Shire of Ngaanyatjarraku

Warburton

Flora and Vegetation Survey

May 2021

Executive summary

The Shire of Ngaanyatjarraku (the Shire) is proposing a new bypass in Warburton and realignment roadworks at Jameson Wanarn (Cutline) Road and Papulankujta Road (Blackstone alignment) to improve the safety of existing roads and local communities. In addition to the road construction projects, eight proposed gravel pit sites required for road maintenance have been identified in the region.

The Shire commissioned GHD Pty Ltd (GHD) to undertake a detailed flora and vegetation assessment of the proposed Warburton Bypass, Jameson Wanarn (Cutline) Road realignment, Blackstone realignment and eight gravel pit sites. The purpose of the assessment was to identify key flora and vegetation values within the survey areas. The results of the assessment will be used to support a clearing permit application to the Department of Water and Environmental Regulation (DWER) for the proposed roadworks.

Key findings

- Nine vegetation types were identified and described for the combined survey areas. The dominant vegetation types mapped within the survey areas are broadly described as Mulga (*Acacia* spp.) woodlands, *Triodia* hummock grasslands and *Aristida* tussock grasslands. The topography and soils of the survey areas consisted predominantly of stony sandy/loamy plains and claypans
- The condition of the vegetation within the survey area ranged from Good to Excellent condition. Frequent and regular fires, grazing damage by camels as well as the ingress of Buffel Grass (**Cenchrus ciliaris*) along road sides and tracks, detract from the Excellent vegetation condition in some areas. Generally, the greater distance from roads, tracks and disturbed areas, the better condition of the native vegetation, with minimal weeds evident
- No threatened or priority ecological communities (TECs and PECs) were identified within the survey areas. It is unlikely any of the vegetation communities recorded are restricted only to the survey areas
- The survey recorded a total of 178 flora taxa (including subspecies and varieties) representing 33 families and 92 genera within the survey area. This total comprised of 174 native taxa and four introduced taxa
- None of the weeds recorded are listed as Declared Plants under the *Biosecurity and Management Act 2007* or Weeds of National Significance
- One threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the *Biodiversity Conservation Act 2016* (BC Act) and Two Priority flora listed by the Department of Biodiversity Conservation and Attractions (DBCA) were recorded within the survey areas:
    - *Seringia exastia* (Threatened)
    - *Goodenia virgata* (Priority 2)
    - *Goodenia gibbosa* (Priority 3).

Conclusion

The lack of systematic biological surveys within the Central Ranges region makes it difficult to comment regarding the conservation status of the vegetation communities and the significance of potential impacts. However, the vegetation types identified during the survey are considered well represented in adjacent areas and are unlikely to represent significant vegetation on a local

or regional scale or are necessary for the continued existence of any threatened or priority flora. Given the linear nature and/or small extent of clearing required spread over a wide-ranging application area which is largely uncleared, it is considered unlikely the proposed projects will have any significant impact on flora and vegetation at a regional scale.

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1. Introduction

1.1 Background

The Shire of Ngaanyatjarraku (the Shire) is proposing a new bypass in Warburton and realignment roadworks at Jameson Wanarn (Cutline) Road and Papulankujta Road (Blackstone alignment) to improve the safety of existing roads and local communities.

The Shire is proposing to construct Warburton Bypass spanning approximately 15 kilometres (km) west of the Great Central Highway from a point approximate 7 km north-east of Warburton. The Bypass re-joins the Highway approximately 7 km west of Warburton. A bypass is required to divert heavy vehicles using the Great Central Road in the vicinity of Warburton roadhouse and community. Heavy vehicles transiting the area pose a danger to the pedestrian and small vehicle traffic in the immediate area near the roadhouse and community areas. Many of the heavy vehicles do not require the roadhouse facilities or need to be in the vicinity of the community. The amount of heavy traffic is expected to increase substantially between the Jameson area and Leonora and beyond when the West Musgrave Mining Project commences.

The realignment and construction of a section of the Jameson Wanarn (Cutline) Road north of Jameson community is for the purposes of removing curves and improving the line of sight for road users. The proposed works is in keeping with completed works to upgrade the road carried out in recent years along the length of the cutline from the Great Central Road through to the Jameson community. The section of road for the proposed realignment is approximately 15 km in length and starts near an existing gravel pit towards Jameson community.

The realignment and construction of a 1 km section along Papulankujta Road (Blackstone alignment) east of Jameson community is also required to remove existing curves and improve the line of sight for road users. As well as the road construction projects listed above, eight proposed gravel pit sites required for road maintenance have been identified.

1.2 Purpose

The Shire commissioned GHD Pty Ltd (GHD) to undertake a detailed flora and vegetation assessment of the proposed Warburton Bypass, Jameson Wanarn (Cutline) Road realignment, Blackstone realignment and eight gravel pit sites. The purpose of the assessment was to identify key flora and vegetation values within the survey areas. The results of the assessment will be used to support a clearing permit application to the Department of Water and Environmental Regulation (DWER) for the proposed roadworks.

1.3 Survey area

The survey area includes a number of sites between the communities of Warburton, Jameson, Blackstone and Warakurna, in the Shire of Ngaanyatjarraku:

- Warburton Road Bypass – total length approximately 15 km (75.4 hectares (ha))
- Jameson Wanarn (Cutline) Road – total length approximately 15 km (79 ha)
- Blackstone Alignment (Papulankujta Road) – total length 1 km (1.8 ha)
- 8 gravel pits (103.6 ha in total).

The survey area is presented in Figure 1, Appendix A. The survey area encompassed an area of 25 meters either side of the centre line for the Warburton Bypass, Jameson Wanarn Road and Blackstone realignments to allow for the road and off-shoot drainage either side of the road

as required. The survey area of the proposed gravel pits included a 200 m radius from the centre of each proposed gravel pit.

1.4 Scope of works

GHD completed the following scope of works to achieve the purpose of the commission:

- An initial desktop assessment to identify known and potential environmental values and conservation significant flora, vegetation or other environmental features (such as riparian areas, wetlands) relating to the survey areas
- An in-season detailed flora and vegetation survey of the survey areas
- Prepare a combined technical report on the flora and vegetation surveys (this report)
- Provide all spatial/mapping data collected during the survey.

1.5 Relevant legislation, conservation codes and background information

In WA some ecological communities, flora and fauna are protected under both Federal and State Government legislation. In addition, regulatory authorities also provide a range of guidance and information on expected standards and protocols for environmental surveys.

An overview of key legislation and guidelines, conservation codes and background information relevant to this biological survey is provided in Appendix B.

1.6 Limitations and assumptions

This report has been prepared by GHD for the Shire and may only be used and relied on by the Shire for the purpose agreed between GHD and the Shire as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than the Shire arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Site conditions may change after the date of the field survey. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Methodology

2.1 Desktop assessment

A desktop assessment of the survey area was completed prior to commencement of the survey with the results used to guide survey effort. The desktop assessment was conducted with a 30 km buffer of each of the survey areas and included:

- A review of the Department of the Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) to identify Matters of National Environmental Significance (MNES) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) potentially occurring within the survey area (Appendix C)
- A review of Department of Biodiversity, Conservation and Attractions (DBCA) Threatened and Priority Ecological Communities (TECs and PECs) and Flora databases. These databases identify conservation significant communities and flora species present within the survey area and surrounds that are contained in DBCA records (Figure 2, Appendix A)
- The DBCA *NatureMap* database for flora species previously recorded within the study area (DBCA 2007-) (Appendix C)
- Identification of Environmentally Sensitive Areas (ESAs) and DBCA-managed conservation estates and reserves present within or near the survey areas (GoWA 2021)
- Identification of wetlands and hydrological features
- Previous broad scale vegetation mapping of the survey area and the pre-European extent remaining.

2.2 Field survey

GHD senior ecologist Erin Lynch (flora licence no. FB62000081-2) and Ecologist Lynette Greer completed a single-season detailed flora and vegetation survey of the survey area between 4 - 7 March 2021.

The field survey was undertaken to identify and describe the dominant vegetation units, assess vegetation condition, and identify and record vascular flora taxa present at the time of survey. Targeted searches for significant flora and vegetation communities were also undertaken during the field survey.

The survey methodology employed by GHD was undertaken with reference to the Environmental Protection Authority (EPA) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

2.2.1 Data collection

Field survey methods involved a combination of sampling quadrats, relevés, photographic reference points located in identified vegetation units and walking traverses.

Quadrats (measuring 50 m x 50 m – area of 2,500 m^2) were located within each identified vegetation unit. Thirty-one non-permanent quadrats and three relevés were described throughout the survey area. A minimum of three quadrats were located within each identified vegetation unit, where possible. Quadrats were not established in vegetation units that had been significantly altered by clearing and weeds. Field data at each quadrat was recorded on a pro-forma data sheet and included the parameters detailed in Table 1. Quadrat and relevé locations are shown on Figure 3, Appendix A and the data is provided in Appendix D.

Table 2.1 Data collected during the field survey

Aspect	Measurement
Collection attributes	Site code, personnel/recorder; date, quadrat dimensions, photograph of the quadrat (North-east corner).
Physical features	Aspect, slope, landform, soil attributes, ground surface cover, leaf and wood litter.
Location	Coordinates recorded in GDA94 datum using a hand-held GPS tool to accuracy approximately ± 5 m.
Vegetation condition	Vegetation condition was assessed using the condition rating scale adapted by EPA (2016) for the Eremaean and Northern Botanical Province.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, exploration activities).
Flora	List of dominant flora from each structural layer. List of all species within the quadrat including average height and cover (using the National Vegetation Information System (NVIS))

A flora inventory was compiled from taxa listed in described quadrats and relevés and from opportunistic floristic records throughout the survey area.

2.2.2 Vegetation units

Vegetation units were identified, and boundaries delineated using a combination of aerial photography, topographical features and field data/observations.

Vegetation units were described based on structure, dominant taxa and cover characteristics as defined by quadrat and relevé data and field observations. Vegetation unit descriptions follow NVIS and are consistent with NVIS Level V (Association). At Level V up to three taxa per stratum are used to describe the association (NVIS Technical Working Group 2017).

2.2.3 Vegetation condition

The vegetation condition of the survey area was assessed and mapped in accordance with the vegetation condition rating scale for the Eremaean and Northern Botanical Provinces (EPA 2016). This scale recognises the intactness of vegetation, which is defined by the following:

- Completeness of structural levels
- Extent of weed invasion
- Historical disturbance from tracks and other clearing or dumping of rubbish
- The potential for natural or assisted regeneration.

The scale consists of six rating levels as outlined in Appendix B.

2.2.4 Targeted flora searches

Significant flora identified in the desktop assessment were targeted during the field survey. Potential habitats were searched by opportunistic sampling. If individuals were identified, the location and number of plants present were to be recorded using a handheld GPS.

2.2.5 Flora identification and nomenclature

Species well known to the senior ecologist were identified in the field; all other species were collected and assigned a unique collection number to facilitate tracking. All specimens collected during the field assessment were dried and processed in accordance with the requirements of the WA Herbarium. Specimens collected during the field assessment were identified by the use

of taxonomic literature, electronic keys, online electronic databases, comparison with herbarium specimens and consultation with taxonomic experts at the WA Herbarium.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (WA Herbarium 1998–) and the EPBC Act Threatened species database provided by DAWE (2021). Nomenclature used in this report follows that used by the Western Australian Herbarium as reported on *FloraBase* (WA Herbarium 1998–).

2.3 Survey limitations

2.3.1 Desktop limitations

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. The records from the DBCA searches of Threatened flora provide more accurate information for the general area and local occurrence. However, some collection, cannot be dated and often misrepresent the current range of Threatened species.

2.3.2 Field survey limitations

The EPA (2016) states that flora survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this field survey are discussed in Table 2.2. Based on this assessment, the present survey effort has not been subject to any constraints, which affect the thoroughness of the assessment and the conclusions that have been formed.

Table 2.2 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information	Nil	Adequate information is available for the survey area. This information includes broad scale (1:250,000) mapping by Beard (1974) and digitised by Shepherd et al. (2002)
Proportion of flora collected and identified (based on sampling, timing and intensity)	Minor	The vegetation survey was a single season survey and was undertaken post wet season (March). Six-eight weeks post wet season (March-June) is considered the most optimal time to undertake vegetation surveys in the Eremaean botanical province. Rainfall was significantly higher than the average for the three months prior to the survey. The rainfall received was sufficient for majority of the flora to flower/fruit and be detectable in the field. The vegetation survey was a detailed assessment, undertaken to identify and describe the dominant vegetation units and map conservation significant flora.
Flora determination	Minor	Flora determination was undertaken by GHD botanist/ecologist in the field and GHD Botanist/Taxonomist Pali Jayasekara. Eight taxa were identified to genus level only, and two taxon could be tentatively identified to species level, due to lack of flowering and/or fruiting material required for identification. None of these species were considered to be potential conservation significant flora. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time of report development, but it

Aspect	Constraint	Comment
		should be noted this may change in response to ongoing research and review of the International Union for Conservation Nature criteria.
Mapping reliability	Minor	The vegetation types were mapped using high-resolution ESRI aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Beard 1974) and field data. Data were recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin ® GPS units and Android ® tablets used for this survey are accurate to within ±5 m on average. Therefore the data points consisting of coordinates recorded from the GPS may contain inaccuracies. However, the aerial imagery displayed on the interactive tablet surface allowed for greater accuracy as field staff could use key visual indicators (such as tree canopy's, cleared areas, fence line etc.) to more accurately locate points.
Timing/weather/season/cycle	Minor	The field survey was undertaken in early Autumn 2021. In the three months prior to the flora survey (December-February), Warburton Airfield weather station (Bureau of Meteorology (BoM) 2021) recorded 251.2 mm of rainfall. The daily weather conditions during the field survey included: - Maximum temperatures ranging from 42-35 C - Minimum temperature ranging from 22-28 C - Patchy rainfall occurred during the survey on the 6th and 7th March. The weather conditions recorded during the survey are considered unlikely to have impacted the survey results.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	Parts of the survey area have been subject to historical disturbances such as clearing and weeds. These disturbances did not impact the survey.
Resources	Nil	Adequate resources were employed during the field survey. Eight person days were spent undertaking the survey using experienced ecologists.
Access restrictions	Minor	There were no access problems or constraints that limited survey effort or coverage.
Experience levels	Nil	The ecologists who executed the flora and vegetation survey were practitioners suitably qualified in their respective fields. Erin Lynch is a Senior Ecologist (botanist) with over 12 years' experience in undertaking ecological surveys. Lynette Greer is an Environmental Scientist with over 3 years' experience in the environmental field.

3. Desktop

3.1 Biogeography

The Interim Biogeographic Regionalisation for Australia (IBRA) recognises 85 bioregions (biogeographic regions) across Australia primarily delineated on the basis of climate, geomorphology, landform lithology, flora and fauna. The survey areas are situated within the Mann-Musgrave Block (CER01) sub-region of the Central Ranges bioregion. The Central Ranges bioregion is bounded to the south by the Great Victoria Desert and to the north by the Great Sandy Desert. The Gibson Desert lies to the west, beyond Warburton.

The Mann-Musgrave Block subregion, described as the 'Giles Botanical District' consists of sandplains which support low open woodlands of either Desert Oak or Mulga over *Triodia basedowii* hummock grasslands. Low open woodlands of Ironwood (*Acacia estrophiolata*) and Corkwoods (*Hakea* spp.) over tussock and hummock grasses often fringe ranges. The ranges support mixed wattle scrub or *Callitris glaucophylla* woodlands over hummock and tussock grasslands (Graham and Cowan 2001).

3.2 Climate

The climate of the Central Ranges bioregion is hot and arid. Rainfall in this region can be variable and unpredictable in parts or it can be summer or winter dominant. The area is influenced by a northern tropical/summer climatic pattern where rainfall is greatest in the summer months, and a southern climatic pattern where rainfall is non-seasonal. In general rainfall predominantly occurs between December and March, derived from summer storms. The average annual rainfall at Warburton Airfield is 243.8 mm. The area is warm to hot throughout the year, with a mean maximum daily temperature of 37.8 °C (recorded in January) and a mean minimum temperature of 5.8 °C (recorded in July) (BoM 2021).

3.3 Soils, geology and landforms

The survey areas are situated on the Musgrave Block, one of the two major Proterozoic structural units of the central Ranges (Daniels 1975). The ranges within the Musgrave Block are composed of Middle Proterozoic igneous and metamorphic rocks (including intrusive elements), primarily gneiss, granite, gabbro and associated weathered material. The plains country that surrounds the ranges is elevated (generally greater than 500 metres) (Geological Society of South Australia 1958). These elevated landscapes are a principal source of sediment that has supplied surrounding basins and low lying areas since Pre-Cambrian times.

The survey areas are mapped within the Central Australian Ranges and the Sandy Desert soil-landscape regions identified within Western Australia's Rangelands and Arid Interior (Tille 2006). The Central Australian Ranges region consists of sandplains and dunes (with hills and ranges surrounded by wash plains) on the granitic and volcanic rocks of the Musgrave Complex and the sedimentary rocks of the Amadeus basin. Soils consist of Red sandy earths, Red deep sands and Red loamy earths (with some Stony soils). Vegetation is dominated by Mulga shrublands and spinifex grasslands (with some other acacias, eucalypts and desert oak) (Tille 2006)

The Sandy Desert region consists of sandplains and dunes (with some undulating plains and uplands) on the sedimentary rocks of the Canning, Gunbarrel and Officer basins. Soils consist of Red deep sands and Red sandy earths with some Shallow gravels and Red loamy earths. Vegetation is dominated by Spinifex grasslands with scattered eucalypts (and some mulga and mallee shrublands) (Tille 2006).

3.4 Wetlands and watercourses

The survey areas lie within the East Murchison Groundwater Area (GoWA 2021). The region is characterised by low rainfall and high evaporation. The area is partly underlain by hard fractured rocks; groundwater is difficult to locate, and naturally-occurring nitrate can affect quality. Some groundwater supplies occur in thin, calcrete drainages where shallow groundwater occurs in interconnected cavities.

No significant surface water features or watercourses occur within or in the vicinity of the survey areas. Surface water in the region is severely limited by a combination of high evaporation/ evapotranspiration rates and low annual rainfall. Where rainfall is sufficient, runoff in the area generally drains as sheet flow.

3.5 Conservation estates and reserves

There are no DBCA conservation estate or reserves located within or close vicinity to the survey areas. The closest reserve is the Gibson Desert Nature Reserve (R 34606), located approximately 80 km north-west of Warburton.

3.5.1 ESA's

All of the survey areas, except the Warburton alignment (survey area 1) are located within an Environmentally Sensitive Area (ESA).

3.6 Broad vegetation mapping

The survey areas are situated within the Giles Botanical District which is characterised by ranges and hills interspersed in sand plains with rocky loams, red soils and sands with mulga, mallee and spinifex dominating the vegetation (Beard 1990).

Broad scale (1:1,000,000) pre-European vegetation mapping of the region was completed at an association level (Beard 1974). The mapping indicates that five vegetation associations occur across the survey areas:

- Low woodland; mulga (*Acacia aneura*) (vegetation association 18)
- Low woodland; mulga between sandridges (vegetation association 19)
- Hummock grasslands, shrub steppe; acacia and grevillea over *Triodia basedowii* (vegetation association 95)
- Shrublands; mallee scrub (Great Victoria Desert) (vegetation association 45)
- Mosaic: Medium sparse woodland; desert oak between sand dunes / Hummock grasslands, grass steppe; hard spinifex, *Triodia basedowii* (vegetation association 230).

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA (latest update March 2019 – GoWA 2019). The current extents of vegetation associations remaining are greater than 99 per cent of the pre-European extent at all scales (e.g. State, IBRA Sub-region and Local Government Area (LGA) (Table 3.1).

Table 3.1 Extents of vegetation associations mapped within the survey areas (GoWA 2019).

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Remaining within DBCA managed lands (%)	Occurrence within survey areas
18	Statewide (WA)	19,892,306	19,843,148	99.75	6.62	Warburton alignment Jameson-Wanarn Road
	IBRA Sub-Region (Mann-Musgrave Block)	1,075,927	1,075,162	99.93	-	
	Shire of Ngaanyatjarraku	1,263,268	1,262,495	99.94	-	
19	Statewide (WA)	4,385,295	4,384,249	99.98	0.71	Blackstone alignment Gravel pits
	IBRA Sub-Region (Mann-Musgrave Block)	902,247	902,170	99.99	-	
	Shire of Ngaanyatjarraku	1,472,498	1,472,117	99.97	-	
45	Statewide (WA)	224,862	224,672	99.92	4.32	Gravel Pits
	IBRA Sub-Region (Mann-Musgrave Block)	20,781	20,781	100	-	
	Shire of Ngaanyatjarraku	54,178	54,178	100	-	
95	Statewide (WA)	1,224,626	1,223,593	99.92	4.03	Jameson-Wanarn Road
	IBRA Sub-Region (Mann-Musgrave Block)	47,953	47,953	100	-	
	Shire of Ngaanyatjarraku	66,299	66,299	100	-	
230	Statewide (WA)	1,453,287	1,451,249	99.86	-	Gravel Pits
	IBRA Sub-Region (Mann-Musgrave Block)	1,180,953	1,180,953	100	-	
	Shire of Ngaanyatjarraku	1,450,322	1,450,322	100	-	

3.7 Significant ecological communities

A search of the EPBC Act PMST database and DBCA TEC and PEC database did not identify any TECs or PECs within the survey areas or surrounding region.

3.8 Flora diversity

The Central Ranges subregion is rich and diverse in flora however most species are wide ranging and usually occur in at least one, and often several, adjoining subregions (Graham and Cowan 2001).

Given the distance between each of the survey areas, multiple database searches were undertaken to cover the area sufficiently. A search of the Naturemap database of flora records within a 40 km radius (maximum buffer area) of each of the survey areas identified the following:

- Warburton alignment: total of 265 flora taxa, comprising of 257 native taxa and eight introduced taxa
- Jameson Wanarn Road: total of 121 flora taxa (all native)
- Blackstone alignment: total of 229 flora taxa, comprising 225 native taxa and four introduced taxa
- Gravel Pits (Wanarn access road No. 1 and 2 and near Tjulun): total of 82 flora taxa, comprising 81 native taxa and one introduced taxa
- Gravel Pits (Near Palytjikata, Big Tjuta Tree, Old Gunbarral): total of 305 flora taxa, comprising 303 native taxa and two introduced taxa
- Gravel Pits (Mulga Park Road No. 1 and No. 2): total of 300 flora taxa, comprising 298 native taxa and two introduced taxa.

The Naturemap database searches are provided in Appendix C.

3.8.1 Significant flora

Searches of the EPBC Act PMST, NatureMap database and DBCA TPFL and WAHERB databases identified the presence/potential presence of a total of 42 conservation significance flora taxa within the combined search area (Appendix C). The desktop searches identified:

- One Threatened taxa listed under the EPBC Act and BC Act
- 18 Priority 1 taxa
- Three Priority 2 taxa
- 19 Priority 3 taxa
- One Priority 4 taxon.

The locations of conservation significant flora registered on the DBCA databases are mapped on Figure 2, Appendix A.

4. Results

4.1 Vegetation types

Nine vegetation types were identified and described for the combined survey areas, not including cleared and/or highly degraded areas. The dominant vegetation types present within the survey areas are broadly described as Mulga (*Acacia* spp.) woodlands, *Triodia* hummock grasslands and *Aristida* tussock grasslands. The topography of the survey areas consisted predominantly of stony sandy/loamy plains and claypans. The composition and structure of the vegetation across the region are largely associated with the landforms and soil-landscape changes as well as mosaic fire patterns/burn scarring.

There are no vegetation types within the survey areas which are considered representative of riparian vegetation.

A description of the vegetation types present within each survey area is provided below.

A more detailed description of each vegetation type is provided in Table 4.1 and mapped on Figure 3, Appendix A. The total extent of vegetation types mapped within each survey area is presented in Table 4.2.

Warburton Alignment

The northern half of the Warburton alignment is dominated by tussock grasslands/forblands on open stony claypans with isolated trees to small patches/groves of mixed *Acacia* and *Hakea* species (VT03). Vegetation cover ranged from bare patches to a moderately dense grass and herb layer. The middle section of the alignment consists of hummock grasslands dominated by *Triodia schinzii* on open loamy/sandy plains with some surface gravel (VT02). The southern section of the alignment consists of mulga woodlands over tussock/hummock open grasslands on sandy/loamy hardpans and stony plains (VT01). Dominant *Acacia* species include *Acacia aneura*, *A. sericophylla* and *A. minyura*.

The vegetation was assessed to be largely in Excellent to Very Good condition with some vehicle tracks and patches of weed species present, in particular **Cenchrus ciliaris*.

Jameson-Wanarn (Cutline) Rd

The Jameson-Wanarn (Cutline) alignment is largely dominated by tussock grasslands/forblands with isolated to small patches of tall shrubs or low trees (*Acacia sibirica, A. incurvaneura, A. aneura, A. sericophylla* and *Hakea lorea*) on open stony claypans (VT03). Vegetation cover ranged from bare patches to a moderately dense grass and herb layer dominated by *Aristida holathera* Domin var. *holathera*, *Enneapogon polyphyllus, Eragrostis dielsii*, *Dactyloctenium radulans*, *Sclerolaena cornishiana*, *Ptilotus* spp., *Boerhavia coccinea*, *Portulaca intraterranea* and *Tribulus occidentalis*. A small patch of mulga open woodland (VT01) is present at the southern end of the alignment and a small patch of hummock grasslands dominated by *Triodia basedowii* associated with a low sandy rise is situated towards the northern end of the alignment (VT04).

The vegetation was assessed to be predominantly in Very Good condition with some roadside vegetation in Good condition, due to the presence of weeds, edge effects and clearing. Patches of **Cenchrus ciliaris* was recorded within the alignment, predominantly along the existing roadside.

Blackstone alignment (Papulankujta Road)

The Blackstone alignment is dominated by mulga woodlands over tussock/hummock grasslands on open sandy/loamy plains (VT01). Dominant species include *Acacia sericophylla, A. aneura*,

Triodia scariosa, Eragrostis dielsii, Aristida holathera Domin var. *holathera* and *Eremophila latrobei* subsp. *filiformis*. Some small patches of **Cenchrus ciliaris* is present along the edges of the existing road. The vegetation was assessed to be in Very Good condition.

Gravel Pits

The location of the proposed gravel pit sites ranged from approximately 88 km south-west of Warakurna to 33 km south-east of Warakurna. Given the spatial distribution of the survey areas and small size of each site, there was a significant variation in species presence and dominance. Vegetation types were based largely on quadrat and releve samples and observations of surrounding vegetation, land systems and soil.

The eight proposed gravel pit sites generally consisted of various *Triodia* dominated hummock grasslands (VT05, VT06, VT07, VT08) on sandy/stony plains and *Acacia* (mulga) woodlands (VT01). A sand dune dominated by an *Aristida* tussock grassland was located along the boundary of one of the survey areas (Mulga Park Rd No.2) (VT09). A small stand of *Allocasuarina decaisneana* (Desert Oak) tall trees over *Triodia schinzii/T. basedowii* hummock grasslands (VT08) is present on the sandy open plains immediately adjacent to the sand dune (VT09).

The vegetation of the gravel pit sites ranged from Good to Excellent condition.

Table 4.1 Description of vegetation types recorded within the survey area

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Acacia (Mulga) Woodland (VT01)	*A. aneura, Acacia sericophylla* and *A. minyura* low woodland to low open woodland/shrublands over *Eremophila latrobei* subsp. *filiformis* scattered shrubs over *Triodia* spp., *Aristida holathera* Domin var. *holathera*, and *Eriachne* spp. open hummock/tussock grassland over *Ptilotus xerophilus*, *Sida* spp. and *Brunonia australis* sparse forbland.	Sandy-loam plain / hardpan / stony plain	Warburton alignment: Q1, Q3, Q9 Blackstone alignment: Q23 Gravel Pits (Mulga Park Rd No.1): Q13	
Triodia Hummock Grassland (VT02)	*Eremophila forrestii* F.Muell. subsp. *forrestii*, *Seringia exastia* and *Dicrastylis gilesii* scattered low shrubs over *Triodia schinzii*, *T. basedowii* and *T. scariosa* hummock grassland over *Aristida holathera* Domin var. *holathera*, *Eriachne mucronata* and *Eragrostis eriopoda* open tussock grassland with emergent *Acacia* spp and *Hakea lorea* tall shrubs.	Red/brown clayey sand plain, some surface gravel	Warburton alignment: Q2, Q4, Q10, Q11, Q12	

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Aristida Tussock Grassland/Forbland (VT03)	Mixed Acacia species (dominant species *Acacia incurvaneura, A. sibirica*, *A. sericophylla, A. pruinocarpa* and *A. tetragonophylla*) and *Hakea lorea* open low woodland to isolated shrubs over *Rhagodia eremaea*, *Senna* spp. and *Eremophila* spp. sparse mid shrubland over *Ptilotus* spp., *Sclerolaena cornishiana* and *Salsola australis* low shrubland over *Aristida holathera* Domin var. *holathera*, *Enneapogon polyphyllus, Eragrostis dielsii* and *Dactyloctenium radulans* tussock grassland to over *Boerhavia coccinea*, *Portulaca intraterranea* and *Tribulus occidentalis* forbland. A variable vegetation type with some bare patches and others with occasional patches of Mulga.	Red/brown gravelly claypans.	Warburton alignment: Q5, Q6, Q7, Q8 Jameson Wanarn Rd: Q24, Q25, Q26, Q27, Q28, Q29,Q31.	

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Triodia Hummock Grassland (VT04)	*Hakea lorea, Acacia sclerosperma subsp. sclerosperma* and *A. dictyophleba* sparse shrubland over *Triodia basedowii, Aristida holathera* Domin var. *holathera* and *Eragrostis dielsii* hummock grassland over *Waltheria indica*, *Ptilotus* spp. and *Solanum coactiliferum* sparse forbland.	Red/brown sandy slope/ low dune	Jameson Wanarn Rd: Q30	
Triodia Hummock Grassland (VT05)	*Eucalyptus gamophylla*, *Eucalyptus* sp. Little Sandy Desert and *Acacia* spp. (mulga varieties) sparse mallee woodland/shrubland to isolated trees/shrubs over *Triodia basedowii, T. pungens* and *Aristida holathera* Domin var. *holathera* hummock grassland over *Haloragis odontocarpa*, *Brunonia australis* and *Euphorbia drummondii* sparse forbland.	Red/brown sand plain	Gravel Pits: Q17 (Wanarn Access Rd) Q18 (Wanarn Access Rd No.2)	

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Triodia Hummock Grassland (VT06)	*Hakea lorea, Eremophila latrobei* subsp. *filiformis* and *Dicrastylis gilesii* isolated shrubs over *Triodia scariosa*, *Aristida holathera* Domin var. *holathera* and *Amphipogon caricinus* F.Muell. var. *caricinus* hummock grassland.	Stony slopes/plain	Gravel Pits: Q19 and R3 (Near Tjulun) Q20 (Near Palytjikata)	
Triodia Hummock Grassland (VT07)	*Eucalyptus gamophylla*, *Acacia tetragonophylla* and *Hakea lorea* isolated trees/tall shrubs over *Eremophila forrestii* F.Muell. subsp. *forrestii*, *Halgania solanaceae* var. Mt Doreen (G.M. Chippendale 4206) and *Dicrastylis gilesii* sparse mid shrubland over *Triodia schinzii*, *T. scariosa* and *Aristida holathera* Domin var. *holathera* hummock grassland over *Waltheria indica*, *Bonamia erecta* and *Leptosema chambersii* sparse low shrubland/forbland.	Loamy sand plain, patchy stony surface	Gravel Pits: Q21 (Old Gunbarrel) Q22 (Big Tjuta Tree)	

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Triodia Hummock Grassland (VT08)	Occasional patches of *Allocasuarina decaisneana* (Desert Oak) over *Hakea lorea, Acacia* spp. and *Grevillea eriostachya* sparse shrubland to isolated trees/shrubs over *Triodia schinzii*, T*. basedowii* and *Amphipogon caricinus* F.Muell. var. *caricinus* hummock grassland over *Sida* sp. Pilbara (A.A. Mitchell PRP 1543), *Bonamia erecta*, *Waltheria indica* sparse low shrubland.	Sand plain, patchy stony surface	Gravel Pits: Q14, Q15 (Mulga Park Rd No.1) Q16, R1 (Mulga Park Rd No.2)	
Aristida Tussock Grassland (VT09)	*Acacia sclerosperma* subsp. *sclerosperma*, *A. coriacea* and *Grevillea juncifolia* Hook. subsp. *juncifolia* sparse tall shrubland over *Aristida holathera* Domin var. *holathera*, *Triodia schinzii* and *Setaria verticillata* tussock grassland over *Seringia exastia, Scaevola parvifolia subsp. pilbarae* and *Swainsona microphylla* sparse low shrubland.	Sand dune	Gravel Pits: R2 (Mulga Park Rd No.2)	

Broad Vegetation Type	Vegetation Association	Landform/ substrate	Location within survey areas and sample points (quadrat/releve)	Representative photograph
Cleared/highly disturbed	Completely/almost completely cleared of native vegetation (e.g. roads and tracks)	-	-	

Table 4.2 Extent of vegetation types mapped within the survey areas

Vegetation Type	Extent mapped (ha)				Total
	Warburton	Jameson-Wanarn	Blackstone	Gravel Pits	
VT01	19.87	4.58	0.41	17.87	**42.74**
VT02	23.91				**23.91**
VT03	31.07	67.40			**98.47**
VT04		1.07			**1.07**
VT05				25.37	**25.37**
VT06				11.75	**11.75**
VT07				23.91	**23.91**
VT08				17.99	**17.99**
VT09				0.88	**0.88**
Cleared	0.51	5.92	1.36	5.78	**13.57**

4.2 Vegetation Condition

The vegetation condition throughout the survey area was generally in Very Good to Excellent condition, with minimal evidence of any human interaction outside those areas directly cleared for access roads/vehicle tracks. Frequent and regular fires, grazing damage by camels as well as the ingress of Buffel Grass (**Cenchrus ciliaris*) along road sides and tracks, detract from the excellent vegetation condition in some areas. Areas mapped as Good to Very Good show some signs of damage caused by human activities with vehicle tracks, introduced weeds and increased fire regimes deteriorating the native vegetation structure and composition.

The extent of the vegetation condition mapped within the survey areas is provided in Table 4.3 and mapped in Figure 4, Appendix A.

Table 4.3 Extent of vegetation condition mapped within the survey areas

Vegetation Condition (EPA 2016)	Extent mapped (ha)			
	Warburton	Jameson-Wanarn	Blackstone	Gravel Pits
Excellent	40.48	-	-	13.79
Very Good	34.36	69.48	0.41	82.93
Good	0.008	3.57	-	1.06
Cleared	0.51	5.92	1.36	5.78

4.3 Significant ecological communities

No threatened or priority ecological communities (TECs and PECs) were identified within the survey areas. It is unlikely that any of the vegetation communities recorded are restricted only to the survey areas.

4.4 Flora diversity

The survey recorded a total of 178 flora taxa (including subspecies and varieties) representing 33 families and 92 genera within the survey area. This total comprised of 174 native taxa and four introduced taxa.

Dominant families recorded from the survey area included:

- Poaceae: 34 taxa
- Fabaceae: 32 taxa

- Malvaceae: 16 taxa
- Chenopodiaceae: 13 taxa

The list of flora recorded within the survey areas is provided in Appendix D.

4.5 Introduced flora

Four introduced taxa were recorded during the survey, **Cenchrus ciliaris* (Buffel grass), **Bidens bipinnata* (Bipinnate beggartick), **Malvastrum americanum* (Spiked malvastrum) and **Rumex vesicarius* (Ruby dock). None of the weeds recorded are listed as Declared Plants under the *Biosecurity and Management Act 2007* or Weeds of National Significance.

All of these weed species have previously been recorded in the Mann-Musgrave Block subregion except **Bidens bipinnata*. This species was recorded at one location along the Warburton alignment, just south of Quadrat 7.

**Cenchrus ciliaris* (Buffel grass) was established as a fodder grass in pastoral areas. It is now a widespread weed of roadsides, creeklines, river edges, and most vegetation types throughout its range. It is a major environmental weed in northern Australia as it replaces native understorey species such as *Triodia* grasslands and increases the frequency of bushfires. Patches of Buffel grass were recorded along the Warburton alignment, Blackstone alignment and the Jameson-Wanarn (Cutline) alignment. The spread of Buffel grass is likely to be facilitated by grazing, wind, water, road traffic and frequent roadside burning.

**Rumex vesicarius* (Ruby dock) can be a problematic species similar to Buffel grass, due to its tendency to heavily colonise disturbed areas to the detriment of native species. One single plant was observed during the survey which was recorded within the northern half of the Warburton alignment (survey area 1).

4.6 Significant flora

One threatened flora species listed under the EPBC Act and BC Act and two DBCA listed Priority flora were recorded within the survey areas. They are:

- *Seringia exastia* (Threatened)
- *Goodenia virgata* (Priority 2)
- *Goodenia gibbosa* (Priority 3).

The location of the priority flora recorded within the survey area are provided in Appendix D and mapped on Figure 5, Appendix A.

Seringia exastia

Seringia exastia (previously known as *Keraudrenia exastia*) is an erect, compact, multi-stemmed shrub 0.7 to 0.9 meters high. The flowers are purple and appear from April and December (WA Herbarium 1998-). The species is listed as Threatened under the BC Act and Critically Endangered under the EPBC Act.

S. exastia was recorded in the Warburton alignment and two of the proposed gravel pit sites (Big Tjuta and Mulga Park Rd No. 2). The species was observed to be a commonly occurring shrub within the *Triodia* hummock grassland sandplains. More than 300 plants were recorded from 33 locations.

S. exastia was a species only known from the Kimberley Region. A recently completed taxonomic study that assessed genomic and morphological characters in several *Seringia* taxa (Binks et al. 2020) has concluded that *Seringia exastia* and *S. elliptica* are the same species. The taxonomy of the genus has been revised to synonymise *S. exastia* and *S. elliptica* under

the oldest valid name of *S. exastia*. As *S. elliptica* is common and widespread throughout the Pilbara region, central WA and the Northern Territory and extends into South Australia, following the taxonomic revision *S. exastia* is now considered common and widespread (DBCA advice 2021).

Advice from the DBCA states that a nomination to delist the species due to no plausible significant threats to the species has been prepared and considered by the WA Threatened Species Scientific Committee (TSSC). It is anticipated that at the next TSSC meeting recommendations will be made to the Minister to delist. However until changes are officially made to the threatened species list, *S. exastia* is still legally listed as threatened flora, and authorisation to take under section 40 of the *Biodiversity Conservation Act 2016* is still required.

Plate 1 *Seringia exastia*

Plate 2 *Seringia exastia* in situ

Goodenia virgata

Goodenia virgata is listed Priority 2 by the DBCA. It is an ascending to erect, virgate perennial, herb, to 0.4 m high with yellow flowers. It flowers in July and is known to grow in association with red sandy loam near salt pans (WA Herbarium 1998-). According to Naturemap (DBCA 2007-) there are 11 records of *G. virgata* in Western Australia which are located in the Gascoyne, Gibson Desert and Great Sandy Desert IBRA regions. There are currently no known records from the Mann-Musgrove Block IBRA subregion and was therefore not identified as potentially occurring in the survey areas in the desktop assessment.

During the field survey *G. virgata* was opportunistically sampled near quadrat 1 (Plate 3) and recorded from Quadrats 2 and 10 within the Warburton alignment and recorded from Quadrat 21 in the Old Gunbarrel proposed gravel pit.

Plate 3 *Goodenia virgata*

Goodenia gibbosa

Goodenia gibbosa is listed Priority 3 by the DBCA. It is a prostrate or decumbent herb, usually stoloniferous, growing to 40 cm with bright yellow flowers. It flowers in July and is known to occur in sandy soils (WA Herbarium 1998-). According to Naturemap (DBCA 2007-) there are thirteen records of this species within Western Australia, which are all located within the Mann-Musgrave Block IBRA subregion (DBCA 2007-).

One specimen of *Goodenia gibbsosa* was collected during the survey from the 'Near Tjulan' proposed gravel pit (Plate 4). It was growing in association with *Triodia scariosa* hummock grassland on a gravelly red/brown sandy/loam soil.

Plate 4 *Goodenia gibbosa*

Likelihood of occurrence

A likelihood of occurrence assessment was conducted post-field survey for all conservation significant flora taxa identified in the desktop assessment (Appendix C). This assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of the species (Appendix D).

The likelihood of occurrence assessment post-field survey concluded that no further priority flora are considered likely to occur within the survey areas, however there are seven that are considered possible to occur.

Generally, given the relative paucity of botanical collections in the Central Ranges region, it is possible that some Priority flora are more widely distributed than the voucher of the specimens of the WA Herbarium would indicate.

4.6.1 Range Extensions

Based on DBCA's *florabase* database, 26 species recorded during the survey represent Range Extensions of more than 100 km within WA or have not been previously recorded within the Central Ranges bioregion (Appendix D). However, a number of these species have been recorded in the neighbouring Gibson Desert and Great Victoria Desert bioregions.

The flora of the Central Ranges bioregion is relatively poorly surveyed. Therefore, it is not surprising that a number of the species recorded from the survey areas are Range Extensions for WA using resources of the WA Herbarium (*florabase*). However, when compared with the Australia-wide combined databases of all herbaria (AVH database), there are often additional records of the same species within WA or just east of the WA border in South Australia or the Northern Territory. Based on the AVH database, six of the 26 species do have records within the Central Ranges bioregion or have a record within 100 km of the survey areas.

5. Conclusion/Discussion

Nine vegetation types were identified and described for the combined survey areas. The dominant vegetation types present within the survey areas are broadly described as Mulga (*Acacia* spp.) woodlands, *Triodia* hummock grasslands and *Aristida* tussock grasslands. The topography and soils of the survey areas consisted predominantly of stony sandy/loamy plains and claypans. There are no vegetation types within the survey areas which are considered representative of riparian vegetation.

The condition of the vegetation within the survey area ranged from Good to Excellent condition. Frequent and regular fires, grazing damage by camels as well as the ingress of Buffel Grass (**Cenchrus ciliaris*) along road sides and tracks, detract from the excellent vegetation condition in some areas. Generally, the greater distance from roads, tracks and disturbed areas, the better condition of the native vegetation, with minimal weeds evident.

No threatened or priority ecological communities (TECs and PECs) were identified within the survey areas. It is unlikely that any of the vegetation communities recorded are restricted only to the survey areas.

The survey recorded a total of 178 flora taxa (including subspecies and varieties) representing 33 families and 92 genera within the survey area. This total comprised of 174 native taxa and four introduced taxa. None of the weeds recorded are listed as Declared Plants under the *Biosecurity and Management Act 2007* or Weeds of National Significance.

One threatened flora species listed under the EPBC Act and BC Act and two DBCA listed Priority flora were recorded within the survey areas: *Seringia exastia* (Threatened), *Goodenia virgata* (Priority 2) and *Goodenia gibbosa* (Priority 3).

Following taxonomic revision *Seringia exastia* is now considered a common and widespread species (DBCA advice 2021). Advice from the DBCA states that a nomination to delist the species due to no plausible significant threats to the species has been prepared and considered by the WA TSSC. It is anticipated that at the next TSSC meeting recommendations will be made to the Minister to delist. However until changes are officially made to the threatened species list, *S. exastia* is still legally listed as threatened flora, and authorisation to take under section 40 of the *Biodiversity Conservation Act 2016* is still required. Although some loss of plants is likely to have occurred and will continue to occur during mining and road works in some parts of the species' distribution, this is not expected to be significant in the context of the entire population. Therefore there should be no impediments to granting authorisation, following the standard process of application made to DBCA's Species and Communities Program (DBCA advice 2021). Based on DBCA advice, the standard targeted surveys are not required to be undertaken to inform the threatened flora authorisation impact assessment for *Seringa exastia.*

The lack of systematic biological surveys within the Central Ranges region makes it difficult to comment regarding the conservation status of the vegetation communities and the significance of potential impacts. However, the vegetation types identified during the survey are considered well represented in adjacent areas and are unlikely to represent significant vegetation on a local or regional scale or are necessary for the continued existence of any threatened or priority flora. Given the linear nature and/or small extent of clearing required spread over a wide-ranging application area which is largely uncleared, it is considered unlikely the proposed projects will have any significant impact on flora and vegetation at a regional scale.

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Appendices

Appendix A – Figures

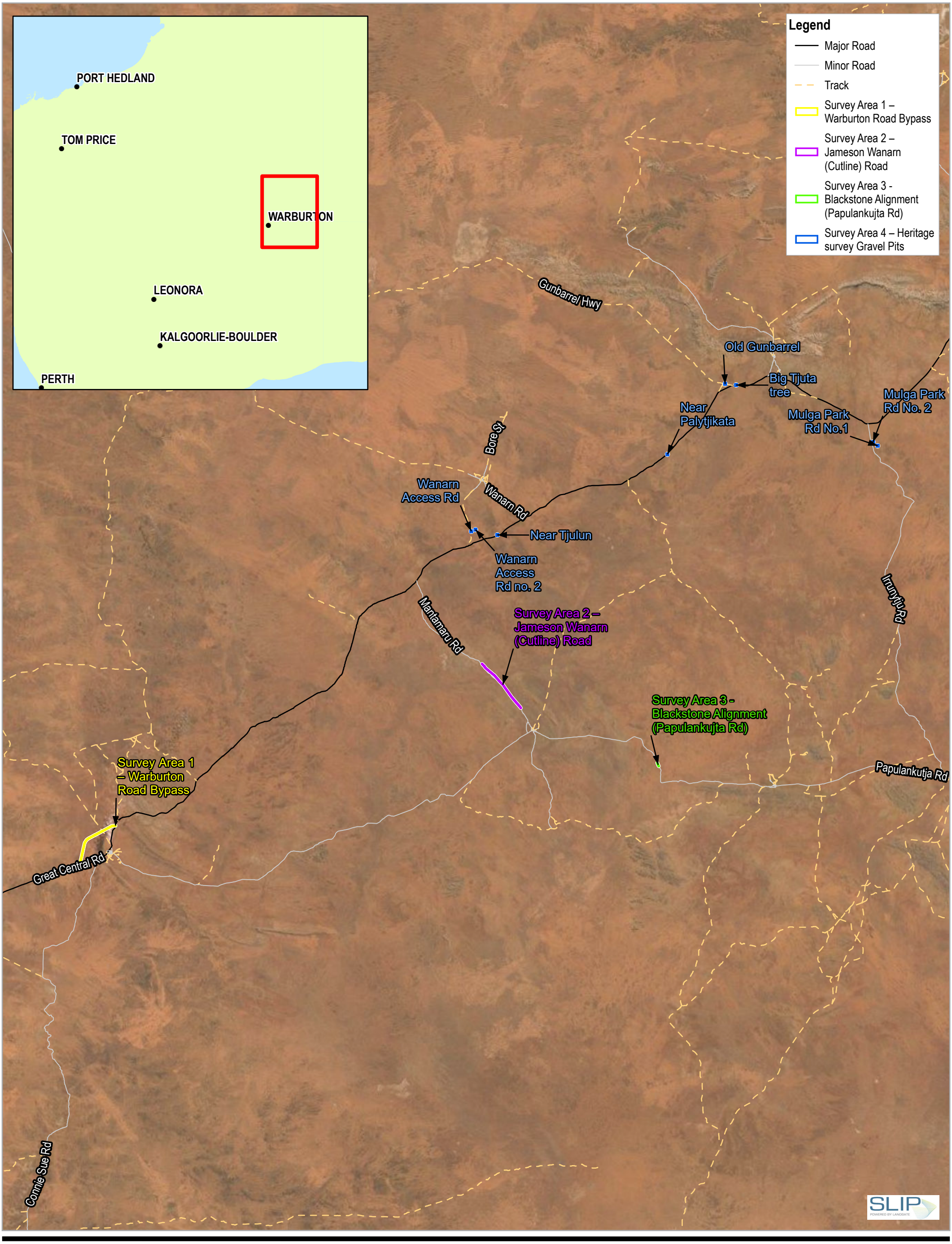
Figure 1 Locality

Figure 2 Environmental constraints

Figure 3 Vegetation types

Figure 4 Vegetation condition

Figure 5 Significant flora



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GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Locality

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Revision No. **0**
Date **17/05/2021**

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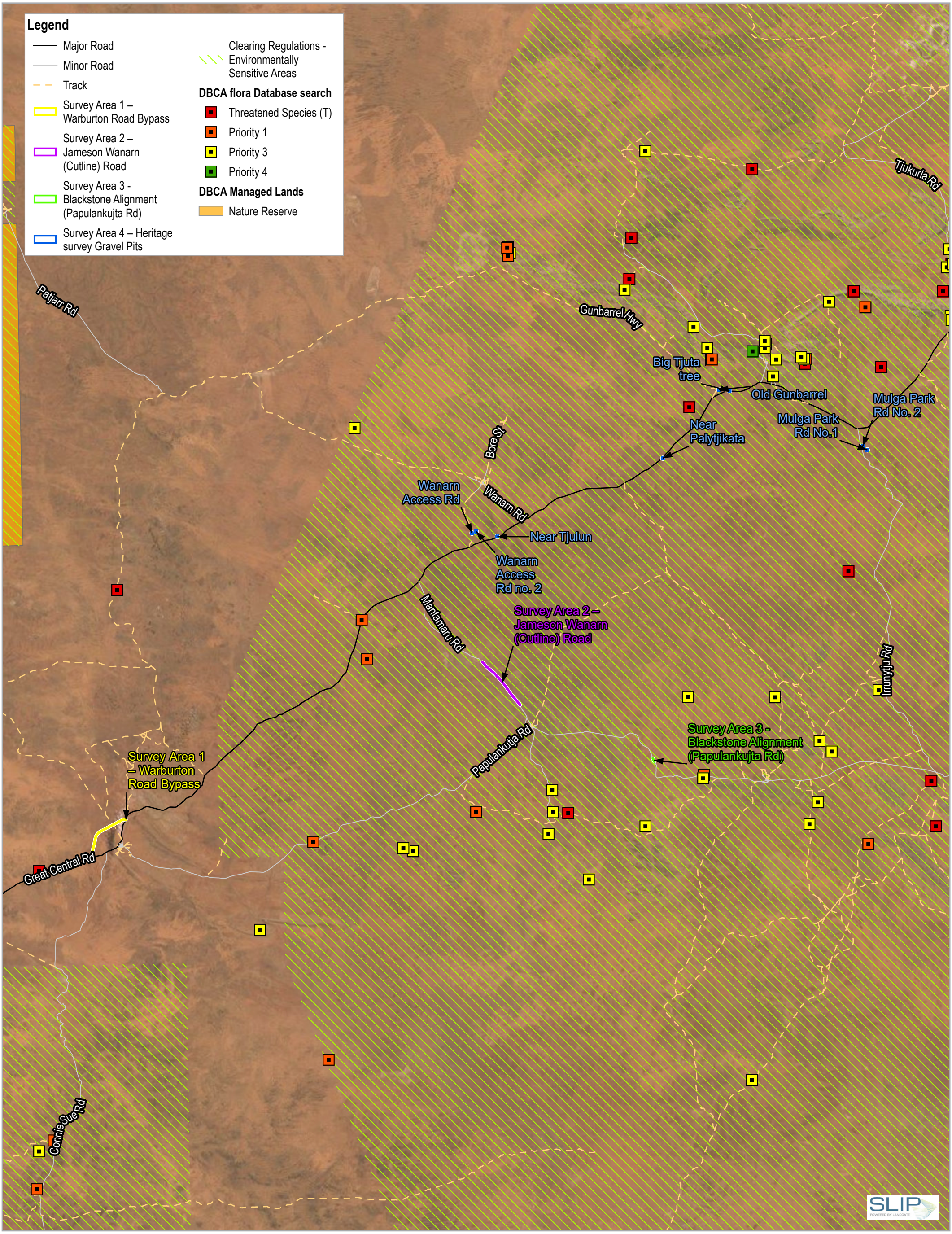

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Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Environmental Constraints

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

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Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

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Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

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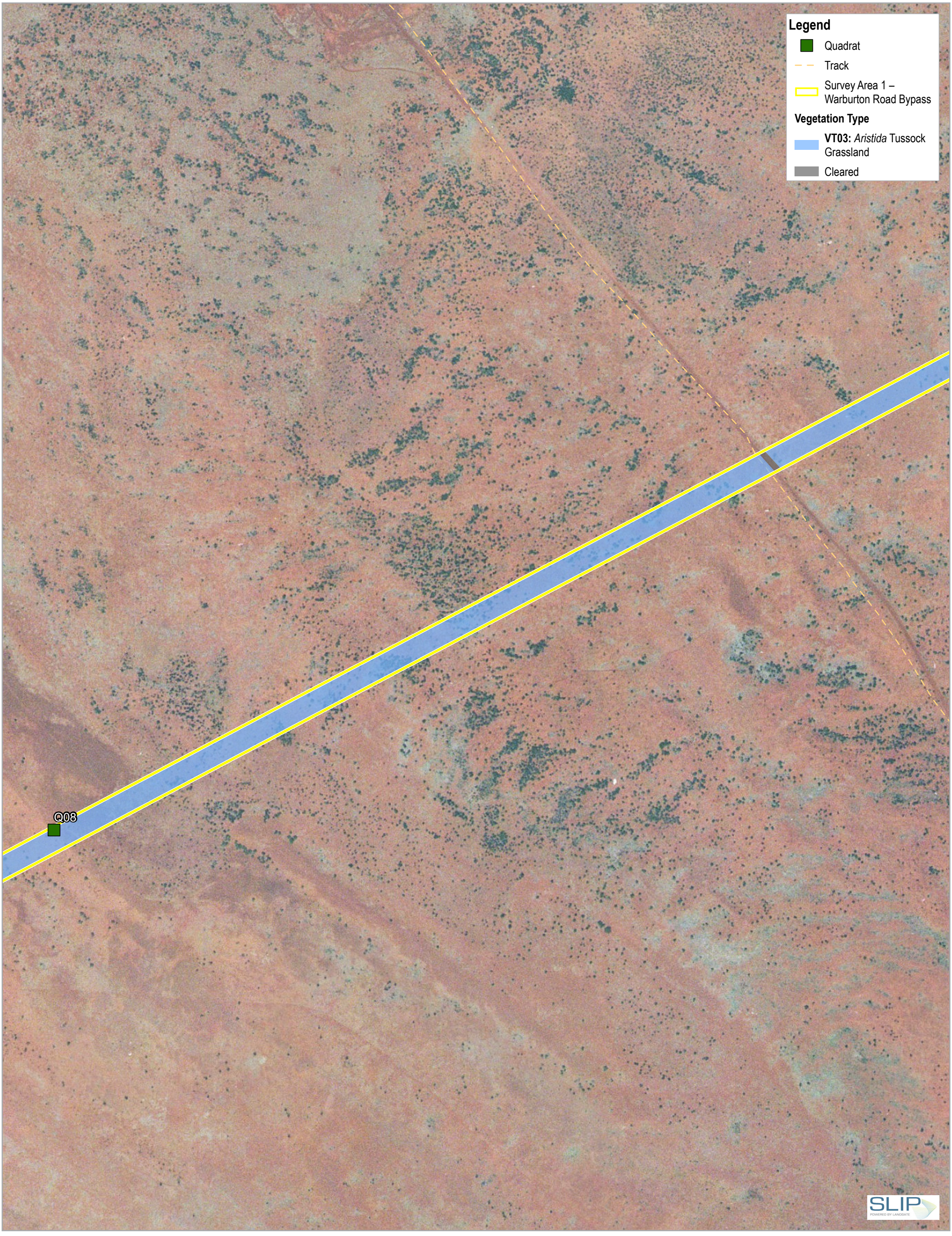

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GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

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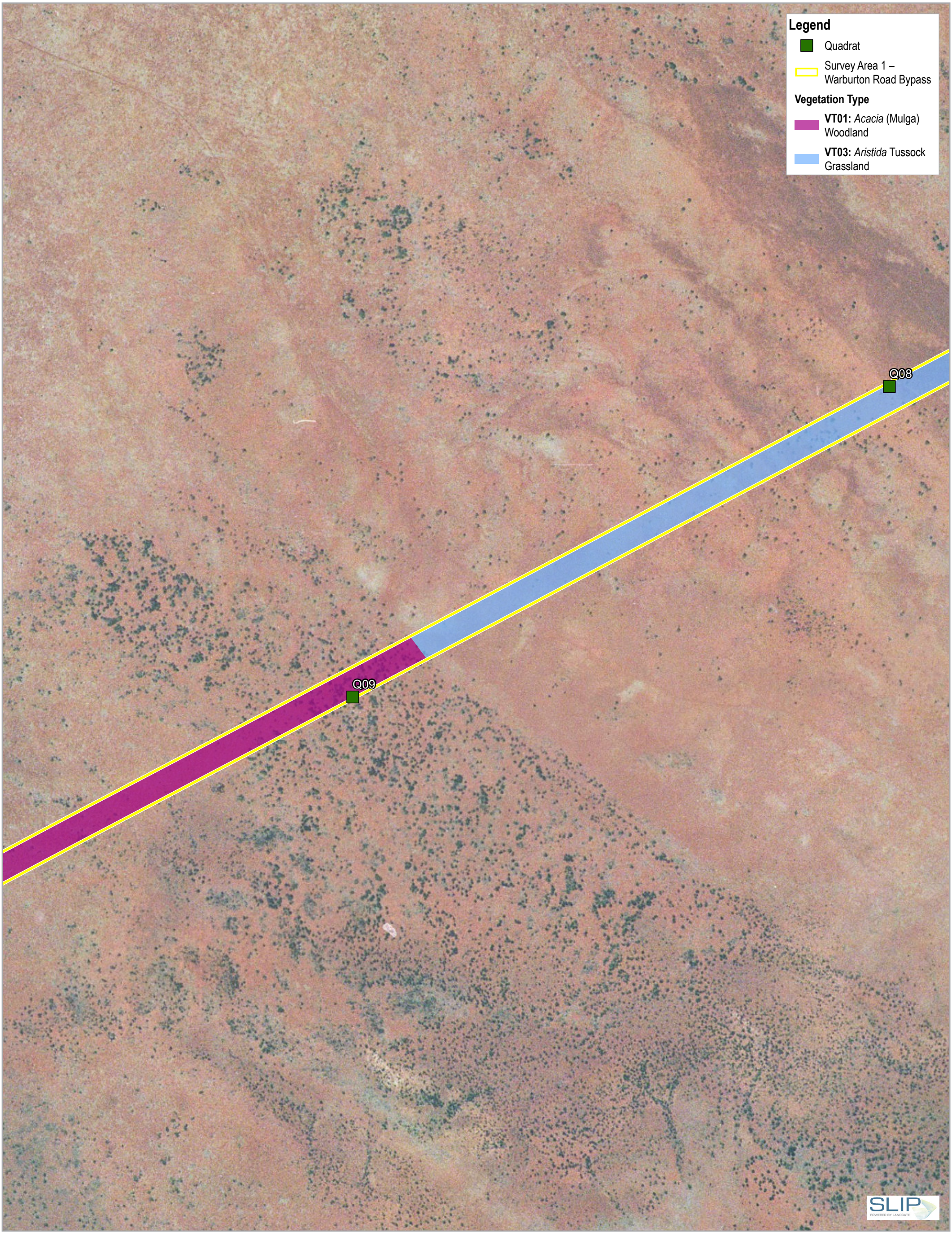

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Grid: GDA 1994 MGA Zone 52

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GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

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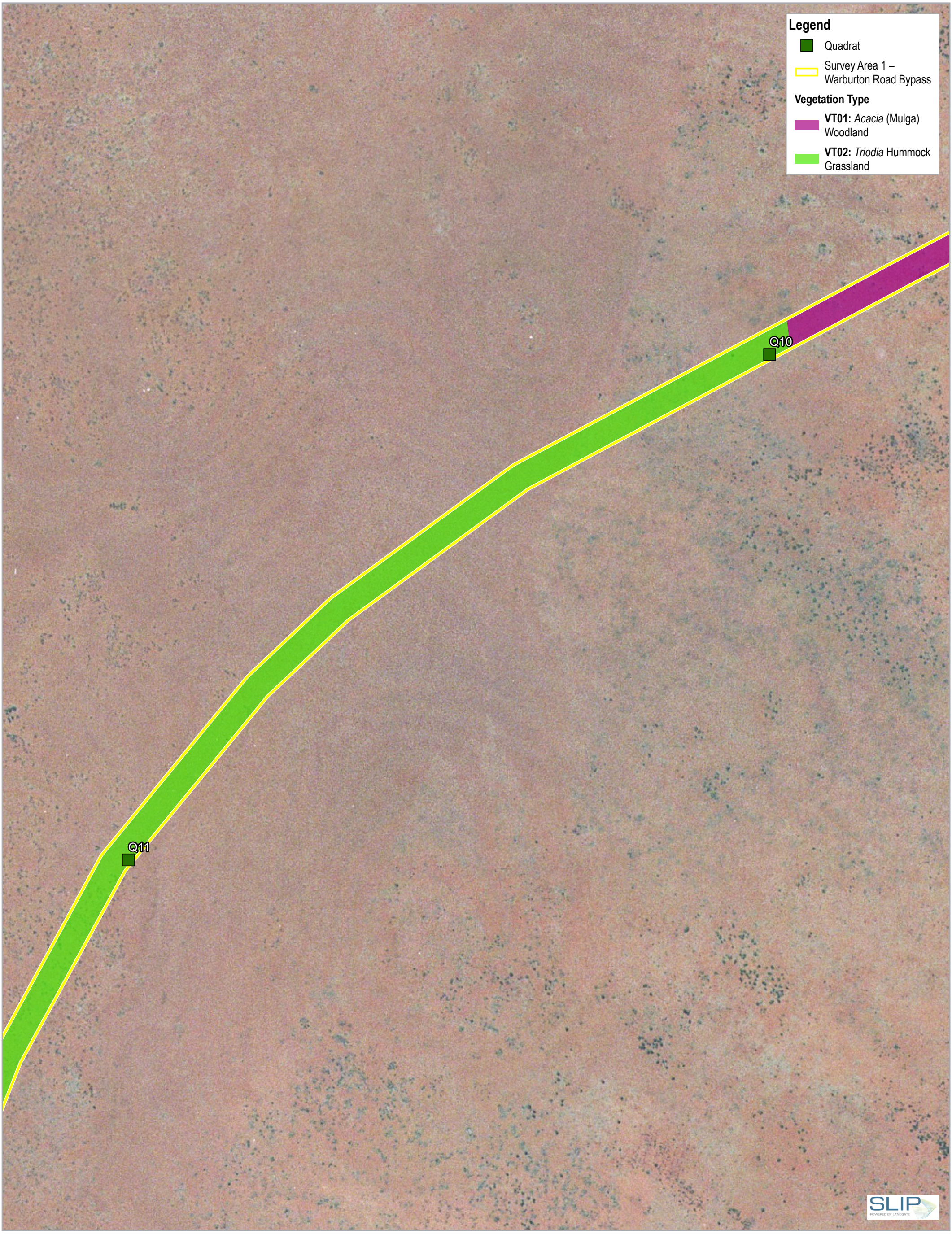

Paper Size ISO A3

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
Print date: 17 May 2021 - 20:56

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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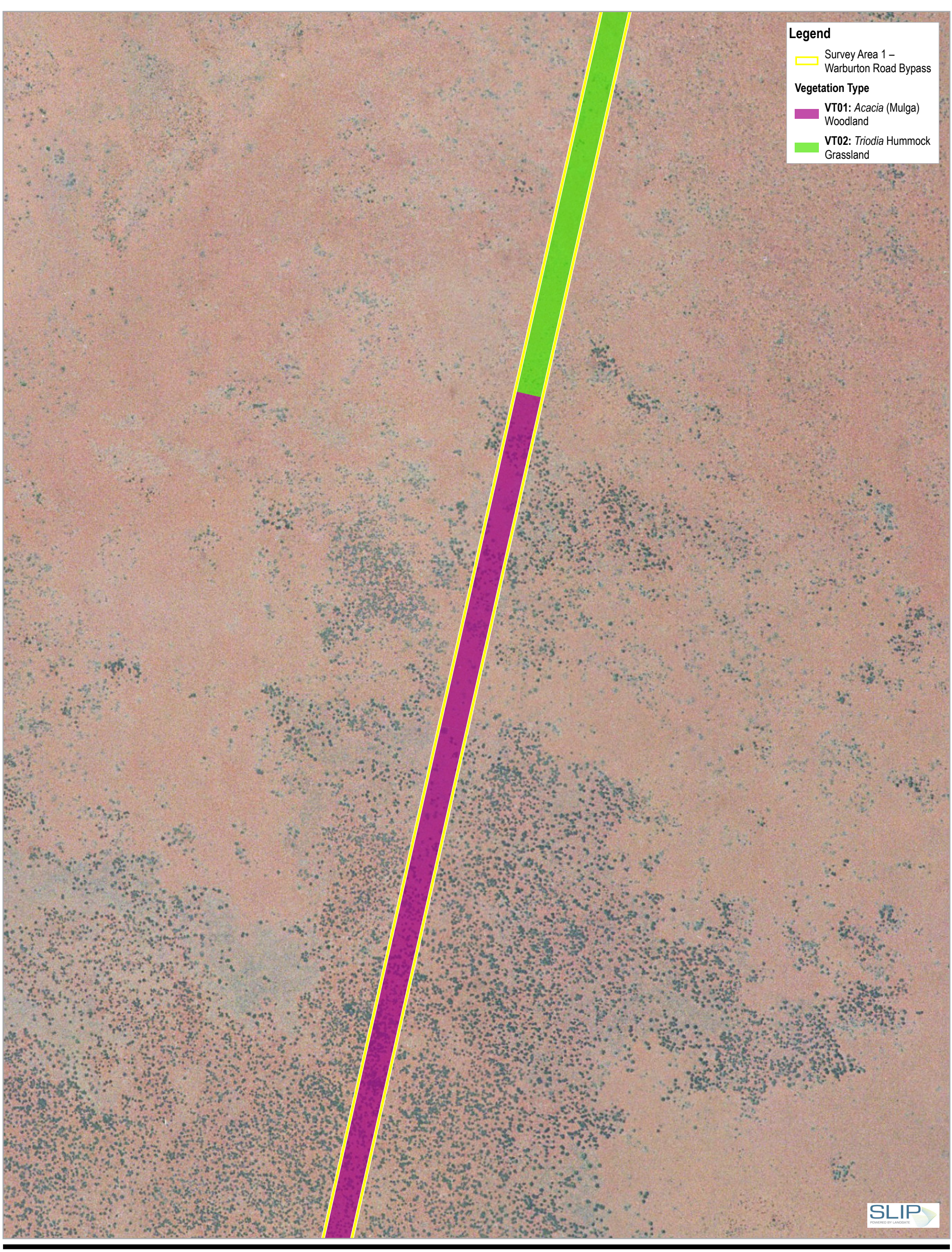

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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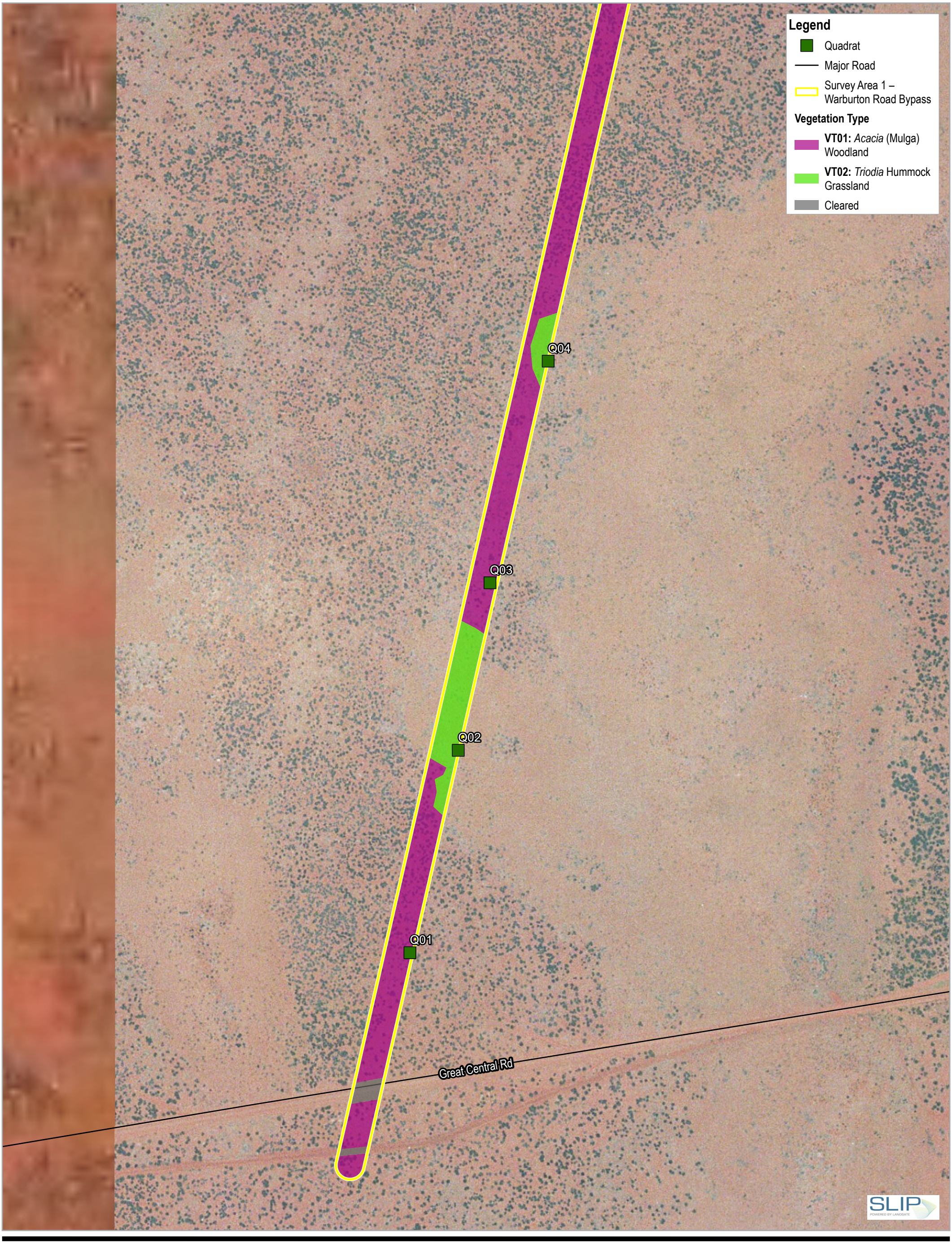

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

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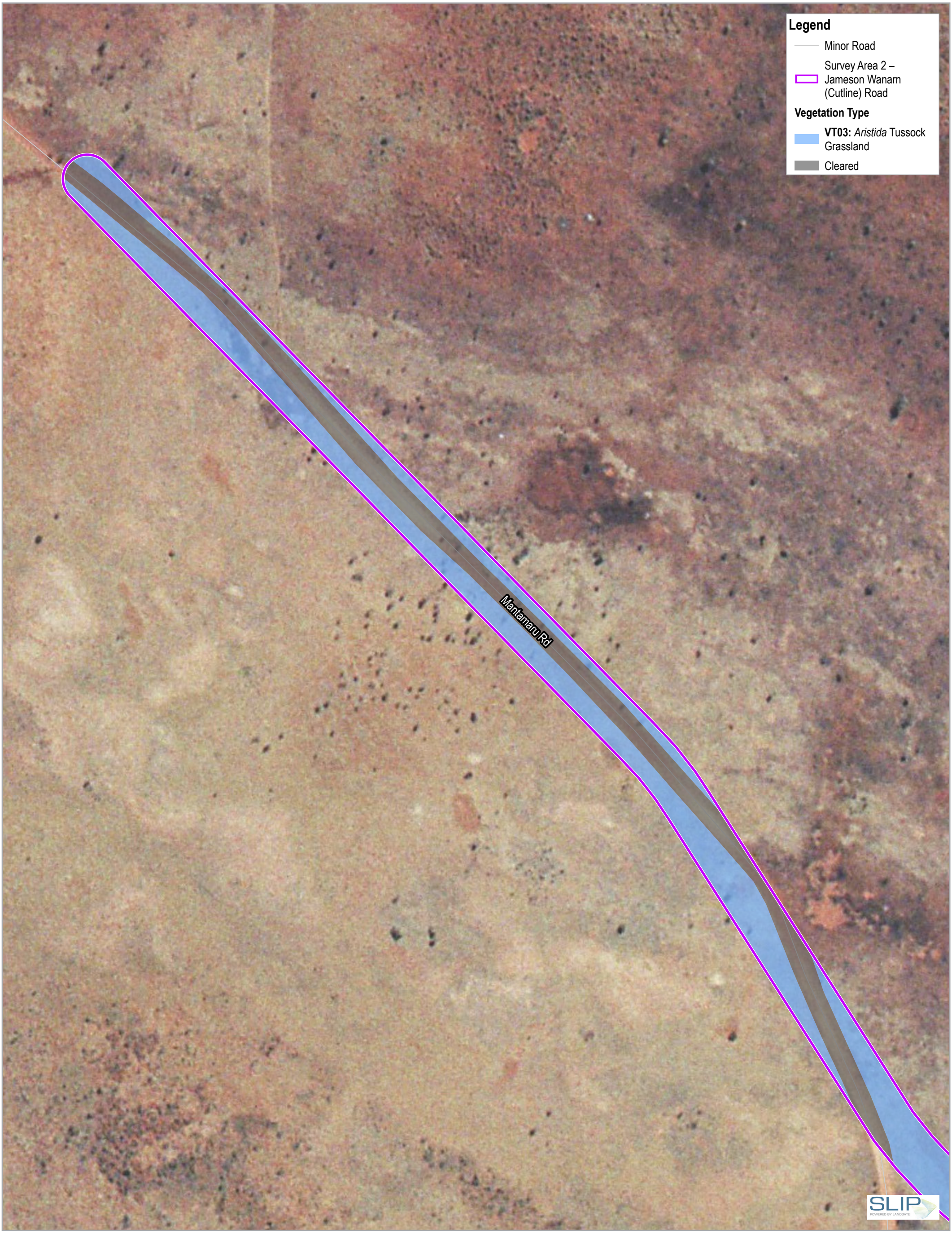

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
Print date: 17 May 2021 - 20:56

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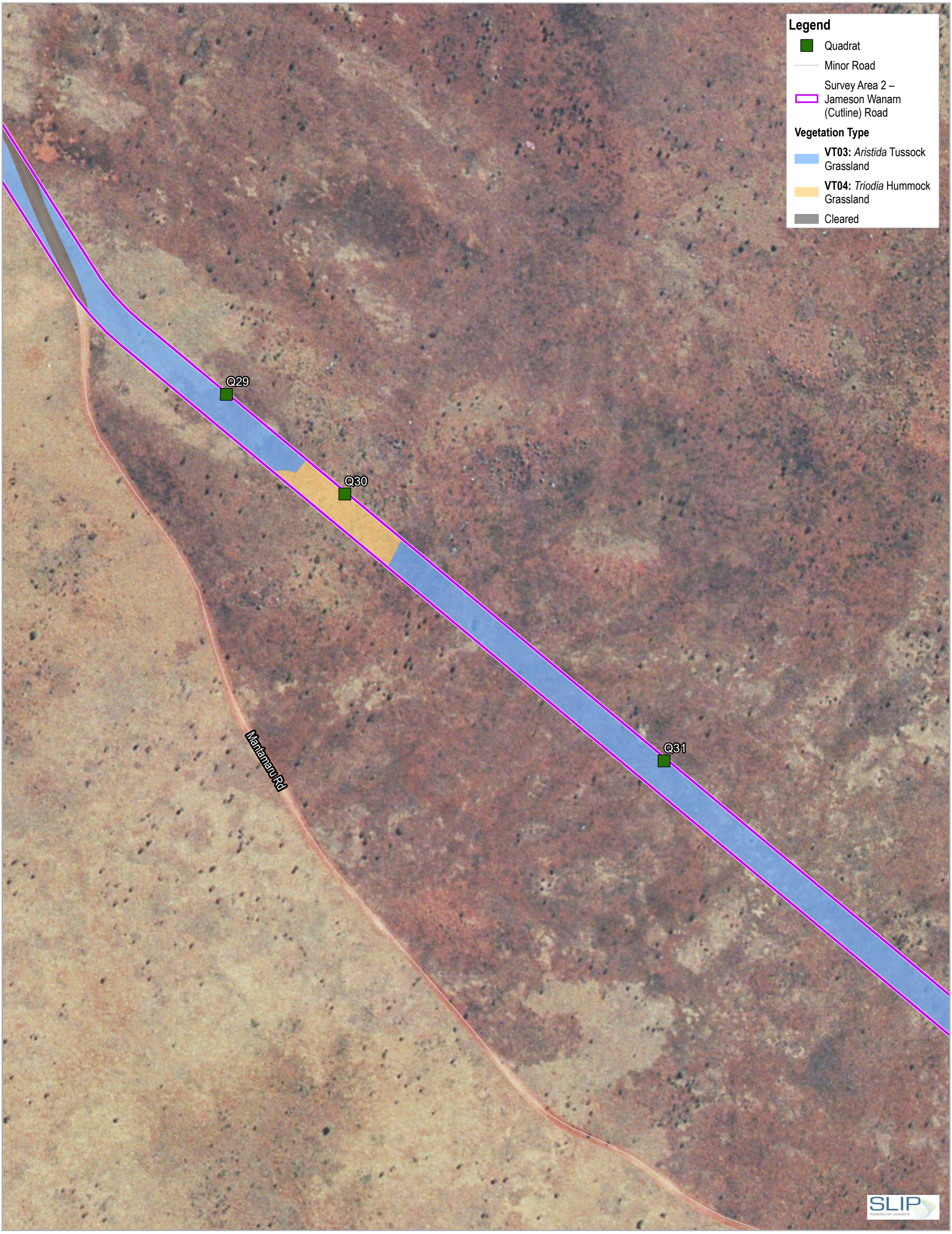

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
Print date: 17 May 2021 - 20:56

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

Paper Size ISO A3

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
Print date: 17 May 2021 - 20:56

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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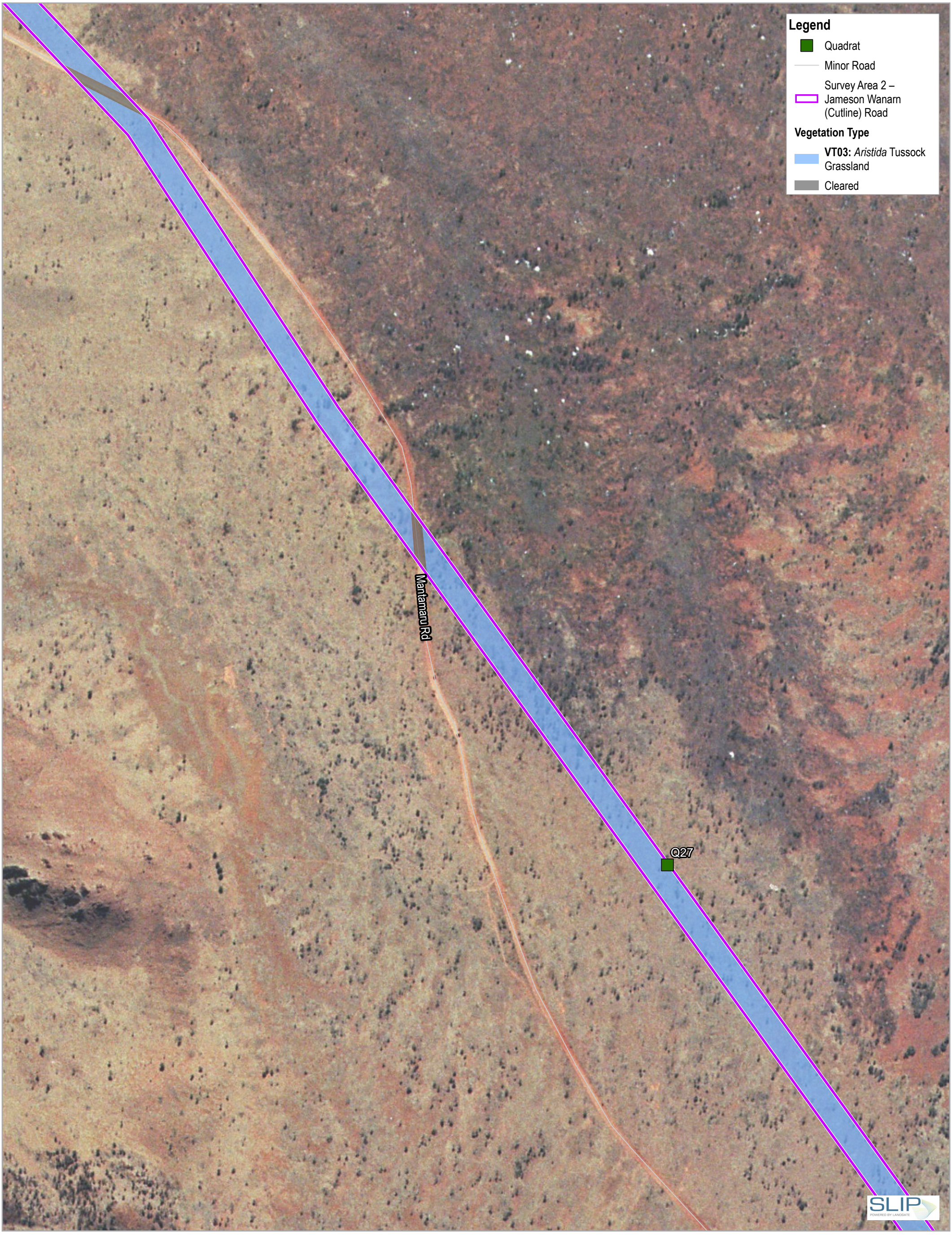

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
Print date: 17 May 2021 - 20:56

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Paper Size ISO A3

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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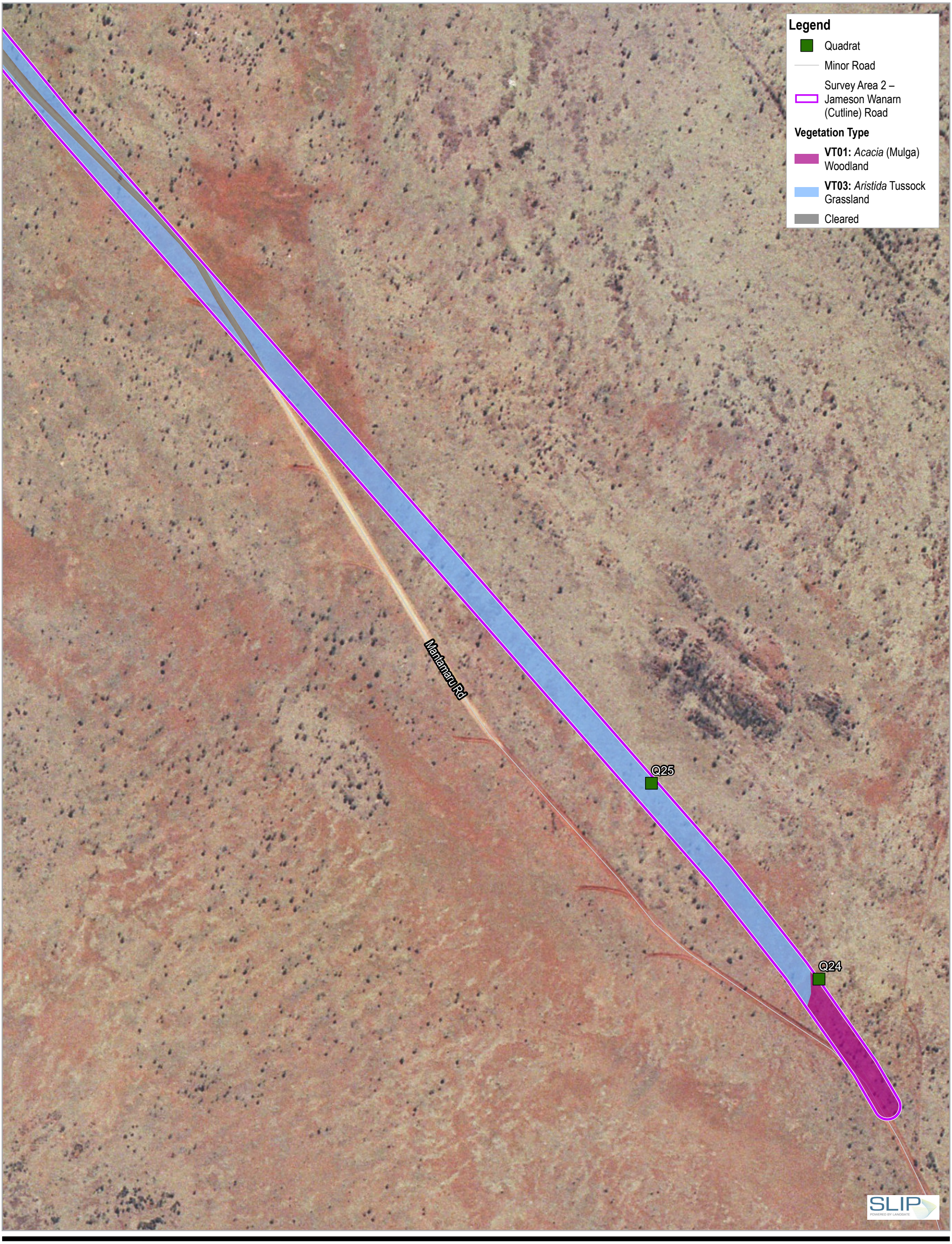

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Blackstone Alignment (Papulankujta Rd)

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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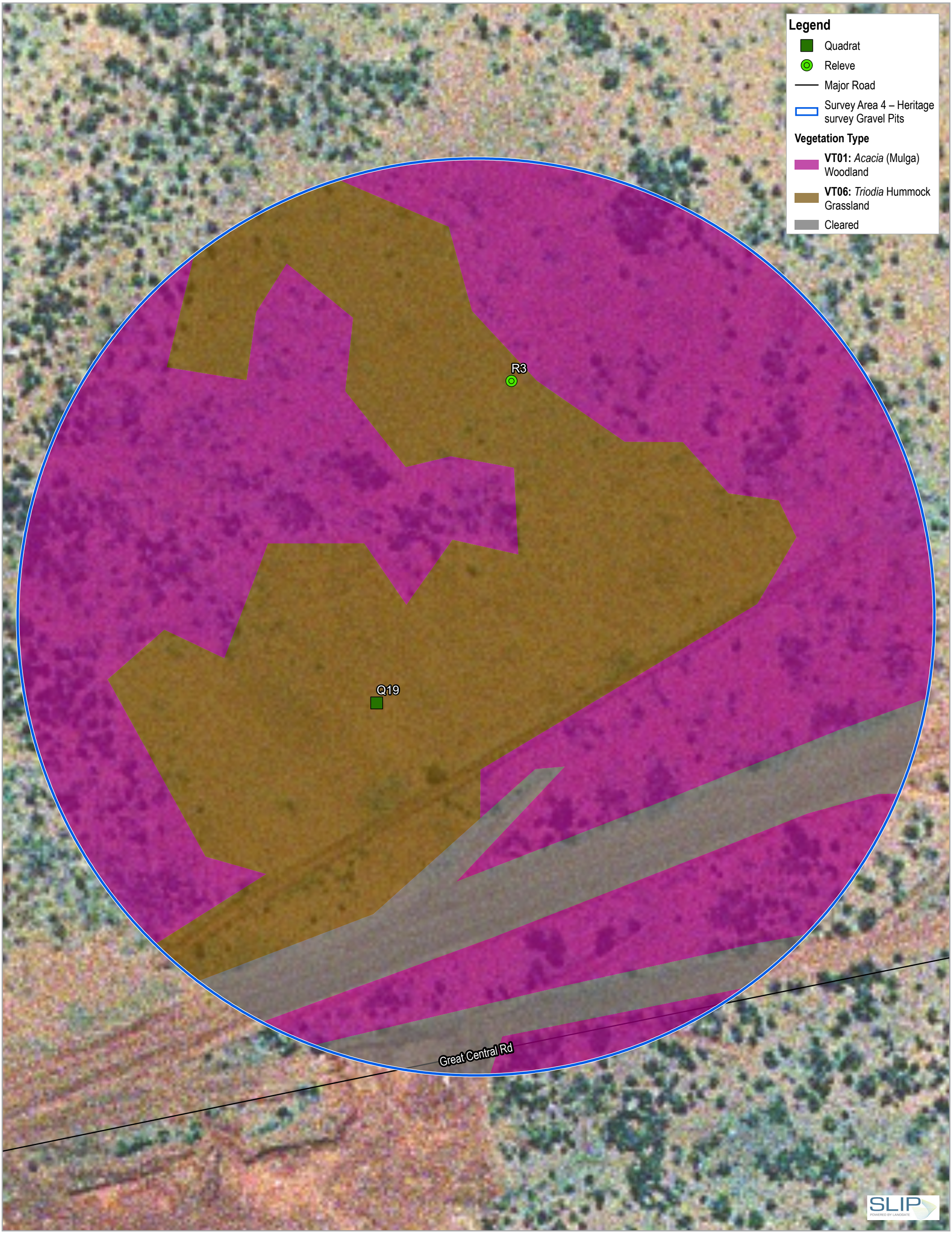

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Near Tjulun

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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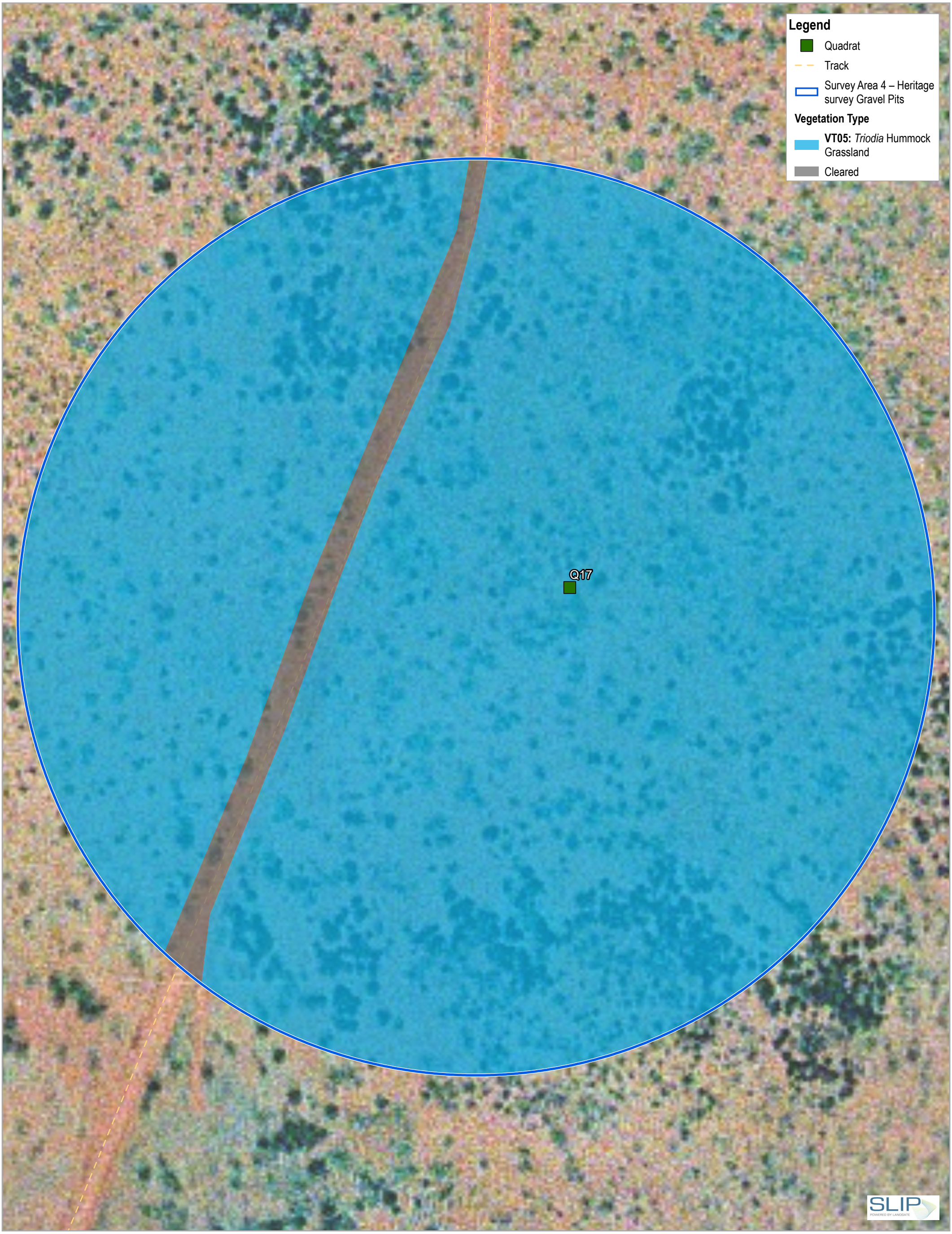

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Wanarn Access Rd

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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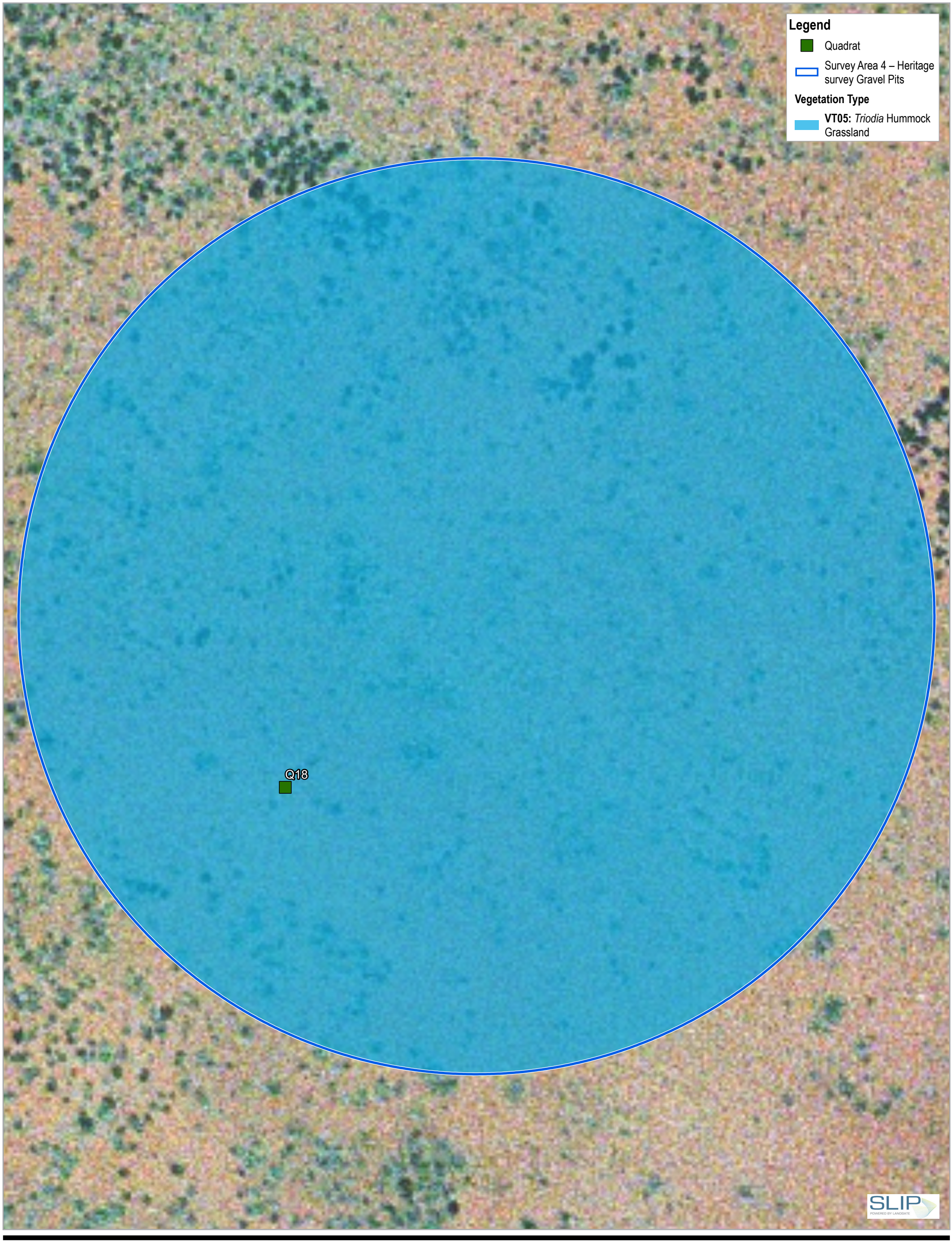

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Wanarn Access Rd no. 2

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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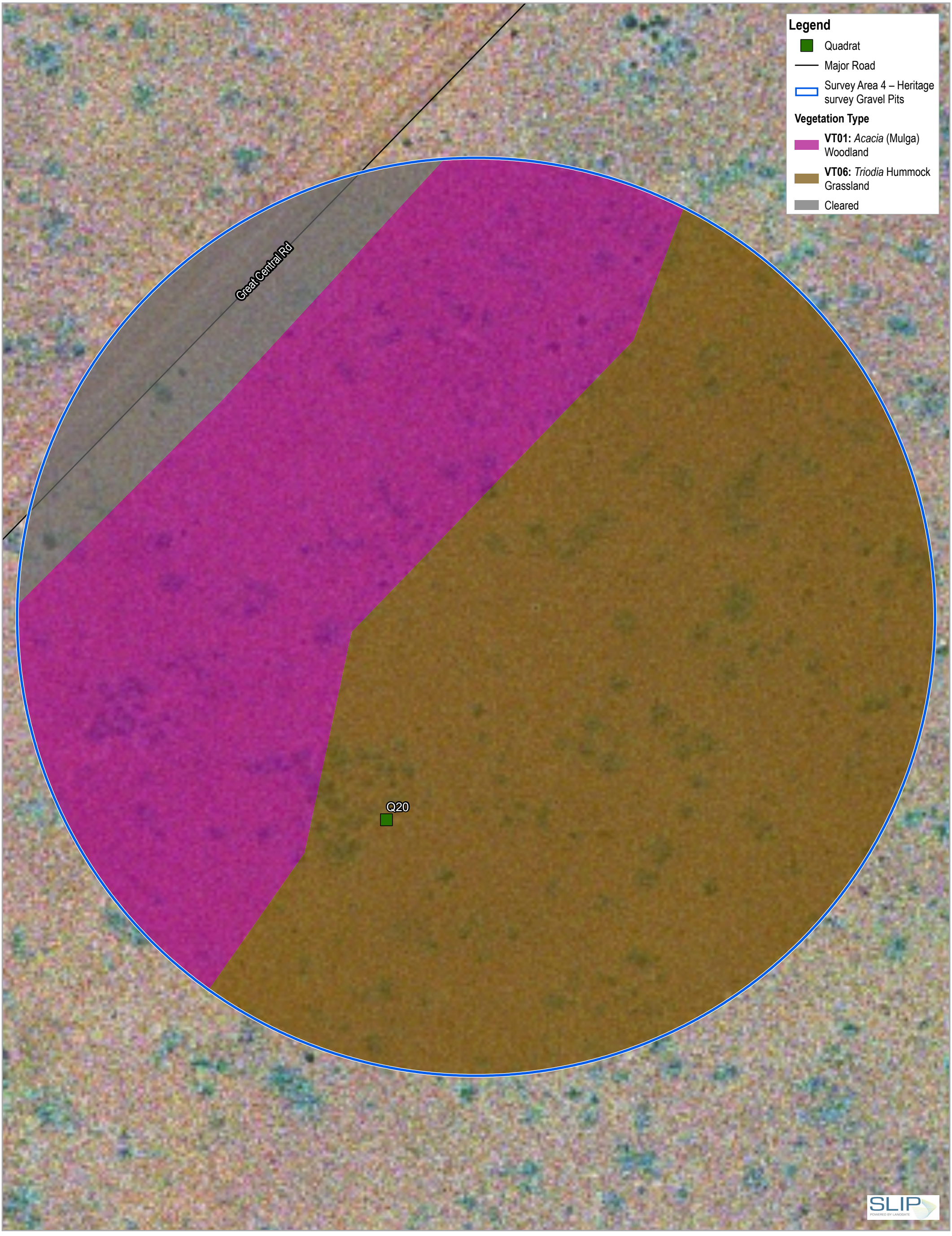

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Near Palytjikata

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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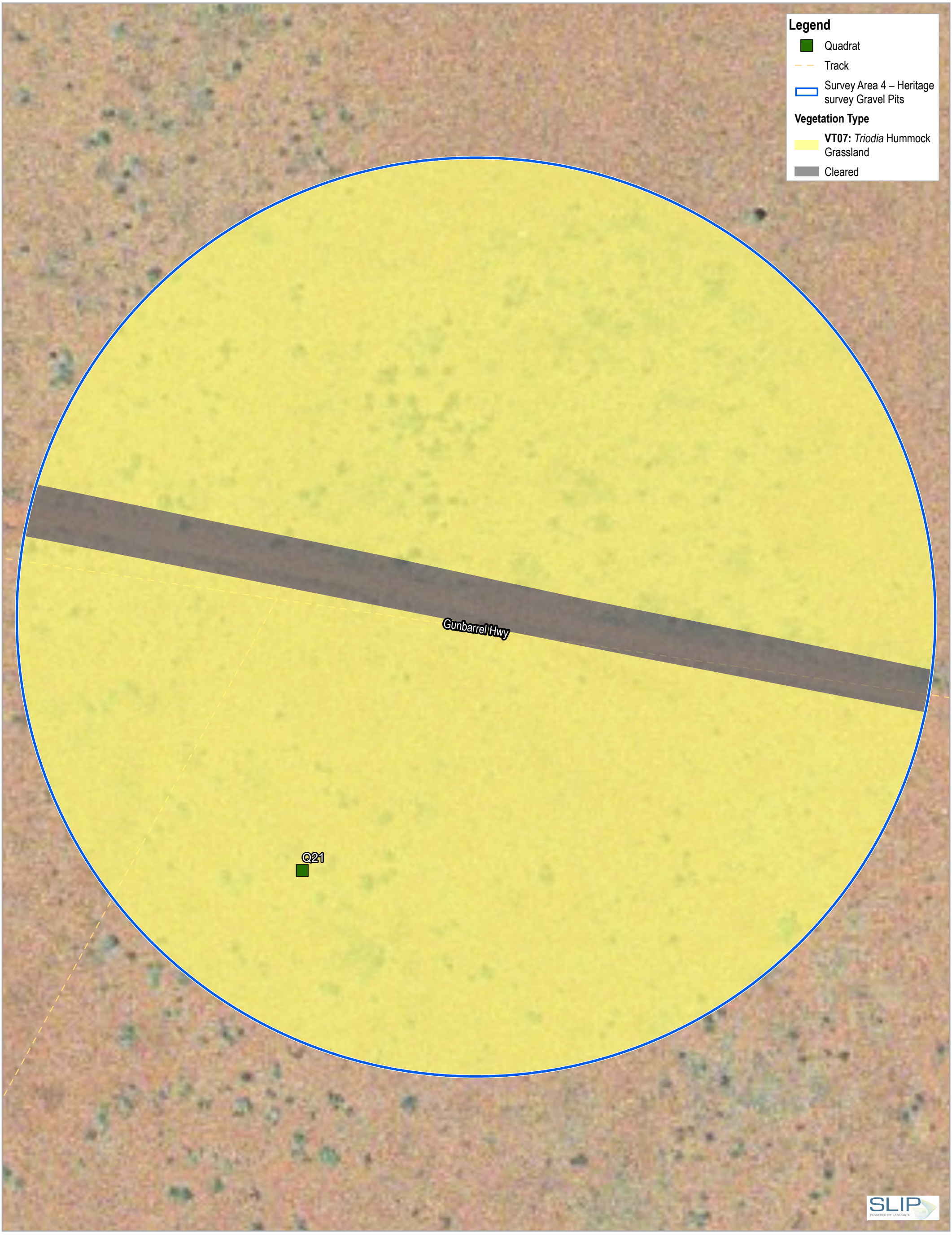

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Old Gunbarrel

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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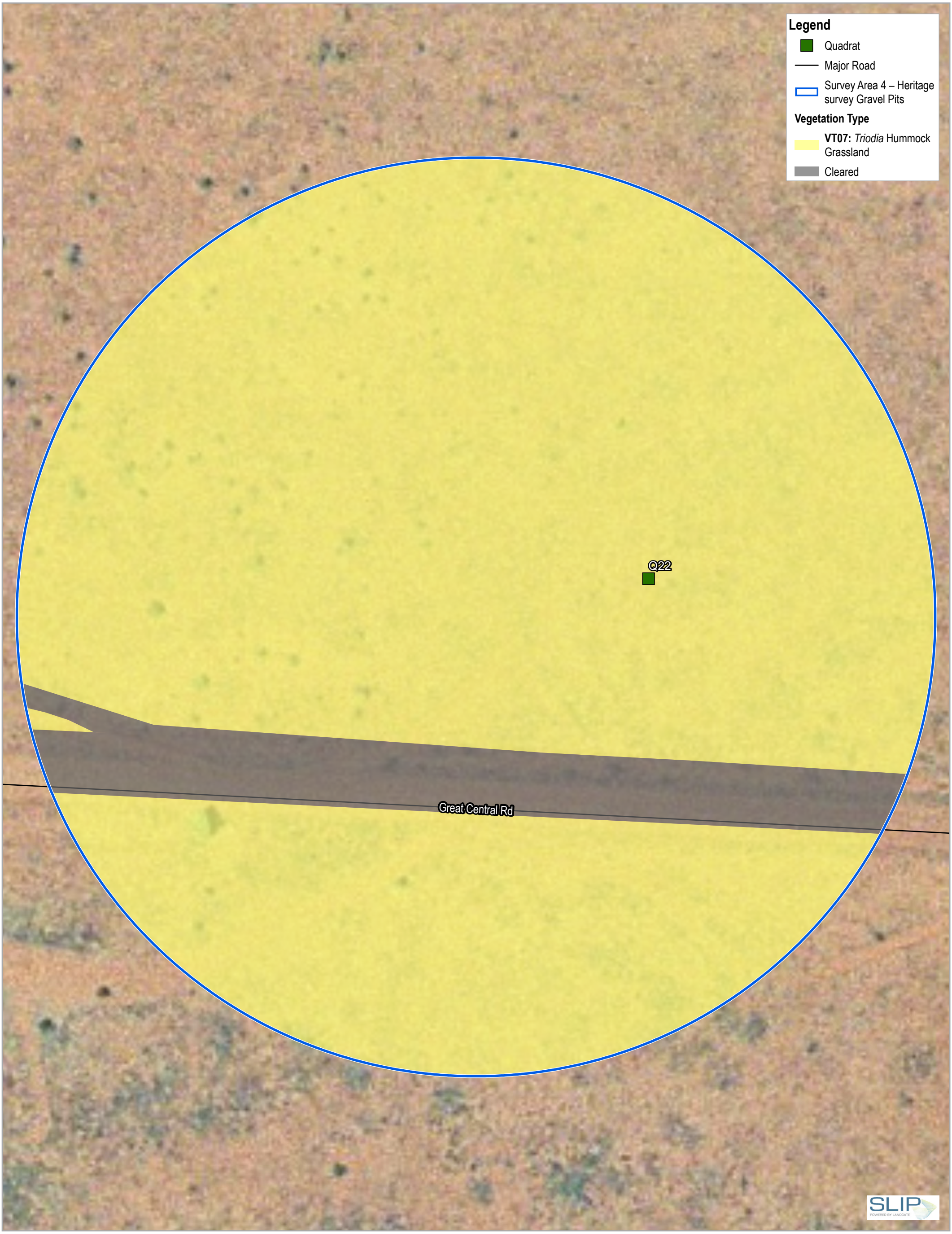

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Big Tjuta tree

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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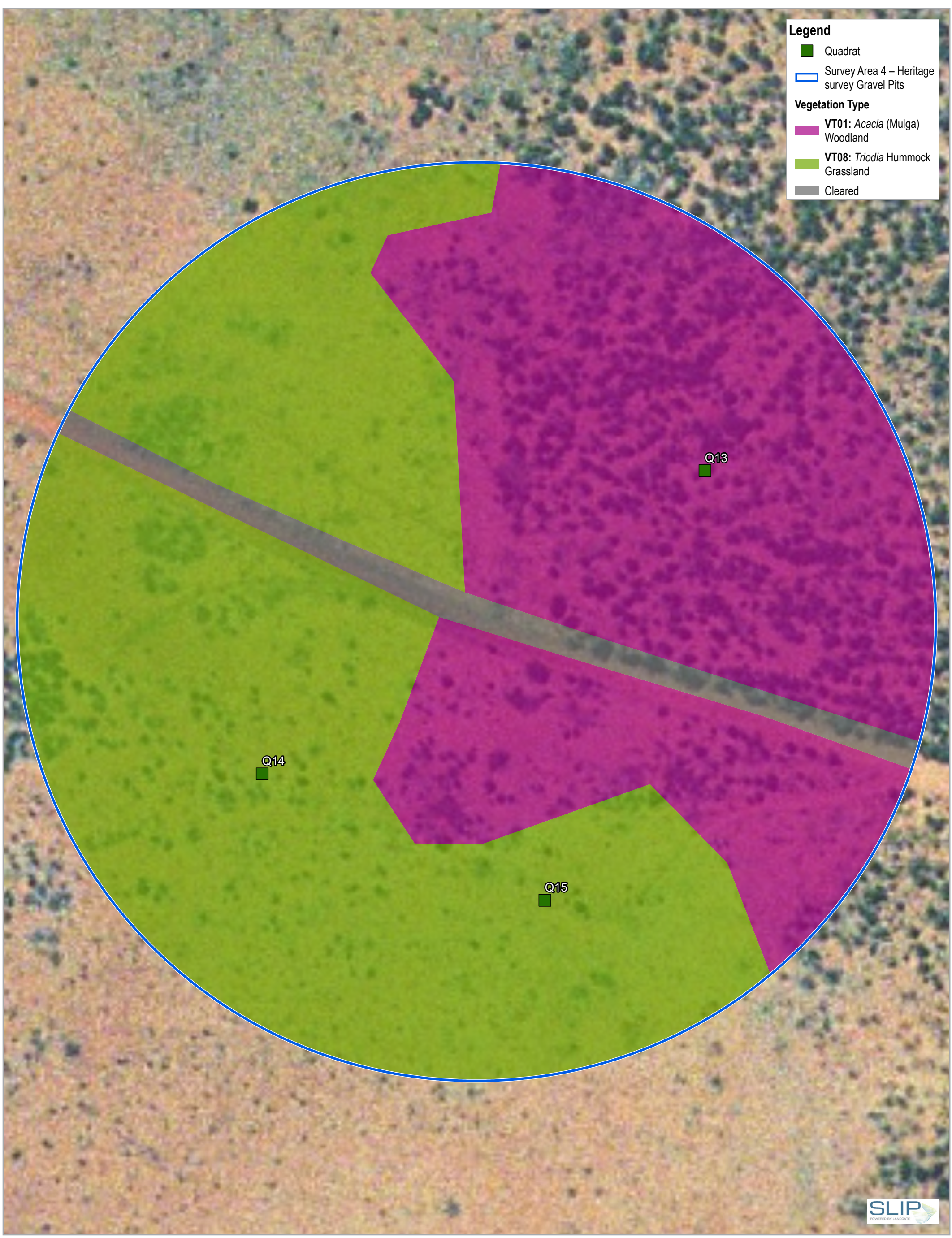

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Mulga Park Rd No.1

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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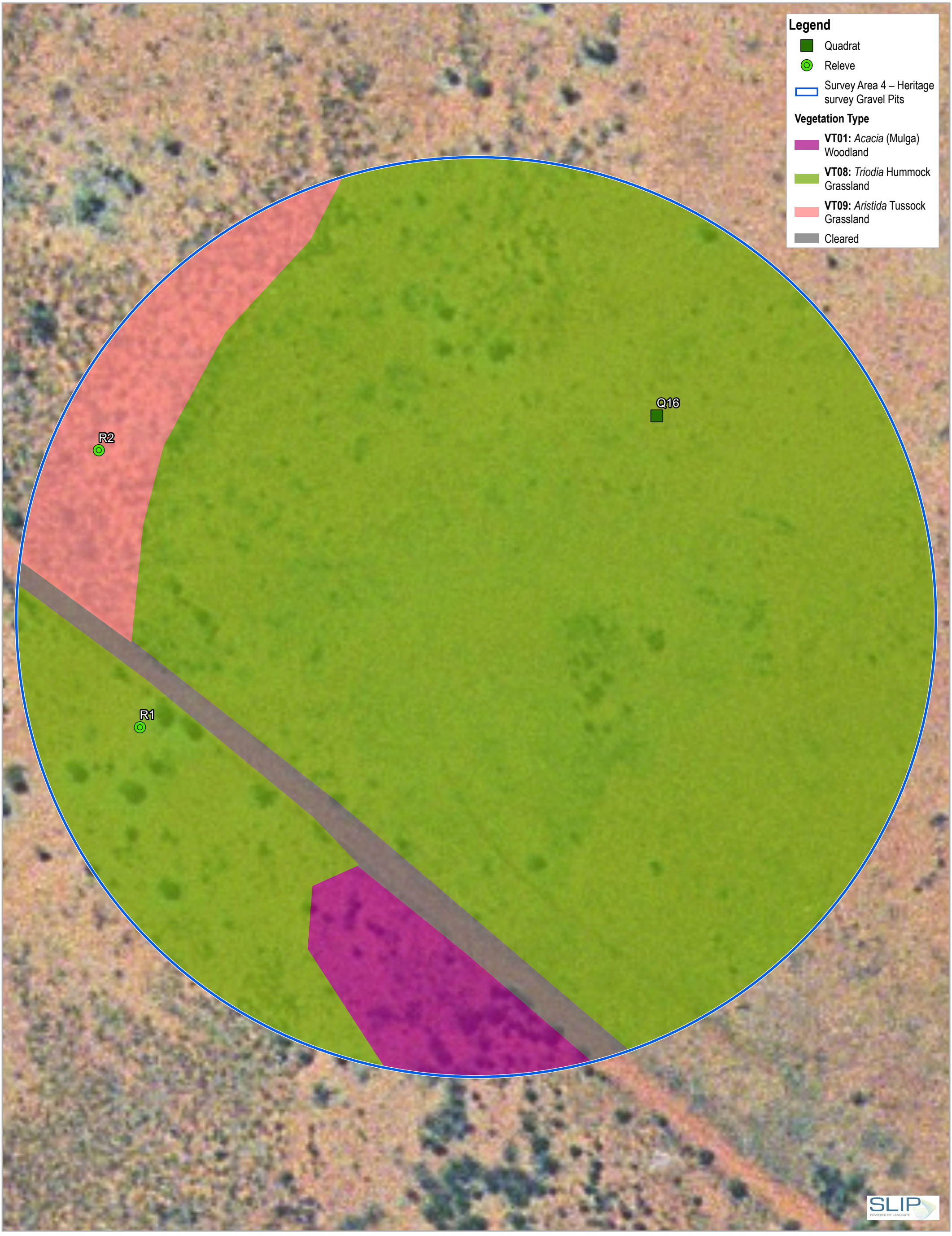

Paper Size ISO A3

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Types:
Mulga Park Rd No. 2

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 3

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_003_VegTypes_RevA
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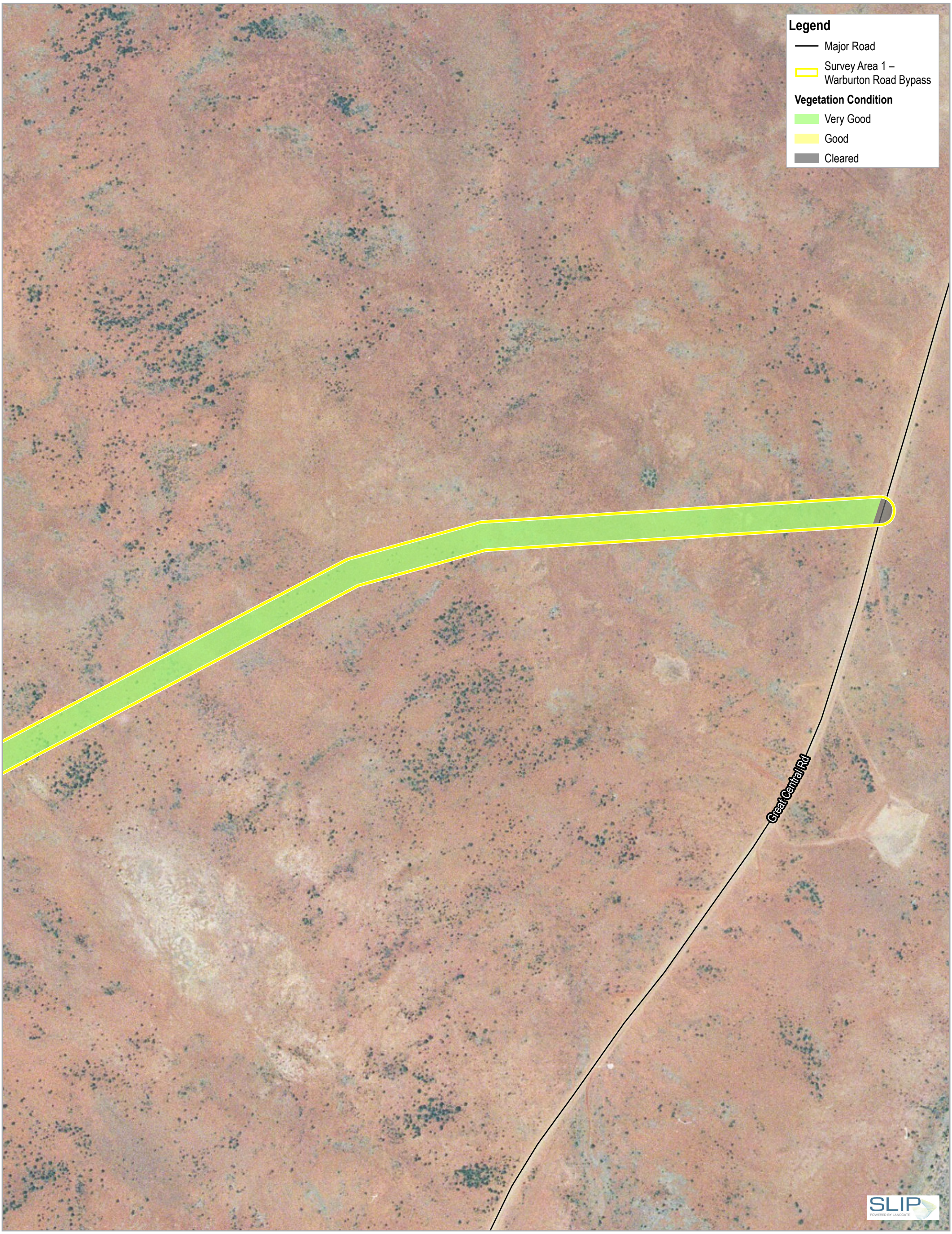

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
Print date: 17 May 2021 - 20:59

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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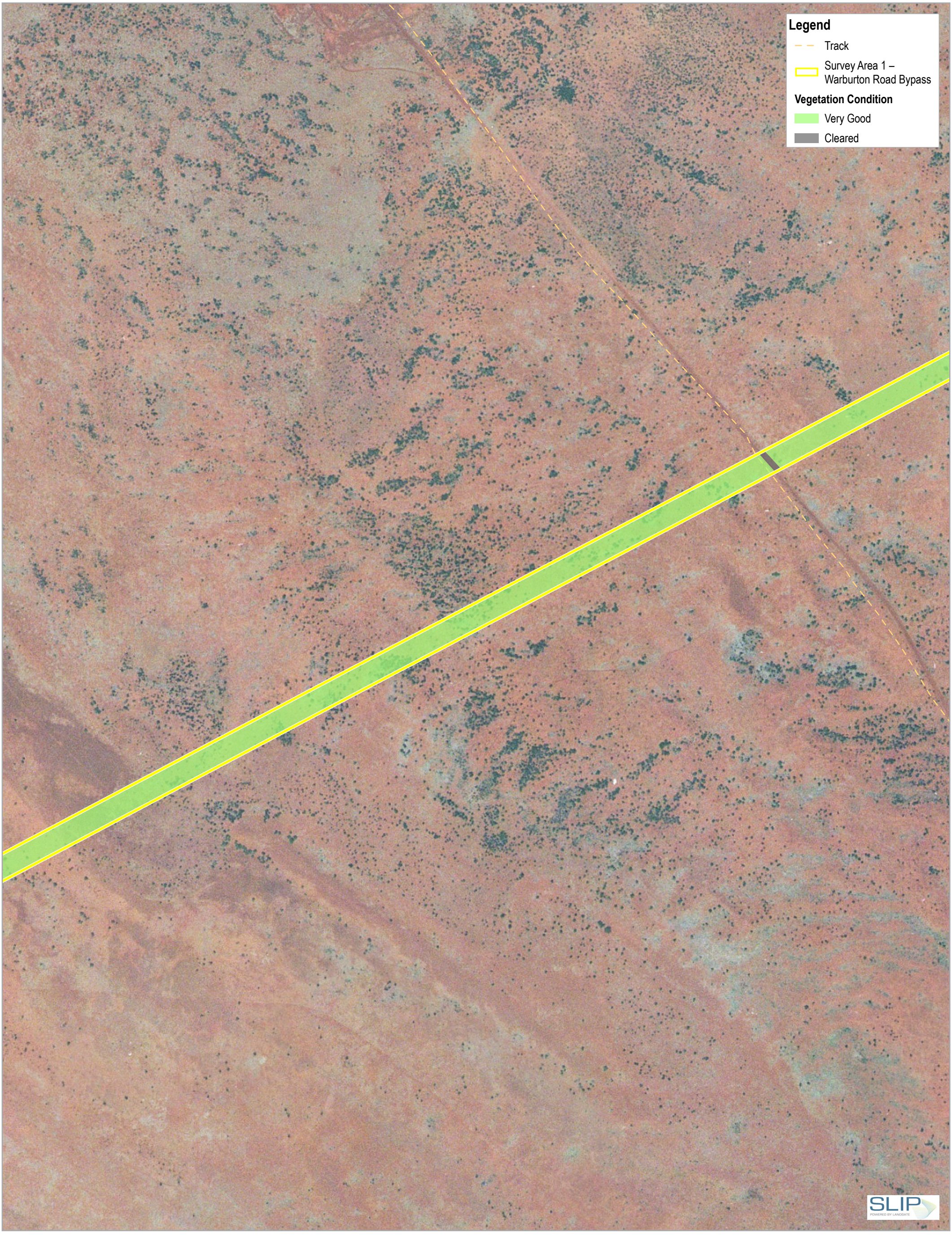

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Print date: 17 May 2021 - 20:59

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Print date: 17 May 2021 - 20:59

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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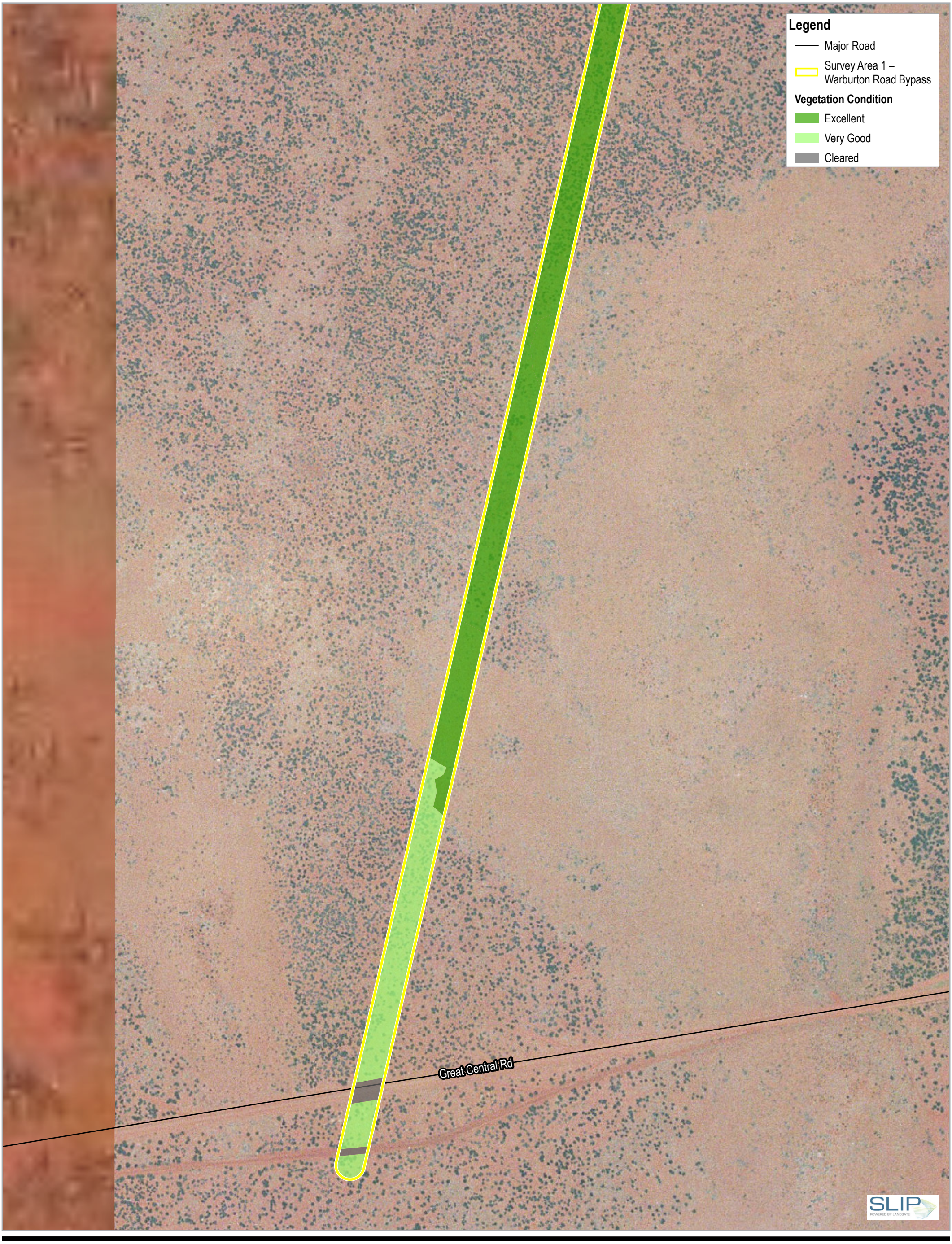

Paper Size ISO A3

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
Print date: 17 May 2021 - 20:59

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Metres

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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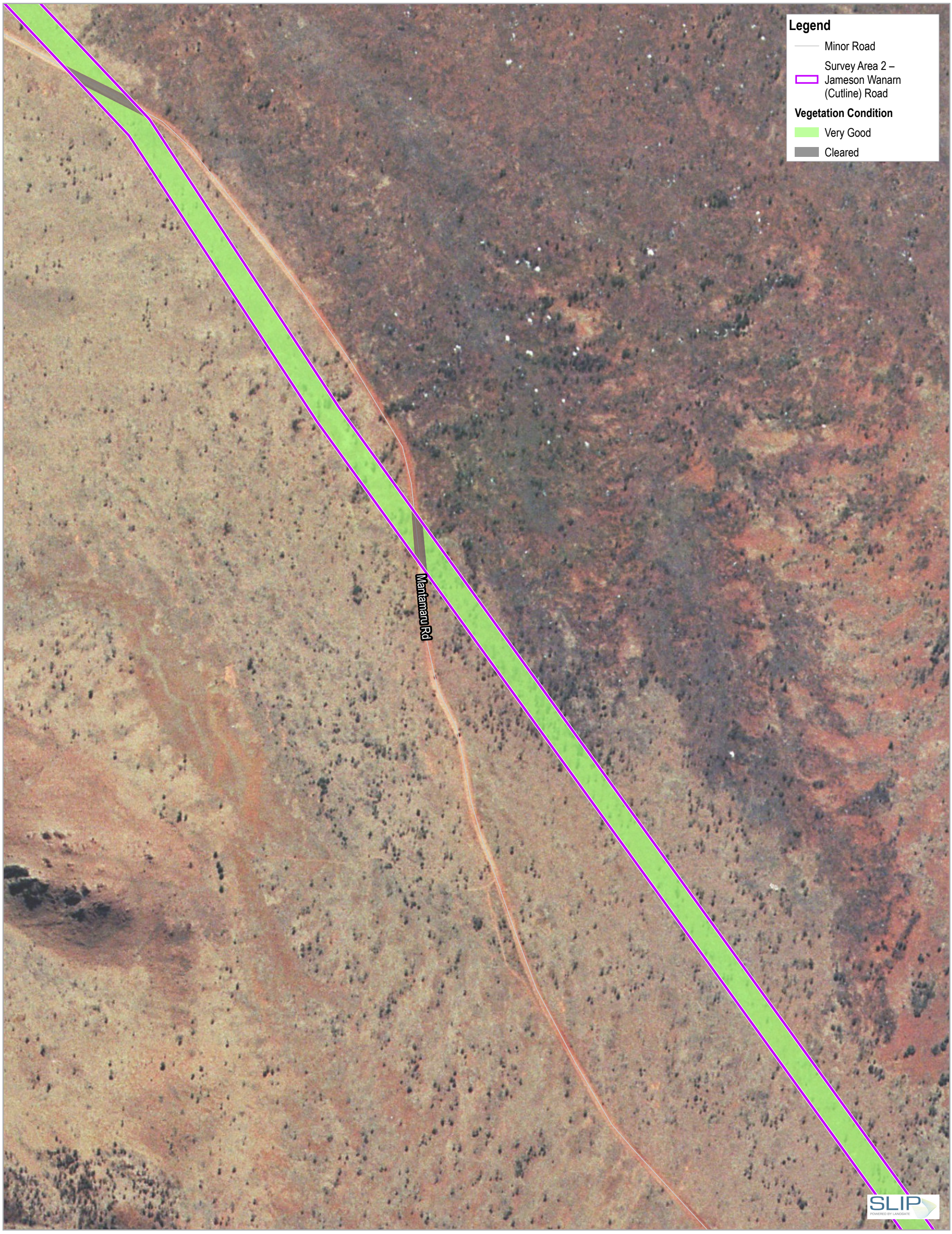

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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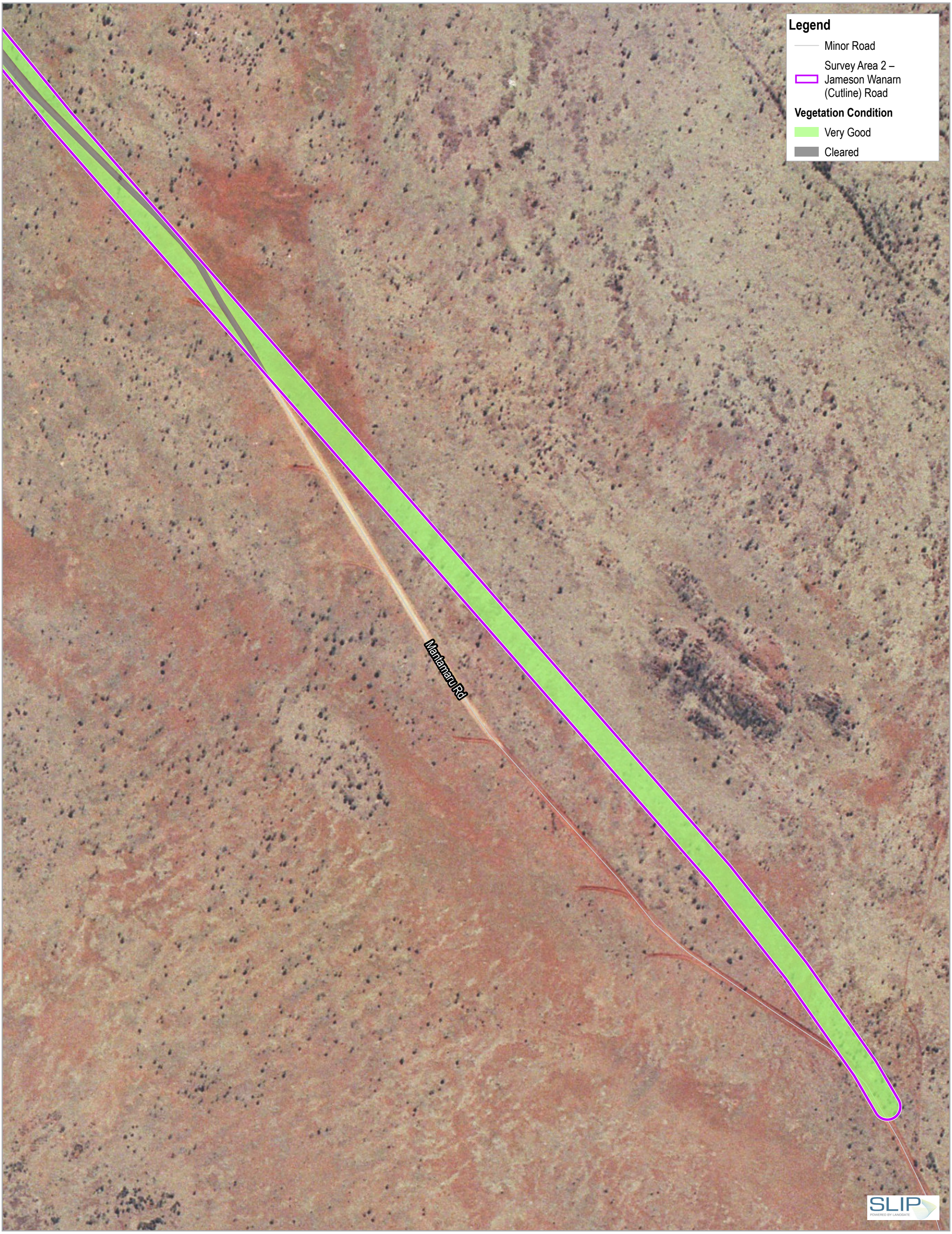

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Jameson Wanarn (Cutline) Road

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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Print date: 17 May 2021 - 21:00

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Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Blackstone Alignment (Papulankujta Rd)

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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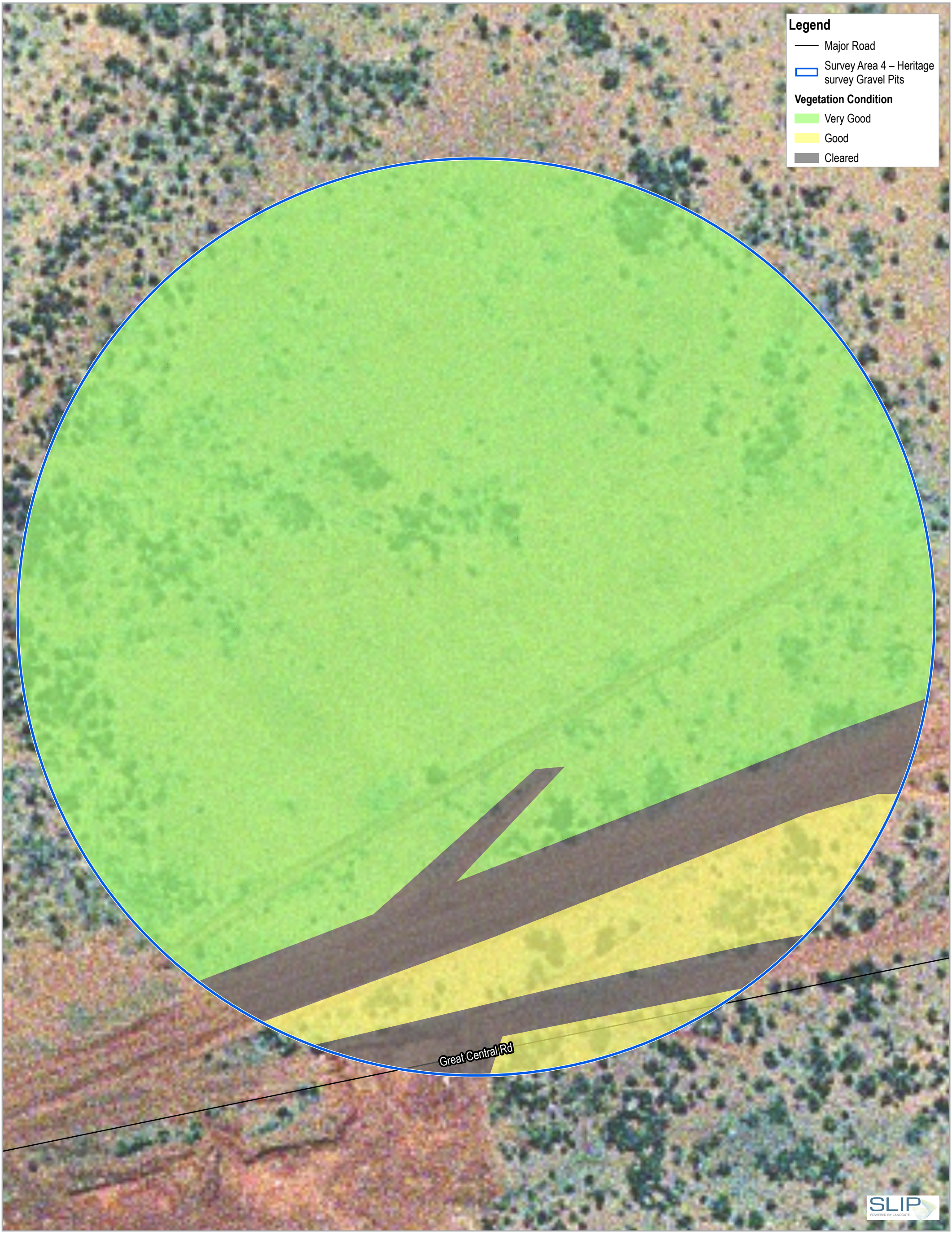

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Near Tjulun

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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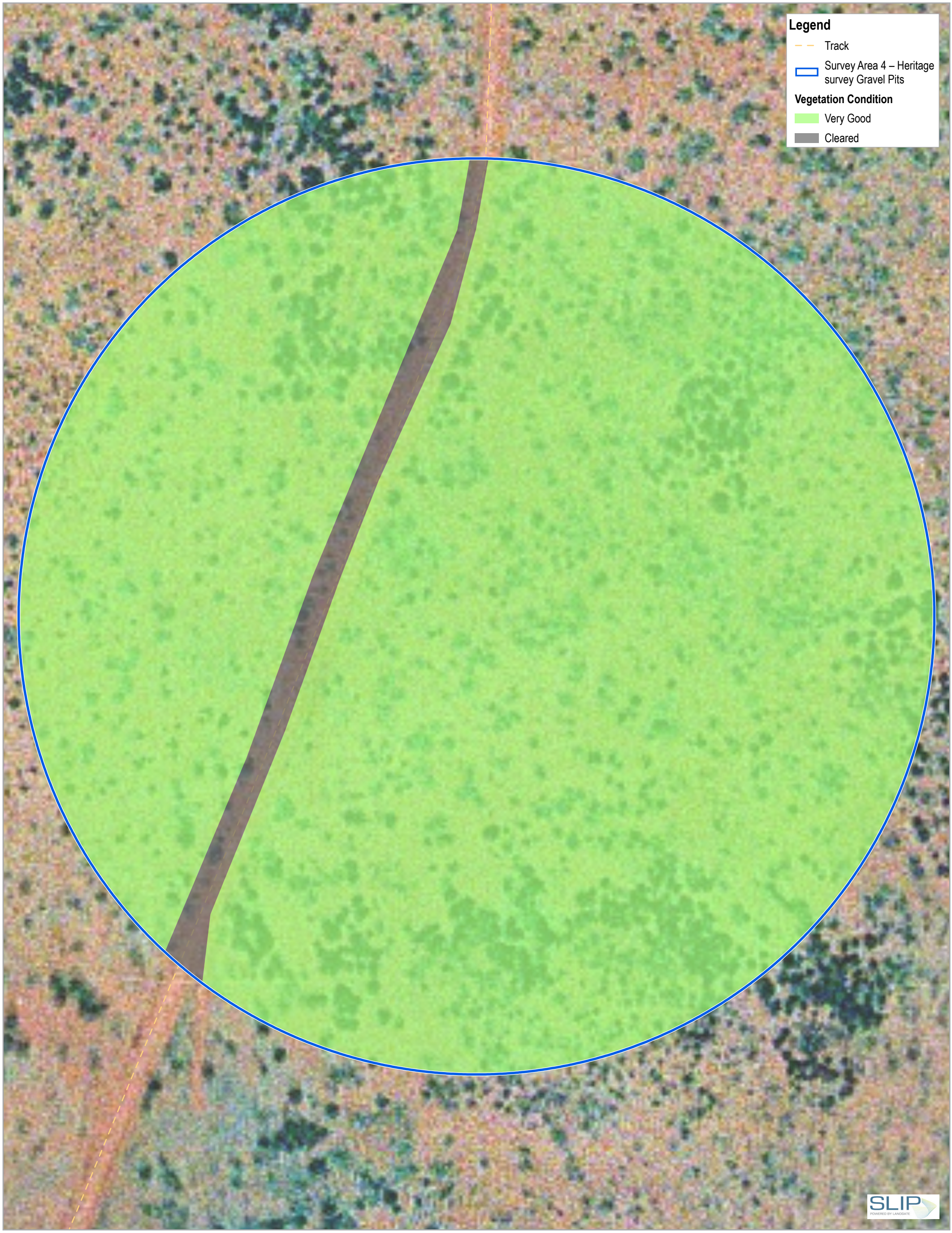

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Wanarn Access Rd

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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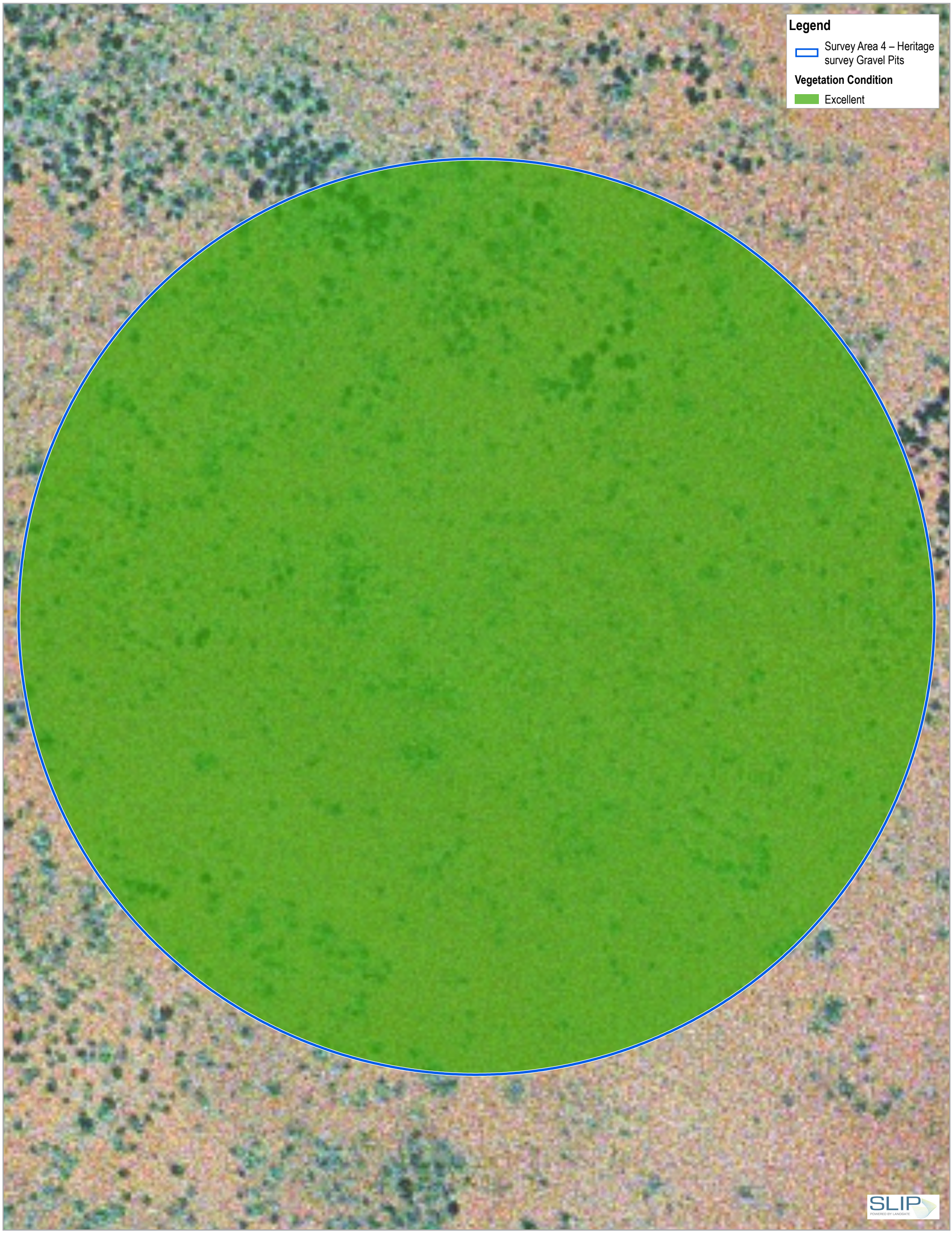

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Wanarn Access Rd no. 2

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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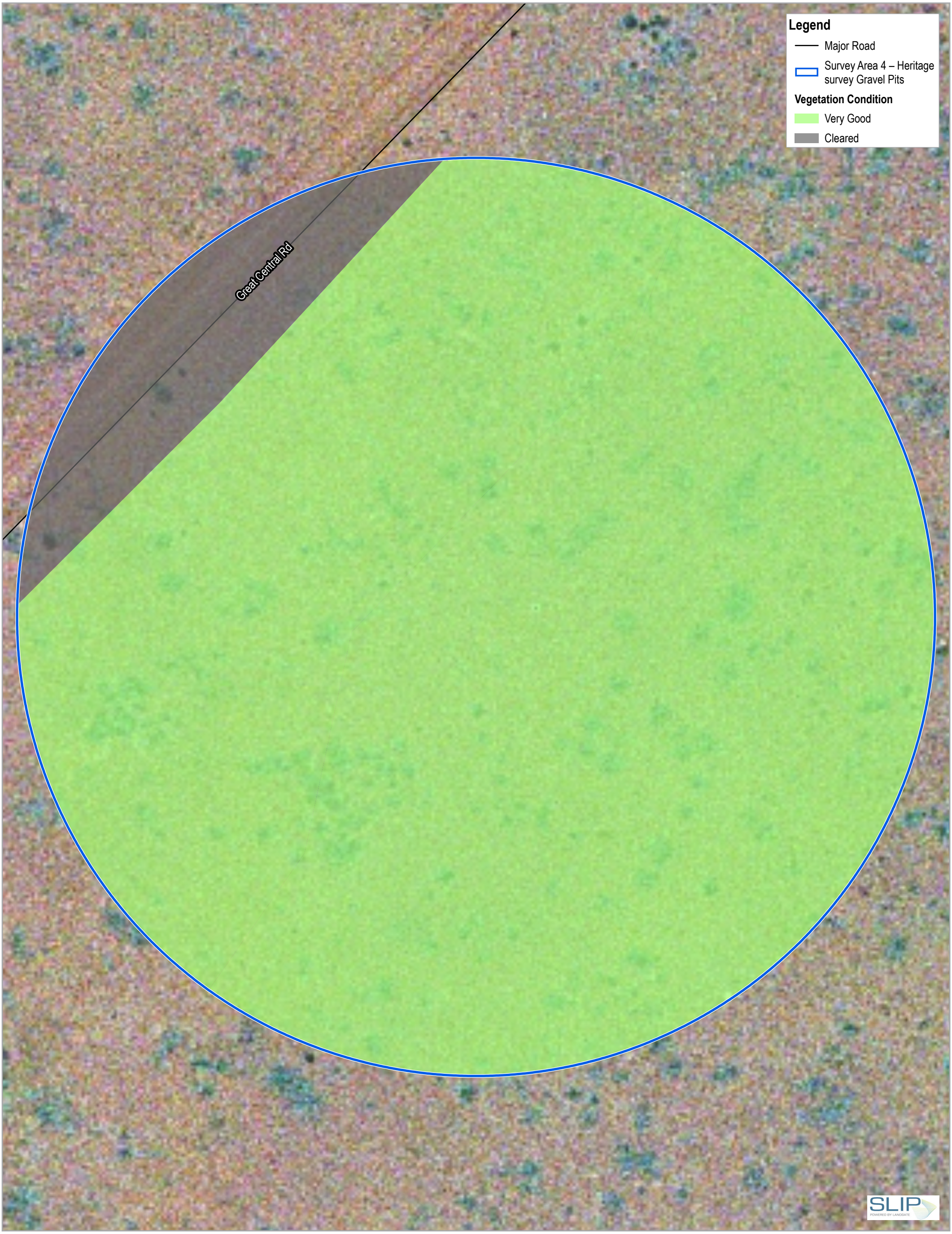

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Near Palytjikata

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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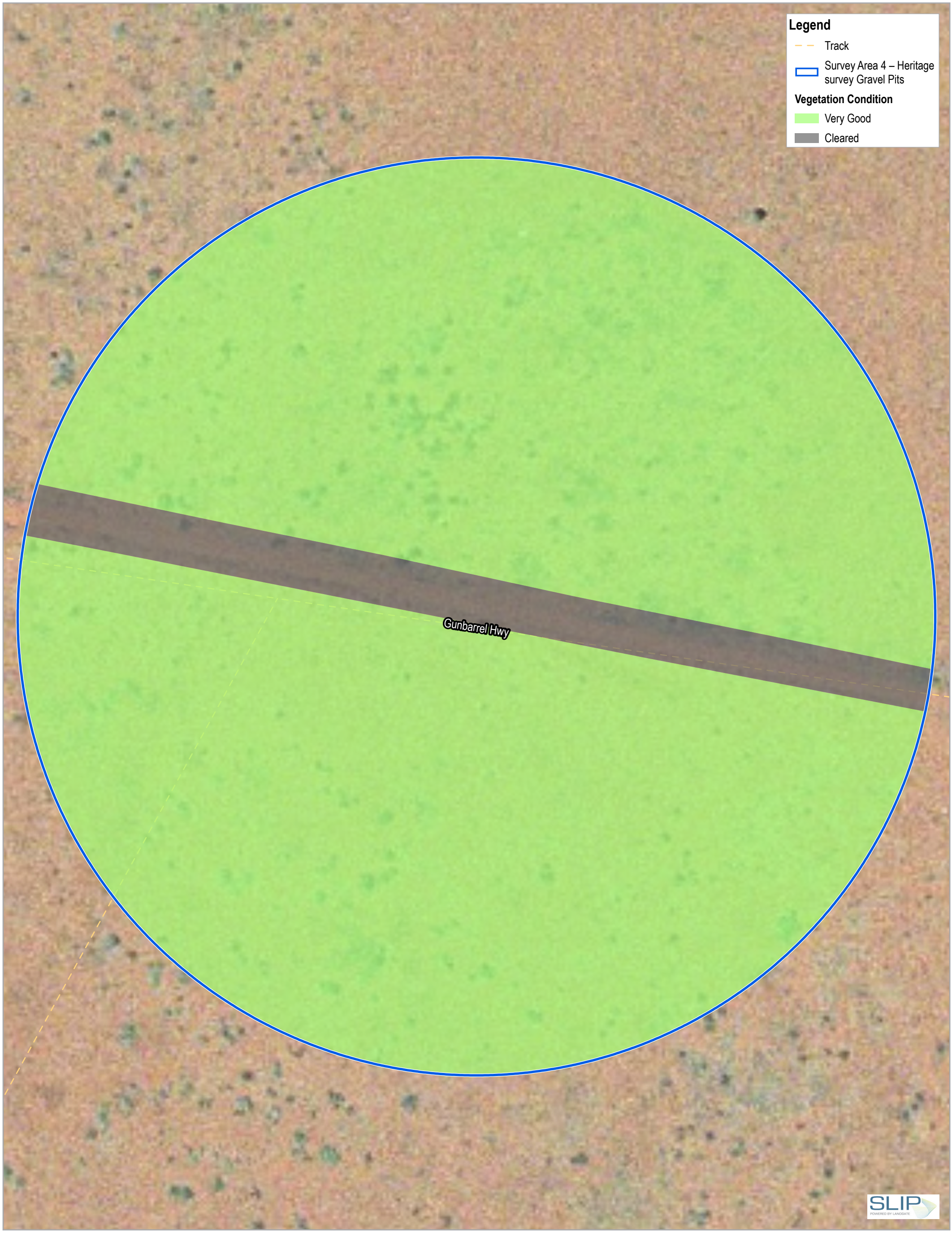

Paper Size ISO A3

0 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Old Gunbarrel

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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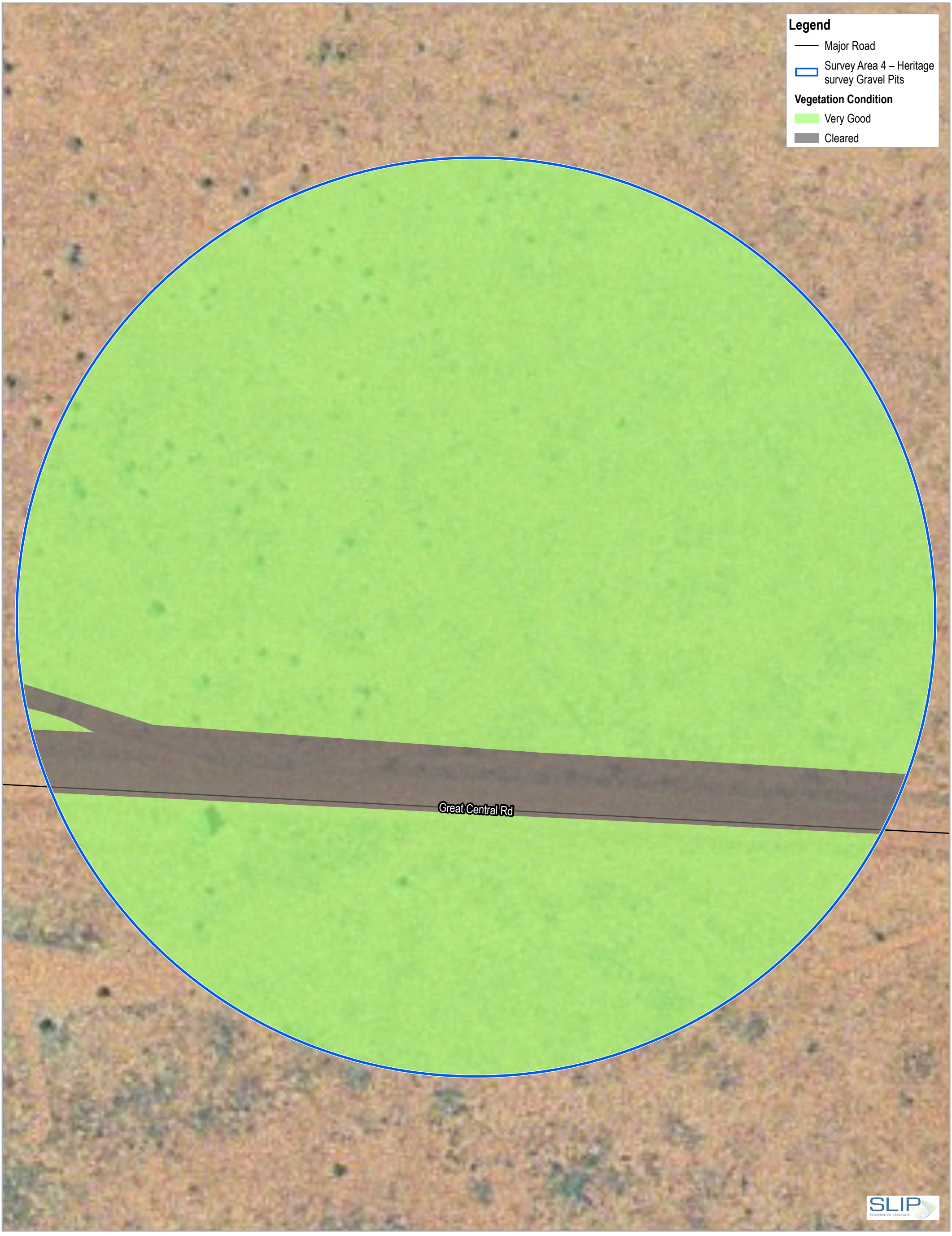

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Big Tjuta tree

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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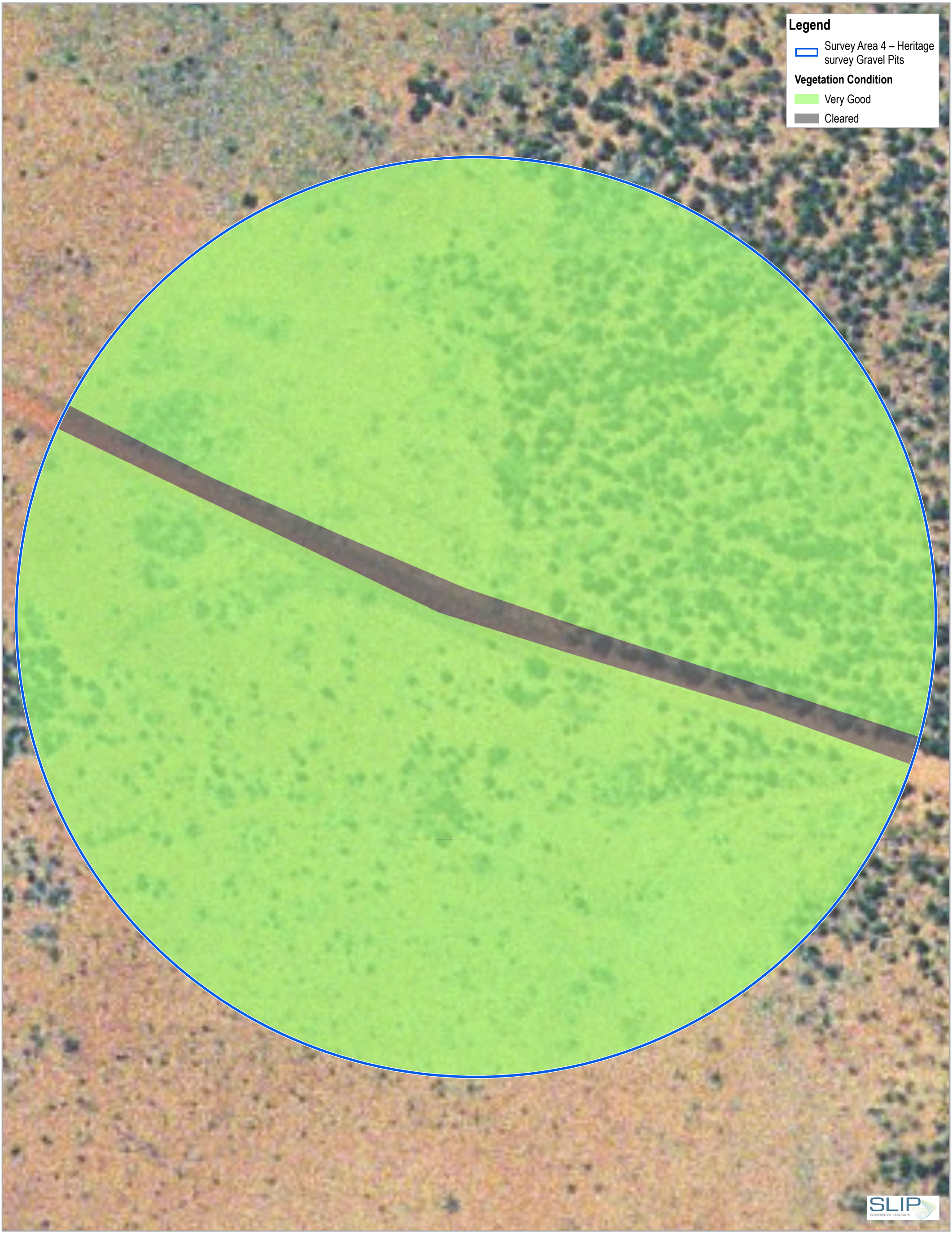

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Mulga Park Rd No.1

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_004_VegCondition_RevA
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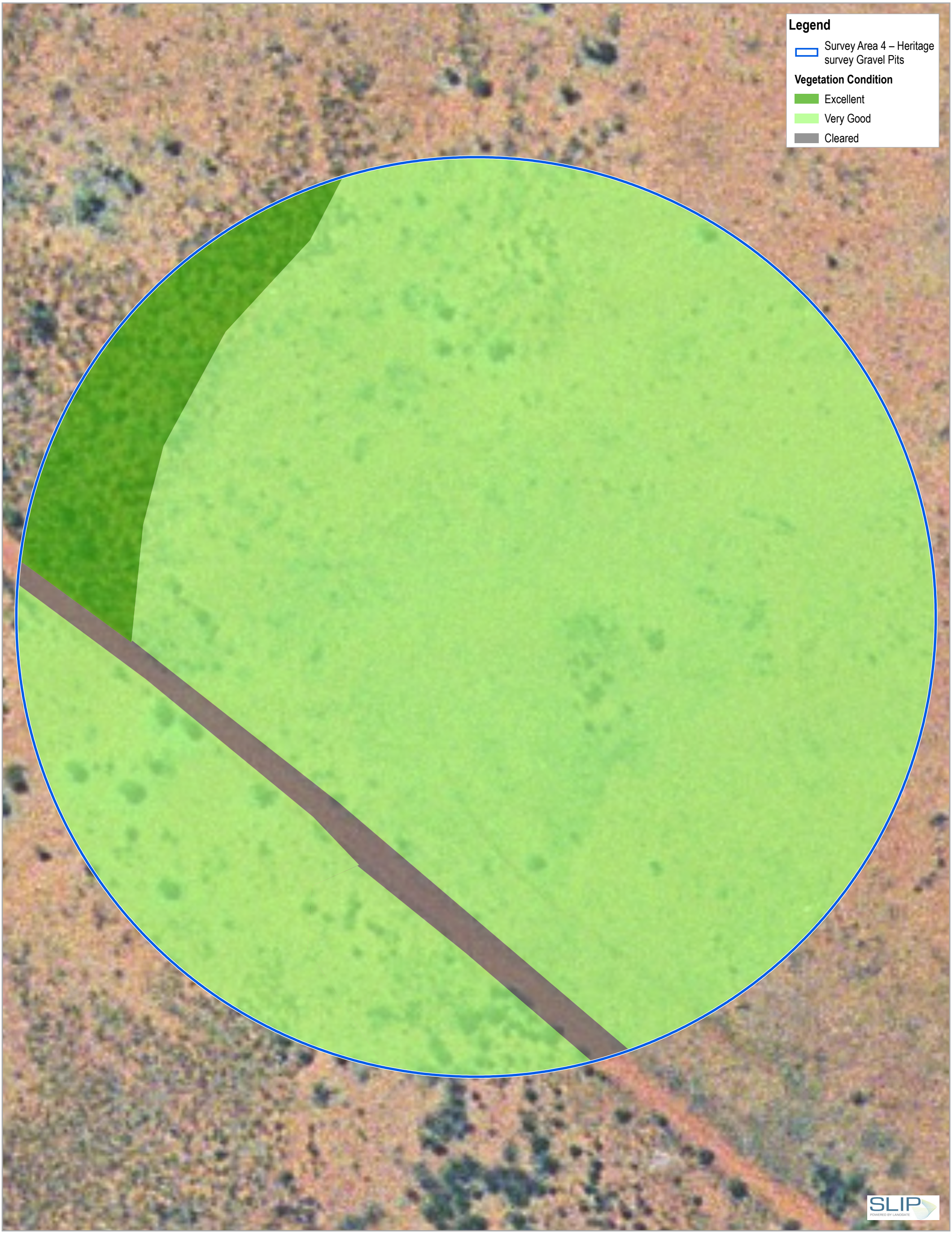

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Vegetation Condition:
Mulga Park Rd No. 2

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 4

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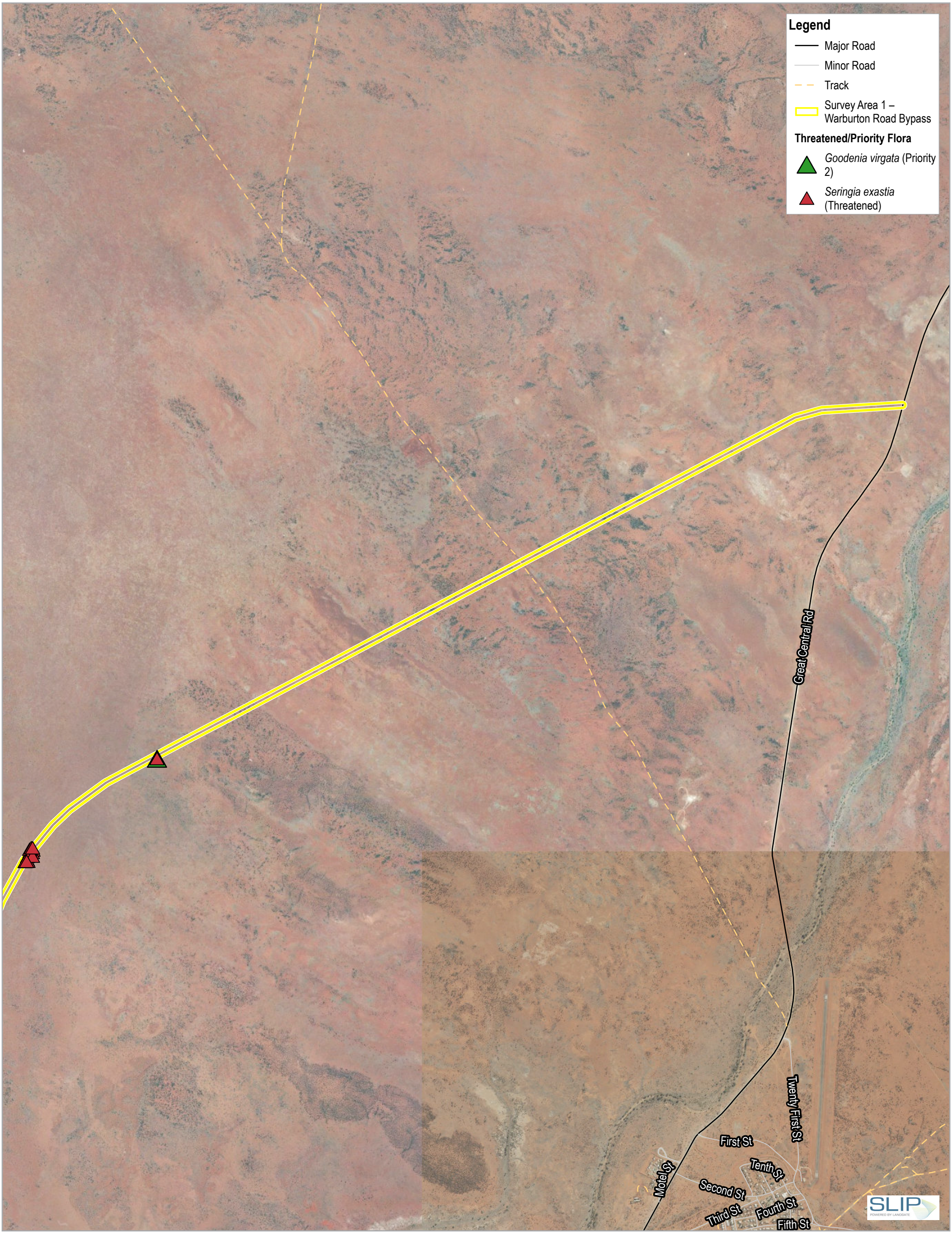

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

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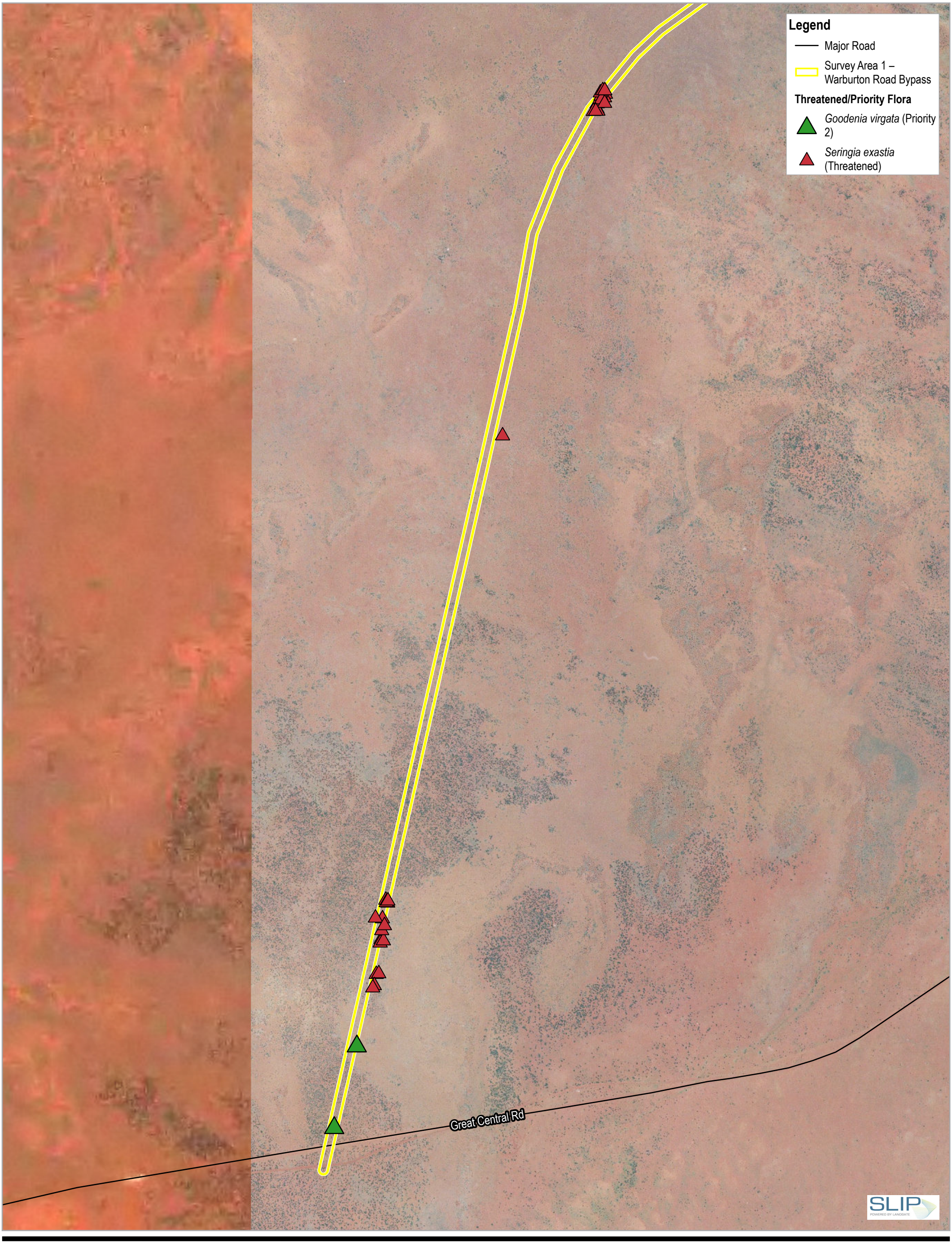

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora:
Warburton North West Bypass

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_005_ThreatenedFlora_RevA
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Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora: Near Tjulun

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

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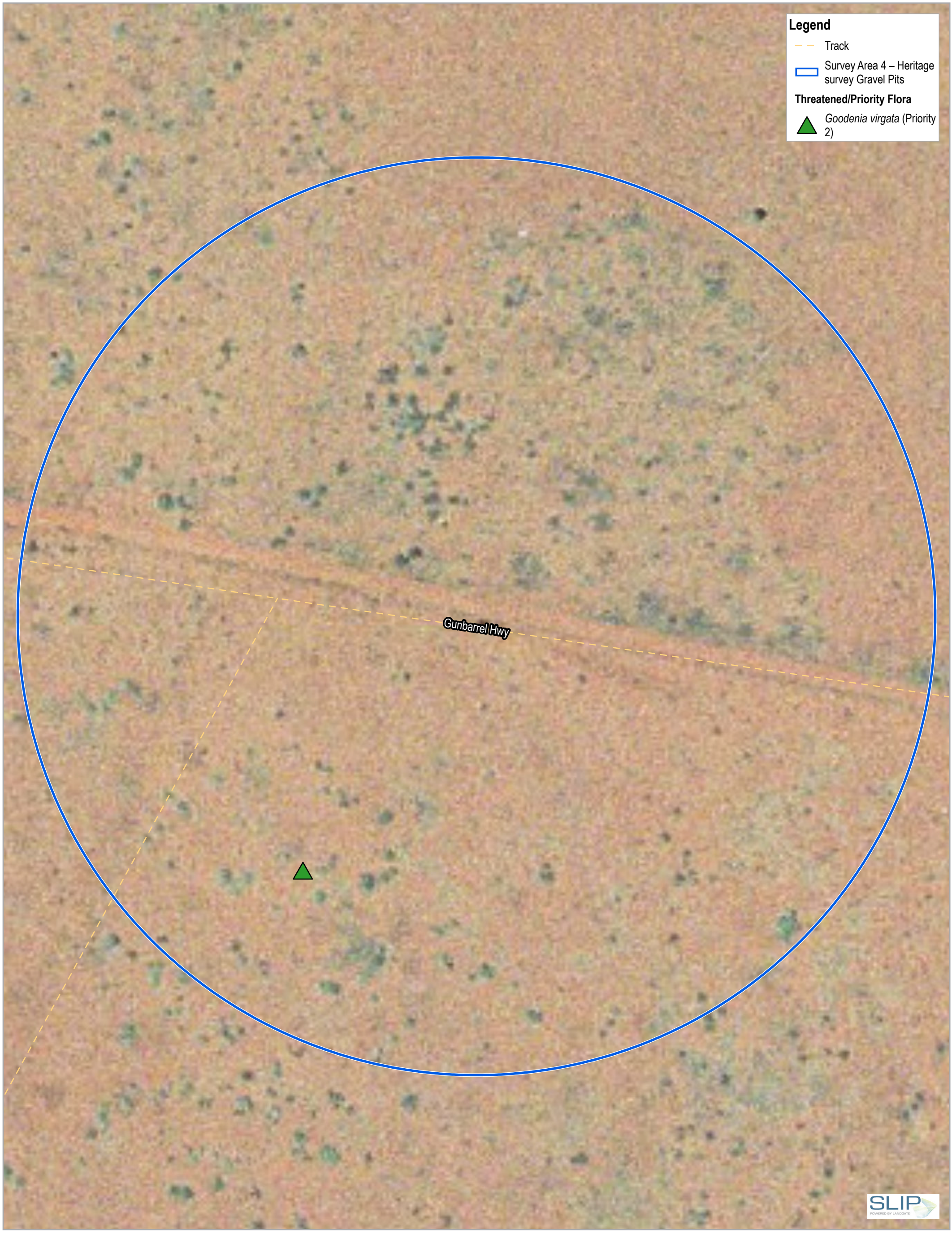

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora:
Old Gunbarrel

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

G:\61\12542369\GIS\Maps\Working\12542369\12542369.aprx\12542369_005_ThreatenedFlora_RevA
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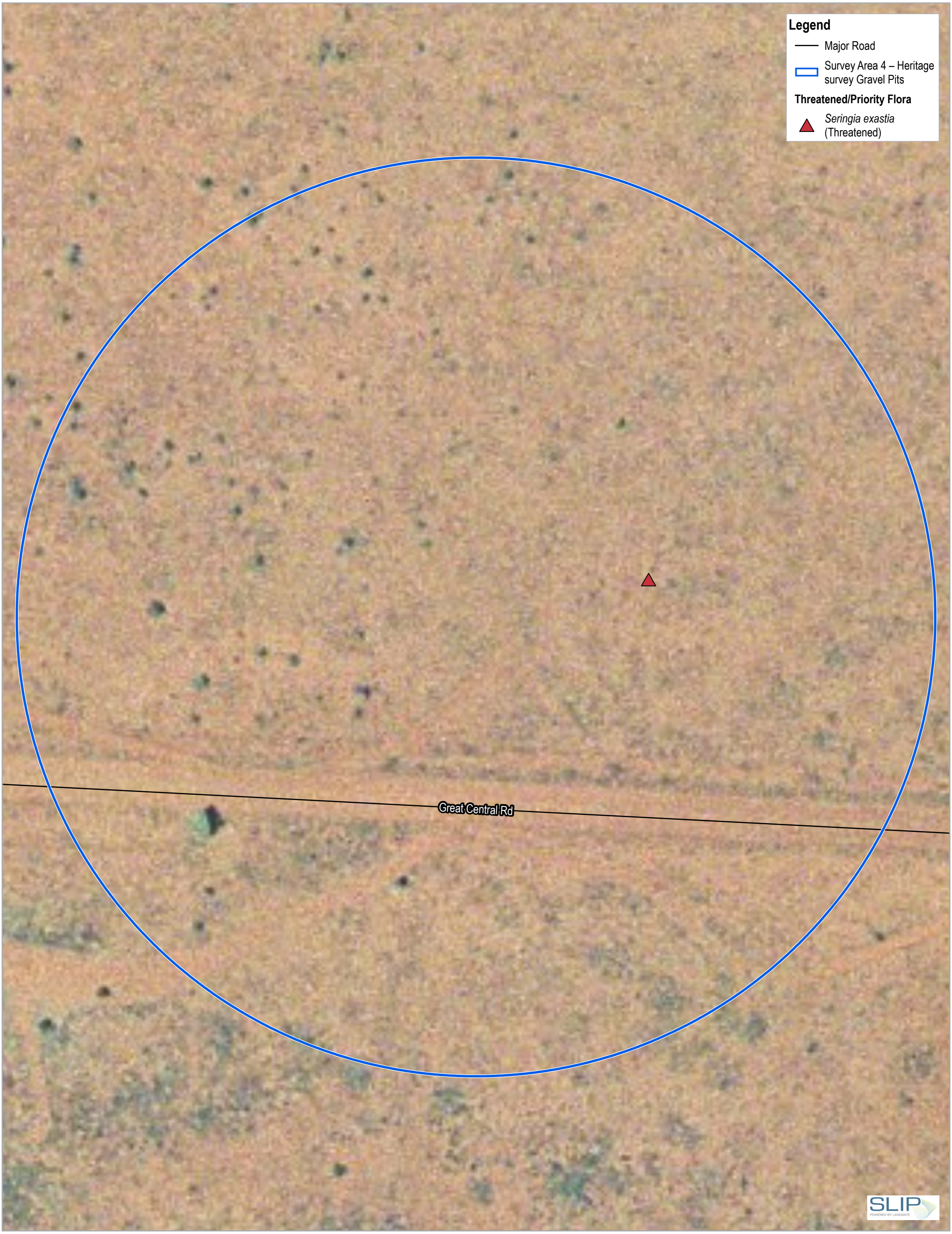

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora:
Big Tjuta tree

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

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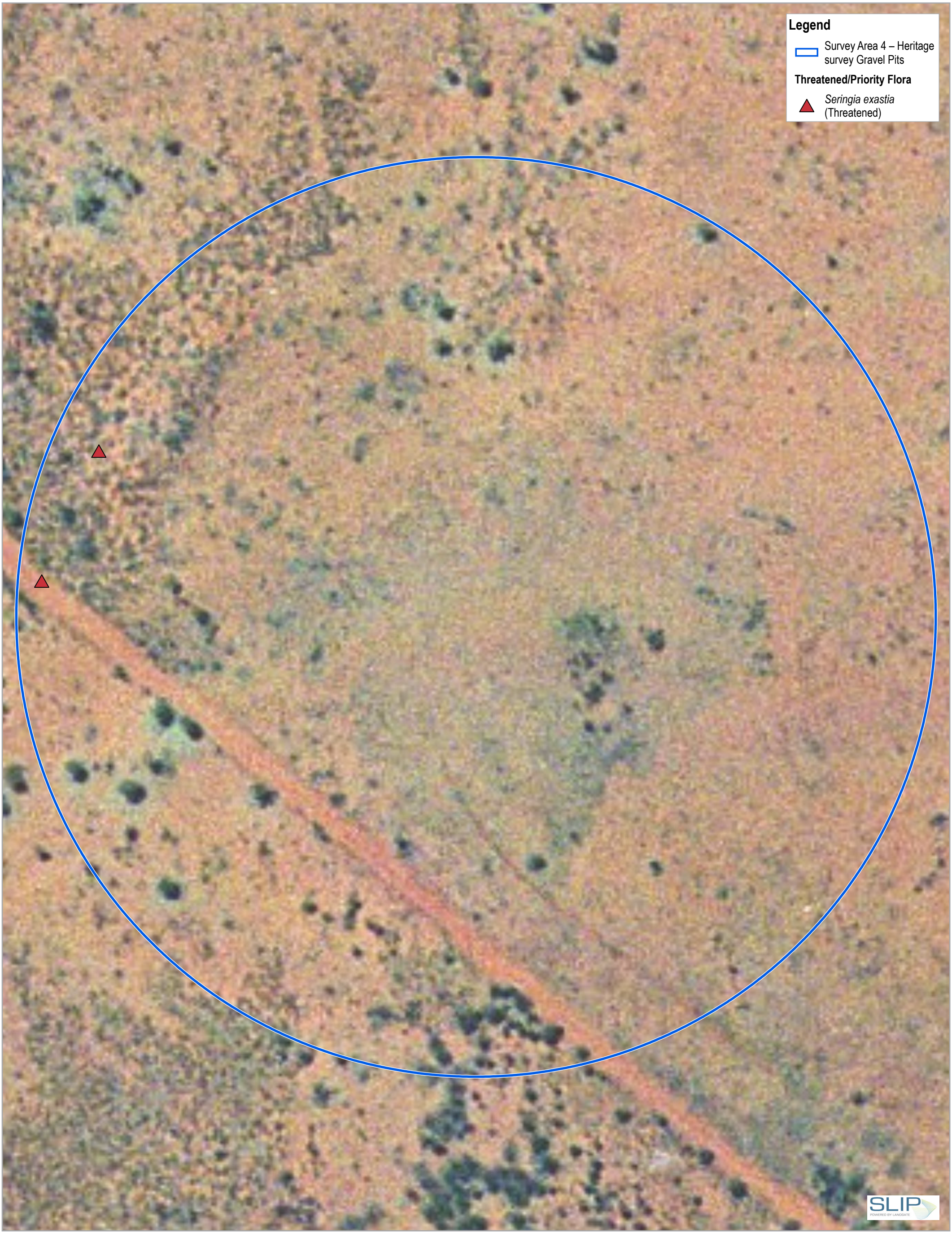

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 52

N

GHD

Shire of Ngaanyatjarraku
Warburton WA - Flora and Vegetation Survey

Threatened and Priority Flora:
Mulga Park Rd No. 2

Project No. **12542369**
Revision No. **0**
Date **17/05/2021**

FIGURE 5

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Print date: 17 May 2021 - 21:05

Data source: Landgate_Subscription_Imagery\WANow: Landgate / SLIP. Created by: bmorgan

Appendix B – Relevant legislation, background information and conservation codes

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora and ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora species and ecological communities
- Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Agriculture, Water and the Environment (DAWE).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.

c) Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.

d) Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.

e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

g) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

h) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State *Biosecurity and Agriculture Management Act 2007*

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976.* The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in “Bush Forever” Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
The areas covered by the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002*.
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.

Reserves and conservation areas

Department of Biodiversity, Conservation and Attractions managed lands and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

Wetlands

Wetlands include not only lakes with open water, but areas of seasonally, intermittently or permanently waterlogged soil.

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are “sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity … because of their ecological, botanical, zoological, limnological or hydrological importance” (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use. Under the Convention, wise use is broadly defined as “maintaining the ecological character of a wetland” (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia’s biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia’s Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating scale for the Eremaean and Northern Botanical Provinces

Condition	Eremaean and Northern Botanical Provinces 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 at 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.

Conservation codes

Species of significant flora and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/ or BC Act

Categories	Definition
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Endangered (EN)	An ecological community if, at that time: A) is not critically endangered; and B) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Vulnerable (VU)	An ecological community if, at that time: A) is not critically endangered or endangered; and B) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000)
Western Australia Conservation Categories (BC Act)	
Threatened Ecological Communities	
Critically Endangered (CR)	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.

Categories	Definition
Endangered (EN)	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.
Vulnerable (VU)	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.
Collapsed ecological communities	
An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time – (a) there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or (b) the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover – (i) its species composition or structure; or (ii) its species composition and structure. Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.	

Categories and definitions for PECS as listed by the DBCA

Category	Description
Priority 1	Poorly known ecological communities. Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2	Poorly known ecological communities. Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Category	Description
Priority 3	Poorly known ecological communities. (i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or: (ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; (iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
Priority 4	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. (i) Rare. Ecological communities known from few occurrences 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 communities are usually represented on conservation lands. (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	Conservation Dependent ecological communities. Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in ‘pristine’ condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora

Significant flora

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to DAWE and/or the EPA.

The Federal conservation level of flora species and their significance status is assessed under the EPBC Act. The significance levels for flora used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species.

The State conservation level of flora species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora.

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. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

Categories and definitions for EPBC Act and BC Act listed flora species

Conservation category	Definition
Threatened species	
Critically Endangered (CR)	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". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines.
Endangered (EN)	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". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines
Vulnerable (VU)	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". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines.
Extinct species	
Extinct (EX)	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).
Extinct in the Wild (EW)	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).

Codes for DBCA listed Priority flora

Priority category	Definition
Priority 1	Poorly-known taxa 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 2	Poorly-known taxa 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

Priority category	Definition
	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 3	Poorly-known taxa 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 4	Rare, Near Threatened and other taxa in need of monitoring A. Rare: Taxa 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 taxa are usually represented on conservation lands. B. Near Threatened. Taxa that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. C. Taxa that have been removed from the list of threatened taxa during the past five years for reasons other than taxonomy.

Other significant flora

Flora species, subspecies, varieties, hybrids and ecotypes may be significant for a range of reasons, other than a statutory listing. The EPA (2016a, b) states that significant flora may include taxa that have/are:

- A keystone role in a particular habitat for Threatened or Priority flora species, or large populations representing a considerable proportion of the local or regional total population of a species
- Relictual status, being representation of taxonomic or physiognomic groups that no longer occur widely in the broader landscape
- New species or anomalous features that indicate a potential new species
- Being representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- Unusual species, including restricted subspecies, varieties, or naturally occurring hybrids
- Local endemism (a restricted distribution) or association with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems)

Introduced plants (weeds)

Declared Pests

Information on species considered to be Declared Pests is provided under *State Biosecurity and Agriculture Management Act 2007.*

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

- Invasiveness
- Impacts
- Potential for spread
- Socio-economic and environmental values.

Australian state and territory governments have identified thirty-two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

References

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GoWA 2019, *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report)*, Current as of March 2019, Perth Western Australia, Department of Environment and Conservation, from https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics.

Shepherd, DP, Beeston, GR & Hopkins, AJM 2002, *Native Vegetation in Western Australia – Extent, Type and Status, Resource Management Technical Report 249*, Perth, Department of Agriculture.

Appendix C – Desktop searches

EPBC Act PMST (50 km)

Naturemap Flora Report (40 km)

Naturemap Fauna Report (40 km)

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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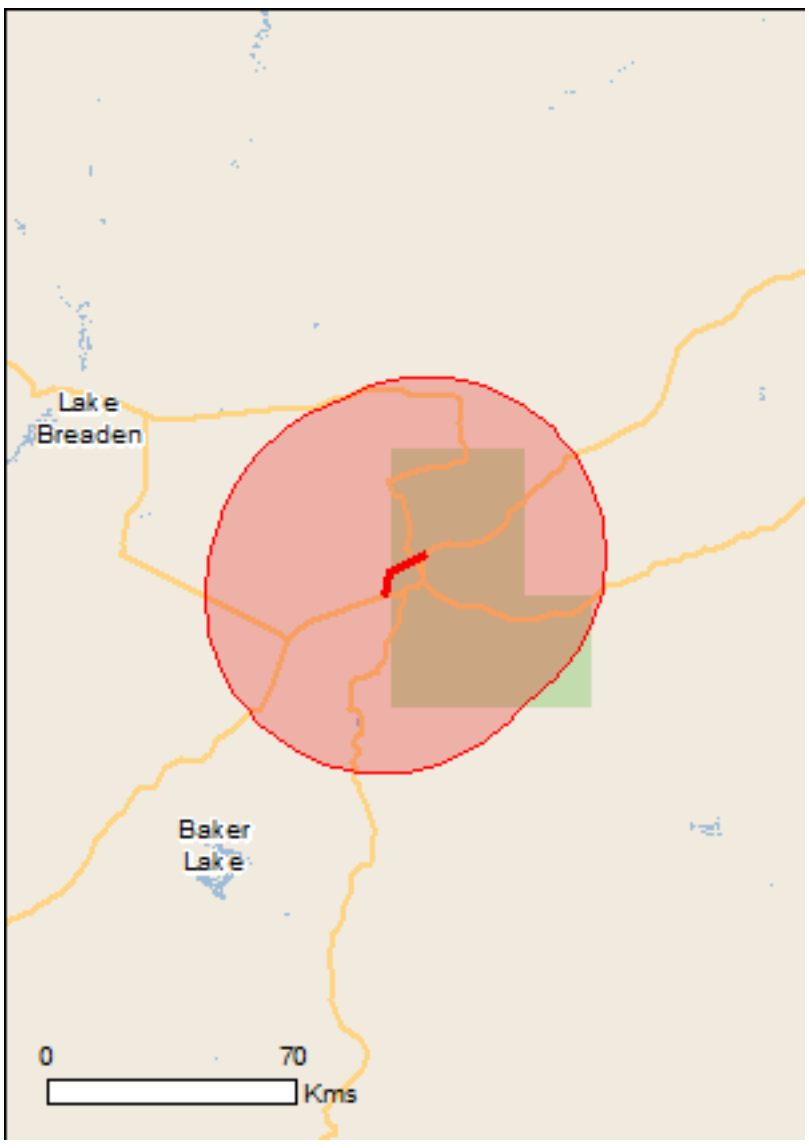
Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

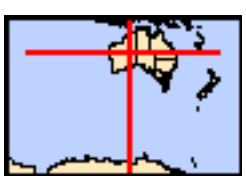
Caveat
Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 50.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	8
Listed Migratory Species:	6

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	9
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	7
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Mammals		
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area
Petrogale lateralis centralis Warru, Central Australian Rock-wallaby [90831]	Vulnerable	Species or species habitat known to occur within area
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat may occur within area
Reptiles		
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Ngaanyatjarra	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Mammals		
Camelus dromedarius Dromedary, Camel [7]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

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

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-26.162189 126.479033,-26.108654 126.498781,-26.070056 126.592872,-26.070056 126.592872

Acknowledgements

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

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

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

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

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NatureMap
Mapping Western Australia's biodiversity

NatureMap_Flora_Warburton

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 126° 30' 56" E,26° 05' 41" S
Buffer 40km
Group By Family

Family	Species	Records
Aizoaceae	1	2
Amaranthaceae	7	9
Apocynaceae	1	1
Asparagaceae	1	1
Asteraceae	26	39
Bignoniaceae	1	2
Boraginaceae	5	11
Brassicaceae	9	11
Campanulaceae	3	3
Casuarinaceae	1	1
Chenopodiaceae	20	34
Colchicaceae	1	2
Convolvulaceae	2	3
Cupressaceae	1	2
Cyperaceae	1	1
Euphorbiaceae	4	6
Fabaceae	36	72
Gentianaceae	1	1
Geraniaceae	1	1
Goodeniaceae	9	17
Gyrostemonaceae	2	3
Haloragaceae	2	2
Lamiaceae	9	15
Loranthaceae	5	5
Malvaceae	11	13
Marsileaceae	1	1
Montiaceae	1	1
Myrtaceae	21	42
Nyctaginaceae	4	5
Pittosporaceae	1	1
Poaceae	36	58
Polygonaceae	1	1
Portulacaceae	2	3
Proteaceae	4	8
Pteridaceae	2	4
Rhamnaceae	1	2
Santalaceae	4	10
Sapindaceae	1	1
Scrophulariaceae	12	24
Solanaceae	10	21
Thymelaeaceae	1	2
Zygophyllaceae	3	3
TOTAL	**265**	**444**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Aizoaceae					
1.	44362	*Trianthema triquetrum*			
Amaranthaceae					
2.	2711	*Ptilotus clementii (Tassel Top)*			
3.	2721	*Ptilotus exaltatus (Tall Mulla Mulla)*			
4.	2731	*Ptilotus helipteroides (Hairy Mulla Mulla)*			
5.	2738	*Ptilotus latifolius (Tangled Mulla Mulla)*			
6.	2747	*Ptilotus obovatus (Cotton Bush)*			
7.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
8.	10809	*Ptilotus sessilifolius*			
Apocynaceae					
9.	48986	*Vincetoxicum lineare*			
Asparagaceae					
10.	14391	*Thysanotus sp. Desert East of Newman (R.P. Hart 964)*		P2	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Asteraceae					
11.	7836	*Angianthus tomentosus (Camel-grass)*			
12.	7871	*Brachyscome ciliaris*			
13.	7896	*Calocephalus platycephalus (Billybuttons)*			
14.	7903	*Calotis hispidula (Bindy Eye)*			
15.	7904	*Calotis latiuscula*			
16.	7906	*Calotis plumulifera*			
17.	34358	*Calotis sp. Carnarvon Range (D.J. Edinger & K.F. Kenneally D 2708 K 12243)*			
18.	12613	*Chrysocephalum eremaeum*			
19.	12614	*Chrysocephalum pterochaetum*			
20.	13138	*Chrysocephalum puteale*			
21.	7988	*Gnephosis arachnoidea (Cobwebby-headed Gnephosis)*			
22.	13289	*Lawrencella davenportii*			
23.	19726	*Leiocarpa semicalva*			
24.	19236	*Leiocarpa tomentosa*			
25.	13258	*Leucochrysum stipitatum*			
26.	8151	*Olearia stuartii*			
27.	8192	*Pterocaulon sphacelatum (Apple Bush, Fruit Salad Plant)*			
28.	13308	*Rhodanthe charsleyae*			
29.	13300	*Rhodanthe citrina*			
30.	13301	*Rhodanthe floribunda*			
31.	13299	*Rhodanthe tietkensii*			
32.	17985	*Rutidosis helichrysoides subsp. helichrysoides*			
33.	13285	*Schoenia ayersii*			
34.	8200	*Schoenia cassiniana (Schoenia)*			
35.	46093	*Waitzia fitzgibbonii*			
36.	48250	*Xerochrysum interiore*			
Bignoniaceae					
37.	7117	*Pandorea pandorana*			
Boraginaceae					
38.	6688	*Halgania erecta*			
39.	6689	*Halgania glabra*			
40.	30258	*Halgania solanacea var. Mt Doreen (G.M. Chippendale 4206)*			
41.	6713	*Heliotropium ovalifolium*			
42.	6727	*Trichodesma zeylanicum (Camel Bush, Kumbalin)*			
Brassicaceae					
43.	3000	*Brassica tournefortii (Mediterranean Turnip)*	Y		
44.	3008	*Carrichtera annua (Ward's Weed)*	Y		
45.	19334	*Harmsiodoxa sp. Eremaean (A.S. George 3894)*			
46.	3032	*Lepidium muelleri-ferdinandii*			
47.	3033	*Lepidium oxytrichum*			
48.	3037	*Lepidium phlebopetalum (Veined Peppercress)*			
49.	3072	*Sisymbrium orientale (Indian Hedge Mustard)*	Y		
50.	3074	*Stenopetalum anfractum*			
51.	30212	*Stenopetalum lineare var. lineare*			
Campanulaceae					
52.	7397	*Isotoma petraea (Rock Isotome, Tundiwari)*			
53.	7403	*Lobelia heterophylla (Wing-seeded Lobelia)*			
54.	7393	*Wahlenbergia tumidifructa*			
Casuarinaceae					
55.	1723	*Allocasuarina decaisneana (Desert Oak)*			
Chenopodiaceae					
56.	2456	*Atriplex elachophylla*			
57.	2476	*Atriplex semilunaris (Annual Saltbush)*			
58.	2481	*Atriplex vesicaria (Bladder Saltbush)*			
59.	2499	*Dissocarpus paradoxus (Curious Saltbush)*			
60.	33501	*Dysphania cristata (Crested Goosefoot)*			
61.	2502	*Dysphania kalpari (Rat's Tail, Kalpari)*			
62.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
63.	33483	*Dysphania saxatilis*			
64.	12064	*Enchylaena tomentosa var. tomentosa (Barrier Saltbush)*			
65.	2544	*Maireana georgei (Satiny Bluebush)*			
66.	2546	*Maireana integra*			
67.	2556	*Maireana planifolia (Low Bluebush)*			
68.	2562	*Maireana scleroptera*			
69.	2571	*Maireana villosa*			
70.	30434	*Salsola australis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
71.	2603	*Sclerolaena cornishiana (Cartwheel Burr)*			
72.	2604	*Sclerolaena costata*			
73.	2607	*Sclerolaena densiflora*			
74.	2611	*Sclerolaena eriacantha (Tall Bindii)*			
75.	2625	*Sclerolaena obliquicuspis (Limestone Bindii)*			
Colchicaceae					
76.	1392	*Wurmbea deserticola*			
Convolvulaceae					
77.	11167	*Bonamia erecta*			
78.	6612	*Convolvulus clementii*			
Cupressaceae					
79.	8466	*Callitris columellaris (White Cypress Pine)*			
Cyperaceae					
80.	814	*Cyperus squarrosus*			
Euphorbiaceae					
81.	42842	*Euphorbia australis var. erythrantha*			
82.	4619	*Euphorbia biconvexa*			
83.	42847	*Euphorbia ferdinandi var. ferdinandi*			
84.	12097	*Euphorbia tannensis subsp. eremophila (Desert Spurge)*			
Fabaceae					
85.	3217	*Acacia aneura (Mulga, Wanari)*			
86.	37260	*Acacia aptaneura*			
87.	3232	*Acacia ayersiana*			
88.	3246	*Acacia brachystachya (Turpentine Mulga)*			
89.	3248	*Acacia burkittii (Sandhill Wattle)*			
90.	3327	*Acacia estrophiolata (Desert Ironwood)*			
91.	3364	*Acacia helmsiana*			
92.	3419	*Acacia ligulata (Umbrella Bush, Watarka)*			
93.	19305	*Acacia melleodora*			
94.	3463	*Acacia nyssophylla*			
95.	15724	*Acacia paraneura*			
96.	3500	*Acacia pruinocarpa (Gidgee)*			
97.	36800	*Acacia pteraneura*			
98.	19499	*Acacia ramulosa var. ramulosa*			
99.	3519	*Acacia rhodophloia*			
100.	3545	*Acacia sibina*			
101.	23529	*Acacia subcontorta*			
102.	3577	*Acacia tetragonophylla (Kurara, Wakalpuka)*			
103.	31511	*Acacia victoriae subsp. victoriae*			
104.	30143	*Acacia walkeri*			
105.	3774	*Crotalaria cunninghamii (Green Birdflower, Bilbun)*			
106.	17217	*Cullen pallidum*			
107.	3938	*Glycine canescens (Silky Glycine)*			
108.	10995	*Gompholobium polyzygum*			
109.	3974	*Indigofera georgei (Bovine Indigo)*			
110.	3991	*Isotropis centralis*			
111.	4055	*Leptosema chambersii*			
112.	17645	*Senna artemisioides*			
113.	12276	*Senna artemisioides subsp. filifolia*			
114.	12281	*Senna artemisioides subsp. petiolaris*			
115.	17558	*Senna artemisioides subsp. x artemisioides*			
116.	12283	*Senna artemisioides subsp. x sturtii*			
117.	18449	*Senna glaucifolia*			
118.	12355	*Swainsona affinis*			
119.	12356	*Swainsona formosa*			
120.	13585	*Swainsona tenuis*			
Gentianaceae					
121.	41660	*Schenkia australis*			
Geraniaceae					
122.	4335	*Erodium cygnorum (Blue Heronsbill)*			
Goodeniaceae					
123.	7433	*Dampiera dentata*			
124.	7483	*Dampiera tomentosa (Felted Dampiera)*			
125.	20523	*Goodenia azurea subsp. hesperia*			
126.	7498	*Goodenia centralis*			
127.	7518	*Goodenia iyouta*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
128.	7547	*Goodenia schwerinensis*			
129.	7558	*Goodenia triodiophila*			
130.	7565	*Goodenia xanthosperma (Yellow-seeded Goodenia)*			
131.	7654	*Velleia connata (Cup Velleia)*			
Gyrostemonaceae					
132.	2784	*Gyrostemon ramulosus (Corkybark)*			
133.	2789	*Gyrostemon tepperi*			
Haloragaceae					
134.	33620	*Glischrocaryon angustifolium*			
135.	6152	*Gonocarpus eremophilus*			
Lamiaceae					
136.	6757	*Dicrastylis doranii*			
137.	6758	*Dicrastylis exsuccosa*			
138.	33778	*Hemigenia botryphylla*			
139.	6785	*Newcastelia bracteosa*			
140.	6786	*Newcastelia cephalantha*			
141.	6793	*Newcastelia spodiotricha*			
142.	12702	*Prostanthera sericea*			
143.	6925	*Prostanthera striatiflora*			
144.	6926	*Prostanthera wilkieana*			
Loranthaceae					
145.	11614	*Amyema gibberula var. gibberula*			
146.	2380	*Amyema miquelii (Stalked Mistletoe)*			
147.	11874	*Amyema sanguinea var. sanguinea*			
148.	12051	*Lysiana exocarpi subsp. exocarpi (Harlequin Mistletoe)*			
149.	2398	*Lysiana murrayi (Mistletoe, Parka-Parka)*			
Malvaceae					
150.	4896	*Abutilon leucopetalum (Desert Chinese Lantern)*			
151.	4907	*Alyogyne pinoniana (Sand Hibiscus)*			
152.	40917	*Androcalva loxophylla*			
153.	4999	*Brachychiton gregorii (Desert Kurrajong, Ngalta)*			
154.	11893	*Hibiscus sturtii var. truncatus*			
155.	19461	*Lawrencia sp. small fruits (Symon 2338)*			
156.	4962	*Malvastrum americanum (Spiked Malvastrum)*	Y		
157.	46816	*Seringia elliptica (Showy fire-bush)*			
158.	4981	*Sida intricata (Tangled Sida)*			
159.	31854	*Sida sp. Excedentifolia (J.L. Egan 1925)*			
160.	19712	*Sida sp. dark green fruits (S. van Leeuwen 2260)*			
Marsileaceae					
161.	75	*Marsilea exarata*			
Montiaceae					
162.	2844	*Calandrinia balonensis (Broadleaf Parakeelya)*			
Myrtaceae					
163.	5446	*Calytrix carinata*			
164.	16780	*Corymbia candida subsp. dipsodes*			
165.	17094	*Corymbia chippendalei*			
166.	17123	*Corymbia eremaea subsp. eremaea*			
167.	17077	*Corymbia ferriticola*			
168.	17092	*Corymbia opaca*			
169.	35344	*Eucalyptus camaldulensis subsp. arida*			
170.	35345	*Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)*			
171.	5636	*Eucalyptus eremicola*			
172.	5655	*Eucalyptus gamophylla (Twin-leaf Mallee, Warilu)*			
173.	13533	*Eucalyptus glomerosa (Jinjulu)*			
174.	5677	*Eucalyptus intertexta (Barstard Coolibah)*			
175.	5684	*Eucalyptus kingsmillii (Kingsmill's Mallee)*			
176.	5707	*Eucalyptus mannensis (Mann Range Mallee)*			
177.	5773	*Eucalyptus socialis (Red Mallee, Altarpa)*			
178.	14548	*Eucalyptus victrix*			
179.	5803	*Eucalyptus youngiana (Large-fruited Mallee, Yarldarlba)*			
180.	5846	*Lamarchea sulcata*			
181.	5915	*Melaleuca glomerata*			
182.	5994	*Micromyrtus fimbrisepala*			
183.	5995	*Micromyrtus flaviflora*			
Nyctaginaceae					
184.	2769	*Boerhavia burbidgeana*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
185.	2770	*Boerhavia coccinea (Tar Vine, Wituka)*			
186.	2774	*Boerhavia repleta*			
187.		*Boerhavia sp.*			
Pittosporaceae					
188.	19744	*Pittosporum angustifolium*			
Poaceae					
189.	207	*Aristida contorta (Bunched Kerosene Grass)*			
190.	240	*Bothriochloa ewartiana (Desert Bluegrass)*			
191.	258	*Cenchrus ciliaris (Buffel Grass)*	Y		
192.	271	*Chloris truncata (Windmill Grass)*			
193.	283	*Cynodon dactylon (Couch)*	Y		
194.	290	*Dactyloctenium radulans (Button Grass)*			
195.	13741	*Dichanthium sericeum subsp. humilius*			
196.	11964	*Dichanthium sericeum subsp. sericeum*			
197.	310	*Digitaria brownii (Cotton Panic Grass)*			
198.	356	*Enneapogon avenaceus (Bottle Washers)*			
199.	357	*Enneapogon caerulescens (Limestone Grass)*			
200.	365	*Enneapogon polyphyllus (Leafy Nineawn)*			
201.	368	*Enteropogon ramosus (Windmill Grass, Curly Windmill Grass)*			
202.	370	*Eragrostis barrelieri*	Y		
203.	378	*Eragrostis dielsii (Mallee Lovegrass)*			
204.	380	*Eragrostis eriopoda (Woollybutt Grass, Wangurnu)*			
205.	386	*Eragrostis laniflora (Hairy-flowered Woollybutt)*			
206.	392	*Eragrostis pergracilis*			
207.	399	*Eragrostis xerophila (Knotty-butt Neverfail)*			
208.	413	*Eriachne mucronata (Mountain Wanderrie Grass)*			
209.	11011	*Eulalia aurea*			
210.	490	*Monachather paradoxus*			
211.	503	*Panicum decompositum (Native Millet, Kaltu-kaltu)*			
212.	514	*Paractaenum refractum*			
213.	10975	*Paspalidium basicladum*			
214.	518	*Paspalidium clementii (Clements Paspalidium)*			
215.	606	*Setaria dielsii (Diels' Pigeon Grass)*			
216.	672	*Themeda avenacea (Native Oatgrass)*			
217.	673	*Themeda triandra*			
218.	676	*Thyridolepis xerophila*			
219.	680	*Triodia basedowii (Lobed Spinifex)*			
220.	682	*Triodia concinna*			
221.	17877	*Triodia melvillei*			
222.	696	*Triodia pungens (Soft Spinifex)*			
223.	17873	*Triodia schinzii*			
224.	706	*Triraphis mollis (Needle Grass)*			
Polygonaceae					
225.	2443	*Rumex vesicarius (Ruby Dock)*	Y		
Portulacaceae					
226.	2875	*Portulaca australis*			
227.	2884	*Portulaca oleracea (Purslane, Wakati)*			
Proteaceae					
228.	2001	*Grevillea eriostachya (Flame Grevillea, Kaliny-kalinypa)*			
229.	15845	*Grevillea juncifolia subsp. juncifolia*			
230.	19137	*Hakea lorea subsp. lorea*			
231.	2200	*Hakea rhombales*			
Pteridaceae					
232.	37	*Cheilanthes lasiophylla (Woolly Cloak Fern)*			
233.	12818	*Cheilanthes sieberi subsp. sieberi*			
Rhamnaceae					
234.	16199	*Stenanthemum petraeum*			
Santalaceae					
235.	2333	*Anthobolus leptomerioides*			
236.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
237.	2356	*Santalum acuminatum (Quandong, Warnga)*			
238.	2357	*Santalum lanceolatum (Northern Sandalwood, Yarnguli)*			
Sapindaceae					
239.	11674	*Dodonaea viscosa subsp. mucronata*			
Scrophulariaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
240.	7182	*Eremophila battii*			
241.	7189	*Eremophila clarkei (Turpentine Bush)*			
242.	7192	*Eremophila cuneifolia (Pinyuru, T'iranju)*			
243.	7205	*Eremophila exilifolia*			
244.	15052	*Eremophila forrestii subsp. forrestii*			
245.	16732	*Eremophila gilesii subsp. gilesii*			
246.	7222	*Eremophila hughesii*			
247.	17576	*Eremophila latrobei subsp. latrobei*			
248.	7234	*Eremophila longifolia (Berrigan, Tulypurpa)*			
249.	15054	*Eremophila platythamnos subsp. exotrachys*			
250.	7256	*Eremophila punctata*			
251.	17160	*Eremophila willsii subsp. integrifolia*			

Solanaceae

252.	6952	*Anthotroche pannosa (Felted Anthotroche)*			
253.	6966	*Duboisia hopwoodii (Pituri, Kundugu)*			
254.	11331	*Nicotiana occidentalis subsp. obliqua*			
255.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			
256.	6997	*Solanum chippendalei*			
257.	6998	*Solanum cleistogamum*			
258.	6999	*Solanum coactiliferum (Western Nightshade)*			
259.	7018	*Solanum lasiophyllum (Flannel Bush, Mindjulu)*			
260.	11241	*Solanum orbiculatum subsp. orbiculatum (Round-leaved Solanum)*			
261.	46734	*Solanum pallidifolium*			

Thymelaeaceae

262.	5230	*Pimelea ammocharis*			

Zygophyllaceae

263.	48889	*Roepera eichleri*			
264.	48901	*Roepera similis*			
265.	4374	*Tribulus astrocarpus*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap_Flora Blackstone

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 127° 59' 00" E,25° 56' 40" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthaceae	1	2
Amaranthaceae	13	30
Araliaceae	1	1
Asteraceae	27	58
Bignoniaceae	1	4
Boraginaceae	4	5
Brassicaceae	4	6
Casuarinaceae	1	2
Celastraceae	2	5
Chenopodiaceae	20	22
Cleomaceae	1	1
Convolvulaceae	1	2
Cyperaceae	1	1
Euphorbiaceae	7	15
Fabaceae	30	49
Gentianaceae	1	1
Geraniaceae	2	6
Goodeniaceae	9	11
Gyrostemonaceae	1	1
Haloragaceae	4	4
Hemerocallidaceae	1	1
Juncaginaceae	1	1
Lamiaceae	4	14
Loganiaceae	1	1
Loranthaceae	5	15
Lythraceae	1	1
Malvaceae	8	9
Montiaceae	1	1
Moraceae	1	2
Myrtaceae	10	36
Nyctaginaceae	1	1
Pittosporaceae	1	2
Plantaginaceae	1	1
Poaceae	33	79
Proteaceae	2	3
Santalaceae	1	2
Sapindaceae	2	6
Scrophulariaceae	10	17
Solanaceae	7	16
Thymelaeaceae	2	4
Zygophyllaceae	5	5
TOTAL	**229**	**443**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthaceae					
1.	11609	*Rostellularia adscendens var. pogonanthera*			
Amaranthaceae					
2.	34810	*Amaranthus centralis*		P3	
3.	2660	*Amaranthus cuspidifolius*			
4.	2666	*Amaranthus mitchellii (Boggabri Weed)*			
5.	2690	*Ptilotus aervoides*			
6.	2709	*Ptilotus chippendalei*			
7.	2711	*Ptilotus clementii (Tassel Top)*			
8.	2721	*Ptilotus exaltatus (Tall Mulla Mulla)*			
9.	2731	*Ptilotus helipteroides (Hairy Mulla Mulla)*			
10.	2738	*Ptilotus latifolius (Tangled Mulla Mulla)*			
11.	2746	*Ptilotus nobilis (Tall Mulla Mulla)*			
12.	2747	*Ptilotus obovatus (Cotton Bush)*			
13.	12090	*Ptilotus obovatus var. griseus*			Y
14.	10809	*Ptilotus sessilifolius*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Araliaceae					
15.	6273	*Trachymene glaucifolia (Wild Carrot)*			
Asteraceae					
16.	7836	*Angianthus tomentosus (Camel-grass)*			
17.	7885	*Brachyscome tesquorum*			
18.	7903	*Calotis hispidula (Bindy Eye)*			
19.	7904	*Calotis latiuscula*			
20.	7905	*Calotis multicaulis (Many-stemmed Burr-daisy)*			
21.	7906	*Calotis plumulifera*			
22.	47153	*Chrysocephalum apiculatum subsp. glandulosum*			
23.	12614	*Chrysocephalum pterochaetum*			
24.	8089	*Ixiochlamys filicifolia*			
25.	13289	*Lawrencella davenportii*			
26.	8110	*Minuria leptophylla (Minnie Daisy)*			
27.	8151	*Olearia stuartii*			
28.	45238	*Podolepis aristata subsp. affinis*			
29.	8192	*Pterocaulon sphacelatum (Apple Bush, Fruit Salad Plant)*			
30.	13301	*Rhodanthe floribunda*			
31.	13299	*Rhodanthe tietkensii*			
32.	8198	*Rutidosis helichrysoides (Grey Wrinklewort)*			
33.	17985	*Rutidosis helichrysoides subsp. helichrysoides*			
34.	13285	*Schoenia ayersii*			
35.	25879	*Senecio eremicola*			
36.	9366	*Senecio gregorii (Fleshy Groundsel)*			
37.	8210	*Senecio laceratus*			
38.	8213	*Senecio magnificus (Showy Groundsel)*			
39.	8237	*Streptoglossa decurrens*			
40.	12649	*Tietkensia corrickiae*			
41.	8265	*Vittadinia eremaea*			
42.	8273	*Vittadinia sulcata*			
Bignoniaceae					
43.	7117	*Pandorea pandorana*			
Boraginaceae					
44.	6680	*Cynoglossum australe (Australian Hound's-tongue)*			
45.	6700	*Heliotropium asperrimum (Rough Heliotrope)*			
46.	17308	*Heliotropium moorei*			
47.	17315	*Heliotropium tanythrix*			
Brassicaceae					
48.	3033	*Lepidium oxytrichum*			
49.	3037	*Lepidium phlebopetalum (Veined Peppercress)*			
50.	3052	*Menkea lutea*		P1	
51.	3082	*Stenopetalum velutinum (Velvet Thread Petal)*			
Casuarinaceae					
52.	1723	*Allocasuarina decaisneana (Desert Oak)*			
Celastraceae					
53.	4729	*Stackhousia clementii*		P3	
54.	19555	*Stackhousia muricata subsp. annual (W.R. Barker 2172)*			
Chenopodiaceae					
55.	2456	*Atriplex elachophylla*			
56.	2481	*Atriplex vesicaria (Bladder Saltbush)*			
57.	2499	*Dissocarpus paradoxus (Curious Saltbush)*			
58.	2502	*Dysphania kalpari (Rat's Tail, Kalpari)*			
59.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
60.	11704	*Einadia nutans subsp. eremaea (Climbing Saltbush)*			
61.	12064	*Enchylaena tomentosa var. tomentosa (Barrier Saltbush)*			
62.	2513	*Eremophea spinosa*			
63.	2544	*Maireana georgei (Satiny Bluebush)*			
64.	2556	*Maireana planifolia (Low Bluebush)*			
65.	2562	*Maireana scleroptera*			
66.	11662	*Maireana tomentosa subsp. tomentosa*			
67.	2582	*Rhagodia eremaea (Thorny Saltbush)*			
68.	30434	*Salsola australis*			
69.	2602	*Sclerolaena convexula*			
70.	2603	*Sclerolaena cornishiana (Cartwheel Burr)*			
71.	2604	*Sclerolaena costata*			
72.	8877	*Sclerolaena gardneri*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
73.	2626	*Sclerolaena parviflora (Small-flower Saltbush)*			
74.	2627	*Sclerolaena patenticuspis (Spear-fruit Saltbush)*			
Cleomaceae					
75.	2988	*Cleome viscosa (Tickweed, Tjinduwadhu)*			
Convolvulaceae					
76.	6612	*Convolvulus clementii*			
Cyperaceae					
77.	777	*Cyperus bulbosus (Bush Onion, Tjanmata)*			
Euphorbiaceae					
78.	17454	*Adriana tomentosa var. hookeri*			
79.	42842	*Euphorbia australis var. erythrantha*			
80.	4619	*Euphorbia biconvexa*			
81.	40100	*Euphorbia centralis*			
82.	42846	*Euphorbia ferdinandi*			
83.	4637	*Euphorbia parvicaruncula*		P1	
84.	12097	*Euphorbia tannensis subsp. eremophila (Desert Spurge)*			
Fabaceae					
85.	37260	*Acacia aptaneura*			
86.	15280	*Acacia cuthbertsonii subsp. cuthbertsonii*			
87.	3377	*Acacia inaequilatera (Baderi)*			
88.	3399	*Acacia kempeana (Witchetty Bush, Ilykuwara)*			
89.	3419	*Acacia ligulata (Umbrella Bush, Watarka)*			
90.	3434	*Acacia maitlandii (Maitland's Wattle)*			
91.	3447	*Acacia monticola (Gawar, Lilwardi)*			
92.	3463	*Acacia nyssophylla*			
93.	3475	*Acacia pachyacra*			
94.	15724	*Acacia paraneura*			
95.	3495	*Acacia prainii (Prain's Wattle)*			
96.	3500	*Acacia pruinocarpa (Gidgee)*			
97.	3577	*Acacia tetragonophylla (Kurara, Wakalpuka)*			
98.	3592	*Acacia validinervia*			
99.	11411	*Crotalaria eremaea subsp. strehlowii*			
100.	3977	*Indigofera helmsii*			
101.	3674	*Petalostylis cassioides*			
102.	4191	*Rhynchosia minima (Rhynchosia)*			
103.	12279	*Senna artemisioides subsp. helmsii*			
104.	12280	*Senna artemisioides subsp. oligophylla*			
105.	12281	*Senna artemisioides subsp. petiolaris*			
106.	17558	*Senna artemisioides subsp. x artemisioides*			
107.	18346	*Senna glutinosa*			
108.	12314	*Senna pleurocarpa var. pleurocarpa*			
109.	4233	*Swainsona leeana*			
110.	4235	*Swainsona microphylla (Small-leaf Swainsona)*			
111.	13585	*Swainsona tenuis*			
112.	4246	*Swainsona unifoliolata*			
113.	4252	*Templetonia egena (Round Templetonia)*			
114.	4282	*Tephrosia sphaerospora*			
Gentianaceae					
115.	6539	*Centaurium erythraea (Common Centaury)*	Y		
Geraniaceae					
116.	4331	*Erodium aureum*	Y		
117.	4334	*Erodium crinitum (Corkscrew)*			
Goodeniaceae					
118.	7426	*Dampiera cinerea*			
119.	7433	*Dampiera dentata*			
120.	48498	*Goodenia asteriscus*		P3	
121.	7495	*Goodenia berardiana*			
122.	7498	*Goodenia centralis*			
123.	8439	*Goodenia glabra*			
124.	7516	*Goodenia hirsuta*		P3	
125.	7558	*Goodenia triodiophila*			
126.	7644	*Scaevola spinescens (Currant Bush, Maroon)*			
Gyrostemonaceae					
127.	2784	*Gyrostemon ramulosus (Corkybark)*			
Haloragaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
128.	6174	*Haloragis gossei*			
129.	23465	*Haloragis gossei var. gossei*			
130.	6180	*Haloragis trigonocarpa*			
131.	6181	*Haloragis uncatipila*			
Hemerocallidaceae					
132.	11873	*Corynotheca micrantha var. divaricata*			
Juncaginaceae					
133.	33276	*Triglochin isingiana*			
Lamiaceae					
134.	6757	*Dicrastylis doranii*			
135.	6762	*Dicrastylis gilesii*			
136.	17741	*Microcorys macredieana*			
137.	6785	*Newcastelia bracteosa*			
Loganiaceae					
138.	46218	*Orianthera centralis*			
Loranthaceae					
139.	11614	*Amyema gibberula var. gibberula*			
140.	2383	*Amyema preissii (Wireleaf Mistletoe)*			
141.	11874	*Amyema sanguinea var. sanguinea*			
142.	12051	*Lysiana exocarpi subsp. exocarpi (Harlequin Mistletoe)*			
143.	2398	*Lysiana murrayi (Mistletoe, Parka-Parka)*			
Lythraceae					
144.	17847	*Lythrum paradoxum*		P3	
Malvaceae					
145.	4895	*Abutilon lepidum*			
146.	4896	*Abutilon leucopetalum (Desert Chinese Lantern)*			
147.	43020	*Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)*			
148.	40917	*Androcalva loxophylla*			
149.	4927	*Hibiscus drummondii (Drummond's Hibiscus)*			
150.	4941	*Hibiscus solanifolius*			
151.	4962	*Malvastrum americanum (Spiked Malvastrum)*	Y		
152.	46816	*Seringia elliptica (Showy fire-bush)*			
Montiaceae					
153.	2860	*Calandrinia polyandra (Parakeelya)*			
Moraceae					
154.	19648	*Ficus brachypoda*			
Myrtaceae					
155.	19469	*Aluta maisonneuvei subsp. maisonneuvei*			
156.	17122	*Corymbia eremaea*			
157.	17123	*Corymbia eremaea subsp. eremaea*			
158.	17095	*Corymbia lenziana*			
159.	17092	*Corymbia opaca*			
160.	5655	*Eucalyptus gamophylla (Twin-leaf Mallee, Warilu)*			
161.	5734	*Eucalyptus oxymitra (Sharp-capped Mallee)*			
162.	5773	*Eucalyptus socialis (Red Mallee, Altarpa)*			
163.	29733	*Eucalyptus trivalva (Victoria Spring Mallee)*			
164.	5915	*Melaleuca glomerata*			
Nyctaginaceae					
165.	2774	*Boerhavia repleta*			
Pittosporaceae					
166.	19744	*Pittosporum angustifolium*			
Plantaginaceae					
167.	34760	*Plantago cunninghamii*			
Poaceae					
168.	206	*Aristida capillifolia (Needle-leaved Threeawn)*			
169.	207	*Aristida contorta (Bunched Kerosene Grass)*			
170.	12063	*Aristida holathera var. holathera*			
171.	212	*Aristida inaequiglumis (Feathertop Threeawn)*			
172.	215	*Aristida latifolia (Feathertop Wiregrass)*			
173.	229	*Astrebla pectinata (Barley Mitchell Grass)*			
174.	17246	*Austrostipa nitida*			
175.	281	*Cymbopogon obtectus (Silkyheads)*			
176.	13741	*Dichanthium sericeum subsp. humilius*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
177.	11964	*Dichanthium sericeum subsp. sericeum*			
178.	310	*Digitaria brownii (Cotton Panic Grass)*			
179.	356	*Enneapogon avenaceus (Bottle Washers)*			
180.	357	*Enneapogon caerulescens (Limestone Grass)*			
181.	358	*Enneapogon cylindricus (Jointed Nineawn)*			
182.	365	*Enneapogon polyphyllus (Leafy Nineawn)*			
183.	368	*Enteropogon ramosus (Windmill Grass, Curly Windmill Grass)*			
184.	386	*Eragrostis laniflora (Hairy-flowered Woollybutt)*			
185.	393	*Eragrostis setifolia (Neverfail Grass)*			
186.	399	*Eragrostis xerophila (Knotty-butt Neverfail)*			
187.	464	*Iseilema membranaceum (Small Flinders Grass)*			
188.	490	*Monachather paradoxus*			
189.	503	*Panicum decompositum (Native Millet, Kaltu-kaltu)*			
190.	514	*Paractaenum refractum*			
191.	515	*Paraneurachne muelleri (Northern Mulga Grass)*			
192.	518	*Paspalidium clementii (Clements Paspalidium)*			
193.	524	*Paspalidium reflexum*			
194.	673	*Themeda triandra*			
195.	680	*Triodia basedowii (Lobed Spinifex)*			
196.	688	*Triodia irritans (Porcupine Grass)*			
197.	696	*Triodia pungens (Soft Spinifex)*			
198.	699	*Triodia scariosa*			
199.	17873	*Triodia schinzii*			
200.	732	*Yakirra australiensis*			
Proteaceae					
201.	2001	*Grevillea eriostachya (Flame Grevillea, Kaliny-kalinypa)*			
202.	19137	*Hakea lorea subsp. lorea*			
Santalaceae					
203.	2357	*Santalum lanceolatum (Northern Sandalwood, Yarnguli)*			
Sapindaceae					
204.	11247	*Dodonaea viscosa subsp. angustissima*			
205.	11674	*Dodonaea viscosa subsp. mucronata*			
Scrophulariaceae					
206.	7201	*Eremophila duttonii*			
207.	7211	*Eremophila georgei*			
208.	16732	*Eremophila gilesii subsp. gilesii*			
209.	14340	*Eremophila glabra subsp. glabra*			
210.	7230	*Eremophila latrobei (Warty Fuchsia Bush, Mintjingka)*			
211.	17169	*Eremophila latrobei subsp. glabra*			
212.	7234	*Eremophila longifolia (Berrigan, Tulypurpa)*			
213.	15054	*Eremophila platythamnos subsp. exotrachys*			
214.	7269	*Eremophila serrulata (Serrate-leaved Eremophila)*			
215.	17160	*Eremophila willsii subsp. integrifolia*			
Solanaceae					
216.	6966	*Duboisia hopwoodii (Pituri, Kundugu)*			
217.	11331	*Nicotiana occidentalis subsp. obliqua*			
218.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			
219.	6998	*Solanum cleistogamum*			
220.	7018	*Solanum lasiophyllum (Flannel Bush, Mindjulu)*			
221.	46734	*Solanum pallidifolium*			
222.	7028	*Solanum petrophilum (Rock Nightshade)*			
Thymelaeaceae					
223.	5230	*Pimelea ammocharis*			
224.	5271	*Pimelea trichostachya (Spiked Riceflower)*			
Zygophyllaceae					
225.	48890	*Roepera eremaea*			
226.	48902	*Roepera tesquorum*			
227.	4374	*Tribulus astrocarpus*			
228.	4380	*Tribulus occidentalis (Perennial Caltrop)*			
229.	4383	*Tribulus terrestris (Caltrop)*	Y		

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4

NatureMap
Mapping Western Australia's biodiversity

NatureMap_Jameson-Wanarn Rd

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 127° 35' 23" E,25° 47' 14" S
Buffer 40km
Group By Family

Family	Species	Records
Amaranthaceae	5	7
Asteraceae	15	23
Bignoniaceae	1	5
Boraginaceae	4	4
Campanulaceae	2	2
Celastraceae	2	2
Chenopodiaceae	4	5
Cyperaceae	2	2
Elatinaceae	1	1
Fabaceae	12	16
Goodeniaceae	7	7
Haloragaceae	2	2
Hemerocallidaceae	1	1
Lamiaceae	8	26
Loranthaceae	2	2
Malvaceae	11	12
Moraceae	1	1
Myrtaceae	10	15
Poaceae	16	22
Pteridaceae	1	1
Sapindaceae	2	5
Scrophulariaceae	4	4
Solanaceae	6	8
Urticaceae	1	1
Zygophyllaceae	1	1
TOTAL	**121**	**175**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amaranthaceae					
1.	2660	*Amaranthus cuspidifolius*			
2.	2738	*Ptilotus latifolius (Tangled Mulla Mulla)*			
3.	2747	*Ptilotus obovatus (Cotton Bush)*			
4.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
5.	10809	*Ptilotus sessilifolius*			
Asteraceae					
6.	7871	*Brachyscome ciliaris*			
7.	7904	*Calotis latiuscula*			
8.	7906	*Calotis plumulifera*			
9.	12612	*Chrysocephalum apiculatum*			
10.	47153	*Chrysocephalum apiculatum subsp. glandulosum*			
11.	12614	*Chrysocephalum pterochaetum*			
12.	7988	*Gnephosis arachnoidea (Cobwebby-headed Gnephosis)*			
13.	8089	*Ixiochlamys filicifolia*			
14.	19727	*Leiocarpa semicalva subsp. semicalva*			
15.	13299	*Rhodanthe tietkensii*			
16.	8198	*Rutidosis helichrysoides (Grey Wrinklewort)*			
17.	17985	*Rutidosis helichrysoides subsp. helichrysoides*			
18.	13285	*Schoenia ayersii*			
19.	25879	*Senecio eremicola*			
20.	12649	*Tietkensia corrickiae*			
Bignoniaceae					
21.	7117	*Pandorea pandorana*			
Boraginaceae					
22.	6680	*Cynoglossum australe (Australian Hound's-tongue)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
23.	6689	*Halgania glabra*			
24.	17308	*Heliotropium moorei*			
25.	17315	*Heliotropium tanythrix*			
Campanulaceae					
26.	7397	*Isotoma petraea (Rock Isotome, Tundiwari)*			
27.	7393	*Wahlenbergia tumidifructa*			
Celastraceae					
28.	4729	*Stackhousia clementii*		P3	
29.	19555	*Stackhousia muricata subsp. annual (W.R. Barker 2172)*			
Chenopodiaceae					
30.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
31.	11662	*Maireana tomentosa subsp. tomentosa*			
32.	8877	*Sclerolaena gardneri*			
33.	2626	*Sclerolaena parviflora (Small-flower Saltbush)*			
Cyperaceae					
34.	777	*Cyperus bulbosus (Bush Onion, Tjanmata)*			
35.	851	*Fimbristylis dichotoma (Eight Day Grass)*			
Elatinaceae					
36.	5187	*Elatine gratioloides (Waterwort)*			
Fabaceae					
37.	37260	*Acacia aptaneura*			
38.	3419	*Acacia ligulata (Umbrella Bush, Watarka)*			
39.	3434	*Acacia maitlandii (Maitland's Wattle)*			
40.	19305	*Acacia melleodora*			
41.	3475	*Acacia pachyacra*			
42.	15724	*Acacia paraneura*			
43.	3495	*Acacia prainii (Prain's Wattle)*			
44.	3592	*Acacia validinervia*			
45.	16378	*Senna pleurocarpa*			
46.	4235	*Swainsona microphylla (Small-leaf Swainsona)*			
47.	13585	*Swainsona tenuis*			
48.	4246	*Swainsona unifoliolata*			
Goodeniaceae					
49.	7433	*Dampiera dentata*			
50.	48498	*Goodenia asteriscus*		P3	
51.	7495	*Goodenia berardiana*			
52.	7498	*Goodenia centralis*			
53.	7516	*Goodenia hirsuta*		P3	
54.	7558	*Goodenia triodiophila*			
55.	7654	*Velleia connata (Cup Velleia)*			
Haloragaceae					
56.	6180	*Haloragis trigonocarpa*			
57.	6181	*Haloragis uncatipila*			
Hemerocallidaceae					
58.	11873	*Corynotheca micrantha var. divaricata*			
Lamiaceae					
59.	6758	*Dicrastylis exsuccosa*			
60.	6762	*Dicrastylis gilesii*			
61.	17741	*Microcorys macredieana*			
62.	6785	*Newcastelia bracteosa*			
63.	6786	*Newcastelia cephalantha*			
64.	12702	*Prostanthera sericea*			
65.	6925	*Prostanthera striatiflora*			
66.	6926	*Prostanthera wilkieana*			
Loranthaceae					
67.	11874	*Amyema sanguinea var. sanguinea*			
68.	2398	*Lysiana murrayi (Mistletoe, Parka-Parka)*			
Malvaceae					
69.	4895	*Abutilon lepidum*			
70.	43020	*Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)*			
71.	40917	*Androcalva loxophylla*			
72.	4921	*Hibiscus arenicola*			
73.	4933	*Hibiscus leptocladus*			
74.	4941	*Hibiscus solanifolius*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
75.	11893	*Hibiscus sturtii var. truncatus*			
76.	46816	*Seringia elliptica (Showy fire-bush)*			
77.	46821	*Seringia nephrosperma (Free carpel fire-bush)*			
78.	4971	*Sida cardiophylla*			
79.	4986	*Sida platycalyx (Lifesaver Burr)*			
Moraceae					
80.	19648	*Ficus brachypoda*			
Myrtaceae					
81.	19469	*Aluta maisonneuvei subsp. maisonneuvei*			
82.	17122	*Corymbia eremaea*			
83.	5596	*Eucalyptus concinna (Victoria Desert Mallee)*			
84.	5655	*Eucalyptus gamophylla (Twin-leaf Mallee, Warilu)*			
85.	5703	*Eucalyptus lucasii (Barlee Box)*			
86.	13019	*Eucalyptus mannensis subsp. mannensis*			
87.	5734	*Eucalyptus oxymitra (Sharp-capped Mallee)*			
88.	5773	*Eucalyptus socialis (Red Mallee, Altarpa)*			
89.	20288	*Melaleuca interioris*			
90.	46054	*Thryptomene sp. Warburton (M. Henson & M. Hannart 32433)*		P1	Y
Poaceae					
91.	12063	*Aristida holathera var. holathera*			
92.	215	*Aristida latifolia (Feathertop Wiregrass)*			
93.	13741	*Dichanthium sericeum subsp. humilius*			
94.	310	*Digitaria brownii (Cotton Panic Grass)*			
95.	357	*Enneapogon caerulescens (Limestone Grass)*			
96.	358	*Enneapogon cylindricus (Jointed Nineawn)*			
97.	365	*Enneapogon polyphyllus (Leafy Nineawn)*			
98.	399	*Eragrostis xerophila (Knotty-butt Neverfail)*			
99.	464	*Iseilema membranaceum (Small Flinders Grass)*			
100.	493	*Neurachne lanigera*		P1	
101.	503	*Panicum decompositum (Native Millet, Kaltu-kaltu)*			
102.	515	*Paraneurachne muelleri (Northern Mulga Grass)*			
103.	680	*Triodia basedowii (Lobed Spinifex)*			
104.	696	*Triodia pungens (Soft Spinifex)*			
105.	48319	*Tripogonella loliiformis*			
106.	732	*Yakirra australiensis*			
Pteridaceae					
107.	12818	*Cheilanthes sieberi subsp. sieberi*			
Sapindaceae					
108.	11247	*Dodonaea viscosa subsp. angustissima*			
109.	11674	*Dodonaea viscosa subsp. mucronata*			
Scrophulariaceae					
110.	7211	*Eremophila georgei*			
111.	14340	*Eremophila glabra subsp. glabra*			
112.	7230	*Eremophila latrobei (Warty Fuchsia Bush, Mintjingka)*			
113.	17160	*Eremophila willsii subsp. integrifolia*			
Solanaceae					
114.	6966	*Duboisia hopwoodii (Pituri, Kundugu)*			
115.	11331	*Nicotiana occidentalis subsp. obliqua*			
116.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			
117.	6998	*Solanum cleistogamum*			
118.	7018	*Solanum lasiophyllum (Flannel Bush, Mindjulu)*			
119.	46734	*Solanum pallidifolium*			
Urticaceae					
120.	12670	*Parietaria cardiostegia*			
Zygophyllaceae					
121.	4374	*Tribulus astrocarpus*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area

5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap_Gravel pits east of Warakurna

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 128° 32' 29" E,25° 12' 26" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthaceae	1	2
Amaranthaceae	9	22
Apocynaceae	1	1
Araliaceae	1	1
Aspleniaceae	1	1
Asteraceae	28	53
Bignoniaceae	1	2
Boraginaceae	8	15
Brassicaceae	4	5
Campanulaceae	3	4
Casuarinaceae	1	3
Celastraceae	3	4
Chenopodiaceae	21	30
Cleomaceae	1	1
Colchicaceae	1	2
Convolvulaceae	1	1
Cupressaceae	1	1
Cyperaceae	6	9
Droseraceae	2	4
Elatinaceae	1	1
Euphorbiaceae	4	4
Fabaceae	55	128
Goodeniaceae	12	22
Haloragaceae	1	2
Isoetaceae	1	2
Lamiaceae	7	18
Loganiaceae	1	1
Loranthaceae	4	8
Malvaceae	9	23
Marsileaceae	2	2
Montiaceae	1	1
Moraceae	1	3
Myrtaceae	21	39
Phyllanthaceae	1	1
Pittosporaceae	1	2
Poaceae	30	48
Polygalaceae	1	1
Proteaceae	8	21
Pteridaceae	3	3
Rhamnaceae	1	5
Rubiaceae	4	7
Santalaceae	3	7
Sapindaceae	4	6
Scrophulariaceae	9	23
Solanaceae	14	38
Stylidiaceae	1	1
Urticaceae	1	1
Violaceae	1	3
Zygophyllaceae	4	6
TOTAL	**300**	**588**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthaceae					
1.	11609	*Rostellularia adscendens var. pogonanthera*			
Amaranthaceae					
2.	2651	*Alternanthera nana (Hairy Joyweed)*			
3.	2666	*Amaranthus mitchellii (Boggabri Weed)*			
4.	2715	*Ptilotus decipiens*			
5.	2718	*Ptilotus drummondii (Narrowleaf Mulla Mulla)*			
6.	2731	*Ptilotus helipteroides (Hairy Mulla Mulla)*			
7.	2747	*Ptilotus obovatus (Cotton Bush)*			
8.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
9.	2756	*Ptilotus royceanus*			
10.	2757	*Ptilotus schwartzii*			
Apocynaceae					
11.	48280	*Cynanchum viminale subsp. australe*			
Araliaceae					
12.	6242	*Hydrocotyle trachycarpa*			
Aspleniaceae					
13.	66	*Pleurosorus subglandulosus*			
Asteraceae					
14.	7869	*Brachyscome blackii*			
15.	7896	*Calocephalus platycephalus (Billybuttons)*			
16.	7904	*Calotis latiuscula*			
17.	19757	*Centipeda minima subsp. minima*			
18.	47153	*Chrysocephalum apiculatum subsp. glandulosum*			
19.	12614	*Chrysocephalum pterochaetum*			
20.	8089	*Ixiochlamys filicifolia*			
21.	13289	*Lawrencella davenportii*			
22.	19726	*Leiocarpa semicalva*			
23.	19727	*Leiocarpa semicalva subsp. semicalva*			
24.	13258	*Leucochrysum stipitatum*			
25.	8151	*Olearia stuartii*			
26.	19910	*Ozothamnus filifolius*			
27.	8167	*Pluchea dentex*			
28.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
29.	41221	*Pterocaulon serrulatum var. velutinum*			
30.	8192	*Pterocaulon sphacelatum (Apple Bush, Fruit Salad Plant)*			
31.	8193	*Pterocaulon sphaeranthoides*			
32.	13301	*Rhodanthe floribunda*			
33.	13299	*Rhodanthe tietkensii*			
34.	8198	*Rutidosis helichrysoides (Grey Wrinklewort)*			
35.	8200	*Schoenia cassiniana (Schoenia)*			
36.	9366	*Senecio gregorii (Fleshy Groundsel)*			
37.	8210	*Senecio laceratus*			
38.	12649	*Tietkensia corrickiae*			
39.	13331	*Waitzia acuminata var. acuminata*			
40.	46093	*Waitzia fitzgibbonii*			
41.	48250	*Xerochrysum interiore*			
Bignoniaceae					
42.	7117	*Pandorea pandorana*			
Boraginaceae					
43.	6689	*Halgania glabra*			
44.	30258	*Halgania solanacea var. Mt Doreen (G.M. Chippendale 4206)*			
45.	6700	*Heliotropium asperrimum (Rough Heliotrope)*			
46.	6706	*Heliotropium cunninghamii*			
47.	17307	*Heliotropium inexplicitum*			
48.	17308	*Heliotropium moorei*			
49.	6718	*Heliotropium tenuifolium (Mamukata)*			
50.	6727	*Trichodesma zeylanicum (Camel Bush, Kumbalin)*			
Brassicaceae					
51.	3010	*Cuphonotus andraeanus*			
52.	3037	*Lepidium phlebopetalum (Veined Peppercress)*			
53.	3054	*Menkea villosula*			
54.	3074	*Stenopetalum anfractum*			
Campanulaceae					
55.	7397	*Isotoma petraea (Rock Isotome, Tundiwari)*			
56.		*Wahlenbergia sp.*			
57.	7393	*Wahlenbergia tumidifructa*			
Casuarinaceae					
58.	1723	*Allocasuarina decaisneana (Desert Oak)*			
Celastraceae					
59.	4731	*Stackhousia intermedia*			
60.	19555	*Stackhousia muricata subsp. annual (W.R. Barker 2172)*			
61.	18405	*Stackhousia sp. swollen gynophore (W.R. Barker 2041)*			
Chenopodiaceae					
62.	2456	*Atriplex elachophylla*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
63.	2481	*Atriplex vesicaria (Bladder Saltbush)*			
64.	2488	*Chenopodium desertorum*			
65.	11553	*Chenopodium desertorum subsp. anidiophyllum*			
66.	2495	*Chenopodium nitrariaceum (Nitre Goosefoot)*			
67.	11632	*Dysphania glomulifera subsp. eremaea*			
68.	2502	*Dysphania kalpari (Rat's Tail, Kalpari)*			
69.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
70.	33596	*Dysphania melanocarpa forma leucocarpa*			
71.	11890	*Dysphania rhadinostachya subsp. rhadinostachya*			
72.	33483	*Dysphania saxatilis*			
73.	11704	*Einadia nutans subsp. eremaea (Climbing Saltbush)*			
74.	2544	*Maireana georgei (Satiny Bluebush)*			
75.	2546	*Maireana integra*			
76.	2556	*Maireana planifolia (Low Bluebush)*			
77.	2562	*Maireana scleroptera*			
78.	11662	*Maireana tomentosa subsp. tomentosa*			
79.	2569	*Maireana triptera (Threewinged Bluebush)*			
80.	2571	*Maireana villosa*			
81.	2611	*Sclerolaena eriacantha (Tall Bindii)*			
82.	2626	*Sclerolaena parviflora (Small-flower Saltbush)*			
Cleomaceae					
83.	2988	*Cleome viscosa (Tickweed, Tjinduwadhu)*			
Colchicaceae					
84.	1392	*Wurmbea deserticola*			
Convolvulaceae					
85.	11200	*Evolvulus alsinoides var. villosicalyx*			
Cupressaceae					
86.	8466	*Callitris columellaris (White Cypress Pine)*			
Cyperaceae					
87.	12797	*Cyperus centralis*			
88.	12811	*Cyperus cunninghamii subsp. cunninghamii*			
89.	798	*Cyperus iria*			
90.	818	*Cyperus vaginatus (Stiffleaf Sedge)*			
91.	854	*Fimbristylis eremophila*			
92.	911	*Isolepis congrua*			
Droseraceae					
93.	3093	*Drosera burmanni (Tropical Sundew)*			
94.	43544	*Drosera finlaysoniana*			
Elatinaceae					
95.	5187	*Elatine gratioloides (Waterwort)*			
Euphorbiaceae					
96.	4620	*Euphorbia boophthona (Gascoyne Spurge)*			
97.	40100	*Euphorbia centralis*			
98.	42847	*Euphorbia ferdinandi var. ferdinandi*			
99.	12097	*Euphorbia tannensis subsp. eremophila (Desert Spurge)*			
Fabaceae					
100.	3194	*Acacia abrupta*			
101.	3198	*Acacia acradenia*			
102.	3205	*Acacia adsurgens*			
103.	3217	*Acacia aneura (Mulga, Wanari)*			
104.	37260	*Acacia aptaneura*			
105.	3234	*Acacia basedowii (Basedow's Wattle)*			
106.	3248	*Acacia burkittii (Sandhill Wattle)*			
107.	15280	*Acacia cuthbertsonii subsp. cuthbertsonii*			
108.	3327	*Acacia estrophiolata (Desert Ironwood)*			
109.	3370	*Acacia hilliana*			
110.	3419	*Acacia ligulata (Umbrella Bush, Watarka)*			
111.	44100	*Acacia macdonnellensis*			Y
112.	44102	*Acacia macdonnellensis subsp. teretifolia*			
113.	3434	*Acacia maitlandii (Maitland's Wattle)*			
114.	19305	*Acacia melleodora*			
115.	3447	*Acacia monticola (Gawar, Lilwardi)*			
116.	3452	*Acacia murrayana (Sandplain Wattle)*			
117.	3475	*Acacia pachyacra*			
118.	15724	*Acacia paraneura*			
119.	3495	*Acacia prainii (Prain's Wattle)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
120.	3500	*Acacia pruinocarpa (Gidgee)*			
121.	36800	*Acacia pteraneura*			
122.	3519	*Acacia rhodophloia*			
123.	29135	*Acacia sericophylla*			
124.	8949	*Acacia sibirica (Bastard Mulga)*			
125.	3553	*Acacia spondylophylla*			
126.	3563	*Acacia strongylophylla (Round-leaf Wattle)*			
127.	3568	*Acacia subtessarogona*			
128.	3577	*Acacia tetragonophylla (Kurara, Wakalpuka)*			
129.	30143	*Acacia walkeri*			
130.	17458	*Cullen australasicum*			
131.	17217	*Cullen pallidum*			
132.	3892	*Gastrolobium brevipes*			
133.	3938	*Glycine canescens (Silky Glycine)*			
134.	10995	*Gompholobium polyzygum*			
135.	3974	*Indigofera georgei (Bovine Indigo)*			
136.	17716	*Indigofera gilesii*		P3	
137.	3978	*Indigofera hirsuta (Hairy Indigo)*			
138.	3980	*Indigofera linifolia*			
139.	3991	*Isotropis centralis*			
140.	4043	*Kennedia prorepens*			
141.	4061	*Lotus cruentus (Redflower Lotus)*			
142.	17645	*Senna artemisioides*			
143.	12281	*Senna artemisioides subsp. petiolaris*			
144.	17558	*Senna artemisioides subsp. x artemisioides*			
145.	12283	*Senna artemisioides subsp. x sturtii*			
146.	18449	*Senna glaucifolia*			
147.	18346	*Senna glutinosa*			
148.	12307	*Senna glutinosa subsp. glutinosa*			
149.	13583	*Swainsona acuticarinata*			
150.	12355	*Swainsona affinis*			
151.	4235	*Swainsona microphylla (Small-leaf Swainsona)*			
152.	13585	*Swainsona tenuis*			
153.	4252	*Templetonia egena (Round Templetonia)*			
154.	42482	*Tephrosia sp. Central (P.K. Latz 17037)*		P3	
Goodeniaceae					
155.	7413	*Brunonia australis (Native Cornflower)*			
156.	15885	*Brunonia australis var. A Kimberley Flora (K.F. Kenneally 5452)*			
157.	7469	*Dampiera roycei*			
158.	7502	*Goodenia cycloptera*			
159.	7510	*Goodenia gibbosa*		P3	
160.	7529	*Goodenia mueckeana*			
161.	7560	*Goodenia vilmoriniae*			
162.	7582	*Lechenaultia lutescens*			
163.	13178	*Scaevola amblyanthera var. centralis*			
164.	7599	*Scaevola basedowii*			
165.	13173	*Scaevola parvifolia subsp. parvifolia*			
166.	7654	*Velleia connata (Cup Velleia)*			
Haloragaceae					
167.	6176	*Haloragis odontocarpa (Mulga Nettle)*			
Isoetaceae					
168.	14	*Isoetes muelleri*			
Lamiaceae					
169.	6758	*Dicrastylis exsuccosa*			
170.	6762	*Dicrastylis gilesii*			
171.	31839	*Dicrastylis subterminalis*		P1	Y
172.	12705	*Prostanthera centralis*		P3	
173.	6925	*Prostanthera striatiflora*			
174.	41063	*Quoya loxocarpa*			
175.	48603	*Teucrium teucriiflorum*			
Loganiaceae					
176.	46218	*Orianthera centralis*			
Loranthaceae					
177.	11614	*Amyema gibberula var. gibberula*			
178.	2380	*Amyema miquelii (Stalked Mistletoe)*			
179.	11874	*Amyema sanguinea var. sanguinea*			
180.	12051	*Lysiana exocarpi subsp. exocarpi (Harlequin Mistletoe)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Malvaceae					
181.	18120	*Abutilon fraseri subsp. fraseri*			
182.	4907	*Alyogyne pinoniana (Sand Hibiscus)*			
183.	40917	*Androcalva loxophylla*			
184.	40910	*Androcalva luteiflora (Yellow-flowered Rulingia)*			
185.	4999	*Brachychiton gregorii (Desert Kurrajong, Ngalta)*			
186.	11559	*Gossypium sturtianum var. sturtianum*			
187.	4933	*Hibiscus leptocladus*			
188.	4941	*Hibiscus solanifolius*			
189.	46816	*Seringia elliptica (Showy fire-bush)*			
Marsileaceae					
190.	75	*Marsilea exarata*			
191.	76	*Marsilea hirsuta (Nardoo)*			
Montiaceae					
192.	2868	*Calandrinia reticulata*			
Moraceae					
193.	19648	*Ficus brachypoda*			
Myrtaceae					
194.	16778	*Corymbia aparrerinja*			
195.	17122	*Corymbia eremaea*			
196.	17123	*Corymbia eremaea subsp. eremaea*			
197.	17124	*Corymbia eremaea subsp. oligocarpa*			
198.	17092	*Corymbia opaca*			
199.	35344	*Eucalyptus camaldulensis subsp. arida*			
200.	35345	*Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)*			
201.	5655	*Eucalyptus gamophylla (Twin-leaf Mallee, Warilu)*			
202.	10993	*Eucalyptus gillenii*			
203.	5707	*Eucalyptus mannensis (Mann Range Mallee)*			
204.	13019	*Eucalyptus mannensis subsp. mannensis*			
205.	5770	*Eucalyptus sessilis (River Mallee)*			
206.	5773	*Eucalyptus socialis (Red Mallee, Altarpa)*			
207.	19576	*Eucalyptus socialis subsp. eucentrica*			
208.	14548	*Eucalyptus victrix*			
209.	5906	*Melaleuca dissitiflora*			
210.	15871	*Melaleuca fulgens subsp. corrugata*			
211.	5915	*Melaleuca glomerata*			
212.	5995	*Micromyrtus flaviflora*			
213.	5997	*Micromyrtus hymenonema*			
214.	48268	*Rinzia polystemonea (Desert Rock-myrtle)*			
Phyllanthaceae					
215.	4687	*Phyllanthus virgatus*			
Pittosporaceae					
216.	19744	*Pittosporum angustifolium*			
Poaceae					
217.	218	*Aristida obscura (Brush Threeawn)*			
218.	240	*Bothriochloa ewartiana (Desert Bluegrass)*			
219.	259	*Cenchrus echinatus (Burrgrass)*	Y		
220.	290	*Dactyloctenium radulans (Button Grass)*			
221.	310	*Digitaria brownii (Cotton Panic Grass)*			
222.	358	*Enneapogon cylindricus (Jointed Nineawn)*			
223.	12746	*Enneapogon intermedius*			
224.	365	*Enneapogon polyphyllus (Leafy Nineawn)*			
225.	368	*Enteropogon ramosus (Windmill Grass, Curly Windmill Grass)*			
226.	375	*Eragrostis cumingii (Cuming's Love Grass)*			
227.	378	*Eragrostis dielsii (Mallee Lovegrass)*			
228.	380	*Eragrostis eriopoda (Woollybutt Grass, Wangurnu)*			
229.	381	*Eragrostis falcata (Sickle Lovegrass)*			
230.	386	*Eragrostis laniflora (Hairy-flowered Woollybutt)*			
231.	388	*Eragrostis leptocarpa (Drooping Lovegrass)*			
232.	391	*Eragrostis parviflora (Weeping Lovegrass)*			
233.	393	*Eragrostis setifolia (Neverfail Grass)*			
234.	395	*Eragrostis speciosa (Handsome Lovegrass)*			
235.	413	*Eriachne mucronata (Mountain Wanderrie Grass)*			
236.	11011	*Eulalia aurea*			
237.	503	*Panicum decompositum (Native Millet, Kaltu-kaltu)*			
238.	546	*Perotis rara (Comet Grass)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
239.	674	*Thyridolepis mitchelliana (Mulga Grass)*			
240.	678	*Tragus australianus (Small Burrgrass)*			
241.	680	*Triodia basedowii (Lobed Spinifex)*			
242.	17877	*Triodia melvillei*			
243.	17873	*Triodia schinzii*			
244.	701	*Triodia spicata (Spike Flowered Spinifex)*			
245.	48319	*Tripogonella loliiformis*			
246.	706	*Triraphis mollis (Needle Grass)*			
Polygalaceae					
247.	4565	*Comesperma viscidulum (Viscid Milkwort)*		P4	
Proteaceae					
248.	2001	*Grevillea eriostachya (Flame Grevillea, Kaliny-kalinypa)*			
249.	2096	*Grevillea stenobotrya*			
250.	2099	*Grevillea striata (Beefwood)*			
251.	13440	*Grevillea wickhamii subsp. aprica*			
252.	2154	*Hakea divaricata (Needlewood, Witjinti)*			
253.	19137	*Hakea lorea subsp. lorea*			
254.	2182	*Hakea minyma*			
255.	2200	*Hakea rhombales*			
Pteridaceae					
256.	37	*Cheilanthes lasiophylla (Woolly Cloak Fern)*			
257.	12815	*Cheilanthes sieberi subsp. pseudovellea*			
258.	12818	*Cheilanthes sieberi subsp. sieberi*			
Rhamnaceae					
259.	16199	*Stenanthemum petraeum*			
Rubiaceae					
260.	48879	*Pomax sp. Sand dunes (P.G. Wilson 752)*			
261.	18155	*Psydrax suaveolens*			
262.	7363	*Synaptantha tillaeacea*			
263.	13339	*Synaptantha tillaeacea var. tillaeacea*			
Santalaceae					
264.	2333	*Anthobolus leptomerioides*			
265.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
266.	2356	*Santalum acuminatum (Quandong, Warnga)*			
Sapindaceae					
267.	4749	*Diplopeltis stuartii*			
268.	12023	*Diplopeltis stuartii var. stuartii (Desert Pepperflower)*			
269.	11247	*Dodonaea viscosa subsp. angustissima*			
270.	11674	*Dodonaea viscosa subsp. mucronata*			
Scrophulariaceae					
271.	7189	*Eremophila clarkei (Turpentine Bush)*			
272.	7203	*Eremophila elderi*			
273.	15052	*Eremophila forrestii subsp. forrestii*			
274.	16732	*Eremophila gilesii subsp. gilesii*			
275.	17616	*Eremophila goodwinii subsp. goodwinii*			
276.	17172	*Eremophila hughesii subsp. hughesii*			
277.	17169	*Eremophila latrobei subsp. glabra*			
278.	7234	*Eremophila longifolia (Berrigan, Tulypurpa)*			
279.	23997	*Eremophila tietkensii*			
Solanaceae					
280.	6966	*Duboisia hopwoodii (Pituri, Kundugu)*			
281.	6971	*Nicotiana benthamiana (Tjuntiwari)*			
282.	11331	*Nicotiana occidentalis subsp. obliqua*			
283.	11410	*Nicotiana rosulata subsp. ingulba*			
284.	11734	*Nicotiana rosulata subsp. rosulata*			
285.	42547	*Solanum austropiceum*			
286.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			
287.	6997	*Solanum chippendalei*			
288.	6998	*Solanum cleistogamum*			
289.	6999	*Solanum coactiliferum (Western Nightshade)*			
290.	7018	*Solanum lasiophyllum (Flannel Bush, Mindjulu)*			
291.	11267	*Solanum orbiculatum subsp. macrophyllum*			
292.	46734	*Solanum pallidifolium*			
293.	7036	*Solanum sturtianum (Thargomindah Nightshade)*			
Stylidiaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
294.	7739	*Stylidium inaequipetalum*			
Urticaceae					
295.	12670	*Parietaria cardiostegia*			
Violaceae					
296.	5215	*Hybanthus aurantiacus*			
Zygophyllaceae					
297.	48889	*Roepera eichleri*			
298.	14379	*Tribulus eichlerianus*			
299.	4379	*Tribulus macrocarpus*			
300.	4383	*Tribulus terrestris (Caltrop)*	Y		

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap_Middle 3 gravel pits

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 128° 06' 45" E,25° 07' 58" S
Buffer 40km
Group By Family

Family	Species	Records
Acanthaceae	1	2
Amaranthaceae	8	19
Apocynaceae	2	2
Araliaceae	1	1
Aspleniaceae	1	2
Asteraceae	23	43
Bignoniaceae	1	1
Boraginaceae	11	16
Brassicaceae	4	5
Campanulaceae	3	4
Casuarinaceae	1	1
Centrolepidaceae	1	1
Chenopodiaceae	19	27
Cleomaceae	1	1
Colchicaceae	1	2
Convolvulaceae	1	1
Cupressaceae	1	1
Cyperaceae	10	14
Droseraceae	2	7
Elatinaceae	1	1
Euphorbiaceae	4	4
Fabaceae	56	141
Goodeniaceae	14	17
Gyrostemonaceae	1	1
Haloragaceae	2	2
Hypericaceae	1	2
Isoetaceae	1	2
Lamiaceae	9	22
Loganiaceae	1	1
Loranthaceae	3	6
Lythraceae	1	1
Malvaceae	8	25
Marsileaceae	1	1
Moraceae	1	2
Myrtaceae	21	43
Phyllanthaceae	2	2
Pittosporaceae	1	2
Plantaginaceae	1	1
Poaceae	32	48
Polygalaceae	1	1
Polygonaceae	1	1
Proteaceae	7	17
Pteridaceae	2	2
Rhamnaceae	1	7
Rubiaceae	3	5
Santalaceae	4	6
Sapindaceae	4	8
Scrophulariaceae	10	26
Solanaceae	12	35
Stylidiaceae	1	3
Typhaceae	1	1
Urticaceae	1	1
Violaceae	1	2
Zygophyllaceae	3	4
TOTAL	**305**	**593**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthaceae					
1.	11609	*Rostellularia adscendens var. pogonanthera*			
Amaranthaceae					
2.	2651	*Alternanthera nana (Hairy Joyweed)*			
3.	2666	*Amaranthus mitchellii (Boggabri Weed)*			
4.	2715	*Ptilotus decipiens*			
5.	2731	*Ptilotus helipteroides (Hairy Mulla Mulla)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
6.	2747	*Ptilotus obovatus (Cotton Bush)*			
7.	2756	*Ptilotus royceanus*			
8.	2757	*Ptilotus schwartzii*			
9.	10809	*Ptilotus sessilifolius*			
Apocynaceae					
10.	48280	*Cynanchum viminale subsp. australe*			
11.	12949	*Marsdenia australis*			
Araliaceae					
12.	6242	*Hydrocotyle trachycarpa*			
Aspleniaceae					
13.	66	*Pleurosorus subglandulosus*			
Asteraceae					
14.	7869	*Brachyscome blackii*			
15.	7896	*Calocephalus platycephalus (Billybuttons)*			
16.	7904	*Calotis latiuscula*			
17.	7906	*Calotis plumulifera*			
18.	34358	*Calotis sp. Carnarvon Range (D.J. Edinger & K.F. Kenneally D 2708 K 12243)*			
19.	19757	*Centipeda minima subsp. minima*			
20.	12612	*Chrysocephalum apiculatum*			
21.	47153	*Chrysocephalum apiculatum subsp. glandulosum*			
22.	12613	*Chrysocephalum eremaeum*			
23.	12614	*Chrysocephalum pterochaetum*			
24.	19727	*Leiocarpa semicalva subsp. semicalva*			
25.	13258	*Leucochrysum stipitatum*			
26.	8151	*Olearia stuartii*			
27.	19910	*Ozothamnus filifolius*			
28.	8167	*Pluchea dentex*			
29.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
30.	41221	*Pterocaulon serrulatum var. velutinum*			
31.	8192	*Pterocaulon sphacelatum (Apple Bush, Fruit Salad Plant)*			
32.	8193	*Pterocaulon sphaeranthoides*			
33.	13299	*Rhodanthe tietkensii*			
34.	8200	*Schoenia cassiniana (Schoenia)*			
35.	8210	*Senecio laceratus*			
36.	48250	*Xerochrysum interiore*			
Bignoniaceae					
37.	7117	*Pandorea pandorana*			
Boraginaceae					
38.	6689	*Halgania glabra*			
39.	6697	*Halgania solanacea*			
40.	30258	*Halgania solanacea var. Mt Doreen (G.M. Chippendale 4206)*			
41.	6700	*Heliotropium asperrimum (Rough Heliotrope)*			
42.	6706	*Heliotropium cunninghamii*			
43.	10992	*Heliotropium glabellum*			
44.	17307	*Heliotropium inexplicitum*			
45.	17308	*Heliotropium moorei*			
46.	17309	*Heliotropium pachyphyllum*			
47.	6718	*Heliotropium tenuifolium (Mamukata)*			
48.	6727	*Trichodesma zeylanicum (Camel Bush, Kumbalin)*			
Brassicaceae					
49.	10855	*Arabidella nasturtium*			Y
50.	3037	*Lepidium phlebopetalum (Veined Peppercress)*			
51.	3054	*Menkea villosula*			
52.	3074	*Stenopetalum anfractum*			
Campanulaceae					
53.	7397	*Isotoma petraea (Rock Isotome, Tundiwari)*			
54.		*Wahlenbergia sp.*			
55.	7393	*Wahlenbergia tumidifructa*			
Casuarinaceae					
56.	1723	*Allocasuarina decaisneana (Desert Oak)*			
Centrolepidaceae					
57.	1126	*Centrolepis eremica*			
Chenopodiaceae					
58.	2456	*Atriplex elachophylla*			
59.	2481	*Atriplex vesicaria (Bladder Saltbush)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
60.	11553	*Chenopodium desertorum subsp. anidiophyllum*			
61.	2495	*Chenopodium nitrariaceum (Nitre Goosefoot)*			
62.	11632	*Dysphania glomulifera subsp. eremaea*			
63.	2502	*Dysphania kalpari (Rat's Tail, Kalpari)*			
64.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
65.	33596	*Dysphania melanocarpa forma leucocarpa*			
66.	11890	*Dysphania rhadinostachya subsp. rhadinostachya*			
67.	33483	*Dysphania saxatilis*			
68.	11704	*Einadia nutans subsp. eremaea (Climbing Saltbush)*			
69.	2544	*Maireana georgei (Satiny Bluebush)*			
70.	2546	*Maireana integra*			
71.	2556	*Maireana planifolia (Low Bluebush)*			
72.	11662	*Maireana tomentosa subsp. tomentosa*			
73.	2569	*Maireana triptera (Threewinged Bluebush)*			
74.	2571	*Maireana villosa*			
75.	2582	*Rhagodia eremaea (Thorny Saltbush)*			
76.	2611	*Sclerolaena eriacantha (Tall Bindii)*			
Cleomaceae					
77.	2988	*Cleome viscosa (Tickweed, Tjinduwadhu)*			
Colchicaceae					
78.	1392	*Wurmbea deserticola*			
Convolvulaceae					
79.	11200	*Evolvulus alsinoides var. villosicalyx*			
Cupressaceae					
80.	8466	*Callitris columellaris (White Cypress Pine)*			
Cyperaceae					
81.	12797	*Cyperus centralis*			
82.	12811	*Cyperus cunninghamii subsp. cunninghamii*			
83.	789	*Cyperus difformis (Rice Sedge)*			
84.	794	*Cyperus gymnocaulos (Spiny Flat-sedge)*			
85.	798	*Cyperus iria*			
86.	818	*Cyperus vaginatus (Stiffleaf Sedge)*			
87.	897	*Fuirena nudiflora*		P3	
88.	911	*Isolepis congrua*			
89.	952	*Lipocarpha microcephala*			
90.	981	*Schoenus centralis*		P1	
Droseraceae					
91.	3093	*Drosera burmanni (Tropical Sundew)*			
92.	43544	*Drosera finlaysoniana*			
Elatinaceae					
93.	5187	*Elatine gratioloides (Waterwort)*			
Euphorbiaceae					
94.	4620	*Euphorbia boophthona (Gascoyne Spurge)*			
95.	40100	*Euphorbia centralis*			
96.	12097	*Euphorbia tannensis subsp. eremophila (Desert Spurge)*			
97.	4664	*Monotaxis luteiflora*			
Fabaceae					
98.	3194	*Acacia abrupta*			
99.	3198	*Acacia acradenia*			
100.	3205	*Acacia adsurgens*			
101.	3217	*Acacia aneura (Mulga, Wanari)*			
102.	37260	*Acacia aptaneura*			
103.	3234	*Acacia basedowii (Basedow's Wattle)*			
104.	3241	*Acacia bivenosa*			
105.	3248	*Acacia burkittii (Sandhill Wattle)*			
106.	15280	*Acacia cuthbertsonii subsp. cuthbertsonii*			
107.	3327	*Acacia estrophiolata (Desert Ironwood)*			
108.	3364	*Acacia helmsiana*			
109.	3370	*Acacia hilliana*			
110.	3399	*Acacia kempeana (Witchetty Bush, Ilykuwara)*			
111.	3419	*Acacia ligulata (Umbrella Bush, Watarka)*			
112.	44100	*Acacia macdonnellensis*			Y
113.	44102	*Acacia macdonnellensis subsp. teretifolia*			
114.	3434	*Acacia maitlandii (Maitland's Wattle)*			
115.	19305	*Acacia melleodora*			
116.	12952	*Acacia minyura*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
117.	3447	*Acacia monticola (Gawar, Lilwardi)*			
118.	3452	*Acacia murrayana (Sandplain Wattle)*			
119.	15724	*Acacia paraneura*			
120.	3495	*Acacia prainii (Prain's Wattle)*			
121.	3500	*Acacia pruinocarpa (Gidgee)*			
122.	36800	*Acacia pteraneura*			
123.	3519	*Acacia rhodophloia*			
124.	8949	*Acacia sibirica (Bastard Mulga)*			
125.	3553	*Acacia spondylophylla*			
126.	3563	*Acacia strongylophylla (Round-leaf Wattle)*			
127.	3568	*Acacia subtessarogona*			
128.	3577	*Acacia tetragonophylla (Kurara, Wakalpuka)*			
129.	30143	*Acacia walkeri*			
130.	17458	*Cullen australasicum*			
131.	3892	*Gastrolobium brevipes*			
132.	3938	*Glycine canescens (Silky Glycine)*			
133.	10995	*Gompholobium polyzygum*			
134.	3974	*Indigofera georgei (Bovine Indigo)*			
135.	17716	*Indigofera gilesii*		P3	
136.	12345	*Indigofera psammophila*			
137.	3991	*Isotropis centralis*			
138.	14978	*Isotropis winneckei*		P1	
139.	4061	*Lotus cruentus (Redflower Lotus)*			
140.	4105	*Mirbelia viminalis*			
141.	17645	*Senna artemisioides*			
142.	12281	*Senna artemisioides subsp. petiolaris*			
143.	17558	*Senna artemisioides subsp. x artemisioides*			
144.	12283	*Senna artemisioides subsp. x sturtii*			
145.	18449	*Senna glaucifolia*			
146.	18346	*Senna glutinosa*			
147.	12307	*Senna glutinosa subsp. glutinosa*			
148.	16378	*Senna pleurocarpa*			
149.	12355	*Swainsona affinis*			
150.	4235	*Swainsona microphylla (Small-leaf Swainsona)*			
151.	13585	*Swainsona tenuis*			
152.	42482	*Tephrosia sp. Central (P.K. Latz 17037)*		P3	
153.	43963	*Tephrosia sp. deserts (J.R. Maconochie 1403)*			
Goodeniaceae					
154.	7413	*Brunonia australis (Native Cornflower)*			
155.	15885	*Brunonia australis var. A Kimberley Flora (K.F. Kenneally 5452)*			
156.	7426	*Dampiera cinerea*			
157.	7433	*Dampiera dentata*			
158.	7510	*Goodenia gibbosa*		P3	
159.	7529	*Goodenia mueckeana*			
160.	7558	*Goodenia triodiophila*			
161.	7560	*Goodenia vilmoriniae*			
162.	7582	*Lechenaultia lutescens*			
163.	13178	*Scaevola amblyanthera var. centralis*			
164.	7599	*Scaevola basedowii*			
165.	7633	*Scaevola parvifolia (Camel Weed)*			
166.	13173	*Scaevola parvifolia subsp. parvifolia*			
167.	7654	*Velleia connata (Cup Velleia)*			
Gyrostemonaceae					
168.	2789	*Gyrostemon tepperi*			
Haloragaceae					
169.	33620	*Glischrocaryon angustifolium*			
170.	6176	*Haloragis odontocarpa (Mulga Nettle)*			
Hypericaceae					
171.	5180	*Hypericum gramineum (Small St John's Wort)*			
Isoetaceae					
172.	14	*Isoetes muelleri*			
Lamiaceae					
173.	6729	*Clerodendrum floribundum (Lollybush)*			
174.	13693	*Clerodendrum floribundum var. coriaceum*			
175.	6758	*Dicrastylis exsuccosa*			
176.	6762	*Dicrastylis gilesii*			
177.	6789	*Newcastelia cladotricha (Lambs Tail)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
178.	12705	*Prostanthera centralis*		P3	
179.	6925	*Prostanthera striatiflora*			
180.	41063	*Quoya loxocarpa*			
181.	48603	*Teucrium teucriiflorum*			
Loganiaceae					
182.	46218	*Orianthera centralis*			
Loranthaceae					
183.	11614	*Amyema gibberula var. gibberula*			
184.	11874	*Amyema sanguinea var. sanguinea*			
185.	12051	*Lysiana exocarpi subsp. exocarpi (Harlequin Mistletoe)*			
Lythraceae					
186.	5287	*Rotala occultiflora*			
Malvaceae					
187.	4907	*Alyogyne pinoniana (Sand Hibiscus)*			
188.	40917	*Androcalva loxophylla*			
189.	40910	*Androcalva luteiflora (Yellow-flowered Rulingia)*			
190.	4999	*Brachychiton gregorii (Desert Kurrajong, Ngalta)*			
191.	11559	*Gossypium sturtianum var. sturtianum*			
192.	46816	*Seringia elliptica (Showy fire-bush)*			
193.	4971	*Sida cardiophylla*			
194.	14942	*Triumfetta maconochieana*			
Marsileaceae					
195.	76	*Marsilea hirsuta (Nardoo)*			
Moraceae					
196.	19648	*Ficus brachypoda*			
Myrtaceae					
197.	16778	*Corymbia aparrerinja*			
198.	17094	*Corymbia chippendalei*			
199.	17122	*Corymbia eremaea*			
200.	17123	*Corymbia eremaea subsp. eremaea*			
201.	17124	*Corymbia eremaea subsp. oligocarpa*			
202.	17077	*Corymbia ferriticola*			
203.	35344	*Eucalyptus camaldulensis subsp. arida*			
204.	35345	*Eucalyptus camaldulensis subsp. obtusa (Blunt-budded River Red Gum)*			
205.	5655	*Eucalyptus gamophylla (Twin-leaf Mallee, Warilu)*			
206.	13019	*Eucalyptus mannensis subsp. mannensis*			
207.	5734	*Eucalyptus oxymitra (Sharp-capped Mallee)*			
208.	5770	*Eucalyptus sessilis (River Mallee)*			
209.	14548	*Eucalyptus victrix*			
210.	5846	*Lamarchea sulcata*			
211.	5906	*Melaleuca dissitiflora*			
212.	15871	*Melaleuca fulgens subsp. corrugata*			
213.	5915	*Melaleuca glomerata*			
214.	20288	*Melaleuca interioris*			
215.	5995	*Micromyrtus flaviflora*			
216.	5997	*Micromyrtus hymenonema*			
217.	48268	*Rinzia polystemonea (Desert Rock-myrtle)*			
Phyllanthaceae					
218.	4687	*Phyllanthus virgatus*			
219.	4691	*Poranthera microphylla (Small Poranthera)*			
Pittosporaceae					
220.	19744	*Pittosporum angustifolium*			
Plantaginaceae					
221.	7102	*Stemodia viscosa (Pagurda)*			
Poaceae					
222.	210	*Aristida holathera*			
223.	12063	*Aristida holathera var. holathera*			
224.	218	*Aristida obscura (Brush Threeawn)*			
225.	240	*Bothriochloa ewartiana (Desert Bluegrass)*			
226.	259	*Cenchrus echinatus (Burrgrass)*	Y		
227.	290	*Dactyloctenium radulans (Button Grass)*			
228.	310	*Digitaria brownii (Cotton Panic Grass)*			
229.	358	*Enneapogon cylindricus (Jointed Nineawn)*			
230.	12746	*Enneapogon intermedius*			
231.	365	*Enneapogon polyphyllus (Leafy Nineawn)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
232.	368	*Enteropogon ramosus (Windmill Grass, Curly Windmill Grass)*			
233.	375	*Eragrostis cumingii (Cuming's Love Grass)*			
234.	378	*Eragrostis dielsii (Mallee Lovegrass)*			
235.	380	*Eragrostis eriopoda (Woollybutt Grass, Wangurnu)*			
236.	381	*Eragrostis falcata (Sickle Lovegrass)*			
237.	386	*Eragrostis laniflora (Hairy-flowered Woollybutt)*			
238.	388	*Eragrostis leptocarpa (Drooping Lovegrass)*			
239.	391	*Eragrostis parviflora (Weeping Lovegrass)*			
240.	393	*Eragrostis setifolia (Neverfail Grass)*			
241.	395	*Eragrostis speciosa (Handsome Lovegrass)*			
242.	413	*Eriachne mucronata (Mountain Wanderrie Grass)*			
243.	11011	*Eulalia aurea*			
244.	503	*Panicum decompositum (Native Millet, Kaltu-kaltu)*			
245.	546	*Perotis rara (Comet Grass)*			
246.	673	*Themeda triandra*			
247.	674	*Thyridolepis mitchelliana (Mulga Grass)*			
248.	678	*Tragus australianus (Small Burrgrass)*			
249.	17877	*Triodia melvillei*			
250.	17873	*Triodia schinzii*			
251.	701	*Triodia spicata (Spike Flowered Spinifex)*			
252.	48319	*Tripogonella loliiformis*			
253.	706	*Triraphis mollis (Needle Grass)*			
Polygalaceae					
254.	4565	*Comesperma viscidulum (Viscid Milkwort)*		P4	
Polygonaceae					
255.	44508	*Duma florulenta*			
Proteaceae					
256.	15845	*Grevillea juncifolia subsp. juncifolia*			
257.	2077	*Grevillea pterosperma*			
258.	2099	*Grevillea striata (Beefwood)*			
259.	2121	*Grevillea wickhamii (Wickham's Grevillea)*			
260.	13440	*Grevillea wickhamii subsp. aprica*			
261.	19137	*Hakea lorea subsp. lorea*			
262.	2200	*Hakea rhombales*			
Pteridaceae					
263.	37	*Cheilanthes lasiophylla (Woolly Cloak Fern)*			
264.	12815	*Cheilanthes sieberi subsp. pseudovellea*			
Rhamnaceae					
265.	16199	*Stenanthemum petraeum*			
Rubiaceae					
266.	48879	*Pomax sp. Sand dunes (P.G. Wilson 752)*			
267.	18155	*Psydrax suaveolens*			
268.	13339	*Synaptantha tillaeacea var. tillaeacea*			
Santalaceae					
269.	2333	*Anthobolus leptomerioides*			
270.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
271.	2356	*Santalum acuminatum (Quandong, Warnga)*			
272.	2357	*Santalum lanceolatum (Northern Sandalwood, Yarnguli)*			
Sapindaceae					
273.	4749	*Diplopeltis stuartii*			
274.	12023	*Diplopeltis stuartii var. stuartii (Desert Pepperflower)*			
275.	11247	*Dodonaea viscosa subsp. angustissima*			
276.	11674	*Dodonaea viscosa subsp. mucronata*			
Scrophulariaceae					
277.	7203	*Eremophila elderi*			
278.	15052	*Eremophila forrestii subsp. forrestii*			
279.	7213	*Eremophila gibsonii*			
280.	16732	*Eremophila gilesii subsp. gilesii*			
281.	17616	*Eremophila goodwinii subsp. goodwinii*			
282.	7222	*Eremophila hughesii*			
283.	17172	*Eremophila hughesii subsp. hughesii*			
284.	17169	*Eremophila latrobei subsp. glabra*			
285.	7234	*Eremophila longifolia (Berrigan, Tulypurpa)*			
286.	23997	*Eremophila tietkensii*			
Solanaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
287.	6971	*Nicotiana benthamiana (Tjuntiwari)*			
288.	11331	*Nicotiana occidentalis subsp. obliqua*			
289.	11734	*Nicotiana rosulata subsp. rosulata*			
290.	42547	*Solanum austropiceum*			
291.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			
292.	6997	*Solanum chippendalei*			
293.	6998	*Solanum cleistogamum*			
294.	6999	*Solanum coactiliferum (Western Nightshade)*			
295.	7018	*Solanum lasiophyllum (Flannel Bush, Mindjulu)*			
296.	11267	*Solanum orbiculatum subsp. macrophyllum*			
297.	46734	*Solanum pallidifolium*			
298.	7036	*Solanum sturtianum (Thargomindah Nightshade)*			
Stylidiaceae					
299.	7739	*Stylidium inaequipetalum*			
Typhaceae					
300.	98	*Typha domingensis (Bulrush, Djandjid)*			
Urticaceae					
301.	12670	*Parietaria cardiostegia*			
Violaceae					
302.	5215	*Hybanthus aurantiacus*			
Zygophyllaceae					
303.	14379	*Tribulus eichlerianus*			
304.	4379	*Tribulus macrocarpus*			
305.	4383	*Tribulus terrestris (Caltrop)*	Y		

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap_3 gravel pits west

Created By Guest user on 16/02/2021

Current Names Only Yes
Core Datasets Only Yes
Species Group All Plants
Method 'By Circle'
Centre 127° 32' 47" E,25° 25' 09" S
Buffer 40km
Group By Family

Family	Species	Records
Amaranthaceae	2	4
Asteraceae	8	9
Brassicaceae	2	2
Campanulaceae	1	2
Casuarinaceae	1	1
Chenopodiaceae	11	14
Fabaceae	11	12
Goodeniaceae	8	8
Lamiaceae	3	3
Loranthaceae	1	1
Malvaceae	11	13
Myrtaceae	8	11
Poaceae	8	9
Proteaceae	2	2
Rubiaceae	1	1
Scrophulariaceae	3	3
Solanaceae	1	1
TOTAL	**82**	**96**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amaranthaceae					
1.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
2.	10809	*Ptilotus sessilifolius*			
Asteraceae					
3.	47153	*Chrysocephalum apiculatum subsp. glandulosum*			
4.	12614	*Chrysocephalum pterochaetum*			
5.	7988	*Gnephosis arachnoidea (Cobwebby-headed Gnephosis)*			
6.	7989	*Gnephosis brevifolia (Short-leaved Gnephosis)*			
7.	19727	*Leiocarpa semicalva subsp. semicalva*			
8.	13258	*Leucochrysum stipitatum*			
9.	8151	*Olearia stuartii*			
10.	8198	*Rutidosis helichrysoides (Grey Wrinklewort)*			
Brassicaceae					
11.	3037	*Lepidium phlebopetalum (Veined Peppercress)*			
12.	3072	*Sisymbrium orientale (Indian Hedge Mustard)*	Y		
Campanulaceae					
13.	7393	*Wahlenbergia tumidifructa*			
Casuarinaceae					
14.	1723	*Allocasuarina decaisneana (Desert Oak)*			
Chenopodiaceae					
15.	2481	*Atriplex vesicaria (Bladder Saltbush)*			
16.	33479	*Dysphania melanocarpa (Black Crumbweed)*			
17.	2506	*Dysphania rhadinostachya*			
18.	33483	*Dysphania saxatilis*			
19.	2544	*Maireana georgei (Satiny Bluebush)*			
20.	2556	*Maireana planifolia (Low Bluebush)*			
21.	2567	*Maireana tomentosa (Felty Bluebush)*			
22.	2607	*Sclerolaena densiflora*			
23.	2611	*Sclerolaena eriacantha (Tall Bindii)*			
24.	2615	*Sclerolaena fusiformis*			
25.	2619	*Sclerolaena lanicuspis (Spinach Burr)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Fabaceae					
26.	3194	*Acacia abrupta*			
27.	3281	*Acacia cuthbertsonii*			
28.	36418	*Acacia incurvaneura*			
29.	3399	*Acacia kempeana (Witchetty Bush, Ilykuwara)*			
30.	19305	*Acacia melleodora*			
31.	15724	*Acacia paraneura*			
32.	19483	*Acacia ramulosa var. linophylla*			
33.	8949	*Acacia sibirica (Bastard Mulga)*			
34.	3577	*Acacia tetragonophylla (Kurara, Wakalpuka)*			
35.	18440	*Senna manicula*			
36.	4246	*Swainsona unifoliolata*			
Goodeniaceae					
37.	15885	*Brunonia australis var. A Kimberley Flora (K.F. Kenneally 5452)*			
38.	7433	*Dampiera dentata*			
39.	7498	*Goodenia centralis*			
40.	7587	*Lechenaultia striata*			
41.	7599	*Scaevola basedowii*			
42.	7644	*Scaevola spinescens (Currant Bush, Maroon)*			
43.	7654	*Velleia connata (Cup Velleia)*			
44.	7660	*Velleia glabrata (Pee the Bed)*			
Lamiaceae					
45.	6758	*Dicrastylis exsuccosa*			
46.	6926	*Prostanthera wilkieana*			
47.	41063	*Quoya loxocarpa*			
Loranthaceae					
48.	12051	*Lysiana exocarpi subsp. exocarpi (Harlequin Mistletoe)*			
Malvaceae					
49.	4896	*Abutilon leucopetalum (Desert Chinese Lantern)*			
50.	4864	*Corchorus sidoides (Flannel Weed)*			
51.	4921	*Hibiscus arenicola*			
52.	4922	*Hibiscus brachychlaenus*			
53.	4924	*Hibiscus burtonii*			
54.	4933	*Hibiscus leptocladus*			
55.	4941	*Hibiscus solanifolius*			
56.	11893	*Hibiscus sturtii var. truncatus*			
57.	4971	*Sida cardiophylla*			
58.	31854	*Sida sp. Excedentifolia (J.L. Egan 1925)*			
59.	19712	*Sida sp. dark green fruits (S. van Leeuwen 2260)*			
Myrtaceae					
60.	19469	*Aluta maisonneuvei subsp. maisonneuvei*			
61.	5677	*Eucalyptus intertexta (Barstard Coolibah)*			
62.	5703	*Eucalyptus lucasii (Barlee Box)*			
63.	5707	*Eucalyptus mannensis (Mann Range Mallee)*			
64.	13019	*Eucalyptus mannensis subsp. mannensis*			
65.	5734	*Eucalyptus oxymitra (Sharp-capped Mallee)*			
66.	14548	*Eucalyptus victrix*			
67.	20288	*Melaleuca interioris*			
Poaceae					
68.	12063	*Aristida holathera var. holathera*			
69.	368	*Enteropogon ramosus (Windmill Grass, Curly Windmill Grass)*			
70.	380	*Eragrostis eriopoda (Woollybutt Grass, Wangurnu)*			
71.	392	*Eragrostis pergracilis*			
72.	490	*Monachather paradoxus*			
73.	493	*Neurachne lanigera*		P1	
74.	515	*Paraneurachne muelleri (Northern Mulga Grass)*			
75.	696	*Triodia pungens (Soft Spinifex)*			
Proteaceae					
76.	15845	*Grevillea juncifolia subsp. juncifolia*			
77.	2177	*Hakea lorea (Witinti)*			
Rubiaceae					
78.	7363	*Synaptantha tillaeacea*			
Scrophulariaceae					
79.	17576	*Eremophila latrobei subsp. latrobei*			
80.	7234	*Eremophila longifolia (Berrigan, Tulypurpa)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
81.	23997	*Eremophila tietkensii*			

Solanaceae

82.	6995	*Solanum centrale (Desert Raisin, Kampurarpa)*			

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Appendix D – Flora data

Flora species list

Quadrat and releve data

Significant flora records

Flora likelihood of occurrence assessment

Flora taxa recorded during the field survey

Family	Taxon	Status	Range Extension
Aizoaceae	*Trianthema triquetrum*		
Amaranthaceae	*Ptilotus axillaris*		X
Amaranthaceae	*Ptilotus clementii*		
Amaranthaceae	*Ptilotus helipteroides*		
Amaranthaceae	*Ptilotus obovatus*		
Amaranthaceae	*Ptilotus polystachyus*		
Amaranthaceae	*Ptilotus schwartzii*		
Amaranthaceae	*Ptilotus sessilifolius*		
Amaranthaceae	*Ptilotus xerophilus*		
Apocynaceae	*Leichhardtia australis*		
Araliaceae	*Trachymene glaucifolia*		
Asteraceae	*Bidens bipinnata*	Weed	X
Asteraceae	*Chrysocephalum pterochaetum*		
Asteraceae	*Chrysocephalum puteale*		
Asteraceae	*Pluchea tetranthera*		X
Asteraceae	*Rhodanthe floribunda*		
Asteraceae	*Rhodanthe tietkensii*		
Asteraceae	*Rutidosis helichrysoides* DC. subsp. *helichrysoides*		
Asteraceae	*Streptoglossa cylindriceps*		X
Boraginaceae	*Halgania erecta*		
Boraginaceae	*Halgania solanacea* var. Mt Doreen (G.M. Chippendale 4206)		
Boraginaceae	*Heliotropium tanythrix*		
Brassicaceae	*Lepidium oxytrichum*		
Casuarinaceae	*Allocasuarina decaisneana*		
Chenopodiaceae	*Dissocarpus paradoxus*		
Chenopodiaceae	*Dysphania kalpari*		
Chenopodiaceae	*Enchylaena tomentosa* R.Br. var *tomentosa*		
Chenopodiaceae	*Maireana* sp.		
Chenopodiaceae	*Maireana villosa*		
Chenopodiaceae	*Maireana aphylla*		
Chenopodiaceae	*Maireana villosa X Maireana tomentosa*		
Chenopodiaceae	*Rhagodia eremaea*		
Chenopodiaceae	*Salsola australis*		
Chenopodiaceae	*Sclerolaena cornishiana*		
Chenopodiaceae	*Sclerolaena cuneata*		X
Chenopodiaceae	*Sclerolaena diacantha*		
Chenopodiaceae	*Sclerolaena eurotioides*		
Cleomaceae	*Arivela viscosa*		
Convolvulaceae	*Bonamia erecta*		
Convolvulaceae	*Convolvulus clementii*		
Convolvulaceae	*Evolvulus alsinoides* var. *villosicalyx*		

Family	Taxon	Status	Range Extension
Cucurbitaceae	*Cucumis ?argenteus*		
Cyperaceae	*Fimbristylis dichotoma*		
Euphorbiaceae	*Euphorbia australis* var *subtomentosa*		
Euphorbiaceae	*Euphorbia boophthona*		
Euphorbiaceae	*Euphorbia drummondii*		
Fabaceae	*Acacia aneura*		
Fabaceae	*Acacia aptaneura*		
Fabaceae	*Acacia brachystachya*		
Fabaceae	*Acacia coriacea*		X
Fabaceae	*Acacia dictyophleba*		X
Fabaceae	*Acacia incurvaneura*		
Fabaceae	*Acacia minyura*		
Fabaceae	*Acacia monticola*		
Fabaceae	*Acacia pachyacra*		
Fabaceae	*Acacia pruinocarpa*		
Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*		X
Fabaceae	*Acacia sericophylla*		
Fabaceae	*Acacia sibirica*		
Fabaceae	*Acacia tetragonophylla*		
Fabaceae	*Crotalaria cunninghamii* subsp. *sturtii*		
Fabaceae	*Indigofera colutea*		
Fabaceae	*Indigofera georgei*		
Fabaceae	*Indigofera linnaei*		X
Fabaceae	*Isotropis atropurpurea*		X
Fabaceae	*Kennedia prorepens*		
Fabaceae	*Leptosema chambersii*		
Fabaceae	*Muelleranthus stipularis*		
Fabaceae	*Rhynchosia minima*		X
Fabaceae	*Senna artemisioides* (DC.) *Randell* subsp. *x artemisioides*		
Fabaceae	*Senna artemisioides* subsp. *helmsii*		
Fabaceae	*Senna artemisioides* subsp. *oligophylla*		
Fabaceae	*Senna glaucifolia* hybrid		
Fabaceae	*Senna notabilis*		
Fabaceae	*Senna pleurocarpa* (F.Muell.) Randell var. *pleurocarpa*		
Fabaceae	*Senna* sp. Meekatharra		X
Fabaceae	*Senna* sp.		
Fabaceae	*Swainsona microphylla*		
Goodeniaceae	*Brunonia australis*		
Goodeniaceae	*Goodenia azurea* subsp. *hesperia*		
Goodeniaceae	*Goodenia centralis*		
Goodeniaceae	*Goodenia gibbosa*	Priority 3	
Goodeniaceae	*Goodenia glabrata*		

Family	Taxon	Status	Range Extension
Goodeniaceae	*Goodenia iyouta*		
Goodeniaceae	*Goodenia virgata*	Priority 2	X
Goodeniaceae	*Goodenia* sp.		
Goodeniaceae	*Lechenaultia lutescens*		
Goodeniaceae	*Scaevola parvifolia*		
Goodeniaceae	*Scaevola spinescens*		
Haloragaceae	*Haloragis odontocarpa*		
Lamiaceae	*Dicrastylis doranii*		
Lamiaceae	*Dicrastylis gilesii*		
Lamiaceae	*Dicrastylis* sp.		
Lamiaceae	*Teucrium teucriiflorum*		
Malvaceae	*Abutilon macrum*		
Malvaceae	*Abutilon otocarpum*		
Malvaceae	*Abutilon oxycarpum* subsp. Prostrate (A.A. Mitchell PRP 1266)		
Malvaceae	*Alyogyne pinoniana*		
Malvaceae	*Corchorus sidoides* F.Muell. subsp. *sidoides*		
Malvaceae	*Hibiscus burtonii*		
Malvaceae	*Hibiscus sturtii* var *truncatus*		
Malvaceae	*Malvastrum americanum*	Weed	
Malvaceae	*Seringia exastia*	Threatened	
Malvaceae	*Sida* sp.		
Malvaceae	*Sida* sp. Golden calyces glabrous		
Malvaceae	*Sida* sp. Dark green fruits (S. van Leeuwen 2260)		
Malvaceae	*Sida* sp. Excedentifolia (J.L. Egan 1925)		
Malvaceae	*Sida* sp. Pilbara (A.A. Mitchell PRP 1543)		
Malvaceae	*Sida* sp. Tiny glabrous fruit (A.A. Mitchell PRP1152)		X
Malvaceae	*Waltheria indica*		X
Montiaceae	*Calandrinia balonensis*		
Montiaceae	*Calandrinia reticulata*		
Myrtaceae	*Aluta maisonneuvei* (F.Muell.) Rye & Trudgen subsp. *maisonneuvei*		
Myrtaceae	*Eucalyptus gamophylla*		
Myrtaceae	*Eucalyptus* sp.		
Myrtaceae	*Eucalyptus* sp. Little Sandy Desert		X
Nyctaginaceae	*Boerhavia coccinea*		
Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		
Poaceae	*Aristida holathera* Domin var. *holathera*		
Poaceae	*Aristida inaequiglumis*		
Poaceae	*Cenchrus ciliaris*	Weed	
Poaceae	*Cymbopogon obtectus*		
Poaceae	*Dactyloctenium radulans*		
Poaceae	*Dichanthium sericeum*		

Family	Taxon	Status	Range Extension
Poaceae	*Dichanthium sericeum* (R.Br.) A.Camus subsp. *sericeum*		
Poaceae	*Digitaria brownii*		
Poaceae	*Diplachne fusca* (L.) Roem. & Schult. subsp. *fusca*		
Poaceae	*Enneapogon polyphyllus*		
Poaceae	*Eragrostis dielsii*		
Poaceae	*Eragrostis eriopoda*		
Poaceae	*Eragrostis setifolia*		
Poaceae	*Eragrostis tenellula*		X
Poaceae	*Eriachne aristidea*		
Poaceae	*Eriachne mucronata*		
Poaceae	*Eriachne pulchella* subsp. *pulchella*		X
Poaceae	*Eulalia aurea*		
Poaceae	*Iseilema macratherum*		X
Poaceae	*Monachather paradoxus*		
Poaceae	*Panicum decompositum*		
Poaceae	*Panicum ?effusum*		
Poaceae	*Paspalidium basicladum*		
Poaceae	*Paspalidium clementii*		
Poaceae	*Setaria verticillata*		X
Poaceae	*Thyridolepis multiculmis*		
Poaceae	*Tragus australianus*		
Poaceae	*Triodia basedowii*		
Poaceae	*Triodia pungens*		
Poaceae	*Triodia scariosa*		
Poaceae	*Triodia schinzii*		
Poaceae	*Triraphis mollis*		
Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		X
Polygalaceae	*Polygala isingii*		X
Polygonaceae	*Rumex vesicarius*	Weed	
Portulacaceae	*Portulaca intraterranea*		
Proteaceae	*Grevillea eriostachya*		
Proteaceae	*Grevillea juncifolia Hook.* subsp. *juncifolia*		
Proteaceae	*Hakea lorea*		
Proteaceae	*Hakea* sp.		
Rubiaceae	*Psydrax latifolia*		
Rubiaceae	*Psydrax suaveolens*		
Santalaceae	*Santalum acuminatum*		
Sapindaceae	*Dodonaea viscosa* subsp. *angustissima*		
Scrophulariaceae	*Eremophila battii* subsp. Granite Peaks (A. Chapman & S. Fraser 7)		X
Scrophulariaceae	*Eremophila eriocalyx*		X
Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		

Family	Taxon	Status	Range Extension
Scrophulariaceae	*Eremophila georgei*		X
Scrophulariaceae	*Eremophila latrobei* F.Muell. subsp. *latrobei*		
Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		
Scrophulariaceae	*Eremophila longifolia*		
Scrophulariaceae	*Eremophila platycalyx* subsp. Neds Creek (N.H. Speck 1228)		X
Solanaceae	*Nicotiana occidentalis* subsp. *obliqua*		
Solanaceae	*Solanum austropiceum*		
Solanaceae	*Solanum centrale*		
Solanaceae	*Solanum coactiliferum*		
Solanaceae	*Solanum lasiophyllum*		
Solanaceae	*Solanum orbiculatum* Poir. subsp. *orbiculatum*		
Trianthema	*Trianthema triquetrum*		
Zygophyllaceae	*Tribulus astrocarpus*		

Quadrat Data

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
1	Fabaceae	*Acacia sericophylla*		5	30-70
	Haloragaceae	*Haloragis odontocarpa*		0.4	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.5	10-30
	Poaceae	*Eriachne mucronata*		0.3	2-10
	Amaranthaceae	*Ptilotus xerophilus*		0.6	<2
	Goodeniaceae	*Brunoniella australis*		0.5	2-10
	Poaceae	*Triodia scariosa*		1	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.2	<2
	Poaceae	*Triodia schinzii*		1.2	2-10
	Fabaceae	*Acacia minyura*		2.1	2-10
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	2-10
	Poaceae	*Eriachne aristidea*		0.4	2-10
2	Poaceae	*Triodia schinzii*		1.1	30-70
	Lamiaceae	*Dicrastylis gilesii*		0.3	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.3	2-10
	Goodeniaceae	*Goodenia virgata*	P2	0.2	<2
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		0.9	<2
	Fabaceae	*Acacia sericophylla*		2.5	<2
	Fabaceae	*Acacia pachyacra*		1.6	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	<2
	Poaceae	*Eriachne aristidea*		0.3	<2
	Amaranthaceae	*Ptilotus xerophilus*		0.4	<2
	Poaceae	*Monachather paradoxus*		0.4	<2
	Fabaceae	*Muelleranthus stipularis*		0.1	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Asteraceae	*Pluchea tetranthera*		1	<2
	Poaceae	*Eriachne mucronata*		0.7	<2
	Fabaceae	*Acacia aneura*		2.2	<2
	Poaceae	*Eragrostis eriopoda*		0.4	2-10
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.8	2-10
	Chenopodiaceae	*Maireana villosa*		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.2	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		0.9	<2
3	Fabaceae	*Acacia sericophylla*		4.5	10-30
	Fabaceae	*Acacia minyura*		2.2	30-70
	Haloragaceae	*Haloragis odontocarpa*		0.3	10-30
	Goodeniaceae	*Brunoniella australis*		0.4	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.5	10-30
	Malvaceae	*Sida* sp. tiny glabrous fruit (A.A. Mitchell PRP1152)		-	<2
	Poaceae	*Eriachne aristidea*		0.4	10-30
	Poaceae	*Monachather paradoxus*		0.4	<2
	Goodeniaceae	*Goodenia glabrata*		0.1	<2
	Goodeniaceae	*Goodenia iyouta*		0.5	<2
	Fabaceae	*Muelleranthus stipularis*		-	<2
	Poaceae	*Eriachne mucronata*		0.6	2-10
	Amaranthaceae	*Ptilotus xerophilus*		0.8	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.1	<2
	Lamiaceae	*Dicrastylis gilesii*		0.3	<2
	Montiaceae	*Calandrinia balonensis*		0.2	<2
	Chenopodiaceae	*Maireana villosa*		0.4	<2
	Solanaceae	*Solanum lasiophyllum*		0.2	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Triodia basedowii*		0.6	<2
	Fabaceae	*Acacia aneura*		5	2-10
	Poaceae	*Thyridolepis multiculmis*		0.2	2-10
	Lamiaceae	*Teucrium teucriiflorum*		1.2	<2
	Cucurbitaceae	*Cucumis? argenteus*		0.1	<2
	Poaceae	*Triodia schinzii*		1.3	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.4	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
4	Poaceae	*Triodia schinzii*		1.1	30-70
	Solanaceae	*Solanum coactiliferum*		0.4	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.6	10-30
	Poaceae	*Eriachne mucronata*		0.3	10-30
	Poaceae	*Eragrostis eriopoda*		0.4	2-10
	Chenopodiaceae	*Maireana villosa*		0.3	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.3	<2
	Poaceae	*Monachather paradoxus*		0.3	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	2-10
	Lamiaceae	*Dicrastylis gilesii*		0.8	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.4	<2
	Chenopodiaceae	*Maireana* sp.		1	<2
	Malvaceae	*Seringia exastia*		0.6	<2
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		0.4	2-10
	Fabaceae	*Acacia minyura*		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1	<2
	Goodeniaceae	*Goodenia centralis*		-	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Acacia sericophylla*		2	<2
5	Fabaceae	*Senna glaucifolia* hybrid		1.7	2-10
	Fabaceae	*Acacia pruinocarpa*		2.2	<2
	Poacaeae	*Cenchrus ciliaris*	*	0.7	10-30
	Cleomaceae	*Arivela viscosa*		0.6	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.7	2-10
	Poaceae	*Enneapogon polyphyllus*		0.4	30-70
	Portulacaceae	*Portulaca intraterranea*		0.2	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.3	2-10
	Poacaeae	*Dactyloctenium radulans*		0.2	2-10
	Zygophyllaceae	*Tribulus occidentalis*		0.2	<2
	Chenopodiaceae	*Salsola australis*		0.5	2-10
	Fabaceae	*Indigofera linnaei*		0.2	<2
	Scrophulariaceae	*Eremophila battii* subsp. Granite Peaks (A. Chapman & S. Fraser 7)		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.05	<2
	Nyctaginaceae	*Boerhavia coccinea*		0.2	<2
	Poaceae	*Triraphis mollis*		0.4	2-10
	Chenopodiaceae	*Enchylaena tomentosa* R.Br. var. *tomentosa*		0.8	<2
	Proteaceae	*Hakea lorea*		6	<2
	Fabaceae	*Acacia tetragonophylla*		2.3	<2
	Amaranthaceae	*Ptilotus obovatus*		0.7	2-10
	Chenopodiaceae	*Maireana villosa*		0.9	<2
	Fabaceae	*Acacia aptaneura*		4.5	2-10
	Chenopodiaceae	*Sclerolaena eurotioides*		0.2	<2
6	Chenopodiaceae	*Sclerolaena eurotioides*		0.2	30-70
	Poaceae	*Dactyloctenium radulans*		0.2	30-70

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Chenopodiaceae	*Salsola australis*		0.3	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.2	>70
	Amaranthaceae	*Ptilotus polystachyus*		0.5	<2
	Amaranthaceae	*Ptilotus obovatus*		0.4	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
	Poaceae	*Cenchrus ciliaris*	*	0.7	2-10
	Asteraceae	*Streptoglossa cylindriceps*		0.1	<2
	Chenopodiaceae	*Dissocarpus paradoxux*		0.2	<2
	Amaranthaceae	*Ptilotus obovatus*		0.8	<2
	Fabaceae	*Acacia tetragonophylla*		1.6	<2
	Fabaceae	*Senna artemisioides* subsp. *helmsii*		1.6	2-10
	Fabaceae	*Senna glaucifolia hybrid*		0.3	<2
	Fabaceae	*Acacia incurvaneura*		1.2	<2
	Scrophulariaceae	*Eremophila eriocalyx*		0.3	<2
	Poaceae	*Eriachne pulchella*		0.1	<2
	Chenopodiaceae	*Maireana* sp.		0.7	<2
	Chenopodiaceae	*Sclerolaena diacantha*		0.2	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1	<2
	Poaceae	*Eragrostis tenellula*		0.8	2-10
	Poaceae	*Panicum? effusum*		0.4	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	2-10
	Portulacaceae	*Portulaca intraterranea*		0.1	2-10
	Cleomaceae	*Arivela viscosa*		0.6	<2
	Poaceae	*Eragrostis dielsii*		0.4	2-10
	Malvaceae	*Abutilon macrum*		0.7	<2
	Fabaceae	*Senna artemisioides* (DC.) Randell subsp. x *artemisioides*		0.9	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Portulacaceae	Portulaca intraterranea		0.15	10-30
	Poaceae	Digitaria brownii		0.4	2-10
	Cyperaceae	Fimbristylis dichotoma		0.4	2-10
7	Fabaceae	*Acacia sibirica*		4	10-30
	Fabaceae	*Acacia incurvaneura*		5	10-30
	Portulacaceae	*Portulaca intraterranea*		0.2	30-70
	Chenopodiaceae	*Salsola australis*		0.4	2-10
	Zygophyllaceae	*Tribulus occidentalis*		0.15	2-10
	Amaranthaceae	*Ptilotus helipteroides*		0.2	<2
	Amaranthaceae	*Ptilotus clementii*		0.6	2-10
	Poaceae	*Enneapogon polyphyllus*		0.4	30-70
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.3	30-70
	Poaceae	*Paspalidium clementii*		0.3	2-10
	Poaceae	*Eragrostis dielsii*		0.4	30-70
	Fabaceae	*Acacia tetragonophylla*		3	<2
	Rubiaceae	*Psydrax latifolia*		2	<2
	Cleomaceae	*Arivela viscosa*		1	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.7	<2
	Poaceae	*Dactyloctenium radulans*		0.2	2-10
	Fabaceae	*Senna artemisioides* (DC.) Randell subsp. x *artemisioides*		0.9	<2
	Lamiaceae	*Teucrium teucriiflorum*		1	<2
	Chenopodiaceae	*Enchylaena tomentosa*		0.3	<2
	Cucurbitaceae	*Cucumis? argenteus*		creeper	<2
	Chenopodiaceae	*Enchylaena tomentosa* R.Br. var. *tomentosa*		0.8	<2
	Scrophulariaceae	*Eremophila battii* subsp. Granite Peaks (A. Chapman & S. Fraser 7)		0.4	<2
	Fabaceae	*Senna* sp. Meekatharra		1	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Chenopodiaceae	*Rhagodia eremaea*		0.9	<2
	Poaceae	*Digitaria brownii*		0.5	2-10
	Amaranthaceae	*Ptilotus obovatus*		0.8	<2
	Scrophulariaceae	*Eremophila eriocalyx*		0.5	<2
	Poaceae	*Eriachne pulchella*		0.2	<2
	Goodeniaceae	*Scaevola spinescens*		1.6	<2
8	Fabaceae	*Acacia incurvaneura*		4.5	2-10
	Portulacaceae	*Portulaca intraterranea*		0.15	30-70
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Poaceae	*Eragrostis dielsii*		0.2	10-30
	Poaceae	*Enneapogon polyphyllus*		0.2	2-10
	Goodeniaceae	*Goodenia centralis*		0.1	<2
	Cleomaceae	*Arivela viscosa*		0.6	<2
	Chenopodiaceae	*Rhagodia eremaea*		0.9	<2
	Poaceae	*Digitaria brownii*		0.6	<2
	Poaceae	*Cenchrus ciliaris*	*	1	<2
	Fabaceae	*Senna* sp. Meekatharra		1.1	<2
	Fabaceae	*Acacia tetragonophylla*		1.2	<2
	Fabaceae	*Acacia aneura*		1.4	<2
	Amaranthaceae	*Ptilotus obovatus*		0.8	<2
	Chenopodiaceae	*Maireana* sp.		0.1	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.2	2-10
	Poaceae	*Dactyloctenium radulans*		0.2	2-10
	Chenopodiaceae	*Salsola australis*		0.3	<2
	Amaranthaceae	*Ptilotus xerophilus*		0.3	<2
9	Goodeniaceae	*Goodenia iyouta*		prostrate	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Acacia sericophylla*		4.6	30-70
	Chenopodiaceae	*Rhagodia eremaea*		1.3	<2
	Amaranthaceae	*Ptilotus obovatus*		0.7	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Amaranthaceae	*Ptilotus polystachyus*		0.7	2-10
	Zygophyllaceae	*Tribulus astrocarpus*		prostrate	2-10
	Poaceae	*Monachather paradoxus*		0.6	10-30
	Poaceae	*Yakirra australiensis (*Domin) Lazarides & R.D.Webster var. *australiensis*		0.1	2-10
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.8	2-10
	Portulacaceae	*Portulaca intraterranea*		0.1	<2
	Fabaceae	*Senna* sp. Meekatharra		0.3	2-10
	Malvaceae	*Sida* sp. Excedentifolia (J.L. Egan 1925)		0.2	2-10
	Goodeniaceae	*Scaevola spinescens*		1.2	<2
	Solanaceae	*Nicotiana occidentalis* subsp. *obliqua*		0.9	<2
	Poaceae	*Triodia scariosa*		0.4	<2
	Poaceae	*Eriachne mucronata*		0.2	<2
	Chenopodiaceae	*Maireana villosa X Maireana tomentosa*		0.3	<3
	Malvaceae	*Hibiscus burtonii*		0.3	<2
	Poaceae	*Eriachne aristidea*		0.4	<2
	Poaceae	*Paspalidium clementii*		0.4	<2
	Poaceae	*Eragrostis dielsii*		0.5	<2
	Montiaceae	*Calandrinia balonensis*		0.1	<2
	Chenopodiaceae	*Dysphania kalpari*		0.1	<2
	Rubiaceae	*Psydrax latifolia*		0.4	<2
	Goodeniaceae	*Brunoniella australis*		0.2	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Malvaceae	*Sida* sp. dark green fruits (S. van Leeuwen 2260)		0.5	<2
	Rubiaceae	*Psydrax suaveolens*		-	<2
	Scrophulariaceae	*Eremophila eriocalyx*		0.3	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
	Poaceae	*Eriachne mucronata*		0.6	2-10
	Cleomaceae	*Arivela viscosa*		0.8	<2
10	Poaceae	*Triodia schinzii*		1.3	30-70
	Goodeniaceae	*Scaevola parvifolia*		0.1	<2
	Goodeniaceae	*Goodenia virgata*	P2	0.15	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.6	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	10-30
	Goodeniaceae	*Goodenia centralis*		0.5	<2
	Poaceae	*Monachather paradoxus*		0.4	<2
	Poaceae	*Paspalidium basicladum*		0.2	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.4	<2
	Malvaceae	*Hibiscus sturtii* var. *truncatus*		0.4	<2
	Fabaceae	*Acacia pruinocarpa*		3.5	<2
	Montiaceae	*Calandrinia balonensis*		0.1	<2
	Proteaceae	*Hakea lorea*		2.1	<2
	Solanaceae	*Solanum coactiliferum*		0.2	<2
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		1.4	2-10
	Poaceae	*Eriachne aristidea*		0.4	2-10
	Poaceae	*Eriachne mucronata*		0.5	2-10
	Amaranthaceae	*Ptilotus xerophilus*		0.4	<2
	Malvaceae	*Seringia exastia*	T	0.5	2-10
	Poaceae	*Cenchrus ciliaris*	*	0.9	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Kennedia prorepens*		0.3	<2
	Chenopodiaceae	*Rhagodia eremaea*		0.5	<2
	Lamiaceae	*Dicrastylis gilesii*		0.1	<2
11	Poaceae	*Triodia schinzii*		1.5	70%
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		1.2	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	2-10
	Poaceae	*Eriachne mucronata*		0.8	10-30
	Malvaceae	*Seringia exastia*	T	0.8	10-30
	Fabaceae	*Kennedia prorepens*		0.1	<2
	Poaceae	*Eriachne aristidea*		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.2	<2
	Solanaceae	*Solanum coactiliferum*		0.2	<2
	Proteaceae	*Hakea lorea*		1.2	<2
	Malvaceae	*Waltheria indica*		0.5	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.3	<2
	Poaceae	*Triodia basedowii*		0.8	2-10
12	Poaceae	*Triodia scariosa*		0.9	10-30
	Poaceae	*Triodia schinzii*		1.2	10-30
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		0.8	2-10
	Poaceae	*Eragrostis dielsii*		0.3	<2
	Solanaceae	*Solanum coactiliferum*		0.1	2-10
	Poaceae	*Eriachne aristidea*		0.3	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.5	30-70
	Amaranthaceae	*Ptilotus polystachyus*		0.4	<2
	Solanaceae	*Solanum orbiculatum* Poir. subsp. *orbiculatum*		0.6	<2
	Goodeniaceae	*Scaevola parvifolia*		0.4	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Muelleranthus stipularis*		0.1	<2
	Poaceae	*Eriachne mucronata*		0.8	<2
	Proteaceae	*Hakea lorea*		2.2	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Fabaceae	*Acacia minyura*		1.5	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.4	<2
	Lamiaceae	*Dicrastylis gilesii*		0.6	2-10
	Malvaceae	*Waltheria indica*		0.2	<2
	Solanaceae	*Solanum austropiceum*		0.3	<2
	Solanaceae	*Solanum orbiculatum* Poir. subsp. *orbiculatum*		0.4	<2
13	Fabaceae	*Acacia sericophylla*		4	30-70
	Scrophulariaceae	*Eremophila latrobei* subsp. *latrobei*		1.5	2-10
	Poaceae	*Eriachne mucronata*		0.4	30-70
	Poaceae	*Monachather paradoxus*		0.4	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	2-10
	Goodeniaceae	*Brunoniella australis*		0.2	<2
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.3	10-30
	Amaranthaceae	*Ptilotus polystachyus*		0.3	<2
	Solanaceae	*Solanum austropiceum*		0.3	<2
	Haloragaceae	*Haloragis odontocarpa*		0.3	<2
	Chenopodiaceae	*Maireana villosa*		0.3	<2
	Poaceae	*Digitaria brownii*		0.4	<2
	Poaceae	*Thyridolepis multiculmis*		0.5	2-10
	Fabaceae	*Acacia aneura*		4	10-30
	Poaceae	*Triodia basedowii*		0.6	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Eriachne pulchella* subsp. *pulchella*		0.1	<2
	Poaceae	*Eragrostis dielsii*		0.5	<2
14	Proteaceae	*Hakea lorea*		3	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.5	10-30
	Poaceae	*Eriachne mucronata*		0.7	10-30
	Amaranthaceae	*Ptilotus polystachyus*		0.7	10-30
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	2-10
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Cyperaceae	*Fimbristylis dichotoma*		0.8	<2
	Convolvulaceae	*Bonamia erecta*		0.6	<2
	Poaceae	*Triodia schinzii*		1.4	30-70
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		0.9	2-10
	Fabaceae	*Indigofera georgei*		0.5	<2
	Asteraceae	*Chrysocephalum pterochaetum*		0.3	<2
	Amaranthaceae	*Ptilotus schwartzii*		0.4	<2
	Malvaceae	*Hibiscus sturtii* var. *truncatus*		0.3	<2
	Euphorbiaceae	*Euphorbia boophthona*		0.5	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.5	<2
	Fabaceae	*Acacia pruinocarpa*		0.9	<2
	Poaceae	*Triodia basedowii*		1	<2
	Chenopodiaceae	*Maireana villosa*		0.3	<2
15	Proteaceae	*Hakea lorea*		2.8	<2
	Proteaceae	*Hakea* sp.		2.1	<2
	Poaceae	*Triodia basedowii*		1	10-30
	Poaceae	*Triodia schinzii*		1.2	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Amaranthaceae	*Ptilotus polystachyus*		0.6	10-30
	Poaceae	*Eragrostis dielsii*		0.5	10-30
	Portulacaceae	*Portulaca intraterranea*		0.2	10-30
	Fabaceae	*Senna artemisioides* (DC.) Randell subsp. *x artemisioides*		0.8	<2
	Santalaceae	*Santalum acuminatum*		0.9	<2
	Solanaceae	*Solanum centrale*		0.5	<2
	Poaceae	*Tragus australianus*		0.4	<2
	Poaceae	*Diplachne fusca* (L.) Roem. & Schult. subsp. *fusca*		0.3	<2
	Poaceae	*Eriachne mucronata*		0.6	2-10
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.4	2-10
	Euphorbiaceae	*Euphorbia boophthona*		0.4	<2
	Poaceae	*Monachather paradoxus*		0.4	2-10
	Convolvulaceae	*Bonamia erecta*		0.3	<2
	Chenopodiaceae	*Maireana villosa*		0.2	<2
	Malvaceae	*Hibiscus burtonii*		0.5	<2
	Poaceae	*Cymbopogon obtectus*		1	<2
	Malvaceae	*Sida* sp. Pilbara (A.A. Mitchell PRP 1543)		0.8	<2
	Fabaceae	*Indigofera georgei*		0.7	<2
	Malvaceae	*Hibiscus sturtii* var. *truncatus*		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.2	<2
	Poaceae	*Yakirra australiensis (*Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	<2
	Poaceae	*Digitaria brownii*		0.3	<2
	Scrophulariaceae	*Eremophila latrobei* subsp*. Latrobei*		0.5	<2
	Malvaceae	*Abutilon otocarpum*		0.4	<2
	Fabaceae	*Kennedia prorepens*		0.3	<2
	Malvaceae	*Waltheria indica*		0.4	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
16	Fabaceae	*Acacia pruinocarpa*		2.2	2-10
	Fabaceae	*Acacia sericophylla*		2.2	<2
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		1	2-10
	Malvaceae	*Waltheria indica*		0.4	10-30
	Poaceae	*Triodia basedowii*		1.1	30-70
	Poaceae	*Triodia schinzii*		1.3	2-10
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	2-10
	Poaceae	*Eragrostis dielsii*		0.4	<2
	Convolvulaceae	*Bonamia erecta*		0.3	2-10
	Solanaceae	*Solanum centrale*		0.3	<2
	Fabaceae	*Kennedia prorepens*		0.4	<2
	Boraginaceae	*Halgania erecta*		0.2	2-10
	Proteaceae	*Grevillea juncifolia* Hook. subsp. *juncifolia*		1	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.9	10-30
	Portulacaceae	*Portulaca intraterranea*		-	<2
	Montiaceae	*Calandrinia balonensis*		0.2	<2
	Malvaceae	*Sida* sp. Pilbara (A.A. Mitchell PRP 1543)		0.8	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	10-30
	Amaranthaceae	*Ptilotus sessilifolius*		0.6	<2
	Lamiaceae	*Dicrastylis gilesii*		0.7	<2
	Polygalaceae	*Polygala isingii*		0.1	<2
	Poaceae	*Eriachne aristidea*		0.3	<2
17	Asteraceae	*Chrysocephalum pterochaetum*		0.3	<2
	Myrtaceae	*Eucalyptus gamophylla*		2.2	2-10
	Fabaceae	*Acacia sericophylla*		1.8	2-10

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Triodia pungens*		1.1	<2
	Poaceae	*Triodia basedowii*		0.8	30-70
	Fabaceae	*Acacia aneura*		0.8	<2
	Myrtaceae	*Eucalyptus* sp. Little Sandy Desert		2.5	2-10
	Fabaceae	*Acacia sibirica*		1	<2
	Goodeniaceae	*Brunoniella australis*		0.2	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	2-10
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.1	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.1	<2
	Fabaceae	*Acacia pruinocarpa*		1.6	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.4	<2
	Myrtaceae	*Eucalyptus* sp. Little Sandy Desert		1.7	<2
	Chenopodiaceae	*Maireana villosa*		0.5	<2
	Solanaceae	*Solanum centrale*		0.3	<2
	Poaceae	*Eragrostis dielsii*		0.6	<2
	Araliaceae	*Trachymene glaucifolia*		0.4	<2
	Fabaceae	*Senna pleurocarpa* (F.Muell.) Randell var. *pleurocarpa*		0.5	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *latrobei*		0.8	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Poaceae	*Paspalidium basicladum*		0.3	<2
	Lamiaceae	*Dicrastylis gilesii*		0.3	<2
18	Fabaceae	*Acacia pruinocarpa*		2	<2
	Poaceae	*Triodia pungens*		0.8	30-70
	Poaceae	*Triodia basedowii*		1	<2
	Haloragaceae	*Haloragis odontocarpa*		0.3	2-10

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Goodeniaceae	*Brunoniella australis*		0.2	<2
	Amaranthaceae	*Ptilotus clementii*		0.4	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.4	<2
	Chenopodiaceae	*Dysphania kalpari*		0.2	<2
	Lamiaceae	*Dicrastylis gilesii*		1	<2
	Fabaceae	*Senna pleurocarpa* (F.Muell.) Randell var. *pleurocarpa*		0.7	<2
	Fabaceae	*Acacia sericophylla*		1	<2
	Fabaceae	*Acacia aneura*		1.2	<2
	Fabaceae	*Acacia pachyacra*		1.2	2-10
	Fabaceae	*Acacia minyura*		1.4	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.1	<2
	Fabaceae	*Acacia sclerosperma* subsp. *Sclerosperma*		1.6	<2
	Poaceae	*Eragrostis dielsii*		0.4	<2
	Fabaceae	*Acacia pachyacra*		1.5	<2
	Solanaceae	*Solanum orbiculatum* Poir. subsp. *orbiculatum*		0.3	<2
	Goodeniaceae	*Goodenia* sp.		0.1	<2
	Malvaceae	*Sida* sp. Excedentifolia (J.L. Egan 1925)		0.2	<2
19	Poaceae	*Triodia scariosa*		1.1	30-70
	Goodeniaceae	*Goodenia azurea* subsp. *hesperia*		0.4	<2
	Malvaceae	*Corchorus sidoides* F.Muell. subsp. *sidoides*		0.2	<2
	Poaceae	*Eragrostis dielsii*		0.4	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.3	<2
	Goodeniaceae	*Goodenia centralis*		0.1	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Polygalaceae	*Polygala isingii*		0.05	<2
	Goodeniaceae	*Goodenia gibbosa*	P3	0.2	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.3	<2
	Haloragaceae	*Haloragis odontocarpa*		0.1	<2
	Lamiaceae	*Dicrastylis gilesii*		1.4	<2
	Amaranthaceae	*Ptilotus schwartzii*		0.3	<2
	Malvaceae	*Waltheria indica*		0.4	<2
	Proteaceae	*Hakea lorea*		1.1	<2
	Goodeniaceae	*Brunoniella australis*		0.3	<2
	Malvaceae	*Hibiscus sturtii* var. *truncatus*		0.3	<2
20	Fabaceae	*Acacia sericophylla*		2	<2
	Poaceae	*Triodia scariosa*		0.9	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Poaceae	*Eriachne aristidea*		0.2	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.05	<2
	Solanaceae	*Solanum coactiliferum*		0.2	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.4	2-10
	Poaceae	*Eragrostis dielsii*		0.3	<2
	Polygalaceae	*Polygala isingii*		0.05	<2
	Myrtaceae	*Aluta maisonneuvei* (F.Muell.) Rye & Trudgen subsp. *maisonneuvei*		0.6	<2
	Amaranthaceae	*Ptilotus schwartzii*		0.4	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.2	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.7	<2
	Fabaceae	*Acacia brachystachya*		1.3	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Acacia aneura*		1.1	<2
	Fabaceae	*Senna notabilis*		0.2	<2
	Chenopodiaceae	*Maireana villosa*		0.3	<2
	Lamiaceae	*Dicrastylis gilesii*		1.3	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.5	<2
21	Myrtaceae	*Eucalyptus gamophylla*		5	2-10
	Fabaceae	*Acacia brachystachya*		2	<2
	Scrophulariaceae	*Eremophila forrestii* F.Muell. subsp. *forrestii*		1.3	2-10
	Poaceae	*Triodia scariosa*		1.1	30-70
	Convolvulaceae	*Bonamia erecta*		0.2	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	10-30
	Euphorbiaceae	*Euphorbia boophthona*		0.5	<2
	Boraginaceae	*Halgania solanacea* var. Mt Doreen (G.M. Chippendale 4206)		0.5	2-10
	Amaranthaceae	*Ptilotus obovatus*		0.5	<2
	Poaceae	*Paspalidium basicladum*		0.4	<2
	Fabaceae	*Acacia tetragonophylla*		0.2	2-10
	Fabaceae	*Senna notabilis*		0.4	<2
	Fabaceae	*Leptosema chambersii*		0.3	<2
	Malvaceae	*Waltheria indica*		0.3	2-10
	Lamiaceae	*Dicrastylis gilesii*		0.4	2-10
	Poaceae	*Aristida inaequiglumis*		1	<2
	Poaceae	*Eragrostis dielsii*		0.5	2-10
	Poaceae	*Eriachne mucronata*		0.5	<2
	Goodeniaceae	*Goodenia virgata*	P2	0.3	<2
22	Poaceae	*Triodia schinzii*		1.1	10-30
	Poaceae	*Monachather paradoxus*		0.5	10-30

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	10-30
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.6	2-10
	Malvaceae	*Waltheria indica*		0.4	2-10
	Fabaceae	*Leptosema chambersii*		0.3	2-10
	Boraginaceae	*Halgania solanacea* var. Mt Doreen (G.M. Chippendale 4206)		0.3	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.4	<2
	Convolvulaceae	*Bonamia erecta*		0.3	<2
	Malvaceae	*Seringia exastia*	T	0.5	<2
	Proteaceae	*Grevillea eriostachya*		0.2	<2
	Poaceae	*Eriachne mucronata*		0.4	2-10
23	Fabaceae	*Acacia sericophylla*		3	2-10
	Fabaceae	*Acacia aneura*		2.1	10-30
	Poaceae	*Triodia scariosa*		1	10-30
	Amaranthaceae	*Ptilotus polystachyus*		0.4	2-10
	Chenopodiaceae	*Maireana villosa*		0.3	<2
	Poaceae	*Eragrostis dielsii*		0.5	2-10
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	2-10
	Malvaceae	*Sida* sp. tiny glabrous fruit (A.A. Mitchell PRP1152)		0.05	<2
	Lamiaceae	*Dicrastylis gilesii*		0.2	<2
	Solanaceae	*Solanum coactiliferum*		0.3	<2
	Scrophulariaceae	*Eremophila latrobei* subsp. *filiformis*		1.6	10-30
	Poaceae	*Monachather paradoxus*		0.3	<2
	Amaranthaceae	*Ptilotus xerophilus*		0.6	<2
	Montiaceae	*Calandrinia balonensis*		0.2	<2
	Poaceae	*Digitaria brownii*		0.4	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Tragus australianus*		0.4	<2
	Malvaceae	*Abutilon otocarpum*		0.2	<2
	Chenopodiaceae	*Dysphania kalpari*		0.2	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.2	<2
	Malvaceae	*Waltheria indica*		0.7	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.2	<2
24	Poaceae	*Dichanthium sericeum*		0.4	<2
	Poaceae	*Panicum decompositum*		1	<2
	Chenopodiaceae	*Salsola australis*		0.5	2-10
	Cleomaceae	*Arivela viscosa*		0.7	2-10
	Fabaceae	*Rhynchosia minima*		0.4	10-30
	Amaranthaceae	*Ptilotus clementii*		0.5	2-10
	Amaranthaceae	*Ptilotus axillaris*		-	10-30
	Portulacaceae	*Portulaca intraterranea*		0.2	30-70
	Poaceae	*Eragrostis setifolia*		0.4	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	<2
	Boraginaceae	*Heliotropium tanythrix*		0.2	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	10-30
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.4	<2
	Poaceae	*Iseilema macratherum*		0.2	<2
	Fabaceae	*Indigofera colutea*		0.2	<2
	Euphorbiaceae	*Euphorbia australis* var. *subtomentosa*		0.1	<2
	Poaceae	*Enneapogon polyphyllus*		0.3	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Senna artemisioides* subsp. *oligophylla*		0.5	<2
	Proteaceae	*Hakea lorea*		2.3	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.9	<2
25	Proteaceae	*Hakea lorea*		2.8	<2
	Fabaceae	*Acacia sericophylla*		3	2-10
	Amaranthaceae	*Ptilotus obovatus*		0.5	2-10
	Amaranthaceae	*Ptilotus clementii*		0.3	<2
	Poaceae	*Panicum decompositum*		1	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.3	30-70
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
	Chenopodiaceae	*Salsola australis*		0.4	2-10
	Euphorbiaceae	*Euphorbia australis* var *subtomentosa*		0.2	2-10
	Poaceae	*Enneapogon polyphyllus*		0.3	10-30
	Boraginaceae	*Heliotropium tanythrix*		0.2	2-10
	Amaranthaceae	*Ptilotus axillaris*		0.05	10-30
	Portulacaceae	*Portulaca intraterranea*		0.1	10-30
	Euphorbiaceae	*Euphorbia drummondii*		0.2	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.6	<2
	Chenopodiaceae	*Arivela viscosa*		0.6	<2
	Zygophyllaceae	*Tribulus occidentalis*		0.2	2-10
	Poaceae	*Cymbopogon obtectus*		1	2-10
	Amaranthaceae	*Ptilotus sessilifolius*		0.3	<2
	Chenopodiaceae	*Sclerolaena cornishiana*		0.4	<2
	Asteraceae	*Chrysocephalum pterochaetum*		0.3	<2
		Solanum lasiophyllum		1	<2
	Poaceae	*Dactyloctenium radulans*		0.3	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Eragrostis dielsii*		-	<2
	Apocynaceae	*Marsdenia australis*		0.2	<2
	Poaceae	*Triraphis mollis*		1	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	2-10
	Malvaceae	*Abutilon macrum*		0.8	<2
26	Fabaceae	*Acacia incurvaneura*		4	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.5	<2
	Poaceae	*Cenchrus ciliaris*	*	1	10-30
	Amaranthaceae	*Ptilotus helipteroides*		0.4	10-30
	Chenopodiaceae	*Salsola australis*		0.5	10-30
	Chenopodiaceae	*Sclerolaena cornishiana*		0.3	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	10-30
	Euphorbiaceae	*Euphorbia australis* var. *subtomentosa*		0.2	2-10
	Poaceae	*Enneapogon polyphyllus*		0.3	10-30
	Poaceae	*Triraphis mollis*		0.5	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Brassicaceae	*Lepidium oxytrichum*		0.2	<2
	Asteraceae	*Chrysocephalum pterochaetum*		0.4	<2
	Amaranthaceae	*Ptilotus obovatus*		0.6	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Amaranthaceae	*Ptilotus clementii*		0.3	<2
	Scrophulariaceae	*Eremophila platycalyx* subsp. Neds Creek (N.H. Speck 1228)		1.6	<2
	Fabaceae	*Senna glaucifolia* hybrid		0.9	<2
	Zygophyllaceae	*Tribulus occidentalis*		0.05	2-10
	Poaceae	*Dactyloctenium radulans*		0.2	<2
	Cucurbitaceae	*Cucumis? argenteus*		-	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Fabaceae	*Acacia sibirica*		1.7	<2
	Chenopodiaceae	*Rhagodia eremaea*		1.7	<2
	Amaranthaceae	*Ptilotus axillaris*		0.1	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.3	<2
	Nyctaginaceae	*Boerhavia coccinea*		0.2	<2
	Portulacaceae	*Portulaca intraterranea*		0.2	<2
	Cleomaceae	*Arivela viscosa*		0.7	<2
	Amaranthaceae	*Ptilotus sessilifolius*		0.7	<2
	Lamiaceae	*Teucrium teucriiflorum*		1.2	<2
	Solanaceae	*Solanum austropiceum*		0.2	<2
27	Fabaceae	*Acacia incurvaneura*		5	2-10
	Poaceae	*Cenchrus ciliaris*	*	1.1	10-30
	Amaranthaceae	*Ptilotus obovatus*		0.9	2-10
	Amaranthaceae	*Ptilotus helipteroides*		0.4	10-30
	Poaceae	*Enneapogon polyphyllus*		0.4	10-30
	Poaceae	*Enneapogon polyphyllus*		0.3	2-10
	Poaceae	*Triraphis mollis*		0.6	<2
	Asteraceae	*Chrysocephalum pterochaetum*		0.3	<2
	Euphorbiaceae	*Euphorbia australis* var. *subtomentosa*		0.2	2-10
	Euphorbiaceae	*Euphorbia drummondii*		0.3	<2
	Chenopodiaceae	*Sclerolaena cornishiana*		0.2	<2
	Fabaceae	*Senna* sp.		0.6	<2
	Poaceae	*Eulalia aurea*		0.9	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Chenopodiaceae	*Salsola australis*		0.6	2-10
	Fabaceae	*Acacia sibirica*		1.4	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.2	<2
	Malvaceae	*Sida* sp.		0.4	<2
	Boraginaceae	*Heliotropium tanythrix*		0.2	<2
	Solanaceae	*Solanum austropiceum*		0.3	<2
	Malvaceae	*Malvastrum americanum*	*	0.4	<2
	Poaceae	*Dichanthium sericeum*		0.4	<2
	Zygophyllaceae	*Tribulus astrocarpus*		-	2-10
	Zygophyllaceae	*Tribulus occidentalis*		-	2-10
	Fabaceae	*Senna glaucifolia hybrid*		1.4	<2
	Poaceae	*Cymbopogon obtectus*		0.9	<2
	Brassicaceae	*Lepidium oxytrichum*		0.2	<2
	Fabaceae	*Senna artemisioides (*DC.) Randell subsp. x *artemisioides*		1.5	<2
	Poaceae	*Dactyloctenium radulans*		0.2	<2
	Amaranthaceae	*Ptilotus clementii*		0.7	<2
	Asteraceae	*Rhodanthe floribunda*		0.1	<2
28	Proteaceae	*Hakea lorea*		5	2-10
	Amaranthaceae	*Ptilotus polystachyus*		0.9	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.8	30-70
	Poaceae	*Eragrostis dielsii*		0.6	2-10
	Poaceae	*Digitaria brownii*		0.7	<2
	Poaceae	*Eriachne aristidea*		0.4	2-10
	Amaranthaceae	*Ptilotus helipteroides*		0.4	<2
	Amaranthaceae	*Ptilotus obovatus*		0.8	2-10
	Portulacaceae	*Portulaca intraterranea*		0.2	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	2-10
	Poaceae	*Eriachne mucronata*		0.9	<2

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Chenopodiaceae	*Salsola australis*		0.4	<2
	Poaceae	*Yakirra australiensis* (Domin) Lazarides & R.D.Webster var. *australiensis*		0.2	<2
	Nyctaginaceae	*Boerhavia coccinea*		0.2	2-10
	Zygophyllaceae	*Tribulus astrocarpus*		-	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Poaceae	*Thyridolepis multiculmis*		0.4	<2
	Solanaceae	*Solanum lasiophyllum*		1	<2
	Chenopodiaceae	*Rhagodia eremaea*		1.4	<2
	Euphorbiaceae	*Euphorbia boophthona*		0.5	<2
	Amaranthaceae	*Ptilotus sessilifolius*		0.6	2-10
	Cleomaceae	*Arivela viscosa*		0.5	<2
29	Fabaceae	*Acacia incurvaneura*		1.5	<2
	Amaranthaceae	*Ptilotus helipteroides*		0.4	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	30-70
	Zygophyllaceae	*Tribulus occidentalis*		-	2-10
	Amaranthaceae	*Ptilotus obovatus*		0.4	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.2	<2
	Poaceae	*Enneapogon polyphyllus*		0.4	<2
	Poaceae	*Triraphis mollis*		0.4	2-10
	Brassicaceae	*Lepidium oxytrichum*		0.05	<2
	Poaceae	*Enneapogon polyphyllus*		0.3	2-10
	Chenopodiaceae	*Sclerolaena cornishiana*		0.3	<2
	Amaranthaceae	*Ptilotus clementii*		0.2	<2
	Euphorbiaceae	*Euphorbia australis* var. *subtomentosa*		0.2	2-10
	Amaranthaceae	*Ptilotus sessilifolius*		0.3	2-10

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Enneapogon polyphyllus*		0.2	2-10
	Zygophyllaceae	*Tribulus occidentalis*		-	10-30
	Poaceae	*Thyridolepis multiculmis*		0.4	<2
	Poaceae	*Triodia scariosa*		0.5	<2
	Poaceae	*Eragrostis dielsii*		0.7	<2
	Chenopodiaceae	*Rhagodia eremaea*		0.7	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.5	<2
	Cleomaceae	*Arivela viscosa*		0.6	<2
	Proteaceae	*Hakea lorea*		1.4	<2
30	Poaceae	*Triodia basedowii*		0.9	30-70
	Proteaceae	*Hakea lorea*		5	2-10
	Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*		2.3	2-10
	Fabaceae	*Acacia dictyophleba*		1.5	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.8	2-10
	Chenopodiaceae	*Salsola australis*		0.4	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.6	2-10
	Malvaceae	*Waltheria indica*		0.3	2-10
	Malvaceae	*Alyogyne pinoniana*		0.8	<2
	Poaceae	*Eriachne aristidea*		0.3	<2
	Euphorbiaceae	*Euphorbia boophthona*		0.4	<2
	Solanaceae	*Solanum coactiliferum*		0.3	<2
	Poaceae	*Eragrostis dielsii*		0.5	<2
	Amaranthaceae	*Ptilotus obovatus*		0.5	<2
31	Poaceae	*Cymbopogon obtectus*		0.7	<2
	Poaceae	*Cenchrus ciliaris*	*	1	<2
	Amaranthaceae	*Ptilotus obovatus*		0.4	2-10

Quadrat	Family	Taxon	Status	Height (m)	Cover (%)
	Cleomaceae	*Arivela viscosa*		0.5	10-30
	Chenopodiaceae	*Salsola australis*		0.8	<2
	Chenopodiaceae	*Sclerolaena cornishiana*		0.4	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.3	10-30
	Portulacaceae	*Portulaca intraterranea*		0.2	30-70
	Amaranthaceae	*Ptilotus helipteroides*		0.3	<2
	Amaranthaceae	*Ptilotus sessilifolius*		0.4	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.5	<2
	Malvaceae	*Sida* sp. Golden calyces glabrous		0.3	10-30
	Poaceae	*Enneapogon polyphyllus*		0.4	2-10
	Nyctaginaceae	*Boerhavia coccinea*		0.2	<2
	Zygophyllaceae	*Tribulus occidentalis*		-	2-10
	Poaceae	*Enneapogon polyphyllus*		0.2	2-10
	Amaranthaceae	*Ptilotus clementii*		0.4	<2
	Poaceae	*Dactyloctenium radulans*		0.2	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.3	<2
	Amaranthaceae	*Ptilotus axillaris*		-	<2
	Fabaceae	*Acacia sibirica*		1.2	<2
	Poaceae	*Triraphis mollis*		0.6	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.3	<2

Releve Data

Releve	Family	Taxon	Status	Height (m)	Cover (%)
R1	Casuarinaceae	*Allocasuarina decaisneana*		10	2-10
	Proteaceae	*Hakea lorea*		3	<2
	Goodeniaceae	*Goodenia centralis*		1.2	30-70
	Amaranthaceae	*Ptilotus polystachyus*		0.4	2-10
	Solanaceae	*Solanum centrale*		0.5	<2
	Convolvulaceae	*Bonamia erecta*		0.4	<2
	Chenopodiaceae	*Sclerolaena cuneata*		0.4	<2
	Malvaceae	*Waltheria indica*		0.6	<2
	Poaceae	*Setaria verticillata*		0.7	<2
	Fabaceae	*Acacia coriacea*		2.2	2-10
	Amaranthaceae	*Ptilotus obovatus*		0.4	<2
	Solanaceae	*Solanum orbiculatum* Poir. subsp. *orbiculatum*		0.5	<2
	Fabaceae	*Acacia aneura*		8	<2
	Santalaceae	*Santalum acuminatum*		1.8	<2
	Myrtaceae	*Eucalyptus* sp. (juvenile)		1.5	<2
	Fabaceae	*Acacia pruinocarpa*		2.5	<2
	Proteaceae	*Grevillea eriostachya*		0.5	<2
	Poaceae	*Enneapogon polyphyllus*		0.3	2-10
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	<2
	Poaceae	*Triodia basedowii*		1	<2
	Poaceae	*Eriachne mucronata*		0.6	<2
	Fabaceae	*Acacia sclerosperma* subsp. *sclerosperma*		1.1	2-10
R2	Malvaceae	*Seringia exastia*		0.4	2-10
	Goodeniaceae	*Scaevola parvifolia* subsp. *pilbarae*		0.3	2-10
	Fabaceae	*Crotalaria cunninghamii* subsp. *sturtii*		0.6	<2

Releve	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Triodia schinzii*		1.5	10-30
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.9	30-70
	Fabaceae	*Acacia dictyophleba*		1	<2
	Myrtaceae	*Aluta maisonneuvei* (F.Muell.) Rye & Trudgen subsp. *maisonneuvei*		1	<2
	Fabaceae	*Indigofera georgei*		1.1	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.4	2-10
	Proteaceae	*Grevillea juncifolia* Hook. subsp. *juncifolia*		2	<2
	Poaceae	*Setaria verticillata*		0.6	2-10
	Fabaceae	*Swainsona microphylla*		0.2	<2
	Fabaceae	*Acacia sclerosperma* subsp. *Sclerosperma*		1.6	2-10
	Fabaceae	*Acacia coriacea*		1.6	<2
	Malvaceae	*Sida* sp. tiny glabrous fruit (A.A. Mitchell PRP1152)		0.2	<2
	Poaceae	*Eriachne mucronata*		0.8	<2
	Amaranthaceae	*Ptilotus polystachyus*		0.4	<2
	Sapindaceae	*Dodonaea viscosa* subsp. *angustissima*		1.7	<2
	Asteraceae	*Chrysocephalum puteale*		0.3	<2
	Santalaceae	*Santalum acuminatum*		0.5	<2
	Malvaceae	*Alyogyne pinoniana*		0.7	<2
R3	Fabaceae	*Acacia aneura*		2.7	10-30
	Fabaceae	*Acacia sericophylla*		2.2	2-10
	Poaceae	*Triodia scariosa*		1.1	30-70
	Goodeniaceae	*Goodenia azurea* subsp. *hesperia*		0.4	2-10
	Malvaceae	*Corchorus sidoides* F.Muell. subsp. *sidoides*		0.2	<2
	Poaceae	*Eragrostis dielsii*		0.4	<2
	Haloragaceae	*Haloragis odontocarpa*		0.2	<2

Releve	Family	Taxon	Status	Height (m)	Cover (%)
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.3	2-10
	Goodeniaceae	*Goodenia centralis*		0.1	<2
	Poaceae	*Aristida holathera* Domin var. *holathera*		0.4	<2
	Euphorbiaceae	*Euphorbia drummondii*		0.1	<2
	Polygalaceae	*Polygala isingii*		0.05	<2
	Goodeniaceae	*Goodenia gibbosa*		0.2	<2
	Poaceae	*Amphipogon caricinus* F.Muell. var. *caricinus*		0.3	<2
	Haloragaceae	*Haloragis odontocarpa*		0.1	<2
	Lamiaceae	*Dicrastylis gilesii*		1.4	<2
	Amaranthaceae	*Ptilotus schwartzii*		0.3	<2
	Malvaceae	*Waltheria indica*		0.4	2-10
	Proteaceae	*Hakea lorea*		1.1	<2
	Goodeniaceae	*Brunoniella australis*		0.3	<2
	Malvaceae	*Hibiscus sturtii* var. *truncatus*		0.3	<2
	Poaceae	*Eriachne aristidea*		0.3	2-10

Significant flora records (GHD)

Taxon	Status	Population size	Easting	Northing
Seringia exastia	Threatened	8	250221.0476	7105588.175
Seringia exastia	Threatened	1	250232.5049	7105571.926
Seringia exastia	Threatened	4	250193.9114	7105361.842
Seringia exastia	Threatened	20	250166.2341	7105161.529
Seringia exastia	Threatened	1	250223.8805	7105574.302
Seringia exastia	Threatened	2	250892.6576	7108258.113
Seringia exastia	Threatened	9	250189.1112	7105341.973
Seringia exastia	Threatened	2	250233.3858	7105584.12
Seringia exastia	Threatened	2	250180.854	7105165.694
Seringia exastia	Threatened	4	250155.3077	7105097.008
Seringia exastia	Threatened	4	250207.7935	7105354.676
Seringia exastia	Threatened	20	250197.9193	7105413.32
Seringia exastia	Threatened	10	250146.2602	7105083.904
Seringia exastia	Threatened	30	453341.8968	7212609.258
Seringia exastia	Threatened	12	251484.6502	7110222.896
Seringia exastia	Threatened	1	251435.9151	7110138.453
Seringia exastia	Threatened	10	250202.2077	7105481.229
Seringia exastia	Threatened	2	251479.0078	7110202.165
Seringia exastia	Threatened	8	251436.8066	7110167.749
Seringia exastia	Threatened	20	251458.5925	7110211.607
Seringia exastia	Threatened	16	251455.0171	7110230.077
Seringia exastia	Threatened	20	251440.9713	7110125.238
Seringia exastia	Threatened	5	251461.0911	7110190.826
Seringia exastia	Threatened	20	251415.1608	7110123.461
Seringia exastia	Threatened	2	251468.5899	7110242.661
Seringia exastia	Threatened	22	250161.7008	7105485.705
Seringia exastia	Threatened	6	251479.5479	7110170.21

Taxon	Status	Population size	Easting	Northing
Seringia exastia	Threatened	13	251480.4706	7110242.788
Seringia exastia	Threatened	1	250213.5639	7105441.818
Seringia exastia	Threatened	1	252562.5096	7111018.928
Seringia exastia	Threatened	1	251428.1531	7110124.776
Seringia exastia	Threatened	1	453367.158	7212666.734
Seringia exastia	Threatened	1	418456.2934	7227248.903
Goodenia gibbosa	Priority 3	1	357041.0637	7188704.98
Goodenia virgata	Priority 2	1	250054.5071	7104753.338
Goodenia virgata	Priority 2	1	252562.5096	7111018.928
Goodenia virgata	Priority 2	1	415472.1308	7227392.935
Goodenia virgata	Priority 2	1	249924.7016	7104283.979

Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Known	Species recorded within study area from field project results (none as this is a desktop search only).
Likely	Species previously recorded within 2 km and large areas of suitable habitat occur in the project area.
Possible	Species previously recorded within 10 km and areas of suitable habitat occur/may occur in the project area.
Unlikely	Species previously recorded within 20 km, or suitable habitat does not occur in the project area.
Highly unlikely	Species not previously recorded within 20 km, suitable habitat does not occur in the project area and/or the project area is outside the natural distribution of the species.
Other considerations	Date of known records, cryptic nature of species, anecdotal evidence from previous Broome studies/surveys

Definitions

Term	Description
Study area	A 40 km buffer around the survey area
Survey area	The potential project footprint
Cr	Critically endangered
En	Endangered
T	Threatened
Vu	Vulnerable
P1 – P4	Priority 1 – Priority 4
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
DBCA	Department of Biodiversity and Conservation Attractions 2018. WA Government, Department of Parks and Wildlife Threatened (Declared Rare) and Priority Flora List
BC Act	*Biodiversity Conservation Act 2016*

Likelihood of occurrence of threatened and priority flora identified in the database searches.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Acacia auricoma	P3		X					Small tree to 2+ m. Young leaves yellow-green; flowers large, globular, venation asymmetrical, 4 veins, 2 glands at dip on top margin of leaf, pods wide and flat. Bark dark grey. Grows in skeletal soil on quartzite scree slopes, rocky hills, in open shrubland with spinifex.	Unlikely No suitable habitat present.
Aenictophyton anomalum	P1		X					Orange flowers. Red deep sandy soil in creekbed in valley, moderate cover of quarzite gravel on the surface.	Unlikely The survey area does not contain suitable habitat.
Amaranthus centralis	P3	X	X			X		Herbaceous shrub to 0.6 m. Red stem, flowers and fruits in clumps, long petioles. Single stemmed herb. Granite outcrop. Silty sand amongst granite boulders. Moderate slope. North aspect. On sand plain. Palgrave volcanics.	Unlikely No suitable habitat present.
Apowollastonia stirlingii subsp. stirlingii	P1		X					No information available. Previous record is from a rocky range.	Unlikely No suitable habitat present.
Calytrix warburtonensis	P2		X					Shrub to 0.8 m. Spreading woody shrub, petals white. Flowers March or September to October. Lateritic breakaway; on rocky outcrop, above rockhole; on rocky rise.	Unlikely No suitable habitat present.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Chrysocephalum apiculatum subsp. racemosum	P3		X					Flowers yellow, Daisy, soft grey leaves, yellow heads. On sand dune. Palgrave volcanics.	Unlikely Suitable habitat is present however the closest known record is more than 45 km away (from Jameson-Wanarn Rd)
Comesperma viscidulum (Viscid Milkwort)	P4	X	X				X	Shrub, sticky leaves, flowers cream, purple and yellow. Open slender shrub 1 m high. Leaves pale green-blue. Occurs on sandplain with gravel at depth; red/yellow sandplain; sand-loam-gravel.	Unlikely A single record is located on the footslopes of the Rawlinson Range, approximately 13 km north-east of the Big Tjuta Tree gravel pit.
Daviesia arthropoda	P3		X					Shrub up to 2 m. Flowers dark red and orange. Perennial/compact. Yellows flowers. Occurs on sand dune; Swale. Red, dry, sandy soil.	Unlikely The known records are on the northern side of the Rawlinson Range, more than 60 km from the survey areas.
Dicrastylis subterminalis	P1	X	X				X	Small green shrub; flowers in umbels, white, small. Damp, dark red sand by creekline. On disused track.	Unlikely Closest known record is 36 km north of the Mulga Park Rd gravel pits. No suitable habitat present within the survey area.
Eremophila pallida	P2		X					Low spreading twiggy shrub 0.45 m high. Flowers violet-red, July to August. Plain. Red sand.	Unlikely A single record is located more than 40 km north-east of the Mulga Park Rd gravel pits, situated on the Rawlinson Range.
Eremophila viscimarginata	P1		X					Shrub, 1 m high, compact bush, woody, flowers pink/mauve. Red brown clay soil, very rocky; colluvial lower slopes, skeletal sandy soil with stones and gibber.	Unlikely A single record is located more than 60 km north-west of Warburton.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Eucalyptus sparsa	P3		X					Mallee ca 6 m high with grey rough fibrous ribbony basal bark; smooth powdery white to grey bark above. Leaves flat, concolorous, glossy green with dense reticulation and intersectional oil glands. Flowers with creamy white anther filaments. Occurs near base of red sand dune. Flat plain with deep red sandy earth.	Unlikely Limited suitable habitat present.
Euphorbia parvicaruncula	P1	X	X			X		Erect annual with milky sap. Fleshy stem. Occurs on rocks.	Unlikely No suitable habitat present.
Fuirena nudiflora	P3	X	X				X	Annual sedge ca. 15-20 cm high. Rocky creek bed in valley. Brown sandy-loam. Open swampy drainage line, sandy soil.	Unlikely No suitable habitat present.
Goodenia asteriscus	P3	X	X		X	X		Prostrate. Perennial herb with yellow flowers. Occurs in red loam. Calcrete plain. Undulating calcrete plain, orange sandy loam. Flowers in July.	Possible Closest known record is less than 15 km south-east of the Blackstone alignment and 35 km south of the Jameson-Wanarn Rd. Suitable habitat present within the survey areas.
Goodenia gibbosa	P3	X	X				X	Sprawling/prostrate herb to 10 cm. Flowers bright yellow. Occurs on strong flat below range. On flat at base of sand dune. Palgrave volcanics. On loam flat. In rocky, sandy loam. Creekline.	Present This species was recorded from one location within the Tjulun gravel pit.
Goodenia grandiflora	P1		X					Shrub 40 cm; leaves glandular, aromatic; corolla yellow. In crevices on cliff with SE aspect.	Unlikely No suitable habitat present.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Goodenia hirsuta	P3	X	X		X	X	X	Perennial herb to 10 cm high, very hairy with longer simple white hairs and short golden tipped glandular hairs (under 10x hand lens). Flowers yellow, flowering in May. Low dune crest. Red aeolian sand. Sandplains.	Possible Limited suitable habitat present (within the Mulga Park Rd No.2 gravel pit). Closest known record is 23 km south east of the Jameson-Wanarn Rd.
Goodenia modesta	P3		X					Upright, 50 cm high x 30 cm wide. Flowers yellow. Flowering likely January to December. Red loam, sand.	Possible Closest known record is more than 40 km north-east of the Mulga Park Rd gravel pits. Suitable habitat present within the survey area.
Grevillea aspera	P1		X					No information available.	Unlikely A single record is located more than 60 km north-west of the Old Gunbarrel gravel pit, situated along the Rawlinson Range.
Indigofera cornuligera subsp. cornuligera	P3		X					Salmon pink flowers, in pieces spiny double, stipules. Quartzite ridge	Unlikely No suitable habitat present.
Indigofera gilesii	P3	X	X				X	Thorny shrub, flowers salmon pink/deep pink. Pebbly loam. Amongst boulders and outcrops and hills. On sand plain. Skeletal orange loamy soil on scree hillslope with abundant angular quartzite boulders and very rocky quartzite bed rock. creek.	Unlikely No suitable habitat present.
Indigofera warburtonensis	P1		X					Shrub up to 1 m. Flowers salmon pink/purplish-red. Palgrave volcanics. On rocky soil. In creek bed.	Unlikely No suitable habitat present.
Isotropis winneckei	P1	X	X				X	Small shrub/perennial herb, pink flowers, leaves grey-green. Scree slope, rocky rise.	Unlikely No suitable habitat present.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Korthalsella leucothrix	P1		X					Parasite on Acacia species. Unusual bright green cladodes, in bud or fruit. Ripe fruits green. Coarse reddish sandy loam, lateritic. By creek.	Unlikely The closest records are more than 70 km south of Warburton.
Lythrum paradoxum	P3	X	X			X	X	Perennial herb. Shrub 1 x 2 m in diameter. Rocky gully	Unlikely No suitable habitat present.
Menkea lutea	P1	X	X			X		Low spreading annual herb with bright yellow flowers, growing to 0.1 m tall. Red loam; Bare area on margin of cracking clay plain.	Unlikely The closest known record is less than 15 km from the Blackstone alignment however no suitable habitat is present.
Micromyrtus helmsii	P1		X					Graceful shrub, 1.5-2 m high x 1 m wide, weeping branchlets. Flowers white. Undulating sandhills. Red sand.	Unlikely No suitable habitat present.
Neurachne lanigera	P1	X	X		X			Clumping perennial grass to 30 cm high x 40 cm wide, hairy leaves. Breakaway area, rocky clay. On rocky slopes of small hill. On lateritic breakaway. On SE slopes.	Possible Limited suitable habitat present. Closest record is approximately 40 km south west of the Wanarn Access Rd gravel pits.
Prostanthera centralis	P3	X	X				X	Erect dwarf shrub to 50 cm, calyx purple, corolla mauve, aromatic. On rocky slopes; red clayey sand over quartzite on rocky hill; flat stony ground, ridge.	Unlikely No suitable habitat present.
Ptilotus royceanus	P1		X					Shrub to 30 cm. Pink/purple flowers, Perennial, erect. Grows on cliff face and hangs down; rock wall crevice; gorge.	Unlikely No suitable habitat present.
Schoenus centralis	P1	X	X				X	Ephemeral sedge. In rocky creek bed in valley.	Unlikely No suitable habitat present.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Seringia exastia	T		X					Perennial/erect/open shrub, 2 m high x 1.5 m wide. Violet flowers, yellow stamens. Leaves strongly discolorous, greyish above; stems reddish brown; flowers mauve with yellow column. Fruits green, globular, tomentose. Plain. Rangeland. Red, dry sand. Sandy loam. Elevated	Present This species was recorded from Triodia hummock grasslands within the Warburton alignment and two of the gravel pits: Mulga Park Rd No.2 and Big Tjuta Tree. Considered a commonly occurring low shrub within the region.
Sporobolus blakei	P3		X					Grass up to 50 cm. Inflorescence is a dense panicle, straw colour. Red sand, seasonally inundated near a creek.	Unlikely Closest known record is more than 80 km south of Warburton.
Stackhousia clementii	P3	X	X		X	X		Wiry perennial shrub 0.4 m high x 0.3 m wide. Shallow skeletal red sand on calcrete platform. Calcrete likely formed in sand dune that has eroded and is now exposed. Silty sand	Possible Limited suitable habitat present within the Jameson-Wanarn Rd alignment. Closest known record is approximately 30 km south of the alignment.
Tephrosia sp. Central (P.K. Latz 17037)	P3	X	X				X	Perennial herb/shrub, flowers orange. Rocky slope, in creek bed by rocky outcrop.	Unlikely No suitable habitat present.
Thryptomene sp. Warburton (M. Henson & M. Hannart 32433)	P1	X	X		X			No information available.	Possible Closest known record is approximately 30 km south of Jameson-Wanarn alignment. No preferred habitat information available.
Thysanotus sp. Desert East of Newman (R.P. Hart 964)	P2	X	X	X				Herb with tubers, flowers mauve. Red sand	Possible Suitable habitat is present. The closest known record is 30 km west of the Warburton alignment.

Species Name	Cons Code	Source		Survey Area				Description and habitat	Likelihood of occurrence
		NM	DBCA	1	2	3	4		
Triodia nana	P1		X					Inflorescences not as branched as T. basedowii. Smaller bluish plants. Exposed gravelly/sandy hilltop. Red gravelly sand.	Unlikely Closest known record is more than 60 km west of Warburton.
Verticordia jamiesonii	P3		X					Single stemmed multi-branching; dwarf shrub 25 - 30 x 20 - 30 cm. Flowers white turning pink. Breakaway along creekline; white, yellow and red/brown soil. Laterite skeletal soils over sandstone and shale.	Unlikely No suitable habitat present.
Verticordia mirabilis	P1		X					Caespitose dwarf shrub, openly branched 40 cm high x 90 cm wide. Leaves glaucous greyish-green. Flowers blood red to dark burgundy red, fading paler with age, produce copious nectar. Stems, branches and leaves covered with oil glands. Breakaway along creekline. White-yellow-red-brown lateritic skeletal soils over sandstone and shale. Laterite - sandstone.	Unlikely No suitable habitat present.
Vittadinia pustulata	P3		X					Daisy, slender low shrub, 20 x 20 cm flowers pale mauve. Red sandplain; sand flat adjacent to sand dune on one side.	Unlikely Suitable habitat is present however the closest known record sis over 50 km from the survey area (Mulga Park Rd gravel pits).

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