	Hummock grass to 1.4m, resinous.	~	96 km	Drainage lines.	1997	Low
Triumfetta echinata	Priority 3	Prostrate shrub, to 0.3 m high.	August	90 km	Red sandy soils. Sand dunes.	1905	Low
Uvedalia clementii	Priority 3	Herb to 10 cm tall. Flowers purple.	July	66 km	Claypans.	2002	Low
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	Priority 3	Herb.	~	73 km	Creeklines.	2017	Low
Wurmbea saccata	Priority 3	Cormous, robust perennial, herb, 0.1-0.35 m high, hermaphrodite. Flower pink/white.	June	60 km	Red gritty or silty damp soils with pebbles. Creek beds & margins of rock pools.	2002	Low

Table A2 Conservation significant ecological communities identified in the desktop assessment.

Ecological community	Description	Conservation status	Distance to survey area	Likelihood
Triodia pisoliticola Assemblages	Triodia pisoliticola (previously Triodia sp. Robe River) assemblages of mesas of the West Pilbara	Priority 3	20 km	High
Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	49 km	Low
Scoop LS	Scoop Land System	Priority 3	43 km	Low

APPENDIX B SPECIES LIST

Table B1 Species recorded within the survey area.

Family	Species	Form
Acanthaceae	*Dicladanthera forrestii*	Perennial
Amaranthaceae	*Aerva javanica* *	Perennial
	Alternanthera nodiflora	Annual
	Gomphrena cunninghamii	Annual
	Gomphrena lanata	Annual
	Ptilotus chamaecladus	Annual
	Ptilotus clementii	Annual
	Ptilotus exaltatus	Annual
	Ptilotus obovatus	Perennial
	Ptilotus roei	Perennial
	Ptilotus xerophilus	Perennial
Apocynaceae	*Cynanchum viminale*	Perennial
	Vincetoxicum lineare	Perennial
Araliaceae	*Trachymene pilbarensis*	Annual
Asteraceae	*Angianthus acrohyalinus*	Annual
	Asteraceae sp. 1	Annual
	Asteraceae sp. 2	Annual
	Asteraceae sp. 3	Perennial
	Centipeda minima subsp. *macrocephala*	Annual
	Centipeda thespidioides	Annual
	Gnephosis brevifolia	Annual
	Ixiochlamys cuneifolia	Perennial
	Minuria sp. 1	Annual
	Pentalepis trichodesmoides	Perennial
	Pluchea dentex	Perennial
	Pterocaulon sphaeranthoides	Perennial
	Rhodanthe margarethae	Annual
	Senecio pinnatifolius	Perennial
	Streptoglossa bubakii	Perennial
Boraginaceae	*Euploca cunninghamii*	Perennial
	Heliotropium ammophilum	Perennial
Brassicaceae	*Lepidium muelleri-ferdinandi*	Perennial
	Lepidium pedicellosum	Perennial
	Lepidium phlebopetalum	Annual
Caryophyllaceae	*Polycarpaea longiflora*	Perennial
Chenopodiaceae	*Atriplex semilunaris*	Perennial
	Dissocarpus paradoxus	Perennial
	Dysphania rhadinostachya subsp. *rhadinostachya*	Annual
	Enchylaena tomentosa	Perennial
	Maireana integra	Perennial

Family	Species	Form
Chenopodiaceae	*Maireana melanocoma*	Perennial
	Maireana planifolia	Perennial
	Maireana thesioides	Perennial
	Maireana tomentosa	Perennial
	Salsola australis	Perennial
	Sclerolaena cuneata	Perennial
	Sclerolaena eriacantha	Perennial
	Sclerolaena lanicuspis	Perennial
Cleomaceae	*Arivela viscosa*	Perennial
Convolvulaceae	*Bonamia pilbarensis*	Perennial
	Evolvulus alsinoides var. *decumbens*	Perennial
	Ipomoea calobra	Perennial
	Ipomoea muelleri	Perennial
	Operculina aequisepala	Annual
Cyperaceae	Cyperus sp. 1	Perennial
	Cyperus sp. 2	Perennial
Euphorbiaceae	*Euphorbia biconvexa*	Annual
	Euphorbia boophthona	Annual
	Euphorbia careyi	Annual
	Euphorbia vaccaria	Perennial
Fabaceae	*Acacia* aff. *wanyu*	Perennial
	Acacia aptaneura	Perennial
	Acacia arida	Perennial
	Acacia bivenosa	Perennial
	Acacia citrinoviridis	Perennial
	Acacia hamersleyensis	Perennial
	Acacia kempeana	Perennial
	Acacia ligulata	Perennial
	Acacia pruinocarpa	Perennial
	Acacia pyrifolia	Perennial
	Acacia synchronicia	Perennial
	Acacia tetragonophylla	Perennial
	Acacia trachycarpa	Perennial
	Acacia wanyu	Perennial
	Acacia xiphophylla	Perennial
	Cullen leucochaites	Perennial
	Fabaceae sp. 1	Annual
	Fabaceae sp. 2	Annual
	Indigofera colutea	Annual
	Indigofera linifolia	Perennial
	Indigofera monophylla	Perennial
	Neptunia xanthonema	Perennial
	Rhynchosia minima	Perennial

Family	Species	Form
Fabaceae	*Senna artemisioides* subsp. *oligophylla*	Perennial
	Senna artemisioides subsp. *oligophylla* x *helmsii*	Perennial
	Senna glutinosa subsp. ×*luerssenii*	Perennial
	Senna glutinosa subsp. *glutinosa*	Perennial
	Senna glutinosa subsp. *pruinosa*	Perennial
	Senna notabilis	Perennial
	Sesbania cannabina	Annual
	Swainsona canescens	Perennial
	Swainsona stenodonta	Annual
	Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	Perennial
	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	Perennial
	Tephrosia uniovulata	Perennial
	Vachellia farnesiana	Perennial
Goodeniaceae	Goodenia forrestii	Perennial
	Scaevola spinescens	Perennial
Lamiaceae	*Clerodendrum floribundum*	Perennial
	Teucrium teucriiflorum	Perennial
Malvaceae	*Abutilon amplum*	Perennial
	Abutilon lepidum	Perennial
	Corchorus crozophorifolius	Perennial
	Corchorus laniflorus	Perennial
	Corchorus lasiocarpus subsp. *parvus*	Perennial
	Corchorus sidoides	Perennial
	Corchorus tridens	Annual
	Corchorus walcottii	Perennial
	Gossypium australe	Perennial
	Hibiscus coatesii	Perennial
	*Malvastrum americanum**	Perennial
	Sida arsiniata	Perennial
	Sida calyxhymenia	Perennial
	Sida cardiophylla	Perennial
	Sida ectogama	Perennial
	Sida fibulifera	Perennial
	Sida rohlenae subsp. *rohlenae*	Perennial
	Sida sp. Excedentifolia (J.L. Egan 1925)	Perennial
	Triumfetta clementii	Perennial
	Triumfetta leptacantha	Perennial
Marsileaceae	*Marsilea* sp. 1	Perennial
Montiaceae	*Calandrinia polyandra*	Annual
Myrtaceae	*Corymbia hamersleyana*	Perennial
	Eucalyptus victrix	Perennial
	Melaleuca glomerata	Perennial

Family	Species	Form
Nyctaginaceae	*Boerhavia coccinea*	Perennial
	Boerhavia schomburgkiana	Perennial
Oleaceae	*Jasminum didymum*	Perennial
Phyllanthaceae	*Nellica maderaspatensis*	Perennial
	Notoleptopus decaisnei	Perennial
	Notoleptopus decaisnei var. *orbicularis*	Perennial
Plantaginaceae	*Stemodia grossa*	Perennial
Poaceae	*Aristida contorta*	Annual
	Aristida holathera	Perennial
	Cenchrus ciliaris *	Perennial
	Cenchrus setiger *	Perennial
	Chrysopogon fallax	Perennial
	Cymbopogon ambiguus	Perennial
	Cynodon convergens	Perennial
	Cynodon prostratus	Perennial
	Dactyloctenium radulans	Annual
	Enneapogon caerulescens	Perennial
	Enneapogon polyphyllus	Perennial
	Eragrostis dielsii	Annual
	Eragrostis sp. 1	Perennial
	Eragrostis tenellula	Annual
	Eragrostis xerophila	Perennial
	Eriachne mucronata	Perennial
	Eriachne pulchella subsp. *dominii*	Annual
	Eriachne pulchella subsp. *pulchella*	Annual
	Eriachne sp. 1	Perennial
	Eulalia aurea	Perennial
	Neurachne muelleri	Perennial
	Panicum decompositum	Perennial
	Paspalidium clementii	Annual
	Poaceae sp. 1	Annual
	Poaceae sp. 2	Annual
	Sporobolus australasicus	Perennial
	Triodia epactia	Perennial
	Triodia wiseana	Perennial
Portulacaceae	*Portulaca pilosa* *	Annual
Proteaceae	*Grevillea eriostachya*	Perennial
	Grevillea pyramidalis subsp. *leucadendron*	Perennial
	Hakea lorea subsp. *lorea*	Perennial
Rubiaceae	*Dolichocarpa crouchiana*	Perennial
Santalaceae	*Santalum lanceolatum*	Perennial
Scrophulariaceae	*Eremophila canaliculata*	Perennial
	Eremophila cuneifolia	Perennial

Family	Species	Form
Scrophulariaceae	*Eremophila exilifolia*	Perennial
	Eremophila forrestii subsp. *forrestii*	Perennial
	Eremophila fraseri subsp. *fraseri*	Perennial
	Eremophila latrobei	Perennial
	Eremophila longifolia	Perennial
Solanaceae	*Nicotiana benthamiana*	Annual
	Solanum cleistogamum	Perennial
	Solanum lasiophyllum	Perennial
	Solanum phlomoides	Perennial
Violaceae	*Afrohybanthus aurantiacus*	Perennial
Zygophyllaceae	*Tribulus hirsutus*	Perennial
	Tribulus macrocarpus	Annual
	Tribulus suberosus	Perennial

* Denotes a weed species

APPENDIX C SPECIES WITHIN VEGETATION TYPES

Table C1 Species occurring within vegetation types

Species	VT1	VT2	VT3	VT4	VT5	VT6	Opp
Abutilon amplum			X		X		
Abutilon lepidum	X	X		X		X	
Acacia aff. *wanyu*	X						
Acacia aptaneura	X						
Acacia arida		X		X			
Acacia bivenosa	X	X	X	X	X		
Acacia citrinoviridis		X	X	X	X	X	
Acacia hamersleyensis				X			
Acacia kempeana	X	X					
Acacia ligulata					X		
Acacia pruinocarpa	X						
Acacia pyrifolia		X		X			
Acacia synchronicia	X	X	X	X	X	X	
Acacia tetragonophylla	X	X	X	X	X	X	
Acacia trachycarpa	X					X	
Acacia wanyu		X			X		
Acacia xiphophylla	X	X	X				
*Aerva javanica**		X					
Afrohybanthus aurantiacus	X			X	X		
Alternanthera nodiflora		X			X		
Angianthus acrohyalinus				X			
Aristida contorta	X		X	X		X	
Aristida holathera	X		X	X			
Arivela viscosa	X	X		X	X		
Asteraceae sp. 1	X	X					
Asteraceae sp. 2					X		
Asteraceae sp. 3						X	
Atriplex semilunaris	X		X				
Boerhavia coccinea	X	X		X	X	X	
Boerhavia schomburgkiana				X	X		
Bonamia pilbarensis				X			
Calandrinia polyandra							X
*Cenchrus ciliaris**	X	X	X	X	X	X	
*Cenchrus setiger**	X	X	X		X	X	
Centipeda minima subsp. *macrocephala*		X					
Centipeda thespidioides					X		
Chrysopogon fallax					X		
Clerodendrum floribundum		X		X			

Species	VT1	VT2	VT3	VT4	VT5	VT6	Opp
Corchorus crozophorifolius	X	X	X	X	X	X	
Corchorus laniflorus			X	X	X	X	
Corchorus lasiocarpus subsp. *parvus*	X			X			
Corchorus sidoides					X		
Corchorus tridens					X		
Corchorus walcottii				X			
Corymbia hamersleyana							X
Cucumis variabilis		X		X	X	X	
Cullen leucochaites				X	X		
Cymbopogon ambiguus				X			
Cynanchum viminale							X
Cynodon convergens							X
Cynodon prostratus	X						
Cyperus sp. 1					X		
Cyperus sp. 2	X						
Dactyloctenium radulans	X						
Dactyloctenium radulans					X		
Dicladanthera forrestii					X		
Dissocarpus paradoxus	X		X	X			
Dolichandrone occidentalis				X			
Dolichocarpa crouchiana				X			
Duperreya commixta						X	
Dysphania rhadinostachya subsp. *rhadinostachya*		X	X	X			
Enchylaena tomentosa	X	X			X		
Enneapogon caerulescens	X	X	X	X			
Enneapogon polyphyllus				X			
Eragrostis dielsii	X						
Eragrostis sp. 1	X						
Eragrostis tenellula	X	X	X		X		
Eragrostis xerophila		X					
Eremophila canaliculata							X
Eremophila cuneifolia	X		X			X	
Eremophila exilifolia							X
Eremophila forrestii subsp. *forrestii*							X
Eremophila fraseri subsp. *fraseri*	X			X			
Eremophila latrobei				X			
Eremophila longifolia		X			X	X	
Eriachne mucronata	X		X	X			
Eriachne pulchella subsp. *dominii*				X			
Eriachne pulchella subsp. *pulchella*	X			X			

Species	VT1	VT2	VT3	VT4	VT5	VT6	Opp
Eriachne sp. 1				X			
Eucalyptus victrix					X		
Eulalia aurea					X		
Euphorbia biconvexa		X	X	X	X		
Euphorbia boophthona		X		X			
Euphorbia careyi		X					
Euphorbia vaccaria	X		X	X			
Euploca cunninghamii	X			X			
Evolvulus alsinoides var. *decumbens*						X	
Fabaceae sp. 1		X			X		
Fabaceae sp. 2		X					
Gnephosis brevifolia		X					
Gomphrena cunninghamii		X	X	X			
Gomphrena lanata							X
Goodenia forrestii				X		X	
Gossypium australe				X			
Grevillea eriostachya				X			
Grevillea pyramidalis subsp. *leucadendron*		X					
Hakea lorea subsp. *lorea*	X		X	X			
Heliotropium ammophilum							X
Hibiscus coatesii	X		X				
Indigofera colutea		X		X	X		
Indigofera linifolia		X					
Indigofera monophylla	X	X	X	X	X		
Ipomoea calobra					X		
Ipomoea muelleri		X			X		
Ixiochlamys cuneifolia				X			
Jasminum didymum		X		X	X		
Lepidium muelleri-ferdinandi		X	X	X			
Lepidium pedicellosum					X		
Lepidium phlebopetalum	X		X				
Maireana integra	X					X	
Maireana melanocoma	X						
Maireana planifolia	X						
Maireana thesioides	X						
Maireana tomentosa	X						
*Malvastrum americanum**		X			X		
Marsilea sp. 1					X		
Melaleuca glomerata		X		X			
Minuria sp. 1		X					

Species	VT1	VT2	VT3	VT4	VT5	VT6	Opp
Nellica maderaspatensis			X	X			
Neptunia xanthonema	X				X		
Neurachne muelleri	X		X				
Nicotiana benthamiana				X			
Notoleptopus decaisnei				X			
Notoleptopus decaisnei var. *orbicularis*							X
Operculina aequisepala					X		
Panicum decompositum							X
Paspalidium clementii	X		X	X			
Pentalepis trichodesmoides							X
Pluchea dentex		X					
Poaceae sp. 1					X		
Poaceae sp. 2						X	
Polycarpaea longiflora	X	X	X	X			
*Portulaca pilosa**	X	X				X	
Pterocaulon sphaeranthoides		X		X	X		
Ptilotus chamaecladus	X		X	X			
Ptilotus clementii			X	X			
Ptilotus exaltatus	X	X	X	X	X	X	
Ptilotus obovatus	X		X				
Ptilotus roei	X						
Ptilotus xerophilus	X	X	X	X			
Rhodanthe margarethae				X			
Rhynchosia minima		X		X	X	X	
Salsola australis	X	X	X	X			
Santalum lanceolatum							X
Scaevola spinescens	X	X	X		X	X	
Sclerolaena cuneata	X	X					
Sclerolaena eriacantha	X	X	X				
Sclerolaena lanicuspis	X						
Senecio pinnatifolius	X						
Senna artemisioides subsp. *oligophylla*			X	X			
Senna artemisioides subsp. *oligophylla* x *helmsii*	X	X	X	X			
Senna glutinosa subsp. ×*luerssenii*	X		X				
Senna glutinosa subsp. *glutinosa*	X		X	X			
Senna glutinosa subsp. *pruinosa*	X		X	X	X		
Senna notabilis			X			X	
Sesbania cannabina		X			X		
Sida arsiniata						X	
Sida calyxhymenia			X				

Species	VT1	VT2	VT3	VT4	VT5	VT6	Opp
Sida cardiophylla			X				
Sida ectogama	X		X				
Sida fibulifera	X	X	X	X			
Sida rohlenae subsp. *rohlenae*	X	X					
Sida sp. Excedentifolia (J.L. Egan 1925)			X				
Solanum cleistogamum		X		X			
Solanum diversiflorum						X	
Solanum lasiophyllum	X	X	X			X	
Solanum phlomoides	X		X	X			
Sporobolus australasicus	X					X	
Stemodia grossa		X		X			
Streptoglossa bubakii	X	X			X		
Swainsona canescens			X				
Swainsona stenodonta		X					
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)		X		X	X		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	X			X			
Tephrosia uniovulata	X	X		X			
Teucrium teucriiflorum					X		
Trachymene pilbarensis				X			
Trianthema turgidifolium	X	X				X	
Tribulus hirsutus	X	X	X	X			
Tribulus macrocarpus						X	
Tribulus suberosus	X		X				
Triodia epactia	X		X		X	X	
Triodia wiseana	X	X	X	X	X		
Triumfetta clementii							X
Triumfetta leptacantha				X			
Vachellia farnesiana *	X	X		X	X	X	
Vincetoxicum lineare	X			X	X		

* Denotes a weed species

APPENDIX D STATISTICAL ANALYSIS

Statistical analysis results including the distance measure (Table D1) and dendrogram (Figure D1) is provided below.

Table D1 Distance measure and similarity percentage between quadrats and determined vegetation types

Quadrat	Closest sites	Distance measure	% Similarity	Determined vegetation type
PQ01	PQ03	0.283	72%	VT1 – *Acacia xiphophylla* shrubland
	PR08	0.44	56%	
	PQ13	0.5652	43%	
PQ02	PR14	0.3929	61%	VT2 - *Acacia citrinoviridis* woodland
	PQ20	0.5526	45%	
	PQ36	0.5625	44%	
PQ03	PQ01	0.283	72%	VT1 - *Acacia xiphophylla* shrubland
	PR08	0.4717	53%	
	PQ13	0.5102	49%	
PQ09	PQ37	0.4348	57%	VT1 - *Acacia xiphophylla* shrubland
	PR08	0.5273	47%	
	PQ03	0.5517	45%	
PQ13	PQ15	0.35	65%	VT3 - *Acacia bivenosa* shrubland
	PQ37	0.4054	59%	
	PQ26	0.4286	57%	
PQ15	PQ13	0.35	65%	VT3 - *Acacia bivenosa* shrubland
	PQ37	0.4286	57%	
	PQ26	0.4468	55%	
PQ16	PQ17	0.359	64%	VT1 - *Acacia xiphophylla* shrubland
	PR08	0.4688	53%	
	PQ37	0.5273	47%	
PQ17	PQ16	0.359	64%	VT3 - *Acacia bivenosa* shrubland
	PR08	0.5	50%	
	PQ37	0.5273	47%	
PQ18	Pr27	0.4884	51%	VT5 - *Eucalyptus victrix* woodland
	PQ29	0.5	50%	
	PQ21	0.5714	43%	
PQ19	PQ26	0.36	64%	VT4 - *Triodia wiseana* hummock grassland
	PQ32	0.4615	54%	
	PQ15	0.5122	49%	
PQ20	PR14	0.5278	47%	VT5 - *Eucalyptus victrix* woodland
	PQ02	0.5526	45%	
	PQ21	0.6667	33%	
PQ21	PQ29	0.4348	57%	VT2 - *Acacia citrinoviridis* woodland
	PQ37	0.4444	56%	
	PR28	0.5	50%	

Quadrat	Closest sites	Distance measure	% Similarity	Determined vegetation type
PQ26	PQ32	0.3103	69%	VT4 - *Triodia wiseana* hummock grassland
	PQ19	0.36	64%	
	PQ33	0.3793	62%	
PQ29	Pr27	0.4043	60%	VT2 - *Acacia citrinoviridis* woodland
	PQ21	0.4348	57%	
	PR28	0.4348	57%	
PQ31	PQ32	0.4667	53%	VT4 - *Triodia wiseana* hummock grassland
	PQ26	0.5616	44%	
	PQ33	0.6	40%	
PQ32	PQ26	0.3103	69%	VT4 - *Triodia wiseana* hummock grassland
	PQ33	0.3667	63%	
	PQ19	0.4615	54%	
PQ33	PQ32	0.3667	63%	VT4 - *Triodia wiseana* hummock grassland
	PQ26	0.3793	62%	
	PQ15	0.5102	49%	
PQ36	PQ02	0.5625	44%	VT6 - *Triodia epactia* hummock grassland
	PQ09	0.625	38%	
	PR14	0.6333	37%	
PQ37	PQ13	0.4054	59%	VT3 - *Acacia bivenosa* shrubland
	PR35	0.4194	58%	
	PQ15	0.4286	57%	
PR08	PR30	0.4091	59%	VT1 - *Acacia xiphophylla* shrubland
	PQ01	0.44	56%	
	PQ16	0.4688	53%	
Pr13	PR14	0.641	36%	VT1 - *Acacia xiphophylla* shrubland
	PQ37	0.6552	34%	
	PQ02	0.6744	33%	
PR14	PQ02	0.3929	61%	VT2 - *Acacia citrinoviridis* woodland
	PQ20	0.5278	47%	
	PQ09	0.6071	39%	
Pr27	PQ29	0.4043	60%	VT2 - *Acacia citrinoviridis* woodland
	PQ18	0.4884	51%	
	PQ21	0.5122	49%	
PR28	PQ29	0.4348	57%	VT2 - *Acacia citrinoviridis* woodland
	PQ21	0.5	50%	
	PQ37	0.5	50%	
PR30	PR08	0.4091	59%	VT1 - *Acacia xiphophylla* shrubland
	PQ13	0.45	55%	
	PQ03	0.5319	47%	

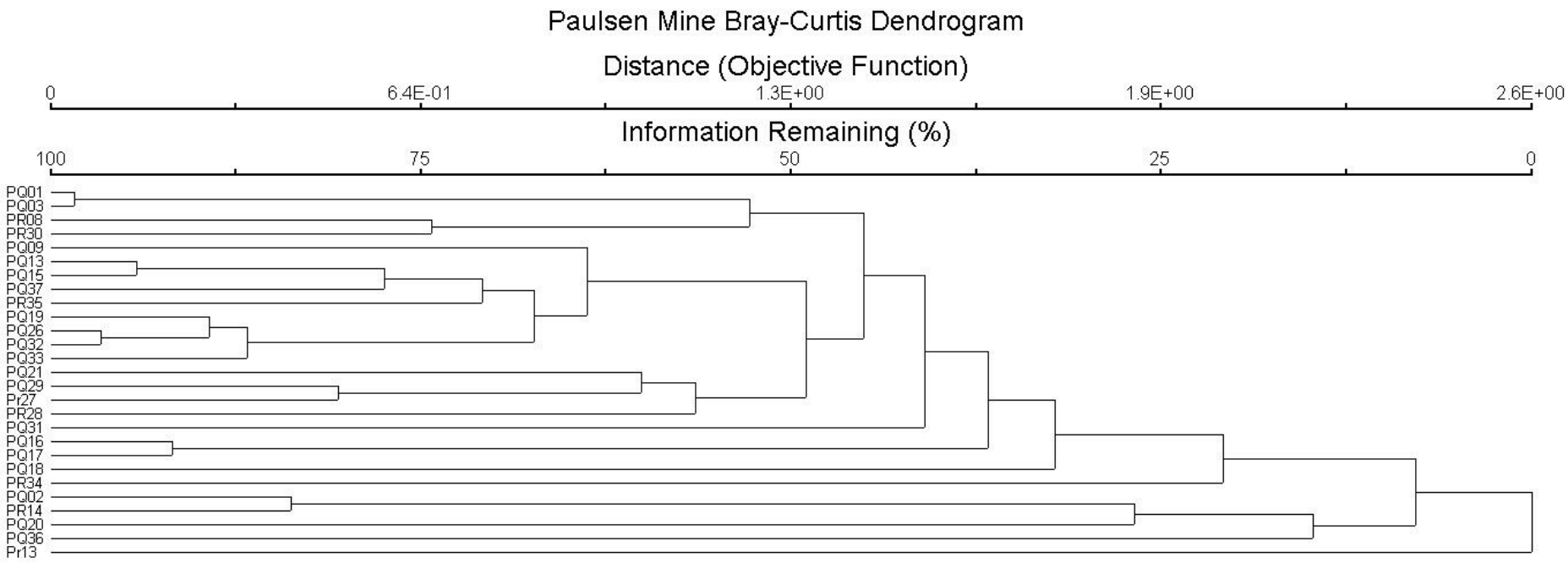


Figure D-1 **Dendrogram**

APPENDIX E QUADRAT DATA

Site: PQ01

Date	17/10/2024, 16/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ01	**Landform**	Plain
NW Corner Latitude	-22.5880316862807°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.22743°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Reddish Brown
Rock type	Quartz	**Fire history**	>10 years
Vegetation condition	Good	**Disturbance**	Cattle
Drainage	Floodplain	**Additional Notes**	Litter: >10% Bare ground: 30-70% Cryptogram: 0%
Vegetation description	AxScTw - *Acacia synchronicia* and *A. xiphophylla* tall open shrubland over *Sclerolaena cuneata* low sparse chenopod shrubland over *Triodia wiseana* low sparse hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia synchronicia	Shrub (>2m),Shrub (1-2m)	1-5
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia xiphophylla	Shrub (>2m),Shrub (1-2m)	5-10
Aristida contorta	Grass	<1
Arivela viscosa	Herb	<1
Boerhavia coccinea	Herb	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus lasiocarpus subsp. *parvus*	Shrub (0-1m)	<1
Cynodon prostratus	Grass	<1
Dissocarpus paradoxus	Herb	<1
Enneapogon caerulescens	Grass	1-5
Euphorbia vaccaria	Herb	<1
Lepidium phlebopetalum	Herb	<1
Maireana integra	Shrub (0-1m)	<1
Maireana tomentosa	Shrub (0-1m)	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus roei	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena cuneata	Herb	1-5
Sclerolaena eriacantha	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Sida fibulifera	Shrub (0-1m)	<1
Triodia wiseana	Hummock Grass	1-5

Site: PQ02

Date	18/10/2024, 14/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ02	**Landform**	Creek
NW Corner Latitude	-22.5882659862806°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2306633°	**Soil type**	Clay
Rock cover (%)	NA	**Soil colour**	Reddish Brown
Rock type	NA	**Fire history**	>10 years
Vegetation condition	Degraded	**Disturbance**	Weeds, cattle
Drainage	River >30m	**Additional Notes**	Litter: 30-70% Bare ground: 10-30% Cryptogram: 0%
Vegetation description	AcAxCc - *Acacia citrinoviridis* low open forest over *A. synchronicia*, *A. xiphophylla* and *Vachellia farnesiana* tall open shrubland over **Cenchrus ciliaris* and **C. setiger* low tussock grassland		

Photo



Species	Stratum	Cover (%)
Abutilon lepidum	Shrub (0-1m)	<1
Acacia bivenosa	Shrub (1-2m)	Associated
Acacia citrinoviridis	Shrub (>2m)	25-50
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia xiphophylla	Shrub (>2m)	5-10
Alternanthera nodiflora	Herb	<1
Arivela viscosa	Herb	<1
**Cenchrus ciliaris*	Grass	50-75
**Cenchrus setiger*	Grass	1-5%
Centipeda minima subsp. *macrocephala*	Herb	<1
Cucumis variabilis	Herb	<1
Enchylaena tomentosa	Shrub (0-1m)	<1
Eragrostis tenellula	Grass	<1
Eragrostis xerophila	Grass	<1
Eremophila longifolia	Shrub (1-2m)	<1
Euphorbia careyi	Herb	<1
Ipomoea muelleri	Vine	<1
**Malvastrum americanum*	Shrub (0-1m)	<1
**Portulaca pilosa*	Herb	<1
Pterocaulon sphaeranthoides	Herb	<1
Ptilotus exaltatus	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena cuneata	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Sida fibulifera	Shrub (0-1m)	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Trianthema turgidifolium	Herb	<1
**Vachellia farnesiana*	Shrub (>2m)	1-5

Site: PQ03

Date	18/10/2024, 15/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ03	**Landform**	Creek
NW Corner Latitude	-22.5882584862806°	**Slope and Aspect**	Gentle, Northwest
NW Corner Longitude	116.2334999°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	Quartz	**Fire history**	>10 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, old tracks, cattle
Drainage	Floodplain	**Additional Notes**	Litter: <10% Bare ground: >70%
Vegetation description	AxDp/MtTw - *Acacia synchronicia* and *A. xiphophylla* tall open shrubland over *Dissocarpus paradoxus* and *Maireana thesioides* low sparse chenopod shrubland over *Triodia wiseana* low sparse hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia synchronicia	Shrub (>2m)	5-10
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia xiphophylla	Shrub (>2m)	5-10
**Cenchrus ciliaris*	Grass	1-5
**Cenchrus setiger*	Grass	<1
Cynodon prostratus	Grass	<1
Dissocarpus paradoxus	Shrub (0-1m)	1-5
Enneapogon caerulescens	Grass	<1
Eragrostis dielsii	Grass	<1
Eragrostis sp. 1	Grass	<1
Euphorbia vaccaria	Herb	<1
Lepidium phlebopetalum	Herb	<1
Maireana integra	Shrub (0-1m)	<1
Maireana thesioides	Shrub (0-1m)	1-5
Maireana tomentosa	Shrub (0-1m)	<1
Neptunia xanthonema	Herb	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena cuneata	Herb	<1
Sclerolaena eriacantha	Herb	<1
Sclerolaena lanicuspis	Herb	<1
Sida fibulifera	Shrub (0-1m)	<1
Sida rohlenae subsp. *rohlenae*	Herb	<1
Solanum lasiophyllum	Herb	<1
Triodia wiseana	Hummock Grass	1-5

Site: PQ09

Date	20/10/2024, 14/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ09	**Landform**	Floodplain
NW Corner Latitude	-22.6047688862728°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.23731940000002°	**Soil type**	Sandy clay loam
Rock cover (%)	30-70	**Soil colour**	Reddish Brown
Rock type	Basalt,Quartz	**Fire history**	>10 years
Vegetation condition	Very Good	**Disturbance**	Cattle, weeds
Drainage	Floodplain	**Additional Notes**	Litter: <10% Bare ground: >70%
Vegetation description	AxTwCc - *Acacia synchronicia*, *A. tetragonophylla* and *A. xiphophylla* tall open shrubland over *Triodia wiseana* low sparse hummock grassland over **Cenchrus ciliaris* low sparse tussock grassland		

Photo



Species	Stratum	Cover (%)
Abutilon lepidum	Shrub (0-1m)	<1
Acacia aptaneura	Shrub (0-1m)	<1
Acacia kempeana	Shrub (>2m)	1-5
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (>2m)	1-5
**Cenchrus ciliaris*	Grass	1-5
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Cynodon prostratus	Grass	<1
Dactyloctenium radulans	Grass	<1
Enchylaena tomentosa	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Eragrostis tenellula	Grass	<1
Eremophila fraseri subsp. *fraseri*	Shrub (0-1m)	<1
Indigofera monophylla	Shrub (0-1m)	<1
Maireana planifolia	Herb	<1
Maireana thesioides	Shrub (0-1m)	<1
Maireana tomentosa	Shrub (0-1m)	<1
Neurachne muelleri	Grass	<1
Ptilotus exaltatus	Herb	<1
Ptilotus obovatus	Shrub (0-1m)	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Senna glutinosa subsp. ×*luerssenii*	Shrub (0-1m)	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Sporobolus australasicus	Grass	<1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	Shrub (0-1m)	<1
Trianthema turgidifolium	Herb	<1
Triodia wiseana	Hummock Grass	5-10

Site: PQ13

Date	20/10/2024, 14/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ13	**Landform**	Floodplain
NW Corner Latitude	-22.6096436862704°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.24238030000001°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	Calcrete, granite	**Fire history**	5-10 years
Vegetation condition	Very Good, Excellent	**Disturbance**	Cattle, fire
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70 % Cryptogram crust
Vegetation description	AbTw - *Acacia bivenosa* mid open shrubland over *Triodia wiseana* low open hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	10-25
Acacia synchronicia	Shrub (1-2m)	<1
**Cenchrus ciliaris*	Grass	<1
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Euphorbia biconvexa	Herb	<1
Euphorbia vaccaria	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Lepidium phlebopetalum	Herb	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus clementii	Herb	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Sclerolaena eriacantha	Herb	<1
Senna glutinosa subsp. ×*luerssenii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Sida cardiophylla	Shrub (0-1m)	<1
Tribulus hirsutus	Herb	<1
Triodia wiseana	Hummock Grass	10-25

Site: PQ15

Date	20/10/2024, 13/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ15	**Landform**	Plain
NW Corner Latitude	-22.614703586268°	**Slope and Aspect**	Gentle, Northwest
NW Corner Longitude	116.2470669°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	Basalt, calcrete	**Fire history**	>10 years
Vegetation condition	Very Good, Excellent	**Disturbance**	Cattle
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70 % Cryptogram crust
Vegetation description	AbTw- *Acacia bivenosa* mid open shrubland over *Triodia wiseana* low hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	10-25
Acacia synchronicia	Shrub (0-1m)	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus laniflorus	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Hakea lorea subsp. *lorea*	Shrub (0-1m)	<1
Hibiscus coatesii	Shrub (0-1m)	<1
Indigofera monophylla	Shrub (0-1m)	<1
Lepidium muelleri-ferdinandi	Herb	<1
Nellica maderaspatensis	Herb	<1
Ptilotus clementii	Herb	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Senna glutinosa subsp. ×*luerssenii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Senna notabilis	Herb	<1
Triodia wiseana	Hummock Grass	25-50

Site: PQ16

Date	20/10/2024, 13/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ16	**Landform**	Floodplain
NW Corner Latitude	-22.6172294°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2519317°	**Soil type**	Sandy clay loam
Rock cover (%)	>70	**Soil colour**	Reddish brown
Rock type	Basalt, quartz	**Fire history**	5-10 years
Vegetation condition	Very Good, Excellent	**Disturbance**	Fire, cattle, weeds
Drainage	Floodplain	**Additional Notes**	Litter: <10% Bare ground: >70%
Vegetation description	AxSgpTw - *Acacia bivenosa*, *A. synchronicia* and *A. xiphophylla* tall open shrubland over *Senna glutinosa* subsp. *pruinosa* mid sparse shrubland over *Triodia epactia* and *T. wiseana* low open hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia aff. *wanyu*	Shrub (1-2m)	<1
Acacia bivenosa	Shrub (>2m)	5-10
Acacia pruinocarpa	Shrub (>2m)	1-5
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia trachycarpa	Shrub (>2m)	1-5%
Acacia xiphophylla	Shrub (>2m)	5-10
Afrohybanthus aurantiacus	Herb	<1
Aristida contorta	Grass	<1
Aristida holathera	Grass	<1
**Cenchrus ciliaris*	Grass	1-5
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dissocarpus paradoxus	Herb	<1
Enneapogon caerulescens	Grass	<1
Eragrostis tenellula	Grass	<1
Eremophila cuneifolia	Shrub (0-1m)	Associated
Eriachne mucronata	Grass	<1
Eriachne pulchella subsp. *pulchella*	Grass	<1
Euploca cunninghamii	Herb	<1
Hakea lorea subsp. *lorea*	Shrub (>2m)	<1
Hibiscus coatesii	Shrub (0-1m)	<1
Indigofera monophylla	Shrub (0-1m)	<1
Maireana melanocoma	Shrub (0-1m)	1-5
Maireana planifolia	Shrub (0-1m)	<1
Maireana thesioides	Shrub (0-1m)	<1
Paspalidium clementii	Grass	<1
Polycarpaea longiflora	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena eriacantha	Herb	<1

Species	Stratum	Cover (%)
Senna glutinosa subsp. ×*luerssenii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	1-5
Sida ectogama	Shrub (0-1m)	<1
Solanum phlomoides	Herb	<1
Tribulus suberosus	Shrub (0-1m)	<1
Triodia epactia	Hummock Grass	1-5
Triodia wiseana	Hummock Grass	10-25

Site: PQ17

Date	20/10/2024, 13/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ17	**Landform**	Plain
NW Corner Latitude	-22.6185350862662°	**Slope and Aspect**	Gentle, West
NW Corner Longitude	116.2531989°	**Soil type**	Sandy clay loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt	**Fire history**	>10 years
Vegetation condition	Very Good	**Disturbance**	Cattle, fire
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70 %
Vegetation description	AxAbTw - *Acacia xiphophylla* tall sparse shrubland over *A. bivenosa* mid open shrubland over *Triodia wiseana* low hummock grassland		

Photo



Species	Stratum	Cover (%)
Abutilon amplum	Shurb (0-1m)	<1
Acacia bivenosa	Shrub (1-2m)	10-25
Acacia tetragonophylla	Shrub (1-2m)	<1
Acacia xiphophylla	Shrub (>2m)	1-5%
Aristida contorta	Grass	<1
Aristida holathera	Grass	<1
Atriplex semilunaris	Shrub (0-1m)	<1
**Cenchrus ciliaris*	Hummock grass	1-5%
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus laniflorus	Shrub (0-1m)	<1
Dissocarpus paradoxus	Herb	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	1-5
Eragrostis tenellula	Grass	<1
Eriachne mucronata	Grass	<1
Gomphrena cunninghamii	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Lepidium phlebopetalum	Herb	<1
Neurachne muelleri	Grass	<1
Paspalidium clementii	Grass	<1
Polycarpaea longiflora	Herb	<1
Ptilotus clementii	Herb	<1
Ptilotus exaltatus	Herb	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena eriacantha	Herb	1-5
Senna glutinosa subsp. ×*luerssenii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Sida calyxhymenia	Shrub (0-1m)	<1
Sida ectogama	Shrub (0-1m)	<1
Sida fibulifera	Shrub (0-1m)	<1

Species	Stratum	Cover (%)
Sida sp. Excedentifolia (J.L. Egan 1925)	Shrub (0-1m)	<1
Solanum phlomoides	Herb	<1
Swainsona canescens	Herb	Associated
Tribulus suberosus	Shrub (0-1m)	<1
Triodia epactia	Hummock grass	<1
Triodia wiseana	Hummock Grass	10-25

Site: PQ18

Date	21/10/2024, 14/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ18	**Landform**	Creek, plain
NW Corner Latitude	-22.6251396862631°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2601157°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Reddish Brown
Rock type	River alluvium	**Fire history**	>10 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, cattle
Drainage	Minor Creek (<5m)	**Additional Notes**	16m x 157m Litter: 10-30 % Bare ground: 30-70 %
Vegetation description	EvAcCc - *Eucalyptus victrix* mid open woodland over *Acacia citrinoviridis* and *A. synchronicia* tall open shrubland over **Cenchrus ciliaris* and **C. setiger* low tussock grassland		

Photo

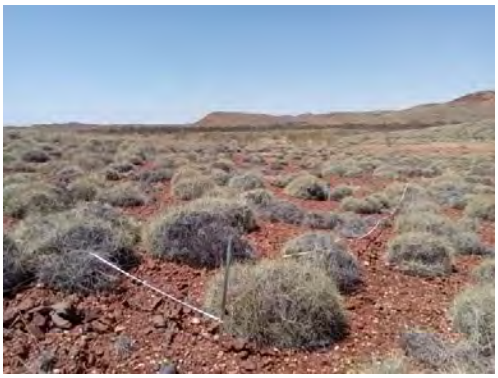


Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	<1
Acacia citrinoviridis	Shrub (>2m)	10-25
Acacia synchronicia	Shrub (>2m)	1-5
Afrohybanthus aurantiacus	Herb	<1
Arivela viscosa	Herb	<1
Boerhavia coccinea	Herb	<1
Boerhavia schomburgkiana	Herb	<1
**Cenchrus ciliaris*	Grass	10-25
**Cenchrus setiger*	Grass	10-25%
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus laniflorus	Shrub (0-1m)	<1
Cullen leucochaites	Shrub (0-1m)	<1
Dactyloctenium radulans	Grass	<1
Eucalyptus victrix	Tree (10-30m)	1-5
Indigofera colutea	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Ipomoea muelleri	Vine	<1
Lepidium pedicellosum	Shrub (0-1m)	<1
Rhynchosia minima	Herb	<1
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	Shrub (0-1m)	<1
Triodia wiseana	Hummock grass	<1
**Vachellia farnesiana*	Shrub (>2m)	<1

Site: PQ19

Date	19/10/2024, 12/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ19	**Landform**	Hill
NW Corner Latitude	-22.6237913°	**Slope and Aspect**	Moderate, Southwest
NW Corner Longitude	116.2653988°	**Soil type**	Sandy loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt, ironstone, quartz	**Fire history**	>10 years
Vegetation condition	Very Good, Excellent	**Disturbance**	Weeds, cattle, track adjacent
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70%
Vegetation description	AaTwAc - *Acacia arida* and *Eremophila latrobei* mid sparse shrubland over *Triodia wiseana* low hummock grassland over *Aristida contorta* low sparse tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia arida	Shrub (1-2m)	2%
Aristida contorta	Grass	1-5
Aristida holathera	Grass	<1
Bonamia pilbarensis	Herb	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	<1
Eremophila latrobei	Shrub (1-2m)	1-5
Eriachne pulchella subsp. *dominii*	Grass	<1
Eriachne pulchella subsp. *pulchella*	Grass	<1
Goodenia forrestii	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Ixiochlamys cuneifolia	Herb	<1
Nellica maderaspatensis	Herb	<1
Paspalidium clementii	Grass	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Trachymene pilbarensis	Herb	<1
Triodia wiseana	Hummock Grass	50-75

Site: PQ20

Date	21/10/2024, 13/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ20	**Landform**	Creek
NW Corner Latitude	-22.6228346862642°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2567096°	**Soil type**	Sandy clay
Rock cover (%)	<10	**Soil colour**	Reddish brown
Rock type	River alluvium	**Fire history**	>10 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, cattle, adjacent track
Drainage	Minor Creek (<5m)	**Additional Notes**	16m x157m Litter: 10-30% Bare ground: 30-70%
Vegetation description	EvAcCc - *Eucalyptus victrix* mid open woodland over *Acacia citrinoviridis* and *A. synchronicia* tall open shrubland over **Cenchrus ciliaris* low open tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	Associated
Acacia citrinoviridis	Shrub (>2m)	10-25
Acacia ligulata	Shrub (>2m)	<1
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia wanyu	Shrub (1-2m)	<1
Alternanthera nodiflora	Herb	<1
Arivela viscosa	Herb	<1
Asteraceae sp. 2	Herb	<1
**Cenchrus ciliaris*	Grass	10-25
**Cenchrus setiger*	Grass	<1
Centipeda thespidioides	Herb	<1
Chrysopogon fallax	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus sidoides	Herb	<1
Corchorus tridens		
Cucumis variabilis	Vine	<1
Cyperus sp. 1	Herb	<1
Dactyloctenium radulans	Grass	<1
Dicladanthera forrestii	Herb	<1
Enchylaena tomentosa	Shrub (0-1m)	<1
Eragrostis tenellula	Grass	<1
Eremophila longifolia	Shrub (>2m)	<1
Eucalyptus victrix	Tree (10-30m)	1-5
Eulalia aurea	Grass	<1
Euphorbia biconvexa	Herb	<1
Fabaceae sp. 1	Shrub (0-1m)	<1
Ipomoea calobra	Vine	<1
Jasminum didymum	Shrub (1-2m)	<1
**Malvastrum americanum*	Shrub (0-1m)	1-5
Marsilea sp. 1	Herb	<1
Neptunia xanthonema	Shrub (0-1m)	<1

Species	Stratum	Cover (%)
Operculina aequisepala	Vine	<1
Poaceae sp. 1	Grass	<1
Pterocaulon sphaeranthoides	Herb	<1
Ptilotus exaltatus	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	Associated
Sesbania cannabina	Shrub (0-1m)	<1
Streptoglossa bubakii	Herb	<1
Teucrium teucriiflorum	Shrub (0-1m)	<1
Triodia epactia	Hummock Grass	<1
Triodia wiseana	Hummock grass	<1
**Vachellia farnesiana*	Shrub (>2m)	1-5
Vincetoxicum lineare	Shrub (1-2m)	<1

Site: PQ21

Date	21/10/2024, 12/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ21	**Landform**	Creek
NW Corner Latitude	-22.6224922862643°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.27392890000002°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	River alluvium	**Fire history**	>10 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, cattle
Drainage	Minor Creek (<5m)	**Additional Notes**	16m x 157m Litter: <10% Bare ground: 30-70%
Vegetation description	AcAsCc - *Acacia citrinoviridis* low woodland over *A. synchronicia* tall open shrubland over **Cenchrus ciliaris* low open tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	<1
Acacia citrinoviridis	Shrub (>2m)	10-25
Acacia synchronicia	Grass	5-10
Acacia tetragonophylla	Shrub (>2m)	<1
**Aerva javanica*	Shrub (0-1m)	<1
Arivela viscosa	Herb	<1
Boerhavia coccinea	Herb	<1
**Cenchrus ciliaris*	Grass	5-10%
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	<1
Euphorbia boophthona	Herb	<1
Fabaceae sp. 1	Shrub (0-1m)	<1
Gnephosis brevifolia	Herb	<1
Grevillea pyramidalis subsp. *leucadendron*	Tree (<10m)	<1
Minuria sp. 1	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena eriacantha	Herb	<1
Triodia wiseana	Hummock Grass	<1

Site: PQ26

Date	19/10/2024, 13/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ26	**Landform**	Hill
NW Corner Latitude	-22.6184782862663°	**Slope and Aspect**	Moderate, South
NW Corner Longitude	116.2929067°	**Soil type**	Sandy clay loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt	**Fire history**	>10 years
Vegetation condition	Excellent	**Disturbance**	NA
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70%
Vegetation description	SaohTwEc - *Senna artemisioides* subsp. *oligophylla* x *helmsii* mid sparse shrubland over *Triodia wiseana* low hummock grassland over *Enneapogon caerulescens* low sparse tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia arida	Shrub (>2m)	<1
Acacia synchronicia	Shrub (1-2m)	<1
Aristida contorta	Grass	<1
Arivela viscosa	Herb	<1
Bonamia pilbarensis	Herb	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus walcottii	Shurb (0-1m)	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	1-5
Enneapogon polyphyllus	Grass	<1
Euphorbia vaccaria	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Ixiochlamys cuneifolia	Herb	<1
Lepidium muelleri-ferdinandi	Herb	<1
Nellica maderaspatensis	Herb	<1
Paspalidium clementii	Grass	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus clementii	Herb	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	1-5
Salsola australis	Herb	<1
Senna artemisioides subsp. *oligophylla*	Shurb (0-1m)	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (1-2m)	1-5
Senna glutinosa subsp. *glutinosa*	Shrub (1-2m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Tribulus hirsutus	Herb	<1
Triodia wiseana	Hummock Grass	25-50

Site: PQ29

Date	21/10/2024, 12/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ29	**Landform**	Plain
NW Corner Latitude	-22.6155072862677°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.28999770000001°	**Soil type**	Sand
Rock cover (%)	30-70	**Soil colour**	Dark brown
Rock type	River alluvium	**Fire history**	5-10 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, nearby track, cattle, rubbish
Drainage	Minor creek (<5m)	**Additional Notes**	16m 157m quadrat Litter: 10-30 % Bare ground: 10-30 %
Vegetation description	AcApCc - *Acacia citrinoviridis* low open woodland over *A. bivenosa*, *A. pyrifolia* and *Melaleuca glomerata* mid open shrubland over **Cenchrus ciliaris* low open tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	1-5
Acacia citrinoviridis	Shrub (>2m)	5-10
Acacia pyrifolia	Shrub (>2m)	5-10
Acacia synchronicia	Shrub (>2m)	<1
**Aerva javanica*	Shrub (0-1m)	1-5
Arivela viscosa	Herb	<1
Asteraceae sp. 1	Herb	<1
Boerhavia coccinea	Herb	<1
**Cenchrus ciliaris*	Grass	10-25
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Euphorbia biconvexa	Herb	<1
Gnephosis brevifolia	Herb	<1
Indigofera colutea	Herb	<1
Melaleuca glomerata	Shrub (>2m)	1-5
Polycarpaea longiflora	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Sclerolaena eriacantha	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Stemodia grossa	Herb	<1
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	Shrub (0-1m)	<1
Trianthema turgidifolium	Herb	<1
Triodia wiseana	Hummock Grass	<1
**Vachellia farnesiana*	Shrub (>2m)	<1

Site: PQ31

Date	20/10/2024, 14/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ31	**Landform**	Hill
NW Corner Latitude	-22.6115017°	**Slope and Aspect**	Moderate, East
NW Corner Longitude	116.2898767°	**Soil type**	Sandy clay loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt	**Fire history**	5-10 years
Vegetation condition	Excellent	**Disturbance**	NA
Drainage	NA	**Additional Notes**	Bare ground: 30-70% Litter: > 10%
Vegetation description	AaTwAv/Lm - *Acacia arida* tall sparse shrubland over *Triodia wiseana* low hummock grassland over *Arivela viscosa* and *Lepidium muelleri-ferdinandi* low sparse forbland		

Photo



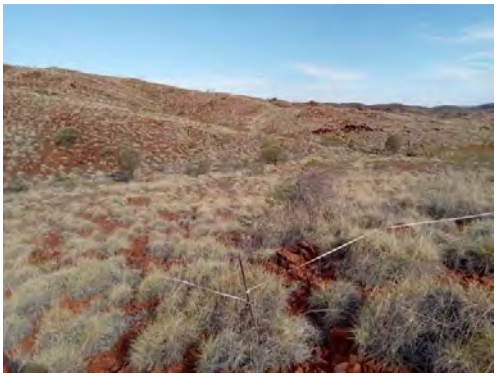
Species	Stratum	Cover (%)
Acacia arida	Shrub (>2m)	1-5
Acacia citrinoviridis	Shrub (1-2m)	<1
Acacia tetragonophylla	Shrub (1-2m)	<1
Afrohybanthus aurantiacus	Herb	<1
Angianthus acrohyalinus	Herb	<1
Aristida holathera	Grass	<1
Arivela viscosa	Herb	1-5
Bonamia pilbarensis	Herb	<1
**Cenchrus ciliaris*	Grass	<1
Clerodendrum floribundum	Tree (<10m)	Associated
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dissocarpus paradoxus	Herb	<1
Dolichandrone occidentalis	Shrub (0-1m)	<1
Dolichocarpa crouchiana	Herb	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	<1
Eremophila fraseri subsp. *fraseri*	Shrub (0-1m)	<1
Eriachne mucronata	Grass	<1
Eriachne sp. 1	Grass	1-5
Euphorbia boophthona	Herb	<1
Euploca cunninghamii	Herb	<1
Gomphrena cunninghamii	Herb	<1
Gossypium australe	Shrub (0-1m)	<1
Indigofera colutea	Shrub (0-1m)	<1
Indigofera monophylla	Shrub (0-1m)	<1
Lepidium muelleri-ferdinandi	Herb	1-5
Nicotiana benthamiana	Herb	<1
Notoleptopus decaisnei	Herb	<1
Paspalidium clementii	Grass	<1
Polycarpaea longiflora	Herb	<1
Pterocaulon sphaeranthoides	Herb	Associated
Ptilotus exaltatus	Herb	<1

Species	Stratum	Cover (%)
Ptilotus xerophilus	Herb	<1
Rhodanthe margarethae	Herb	<1
Rhynchosia minima	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *glutinosa*	Shrub (1-2m)	<1
Sida fibulifera	Shrub (0-1m)	<1
Solanum cleistogamum	Shrub (0-1m)	<1
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	Herb	<1
Trachymene pilbarensis	Herb	<1
Tribulus hirsutus	Herb	<1
Triodia wiseana	Hummock Grass	25-50
Triumfetta leptacantha	Herb	<1
Vincetoxicum lineare	Shrub (1-2m)	<1

Site: PQ32

Date	14/03/2025	**Botanist**	CK, BE
Waypoint	PQ32	**Landform**	Hill
NW Corner Latitude	-22.6100353°	**Slope and Aspect**	Moderate, East
NW Corner Longitude	116.294198°	**Soil type**	Clay loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt	**Fire history**	5-10 years
Vegetation condition	Excellent	**Disturbance**	NA
Drainage	NA	**Additional Notes**	40m x 62.5m Litter: <10% Bare ground: 30-70 %
Vegetation description	AaTwDrr - *Acacia arida* and *A. bivenosa* tall sparse shrubland over *Triodia wiseana* low hummock grassland over *Dysphania rhadinostachya* subsp. *rhadinostachya* low sparse forbland		

Photo



Species	Stratum	Cover (%)
Abutilon lepidum	Shrub (0-1m)	<1
Acacia arida	Shrub (>2m)	1-5
Acacia bivenosa	Shrub (>2m)	1-5
Arivela viscosa	Herb	<1
Boerhavia coccinea	Herb	<1
Bonamia pilbarensis	Herb	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dolichocarpa crouchiana	Herb	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	1-5
Enneapogon caerulescens	Grass	<1
Euphorbia biconvexa	Herb	<1
Euphorbia boophthona	Herb	<1
Euphorbia vaccaria	Herb	<1
Gomphrena cunninghamii	Herb	<1
Indigofera monophylla	Shrub (0-1m)	<1
Ixiochlamys cuneifolia	Herb	<1
Lepidium muelleri-ferdinandi	Herb	<1
Nellica maderaspatensis	Herb	<1
Paspalidium clementii	Grass	<1
Ptilotus clementii	Herb	<1
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Rhodanthe margarethae	Herb	<1
Rhynchosia minima	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Tephrosia uniovulata	Shrub (0-1m)	<1
Tribulus hirsutus	Herb	<1
Triodia wiseana	Hummock Grass	25-50

Site: PQ33

Date	19/10/2024, 12/03/2025	**Botanist**	CK, LK, BE
Waypoint	PQ33	**Landform**	Hill
NW Corner Latitude	-22.6133083°	**Slope and Aspect**	Gentle, moderate Northwest, Southeast
NW Corner Longitude	116.2973183°	**Soil type**	Sandy loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt, quartz	**Fire history**	5-10 years
Vegetation condition	Excellent	**Disturbance**	NA
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 30-70%
Vegetation description	TwTh - *Triodia wiseana* low open hummock grassland over *Tribulus hirsutus* low sparse forbland		

Photo



Species	Stratum	Cover (%)
Abutilon lepidum	Shurb (0-1m)	<1
Acacia bivenosa	Shrub (1-2m)	Associated
Arivela viscosa	Herb	<1
Bonamia pilbarensis	Herb	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus laniflorus	Shrub (0-1m)	<1
Corchorus lasiocarpus subsp. *parvus*	Shrub (1-2m)	<1
Cullen leucochaites	Shrub (1-2m)	<1
Cymbopogon ambiguus	Grass	<1
Dolichocarpa crouchiana	Herb	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	<1
Euploca cunninghamii	Herb	<1
Gomphrena cunninghamii	Herb	<1
Hakea lorea subsp. *lorea*	Shrub (1-2m)	Associated
Ixiochlamys cuneifolia	Herb	<1
Lepidium muelleri-ferdinandi	Herb	<1
Nellica maderaspatensis	Herb	<1
Paspalidium clementii	Grass	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus clementii	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Senna artemisioides subsp. *oligophylla*	Shrub (1-2m)	Associated
Senna glutinosa subsp. *pruinosa*	Shrub (1-2m)	<1
Tephrosia uniovulata	Shrub (0-1m)	<1
Trachymene pilbarensis	Herb	<1
Tribulus hirsutus	Herb	1-5
Triodia wiseana	Hummock Grass	10-25

Site: PR08

Date	22/10/2024	**Botanist**	CK, LK
Waypoint	PR08	**Landform**	Floodplain
NW Corner Latitude	-22.5994793862753°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.23582210000001°	**Soil type**	Sandy clay
Rock cover (%)	>70	**Soil colour**	Reddish brown
Rock type	Quartz	**Fire history**	>3 years
Vegetation condition	Good	**Disturbance**	Cattle, weeds
Drainage	Floodplain	**Additional Notes**	
Vegetation description	AxTe/TwCc/Nm - *Acacia synchronicia* and *A. xiphophylla* tall open shrubland over *Triodia epactia* and *T. wiseana* low sparse hummock grassland over **Cenchrus ciliaris* and *Neurachne muelleri* low sparse tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (0-1m)	<1
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (0-1m)	<1
Acacia xiphophylla	Shrub (>2m)	5-10
Aristida contorta	Grass	<1
**Cenchrus ciliaris*	Grass	1-5
Enneapogon caerulescens	Grass	<1
Eragrostis tenellula	Grass	<1
Eremophila cuneifolia	Shrub (0-1m)	<1
Lepidium phlebopetalum	Herb	<1
Maireana thesioides	Shrub (0-1m)	<1
Neurachne muelleri	Grass	1-5
Ptilotus exaltatus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Sclerolaena cuneata	Herb	<1
Sclerolaena eriacantha	Herb	<1
Senecio pinnatifolius	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Senna glutinosa subsp. *pruinosa*	Shrub (0-1m)	<1
Tephrosia uniovulata	Shrub (0-1m)	<1
Trianthema turgidifolium	Herb	<1
Triodia epactia	Hummock Grass	1-5
Triodia wiseana	Hummock Grass	1-5

Site: PR13

Date	21/10/2024	**Botanist**	CK, LK
Waypoint		**Landform**	Floodplain
NW Corner Latitude	-22.6103666862701°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.24095449999999°	**Soil type**	Clay
Rock cover (%)	NA	**Soil colour**	Reddish brown
Rock type	NA	**Fire history**	>3 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, cattle, vehicle tracks
Drainage	Floodplain	**Additional Notes**	
Vegetation description	AxCcCsp - *Acacia synchronicia* and *A. xiphophylla* tall open shrubland over **Cenchrus ciliaris* low open tussock grassland over *Cyperus* sp. 2 low sparse sedgeland		

Photo



Species	Stratum	Cover (%)
Acacia synchronicia	Shrub (>2m)	1-5
Acacia xiphophylla	Shrub (>2m)	10-25
Acacia tetragonophylla	Shrub (>2m)	<1
Asteraceae sp. 1	Herb	<1
**Cenchrus ciliaris*	Grass	25-50
Cyperus sp. 2	Sedge	1-5
Enchylaena tomentosa	Shrub (1-2m)	<1
Eragrostis tenellula	Grass	<1
Hakea lorea subsp. *lorea*	Shrub (1-2m)	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Tribulus hirsutus	Herb	<1
**Vachellia farnesiana*	Shrub (>2m)	<1
Vincetoxicum lineare	Shrub (0-1m)	<1

Site: PR14

Date	21/10/2024, 17/03/2025	**Botanist**	CK, BE
Waypoint	PR14	**Landform**	Creek, floodplain
NW Corner Latitude	-22.6112632948758°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2422912389346°	**Soil type**	Sandy loam
Rock cover (%)	NA	**Soil colour**	Reddish brown
Rock type	NA	**Fire history**	>3 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, cattle
Drainage	Minor creek (<5m)	**Additional Notes**	
Vegetation description	AcVfCc - *Acacia citrinoviridis* low open woodland over *A. synchronicia* and *Vachellia farnesiana* tall open shrubland over **Cenchrus ciliaris* and **C. setigera* low tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia citrinoviridis	Tree (<10m)	1-5
Acacia kempeana	Shrub (>2m)	<1
Acacia synchronicia	Shrub (>2m)	1-5
Acacia tetragonophylla	Shrub (>2m)	<1
Acacia wanyu	Shrub (>2m)	<1
Alternanthera nodiflora	Herb	<1
**Cenchrus ciliaris*	Grass	10-25
**Cenchrus setiger*	Grass	5-10%
Clerodendrum floribundum	Shrub (1-2m)	<1
Cucumis variabilis	Vine	<1
Enchylaena tomentosa	Shrub (0-1m)	<1
Eragrostis tenellula	Grass	<1
Ipomoea muelleri	Vine	<1
Jasminum didymum	Shrub (>2m)	<1
**Malvastrum americanum*	Shrub (0-1m)	1-5
Pluchea dentex	Herb	<1
Pterocaulon sphaeranthoides	Herb	<1
Ptilotus exaltatus	Herb	<1
Rhynchosia minima	Vine	<1
Scaevola spinescens	Shrub (1-2m)	1-5
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Sesbania cannabina	Shrub (0-1m)	<1
Solanum cleistogamum	Herb	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Stemodia grossa	Herb	<1
**Vachellia farnesiana*	Shrub (>2m)	10-25

Site: PR27

Date	22/10/2024	**Botanist**	CK, LK
Waypoint	PR27	**Landform**	Creek
NW Corner Latitude	-22.6182949967927°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.29713970000003°	**Soil type**	Sand
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	River alluvium	**Fire history**	>3 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds
Drainage	Minor creek (<5m)	**Additional Notes**	
Vegetation description	AcApCc - *Acacia citrinoviridis* low open woodland over *A. pyrifolia* tall sparse shrubland over **Cenchrus ciliaris* low open tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	<1
Acacia citrinoviridis	Shrub (>2m)	5-10
Acacia pyrifolia	Shrub (>2m)	1-5
Acacia synchronicia	Shrub (1-2m)	<1
Arivela viscosa	Herb	<1
Boerhavia coccinea	Herb	<1
**Cenchrus ciliaris*	Grass	10-25
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Cucumis variabilis	Herb	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Fabaceae sp. 2	Herb	<1
Indigofera linifolia	Shrub (0-1m)	<1
Indigofera monophylla	Shrub (0-1m)	<1
Lepidium muelleri-ferdinandi	Herb	<1
Salsola australis	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Streptoglossa bubakii	Herb	<1
Trianthema turgidifolium	Herb	<1
Triodia wiseana	Hummock Grass	1-5
**Vachellia farnesiana*	Shrub (>2m)	<1

Site: PR28

Date	22/10/2024	**Botanist**	CK, LK
Waypoint	PR28	**Landform**	Creek
NW Corner Latitude	-22.6140792862683°	**Slope and Aspect**	Gentle, East
NW Corner Longitude	116.29135020000001°	**Soil type**	Sandy loam
Rock cover (%)	10-30	**Soil colour**	Brown
Rock type	River alluvium	**Fire history**	>3 years
Vegetation condition	Very Good	**Disturbance**	Weeds
Drainage	Drainage line	**Additional Notes**	
Vegetation description	AcAb/Ap/MgTw - *Acacia citrinoviridis* low open woodland over *A. bivenosa*, *A. pyrifolia* and *Melaleuca glomerata* mid open shrubland over *Triodia wiseana* low open hummock grassland		

Photo



Species	Stratum	Cover (%)
Acacia arida	Shrub (1-2m)	<1
Acacia bivenosa	Shrub (>2m)	1-5
Acacia citrinoviridis	Shrub (>2m)	1-5
Acacia pyrifolia	Shrub (1-2m)	1-5
Acacia synchronicia	Shrub (>2m)	<1
Acacia tetragonophylla	Shrub (>2m)	<1
**Aerva javanica*	Shrub (0-1m)	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	Herb	<1
Enneapogon caerulescens	Grass	<1
Gomphrena cunninghamii	Herb	<1
Melaleuca glomerata	Shrub (1-2m)	1-5
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (1-2m)	<1
Swainsona stenodonta	Herb	<1
Tephrosia uniovulata	Shrub (0-1m)	<1
Tribulus hirsutus	Herb	<1
Triodia wiseana	Hummock Grass	10-25

Site: PR30

Date	22/10/2024	**Botanist**	CK, LK
Waypoint	PR30	**Landform**	Floodplain
NW Corner Latitude	-22.6130629°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.2942243°	**Soil type**	Sandy clay
Rock cover (%)	30-70	**Soil colour**	Brown
Rock type	Quartz	**Fire history**	>3 years
Vegetation condition	Poor (northern and Eremaean only)	**Disturbance**	Weeds, tracks, rubbish
Drainage	Floodplain	**Additional Notes**	
Vegetation description	AsTwCc - *Acacia synchronicia* and *A. xiphophylla* tall open shrubland over *Triodia wiseana* low sparse hummock grassland over **Cenchrus ciliaris* low sparse tussock grassland		

Photo



Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (0-1m)	<1
Acacia synchronicia	Shrub (>2m)	5-10
Acacia xiphophylla	Shrub (>2m)	1-5
Atriplex semilunaris	Shrub (0-1m)	<1
**Cenchrus ciliaris*	Grass	5-10
Corchorus crozophorifolius	Shrub (0-1m)	<1
Eragrostis tenellula	Grass	<1
Lepidium phlebopetalum	Herb	<1
Maireana thesioides	Shrub (0-1m)	<1
**Portulaca pilosa*	Herb	<1
Ptilotus chamaecladus	Herb	<1
Ptilotus xerophilus	Herb	<1
Salsola australis	Herb	<1
Sclerolaena eriacantha	Herb	<1
Senna glutinosa subsp. *pruinosa*	Shrub (0-1m)	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Streptoglossa bubakii	Shrub (0-1m)	<1
Trianthema turgidifolium	Herb	<1
Triodia wiseana	Hummock Grass	1-5

Site: PQ36

Date	16/03/2025	**Botanist**	CK, BE
Waypoint	PQ36	**Landform**	Plain
NW Corner Latitude	-22.589249°	**Slope and Aspect**	Negligible
NW Corner Longitude	116.240424°	**Soil type**	Sandy clay
Rock cover (%)	<10	**Soil colour**	Reddish brown
Rock type	Quartz	**Fire history**	>10 years
Vegetation condition	Poor	**Disturbance**	Buffel, cattle tracks
Drainage	NA	**Additional Notes**	Litter: 10-30% Bare ground: 30%
Vegetation description	AsTeCc - *Acacia synchronicia*, *A. trachycarpa* and *Eremophila longifolia* tall open shrubland over *Triodia epactia* low open hummock grassland over **Cenchrus ciliaris* low open tussock grassland		

Species	Stratum	Cover (%)
Abutilon lepidum	Shrub (0-1m)	<1
Acacia citrinoviridis	Shrub (1-2m)	<1
Acacia synchronicia	Shrub (>2m)	5-10%
Acacia tetragonophylla	Shrub (>2m)	1-5%
Acacia trachycarpa	Shrub (>2m)	1-5%
Aristida contorta	Grass	<1
Asteraceae sp. 3	Herb	<1
Boerhavia coccinea	Herb	<1
**Cenchrus ciliaris*	Grass	10-25%
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Corchorus laniflorus	Shrub (0-1m)	<1
Cucumis variabilis	Vine	<1
Duperreya commixta	Vine	<1
Eremophila cuneifolia	Shrub (1-2m)	<1

Species	Stratum	Cover (%)
Eremophila longifolia	Shrub (>2m)	1-5%
Evolvulus alsinoides var. *decumbens*	Herb	<1
Goodenia forrestii	Herb	<1
Maireana integra	Herb	<1
Poaceae sp. 2	Grass	<1
**Portulaca pilosa*	Herb	<1
Ptilotus exaltatus	Herb	<1
Rhynchosia minima	Shrub (0-1m)	<1
Scaevola spinescens	Shrub (1-2m)	<1
Senna notabilis	Shrub (0-1m)	<1
Sida arsiniata	Shrub (0-1m)	<1
Solanum diversiflorum	Shrub (0-1m)	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Sporobolus australasicus	Grass	<1
Trianthema turgidifolium	Herb	<1
Tribulus macrocarpus	Herb	<1
Triodia epactia	Hummock grass	27%
Triodia wiseana	Hummock grass	<1
**Vachellia farnesiana*	Shrub (>2m)	1-5%

Site: PQ37

Date	17/03/2025	**Botanist**	CK, BE
Waypoint	PQ37	**Landform**	Plain
NW Corner Latitude	-22.609576°	**Slope and Aspect**	Gentle, South, Southwest
NW Corner Longitude	116.241077°	**Soil type**	Sandy loam
Rock cover (%)	30-70	**Soil colour**	Reddish brown
Rock type	Basalt, calcrete	**Fire history**	>10 years
Vegetation condition	Very Good	**Disturbance**	Weeds
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: 10-20%
Vegetation description	AbSglTw - *Acacia bivenosa*, *A. synchronicia* and mid open shrubland over *Triodia wiseana* low hummock grassland		

Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (1-2m)	15-22%
Acacia citrinoviridis	Shrub (0-1m)	<1
Acacia synchronicia	Shrub (1-2m)	1-5%
Acacia tetragonophylla	Shrub (1-2m)	<1
**Cenchrus ciliaris*	Grass	<1
**Cenchrus setiger*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Indigofera monophylla	Shrub (0-1m)	
Ptilotus exaltatus	Herb	<1
Ptilotus obovatus	Shrub (0-1m)	<1
Salsola australis	Herb	<1
Scaevola spinescens	Shrub (0-1m)	<1
Senna glutinosa subsp. ×*luerssenii*	Shrub (1-2m)	0.50%
Sida ectogama	Shrub (0-1m)	<1
Triodia wiseana	Hummock grass	19%

Site: PR34

Date	14/03/2025	**Botanist**	CK, BE
Waypoint	PR34	**Landform**	Creek
NW Corner Latitude	-22.610847°	**Slope and Aspect**	Gentle Southeast
NW Corner Longitude	116.290022°	**Soil type**	Sandy loam
Rock cover (%)	>70	**Soil colour**	Dark brown
Rock type	River alluvium	**Fire history**	>10 years
Vegetation condition	Degraded	**Disturbance**	Buffel grass
Drainage	Major creek	**Additional Notes**	Litter: <10% Bare ground: <5%

Species	Stratum	Cover (%)
Acacia arida	Shrub (1-2m)	<1
Acacia citrinoviridis	Tree (<10m)	5-10%
Acacia hamersleyensis	Shrub (1-2m)	<1
Acacia pyrifolia	Shrub (1-2m)	<1
Acacia tetragonophylla	Shrub (1-2m)	<1
Afrohybanthus aurantiacus	Herb	<1
Arivela viscosa	Herb	<1
Boerhavia schomburgkiana	Herb	<1
**Cenchrus ciliaris*	Grass	35%
Clerodendrum floribundum	Shrub (0-1m)	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Cucumis variabilis	Vine	<1
Cullen leucochaites	Shrub (0-1m)	<1
Cymbopogon ambiguus	Grass	<1
Enneapogon caerulescens	Grass	<1
Gomphrena cunninghamii	Shrub (0-1m)	<1
Gossypium australe	Shrub (0-1m)	<1
Grevillea eriostachya	Shrub (1-2m)	<1
Jasminum didymum	Shrub (0-1m)	<1
Melaleuca glomerata	Shrub (>2m)	<1
Notoleptopus decaisnei	Herb	<1

Species	Stratum	Cover (%)
Polycarpaea longiflora	Herb	<1
Rhynchosia minima	Herb	<1
Senna artemisioides subsp. *oligophylla*	Shrub (0-1m)	<1
Solanum phlomoides	Herb	<1
Stemodia grossa	Herb	<1
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	Shrub (0-1m)	<1
Tephrosia uniovulata	Shrub (0-1m)	<1
Triodia wiseana	Hummock grass	1-5%
**Vachellia farnesiana*	Shrub (>2m)	1-5%

Site: PR35

Date	16/03/2025	**Botanist**	CK, BE
Waypoint	PR35	**Landform**	Plain
NW Corner Latitude	-22.619041°	**Slope and Aspect**	Gentle Southwest
NW Corner Longitude	116.292303°	**Soil type**	Clay loam
Rock cover (%)	>70	**Soil colour**	Reddish brown
Rock type	Basalt, ironstone, quartz	**Fire history**	>10 years
Vegetation condition	Very Good	**Disturbance**	Buffel grass, fire, cattle scats
Drainage	NA	**Additional Notes**	Litter: <10% Bare ground: <5%

Species	Stratum	Cover (%)
Acacia bivenosa	Shrub (>2m)	1-5%
Acacia synchronicia	Shrub (>2m)	1-5%
Aristida holathera	Grass	<1
**Cenchrus ciliaris*	Grass	<1
Corchorus crozophorifolius	Shrub (0-1m)	<1
Enneapogon caerulescens	Grass	<1
Eremophila cuneifolia	Shrub (0-1m)	<1
Eriachne mucronata	Grass	<1
Indigofera monophylla	Shrub (0-1m)	<1
Ptilotus exaltatus	Herb	<1
Ptilotus obovatus	Shrub (0-1m)	<1
Senna artemisioides subsp. *oligophylla*	Shrub (0-1m)	5-10%
Senna artemisioides subsp. *oligophylla* x *helmsii*	Shrub (0-1m)	<1
Solanum lasiophyllum	Shrub (0-1m)	<1
Triodia wiseana	Hummock grass	32%