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Project Summary: A detailed flora and vegetation survey was carried out within the area described in the shapefile (1_SurveyDetails.shp) provided in the IBSA package pursuant to this report. The results and findings of that survey are outlined herein.

Flora and Vegetation Survey

Jameson Road Realignments Ngaanyatjarraku Shire

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1.0 INTRODUCTION

Ngaanyatjarra Council's Land and Culture Unit has been engaged by Ngaanyatjaraku Shire to deliver a threatened flora and vegetation survey of the area subject to proposed roadworks. The roadworks area intended for the purposes of creating an East-West Bypass of the Jameson township, and for accommodating traffic associated with the refuel facility and community airstrip. The subject area is described in shapefiles pursuant to the encompassing IBSA package. This report addresses the findings of a Vegetation and Targeted Threatened Flora survey carried out in the subject area during April 2019.

2.0 METHODS

The methods employed during this assessment aimed to adhere to formal guidelines, including those laid out in the following documents:

- Technical Guidelines – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016)
- Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA; EPA 2018)

2.1 DESKTOP ASSESSMENT

2.1.1 Personnel and Consultation

Custodians of Traditional Ecological Knowledge provided their ecological expertise to guide the desktop assessment phase. Consultations and the field survey engaged Anawari Mitchell, Angela Lyons, Winston Mitchell and Rykem Lyons whose qualifications are outlined in the table below. Additional input was provided by the broader team of Yarnangu field staff, who are listed on the title page of this report.

Anawari Mitchell
Senior Yarnangu Woman
10 years' experience as an Indigenous Ranger with Ngaanyatjarra Council
Weed identification and management (CLC)
Flora survey experience for purposes of land management and chaperoning botanists
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Weed identification and management (CLC)
Flora survey experience for purposes of land management and chaperoning botanists
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10 years' experience as an Indigenous Ranger with Ngaanyatjarra Council
Cert II Conservation and Land Management
Rykem Lyons
Yarnangu Man and Indigenous Protected Area Ranger
Scientific Purposes Permit SL012491
Jennifer Timbs
Ranger Team Coordinator

Bachelor of Science (Environment); Permit SL012492
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7 years' experience in ecological assessment
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Left to Right: Anawari Mitchell collecting specimens; Anawari Mitchell identifying and labelling specimens; Steve Mitchell acting as land-access escort; Older women mentoring younger women in plant identification

2.1.2 Database Searches & Literature Review

The desktop and pre-field investigation drew upon the following resources:

- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters search tool
- Wildlife Conservation Act 1950 (WC Act) search tool
- Atlas of Living Australia search tool
- Records of flora and habitat features held by NG Council
- Western Botanical (2018), 'Interim Report on the Flora and Vegetation of the West Musgraves Project', *Unpublished Report Prepared for OZ Exploration Pty Ltd*, August 2018 and associated spatial datasets where made available

2.2 FIELD ASSESSMENT

2.2.1 Vegetation Survey & Threatened Flora Search

The study area was surveyed on the 5th, 9th, 15th and 16th of April, 2019. Quadrat sizes of 40m x 40m were used based on precedence set during other surveys in the surrounding area, by which species area curves have indicated 40m x 40m to be sufficient to capture species richness (Western Botanical 2018). Foliage Projective Cover was assessed along a central transect of 50 metres.

Eleven 40m x 40m quadrats were established within the proposed area, and an additional 18 releve sites. Quadrats were positioned to fall within a single vegetation unit. Vegetation surveys were carried out in accordance with the Technical Guidelines for Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016), with the exception that quadrat sizes were reduced to 40m x 40m for reasons provided above. **Appendix B** shows the distribution of sample sites throughout the subject area.

The following attributes were recorded:

- Site ID;
- location, with GPS coordinates and datum;
- method used to mark quadrat (e.g. GPS, measuring tape, flagging tape, stakes);
- dimensions of quadrat;
- photograph from NW corner;
- landform and soil description;
- slope, aspect, coarse woody debris (recorded as metres of CWD >15cm diameter);
- assessment of vegetation condition as per technical guidelines (EPA 2016);

- description of disturbances, including fire history;
- dominant growth form (e.g. herb, tussock grass, small shrub, tall shrub, tree);
- height for the upper, mid and ground strata;
- foliage projective cover at intervals of 2 m along 50 m transect; and
- a comprehensive species list, including weeds.

A 50m line transect through the centre of the quadrat was walked using the point-intercept method at 2m intervals, to record groundcover attributes as follows:

- ground cover (litter, rock, gravel, bare, native vegetation [species], non-native vegetation [species]; and
- canopy cover (native vegetation [species], non-native vegetation [species], open).

In addition, threatened flora searches were carried out in suitable habitats within the proposed impact area, including a 500m buffer where possible (see Section 2.2.2).

2.2.2 Unsurveyed portions of the 500m buffer

Every effort was made to assess vegetation communities within a 500 m buffer on either side of the proposed linear disturbance footprint; however, due to cultural heritage exclusion zones observed by the field staff it was not possible to survey to such an extent throughout the entire buffer area. Every attempt was made to characterise the inaccessible vegetation from the vantage point of unrestricted areas by line of site to determine whether additional community diversity was being excluded from the survey. Visual assessments carried out in this way, combined with reports by initiated men indicated that the vegetation was generally homogenous to the extent visible from the footprint. This unsurveyed vegetation is not subject to the proposed impacts and has been formally demarcated for retention during cultural heritage clearances. The vegetation map given in **Appendix A** shows the areas that were formally surveyed and those that were within restricted areas according to the cultural heritage guides Steve Mitchell, Winston Mitchell and Reggie Smith of the Ngaanyatjarra Council Aboriginal Corporation.

2.3 DATA ANALYSIS AND MAPPING

2.3.1 Spatial Analysis

Mapping and analysis of spatial data was carried out using ArcMap 10.5. Vegetation mapping undertaken by CAD Resources on behalf of Western Botanical in August 2018 was used as a basis for the present mapping. Some polygons were modified to reflect minor variations in their perimeters based on random releve points.

2.3.2 Flora Identification

Samples were collected under permits **SL012491** and **SL012492** for determination and/or confirmation of species following the field survey. All specimens were checked against descriptions of declared threatened flora of the same respective genus. The identification of flora drew upon knowledge of the local plants and referred primarily to the following texts and keys:

- Atlas of Living Australia occurrence download at <http://www.ala.org.au>. Accessed 21 August 2018.
- Western Botanical (2018), 'Interim Report on the Flora and Vegetation of the West Musgraves Project', *Unpublished Report Prepared for OZ Exploration Pty Ltd*, August 2018

- Western Australian Herbarium (1998–2018), 'FloraBase—the Western Australian Flora'. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/>
- The Australian Systematic Botany Society (1981), 'Flora of Central Australia', John Jessop, Editor in Chief, *Reed*, Sydney
- Maslin, B.R. (coordinator) (2018). 'Wattle: Interactive Identification of Australian Acacia', Version 3, *Australian Biological Resources Study*, Canberra; *Department of Biodiversity, Conservation and Attractions*, Perth; *Identic Pty. Ltd.*, Brisbane.
- Sharp D, Simon BK (2002), 'AusGrass: grasses of Australia'. Version 1.0, July 2002. *Australian Biological Resources Study*, Canberra.
- Barrett MD, Anderson BM & Thiele K (2017), 'SpiKey: An interactive key to *Triodia spinifex* grasses of the Pilbara', Western Australia. Version 1. *Identic Pty Ltd*, Brisbane.
- Moore, P. (2005), 'A Guide to Plants of Inland Australia', *Reed New Holland*, Sydney
- Kellermann, J. (ed.), *Flora of South Australia* (ed. 5). 18 pp., State Herbarium of South Australia: Adelaide. www.flora.sa.gov.au/ed5

3.0 RESULTS

3.1 DESKTOP ASSESSMENT

3.1.1 Environmental Overview of Study Area

The area is within the Shire of Ngaanyatjaraku and in the Indigenous Protected Area managed by Ngaanyatjarra Council Aboriginal Corporation. It lies at the junction of two bioregions – Great Victoria Desert (GVD02) and the Central Ranges (CER01) – as per the Interim Biogeographic Regionalisation for Australia. Geologically, the study area occurs on the Mann-Musgrave Block (CR1) sub-region of the Central Ranges Interim Biogeographic Regionalisation of Australia (IBRA), which is characterised by soils of quartzite and volcanic origins and their derivatives.

The climate of the study area is described as arid. Rainfall data collected between 1940 and 2019 at the nearby Warburton Airfield (100km West of the study area), indicate mean annual rainfall of 247.6 mm. Mean rainfall was below the historical average in all of the preceding months, with a monthly average of 10 mm throughout that period, compared with an historical average of 54 mm over the same time period. Maximum temperatures in the month of survey were above the historical average for maximum temperatures in April (38.4 versus 29.5 degrees Celsius). These conditions may potentially have reduced the detection of annual species present in the seedbank.

3.1.2 Recent Historical and Current Impacts

Pest herbivores exert considerable grazing pressure in the study area, including horses and, particularly, camels. The impacts of these species tend to intensify in proximity to water sources such as those concentrated in communities. As the study area encompasses the community of Mantamaru (Jameson), the impacts of grazing herbivores are expected to be higher in the proposed footprint than in the broader landscape.

The majority of the study area is also subject to intensive periodic pressures associated with ephemeral campgrounds, such as firewood collection, compaction by off-road vehicles and incineration of rubbish. Vehicle tracks of varying permanence, intensity and age were observed throughout the study area, almost without exception.

Numerous municipal services occur within the study area, including the community of Jameson, its residences, public buildings, a diesel generator and airfield. The existing highway and its connecting roads also pass through the study area, the currently proposed bypass footprint being offset from the existing route by between roughly 250 m to 450 m to the south. A portion of the landscape captured within the 500m buffer is occupied by the municipal landfill area, while another is a relatively sprawling automotive scrapyards. Areas of sufficient scale were mapped as, ‘Disturbed’.

3.1.3 Vegetation and Habitat Features

Vegetation of the subject area and surrounds was broadly mapped between 1972 and 1980 at a scale of 1:250000. The vegetation of area is mapped in its entirety as Low Mulga Woodland. The Federal Threatened Ecological Communities (TEC) database indicates that no listed TECs or Priority Ecological Communities (PECs) have been recorded in or near the survey area. There are no Nationally Important Wetlands within the vicinity of the subject area.

A previous Flora and Vegetation Survey assessment was carried out in nearby vegetation under permit application CPS 8343/1. In addition, a series of reports submitted with respect to the flora and vegetation assessment of the West Musgraves Project proposed as a joint venture by Cassini Resources Ltd and OZ Exploration Pty Ltd, include a corridor that overlaps with a portion of the area that is subject to the present report. The vegetation associations mapped within that portion of the subject area are:

- Disturbed;
- *Marieana triptera* shrubland;
- Claypan Grassland;
- Mulga Woodland;
- Groved Mulga Woodland;
- Mulga-Wanderrie;
- Mulga Wanderrie over *Eremophila* spp./ *Senna* spp./ *Atriplex vesicaria* low shrubland
- Hardpan Mulga Woodland; and
- Hardpan Mulga Woodland (Drainage).

3.1.4 Listed Introduced Species

Weed species with the potential to occur within the subject area are described in Table 3-1.

Table 3-1 Introduced species with potential to occur in subject area.

FAMILY	Species	Common Name	Status	Habitat & Phenology
FLORA				
POACEAE	<i>Cenchrus ciliaris</i>	Buffel Grass	WoNS	Widespread in Ngaanyatjarra lands.
FABACEAE	<i>Prosopis</i> spp.	Mesquite	WoNS	Predominantly confined to communities. Not widespread on lands.
CURCUBITACEAE	<i>Citrullus colocynthis</i>	Paddy Melon		Occurs frequently along roadsides in disturbed soil.
FABACEAE	<i>Tribulus terrestris</i>	Bindi		Known to occur in the subject area.
BRASSICACEAE	<i>Brassica tournefortii</i>	African Mustard		Occurs in disturbed sandy soils on roadsides.
POACEAE	<i>Chloris virgata</i>	Feathertop Rhodes Grass		Occurs in both disturbed and undisturbed areas, from sand to clay.
POLYGONACEAE	<i>Rumex vesicarius</i>	Ruby Dock		A common arid zone weed species known to occur in the area.

3.1.5 Listed Flora

Native flora species of conservation concern for which historical records were found for the Ngaanyatjarra IPA are described in **Table 3-2**. This table has been composed based on historical records made available to Western Australian State databases, in addition to threatened species lists accrued during surveys in the region and made available to Ngaanyatjarra Council.

Table 3-2 Native flora species of conservation concern with potential to occur in subject area based on historical records.

FAMILY	Species	Description	Conservation Status Code BC Act	Habitat, Phenology & likelihood of occurrence
AMARANTHACEAE	<i>Amaranthus centralis</i>	Annual herb to 0.6 m with reddish stems.	3	Associated with watercourses and ephemeral and permanent waterbodies or soaks, but has also been recorded within a clay playa in the Hardpan Mulga Woodland vegetation complex (Western Botanical). Potential to Occur.
ASTERACEAE	<i>Calotis latiuscula</i>	“Leafy-burr Daisy”. Upright herb to 0.5m high with yellow daisy-like flowers.	3	Flowers June to October. Occurs on sand or sandy-loam, on rocky hillsides, floodplains, rocky creeks or riverbeds (WA Herbarium 2018).
ASTERACEAE	<i>Chrysocephalum apiculatum</i> supsp. <i>racemosum</i>	“Yellow Buttons”, A perennial herb	3	Flowers in Spring and Summer. KNOWN TO OCCUR within the subject area.
FABACEAE	<i>Aenictophyton anomalum</i>	Pinnate-leaved small, prostrate shrub. Flowers orange, terminally clustered.	1	Western Botanical (2018) determined this species to have a strong association with Grevillea-Acacia shrubland on deep sandy soils. As this soil type and vegetation association was not expected to occur in the study area, this species was considered unlikely to occur.
FABACEAE	<i>Indigofera warburtonensis</i>	Shrub to 1m high, upright or spreading with pinnate eaves, the leaflets having triangular stipules.	1	Abundant population recorded South of Jameson township, in association with Acacia shrublands, This species was considered to have HIGH POTENTIAL TO OCCUR.
FABACEAE	<i>Isotropis winneckeii</i>	Pink to purple pea-flowered herb. May be upright or with stem growing along the ground (procumbent). Grows to 20cm. Leaves narrow, unifoliate, folded ‘upwards’ along axis of midvein.	1	Observed flowering in January, July and October (may flower year-round). Occurs on sandstone ridges and rocky rises. Leguminous, non-fleshy fruit, dehiscent (dry). Fruit elongated and 1 celled, sepals persistent.
FABACEAE	<i>Tephrosia</i> sp. Central (P.K. Latz 17037)	Pinnate, pubescent leaves; leaflets between 0.4 and 1 cm. Elongate pods.	3	Recorded from Hardpan Mulga Woodland. Observed south of Jameson Road, approximately 50km south-west of the subject area (Western Botanical 2018). HIGH POTENTIAL TO OCCUR.
FABACEAE	<i>Acacia eremophila</i> var. Numerousnerved variant (A.S. George 11924)	Terete phyllodes Flowers August to September, seed set December – January.	3	Recorded near Katjukatjurin, approximately 175 km south of the subject area, representing a range extension of 300km North of its prior known range. Locally, it has been recorded primarily in association with calcrete-rich substrates, (Western Botanical 2018), which are not expected within the subject area.
MYRTACEAE	<i>Calytrix warburtonensis</i>	Shrub growing to between 30cm and 60cm high, star-shaped flowers with 5 white to pink petals, numerous stamens longer than the petals.	2	Flowers September to October on stony hills and sandy, rocky soils.

MYRTACEAE	<i>Verticordia mirabilis</i>	Spreading shrub with showy red flowers on thick petioles (stalks), growing to between 30 and 100cm high. Leaves narrow, stems to circular cross-section with irregular teeth at tips.	1	Showy red flowers in spring.
ELATINACEAE	<i>Elatine macrocalyx</i>	Annual herb growing close to the ground (prostrate) forming dense mats. Leaves opposite, smooth, tapering at base. Flowers sessile, 3-merous. Sepals longer or equal in length to petals (Albrecht 2002).	3	Flowering and fruiting between May and October. Moist margins of claypans or shallow sands over clay. Tolerates highly alkaline soils.
POACEAE	<i>Aristida jerichoensis</i> <i>var. subspinulifera</i>	Easily mistaken for common <i>Aristida inaequiglumis</i> -distinguished by lengths of awns and minor differences in shape of seed. <i>0.8 – 2.0 metres high tussock grass, flowering and fruiting all year round.</i>	3	Occurs in mulga groves and Wanderrie grass associations. Previously recorded south of Jameson Road. <u>Previously recorded within the 500m buffer of proposed footprint</u> , with a population recorded approximately 60 m from the proposed road centreline.
SCROPHULARIACEAE	<i>Eremophila pallida</i>	Small shrub to 40cm high, with branches of pale yellow/white covered in sometimes resinous hairs. Flowers usually in leaf axis on a pubescent stalk 2-4mm long. Petals reddish-purple & white with dark purple markings inside the tube. Papery outer casing of dry, woody fruit covered with short hairs (Chinnock 2007)	2	Flowers May-August. Recorded North-West of Warburton on lateritic soils, often with gibber surface.
SCROPHULARIACEAE	<i>Eremophila viscimarginata</i>	Small, erect shrub to around 50cm high. Hairy stems, small, sharply pointed leaves with a prickly effect, arranged alternately and overlapping. Leaves resinous and covered in glandular hairs at base. Flowers pubescent, reddish purple to greenish pink to mauve.	1	Flowers September. Occurs on skeletal soils (e.g. ironstone, shallow soils with no discernible strata). It is only known from a few locations; therefore, further sampling in the region may produce more records.
GOODENIACEAE	<i>Goodenia gibbosa</i>	Small, prostrate to decumbent herb, sometimes stoloniferous (spreading through roots either at or below soil surface), to 40cm.	3	Flowers in July in sandy soils.

		Leaves sparsely hairy, flat, 1.5-6cm long, 0.7 to 1.7cm wide. Leaves can be toothed or entire. Flower stalks 3-6.5cm long and smooth. Calyx 0.2-0.3cm long, smooth. Petals yellow, 1.3-2cm long.		
GOODENIACEAE	<i>Goodenia asteriscus</i>	Perennial rosette with stoloniferous habit. Spent pedicels persist on plant.	3	Recorded East of Blackstone. Records on site would represent a range extension. Has so far been associated with calcrete hummock grassland. Potential to occur.
GOODENIACEAE	<i>Goodenia grandiflora</i>	Upright, sticky shrub. 0.4-1.6m high. Stems ribbed, leaves hairy, flat, 1.5-5cm long, 0.8-2.5cm wide. Flower stalks 0.6-1.5cm long, hairy. Petals yellow, 2.1-3.5cm long. Hairy on the outside with sparse hairs. Smooth on the inside.	1	Flowers May to December on sandy/ gravelly soils on rocky hillsides and breakaways.
GOODENIACEAE	<i>Goodenia lyrata</i>	Prostrate herb, with lyrate leaves (shaped like a dandelion leaf). Stems ribbed. Leaves 0.5-1cm long, 0.3-1cm wide, covered in sparse hairs.	3	Flowers August. Occurs on red, sandy loam or near claypan
GOODENIACEAE	<i>Goodenia modesta</i>	Small herb to 0.5m high. Leaves 0.7-7cm long, 0.2-1cm wide, sparsely hairy. Entire (not lobed). Flower stalks 0.7-1cm long and hair. Petals yellow 0.8-1.7cm long, sparsely hairy on outside and inside. Yellow wings with purple central lobes.	3	Flowers year-round on red loam-sand.
PROTEACEAE	<i>Grevillea aspera</i>	Shrubs to 2.5m high. Branches hairy, leaves alternate 3-8cm long, Inflorescence at the ends of branches or in the forks, red, pink or brown. Fruit smooth, dry, 13-1.7cm long	1	Flowers May-November, loam, clay-loam, quartzite or laterite soils, rocky hillsides or open heathland.
CELASTRACEAE	<i>Stackhousia clementii</i>	An inconspicuous herb with slender stems and reduced leaves. Appears 'sedge-like; in form.	3	Grows over calcrete (Western Botanical 2018).

SANTALACEAE	<i>Korthalsella leucothrix</i>	A mistletoe; Flowers white, around 20 flowers per node. Rounded leaf tip.	1	A parasitic aerial shrub attached to the branch of <i>Acacia acuminata</i> or <i>Acacia craspedocarpa</i> . Flowers in August.
CHENOPODIACEAE	<i>Maireana sp. Patience (C.P. Campbell 1052)</i>	Very low shrub, with fleshy, finely pubescent (furry), narrow leaves. Papery 'wing' encircling the fruit.	1	Perennial. Recorded on red sand, lateritic soils, adjacent gullies. Potential to occur.
LAMIACEAE	<i>Dicrastylis subterminalis</i>	Small shrub. Opposite, entire, leaves 5-10 mm long, 1 mm wide, hairy stems. Hairy calyx 1.5 mm long. Corolla 6-8 mm long, hairy, with anthers 0.7 mm long.	1	Grows in red sand along drainage lines. Potential to occur.
LAMIACEAE	<i>Physopsis chrysotricha</i>	Small shrub. Yellow-white sessile, minute, 5-lobed 'mint' flowers. 4-6mm long petals. 4 stamens, 1 style. Stem cross section circular. Leaves opposite on alternate axes (WA Herbarium 2018).	2	Flowers in September. Occurs on or around gypsum soils (Anglo-Gold Ashanti 2017).
ASTERACEAE	<i>Vittadinia pustulata</i>	Small, spreading, bushy shrub to 1m high. Large red flowers in small clusters towards the ends of branches. Thick petioles (flower stalks). Fleshy leaves, oblong d or triangular in cross-section (WA Herbarium 2018).	3	Showy red flowers September/October. Found in lateritic soil South of Warburton on rocky outcrop. Fruit non-fleshy nut, 1-celled, indehiscent (not splitting), (WA Herbarium 2018).
CYPERACEAE	<i>Fuirena nudiflora</i>	Sedge growing to 0.1 to 0.2m. Terminal inflorescence brown, perianth (petals and sepals) absent, 1 stamen. Stems obtusely triangular to round and approximately 1mm diameter. Upper leaves 40-70mm long, 7-15mm wide (NT Herbarium 2013).	3	Annual, flowering and fruiting between April and July although may vary. Observed in sandy depressions, drainage lines or seepages subject to inundation. Wetland indicator species. Likely to respond to seasonal conditions, i.e. rainfall events, inundation. May be confused with <i>Fuirena ciliaris</i> in the field – suspected samples should be submitted to the herbarium (NT Herbarium 2013).
POACEAE	<i>Neurachne lanigera</i>	"Mulga Grass". Tufted perennial grass to 15-30cm high.	1	Flowers July to October. Occurs on red sand, laterite, on diverse landforms from rocky outcrops to plains.

3.2 FIELD SURVEYS

3.2.1 Flora

No Threatened Flora, as listed under the Wildlife Conservation Act 1950, were recorded within the subject area; however, a Priority 3 perennial grass species, *Aristida jerichoensis* var. *subspinulifera* was recorded in 8 locations within and around the subject area (shown in **Appendix C**). In addition, a population was recorded to the North of the subject area, approximately 300 m from the northern perimeter of Jameson Community. Specimens in each population were in varying stages of fruiting, allowing positive identification.



Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

- DBCA 2019

Plate 1. *Aristida jerichoensis* var. *subspinulifera* (P3)

Discussion on the implications of these populations in the context of the proposed development is presented in Section 4. Copies of the relevant Priority Flora Report Forms are provided in Appendix D.

Introduced weed Paddy Melon (*Citrullus colocynthus*) occurred in at high densities in restricted patches along road margins, and Buffel Grass *Cenchrus ciliaris* was observed at most sites.

Although *Chrysocephalum apiculatum* subsp. *racemosum* is known from previous surveys to occur approximately 450 and 500m from the proposed centreline of the East West bypass, no additional populations were observed during present field surveys.

3.2.2 Vegetation

Nine different vegetation classifications were identified during field assessments (**Appendix A**). These are listed as follows:

- Hardpan Mulga Woodland
- Hardpan Mulga Woodland – Drainage
- Claypan Grassland
- Mulga over *Maireana triptera* Shrubland
- Mulga Woodland
- Wanderrie Woodland
- Mulga Wanderrie over *Eremophila foliosissima*/ *Senna artemisoides*/ *Atriplex vesicaria* low shrubland

Road margins were classified as disturbed, as were the footprints of Jameson and its associated facilities.

Hardpan Mulga Woodland

Species included *Acacia aneura* (to 3.5m), *Hakea lorea* (Wirtjinti; to 1.5m), *Corymbia opaca* (Tjuta murrmurpa; to 0.5 m), *Eragrostis eriopoda* (Tjanpi), *Euphorbia drumondii*, *Dissocarpus paradoxa* (Tjilka tjilka), *Acacia tetragonophylla* (Kultupuka; to 0.75 m), *Enchylaena tomentosa* var. *tomentosa*, *Atriplex vesicaria* and *Eremophila latrobei* subsp. *glabra* (Narangkura)

On the southern side of the existing highway, where the proposed East-West Bypass is intended to intercept the existing road, frequent fire events and continued vehicular disturbance have largely eliminated the shrub and groundcover, while thinning the tree layer. Extant herb, grass, shrub and tree composition, combined with the soil profile, indicate that this vegetation community is nonetheless contiguous with the adjacent Hardpan Mulga Woodland.

Hardpan Mulga Woodland – Drainage

A polygon of this vegetation community occurs towards the eastern and north-eastern portions of the subject area and was observed in generally good condition with some loss of cover as a result of gradual impacts from off-road vehicles, fuel reduction and camping. Species include *Acacia aneura*, *Hakea lorea*, *Atriplex vesicaria*, *Eragrostis eriopoda*, *Dissocarpus paradoxa*, *Enchylaena tomentosa* var. *tomentosa*, *Acacia tetragonophylla*, *Rulingia loxophylla*, *Sclerolaena cornishiana* and *Altenanthera angustifolia*,

Mulga over *Maireana triptera* shrubland

Sites characterised as Mulga over *Maireana triptera* shrubland were generally on raised landforms and not directly in the trajectory of the proposed road alignment. Species included *Maireana triptera* (Kunawiltu), *Eremophila longifolia*, *Acacia aneura*, *Eremophila serrulata* (Pirru pirru), *Rhyncharrhena linearis* (Puya), *Cenchrus ciliaris* (Buffel Grass), *Solanum*

Iasiophyllum (Rangki rangki), *Acacia ligulata* (Watarrka), *Eremophila latrobei subsp. glabra* (Narangka), *Dissocarpus paradoxus* and *Sclerolaena cornishiana* (Tjilka tjilka), *Rhagodia eremaea* and *Grevillea stenobotrya* (Nyintilpa).

This vegetation community is not widespread in the local context (Western Botanical 2018). Throughout the *Maireana triptera* shrublands within the buffer of the proposed footprint, fuel load reduction activities, the municipal landfill and vehicular traffic have resulted in relatively intensive prior impacts on ground, shrub and tree layers compared with the surrounding landscape. The proposed road corridor footprint will not directly encroach on extant *Maireana triptera* shrublands.

Mulga Woodland

Species include *Acacia aneura*, *Acacia pteraneura*, *Grevillea stenobotrya* (Nyintilpa), *Hakea lorea*, *Acacia ligulata* (Watarrka), *Senna artemisoides* (Punti), *Eragrostis eriopoda* (Tjanpi), *Eremophila latrobei subsp. glabra* (Narangka), *Sclerolaena cornishiana* (Tjilka tjilka) and *Rhagodia eremaea*,

Mulga Wanderrie over *Eremophila* spp./ *Senna* spp./ *Atriplex vesicaria* low shrubland

Species include *Anthobolus leptomerioides*, *Acacia pteraneura* (Pilytalypa), *Bonamia erecta*, *Cenchrus ciliaris*, *Rhagodia eremaea*, *Acacia pruinocarpa*, *Acacia aneura*, *Corymbia opaca*, *Anthobolus leptomerioides*, *Atriplex vesicaria*, *Bonamia erecta*, *Aristida jerichoensis* var. *subspinulifera* (P3), *Cenchrus ciliaris*.

Claypan Grassland

The proposed road corridor intersects with a continuous patch of this vegetation community. Groundcover is predominately comprised of graminoid species with frequent chenopods *Dissocarpus paradoxa* and *Sclerolaena cornishiana* as well as sparse shrubs of *Senna artemisoides*, *Acacia aneura*, *Maireana triptera* and *Eremophila* spp. Buffel grass (*Cenchrus ciliaris*) is present in varying densities in this vegetation type.

A population of the Priority 3 perennial grass species *Aristida jerichoensis* var. *subspinulifera* occurs within the Claypan Grassland vegetation type, being the dominant grass species in some areas south of the proposed East-West Bypass.

4.0 DISCUSSION

Overview of Subject Area

Consistent with a history of prior disturbance associated with the adjacent highway, campgrounds, the township of Jameson and its municipal facilities, evidence of vehicle tracks of varying degrees of intensity criss-cross the subject area and some vegetation is denuded of cover in all strata as a result of too-frequent fire and firewood collection. Impacts are less pronounced in the eastern portion of the subject area, adjacent and parallel to the airstrip; however, some vehicle tracks are evident throughout. Despite some areas of reduced cover and diminished species composition, on balance, the extant vegetation is in good to excellent condition.

Priority Flora

Aristida jerichoensis var. *subspinulifera*, a Priority 3 perennial grass species, has previously been recorded within the subject area and was again recorded during the present survey. While these records, including those made by Western Botanical in 2018, represent a significant range extension from previously recorded populations in Western Australia, they represent a less pronounced extension of the known distribution in the nearby Northern Territory. Broadly speaking, the species is wide-ranging, and in the immediate vicinity to the south and north-west of the proposed road corridor, the populations are dense, sometimes sprawling, and do not appear to be under threats of immediate significance.

The majority of new records, while within the buffer area around the proposed footprint, are not subject to immediate impacts as a result of proposed roadworks. However, the proposed road alignment intersects with outlying patches at the northern extent of a large population of *A. jerichoensis* var. *subspinulifera*. An estimate of up to 150 individuals of this population are potentially subject to destruction from the proposed road works. However, given that the density and extent of the population is concentrated further south of the proposed alignment, and that there exist multiple other evidently robust populations in the locality, it is not considered likely that the proposed works would have a significant negative impact on the persistence of this species in the area.

Vegetation

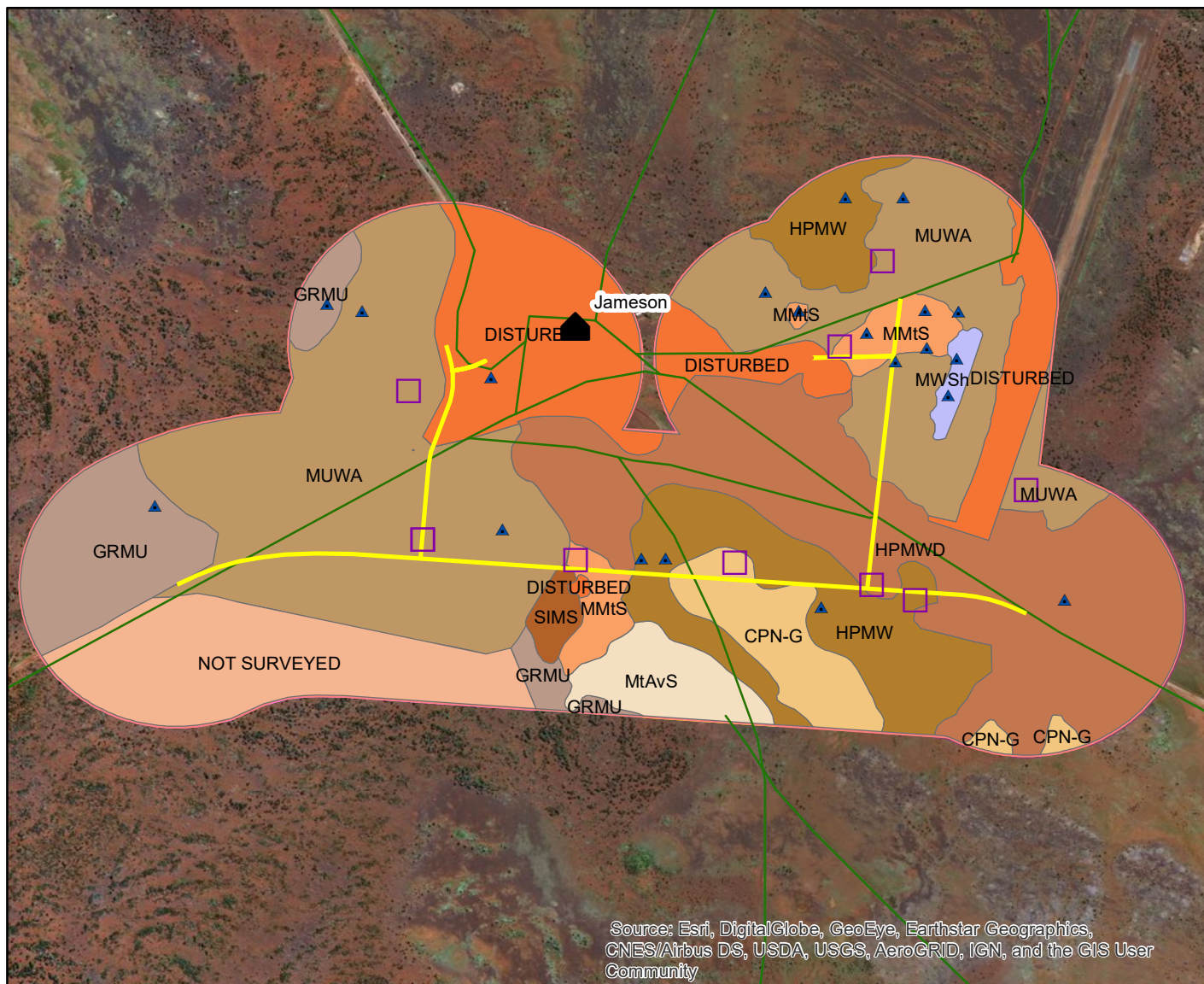
The area to the northwest of the municipal generator was classified as Mulga over *Maireana triptera* shrubland, despite being extensively denuded of tree and shrub cover, evidently as a result of vehicle traffic and fuel reduction activities combined with a shallow soil profile. Despite poor tree and shrub densities, relatively well-developed shrub and herb species richness was concentrated under the canopies of the remaining trees. It is expected that with improved direction of traffic as a result of formalising the bypasses, the areas of vegetation retained will be relieved of substantial pressure from meandering off-road vehicle traffic, allowing natural regeneration to occur.

5.0 REFERENCES

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APPENDIX A

VEGETATION MAPPING



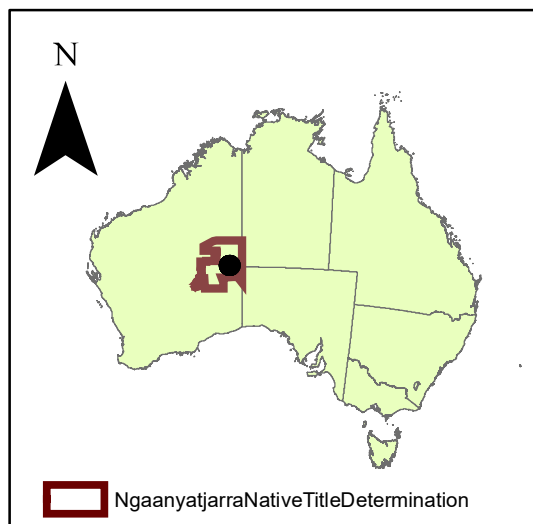
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Kilometers

1:22,876

Coordinate System: GCS GDA 1994

Datum: GDA 1994

Units: Degree



Date Saved: 7/06/2019 9:45:01 AM

Legend



Jameson (Mantamaru) Community

Existing Roads

Proposed Road Realignment

500 m buffer around proposed road realignment

SiteType



Quadrat



Releve

Vegetation Description



Claypan - Grassland



Disturbed



Groved Mulga Woodland



Hard pan Mulga Woodland



Hard pan Mulga Woodland Drainage



Maireana triptera Atriplex vesicaria Shrubland



Mulga Wanderrie



Mulga Wanderrie over Mixed Chenopod Shrubland



Mulga over Maireana triptera Shrubland



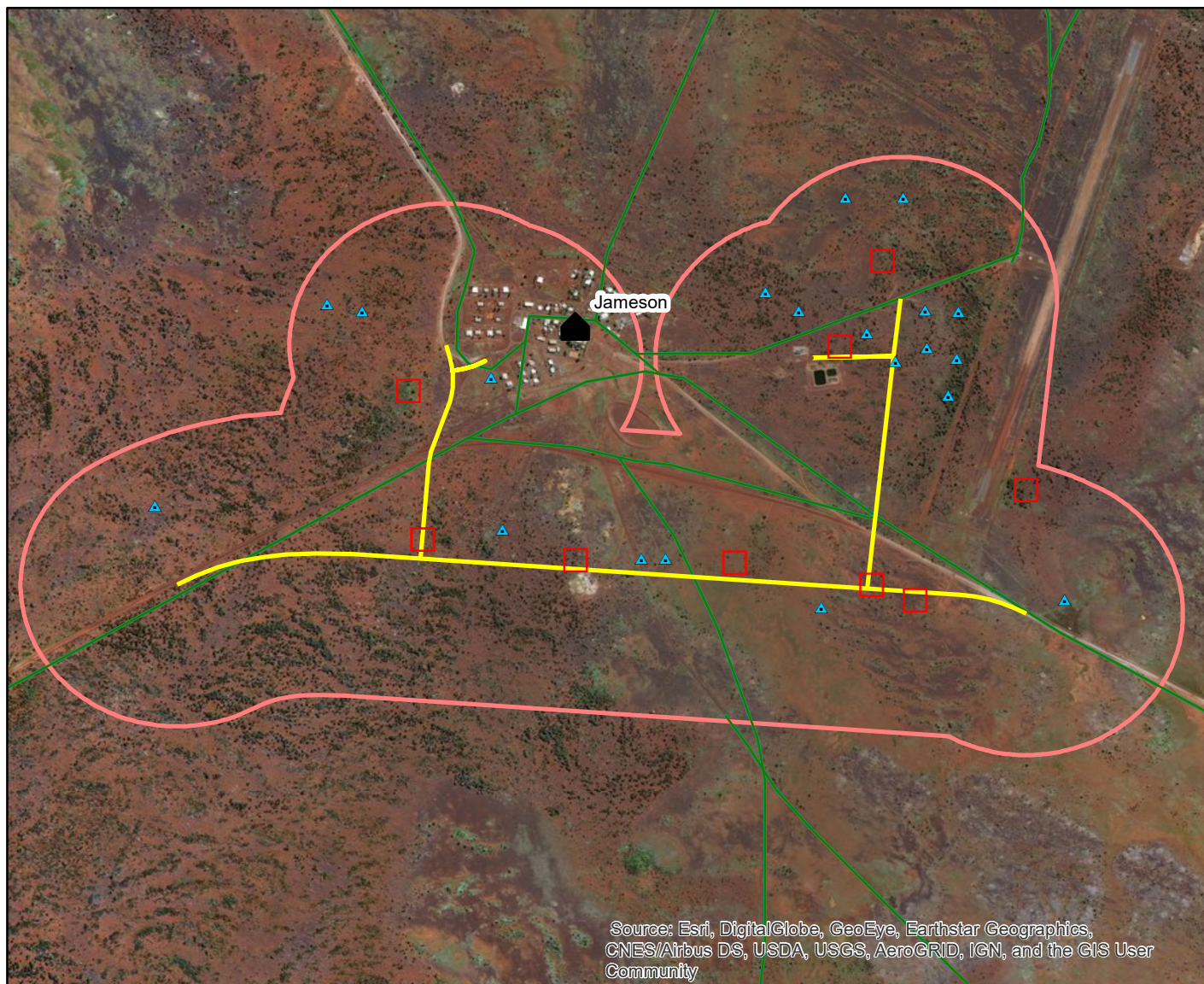
NOT SURVEYED



Stony Ironstone Mulga Shrubland

APPENDIX B

MAP OF FIELD SURVEY EFFORT



0 0.125 0.25 0.5 0.75 1 Kilometers

1:22,876

Coordinate System: GCS GDA 1994

Datum: GDA 1994

Units: Degree

Legend



Jameson (Mantamaru) Community



Existing Roads



Proposed Road Realignment



500 m buffer around proposed road realignment

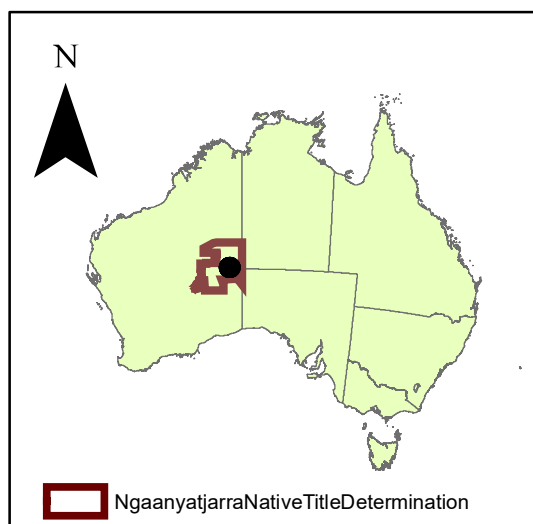
SiteType



Releve



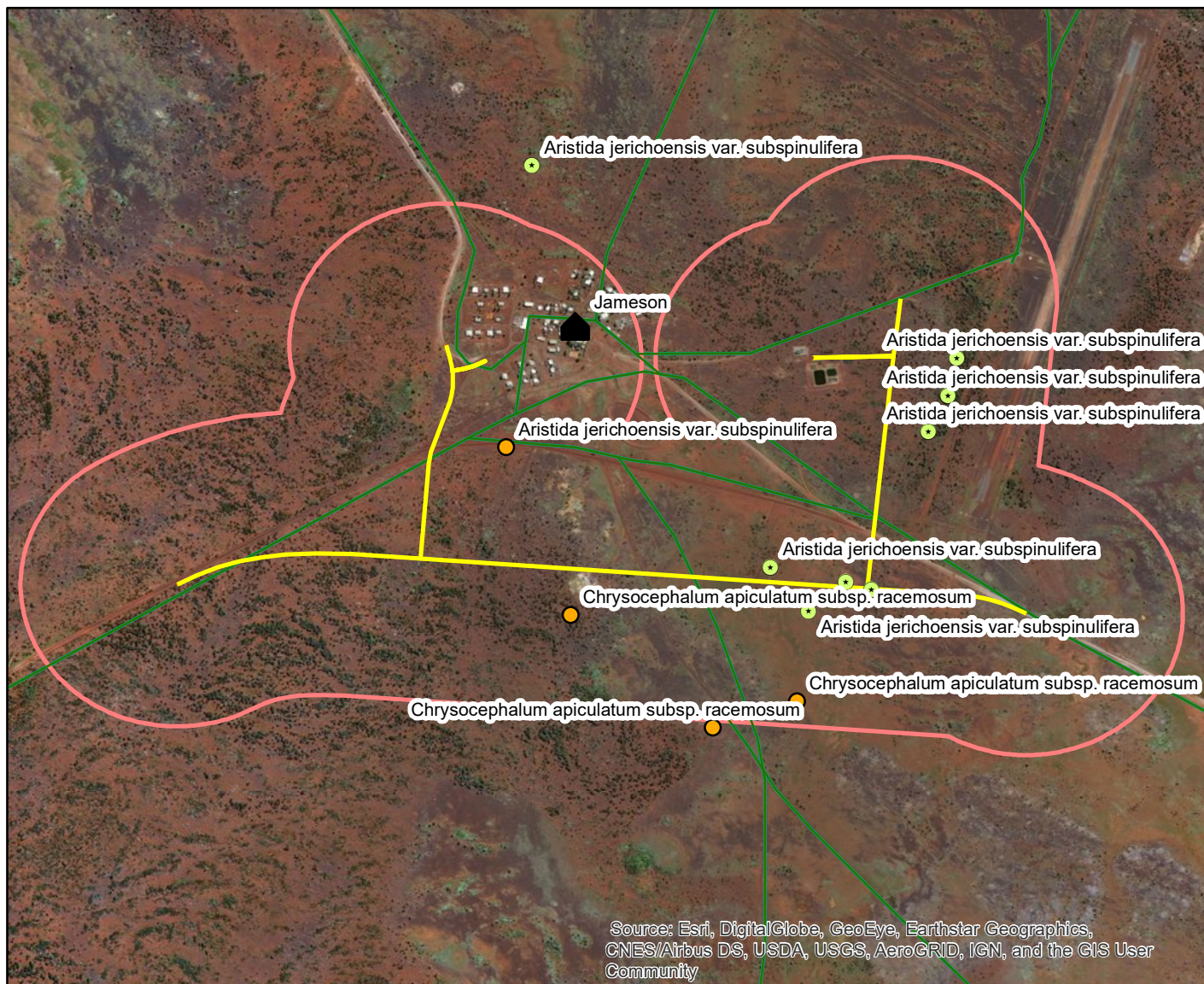
Quadrat



Date Saved: 7/06/2019 9:45:01 AM

APPENDIX C

MAP OF PRIORITY FLORA SPECIES



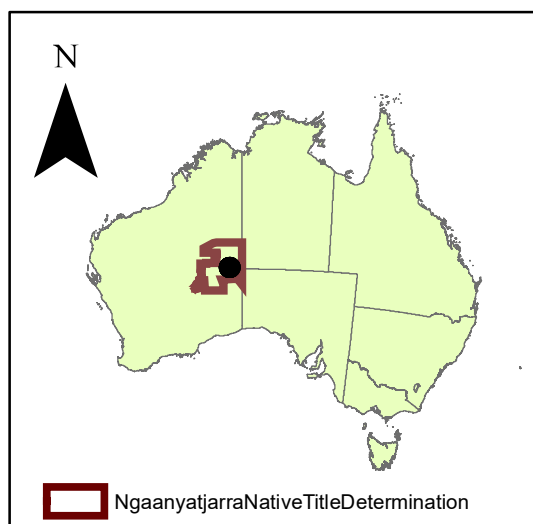
00.125 0.25 0.5 0.75 1
Kilometers

1:22,876

Coordinate System: GCS GDA 1994

Datum: GDA 1994

Units: Degree



Legend



Jameson (Mantamaru) Community



Existing Roads



500 m buffer around proposed road realignment



Proposed Road Realignment



Aristida jerichoensis var. *subspinulifera* (P3) recorded during survey



Western Botanical Priority Flora Records August 2018

APPENDIX D

SITE DATA

Table 1 Field Data for Site 1

File Information and Site Location			
Date	5/04/2019	Project Title (e.g. Ninu2018)	Jameson EW Bypass
Ranger Team	Blackstone	Observer	Anawari Mitchell, Winston Mitchell, Marcia Mitchell, Joy Lyons, Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AM
SiteName	Jameson EW Bypass1391	Waypoint - GPS	1391
Photo 0m	Jameson EW Bypass1391_0	Site Type	40 x 40 m
Photo 50m	Jameson EW Bypass1391_50	Transect bearing	265
MGA Zone	52	Site number	1
Camera ID	OPPO_AX5	Other Notes	Ngaanyatjarraku Shire 1-NE. Corners marked with pegged flagging tape on pegs; removed following survey.
About the site - plants, soil, fire			
Long, Lat	127.675964003, -25.87124	Vegetation community	Hardpan Mulga Woodland - sparsely vegetated ironstone gibberplain
Slope	flat	Veg Condition/ Comments	Subject to frequent fires, vehicle impacts and edge effects from road. Largely denuded of vegetation.
Aspect (which direction does the slope face?)		Buffel Grass	1
Soil Surface Colour	red	Other weeds?	Nil
Soil Surface	Black Ironstone Gibber/ gravel over red clay	How long since the last fire? (Years)	1
Coarse Woody Debris (m)	0	Scorch height on tree trunks	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above?	Ngaanya below?
2	Bare	Nil	Nil
4	Bare	Nil	Nil
6	Bare	Nil	Nil
8	Bare	Nil	Nil
10	Bare	Nil	Nil
12	Bare	Nil	Nil
14	Bare	Nil	Nil
16	Bare	Nil	Nil
18	Bare	Nil	Nil
20	Bare	Nil	Nil
22	Bare	Nil	Nil
24	Litter	Nil	Nil
26	Bare	Nil	Nil
28	Bare	Nil	Nil
30	Bare	Nil	Nil
32	Bare	Nil	Nil
34	Bare	Nil	Nil
36	Litter	Nil	Nil
38	Litter	Nil	Nil
40	Bare	Nil	Nil
42	Bare	Nil	Nil
44	Bare	Nil	Nil
46	Bare	Nil	Nil
48	Bare	Nil	Nil
50	Bare	Nil	Nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
	<i>Euphorbia drummondii</i>	0.5	0.15
<i>Tjilka tjilka</i>	<i>Dissocarpus paradoxa</i>	1	0.15
<i>Tjarnpi</i>	<i>Eragrostis eriopoda</i>	1	0.15
<i>Kultulpuka</i>	<i>Acacia tetragonophylla</i>	1	0.75
Buffel	<i>Cenchrus ciliaris</i>	1	0.25
	<i>Eremophila foliosissima</i>	1	0.4
Tjuta murrmurrrpa	<i>Corymbia opaca</i>	1	0.6
Tree structure (>2m high)			
NIL			



Table 2 Field Data for Site 2

File Information and Site Location			
Date	4/12/2018	Project Title (e.g. Ninu2018)	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AL, Ningbell Lyons
Site Name	JamesonBypass140	Waypoint - GPS	140
Photo 0m	JamesonBypass140_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass140_50	Transect bearing	330
MGA Zone	52	Site number	2
Camera ID	Yellow Nikon	Other Notes	Ngaanyatjarraku Shire. Corners n
About the site - plants, soil, fire			
Landscape Position	flat	Vegetation community	Hardpan Mulga Woodland
Slope	flat	Veg Condition/ Comments	
Aspect (which direction does the slope face?)		Buffel Grass	Occasional
Soil Surface Colour	red	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire? (Years)	
Coarse Woody Debris	0	Scorch height on tree trunk	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Bare	Nil	Nil
4	Litter	Nil	Nil
6	Non-native graminoid	Nil	Cenchrus ciliaris
8	Bare	Nil	Nil
10	Litter	Acacia aneura	Nil
12	Bare	Nil	Nil
14	Tjarnpi	Nil	Aristida latifolia
16	Tjarnpi	Nil	Aristida latifolia
18	Tjarnpi	Nil	Aristida latifolia
20	Tjarnpi	Nil	Aristida latifolia
22	Vegetation	Nil	Nil
24	Bare	Nil	Nil
26	Tjarnpi	Nil	Aristida latifolia
28	Tjarnpi	Nil	Aristida latifolia
30	Bare	Nil	Nil
32	Litter	Nil	Nil
34	Bare	Nil	Nil
36	Tjarnpi	Nil	Aristida latifolia
38	Tjarnpi	Nil	Aristida latifolia
40	Non-native graminoid	Hakea lorea	Cenchrus ciliaris
42	Non-native graminoid	Nil	Cenchrus ciliaris
44	Vegetation	Nil	Rulingia loxophylla
46	Vegetation	Nil	Rulingia loxophylla
48	Bare	Nil	Nil
50	Bare	Nil	Nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
Tjilka tjilka	Sclerolaena cornishiana	1	0.15
Wanguu	Eragrostis eriopoda	5	0.2
	Enchylaena tomentosa var. tomentosa	3	1.1
Tjanpi	Aristida jerichoensis var. subspinulifera (P3)	5	0.6
Nyiyurr-nyiyurpa	Rhagodia eremea	1	0.4
Wirtjintji	Hakea lorea	2.5	0.3
	Rulingia loxophylla	2	0.35
Tjanpi	Monachather paradoxus	2	0.2
Yaranpa	Acacia aneura	15	6.4
	Sida fulvilifera	2	0.3
	Altenanthera angustifolia	1	0.05
Tjulpin tjulpinpa	Chrysocephalum apiculatum subsp. glandulosum	3	0.3
	Atriplex vesicaria	2	0.6
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Yaranpa	Acacia aneura	3.8	8.4
Yaranpa	Acacia aneura	3	7.6
Wakalypuka/ Kultulpuka	Acacia tetragonophylla	2	Nil
Wirtjintji	Hakea lorea	2.2	2.4
Yaranpa	Acacia aneura	2.3	3.2



Table 3 Data for Site 3

Date	4/12/2018	Project Title (e.g. NINU)	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AL, Ningbell Lyons
Site Name	JamesonBypass141	Waypoint - GPS	141
Photo 0m	JamesonBypass141_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass141_50	Transect bearing	270
MGA Zone	52	Site number	3
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position	flat	Vegetation community	Claypan Grassland
Slope	0	Veg Condition/ Community	Priority 3 listed species present in abundance
Aspect (which direction)	NW	Buffel Grass	Rare
Soil Surface Colour	red brown	Other weeds?	Nil
Soil Surface	Clay	How long since the last fire	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Bare	Nil	Nil
4	Bare	Nil	Nil
6	Tjanpi	Nil	Aristida latifolia
8	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
10	Litter	Nil	Nil
12	Bare	Nil	Nil
14	Tjanpi	Nil	Eragrostis setifolia
16	Bare	Nil	Nil
18	Non-native graminoid	Nil	Cenchrus ciliaris
20	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
22	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
24	Bare	Nil	Nil
26	Bare	Nil	Nil
28	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
30	Non-native graminoid	Nil	Cenchrus ciliaris
32	Litter	Nil	Nil
34	Tjanpi	Nil	Aristida latifolia
36	Bare	Nil	Nil
38	Bare	Nil	Nil
40	Bare	Nil	Nil
42	Bare	Nil	Nil
44	Native Graminoid	Nil	Aristida jerichoensis var subspinulifera
46	Bare	Nil	Nil
48	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
50	Tjanpi	Nil	Aristida jerichoensis var subspinulifera
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
Kapil kapilpa, Punt	Senna artemisoides	2.5	0.9
Tjanpi yipiri	Aristida latifolia	10	0.4
Buffel	Cenchrus ciliaris	8	0.3
Tjanpi	Eragrostis setifolia	3	0.25
Tjanpi yipiri	Aristida latifolia	8	0.3
Tjanpi	Eragrostis eriopoda	8	0.2
	Kennedia prorepens	1	0.05
Wirtjintji	Hakea lorea	2	2
Tjanpi	Aristida jerichoensis var subspinulifera	10	0.4
Kultulpuka	Acacia tetragonophylla	4	1.5
Warnari	Acacia aneura	5	3.1
Warnari	Acacia pteraneura	2.5	4
*Name forthcoming	Podaxis pistillaris	0.025	0.1
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Wirtjintji	Hakea lorea	1.5	Nil
Yaranpa	Acacia aneura	3.1	8.24
	Acacia pteraneura	4	8.2



Table 4 Data for Site 4

Date	4/12/2018	Project Title (e.g. Nintil)	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AL, Ningbell Lyons
Site Name	JamesonBypass145	Waypoint - GPS	145
Photo 0m	JamesonBypass145_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass145_50	Transect bearing	
MGA Zone	52	Site number	4
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position	Midslope	Vegetation community	Mulga over Maireana triptera Shrub
Slope	15	Veg Condition/ Comments	
Aspect (which direction)	NE	Buffel Grass	Rare
Soil Surface Colour	red with black ironstone patches	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above?	Ngaanya below?
2	Rock	Acacia aneura	Nil
4	Bare	Nil	Nil
6	Litter	Acacia aneura	Nil
8	Litter	Nil	Nil
10	Litter	Nil	Nil
12	Litter	Nil	Nil
14	Native Graminoid	Nil	Eragrostis eriopoda
16	Non-native graminoid	Nil	Cenchrus ciliaris
18	Bare	Nil	Nil
20	Bare	Nil	Nil
22	Bare	Nil	Nil
24	Rock	Nil	Nil
26	Rock	Nil	Nil
28	bare	Nil	Nil
30	litter	Nil	Nil
32	Vegetation	Acacia aneura	Maireana triptera
34	bare	Nil	nil
36	bare	Nil	Nil
38	Bare	Nil	Nil
40	rock	Nil	Nil
42	bare	Nil	Nil
44	Bare	Nil	Nil
46	Bare	Nil	Nil
48	Litter	Nil	Nil
50	Bare	Nil	Nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
Kunawiltu	Maireana triptera	5	0.25
	Monochather paradoxus	1	0.3
Tjilkka tjilkka	Sclerolaena cornishiana	1	0.2
Yaranpa	Acacia aneura	15	2.7
	Atriplex vesicaria	2.5	0.5
Tjarnpi	Eragrostis eriopoda	1	0.2
Buffel	Cenchrus ciliaris	1	0.3
	Maireana georgei	2.5	0.4
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Yaranpa	Acacia aneura	3.1	5
Yaranpa	Acacia aneura	2.8	7.5
Yaranpa	Acacia aneura	2.3	4.5
Yaranpa	Acacia aneura	3.4	11.2
Yaranpa	Acacia aneura	3	8
Yaranpa	Acacia aneura	2	4.2



Table 5 Data for Site 5

Date	4/12/2018	Project Title (e.g. Ninu	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AL, Ningbell Lyons
Site Name	JamesonBypass146	Waypoint - GPS	146
Photo 0m	JamesonBypass146_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass146_50	Transect bearing	
MGA Zone	52	Site number	5
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position	flat	Vegetation community	Mulga Warranderie Woodland
Slope	flat	Veg Condition/ Comments	
Aspect (which direction does the slope face?)		Buffel Grass	Rare
Soil Surface Colour	red with black ironstone pebbles	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire?	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Bare	Nil	Nil
4	Bare	Nil	Nil
6	Vegetation	Nil	<i>Rhagodia eremea</i>
8	Litter	Nil	Nil
10	Vegetation	Nil	<i>Eremophila foliosissim</i>
12	Litter	Nil	Nil
14	Native Graminoid	Nil	<i>Eragrostis eriopoda</i>
16	Non-native graminoid	Nil	Nil
18	Bare	Nil	<i>Cenchrus ciliaris</i>
20	Bare	Nil	Nil
22	Bare	Nil	Nil
24	Bare	Nil	Nil
26	Bare	Nil	Nil
28	Vegetation	Nil	<i>Maireana triptera</i>
30	Non-native graminoid	Nil	<i>Cenchrus ciliaris</i>
32	Native Graminoid	Nil	<i>Eragrostis eriopoda</i>
34	Native Graminoid	Nil	<i>Eragrostis eriopoda</i>
36	Native Graminoid	Nil	<i>Eragrostis eriopoda</i>
38	Bare	Nil	Nil
40	Vegetation	Nil	<i>Senna artemisoides</i>
42	Vegetation	Nil	<i>Sclerolaena cornishiana</i>
44	Bare	Nil	Nil
46	Bare	Nil	Nil
48	Litter	Nil	Nil
50	Bare	Nil	Nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
	<i>Acacia pruinocarpa</i>	5	3
	<i>Bonamia erecta</i>	10	0.2
<i>Kunawiltu</i>	<i>Maireana triptera</i>	1	0.25
<i>Tjarnpi</i>	<i>Eragrostis laniflora</i>	5	0.4
<i>Tjarnpi</i>	<i>Eragrostis setifolia</i>	5	0.2
<i>Yaranpa</i>	<i>Acacia aneura</i>	20	
<i>Buffel</i>	<i>Cenchrus ciliaris</i>	2.5	0.3
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	1	0.3
<i>Yilintji</i>	<i>Cymbopogon ambiguus</i>	1	0.45
<i>Tjarnpi</i>	<i>Eragrostis eriopoda</i>	15	0.2
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
	<i>Acacia pruinocarpa</i>	3.2	15
	<i>Acacia tetragonophylla</i>	2.1	2.3
<i>Wirtjintji</i>	<i>Hakea lorea</i>	2.8	15.53



Table 6 Data for Site 6

Date	5/12/2018	Project Title (e.g. Ninu	JamesonBypass
Ranger Team	Blackstone	Observer	Anawari Mitchell, Rykem Lyons, Jer
Nearest Community	Mantamaru	Scribe	JT, AL, Ningbell Lyons
Site Name	JamesonBypass149	Waypoint - GPS	149
Photo 0m	JamesonBypass149_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass149_50	Transect bearing	
MGA Zone	52	Site number	6
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position	Midslope	Vegetation community	Mulga over Maireana triptera shrub
Slope	25	Veg Condition/ Comm	Poor
Aspect (which direction)	NW	Buffel Grass	Rare
Soil Surface Colour	red with black ironstone pebbles	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Bare	Nil	Nil
4	Bare	Nil	Nil
6	Bare	Nil	Nil
8	Bare	Nil	Nil
10	Bare	Nil	Nil
12	Bare	Nil	Nil
14	Bare	Nil	Nil
16	Bare	Nil	Nil
18	Bare	Nil	Nil
20	Bare	Nil	Nil
22	Bare	Nil	Nil
24	Bare	Nil	Nil
26	Bare	Nil	Nil
28	Bare	Nil	Nil
30	Bare	Nil	Nil
32	Bare	Nil	Nil
34	Bare	Nil	Nil
36	Bare	Nil	Nil
38	Bare	Nil	Nil
40	Tjanpi	Nil	Nil
42	Vegetation	Nil	Nil
44	Litter	Nil	Nil
46	Tjanpi	Acacia aneura	Eragrostis eriopoda
48	Litter	Acacia aneura	Nil
50	Non-native graminoid	Nil	Cenchrus ciliaris
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
	Acacia tetragonohylla	2.5	1.5
Narangkura/yawulyirri	Eremophila latrobei	5	0.4
Pirru Pirru	Eremophila georgei	5	0.4
Puyu	Rhyncharrhena linearis	1	0.2
Tjanpi Wangunu	Eragrostis eriopoda	5	0.2
Yirriya	Atriplex vesicaria	2.5	0.4
Tjilka tjilka	Sclerolaena cornishiana	2	0.2
Yaranpa	Acacia aneura	10	3
	Rhagodia eremea	2	0.5
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Yaranpa	Acacia aneura	4.2	



Table 7 Data for Site 7

MGA Zone	52	MGA Zone	52
Date	4/12/2018	Project Title (e.g. Nintilypa)	JamesonBypass
Ranger Team	Blackstone	Observer	Anawari Mitchell, Winston Mitchell
Nearest Community	Mantamaru	Scribe	Jennifer Timbs, Sharon Doolan
Site Name	JamesonBypass150	Waypoint - GPS	150
Photo 0m	JamesonBypass150_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass150_50	Transect bearing	270
MGA Zone	52	Site number	7
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position	Midslope	Vegetation community	Mulga Woodland
Slope	25	Veg Condition/ Community	Good
Aspect (which direction)	NW	Buffel Grass	Rare
Soil Surface Colour	red with black ironstone patches	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire?	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta abo	Ngaanya below?
2	Bare	Nil	Nil
4	Bare	Nil	Nil
6	Litter	Nil	Nil
8	Tjanpi	Nil	Eragrostis lanifolia
10	Litter	Nil	Nil
12	Bare	Nil	Nil
14	vegetation	Nil	Eremophila latrobei
16	Bare	Nil	Nil
18	vegetation	Nil	Eremophila latrobei
20	vegetation	Nil	Bonamia media
22	Bare	Nil	nil
24	Tjanpi	Nil	Eragrostis lanifolia
26	Bare	Nil	Nil
28	litter	Nil	Nil
30	Bare	Nil	Nil
32	Litter	Nil	Nil
34	Bare	Nil	Nil
36	Bare	Nil	Nil
38	Bare	Nil	Nil
40	Bare	Nil	Nil
42	Bare	Nil	Nil
44	Litter	Nil	Nil
46	Bare	Nil	Nil
48	vegetation	Acacia aneura	Corymbia opaca
50	Bare	Acacia aneura	nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
Kutulpulka	Acacia teragonophylla	-	-
Nyintilypa	Grevillea stenobotrya	-	-
	Bonamia media	-	-
Punti	Senna artemisoides	-	-
	Eremophila foliosissima	-	-
Watarrka	Acacia ligulata	-	-
Yawulyirri	Eremophila latrobei	-	-
Tjunta murrurrpa	Corymbia opaca	-	-
Tjanpi	Themeda triandra	-	-
	Curcuma argenteus	-	-
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Yaranpa	Acacia aneura	3.8	7.5
Yaranpa	Acacia aneura	4.1	8.34
Tjuntu murrurrpa	Corymbia opaca	3.9	23.2
Nyintilypa	Grevillea stenobotrya	2.5	Nil



Table 8 Data for Site 8

Date	15/16/2018	Project Title (e.g. Ninu	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Comm	Mantamaru	Scribe	JT, RK, AL
Site Name	JamesonBypass8	Waypoint - GPS	8
Photo 0m	JamesonBypass8 0	Site Type	40 x 40 m
MGA Zone	52	Site number	8
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Pos	flat	Vegetation community	Mulga woodland
Slope	0	Veg Condition/ Comm	Richness despite buffel
Aspect (which direction does the slope face)		Buffel Grass	Rare
Soil Surface Colour	red with black ironstone patches	Other weeds?	Nil
Soil Surface	CLS	How long since the last fire	1
Coarse Woody	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta abo	Ngaanya below?
2	Bare		nil
4	Bare		nil
6	Non-native graminoid		Cenchrus ciliaris
8	Bare		nil
10	Non-native graminoid		Cenchrus ciliaris
12	Vegetation		Eremophea spinosa
14	Bare		nil
16	bare		nil
18	Vegetation		Salsola australis
20	Bare		Nil
22	Non-native graminoid		Cenchrus ciliaris
24	nil		nil
26	litter		Cenchrus ciliaris
28	litter		Nil
30	Non-native graminoid		Chrysocephalum pterochaetum
32	Non-native graminoid		Chrysocephalum pterochaetum
34	tjanpi		Eragrostis setifolia
36	Non-native graminoid		Cenchrus ciliaris
38	Non-native graminoid		Cenchrus ciliaris
40	Non-native graminoid		Cenchrus ciliaris
42	bare		nil
44	Non-native graminoid		Cenchrus ciliaris
46	litter		nil
48	Vegetation		Sclerolaena cornishiana
50	litter		nil
Species Richness			
Ngaanyatjarr	Species	% Cover	Mean Height (m)
	Acacia pruinocarpa		16.24
	Eremophea spinosa	2	
Kapil kapilpa	Abutilon malvifolium	1	
	Atriplex vesicaria	5	
	Solanum lasiophyllum	1	
	Acacia aneura	5	
	Corymbia opaca	1	
	Salsola australis	1	
	Euphorbia tannensis	1	
	Chrysocephalum pterochaetum	3	
	Sclerolaena cornishiana	3	
	Eragrostis setifolia	2	
	Amaranthus macrocephalus	1	
	Sida fibulifera	3	
	Euphorbia drumondii	1	
	Sida cardiophylla	1	
	Hakea lorea	3	
	Senna artemesoides	5	
Tree structure (>2m high)			
Ngaanyatjarr	Species	Height (m)	DBH (cm)
	Acacia pruinocarpa	2.3	-
	Hakea lorea	4	4
	Acacia pruinocarpa	2.5	17.22
	Acacia pruinocarpa	4	19.4
	Acacia pruinocarpa	2.1	12.1
	Acacia aneura	2	9.14



Table 9 Data for Site 9

MGA Zone	52	MGA Zone	52
Date	15/12/2018	Project Title (e.g. NINU)	JamesonBypass
Ranger Team	Blackstone	Observer	
Nearest Community	Mantamaru	Scribe	
Site Name	JamesonBypass166	Waypoint - GPS	166
Photo 0m	JamesonBypass166_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass166_50	Transect bearing	
MGA Zone	52	Site number	9
Camera ID	OPPO AX5	Other Notes	q152 notebook
About the site - plants, soil, fire			
Landscape Position	flat	Vegetation community	Mulga Woodland
Slope	0	Veg Condition/ Comm	Excellent
Aspect (which direction does the slope face?)		Buffel Grass	0.05
Soil Surface Colour		Other weeds?	Nil
Soil Surface	CLS	How long since the last fire?	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Bare	Nil	Nil
4	Non-native graminoid	Nil	Cenchrus ciliaris
6	litter	Nil	Nil
8	Litter	Acacia aneura	Nil
10	Tjanpi	Nil	E setifolia
12	Bare	Nil	Nil
14	Litter	Acacia aneura	Nil
16	Litter	Acacia aneura	Nil
18	Vegetation	Nil	Abutilon macrum
20	litter	Nil	Nil
22	Bare	Nil	Nil
24	Bare	Nil	Nil
26	Tjanpi	Nil	Eragrostis eriopoda
28	Litter	Nil	Nil
30	Vegetation	Nil	Nil
32	Tjanpi	Nil	Eragrostis eriopoda
34	Tjanpi	Nil	Eragrostis eriopoda
36	Tjanpi	Nil	Eragrostis eriopoda
38	Nil	Nil	Nil
40	Vegetation	Nil	Sida spinulifera
42	bare	Nil	Nil
44	Bare	Nil	Nil
46	Bare	Nil	Nil
48	litter	Nil	Nil
50	litter	Nil	Nil
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
Yaranpa	Acacia aneura	15	2.8
	Themeda triandra	2	
	Sida fulvilifera	5	
	Rgagodia eremea	2	
	Eragrostis eriopoda	10	
	Eremophea spinosa	5	
Buffel	Cenchrus ciliaris	5	
	Eragrostis setifolia	5	0.2
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
	Acacia aneura	5.2	12.4
	Acacia aneura	2.2	Nil
	Acacia aneura	2.8	10.1
	Acacia aneura	2	Nil
	Acacia aneura	3	8



Table 10 Data for Site 10

Date	4/12/2018	Project Title (e.g. NINU)	JamesonBypass
Ranger Team	Blackstone	Observer	Angela Lyons, Jennifer Timbs
Nearest Community	Mantamaru	Scribe	JT, AL, RL, SM, VG
Site Name	JamesonBypass182	Waypoint - GPS	182
Photo 0m	JamesonBypass182_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass182_50	Transect bearing	
MGA Zone	52	Site number	10
Camera ID	OPPO AX5	Other Notes	
About the site - plants, soil, fire			
Landscape Position		Vegetation community	Mulga over Mairean triptera shrub
Slope	4	Veg Condition/ Comm	Good
Aspect (which direction)	north	Buffel Grass	Rare
Soil Surface Colour	red clay w ironstone gibber	Other weeds?	Nil
Soil Surface		How long since the last fire	1
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta abo	Ngaanya below?
2	bare		
4	bare		
6	bare		
8	Non-native graminoid		Cenchrus ciliaris
10	bare		
12	Non-native graminoid	Acacia aneura	Cenchrus ciliaris
14	bare	Acacia aneura	
16	bare		
18	bare		
20	bare		
22	bare		
24	bare		
26	bare		
28	bare		
30	bare		
32	bare	Acacia aneura	
34	bare		
36	bare		
38	bare		
40	bare		
42	bare		
44	bare		
46	bare		
48	bare		
50	bare		
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
	Maireana triptera	5	
	Sclerolaena cornishiana	1	
	Eremophila serrulata	2.5	
	Atriplex vesicaria	2.5	
	Cenchrus ciliaris	2	
	Abutilon macrum	1	
	Acacia aneura	10	
	Rhagodia eremea	5	
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
Yaranpa	Acacia aneura	5.2	19.4
Yaranpa	Acacia aneura	2.8	8



Data for Site 11 Mulga wanderrie woodland over *Senna* spp.*Eremophila* spp.\Chenopod low shrubland

Date	16/12/2018	Project Title (e.g. NINU)	JamesonBypass
Ranger Team	Blackstone	Observer	
Nearest Community	Mantamaru	Scribe	
Site Name	JamesonBypass185	Waypoint - GPS	185
Photo 0m	JamesonBypass185_0	Site Type	40 x 40 m
Photo 50m	JamesonBypass185_50	Transect bearing	
MGA Zone	52	Site number	10
Camera ID	OPPO AX5	Other Notes	Priority 3 species present - A. ieri
About the site - plants, soil, fire			
Landscape Position	flat	Vegetation community	Mulga Warranderrie Woodland over
Slope	0	Veg Condition/ Comm	Excellent
Aspect (which direction does the slope face?)		Buffel Grass	Rare
Soil Surface Colour	red clay w ironstone gibber	Other weeds?	Nil
Coarse Woody Debris	3	Scorch height on tree	NA
Foliage Projective Cover			
Meters	Cover	Ngaanya warta above	Ngaanya below?
2	Vegetation		Rhagodia eremea
4	Litter		
6	Bare		
8	Litter		
10	Vegetation		Eremophila foliosissima
12	Vegetation		Atriplex vesicaria
14	Vegetation		Eremophila foliosissima
16	Bare		
18	Vegetation		Senna artemisoides
20	Tjanpi		Eragrostis laniflora
22	Litter		
24	Litter		
26	Vegetation	Acacia tetragonophylla	Acacia tetragonophylla
28	Non-native graminoid		Cenchrus ciliaris
30	Vegetation		Eremophila foliosissima
32	Tjanpi		Eragrostis eriopoda
34	Tjanpi	Acacia pteraneura	Eragrostis eriopoda
36	Vegetation		Anthobolus leptomeroides
38	Tjanpi		Eragrostis eriopoda
40	Litter		
42	Vegetation		Rhagodia eremea
44	Vegetation		Atriplex vesicaria
46	Tjanpi		Eragrostis eriopoda
48	Bare		
50	Vegetation		Acacia aneura
Species Richness			
Ngaanyatjarra	Species	% Cover	Mean Height (m)
	<i>Eremophila foliosissima</i>	15	0.4
	<i>Atriplex vesicaria</i>	5	1
	<i>Eremophila longifolia</i>	1	0.4
	<i>Senna artemisoides</i>	5	1.2
	<i>Eragrostis laniflora</i>	3	0.4
	<i>Eragrostis eriopoda</i>	5	0.2
	<i>Acacia tetragonophylla</i>	1	1.5
	<i>Acacia pteraneura</i>	10	4
	<i>Acacia pruinocarpa</i>	2	1.2
	<i>Rhagodia eremea</i>	1	1
	<i>Aristida jerichoensis</i> var. <i>subsp.</i>	4	0.6
	<i>Enneopogon venaceus</i>	1	0.4
	<i>Anthobolus leptomeroides</i>	5	1
Tree structure (>2m high)			
Ngaanyatjarra	Species	Height (m)	DBH (cm)
	<i>Acacia aneura</i>	3.5	10.6
	<i>Acacia aneura</i>	4.1	8.9
	<i>Acacia aneura</i>	2.6	5.4
	<i>Acacia aneura</i>	3.4	9.5



APPENDIX E

PRIORITY FLORA REPORT FORMS



Threatened and Priority Flora Report Form

Version 1.3 August 2017

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Aristida jerichoensis var. subspinulifera</u>	TPFL Pop. No.: _____
OBSERVATION DATE: <u>16/04/2019</u>	CONSERVATION STATUS: <u>P3</u> New population <input checked="" type="checkbox"/>
OBSERVER/S: <u>Rykem Lyons, Angela Lyons, Jennifer Timbs</u>	PHONE <u>0448089423</u>
ROLE: <u>Land Management Rangers</u>	ORGANISATION: <u>Ngaanyatjarra Council Aboriginal Corporation</u>

DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):

Adjacent and parallel to the airstrip to the East of Mantamaru Aboriginal Community (Jameson), approximately 40m from the airstrip's western perimeter.

Reserve No.: _____

DBC DISTRICT: <u>Goldfields</u>	LGA: <u>Ngaanyatjarraku Shire</u>	Land manager present: <input checked="" type="checkbox"/>
DATUM:	COORDINATES: (If UTM coords provided, Zone is also required)	METHOD USED:
GDA94 / MGA94 <input checked="" type="checkbox"/>	DecDegrees <input checked="" type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input type="checkbox"/>	GPS <input checked="" type="checkbox"/> Differential GPS <input type="checkbox"/> Map <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	Lat / Northing: _____	No. satellites: _____ Map used: _____
WGS84 <input type="checkbox"/>	Long / Easting: _____	Boundary polygon captured: <input type="checkbox"/> Map scale: _____
Unknown <input type="checkbox"/>	ZONE: _____	
LAND TENURE:		
Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/> SLK/Pole _____ to _____
		Rail reserve <input type="checkbox"/> Shire road reserve <input type="checkbox"/>
		MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/>
		Specify other: Indigenous Protected Area

AREA ASSESSMENT: Edge survey <input type="checkbox"/> Partial survey <input checked="" type="checkbox"/> Full survey <input type="checkbox"/> Area observed (m ²): <u>22</u>				
EFFORT: Time spent surveying (minutes): _____		No. of minutes spent / 100 m ² : _____		
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input checked="" type="checkbox"/> Estimate <input type="checkbox"/>		Count method: <u>Extrapolated Count</u> (Refer to field manual for list)		
WHAT COUNTED:	Plants <input checked="" type="checkbox"/>	Clumps <input type="checkbox"/>	Clonal stems <input type="checkbox"/>	
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:
Alive	<u>130</u>			
Dead				
Area of pop (m ²): <u>22</u>				
Note: Pls record count as numbers (not percentages) for database.				
QUADRATS PRESENT:	No. _____	Size _____	Data attached <input type="checkbox"/>	Total area of quadrats (m ²): _____
Summary Quad. Totals: Alive				
REPRODUCTIVE STATE:	Clonal <input type="checkbox"/>	Vegetative <input type="checkbox"/>	Flowerbud <input type="checkbox"/>	Flower <input type="checkbox"/>
	Immature fruit <input type="checkbox"/>	Fruit <input checked="" type="checkbox"/>	Dehiscent fruit <input checked="" type="checkbox"/>	Percentage in flower: <u>30%</u>

CONDITION OF PLANTS: Healthy ☒ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: _____

THREATS - type, agent and supporting information:		Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)				
• Weed invasion		L	L	L
• Track creation		L	H	L
• Native flora competition		L	L	L

Please return completed form to **Species And Communities Branch DBCA**,
Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to **Flora Administrative Officer**, Species and Communities Branch.

Record entered by: _____ Sheet No.: _____ Record Entered in Database ☐



Threatened and Priority Flora Report Form

Version 1.3 August 2017

HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input checked="" type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input checked="" type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	10-30% <input type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	30-50% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	50-100% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____		Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>					

CONDITION OF SOIL:

Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION

CLASSIFICATION*:

Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);
2. Open shrubland (Hibbertia sp., Acacia spp.);
3. Isolated clumps of sedges (Mesomelaena tetragona)

1. Mulga Warranderie woodland over Eremophila foliosissima\ Senna artemisoides\ Atriplex vesicaria low shrubland

2.

3.

4.

ASSOCIATED

SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT:

Pristine ☐ Excellent ☒ Very good ☐ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

Excellent condition, although somewhat fragmented in this specific location, being between tracks, road and airstrip.

FIRE HISTORY:

Last Fire: Season/Month: _____ Year: _____ Fire Intensity: High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING:

Not required ☒ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS:

Not required ☒ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

This population is not under immediate threat of disturbance and will be conserved in so far as no actions will be undertaken to alter prevailing landuses in this location.

The patch is not in a thoroughfare for vehicles, however low level vehicle traffic for collection of firewood in the vicinity does not appear to have suppressed the population.

Further surveys of the region will be undertaken as part of the Ngaanyatjarra Ranger program to further investigate the status of this species in the area.

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SPECIMEN:

Collectors No: _____ WA Herb. ☐ Regional Herb. ☐ District Herb. ☐ Other: _____

ATTACHED:

Map ☐ Mudmap ☐ Photo ☒ GIS data ☒ Field notes ☒ Other: _____

COPY SENT TO:

Regional Office ☐ District Office ☐ Other: _____

Submitter of Record: Jennifer Timbs Role: Ranger Team Coordinator Signed: _JT_ Date: 05/05/19

Please return completed form to **Species And Communities Branch DBCA**,
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Threatened and Priority Flora Report Form

Version 1.3 August 2017

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <http://dpaw.wa.gov.au> under Standard Report Forms

TAXON: <u>Aristida jerichoensis var. subspinulifera</u>		TPFL Pop. No: _____	
OBSERVATION DATE: <u>16/04/2019</u>		CONSERVATION STATUS: <u>P3</u> New population <input checked="" type="checkbox"/>	
OBSERVER/S: <u>Rykem Lyons, Angela Lyons, Jennifer Timbs</u>		PHONE: <u>0448089423</u>	
ROLE: <u>Land Management Rangers</u>		ORGANISATION: <u>Ngaanyatjarra Council Aboriginal Corporation</u>	
DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place): <u>Occurs in Mulga Wanderrie Woodlands 500 m to the North-Northwest of Jameson Community (Mantamaru)</u>			
DBC DISTRICT: <u>Goldfields</u>		Reserve No: _____	
LGA: <u>Ngaanyatjarraku Shire</u>		Land manager present: <input checked="" type="checkbox"/>	
DATUM:	COORDINATES: (If UTM coords provided, Zone is also required)		METHOD USED:
GDA94 / MGA94 <input checked="" type="checkbox"/>	DecDegrees <input checked="" type="checkbox"/>	DegMinSec <input type="checkbox"/>	UTMs <input type="checkbox"/>
AGD84 / AMG84 <input type="checkbox"/>	Lat / Northing: <u>-25.857376</u>		GPS <input checked="" type="checkbox"/>
WGS84 <input type="checkbox"/>	Long / Easting: <u>127.66376</u>		Differential GPS <input type="checkbox"/>
Unknown <input type="checkbox"/>	ZONE: <u>52</u>		Map <input type="checkbox"/>
LAND TENURE:		No. satellites: _____ Map used: _____ Boundary polygon captured: <input type="checkbox"/> Map scale: _____	
Nature reserve <input type="checkbox"/> Timber reserve <input type="checkbox"/> Private property <input type="checkbox"/> Rail reserve <input type="checkbox"/> Shire road reserve <input type="checkbox"/> National park <input type="checkbox"/> State forest <input type="checkbox"/> Pastoral lease <input type="checkbox"/> MRWA road reserve <input type="checkbox"/> Other Crown reserve <input type="checkbox"/> Conservation park <input type="checkbox"/> Water reserve <input type="checkbox"/> UCL <input type="checkbox"/> SLK/Pole _____ to _____ Specify other: Indigenous Protected Area			

AREA ASSESSMENT: Edge survey <input checked="" type="checkbox"/> Partial survey <input type="checkbox"/> Full survey <input type="checkbox"/> Area observed (m ²): <u>100</u>			
EFFORT: Time spent surveying (minutes): <u>10</u>		No. of minutes spent / 100 m ² : _____	
POP'N COUNT ACCURACY: Actual <input type="checkbox"/> Extrapolation <input type="checkbox"/> Estimate <input checked="" type="checkbox"/>		Count method: _____ (Refer to field manual for list)	
WHAT COUNTED:	Plants <input checked="" type="checkbox"/>	Clumps <input type="checkbox"/>	Clonal stems <input type="checkbox"/>
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:
Alive	<u>200</u>		
Dead			
Area of pop (m ²): <u>400</u>			
Note: Pls record count as numbers (not percentages) for database.			
QUADRATS PRESENT:	No. _____	Size _____	Data attached <input type="checkbox"/>
Total area of quadrats (m ²): _____			
Summary Quad. Totals: Alive			
REPRODUCTIVE STATE:	Clonal <input type="checkbox"/>	Vegetative <input type="checkbox"/>	Flowerbud <input type="checkbox"/>
Immature fruit <input type="checkbox"/>	Fruit <input checked="" type="checkbox"/>	Dehisced fruit <input checked="" type="checkbox"/>	Flower <input type="checkbox"/>
Percentage in flower: <u>30%</u>			

CONDITION OF PLANTS: Healthy ☒ Moderate ☐ Poor ☐ Senescent ☐

COMMENT: _____

THREATS - type, agent and supporting information:	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant. Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)			
• Weed invasion	L	L	L
• Track creation	L	H	L
• Herbivory	L	L	L

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HABITAT INFORMATION:

LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest <input type="checkbox"/>	Granite <input type="checkbox"/>	(on soil surface; eg gravel, quartz fields)	Sand <input type="checkbox"/>	Red <input checked="" type="checkbox"/>	Well drained <input checked="" type="checkbox"/>
Hill <input type="checkbox"/>	Dolerite <input type="checkbox"/>		Sandy loam <input type="checkbox"/>	Brown <input type="checkbox"/>	Seasonally inundated <input checked="" type="checkbox"/>
Ridge <input type="checkbox"/>	Laterite <input type="checkbox"/>		Loam <input type="checkbox"/>	Yellow <input type="checkbox"/>	Permanently inundated <input type="checkbox"/>
Outcrop <input type="checkbox"/>	Ironstone <input checked="" type="checkbox"/>	0-10% <input checked="" type="checkbox"/>	Clay loam <input checked="" type="checkbox"/>	White <input type="checkbox"/>	Tidal <input type="checkbox"/>
Slope <input type="checkbox"/>	Limestone <input type="checkbox"/>	10-30% <input type="checkbox"/>	Light clay <input type="checkbox"/>	Grey <input type="checkbox"/>	
Flat <input checked="" type="checkbox"/>	Quartz <input type="checkbox"/>	30-50% <input type="checkbox"/>	Peat <input type="checkbox"/>	Black <input type="checkbox"/>	
Open depression <input type="checkbox"/>	Specify other: _____	50-100% <input type="checkbox"/>	Specify other: _____	Specify other: _____	
Drainage line <input type="checkbox"/>					
Closed depression <input type="checkbox"/>					
Wetland <input type="checkbox"/>	Specific Landform Element: (Refer to field manual for additional values)				

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:

Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);
2. Open shrubland (Hibbertia sp., Acacia spp.);
3. Isolated clumps of sedges (Mesomelaena tetragona)

1. Mulga Wanderrie Woodland

2.

3.

4.

ASSOCIATED SPECIES:

Other (non-dominant) spp

* Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☒ Very good ☐ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: Excellent condition.

FIRE HISTORY: Last Fire: Season/Month: _____ Year: _____ Fire Intensity: High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☒ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☒ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)

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