Biota Environmental Sciences

Manuwarra Red Dog Highway Stage 4 Biological Survey

Prepared for Main Roads Western Australia

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Manuwarra Red Dog Highway Stage 4 Biological Survey

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1.0 Executive Summary

Main Roads Western Australia (Main Roads) is planning to commence work on Manuwarra Red Dog Highway Stage 4 (hereafter 'the project'), located in the Pilbara region of Western Australia. Main Roads commissioned Biota Environmental Sciences (Biota) to carry out a biological survey for the project in order to identify key flora and fauna values relevant to the design and construction of the project. The survey will support the environmental impact assessment (EIA) process for the project and inform referral of the project to the State Environmental Protection Authority and the Commonwealth Department of Agriculture, Water and the Environment.

The spatial scopes for the biological survey comprised:

- the survey area (the development envelope for the project, which will accommodate all aphysical components of the proposal for the purposes of EIA);
- a contextual area (a 500 m buffer on the centreline of the survey area; mapping was extended out to the edge of the contextual area where the survey area was narrower than this overall 1 km corridor); and
- the study area (an 18 km buffer from a centreline of the survey area for broader context setting).

A desktop flora and fauna assessment was undertaken for the study area, to use existing information to identify likely fauna and flora within the survey area. This was followed by a field survey work of the survey area, which comprised a detailed and targeted flora and vegetation survey and a basic and targeted fauna field survey. The surveys were undertaken over four mobilisations in April, May and October 2020 and March 2021.

Vegetation and Flora

A total of 29 vegetation types were identified for the survey area, broadly grouped into hills, cracking clay plains, Mulga low woodland, stony to gravelly plains, drainage lines, and floodplains. Approximately 5% of the survey area was comprised of cleared and/or disturbed ground.

Three of the vegetation types (C4, C5 and P6) represented a Threatened Ecological Community (TEC), the "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)" TEC, which is listed at State level as Vulnerable. The TEC occurred in the Tom Price section of the survey area where 115.3 ha was mapped, representing 38.8% of the extent of the TEC in the local area.

One Priority Ecological Community (PEC), the Priority 1 "Brockman Iron cracking clay communities of the Hamersley Range", was recorded in the survey area: vegetation type C3, which was present in the Tom Price section with a total of 88.1 ha mapped, representing 39.1% of the extent of this vegetation type in the local area.

A third ecological community, represented by vegetation units C2 and one site from P7, corresponds to one of the four plant assemblages described for the Wona Land System, the "Mitchell grass and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai", which is a Priority 3 PEC. However, as these vegetation types did not occur on the Wona Land System but rather the Hooley Land System, they may be considered to be of local conservation significance rather than representing the PEC itself. In the far north of the survey area, a total of 206.8 ha was mapped for C2, representing 2.4% of the survey area, while P7 comprised 43.2 ha (0.5% of the survey area), noting that the latter figures include all P7 sites and the proportion of this vegetation type that is of local conservation significance is minor.

A total of 590 native vascular flora species from 190 genera and 56 families were recorded from the survey area, and 16 introduced flora species (weeds). One Threatened flora species, *Seringia exastia,* which is listed under State and Commonwealth legislation, was recorded from the survey area, with no other Threatened flora considered Likely to Occur. This species has recently been

incorporated into the common and widespread species, *Seringia elliptica,* and is no longer considered to be of conservation significance.

Twenty-one State-listed Priority flora species were recorded from the survey area, with no other Priority flora considered Likely to Occur. The species recorded comprised:

- three Priority 1 species: *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354), *Josephinia* sp. Woodstock (A.A,. Mitchell PRP 989) and *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684);
- three Priority 2 species: *Aristida lazaridis, Euphorbia inappendiculata* var*. inappendiculata* and *Euphorbia inappendiculata* var*. queenslandica*;
- twelve Priority 3 species: *Aristida jerichoensis* var*. subspinulifera, Astrebla lappacea, Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479), *Euphorbia australis* var*. glabra, Glycine falcata, Gymnanthera cunninghamii, Rhagodia* sp. Hamersley (M. Trudgen 17794), *Sida* sp. Hamersley Range (K. Newbey 10692), *Swainsona thompsoniana, Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Streptoglossa* sp. Cracking Clays (S. van Leeuwen et al. PBS 7353), *Triodia basitricha*; and
- three Priority 4 species: *Eremophila magnifica* subsp*. magnifica, Goodenia berringbinensis* and *Goodenia nuda*.

Fauna

Database and literature searches of the study area identified a total of 305 vertebrate fauna species with the potential to occur in the survey area, 31 of which are listed as significant. Prior to the field survey, eight of these species were assessed as Likely to Occur within the survey area, with a further ten that May Occur.

During the field survey, a combined total of 110 species of vertebrate fauna was recorded within the survey area and contextual area, including five ground mammals, 11 bats, 75 birds, 15 reptiles and four amphibians.

Four fauna species of conservation significance, including three mammal species and one bird species, were recorded from the survey area:

- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form; State and Federal: Vulnerable);
- Ghost Bat (*Macroderma gigas;* State and Federal: Vulnerable);
- Western Pebble-mound Mouse (*Pseudomys chapmani*; State: Priority 4); and
- Grey Falcon (*Falco hypoleucos;* Vulnerable*).*

Two of the above species, the Pilbara Leaf-nosed Bat and the Grey Falcon, were recorded with certainty from the survey area through call recordings and sighting respectively. Secondary evidence of the other two species also confirmed their presence: Ghost Bat remains and scats were identified inside a cave within the survey area, and a recently active Pebble-mound Mouse mound was recorded.

Based on previous records from the study area, and field assessment of the habitats present within the survey area, seven other fauna species of conservation significance were considered Likely to Occur: Northern Quoll (*Dasyurus hallucatus*), Short-tailed Mouse (*Leggadina lakedownensis*), Pacific Swift (*Apus pacificus*), Peregrine Falcon (*Falco peregrinus*), Pilbara Olive Python (*Liasis olivaceus barroni*) and *Notoscincus butleri*.

Most of the fauna species of conservation significance recorded from the survey area, or deemed Likely to Occur, would be associated with the rocky habitats of the Hamersley Range (habitat types HS, RHS, MDE, MDM and RG), which would be considered to have the highest local conservation significance for fauna.

2.0 Introduction

2.1 Project Background

Main Roads Western Australia (Main Roads) is planning to commence work on the construction of Manuwarra Red Dog Highway Stage 4 (hereafter 'the project'), located in the Pilbara region of Western Australia (WA) (Figure 2.1). The project includes 110 km of new highway construction from the southern end of Stage 3 of the highway (at Wallyinya Pool) to its intersection with the existing Nanutarra - Munjina Road. This will complete Straight Line Kilometre (SLK) 136 to 245 of the highway, and will be the final stage of works. The 110 km of the project is planned to be constructed in three sections, from north to south:

- Coolawanyah – the initial 32.5 km of highway;
- Hamersley – the following 47.5 km; and
- Tom Price – the final 30 km.

On completion, the highway will be called Manuwarra Red Dog Highway in recognition of both the traditional owners of the area[1] and the iconic Red Dog kelpie who was often seen along parts of the original road in the 1970s. The purpose of the project is to provide a safe and efficient transport connection between Karratha and Tom Price as an alternative to the existing Rio Tinto rail access road, which is an unsealed track and unsuited to heavy freight traffic.

Main Roads commissioned Biota Environmental Sciences (Biota) to carry out a biological survey for the project in order to identify key flora and fauna values relevant to the design and construction of the project. The survey will support the environmental impact assessment (EIA) process for the project and inform referral of the project to the WA Environmental Protection Authority (EPA) and the Commonwealth Department of Agriculture, Water and the Environment (DoAWE).

2.2 Spatial Scope and Report Terminology

The primary spatial scope of the survey comprised the development envelope within which the project will be constructed. Terminology for the spatial extents referenced in this document is defined in Table 2.1 and shown in Figure 2.1.

Table 2.1: Spatial extents and terminology used in this document.

Report Terminology	Definition	Size (ha)	Flora Survey	Fauna Survey
Survey area	The development envelope for the project, which will accommodate all physical components of the proposed project for the purposes of EIA.	8,746.4	Detailed and Targeted flora and vegetation survey.	Basic and targeted fauna survey[2].
Contextual area	A 500 m buffer on the centreline of the survey area. Mapping was extended out to the edge of the contextual area where the survey area was narrower than this overall 1 km corridor.	4,841.5	Not surveyed in sections wider than the survey area, with vegetation and fauna habitat mapping was extrapolated from survey area data and aerial imagery.	
Study area	An 18 km buffer from the centreline of the survey area, within which a desktop review was carried out to determine a potential species list and identify any conservation significant species that may occur within the survey area.	505,809.4	Desktop background information gathered from database and literature sources.	

[1] Manuwarra is the Yindjibarndi word for 'heaps' or 'masses', which the people use to describe Red Dog Gorge located within the Millstream Chichester National Park.

[2] The fauna survey extended into adjacent habitats of the contextual area to inform the use or potential use of habitats within the survey area, given that fauna are mobile.

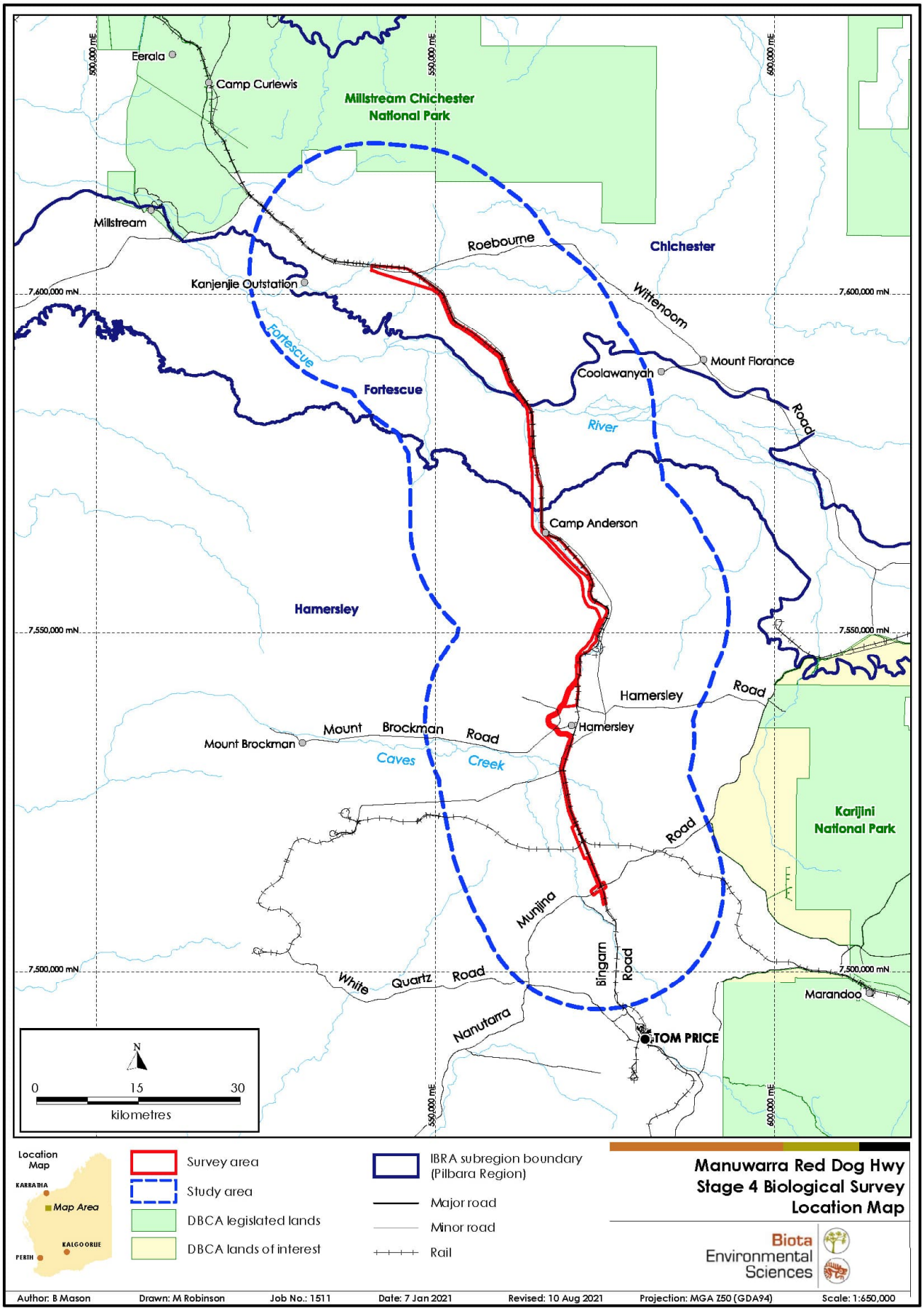

Figure 2.1 Location of survey and study areas for the project.

2.3 Study Objectives and Scope

This report documents the methods, results and key findings of the biological survey of the survey area. The survey consisted of both flora and vegetation and fauna sampling, with the specific scope of each of these described below in Section 2.3.1 and Section 2.3.2.

2.3.1 Detailed and Targeted Flora and Vegetation Survey

The objectives of the flora and vegetation survey were to:

- undertake a desktop study of relevant databases and previous surveys to consolidate existing records of significant flora from the study area, in order to predict those that were likely to occur, or may occur, within the survey area;
- conduct a single-phase detailed survey and a targeted survey for flora of significance (Threatened and Priority flora) within the survey area as per EPA (2016a), including:
  - sampling of flora and vegetation within the survey area to describe and characterise the vegetation, including quadrat and relevé sampling;
  - compiling a list of vascular flora species recorded from the survey area;
  - conducting targeted searches and traverses of habitat likely to support flora of significance;
  - recording and photographing introduced flora species (weeds) as well as any other disturbances; and
  - identifying and mapping key constraints relevant to flora and vegetation in the survey area.

The approach and scope of the flora and vegetation survey was consistent with the following policy documents:

- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016a); and,
- Environmental Factor Guideline – Flora and Vegetation (EPA 2016b).

2.3.2 Basic and Targeted Fauna Survey

The objectives of the fauna survey were to:

- undertake a desktop study of relevant databases and previous surveys to consolidate existing records of significant fauna from the study area, in order to predict those that were likely to occur, or may occur, within the survey area;
- complete a basic fauna survey of the study area, as per EPA (2020), to collect non-systematic data on fauna occurrence, determine the fauna habitats present and assess their suitability to support fauna of conservation significance; and
- undertake a targeted fauna survey of the survey area for species of conservation significance considered likely to occur.

The approach and scope of the fauna survey was consistent with the following policy documents:

- Environmental Factor Guideline – Terrestrial Fauna (EPA 2016c)
- Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment (EPA 2020);
- Survey Guidelines for Australia's Threatened Birds (DEWHA 2010); and
- Survey Guidelines for Australia's Threatened Mammals (DSEWPaC 2011).

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3.0 Regional Context

3.1 IBRA Bioregion and Subregions

The Interim Biogeographic Regionalisation for Australia (IBRA) recognises 89 bioregions and 419 subregions within Australia (DSEWPaC 2012). The survey area lies within the Pilbara bioregion, which is divided into four subregions. The survey area intersects the Chichester, Fortescue and Hamersley IBRA subregions (see Figure 2.1). A description of each of these subregions and their extent in the survey area is provided in Table 3.1.

The Pilbara bioregion is a major centre for biodiversity within Western Australia. In recognition of this high species diversity and the high levels of endemism in the region, the Hamersley subregion is considered one of the 15 national biodiversity hotspots in Australia. This appears to be related to the diversity of geological, altitudinal and climatic elements in the region, as well as being a function of its location in a transitional zone between the floras of the Eyrean (central desert) and southern Torresian (tropical) bioclimatic regions (see for example van Leeuwen and Bromilow (2002) for a detailed discussion of the significance of the Hamersley Range).

Table 3.1: Description of the IBRA subregions within the survey area.

IBRA Subregion	Description (Reference)	Extent in Pilbara Bioregion (ha)	Extent in Survey Area	
			Area (ha)	Proportion
Hamersley subregion (PIL 3)	Mountainous area of Proterozoic sedimentary ranges and plateaus, dissected by gorges (basalt, shale and dolerite). Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (Kendrick 2003a).	6,215,092	5460	62%
Chichester subregion (PIL 1)	Undulating Archaean granite and basalt plains include significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens*) hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (Kendrick and McKenzie 2003).	9,044,560	2,100	24%
Fortescue subregion (PIL2)	Extensive salt marsh, mulga-bunch grass, and short grass communities on alluvial plains in the east. Deeply incised gorge systems in the western (lower) part of the drainage. River gum woodlands fringe the drainage lines. Northern limit of Mulga (*Acacia aneura*). An extensive calcrete aquifer (originating within a palaeo-drainage valley) feeds numerous permanent springs in the central Fortescue, supporting large permanent wetlands with extensive stands of river gum and cadjeput Melaleuca woodlands (Kendrick 2003b).	2,041,914	1,187	14%

3.2 Land Systems

Land systems are composed of repeating patterns of topography, soils and vegetation, which are described as a series of land units (Christian and Stewart 1953). A total of 105 land systems have been identified and mapped in the Pilbara bioregion by the then Department of Agriculture. Land systems mapping covering the survey area was prepared by van Vreeswyk et al. (2004).

Twelve land systems are mapped within the survey area. The Boolgeeda land system was best represented, accounting for 27.4% of the survey area, followed by the River land system (Table 3.2 and Figure 3.1). Only a small proportion of the total extent of each of the land systems in the Pilbara bioregion intersects the survey area (Table 3.2).

There are a further 14 land systems mapped within the surrounding study area, that do not occur within the survey area (Figure 3.1).

Table 3.2: Land systems within the survey area.
Data from Department of Agriculture WA (van Vreeswyk et al. 2004).

Land System	Description	Extent in Pilbara Bioregion (ha)	Extent in Survey Area		Extent in Survey Area as a Proportion of the Pilbara Bioregion
			Area (ha)	Proportion	
Boolgeeda (RGEBGD)	Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands.	961,637	2396.5	27.4%	0.25%
River (RGERIV)	Active flood plains, major rivers and banks supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands.	482,179	2104.2	24.1%	0.44%
Urandy (RGEURY)	Stony plains, alluvial plains and drainage lines supporting shrubby soft spinifex grasslands.	131,976	787.3	9.0%	0.60%
Nooingnon (RGENON)	Hardpan plains with very large groves and sandy banks supporting mulga shrublands and wanderrie grasses.	28,768	753.6	8.6%	2.62%
Hooley (RGEHOY)	Alluvial clay plains supporting a mosaic of snakewood shrublands and tussock grasslands.	59,081	672.9	7.7%	1.14%
Platform (RGEPLA)	Dissected slopes and raised plains supporting hard spinifex grasslands.	236,336	593.7	6.8%	0.25%
Newman (RGENEW)	Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands.	1,993,745	436.9	5.0%	0.02%
Brockman (RGEBRO)	Gilgai alluvial plains with cracking clay soils supporting tussock grasslands.	74,108	405.6	4.6%	0.55%
Jurrawarrina (RGEJUR)	Hardpan plains and alluvial tracts supporting mulga shrublands with tussock and spinifex grasses.	66,475	318.0	3.6%	0.48%
Pindering (RGEPDG)	Gravelly hardpan plains supporting groved mulga shrublands with hard and soft spinifex.	38,757	215.3	2.5%	0.56%
McKay (RGEMCK)	Hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands.	426,145	50.1	0.6%	0.01%
Rocklea (RGEROC)	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands.	2,881,897	12.3	0.1%	<0.01%

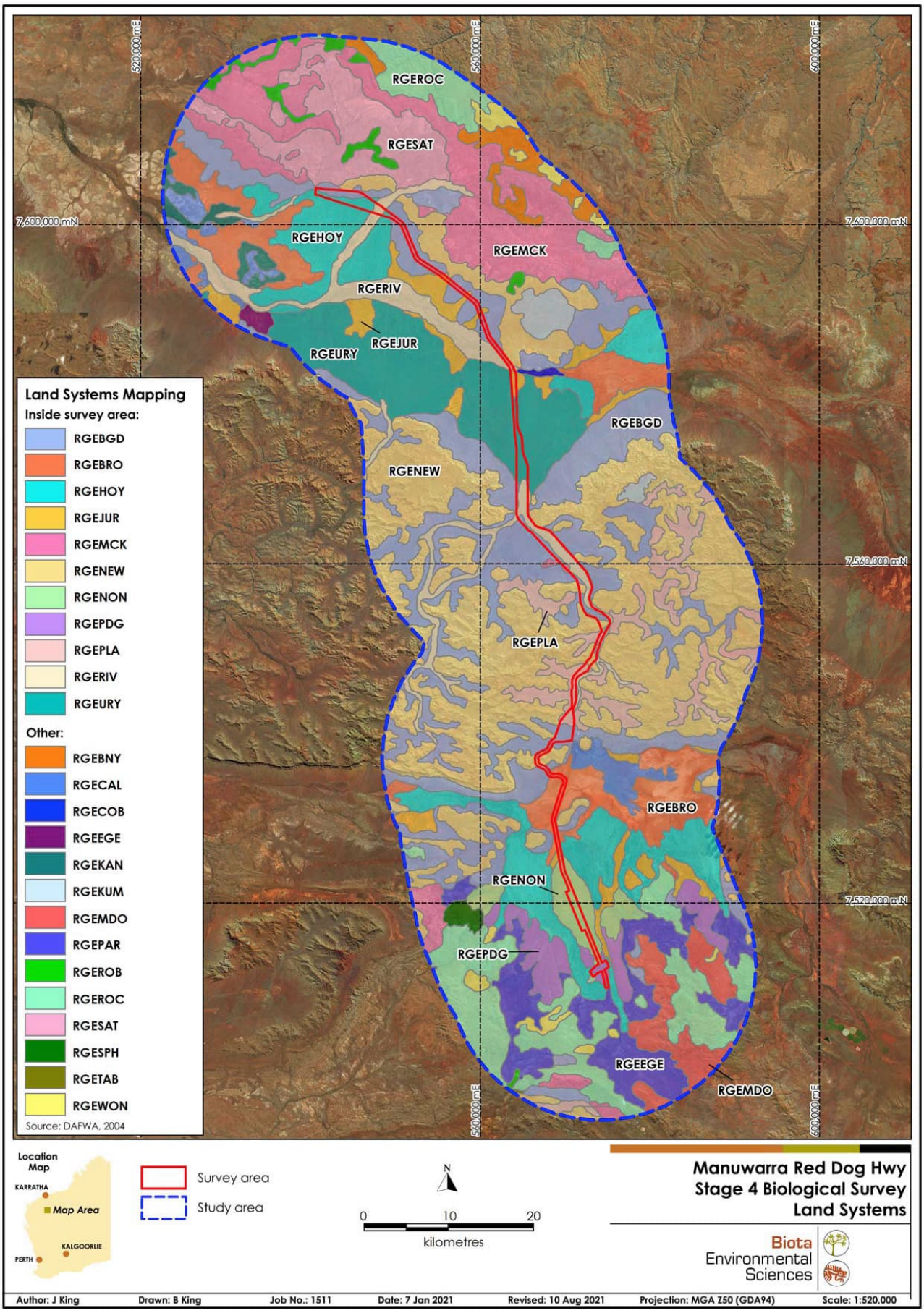

Figure 3.1: Land systems mapping of the survey area and the study area.

3.3 Geology

Mapping of the surface geological units in the locality was prepared based on data from Stewart et al. (2008). Eight geological units occur within the survey area (see Table 3.3 and Figure 3.2), with an additional nine geological units are mapped only within the wider study area (Figure 3.2).

The dominant surface geology types in the survey area were the Qrc (colluvium) and Qa (alluvium) (comprising 53.0% and 36.1% of the survey area, respectively).

3.4 Soils

Soil units have been mapped by Northcote et al. (1960). Eight broad soil types have been mapped within the survey area (see Table 3.4 and Figure 3.3), while a further six units occur only in the broader study area (Figure 3.3). The dominant units in the survey area comprise the valley plain unit associated with Fortescue River, Ja1, which made up 27.7% of the survey area and Fb3, which represented high-level valley plains and accounted for 23.0% of the survey area.

Table 3.3: Description and extent of geological units within the survey area.
Data from Geoscience Australia (Stewart et al. 2008).

Geological Unit	Description	Extent in Survey Area	
		Area (ha)	Proportion
Qrc – colluvium	Colluvium, sheetwash, talus; gravel piedmonts and aprons over and around bedrock; clay-silt-sand with sheet and nodular kankar; alluvial and aeolian sand-silt-gravel in depressions and broad valleys in Canning Basin; local calcrete, reworked laterite	4,638.6	53.0%
Qa – alluvium	Channel and flood plain alluvium; gravel, sand, silt, clay, locally calcreted	3,154.7	36.1%
Lchk – Brockman Iron Formation	Banded iron-formation, chert, mudstone and siltstone	356.2	4.1%
Ashm – Mt. McRae Shale and Mt. Sylvia Formation	Interbedded shale, chert, banded iron-formation	249.9	2.9%
Czl – ferruginous duricrust	Pisolitic, nodular or vuggy ferruginous laterite; some lateritic soils; ferricrete; magnesite; ferruginous and siliceous duricrusts and reworked products, calcrete, kaolinised rock, gossan; residual ferruginous saprolite	145.1	1.7%
Alhw – Wittenoom Formation	Calcitic dolomite, interbedded chert and shale in upper and lower parts, volcaniclastic sandstone	137.6	1.6%
Achm – Marra Mamba Iron Formation	Chert, ferruginous chert, jaspilite, banded iron-formation, minor shale, siltstone, mudstone	41.5	0.5%
Abfp – Bunjinah Formation	Metabasaltic pillow lava and breccia; metatuff and minor chert	22.8	0.3%

Table 3.4: Description and extent of soil units within the survey area.
Data from Northcote et al. (1960).

Soil Unit	Description	Extent in Survey Area (ha)	
		Area (ha)	Proportion
Ja1	Extensive valley plains largely associated with the Fortescue River: chief soils are earthy clays (Uf6.71) along with some (Ug5.38), (Um5.5), and (Dr2.33) soils. Small areas of calcrete (kunkar) with (Um5.11) soils occur also.	2,427.1	27.7%
Fb3	High-level valley plains set in extensive areas of unit Fa13. There are extensive areas of pisolitic limonite deposits: principal soils are deep earthy loams (Um5.52) along with small areas of (Gn2.12) soils.	2,008.1	23.0%
Fa13	Ranges of banded jaspilite and chert along with shales, dolomites, and iron ore formations; some areas of ferruginous duricrust as well as occasional narrow winding valley plains and steeply dissected pediments. This unit is largely associated with the Hamersley and Ophthalmia Ranges. The soils are frequently stony and shallow and there are extensive areas without soil cover: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the steeper slopes. Associated are (Dr2.33 and Dr2.32) soils on the limited areas of dissected pediments, while (Um5.52) and (Uf6.71) soils occur on the valley plains.	1,889.7	21.6%
Oc74	Dissected pediments with low stony hills as in unit Oc70, and with some residuals capped by ironstone gravels and underlain by pallid zones to 30 ft; pediments have a gravel veneer of coarse rock fragments: hard alkaline and neutral red soils (Dr2.33 and Dr2.32) are dominant with some (Um5.52) on pediments and rock outcrop, and there are gravelly loams (KS-Um5.51) and sands (KS-Uc5.21) overlying duricrust at shallow depths on the residuals.	973.6	11.1%
MM16	Alluvial plains dominated by deep cracking clays (Ug5.38) along with some areas of (Uf6.71) soils, and minor areas of (Dr2.33) soils.	814.1	9.3%
Ja2	This unit occupies the central position within the high-level valley plains represented by unit Fb3: chief soils are earthy clays (Uf6.71) along with extensive areas of (Ug5.38) soils.	450.1	5.1%
Lb12	Valley flats along major drainage lines, associated with limestone and calcareous gravels (kunkar): chief soils are highly calcareous earths (Gc1.12) with minor areas of shallow calcareous loams (Um1.1). Associated are areas of hard red soils (Dr2.33) and some cracking clays (Ug5.37).	111.5	1.3%
Fa14	Steep hills and steeply dissected pediments on areas of banded jaspilite and chert along with shales, dolomite, and iron ore formations; some narrow winding valley plains: chief soils are shallow stony earthy loams (Um5.51) along with some (Uc5.11) soils on the steeper slopes. (Dr2.33 and Dr2.32) soils which occur on the pediments are more extensive than in unit Fa13. (Um5.52) and (Uf6.71) soils occur on the valley plains.	72.3	0.8%

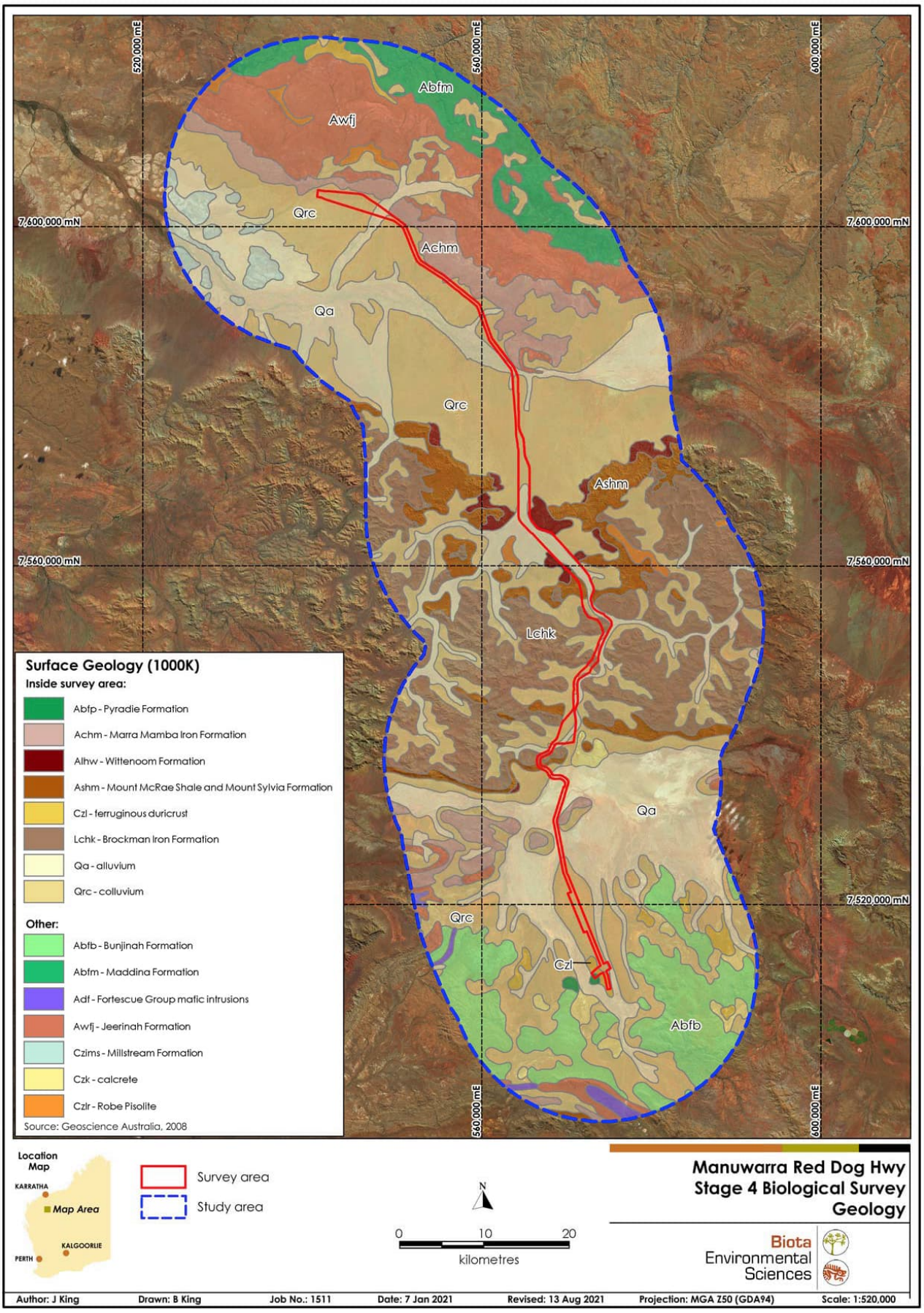

Figure 3.2: Geological units of the survey area and the study area.

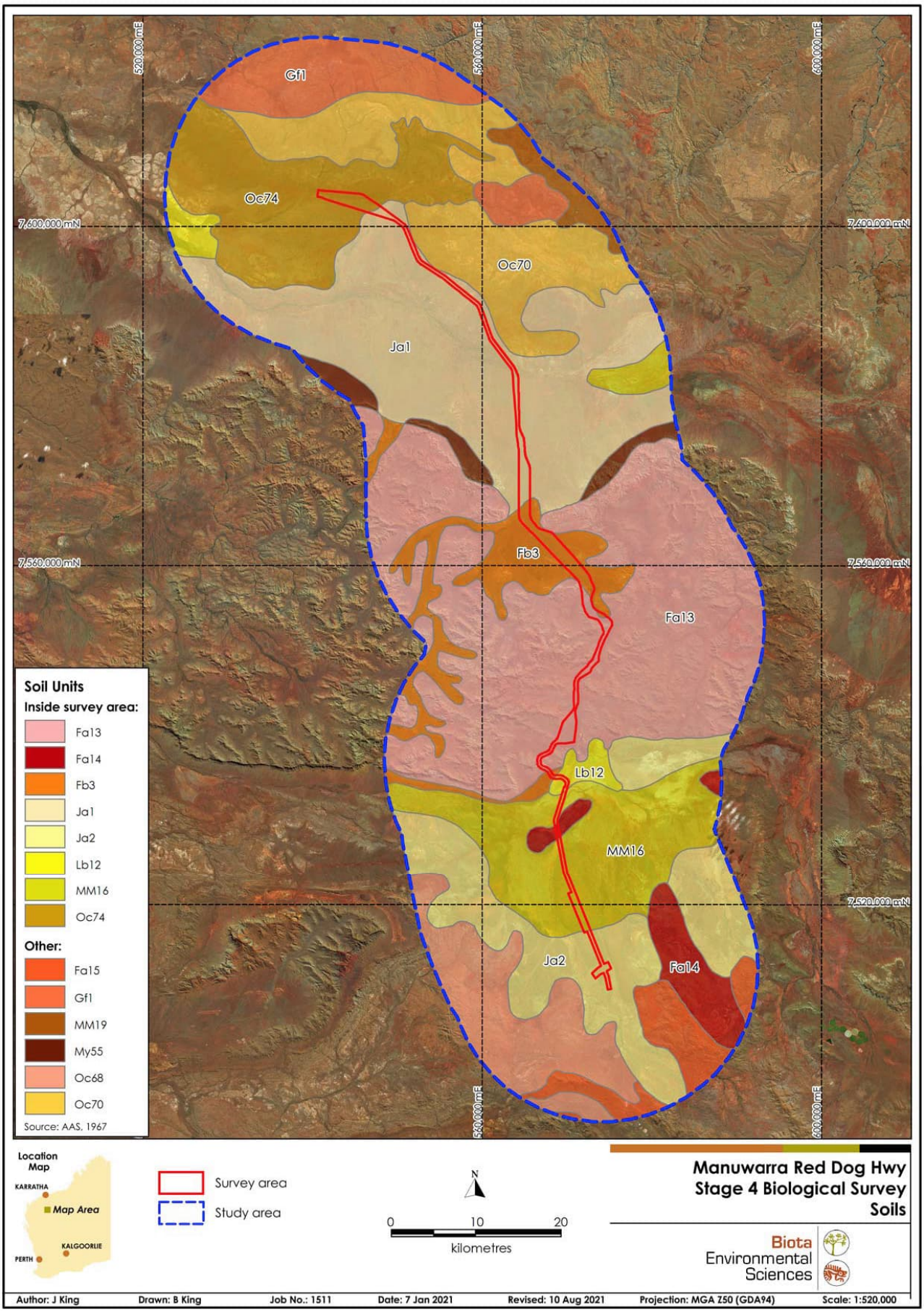

Figure 3.3: Soil units of the survey area and the study area.

3.5 Hydrology

The survey area intersects two major drainage systems, the Fortescue River, in the northern part of the corridor and Caves Creek in the southern part of the corridor (see Figure 2.1). In addition, Weelumurra creek, which is one of the longest tributaries of the Fortescue River, drains off the Hamersley Range and flows north, alongside and sometimes intersecting the survey area, into the Fortescue River. The survey area also intersects Cowcumber Creek in the north and Barnett Creek in the south, as well as various minor un-named tributaries of the Fortescue River and other unnamed minor creeks throughout the Hamersley Range.

3.6 Conservation Reserves

There is no formally gazetted conservation tenure within the survey area.

The nearest reserve is the Millstream-Chichester National Park, which is located approximately 15 km north of the northern end of the survey area and intersects the study area boundary (Figure 2.1). Karijini National Park is also nearby, located approximately 26 km east of the southern end of the survey area, but does not intersect the study area. Figure 2.1 also shows Department of Biodiversity, Conservation and Attractions (DBCA) lands of interest adjacent to Karijini National Park, approximately 20 km east of the survey area. These areas include the former leasehold areas of Mt Florence and Hamersley Stations, that are proposed for conservation in the future.

3.7 Pre-European Vegetation

Broad-scale vegetation mapping for the locality has been prepared at the 1:1,000,000 scale based on the work of J.S. Beard for the Pilbara (Beard 1975a). The survey area includes nine of Beard's vegetation system associations (Table 3.5 and Figure 3.4), while an additional nine associations occur only in the surrounding study area (see Figure 3.4). The majority of the survey area is mapped as hummock grasslands units (79%). The dominant Beard vegetation types in the survey area are Hamersley 565 and Chichester Plateau 607, which accounted for 37% and 18% of the survey area, respectively. Low mulga woodland (Hamersley 29 and Hamersley 29) and short bunch grassland (Hamersley 175) were also present in the survey area.

The pre-European and current extents of Beard's vegetation system associations have been calculated using interpretation of imagery to determine areas that have been cleared (see Shepherd et al. 2002, and Government of Western Australia 2018). These sources indicated that over 99% of the extent of each of these units remains uncleared.

Table 3.5 Description and extent of Beard vegetation units within the survey area.
Data from Beard (1975b)

Vegetation Association	Description	Extent in Survey Area		Extent in Pilbara Bioregion (ha)	Extent in Survey Area as a Proportion of the Pilbara Bioregion
		Area (ha)	Proportion		
Hamersley 565	Hummock grasslands, low tree steppe; bloodwood over soft spinifex.	3,273.7	37.4%	108,874	3.01%
Chichester Plateau 607	Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex & *Triodia wiseana.*	1,611.5	18.4%	119,009	1.35%
Hamersley 175	Short bunch grassland - savanna/grass plain (Pilbara).	1,425.1	16.3%	95,187	1.50%
Hamersley 644	Hummock grasslands, open low tree steppe; mulga & snakewood over soft spinifex & *Triodia basedowii*	724.5	8.3%	27,180	2.67%
Hamersley 82	Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana.*	590.4	6.8%	2,168,072	0.03%
Chichester Plateau 646	Hummock grasslands, shrub steppe; snakewood over *Triodia basedowii*.	480.5	5.5%	18,033	2.66%
Hamersley 29	Sparse low woodland; mulga, discontinuous in scattered groups.	350.3	4.0%	151,142	0.23%
Hamersley 645	Hummock grasslands, shrub steppe; kanji & snakewood over soft spinifex & *Triodia wiseana*.	247.2	2.8%	84,608	0.29%
Hamersley 18	Low woodland; mulga (*Acacia aneura* complex).	43.4	0.5%	580,483	0.01%

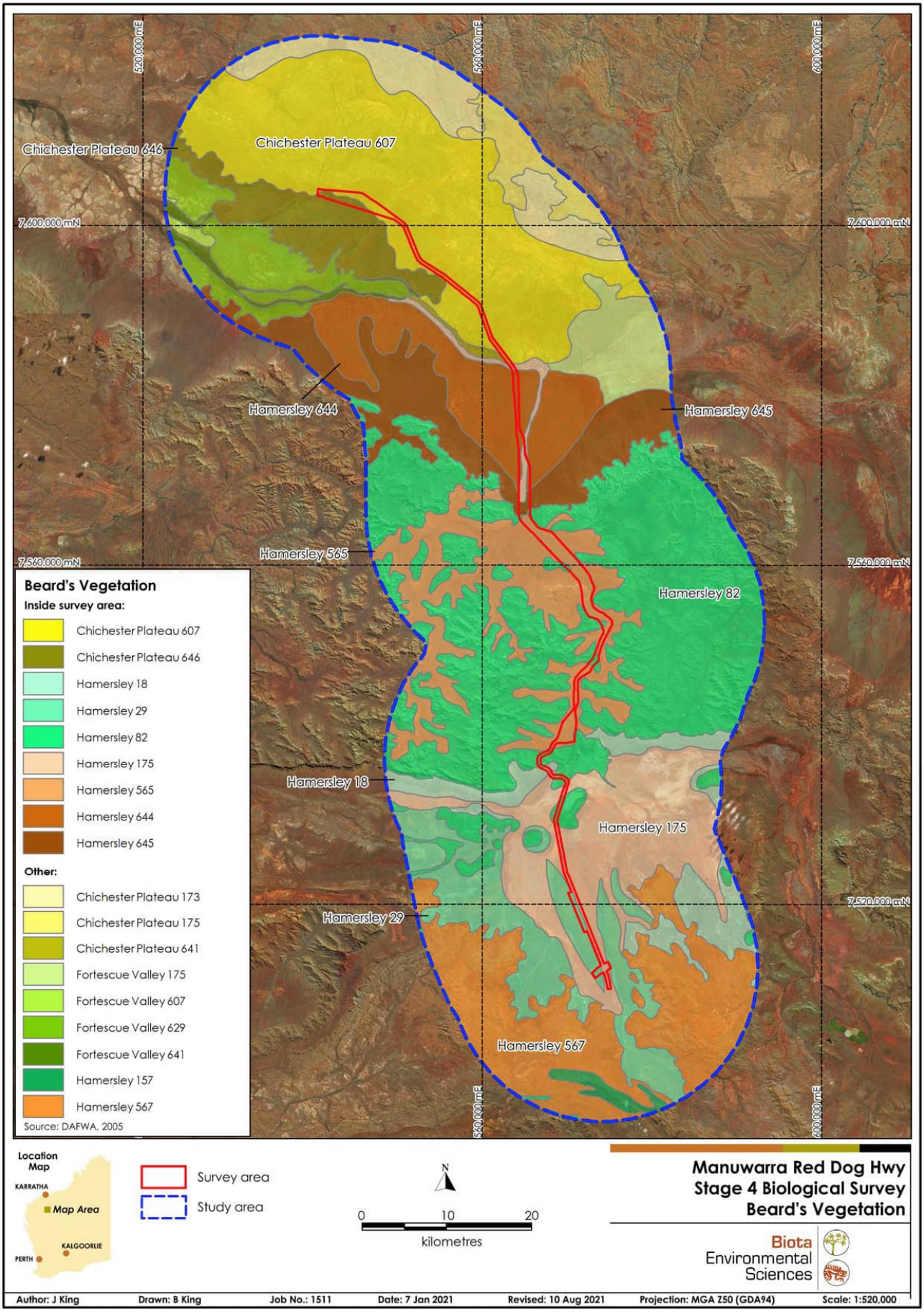

Figure 3.4: Beard's vegetation mapping within the survey area and the study area.

4.0 Methodology

4.1 Conservation Significance Framework

Native flora and fauna species that are rare, threatened with extinction, or have high conservation value, are specially protected by law as Threatened species under the State *Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Migratory and Marine fauna species are also protected under the EPBC Act as Matters of National Environmental Significance (MNES). In addition, the DBCA maintains a list of Priority species that have not been assigned statutory protection under the BC Act but are still considered to be of conservation priority, or are considered to be rare but not threatened and are in need of monitoring (DBCA 2020a). Appendix 1 details categories of conservation significance recognised under the above frameworks.

4.2 Desktop Study

A desktop study and literature review was undertaken to identify features of significance known from the study area. This involved the collation of previous biological surveys overlapping the study area and the outputs of various database searches.

The results of the desktop study were used as the basis for compiling lists of flora species, fauna species, and ecological communities of significance potentially occurring in the survey area. In reviewing previous surveys carried out nearby, the potential presence of habitat types associated with conservation significant species were identified and used to tailor the design and timing of the current field survey.

4.2.1 Database Searches

The following databases were searched to assist in the determination of the potential flora and fauna assemblages of the study area:

- NatureMap database (http://NatureMap.dec.wa.gov.au): a joint project of the DBCA and the Western Australian Museum (WAM). This database represents the most comprehensive source of information on the distribution of Western Australia's flora and fauna, comprising records from the Fauna Survey Returns database, the WA Threatened Flora and Fauna Databases, the WA Herbarium and WAM Specimen databases, and the BirdLife Australia Atlas. The database was searched using the line method at six points along the study area (Table 4.1) (Appendix 2).
- The DBCA databases of Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs), Declared Rare and Priority Flora, and Threatened Fauna. These searches returned records from a 40 km buffer around the survey area as provided by Main Roads. For the purpose of this report, only records that intersect with the study area were discussed.
- The Commonwealth EPBC Act Protected Matters search tool. The database search requested the return of records from the study area using six points positioned along the length of the study area (Appendix 2).

Table 4.1 Coordinates along the length of the study area used for database searches.

Location	Latitude	Longitude
North End	-21.674296	117.446276
North	-21.863438	117.617909
Middle North	-22.017518	117.634518
Middle South	-22.122148	117.731687
South	-22.337121	117.668409
South End	-22.493854	117.723366

4.2.2 Literature Review

Publicly available literature (including previous surveys commissioned by Main Roads) was reviewed for relevant flora and vegetation surveys (Table 4.3) and fauna surveys (Table 4.4 and Figure 4.1) conducted in the study area. The species of significance recorded during these previous surveys were used to inform the assessment of species likely to occur in the survey area (Section 4.2.3) and to determine methods and habitats for targeting these species (Sections 4.4.3 and 4.5).

4.2.3 Assessment of Likelihood of Occurrence

The likelihood of occurrence of conservation significant species identified in the desktop review was assessed prior to and after the survey. This assessment was based on the proximity of previous records to the survey area, knowledge of the habitat preferences of each taxon, an assessment of the habitats present within the survey area, and any records obtained during the field survey. The criteria used to assess likelihood of occurrence are outlined in Table 4.2.

Table 4.2: Criteria used to assess likelihood of species occurrence within the survey area.

Likelihood	Criteria
Recorded	1. The species has been recorded in the survey area.
Likely to occur	1. There are existing records of the species in close proximity to the survey area (within 10 km); and • the species is strongly linked to a specific habitat, which is present in the survey area; or • the species has more general habitat preferences, and suitable habitat is present.
May occur	1. There are existing records of the species from the study area, however • the species is strongly linked to a specific habitat, of which only a small amount is present in the survey area; or • the species has more general habitat preferences, but only some suitable habitat is present in the survey area. 2. There is suitable habitat in the survey area, but the species is recorded infrequently in the locality.
Unlikely to occur	1. The species is linked to a specific habitat, which is absent from the survey area; or 2. Suitable habitat is present in the survey area, however there are no existing records of the species from the study area despite reasonable previous sampling effort in suitable habitat; or 3. There is some suitable habitat in the survey area, however the species is very infrequently recorded in the study area or the only records are historical (>40 years ago).
Would not occur	1. The species is strongly linked to a specific habitat, which is absent from the survey area; or 2. The species' range is very restricted and does not include the survey area; or 3. The species is not considered extant in the study area.

Table 4.3: Previous relevant flora and vegetation surveys carried out within the study area.

Report/Document Title (Author)	Location and Area Surveyed (ha)	Type of Survey/Study and Survey Effort	Survey Dates	No. Native Flora Species Recorded	No. Introduced Species	Features of Conservation Significance / TECs and PECs / Threatened and Priority Species	Survey Limitations
Eliwana Flora and Vegetation Survey – Phase 2 (Biota 2018a)	• Rail survey area (RSA) intersects survey area in the south • 134,177 ha (MSA and RSA)	• Detailed,1- or 2-phase flora and vegetation survey of RSA and mine survey area (MSA) • Desktop study and consolidation of data from 22 previous surveys conducted in and around the survey area • Resampling of many previously established sites • 554 quadrats and 143 relevés	18th – 30th April 26th June – 3rd July 21st – 29th August 12th – 23rd September	596 (from MSA and RSA)	27 species from MSA and RSA: **Aerva javanica, *Alternanthera pungens, *Argemone ochroleuca subsp. ochroleuca, *Bidens bipinnata, *Bothriochloa pertusa, *Cenchrus ciliaris, *Cenchrus setiger, *Chloris virgata, *Citrullus amarus, *Conyza bonariensis, *Cynodon dactylon, *Datura leichhardtii, *Digitaria ciliaris, *Echinochloa colona, *Euphorbia hirta, *Flaveria trinervia, *Lactuca serriola forma serriola, *Malvastrum Americanum, *Oxalis corniculate, *Portulaca pilosa, *Rumex vesicarius, *Setaria verticillate, *Sigesbeckia orientalis, *Solanum nigrum, *Sonchus oleraceus,*Tribulus terrestris, *Vachellia farnesiana.*	One TEC*: Themeda* grasslands on cracking clays (Hamersley Station, Pilbara) (VU) Two PECs: • Brockman Iron cracking clay communities of the Hamersley Range (Priority 1) • *Triodia pisoliticola* (previously *Triodia* sp. Robe River) assemblages of mesas of the West Pilbara) (Priority 3) 37 species recorded from the RSA during this survey: • *Calotis squamigera* (P1) • *Helichrysum oligochaetum* (P1) • *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1) • *Triodia* aff. sp. Karijini (S. van Leeuwen 4111) (P1) • *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684) (P1) • *Whiteochloa capillipes* (P1) • *Euphorbia inappendiculata* var. *inappendiculata* (P2) • *Euphorbia inappendiculata* var. *queenslandica* (P2) • *Gompholobium karijini* (P2) • *Ipomoea racemigera* (P2) • *Pentalepis trichodesmoides* subsp. *hispida* (P2) • *Aristida jerichoensis* var. *subspinulifera* (P3) • *Astrebla lappacea* (P3) • *Cyanthillium gracile* (P3) • *Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)* (P3) • *Eragrostis surreyana* (P3) • *Eremophila magnifica* subsp. *velutina* (P3) • *Euphorbia australis* var. *glabra* (P3) • *Glycine falcata*(P3) • *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (P3) • *Grevillea saxicola* (P3) • *Indigofera gilesii* (P3) • *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • *Iotasperma sessilifolium* (P3) • *Ptilotus subspinescens* (P3) • *Rhagodia* sp. Hamersley(M. Trudgen 17794) (P3) • *Rostellularia adscendens* var. *latifolia* (P3) • *Sida* sp. Hamersley Range (K. Newbey 10692) (P3) • *Solanum albostellatum* (P3) • *Stackhousia clementii* (P3) • *Swainsona thompsoniana* (P3) • *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3) • *Triodia basitricha* (P3) • *Acacia bromilowiana* (P4) • *Goodenia nuda* (P4) • *Ptilotus mollis* (P4) • *Rhynchosia bungarensis* (P4)	Possible timing limitations – some parts of survey area only able to be sampled during one phase
Koodaideri Iron Ore project – Vegetation and Flora Integration Report (Biota 2012a)	• Intersects survey area in the centre • 67,857 ha	• Consolidation of data from five flora and vegetation surveys in the Koodaideri area • 403 quadrats and 30 relevés, many of which were sampled twice	NA – Desktop study	758 (consolidated from all five survey areas)	16 species: **Aerva javanica,*Bidens bipinnata, *Cenchrus ciliaris, *Cenchrus setiger, *Cenchrus* sp., **Chloris virgata, *Citrullus amarus, *Flaveria trinervia, *Lactuca saligna, *Malvastrum americanum, *Rumex vesicarius, *Setaria verticillata, *Sigesbeckia orientalis, *Sonchus oleraceus, *Tribulus terrestris, *Vachellia farnesiana.*	14 Priority species: • *Acacia subtiliformis* (P3) • *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727) (P3) • *Gymnanthera cunninghamii* (P3) • *Nicotiana umbratica* (P3) • *Rostellularia adscendens* var. *latifolia* (P3) • *Sida* sp. Barlee Range (S. van Leeuwen 1642) (P3) • *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3) • *Vittadinia pustulata* (P3) • *Eremophila magnifica* subsp. *magnifica* (P4) • *Goodenia nuda* (P4) • *Lepidium catapycnon* (P4) • *Ptilotus mollis* (P4) • *Rhynchosia bungarensis* (P4)	No significant limitations reported

Report/Document Title (Author)	Location and Area Surveyed (ha)	Type of Survey/Study and Survey Effort	Survey Dates	No. Native Flora Species Recorded	No. Introduced Species	Features of Conservation Significance / TECs and PECs / Threatened and Priority Species	Survey Limitations
A Vegetation and Flora Survey of the Rio Tinto Rail Duplication – Emu Siding to Rosella Siding Development Areas (Biota 2010a)	• Intersects survey area at several points • 2,145 ha	• Level 2 flora and vegetation survey • 35 quadrats and 3 relevés	5th – 13th May 2008 and 20th July 2008	473	17 species: **Aerva javanica, *Bidens bipinnata, *Cenchrus ciliaris, *Cenchrus setiger, *Chloris virgata, *Citrullus colocynthis, *Crotalaria juncea, *Cucumis* sp., **Cynodon dactylon, *Echinochloa colona, *Flaveria trinervia, *Lactuca* sp., **Malvastrum americanum, *Rumex vesicarius, *Setaria verticillata, *Tribulus terrestris, *Vachellia farnesiana.*	1 TEC: *Themeda* grasslands on cracking clays (Hamersley Station, Pilbara) (VU) 1 PEC: Four plant assemblages of the Wona Land System (Priority 1-3) 4 Priority species: • *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • *Rhagodia* sp. Hamersley (M. Trudgen 17794) (P3) • *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3) • *Goodenia nuda* (P4)	No significant limitations reported
Galah, Gull, Ibis-Koala and Rosella Rail Sidings Native Vegetation Clearing Permit Report (Biota 2010b)	• Intersects survey area in the north and south • 3,148 ha	• Desktop review, collation of previous data from 6 detailed surveys in the Sidings areas • Site visit / reconnaissance survey	12th – 19th May 2010	574 (from previous data and 2010 survey)	15 species: **Aerva javanica, *Bidens bipinnata, *Cenchrus ciliaris, *Cenchrus setiger, *Chloris virgata, *Citrullus colocynthis, *Cucumis* sp, **Cynodon dactylon, *Echinochloa colona, *Malvastrum americanum, *Parkinsonia aculeata, *Rumex vesicarius, *Trianthema portulacastrum, *Tribulus terrestris, *Vachellia farnesiana.*	4 Priority species recorded: • *Astrebla lappacea* (P3) • *Rhagodia sp. Hamersley*(M. Trudgen 17794) (P3) • *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (P3) • *Goodenia nuda* (P4)	Drier than usual conditions during 2010 survey
Ti Tree Rail Construction Camp: Native Vegetation Clearing Permit Report (Biota 2008a)	• Intersects survey area in the north • 58 ha	• Desktop and site visit / reconnaissance survey • 1 quadrats and 3 relevés	20th March 2008	68	1 species: **Cenchrus ciliaris*	None	No significant limitations reported
A Vegetation and Flora Survey of the Rio Tinto Rail Duplication project – Bellbird Siding to Juna Downs (Biota 2008b)	• Intersects survey area near Tom Price • 8,982 ha	• Level 2 flora and vegetation survey • 28 quadrats	23rd May – 1st June 2008	331	10 species: **Bidens bipinnata,*Cenchrus ciliaris, *Cenchrus setiger, *Chloris virgata, *Datura leichhardtii, *Malvastrum americanum, *Rumex vesicarius,*Setaria verticillata, *Sonchus oleraceus,*Vachellia farnesiana.*	5 Priority species: • *Calotis squamigera* (P1) • *Astrebla lappacea* (P3) • *Goodenia lyrata* (P3) • *Rhagodia* sp. Hamersley (M. Trudgen 17794) (P3) • *Rostellularia adscendens* var. *latifolia* (P3)	Dry conditions

Table 4.4: Previous relevant fauna surveys carried out within the study area.

Report/Document Title (Author)	Location and Size of Area Surveyed (Ha)	Type of Survey/Study and Survey Effort	Survey Dates	Taxonomic Groups Documented	Features of Conservation Significance	Habitat identified that may support fauna of conservation significance for conservation	Survey Limitations
Karratha Tom Price Road (K-TP3 and KTP4a to Rio Access) Northern Quoll Reconnaissance Survey (GHD 2017)	• Adjoining	• Reconnaissance.	26th – 31st July 2017	• Reptiles (5) • Avifauna (11) • Mammals (7)	No conservation significant species were recorded.	• It is unlikely that the Northern Quoll regularly uitlise the study area but may transition through the area during dispersal to surrounding suitable habitat. • Floodplain, low rocky hills and Fortescue River were regarded as marginal habitat for Northern Quoll.	• Single phase reconnaissance survey.
Red Hill Campground (Biota 2016)	• 9.4 km away	• Rare flora survey. • Level 1 fauna survey. • SRE searches.	19th May 2016	• Reptiles (2) • Avifauna (14) • Mammals (1)	• Rainbow Bee-eater	• Potential foraging habitat for Pilbara Leaf-nosed Bat but no suitable denning or roosting areas.	• Survey timing adequate but not optimal for the detection of cryptic species. • No systematic trapping was undertaken in accordance with expectations for Level 1 survey.
West Turner Syncline Section 10 Below Water Table and Satellite Ore Bodies Targeted Terrestrial Fauna Survey (Biota 2015)	• 11.6 km away • 10, 074 ha	• Targeted field survey for threatened vertebrate fauna • Cage traps and large elliotts deployed at 4 locations. • Motion cameras at 7 locations • Searching secondary signs (e.g. scats, tracks)	7th – 13th April 2014	Includes historical records within study area as well as those recorded by field survey: • Amphibians (0) • Reptiles (17) • Avifauna (50) • Mammals (20)	The presence of 1 conservation significant species was confirmed and secondary evidence of 1 other was recorded: • Pilbara Leaf-nosed Bat (VU) • Western Pebble-Mound Mouse (P4) (mound recorded)	• Gorges, gullies and rocky free faces present which may provide potential habitat for the Northern Quoll and Pilbara Olive Python. • Transitory or foraging habitat may be present for Pilbara Leaf-nosed Bat given echolocation records but no evidence of suitable roost caves in study area or wider area.	• Not all sections of the study area were equally ground-truthed or sampled for fauna due to accessibility. • Single phase survey. Additional sampling would augment the number of species recorded.
Solomon Hub Vertebrate Fauna Assessment (Ecologia 2014a)	• 4.1 km away • 183,201 ha	• Single phase Level 2 fauna survey. • Targeted survey for threatened fauna. • 1,120 pitfall trap nights. • 2,792 Cage/Elliott trap nights. • 36 hours avifauna censuses across16 trapping sites and additional opportunistic sites.	Level 2 Survey: 22nd April – 4th May 2014 Targeted Survey: 1st – 11th July 2014	• Amphibians (3) • Reptiles (69) • Avifauna (81) • Mammals (23)	• Pilbara Leaf-nosed Bat • Short-tailed Mouse • Pilbara Barking Gecko • Rainbow Bee-eater • Bush-stone Curlew • Northern Quoll	• Gorges/gullies, drainage lines, hilltops/ridges/plateaux present and known habitat for Northern Quoll and Pilbara Olive Python. • Transitory or foraging habitat may be present for Pilbara Leaf-nosed Bat but no evidence of suitable roost caves in study area or wider area. • Cracking clay habitat suitable for Short-tailed Mouse.	• None listed in report.
Stingray project Terrestrial Vertebrate Fauna Assessment (Ecologia 2014b)	• Overlaps at Mt Brockman Road. • 8, 932 ha	• Single phase Level 2 survey. • 3,672 trap nights (pit traps, funnels, elliott traps and cage traps). • 18 hours of avifauna surveys. • 8.8 hours nocturnal searching.	P1: 3rd – 13th May 2013	• Amphibians (2) • Reptiles (48) • Avifauna (79) • Mammals (21)	5 species of conservation significance were recorded. • Pilbara Leaf-nosed Bat • Ghost Bat • Short-tailed Mouse • Rainbow Bee-eater • Western Pebble Mound Mouse (potentially active mounds)	• Drainage lines utilised as foraging habitat for Pilbara Leaf-nosed Bat present but no suitable roosting habitat. • Cracking clay habitat present which is suitable for Short-tailed Mouse.	• No significant limitations reported on.
Central Pilbara project - Mine Vertebrate Fauna Assessment (Ecologia 2012)	• 2.1 km away • 5,9055 ha	• Two phase Level 2 survey. • 24 systematic trapping locations. • 14,592 trap nights (pit traps, funnels, elliott traps and cage traps) across two phases. • 74.5 hours of avifauna censuses over two phases. • Motion cameras and Ultrasonic recorders • Targeted searches for threatened fauna.	P1: 3rd – 15th March 2011 P2 -1: 25th August – 6th September 2011 and P2-2: 23rd September – 5th October 2011	• Amphibians (4) • Reptiles (84) • Avifauna (100) • Mammals (28)	• Northern Quoll • Pilbara Leaf-nosed Bat • Long-tailed Dunnart • Ghost bat • Western Pebble Mound Mouse • Fork-tailed Swift • Rainbow Bee-eater • Peregrine Falcon • Bushstone Curlew • Pilbara Olive Python • *Anilios ganei* • *Notoscincus butlleri*	• Rocky ridges, breakaways and creekline habitats present which are considered suitable for Northern Quoll denning and foraging. • Major creekline with fringing Eucalypt habitat suitable for Pilbara Leaf-nosed Bat foraging.	• None listed in report.
A Two Phase Fauna Survey of the Hamersley Agriculture project (Biota 2011)	• 18 km away • 3, 018 ha	• Two-phase Level 2 survey • 14 pit tapping transects • 2 funnel trapping transects • 2 elliott trapping transects • Total of 2,508 trap nights • Ultrasonic recorders • SRE targeted searching • 68 avifauna censuses	P1: 25th May – 4th June 2010 P2: 3rd – 13th May 2011	• Amphibians (1) • Reptiles (44) • Avifauna (68) • Mammals (18)	2 fauna of conservation significance were recorded in the study area: • Western Pebble-mound Mouse (P4) (Inactive and active mounds) • Rainbow Bee-eater (M)	• *Themeda* Grassland (TEC) known to occur 3 – 20 km northwest of study area. • While core habitat for Northern Quoll (such as rocky breakaways and gorges) is absent from the study area, secondary, or transitory habitat, including ephemeral rivers and creek lines occur.	• Not all sections of the study area were equally ground-truthed or sampled for fauna due to accessibility.
Tom Price Power Line West Detritals: Two-phase fauna survey (Biota 2009a)	• 17.2 km away • 813 ha	• Two phase Level 2 survey • 10 pitfall trapping sites • 1 funnel trapping line • 2 elliott trap lines • Harp nets • Ultrasonic recorders • SRE targeted searching • 46 avifauna censuses	P1: 17th – 25th September 2007 P2: 3rd – 10th September 2008	• Amphibians (1) • Reptiles (43) • Avifauna (52) • Mammals (14)	1 species of conservation significance was recorded: • Western Pebble-mound Mouse (P4) (mounds and individuals)	• Gorges, gullies and rocky free faces present which may provide potential habitat for the Northern Quoll and Pilbara Olive Python. • Transitory or foraging habitat may be present for Pilbara Leaf-nosed Bat but no evidence of suitable roost caves in study area.	• Not all sections of the study area were equally ground-truthed or sampled for fauna due to accessibility. • Both survey phases were carried out in September so the two-phase survey cannot be considered a seasonal survey.
Rio Tinto Rail Duplication Fauna Assessment: Bellbird Siding to Juna Downs (Biota 2008c)	• Overlaps • 120 km railway line	• 14 pit trapping transects • 38 avifauna censuses • 3 harp net sites, with combined total of 13 nights. • Ultrasonic recorders at 3 sites • Searching secondary signs (e.g. scats, tracks)	6th – 12th May 2008	• Amphibians (2) • Reptiles (33) • Avifauna (67) • Mammals (18)	3 fauna of conservation significance were recorded: • Peregrine Falcon (OS) • Western Pebble-mound Mouse (P4) • Rainbow Bee-eater (M)	• Ghost Bat foraging habitat present but suitable roosting caves have not been observed. • Gilgai clay and cracking clay habitats common, suitable for Short-tailed Mouse. Likely the species would be recorded in a seasonal survey over winter.	• Not all sections of the study area were equally ground-truthed or sampled for fauna due to accessibility.

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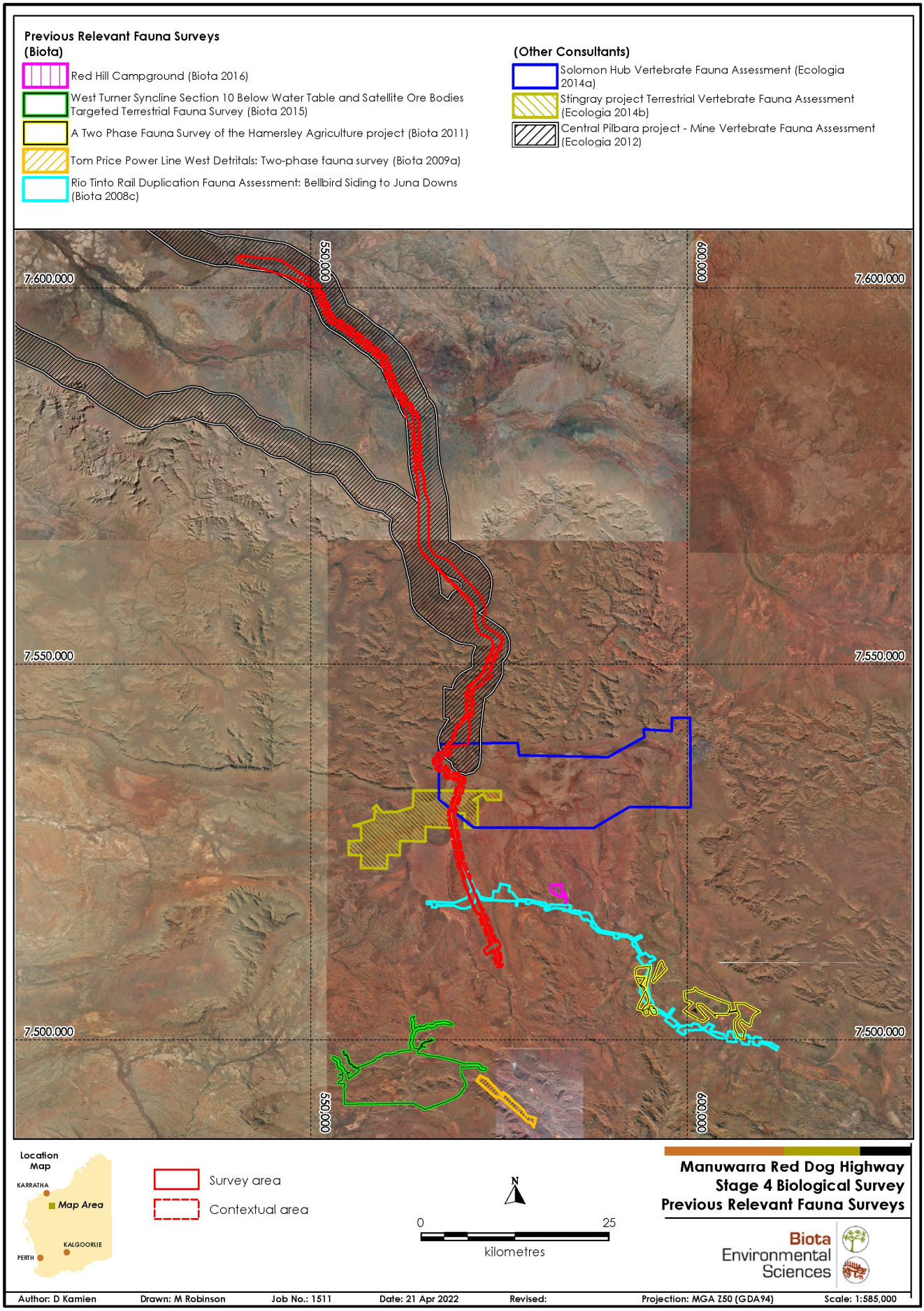

Figure 4.1: Previous relevant fauna surveys carried out within the study area.

4.3 Field Survey

4.3.1 Timing and Personnel

A summary of field sampling mobilisations and survey team personnel are included in Table 4.5, while a summary of the field personnel and their respective roles in the survey is provided in Table 4.6

The flora survey component of this assessment was undertaken over four mobilisations between the 19th April 2020 and 30th March 2021, totalling 30 field days. The fauna survey component was completed over two mobilisations between the 17th April and the 31st of May 2020, totalling 17 field days. The April 2020 surveys assessed the Coolawanyah and Tom Price sections of the survey area and in May 2020 the Hamersley section was surveyed. The mobilisations in October 2020 and March 2021 were to complete additional flora survey effort in the Hamersley and Tom Price sections, due to Main Roads' design amendments of the survey area.

Table 4.5 Summary of field sampling events undertaken during the survey (weather data from Karijini North #5098).

Sampling Dates	Survey Component	Survey Personnel	Min – Max Temperature	Total Rainfall
19th – 27th April 2020	Flora – Coolawanyah and Tom Price sections	Louis de Kock, Rebecca Mason, Brian Morgan, Ayesha Lapinski, Michael Greenham and Sylvie Schmidt	23.3°C – 40.0°C	0 mm
19th – 25th April 2020	Fauna - Coolawanyah and Tom Price sections	Stewart Ford, Jacinta King, Penny Brooshooft and John Graff	23.3°C – 40.0°C	0 mm
22nd – 29th May 2020	Flora - Hamersley section	Louis de Kock, Rebecca Mason, Brian Morgan and Simon Colwill	8.2°C – 26.7°C	34.2 mm (25th with 33 mm)
22nd – 31st May 2020	Fauna - Hamersley section	Stewart Ford and Jacinta King	8.2°C – 27.7°C	34.2 mm (25th with 33 mm)
19th – 26th October 2020	Flora – Tom Price and Hamersley sections	Rebecca Mason and Jacinta King	16.9°C – 39.1°C	0 mm
26th – 30th March 2021	Flora – Tom Price and Hamersley sections	Rebecca Mason and Ayesha Lapinski	21.7°C – 38.8°C	0 mm

Table 4.6 Flora and Fauna survey team qualifications and experience.

Name		Position at Biota	Survey Role	Qualification	Years Experience
Flora	Louis de Kock	Specialist Taxonomist	Flora (project manager)	BSc.	12
	Rebecca Mason	Botanist	Flora (field team lead)	BSc.	9
	Brian Morgan	Senior Botanist	Flora (team member)	BSc. Hons	20
	Simon Colwill	Botanist	Flora (team member)	BSc.	9
	Ayesha Lapinski	Botanist	Flora (team member)	Grad. Dip. Sc.	3
	Michael Greenham	Biologist	Flora (team member)	BSc.	20
	Sylvie Schmidt	Biologist	Flora (team member)	BSc. Hons; PhD	9
Fauna	Stewart Ford	Principal Zoologist	Fauna (project manager)	BSc. Hons; PhD	19
	Jacinta King	Zoologist	Fauna (field team lead)	BSc. Hons	9
	Penny Brooshooft	Zoologist	Fauna (team member)	BSc. Hons	10
	John Graff	Zoologist	Fauna (team member)	BSc. Hons	10

4.3.2 Climate

Long-term climate data (rainfall from 1972 – 2011, temperature data from 1997 – 2011) were obtained from the Bureau of Meteorological (BOM) weather station in Tom Price (station number 5072), located approximately 15 km southwest of the survey area. Temperature and rainfall data for the year preceding and including the survey period were obtained from BOM weather station at Karijini North (station number 5098). Figure 4.2 illustrates the average monthly minimum and maximum temperatures and rainfall in the year preceding the survey compared to the long-term averages.

Maximum and minimum temperatures were higher than long-term averages in all months for the year preceding the survey, with the exception of maximum temperature in February 2021 (Figure 4.2). The wet season, between January and March 2020, received lower than average rainfall overall, however above average rainfall was received in January and February, preceding the primary survey mobilisations by 4-8 weeks, which provides for optimal sampling. Very high rainfall was also received in December 2020 and February 2021, which provided optimal sampling conditions for the final flora survey completed in March 2021.

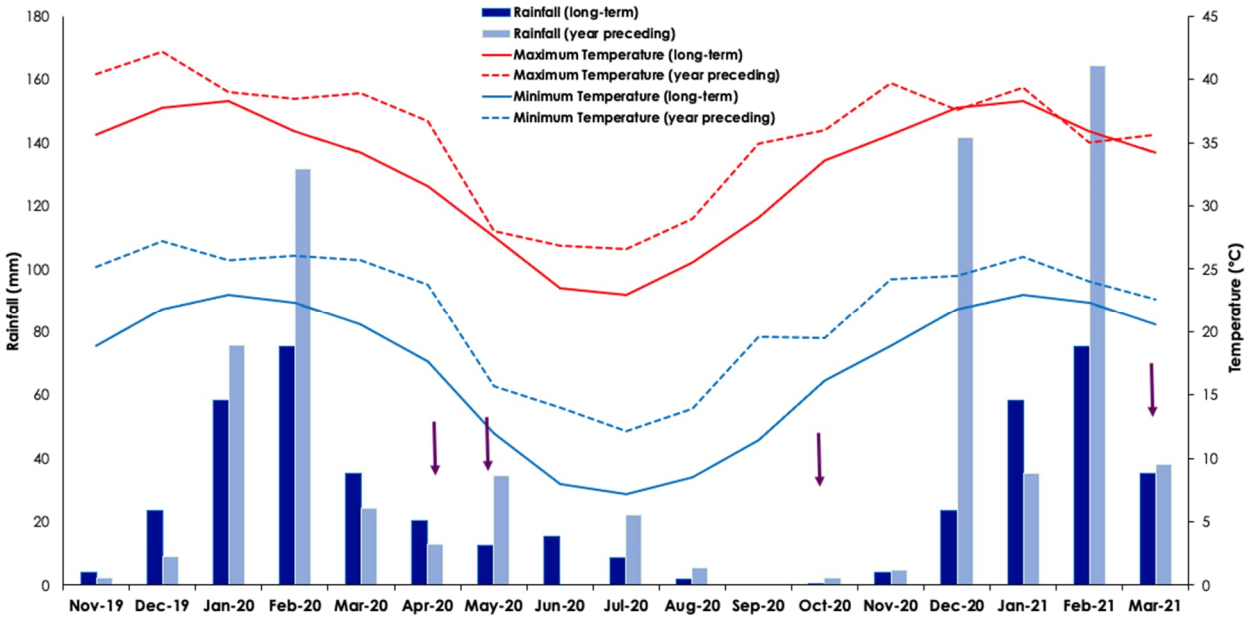

Figure 4.2 Climate and weather graph depicting long-term and monthly averages for one year preceding and during survey timing . (Long-term temperature data 1997 – 2011, rainfall data 1972 – 2011; arrows indicate field mobilisations).

4.4 Detailed and Targeted Flora and Vegetation Survey

4.4.1 Floristic Data Collection: Assessment of Quadrats and Relevés

Indicative sites were selected prior to the field survey, based on the broad habitats and vegetation types apparent. Once in the field, the actual locations of the sites were adjusted as necessary (e.g. to be placed in an area more representative of the broader vegetation type, to avoid recently burnt areas, etc.).

Sampling sites were established as either:

1. Quadrats: bounded floristic sampling sites. The standard for the Pilbara bioregion comprises a 50 m x 50 m square (or a modified shape with an equivalent area). Quadrats were measured out using optical squares and measuring tapes, and permanently marked with a steel fence dropper at each corner; or

2. Relevés: unbounded floristic sampling sites with a similar search area to a quadrat. Relevés were typically used where the target vegetation was too small or too narrow to effectively establish a quadrat. The relevés during the current survey were thoroughly surveyed for flora, but were not permanently marked.

The following parameters were recorded for all quadrats and relevés:

1. Location coordinates[3] (±2 m) were recorded using a hand-held Global Positioning System (GPS) unit; coordinates were recorded for all four corners of a quadrat. A central point was recorded as a minimum for the relevés, with a start and end point recorded for relevés that were undertaken in linear habitats such as long thin creek lines;
2. Habitat: A description of the landform and habitat;
3. Soil: A broad description of the soil and any stony surface mantle or rocky outcropping;
4. Fire History: An estimate of time since last fire;
5. Disturbance Details: Vegetation condition was ranked according to the scale from EPA (2016a), which was based on that developed by Trudgen (1988); this considered evidence of grazing, physical disturbance, weed invasion etc. (see Appendix 3);
6. Vegetation Description: A broad description based on the height and estimated cover of dominant species after Aplin's (1979) modification of the vegetation classification system of Specht (1970) (see Appendix 3);
7. Flora Species: The estimated percentage foliar cover of each flora species present within the quadrat, or in the vicinity of the relevé (within a ~30 m radius of the centre point); and
8. Photograph: A representative digital photograph of the vegetation was taken, typically from the north or northwest corner of the quadrat or the central point of a relevé.

The study area was sampled with 137 quadrats and 19 relevés (Figure 4.3 and Figure 4.4). A minimum of three sampling sites was established within each vegetation type where possible, consistent with EPA (2016a) guidance detailed flora and vegetation surveys.

4.4.2 Vegetation Description and Mapping

The scale of vegetation mapping is influenced by a range of factors including spatial characteristics of the survey area (e.g. the size and variety of habitats present), and other factors such as the scope of the survey and the availability of current, high-resolution aerial photography. The vegetation types for this study were described at the association level (level V as per the National Vegetation Information System; NVIS)[4]. This level of detail would be considered fine-scale (intra-locality) delineation of vegetation types as per EPA (2016a). In general, minor variations in the vegetation were not clearly defined on aerial photography or were not practical to accurately map in the field, these minor variations were incorporated into the surrounding 'parent' vegetation type.

Vegetation sampling focussed on quadrat and relevé sampling. Mapping notes were also utilised to mark the boundaries of vegetation types in the field to allow for more accurate delineation of these boundaries following the survey. Mapping notes were used as an additional way to define vegetation types when it was not practical to establish quadrats or relevés in the area. Sampling was limited to the survey area only; vegetation mapping over the context area was prepared by extrapolation only. Vegetation types and boundaries were subsequently verified using both the data collected in the field and digital imagery. Each vegetation type mapped for this assessment was given a unique alphanumeric code, comprising a character representing the broad landform group (i.e. 'P' for plain, 'H' for hills, and 'D' for drainage), followed by a number sequence.

Vegetation maps were created and consolidated using Geographical Information System (GIS) software (QGIS and MapInfo Professional). All maps in this report were produced by Biota's GIS team of Melissa Robinson, Brandon King (GIS Cartographers) and Paul Sawers (GIS Manager).

[3] All coordinates presented in this report are in GDA94 datum and MGA51 projection.

[4] http://www.environment.gov.au/land/publications/nvis-taxonomic-review/introduction#del

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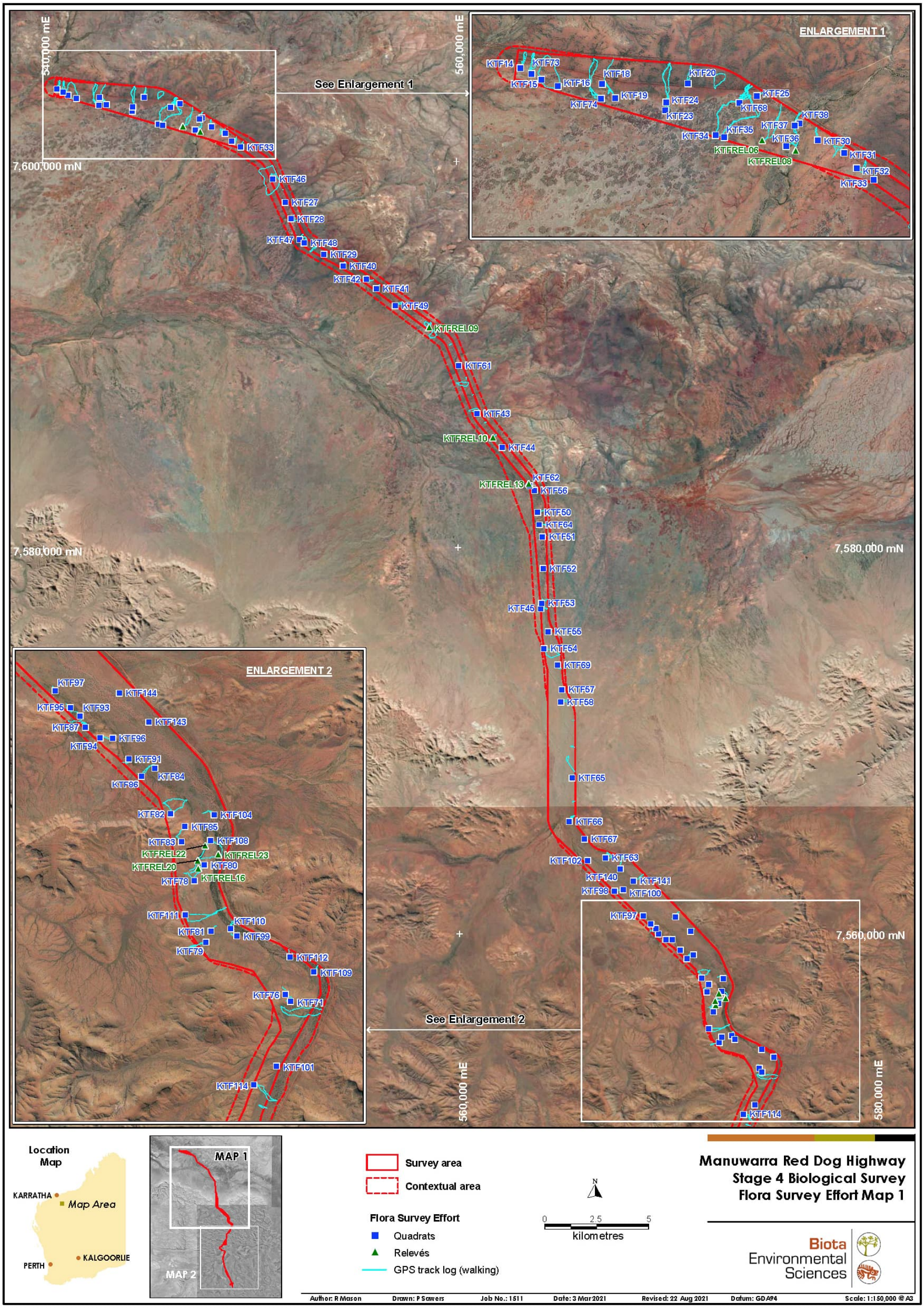

Figure 4.3: Overview of quadrat and relevés sampled within the survey area (Map 1).

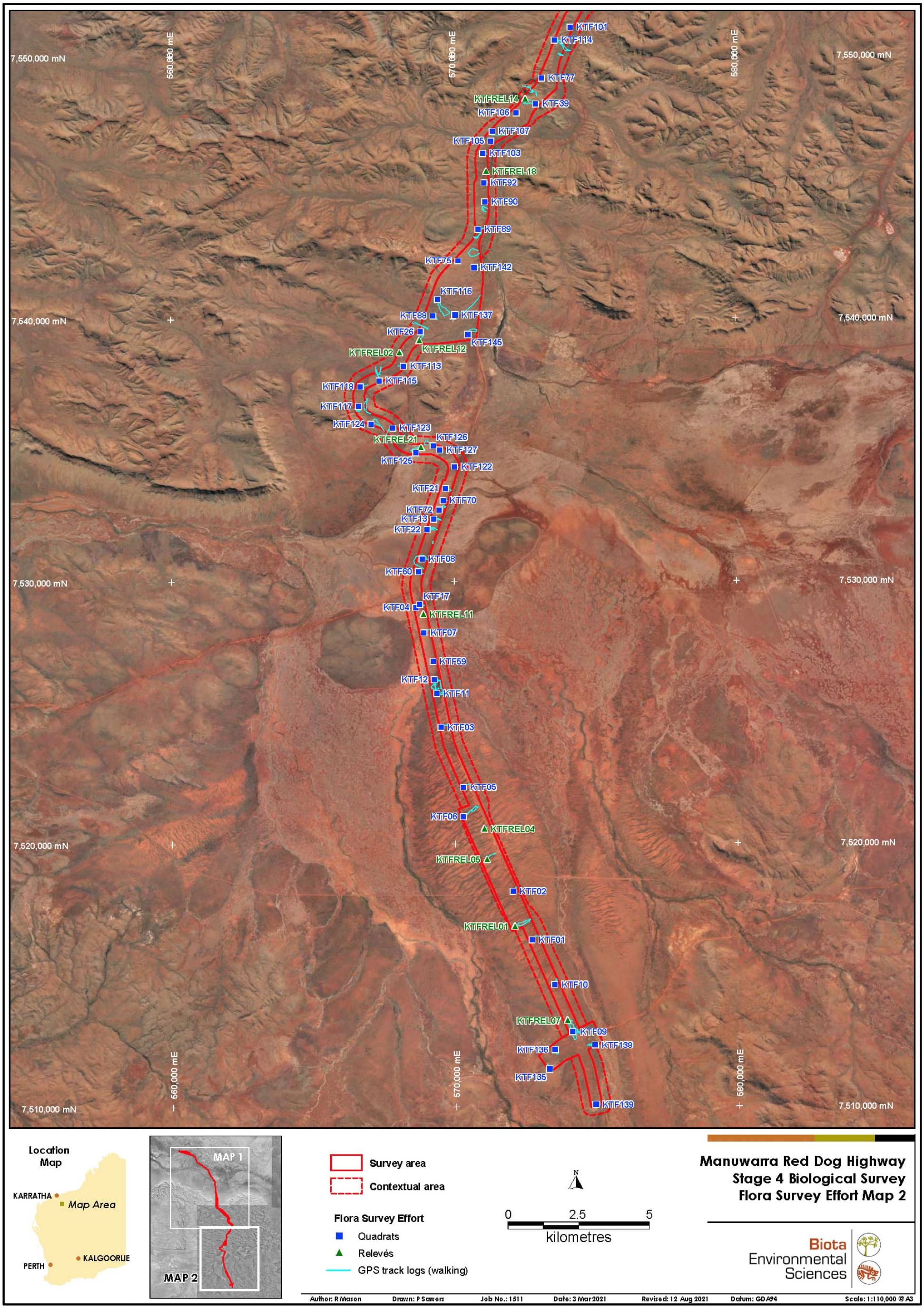

Figure 4.4: Overview of quadrat and relevés sampled within the survey area (Map 2).

4.4.3 Searches for Significant Flora and Weeds

Targeted, non-systematic searches were conducted in areas considered to be potential habitat for significant flora (i.e. Threatened and Priority listed species). The distance between botanists during traverses varied depending on the terrain, but botanists were approximately spaced 50 to 100 m apart.

Locations of species of significance or unknown taxa were recorded using a hand-held GPS unit. The number of individuals and extent of the population were also recorded for each location, together with the habitat and associated species. Locations of introduced flora species (weeds) were also recorded during the foot traverses, along with an estimate of their population size. These latter searches focussed on weeds of particular management concern; i.e. Declared Pests under the WA *Biosecurity and Agriculture Management Act 2007* (the BAM Act) and Weeds of National Significance (WoNS).

4.4.4 Specimen Identification, Nomenclature and Data Entry

Common taxa that were well known to the survey botanists were confirmed in the field. A voucher specimen was collected if the taxon was either difficult to determine without closer examination, belonged to a recognised species complex, was poorly collected or otherwise unusual. Each voucher specimen was assigned a unique internal code to facilitate tracking of data. Specimens were pressed in the field and then returned to Perth for further examination and confirmation.

Voucher specimens were identified using all available flora keys, comparison with reference collections of specimens at the WA Herbarium, and in-house at Biota. Specimens were identified by Biota botanists and confirmed by Michi Maier (Principal Botanist) and Pierre-Louis de Kock (Senior Botanist / Specialist Taxonomist). Fifty-five specimens could not be resolved to species and were lodged with the WA Herbarium for identification by specialist taxonomists.

Nomenclature and conservation significance rankings used in this report are consistent with the current listing of WA flora recognised by the WA Herbarium on FloraBase[5] at the time of preparation of this report.

All data were entered into a Microsoft Access database maintained at Biota, which was developed by Ted Griffin at the request of Malcolm Trudgen (M.E. Trudgen & Associates).

4.4.5 Analysis of Flora Data

4.4.5.1 Sampling Adequacy

Plots of species accumulation curves can be used to assess sampling adequacy. When a survey has sampled an adequate proportion of the floristic assemblage, the curve should plateau and approach asymptote. EstimateS (Colwell 2013) was used to calculate smoothed species accumulation curves based on 999 random permutations of the species data; only quadrat and relevé data were used (opportunistic records were excluded).

Species accumulation curves alone cannot be reliably used to extrapolate predicted species richness for future biological sampling. In order to estimate asymptotic richness (i.e. an extrapolation of species richness) for the incidence data (i.e. presence, rather than abundance data), the Chao 2 Mean and ICE Mean estimators were calculated using EstimateS.

4.4.5.2 Floristic Analysis

To assist with defining the vegetation types from the survey area, hierarchical clustering analyses were conducted in PRIMER v6 (Clarke and Gorley 2006) to investigate the similarity of sampling sites based on their floristic composition.

[5] http://florabase.dpaw.wa.gov.au

A combined species list was generated from all sites in the data set from the survey. Taxon names and records were then rationalised as follows:

- Species that were present at only a single site were removed to reduce 'noise' in the data set.
- Taxa that could potentially refer to more than one entity (e.g. "*Sida* sp.") were removed.
- Some taxa were merged, where considered appropriate (e.g. records of sterile material of *Evolvulus alsinoides* were merged with both identified varieties).
- All weeds were removed with the exception of **Cenchrus ciliaris* and **C. setiger;* these were merged into a single taxon, "**Cenchrus* spp."

Two analyses were run, using:

1. Percent cover data (square-root transformed); and
2. Presence-absence data.

In each case, the Bray-Curtis measure of similarity was used to produce a similarity matrix and the group average method cluster analysis was used to determine floristic groups. Statistically different groups were identified through similarity profile analysis (SIMPROF). The similarity percentage test (SIMPER) was used to determine which species contributed most to the similarities between groups.

Results were investigated through outputs including dendrograms (tree diagrams) of site similarity, and Non-metric Multi-Dimensional Scaling plots (NMDS plots).

4.5 Basic and Targeted Fauna Sampling Methods

A basic and targeted fauna survey of the survey area was undertaken in order to verify the accuracy of the desktop study, broadly characterise the fauna assemblage and collect data on species of significance. This involved describing and mapping fauna habitats and selective low-intensity sampling.

An initial assessment of the entire length of the survey area was undertaken to determine survey locations for each of the threatened fauna species identified from the desktop study (listed in Table 4.7). This was based on factors such as recent fire, location of temporary or permanent water bodies and presence of core habitat for likely species. Following this initial appraisal, targeted searches were undertaken in areas of potentially suitable habitat for conservation significant fauna, and a more detailed habitat assessment was conducted along the length of the survey area. During the second field mobilisation, which focused on the Hamersley section of the survey area, a helicopter was used due to limited access and the size of the survey area. From the helicopter we were able to gain a broader understanding of the available fauna habitats types and optimise selection of trapping and search locations.

A range of search methods were used to target conservation significant fauna species identified as potentially occurring, including; diurnal and nocturnal foot traverses searching for potential habitat, individuals and secondary evidence; and the deployment of passive recording equipment including ultrasonic and audible automated recording units (ARUs) and motion cameras (Table 4.7). All fauna species encountered opportunistically within the survey and contextual areas throughout the survey were also recorded. Each search method employed simultaneously targeted multiple species, as outlined in Table 4.7, and effort was expended in the habitats mostly likely to support the species. An overview of the distribution of fauna sampling effort within the survey area is shown in Figure 4.5 and Figure 4.6.

The field survey was completed under licence BA27000237 issued by DBCA (Appendix 4). More detailed methodology for each sampling technique is provided in Sections 4.5.1 to 4.5.6.

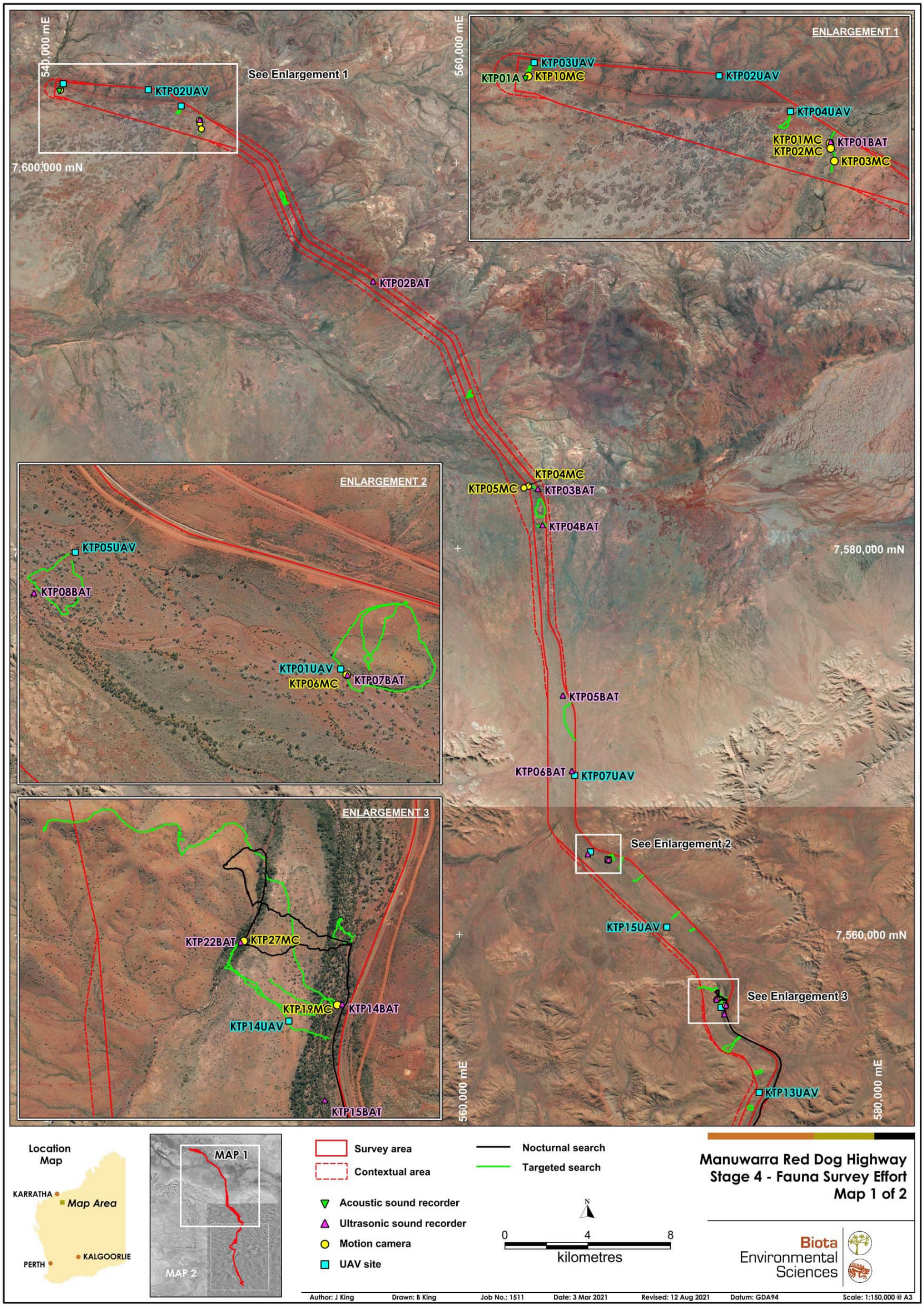

Figure 4.5: Overview of fauna sampling effort within the survey area (Map 1).

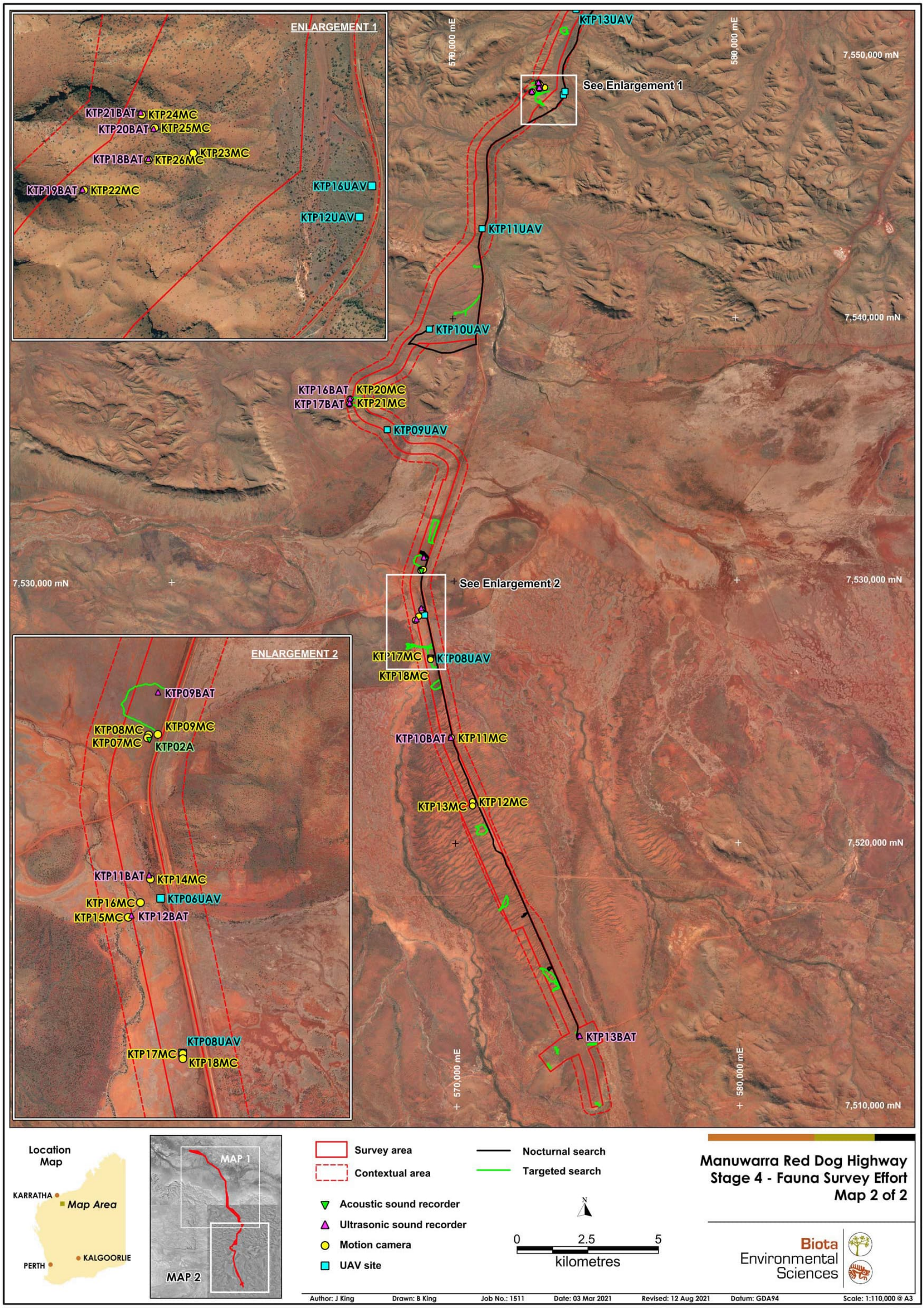

Figure 4.6: Overview of fauna sampling effort within the survey area (Map 2).

Table 4.7 Conservation significant fauna survey methodologies employed during the survey.

Species	Conservation Status		Passive Recording			Ultrasonic ARUs	Audible ARUs	Opportunistic
	State	Federal	Diurnal Searches	Nocturnal Searches	Motion Cameras			
Mammals								
Northern Quoll *Dasyurus hallucatus*	EN	EN	•		•			
Bilby *Macrotis lagotis*	VU	VU	•					
Ghost Bat *Macroderma gigas*	VU	VU	•			•		
Pilbara Leaf-nosed Bat *Rhinonicteris aurantia*	VU	VU				•		
Long-tailed Dunnart *Sminthopsis longicaudatus*	P4	-			•			
Spectacled Hare-wallaby *Lagorchestes conspicillatus leichardti*	P4	-		•				
Short-tailed Mouse *Leggadina lakedownensis*	P4	-			•			
Birds								
Night Parrot *Pezoporus occidentalis*	CR	CR					•	
Grey Falcon *Falco hypoleucos*	VU	-						•
Fork-tailed Swift *Apus pacificus*	MI	MI						•
Peregrine Falcon *Falco peregrinus*	OS	-						•
Reptiles								
Pilbara Olive Python *Liasis olivaceus barroni*	VU	VU	•	•	•			
Pilbara Barking Gecko (*Underwoodisaurus seorsus*)	P2			•				
Ctenotus uber	P2		•					•
Notoscincus butleri	P4		•					•

4.5.1 Diurnal Traverses

Targeted foot traverses were undertaken to search for individuals, secondary evidence and potential habitat for multiple significant taxa (Table 4.8). These searches were undertaken at 26 locations within the survey and contextual areas, totalling over 53 km and 154 hours of search effort (Table 4.8). These traverses were used to map fauna habitats within the survey area and contextual areas, identify suitable habitat in which to position motion cameras, ultrasonic and acoustic sound recorders. Effort was focused on habitat types such as creeklines, gullies and rocky breakaways, searching for secondary signs of Northern Quoll

Table 4.8 Targeted diurnal search effort in different fauna habitat types within the survey area.

Track	Date	No. Observers	Duration (min)	Total Effort (min)
KTP01TS	20/04/2020	2	118	236
KTP02TS	20/04/2020	2	82	164
KTP03TS	20/04/2020	2	30	60
KTP04TS	20/04/2020	2	22	44
KTP05TS_A	20/04/2020	2	126	252
KTP05TS_B	21/04/2020	2	132	264
KTP06TS	21/04/2020	2	122	244
KTP07TS	21/04/2020	2	130	260
KTP08TS	21/04/2020	2	42	84
KTP09TS	21/04/2020	2	136	272
KTP10TS_A	23/04/2020	1	34	34
KTP10TS_B	22/04/2020	2	64	128
KTP11TS	23/04/2020	2	314	628
KTP12TS	23/04/2020	2	138	276
KTP13TS	24/04/2020	2	200	400
KTP14TS	24/04/2020	2	118	236
KTP15TS	25/04/2020	2	115	230
KTP16TS_A	24/04/2020	1	36	36
KTP16TS_B	25/04/2020	2	142	284
KTP17TS	26/04/2020	2	1920	3840
KTP18TS	26/04/2020	2	148	296
KTP20TS	23/04/2020	2	58	116
KTP21TS_A	24/04/2020	2	96	192
KTP21TS_B	23/04/2020	2	120	240
KTP22TS	23/04/2020	2	98	196
KTP23TS	23/04/2020	2	136	272
			Total Effort:	9,284

4.5.2 Nocturnal Foot Traverses

Nocturnal foot traverses targeting amphibians and reptile species such as the Pilbara Olive Python were carried out at seven locations with 2 – 4 people and totalling over 66 hours of search effort.

Conditions at night were relatively cool, particularly during the May 2020 mobilisation and reptile activity was subsequently low. Most of the survey effort was concentrated near water bodies identified during the day, creeklines and gullies, while the remaining effort was applied to varying habitat types for completeness of the survey species list. Cracking clay in the Themeda grassland was surveyed in search of the Short-tailed Mouse.

Table 4.9 Nocturnal targeted search effort carried out within the survey area.

Track	Date	No. Observers	Duration (min)	Total Effort (min)
KTP01N	21/04/2020	4	256	1024
KTP02N	21/04/2020	4	152	608
KTP03N	23/04/2020	4	184	736
KTP04N	23/04/2020	4	88	352
KTP05N	23/04/2020	4	172	688
KTP06N	31/05/2020	2	45	90
KTP07N	31/05/2020	2	242	484
			Total Effort:	3,982

4.5.3 Remote Cameras

Reconyx infrared motion cameras were deployed at 27 locations within the survey area and contextual area, totalling 95 trap nights (Table 4.10). Twenty-six of the cameras were left out for between one and four nights while the remaining camera was left out for a month between field mobilisations. Two motion cameras were positioned just outside the survey area boundary in the context area, as large caves representing suitable habitat for multiple conservation significant species were discovered and it is expected that if present they would utilise adjacent habitat within the survey area boundary. Two other cameras were positioned in the context area due to changes to the survey area boundary, including one camera (KTP19MC), which was left out between mobilisations.

Table 4.10 Location of motion cameras deployed within the survey and contextual areas.

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Deployed	Effort (nights)
Coolawanyah	KTP01MC	547586	7602273	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP02MC	547601	7602147	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP03MC	547685	7601843	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP04MC	563433	7583284	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP05MC	563207	7583195	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP06MC	567204	7563859	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-20	2
	KTP10MC	540875	7603879	Floodplain	2020-04-20	2
Tom Price	KTP07MC	568830	7530472	Grassland plains with cracking clay.	2020-04-21	4
	KTP08MC	568821	7530442	Grassland plains with cracking clay.	2020-04-21	3
	KTP09MC	568922	7530477	Grassland plains with cracking clay	2020-04-21	3
	KTP11MC	569880	7524085	Man-made water bodies	2020-04-22	3
	KTP12MC	570609	7521622	Grove mulga	2020-04-22	3
	KTP13MC	570615	7521458	Grove mulga	2020-04-22	3
	KTP14MC	568843	7528951	Eucalyptus fringed major drainage lines and associated tributaries.	2020-04-22	3
	KTP15MC	568625	7528551	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-22	2
	KTP16MC	568744	7528705	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-22	2
	KTP17MC	569153	7527102	Floodplain	2020-04-24	1
	KTP18MC	569153	7527049	Floodplain	2020-04-24	1

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Deployed	Effort (nights)
Hamersley	KTP19MC	572816	7556275	Melaleuca forest/major drainage lines	2020-04-25	30
	KTP20MC	566340	7536993	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-23	3
	KTP21MC	566317	7536807	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-23	3
	KTP22MC	572841	7548668	Mesas, caves, cliffs and free faces	2020-05-26	3
	KTP23MC	573281	7548828	Rocky gullies	2020-05-26	3
	KTP24MC	573074	7548993	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-26	3
	KTP25MC	573126	7548936	Rocky gullies	2020-05-26	3
	KTP26MC	573100	7548798	Rocky gullies	2020-05-23	3
	KTP27MC	572396	7556590	Melaleuca forest/major drainage lines	2020-05-29	2
					Total Effort:	95

4.5.4 Ultrasonic Sound Recorders

SongMeter4BAT (SM4BAT) ultrasonic ARUs were used to detect bat species within the survey and contextual areas, including the conservation significant Ghost Bat (*Macroderma gigas*) and Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form). The units were programmed following the manufacturer's recommendations for selectable filters and triggers, jumper and audio settings for bat detection (Wildlife Acoustics 2010). Bat sampling was undertaken at 22 sites for a period of one to three nights at each site (Table 4.11).

Bat echolocation call analysis was conducted by Dan Kamien of Biota using Kaleidoscope Pro software (version 4.3.2), and following methods recommended by the Australasian Bat Society (2006) in conjunction with available reference data (Churchill 2008, McKenzie and Bullen 2009). Only sequences containing good quality search phase calls were considered for identification.

Table 4.11 Location of ultrasonic sound recorders deployed within the survey and contextual areas.

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Deployed	Effort (nights)
Coolawanyah	KTP01BAT	547602	7602293	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-19	3
	KTP02BAT	555951	7593873	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-19	3
	KTP03BAT	563881	7583117	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-19	3
	KTP04BAT	564094	7581221	Mulga woodland plain	2020-04-19	3
	KTP05BAT	565028	7572372	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-19	3
	KTP06BAT	565453	7568472	Man-made water bodies	2020-04-19	3
	KTP07BAT	567206	7563856	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-21	3
	KTP08BAT	566199	7564144	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-22	2
Tom Price	KTP09BAT	568927	7530917	Grassland plains with cracking clay	2020-04-22	3
	KTP10BAT	569859	7524061	Man-made water bodies	2020-04-22	3
	KTP11BAT	568830	7528986	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-22	3
	KTP12BAT	568654	7528564	Eucalyptus fringed major drainage lines and associated tributaries	2020-04-22	2
	KTP13BAT	574357	7512691	Man-made water bodies	2020-04-22	3

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Deployed	Effort (nights)
Hamersley	KTP14BAT	572839	7556277	Melaleuca forest/major drainage lines	2020-04-24	1
	KTP15BAT	572759	7555815	Melaleuca forest/major drainage lines	2020-04-24	1
	KTP16BAT	566340	7536992	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-23	3
	KTP17BAT	566325	7536812	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-23	3
	KTP18BAT	573100	7548801	Rocky gullies	2020-05-23	3
	KTP19BAT	572834	7548669	Mesas, caves, cliffs and free faces	2020-05-26	3
	KTP20BAT	573122	7548931	Rocky gullies	2020-05-26	3
	KTP21BAT	573070	7549001	Rocky hills and slopes with low open spinifex and scattered trees	2020-05-26	3
	KTP22BAT	572382	7556581	Melaleuca forest/major drainage lines	2020-05-29	2
					Total Effort:	59

4.5.5 Acoustic Recording Units

Two ARUs were positioned in the most prospective habitat available within the survey area for Night Parrot (Table 4.12). Both were positioned in areas of grassland with cracking clay, one of which was in the Themeda Grassland TEC. The combined survey effort totalled seven nights for the Coolawanyah and Tom Price sections. There was no suitable habitat for Night Parrot in the Hamersley section and therefore no acoustic sound recorders were deployed.

Table 4.12 Location of acoustic recording units deployed in the survey and contextual areas.

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Deployed	Effort (nights)
Coolawanyah	KTP01A	540806	7603831	Floodplain	2020-04-20	2
Tom Price	KTP02A	568839	7530420	Grassland plains with cracking clay	2020-04-20	5
					Total Effort:	7

4.5.6 UAV

An unmanned aerial vehicle (UAV or drone) was used throughout the survey area as a method to quickly assess distant caves for structural composition and viability to support Pilbara Leaf-nosed Bat, Ghost Bat or Northern Quoll and to determine those worthy of closer inspection on foot. The drone was also used to obtain a broad overview of the vegetation structure and fauna habitat types present within the survey area, including to take photos of representative habitat types. Drone deployment locations and purpose are outlined in Table 4.13.

Table 4.13 Locations of UAV deployment in the survey area, purpose and effort.

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Date
Coolawanyah	KTP01UAV	567184	7563880	Eucalyptus fringed major drainage lines and associated tributaries	20/04/20
	KTP02UAV	545118	7603880	Eucalyptus fringed major drainage lines and associated tributaries	20/04/20
	KTP03UAV	541004	7604201	Mixed Acacia shrublands	20/04/20
	KTP04UAV	546705	7603027	Acacia xyphophylla shrublands over cracking clay	22/04/20
	KTP06UAV	565591	7568265	Floodplain	23/04/20
	KTP07UAV	566333	7564286	Eucalyptus fringed major drainage lines and associated tributaries	23/04/20
Tom Price	KTP05UAV	568944	7528749	Mulga woodland plain	22/04/20
	KTP08UAV	569151	7527108	Mixed Acacia shrublands	24/04/20

Survey area section	Site	Easting (mE)	Northing (mN)	Fauna Habitat	Date
Hamersley	KTP09UAV	567653	7535817	Mixed Acacia shrublands	28/05/20
	KTP10UAV	569164	7539638	Mixed Acacia shrublands	28/05/20
	KTP11UAV	571048	7543472	Rocky hills and slopes with low open spinifex and scattered trees	28/05/20
	KTP12UAV	573948	7548547	Eucalyptus fringed major drainage lines and associated tributaries	28/05/20
	KTP13UAV	574413	7551785	Rocky hills and slopes with low open spinifex and scattered trees	28/05/20
	KTP14UAV	572598	7556199	Mixed Acacia shrublands	28/05/20
	KTP15UAV	569997	7560355	Floodplain	28/05/20
	KTP16UAV	574000	7548682	Eucalyptus fringed major drainage lines and associated tributaries	29/05/20

4.5.7 Fauna Habitat Mapping

Fauna habitat mapping was undertaken using a functional, ecological perspective on fauna use of the landscape (Biota 2013). Habitat elements of note included landscape type, soil type, surface material, landform, any notable microhabitats present, any disturbance (e.g. fire, weeds, grazing, evidence of introduced fauna), broad vegetation types and representative photographs. Site descriptions were then considered in the context of the detailed vegetation mapping descriptions provided in Section

Broad fauna habitat areas were mapped in the field using a combination of foot traverses, vehicle traverse of the existing road, and UAV photography. Habitats were described and mapped based on areas within the survey and contextual areas that would be likely to offer a range of ecological niches for a suite of different species, with consideration of landform, substrate and vegetation. It is important to note that each broad habitat area defined here cannot be used to map the distribution of any one species or group of taxa, as many species use a range of ecological niches for specific activities such as foraging, commuting, breeding and nesting. The resultant habitat map may therefore be viewed as a guide to delineate areas that may be of differing ecological importance to the fauna species utilising the survey area.

Quality of fauna habitat was also considered according to the criteria defined in Table 4.14.

Table 4.14: Criteria used to assess fauna habitat quality.

Habitat Quality	Criteria
Excellent	Minimal to no modification of habitat from intense/frequent fires, trampling/grazing by introduced herbivores or weed invasion.
Good	Some habitat modification from intense/frequent fires, trampling/grazing by introduced herbivore and/or weed invasion.
Poor	Habitat mostly or completely modified by intense/frequent fires, trampling by introduced herbivores, invasion of weeds and/or clearing.

4.5.8 Fauna Nomenclature

As per the relevant Technical Guidance (EPA 2016d), species nomenclature for mammals, reptiles and amphibians follows that of the WAM fauna taxonomic checklist, which was last revised in April 2020. Species nomenclature for avifauna follows that of the International Ornithological Congress (IOC) World Bird List[6].

6 https://www.worldbirdnames.org/

4.6 Survey Limitations

In accordance with the EPA Technical Guidance for 'Flora and Vegetation Surveys for Environmental Impact Assessment' (EPA 2016a) and 'Terrestrial Vertebrate Fauna for Environmental Impact Assessment' (EPA 2020), potential constraints and limitations of this biological survey of the survey and contextual areas are addressed in Table 4.15.

Table 4.15: Potential constraints and limitations of the biological survey.

Potential Constraint	Statement of Limitations
1. Availability of contextual information at a regional and local scale	• Extensive previous survey work has been undertaken in the region and contextual information was readily available. • Contextual information was not considered a limitation.
2. Competency/ experience of the team carrying out the survey, including experience in the bioregion surveyed	• All field personnel were suitably qualified and have extensive experience in the Pilbara region. • Competency was not considered to be a limitation.
3. Proportion of species recorded and/or collected, any identification issues	• All vascular flora encountered in the survey area were recorded, with collections made of any taxa that were unusual, or difficult to identify without microscopic examination. The majority (94%) of flora taxa were able to be identified to the lowest level possible within the current taxonomic framework. • The basic and targeted fauna survey recorded species via targeted and opportunistic methods, and verified habitats with the potential to support significant species; the targeted surveys focused on recording evidence of significant species. An inventory survey of all fauna species was not completed, as this would require systematic trapping as part of a larger detailed survey, which was not required to meet the objectives of the current survey. • The recent taxonomic revision of the genus *Gehyra* in the Pilbara (Doughty et al. 2018, Kealley et al. 2018) meant some *Gehyra* individuals recorded were difficult to identify with certainty. All other fauna species observed within the study area were identified with certainty. • Overall, identification and proportion of fauna recorded were not considered to be a limitation given the objectives of this survey.

Potential Constraint	Statement of Limitations
4. Appropriate area fully surveyed (effort and extent)	• The survey area was surveyed thoroughly from both a fauna and flora perspective, with numerous sampling sites assessed and foot traverses completed through the majority of the survey area. • Flora site sampling was completed through all representative habitats in the survey area. At least three replicated sites have been sampled in each vegetation type except for six vegetation types that had limited representation in the survey area: o Cracking clay unit C5 – one site o Drainage unit D3 – two sites o Hills unit H4 – one site o Plains units P4 and P8- one site and two sites respectively o Mulga unit M4 – two sites • The survey comprised a single phase of sampling. Seasonal sampling would, however, undoubtedly lead to additional flora taxa being recorded. • This study targeted specific fauna species of significance. The study comprehensively assessed the occurrence of habitat for these species within the survey and contextual areas. • Survey effort and extent for the survey was not considered to be a limitation.
5. Access restrictions within the survey and contextual areas	• The Coolawanyah and Tom Price sections of the survey area were readily accessible being located adjacent to the existing rail access road. Portions of the Hamersley section was accessed via the use of a helicopter, and the remainder was accessed via road and on foot. • Access was not considered to be a limitation.
6. Survey timing, rainfall, season of survey	o The fauna surveys were undertaken during April and May, which is suitable timing for detecting all terrestrial fauna groups in the Pilbara. However, warmer weather may have been more conducive to reptile activity. o The survey area had received adequate rainfall for flora collecting in the months prior to each of the flora surveys. The third mobilisation was less optimally timed in regard to rainfall, but would not have significantly limited the findings. o Survey timing was not considered to be a limitation.
7. Disturbance that may have affected the results of survey such as fire, flood or clearing	o No parts of the survey area had been recently burnt. o Existing clearing associated with the Rio Tinto Rail Access Road and railway network comprised the majority of cleared areas within the survey area. However, the majority of the survey area remained uncleared, allowing all habitat types to be sampled in undisturbed areas. o Disturbance is not considered to have been a limitation for the study.

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5.0 Vegetation Results

5.1 Desktop Study

This section describes vegetation of significance previously recorded within the survey area, or known from the study area, based on the desktop study (see Section 4.2 and Table 4.3).

5.1.1 Threatened Ecological Communities

TECs are described by DBCA as biological assemblages occurring in a particular habitat, which are under threat of modification or destruction from various processes (as per DEC 2010) (see Appendix 1). TECs are significant at State level, being protected under the BC Act, as well as having protection as Environmentally Sensitive Areas (ESAs) under the State *Environmental Protection Act 1986.* Some TECs are also protected at Commonwealth level under the EPBC Act.

One TEC listed as Vulnerable at State level has been previously recorded from the southern end of the survey area (Figure 5.1):

- "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)" (hereafter referred to as the *Themeda* grasslands TEC) is described as "grassland plains dominated by the perennial *Themeda* (kangaroo grass) and many annual herbs and grasses"(DBCA 2018).

No other TECs are likely to occur within either the survey area or the study area.

5.1.2 Priority Ecological Communities

PECs are biological communities that are recognised to be of significance, but do not meet the criteria for listing as a TEC. There are five categories of PECs, none of which are currently protected under legislation (see Appendix 1).

Forty-three PECs are listed for the Pilbara bioregion (DBCA 2020b). One of these has previously been recorded from the survey area, intersecting the southern section of the corridor (Figure 5.1):

- The Priority 1 "Brockman Iron cracking clay communities of the Hamersley Range" PEC (hereafter referred to as Brockman Iron cracking clay communities PEC) is described as a "rare tussock grassland dominated by *Astrebla lappacea* (not every site has presence of *Astrebla*) in the Hamersley Range, on the Brockman land system. Tussock grassland on cracking clays- derived in valley floors, depositional floors. This is a rare community and the landform is rare. Known from near West Angelas, Newman, Tom Price and boundary of Hamersley and Brockman Stations" (DBCA 2020b).

Two additional PECs have been previously recorded within the study area, but not the survey area (Figure 5.1):

- The Priority 3 "Kumina Land System" PEC, which is described as "Duricrust plains and plateau remnants supports hard spinifex grasslands" and occurs approximately 13 km east of the survey area; and
- The Priority 3 "Kanjenjie Land System" PEC, which is described as "Stony clay plains supporting Snakewood (*Acacia xiphophylla*) shrublands with tussock grasses" with the closest occurrence located approximately 15 km west from the far northern end of the survey area.

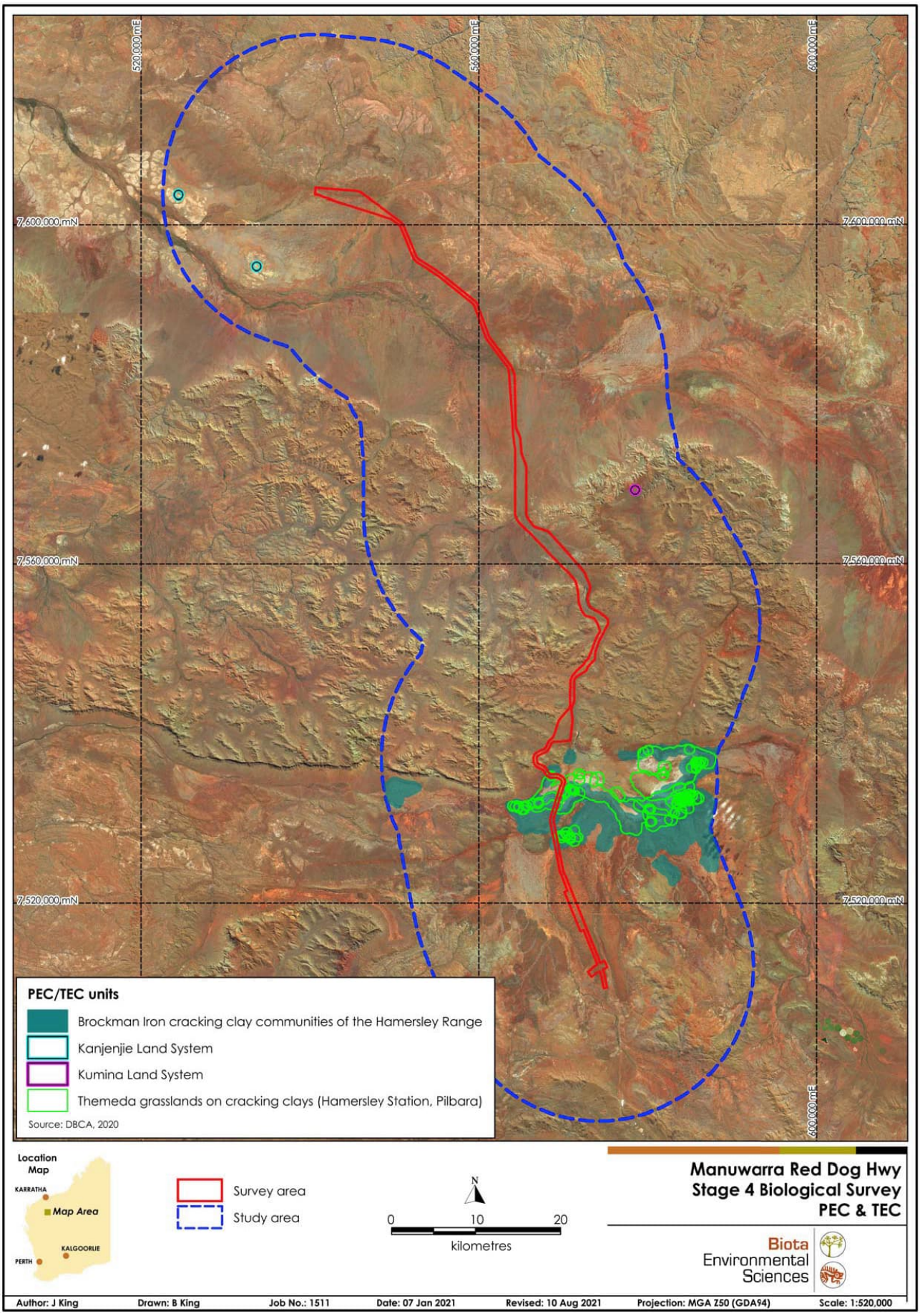


Figure 5.1: TECs and PECs intersecting the survey area and study area.

5.2 Overview of Vegetation Types Recorded

The survey area generally traversed low-lying areas within the landscape, reflecting its location along an existing rail access road, with larger hills typically present in the Hamersley section of the survey area. Broad landforms and vegetation types through the remainder of the corridor comprised:

- Hills with boulder or stony substrates supporting spinifex hummock grasslands with a usually sparse overstorey of shrubs and trees; the hummock grassland was usually dominated by *Triodia wiseana* (Plate 5.1);
- Cracking clay plains comprised of perennial tussock grasses annual grasses and herbs, supporting multiple communities of vegetation of conservation significance: "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)"(Vulnerable) TEC, the "Four plant assemblages of the Wona land system" (Priority 3) PEC and the "Brockman Iron cracking clay communities of the Hamersley Range" (Priority 1) PEC (Plate 5.2);
- Mulga (*Acacia aptaneura* species complex) low woodland on clay plains (Plate 5.3);
- Stony to gravelly plains supporting spinifex hummock grasslands, usually dominated by *Triodia epactia* and *T. wiseana*, with a sparse to open cover of shrubs and trees (Plate 5.4);
- Drainage lines, ranging in scale from major drainages (e.g. the Fortescue River) through to Weelumurra creek and its tributaries, supporting riparian Eucalypt and *Melaleuca* open forests and woodlands (Plate 5.5); and
- Floodplains of major drainages to minor tributaries supporting scattered *Corymbia hamersleyana* with mixed wattles and hummock grasses (Plate 5.6).

The extent of each mapping unit is presented in Table 5.1 and mapped in Appendix 5. Individual vegetation types are further described in Section 5.3.

Plate 5.1: Vegetation of hills with a boulder substrate (left), compared to a stony substrate (right).

Plate 5.2: Vegetation of cracking clay plains.

Plate 5.3: Mulga woodland vegetation on clay plains.

Plate 5.4: Vegetation of stony plains.

Plate 5.5: Vegetation of drainage lines: the Fortescue River (left), Weelumurra Creek (right).

Plate 5.6: Vegetation of floodplains.

Table 5.1: Extent of vegetation types and other mapping units in the survey area and contextual area.

Code	Mapping Unit	Extent in Survey Area		Extent in Local Area (Survey Area + Contextual Area) (ha)	Extent in Survey Area as Proportion of Local Area
		Area (ha)	Proportion of Survey Area		
Vegetation of Stony Hillslopes, Hillcrests and Foothills					
H1	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia wiseana* hummock grassland.	294.3	3.4%	508.3	57.9%
H2	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland.	19.3	0.2%	33.9	56.9%
H3	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over mixed *Acacia* shrubs over *Triodia wiseana* open hummock grassland.	418.3	4.8%	647.5	64.6%
H4	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.	8.4	0.1%	44.0	19.0%
Vegetation of Cracking Clays					
C1	*Eriachne benthamii*, *Eragrostis xerophila*, *Astrebla elymoides* very open tussock grassland over *Cynodon convergens* very open bunch grassland.	136.3	1.6%	151.9	89.8%
C2	*Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses.	206.8	2.4%	211.7	97.7%
C3	Mixed *Astrebla* tussock grassland over *Urochloa occidentalis* var. *occidentalis* bunch grassland.	88.1	1.0%	225.1	39.1%
C4	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.	72.7	0.8%	197.7	36.8%
C5	*Eucalyptus victrix* scattered low trees over *Eriachne benthamii*, (*Themeda* sp Hamersley Station (M.E. Trudgen 11431)) very open tussock grassland over mixed open herbland.	4.4	0.1%	15.3	28.9%
Mulga Vegetation					
M1	*Acacia aptaneura* (*A. pruinocarpa*) low woodland over *Triodia epactia* (*T. melvillei*) very open hummock grassland over *Chrysopogon fallax* scattered tussock grasses.	188.9	2.16%	313.4	60.3%
M2	*Acacia* ?*macraneura*, *A. aptaneura* over *Triodia epactia* scattered hummock grasses.	646.6	7.39%	1156.4	55.9%

Code	Mapping Unit	Extent in Survey Area		Extent in Local Area (Survey Area + Contextual Area) (ha)	Extent in Survey Area as Proportion of Local Area
		Area (ha)	Proportion of Survey Area		
M3	*Acacia aneura/aptaneura*, (*A ?macraneura*,) low woodland over bunch grasses.	111.4	1.27%	260.4	42.8%
M4	*Acacia aptaneura*, *A ?macraneura* (*Hakea lorea* subsp. *lorea*) low open woodland over mixed tussock grasses, bunch grasses and herbs.	47.9	0.55%	88.9	53.8%
Vegetation of Stony Plains and Sloping Plains					
P1	*Corymbia deserticola* subsp. *deserticola*, *C. hamersleyana*, *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland.	641.0	7.3%	935.9	68.5%
P2	*Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland.	1,095.5	12.5%	1918.7	57.1%
P3	*Hakea lorea* subsp. *lorea* low open woodland over shrubs over *Triodia epactia* very open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) very open tussock grassland.	53.8	0.6%	141.0	38.1%
P4	*Corymbia hamersleyana* scattered low trees over *Triodia epactia*, (*T. wiseana*) open hummock grassland and *Eulalia aurea* scattered tussock grasses.	14.5	0.2%	14.5	100.0%
P5	*Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia angusta* open hummock grassland with mixed tussock grasses.	109.9	1.3%	117.3	93.7%
P6	*Hakea lorea* subsp. *lorea* low open woodland over **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.	38.2	0.4%	84.4	45.2%
P7	*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses.	43.2	0.5%	52.0	83.1%
P8	**Vachellia farnesiana* scattered tall shrubs over *Chrysopogon fallax* very open tussock grassland over mixed annual grassland and herbland.	81.5	0.9%	191.6	42.5%
Vegetation of Drainage Lines					
D1	*Eucalyptus victrix* (*E. camaldulensis* subsp. *refulgens*) woodland over *Melaleuca glomerata* tall open shrubland over *Triodia epactia* scattered hummock grasses over mixed tussock grasses and sedges.	1,008.1	11.5%	1256.4	80.2%
D2	*Eucalyptus camaldulensis* subsp. *refulgens*, *Melaleuca argentea* open forest over mixed scattered tussock grasses with *Cyperus vaginatus* scattered sedges.	65.6	0.8%	65.6	100.0%

Code	Mapping Unit	Extent in Survey Area		Extent in Local Area (Survey Area + Contextual Area) (ha)	Extent in Survey Area as Proportion of Local Area
		Area (ha)	Proportion of Survey Area		
D3	*Eucalyptus victrix* low open woodland over **Vachellia farnesiana* scattered tall shrubs over mixed tussock grasses and bunch grasses.	19.6	0.2%	49.2	39.9%
Vegetation of Floodplains					
F1	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* (*T. epactia*) open hummock grassland with mixed tussock grasses.	1,788.6	20.4%	2289.7	78.1%
F2	*Corymbia hamersleyana* low woodland over mixed *Acacia* tall open shrubland over *Triodia wiseana*, (*T. epactia*) open hummock grassland.	503.8	5.8%	821.2	61.3%
F3	*Corymbia hamersleyana* low open woodland over mixed *Acacia* open shrubland over *Triodia epactia* very open hummock grassland with *Chrysopogon fallax* very open tussock grassland.	222.4	2.5%	444.9	50.0%
F4	*Acacia citrinoviridis* low woodland over *Triodia epactia* open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.	58.7	0.7%	197.2	29.7%
F5	*Corymbia hamersleyana* low open woodland over *Acacia bivenosa* tall shrubland over *Triodia epactia* scattered hummock grasses and **Cenchrus ciliaris* tussock grasses.	282.3	3.2%	308.8	91.4%
Other Mapping Units					
Disturbed	Disturbed.	117.8	1.3%	216.4	54.5%
Cleared	Cleared.	358.7	4.1%	628.7	57.0%

5.3 Description of Vegetation Types

5.3.1 Vegetation of Stony Hillslopes, Hillcrests and Foothills

H1	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia wiseana* hummock grassland.
Distribution and habitat	This vegetation type occurred on clay loams and sandy clay loams on stony rises, low hills, footslopes and undulating stony plains, particularly in the Hamersley section of the survey area (Plate 5.7 and Plate 5.8). *Corymbia hamersleyana* and *C. deserticola* subsp. *deserticola* were both scattered throughout the landscape. *Eucalyptus gamophylla* was occasionally present as scattered low mallee. Scattered tall shrubs of various *Acacia* species and *Senna glutinosa* subsp. *glutinosa* were also typically present.
Other associated species	Shrubs: *Acacia atkinsiana, A. inaequilatera, A. bivenosa, A. ptychophylla, A. ancistrocarpa, Ptilotus calostachyus, Gompholobium oreophilum.* Grasses: *Schizachyrium fragile, Eriachne pulchella, Eriachne mucronata, Amphipogon sericeus.* Herbs: *Fimbristylis dichotoma, Bulbostylis barbata, Bonamia erecta*.
Vegetation condition	Excellent.
Sites	Quadrats KTF89, KTF92, KTF103, KTF106, KTF107, KTF111, KTF118

Plate 5.7: Unit H1 (KTF106).

Plate 5.8: Unit H1 (KTF114).

H2	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland.
Distribution and habitat	This vegetation type occurred on the restricted geology of the Wittenoom Formation, including the crest and slopes of low hills (Plate 5.9 and Plate 5.10). The sparse shrub layer sometimes included *Acacia spondylophylla, A. bivenosa* and *Indigofera rugosa.*
Other associated species	Shrubs: *Acacia ancistrocarpa, A. bivenosa, A. inaequilatera, Grevillea pyramidalis subsp. leucadendron, Ehretia saligna* var. *saligna, Hakea lorea* subsp. *lorea.* Grasses: *Enneapogon caerulescens, Iseilema membranaceum.* Herbs: *Dolichocarpa crouchiana, Polymeria ambigua, Tribulus hirsutus, Notoleptopus decaisnei, Afrohybanthus aurantiacus, Arivela viscosa.*
Vegetation condition	Excellent.
Sites	Quadrats KTF94, KTF96

Plate 5.9: Unit H2 (KTF94).

Plate 5.10: Unit H2 (KTF96).

H3	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over mixed *Acacia* shrubs over *Triodia wiseana* open hummock grassland.
Distribution and habitat	This vegetation type occurred on moderate hill crests, mid-slopes of spurs, moderate hills and hillslopes of the Hamersley section of the survey area, as well as the southern tip of the survey area (Tom Price Section), (Plate 5.11 and Plate 5.12). Scattered tall shrubs of various *Acacia* species and *Senna glutinosa* subsp. *glutinosa* were typically present. *Eriachne mucronata* scattered tussock grasses were also common.
Other associated species	Shrubs: *Acacia inaequilatera, A. trudgeniana, A. hilliana, A. adoxa* var. *adoxa*, *Grevillea pyramidalis* subsp. *leucadendron, Mirbelia viminalis, Hakea chordophylla, Goodenia stobbsiana.* Grasses: *Eriachne pulchella, Paraneurachne muelleri, Eriachne ciliata, Schizachyrium fragile.* Herbs: *Bulbostylis barbata, Dolichocarpa crouchiana, Bonamia pilbarensis, Polycarpaea holtzei, Fimbristylis simulans.*
Vegetation condition	Excellent.
Sites	Quadrat KTF26, KTF39, KTF71, KTF76, KTF77, KTF79, KTF83, KTF85, KTF113, KTF114, KTF115, KTF117, KTF135

Plate 5.11: Unit H3 (KTF26).

Plate 5.12: Unit H3 (KTF115).

H4	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.
Distribution and habitat	This vegetation type was restricted to the hill crests of major ranges within the Hamersley section of the survey area (Plate 5.13). In the tree layer, *Corymbia ferriticola* was occasionally present, as was *Acacia pruinocarpa* in the shrub layer.
Other associated species	Shrubs: *Ficus brachypoda, Capparis spinosa subsp. nummularia, Dampiera candicans, Corchorus incanus* subsp. *incanus.* Grasses: *Enneapogon caerulescens, Eriachne pulchella.* Herbs: *Dolichocarpa crouchiana, Streptoglossa decurrens, Arivela viscosa.*
Vegetation condition	Excellent.
Sites	Quadrats KTFREL14

Plate 5.13: Unit H4 (KTFREL14).

5.3.2 Vegetation of Cracking Clays

C1	*Eriachne benthamii*, *Eragrostis xerophila*, *Astrebla elymoides* very open tussock grassland over *Cynodon convergens* very open bunch grassland.
Distribution and habitat	This vegetation was restricted to some minor areas of cracking clay substrate in the northern (Coolawanyah) section and the southern (Tom Price) section of the survey area (see Plate 5.14 and Plate 5.15). **Vachellia farnesiana* tall shrubs were sparsely scattered throughout the landscape. The ground layer in this unit comprised a mosaic of patches of tussock grassland, interspersed with large open patches that were dominated by herblands and annual grasslands of various species including *Cullen cinereum*, *Neptunia dimorphantha*, *Operculina aequisepala* and *Panicum laevinode*.
Other associated species	Shrubs: *Phyllanthus maderaspatensis, Abutilon malvifolium.* Grasses: *Sporobolus australasicus, Eragrostis tenellula, Cynodon convergens, Iseilema membranaceum, Dichanthium sericeum subsp. humilius.* Herbs: *Stemodia kingii, Hibiscus verdcourtii, Sida spinosa, Indigofera linifolia, Ipomoea lonchophylla, Portulaca intraterranea, Vigna* sp. *Ha*mersley Clay (A.A. Mitchell PRP 113), *Alysicarpus muelleri.*
Vegetation condition	Very Good: occasional weeds; some cattle activity.
Sites	Quadrats KTF23, KTF34, KTF74, KTF139

Plate 5.14: Unit C1 (KTF23).

Plate 5.15: Unit C1 (KTF74).

C2	*Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses.
Distribution and habitat	This vegetation occurred on cracking clay soils in the northern (Coolawanyah) section of the study area (see Plate 5.16 and Plate 5.17). The tree overstorey was dominated by *Acacia xiphophylla.* The ground layer in this unit was a mixture of perennial tussock grasses, annual bunch grasses and herb species including *Neptunia dimorphantha* and *Arivela viscosa.*
Other associated species	Shrubs: *Rhagodia eremaea, Senna notabilis, Ptilotus exaltatus, Senna hamersleyensis, Enchylaena tomentosa* var. *tomentosa.* Grasses: *Triodia wiseana*, *Sporobolus australasicus, Eriachne flaccida, Cynodon convergens, Aristida latifolia* Herbs: *Sida fibulifera, Corchorus tridens, Boerhavia burbidgeana, Phyllanthus maderaspatensis, Notoleptopus decaisnei.*
Vegetation condition	Very Good: occasional weeds; some cattle activity.
Sites	Quadrats KTF15, KTF25, KTF68

Plate 5.16: Unit C2 (KTF15).

Plate 5.17: Unit C2 (KTF68).

C3	Mixed *Astrebla* tussock grassland over *Urochloa occidentalis* var. *occidentalis* bunch grassland.
Distribution and habitat	This vegetation type occurred on the cracking clay plains in the Tom Price section of the survey area (see Plate 5.18 and Plate 5.19). Occasional **Vachellia farnesiana* shrubs were dotted throughout the landscape. The ground layer in this unit was a mixture of *Astrebla* tussock grasses, annual bunch grasses and herb species including *Operculina aequisepala* and *Rhynchosia minima.* This unit is recognised as the "Brockman Iron cracking clay communities of the Hamersley Range" PEC.
Other associated species	Grasses: *Astrebla lappacea, Astrebla elymoides, Astrebla pectinata, Urochloa occidentalis* var. *ciliata*, *Urochloa occidentalis* var. *occidentalis, Chrysopogon fallax, Cynodon convergens, Themeda* sp. Hamersley Station (M.E. Trudgen 11431). Herbs: *Alysicarpus muelleri, Cucumis picrocarpus, Boerhavia burbidgeana, Indigofera linifolia.*
Vegetation condition	Very Good: occasional weeds; some cattle activity.
Sites	Quadrats KTF08, KTF59, KTF60

Plate 5.18: Unit C3 (KTF08).

Plate 5.19: Unit C3 (KTF59).

C4	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.
Distribution and habitat	This vegetation type occurred on cracking clay plains in the Tom Price section of the survey area (see Plate 5.20 and Plate 5.21). Whilst this unit is dominated by the perennial *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grass, a variety of annual grasses and herbs were also present, including *Polymeria longifolia, Cullen cinereum, Streptoglossa bubakii* and *Cynodon convergens.* This unit is recognised as the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC.
Other associated species	Grasses: *Chrysopogon fallax*, *Dichanthium sericeum* subsp. *humilius, Urochloa occidentalis* var. *ciliata, Panicum laevinode.* Herbs: *Cucumis picrocarpus, Indigofera linifolia, Ptilotus gomphrenoides, Sida spinosa, Cullen graveolens.*
Vegetation condition	Very Good: occasional weeds; some cattle activity.
Sites	Quadrats KTF21, KTF22, KTF72

Plate 5.20: Unit C4 (KTF21).

Plate 5.21: Unit C4 (KTF72).

C5	*Eucalyptus victrix* scattered low trees over *Eriachne benthamii*, (*Themeda* sp Hamersley Station (M.E. Trudgen 11431)) very open tussock grassland over mixed open herbland.
Distribution and habitat	This vegetation type occurred in a minor flowline (Barnett Creek) intersecting the C4 vegetation unit, on the cracking clay plains in the Tom Price section of the survey area (Plate 5.22). Scattered tall shrubs of **Vachellia farnesiana* were present throughout, as well a varied list of herbs including *Polymeria longifolia, Cullen graveolens* and *Ptilotus gomphrenoides.* This unit is recognised as part of the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC.
Other associated species	Shrubs: *Rhagodia eremaea, Pimelea holroydii.* Grasses: *Iseilema macratherum, Panicum laevinode, Eragrostis tenellula*. Herbs: *Blumea tenella, Stemodia kingii, Vigna* sp. Hamersley Clay (A.A. Mitchell PRP 113).
Vegetation condition	Very Good: occasional weeds; some cattle activity.
Sites	Quadrat KTF13.

Plate 5.22: Unit C5 (KTF13).

5.3.3 Mulga Vegetation

M1	*Acacia aptaneura* (*A. pruinocarpa*) low woodland over *Triodia epactia* (*T. melvillei*) very open hummock grassland over *Chrysopogon fallax* scattered tussock grasses.
Distribution and habitat	This vegetation type occurred in groves on silty clay to sandy clay loam plains in the Tom Price section of the survey area (Plate 5.23 and Plate 5.24). While *Acacia aptaneura* was the most common Mulga species, *Acacia ?macraneura* and *A. ?pteraneura* were also present. Tall shrubs of *Grevillea berryana* and *A. pruinocarpa* were scattered throughout the groves. **Bidens bipinnata* was a particularly common weed.
Other associated species	Shrubs: *Rhagodia* sp. Hamersley (M. Trudgen 17794), *Senna glutinosa* subsp. *glutinosa*, *Dodonaea petiolaris, Maireana villosa.* Grasses: *Aristida obscura, Eriachne benthamii, Eragrostis pergracilis, Eragrostis exigua, Enneapogon polyphyllus, Eragrostis cumingii.* Herbs: *Portulaca oleracea, Spermacoce brachystema, Blumea tenella, Abutilon otocarpum, Areocleome oxalidea, Arivela viscosa, Bulbostylis turbinata, Cucumis variabilis.*
Vegetation condition	Good to Excellent.
Sites	Quadrats KTF01, KTF03, KTF09, KTF10; relevés KTFREL04, KTFREL05, KTFREL07.

Plate 5.23: Unit M1 (KTF01).

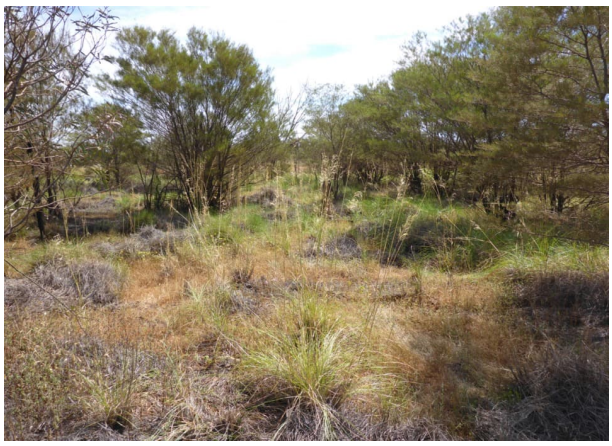


Plate 5.24: Unit M1 (KTFREL07).

M2	*Acacia ?macraneura*, *A. aptaneura* over *Triodia epactia* scattered hummock grasses.
Distribution and habitat	This vegetation type occurred in the open plains between the M1 vegetation type (Mulga groves), in the Tom Price section of the survey area (Plate 5.25 and Plate 5.26). *Grevillea berryana* and *Acacia pruinocarpa* were also commonly encountered in the tree layer and *Eremophila fraseri* subsp. *fraseri* and *Acacia tetragonophylla* were dominant in the shrub layer. The hummock grassland ground layer was dominated by *Triodia epactia,* however *T. melvillei* was also present. *Aristida contorta* was a common bunch grass species for this vegetation.
Other associated species	Shrubs: *Sida platycalyx, Sclerolaena cornishiana, Ptilotus exaltatus, Rhagodia* sp. Hamersley (M. Trudgen 17794), *Ptilotus schwartzii* var. *schwartzii.* Grasses: *Dichanthium sericeum* subsp. *humilius, Digitaria ctenantha, Panicum effusum, Paspalidium clementii, Perotis rara, Aristida holathera* var. *holathera.* Herbs: *Evolvulus alsinoides* var. *villosicalyx*, *Tribulus astrocarpus, Dysphania kalpari, Ptilotus roei, Bulbostylis barbata, Areocleome oxalidea, Boerhavia coccinea.*
Vegetation condition	Very Good-Excellent. Occasional weeds and evidence of cattle.
Sites	Quadrats KTF02, KTF05, KTF06, KTF119, KTF138; relevé KTFREL01.

Plate 5.25: Unit M2 (KTF02).

Plate 5.26: Unit M2 (KTFREL01).

M3	*Acacia aneura/aptaneura*, (*A ?macraneura*,) low woodland over bunch grasses.
Distribution and habitat	This vegetation type occurred on clay loam plains in the Hamersley and Tom Price sections of the survey area. In addition to Mulga species, *Acacia pruinocarpa* and *Corymbia hamersleyana* were also common in the tree layer. *Acacia bivenosa* was dominant in the sparse shrub layer. The sparse hummock grassland included *Triodia epactia* and *T. wiseana.* The bunch grass layer was comprised of various species including *Perotis rara, Sporobolus australasicus* and *Paspalidium clementii.*
Other associated species	Shrubs: *Abutilon lepidum, Sida arsiniata, Solanum diversiflorum, Senna artemisioides* subsp. *oligophylla* x subsp. *helmsii, Ptilotus obovatus* var. *obovatus.* Grasses: *Urochloa occidentalis* var. *occidentalis*, *Paspalidium rarum*, **Cenchrus ciliaris, Chrysopogon fallax.* Herbs: *Arivela viscosa, Tribulus macrocarpus, Trianthema pilosum, Trachymene oleracea* subsp. *oleracea, Rhynchosia minima, Dactyloctenium radulans, *Bidens bipinnata.*
Vegetation condition	Good-Very Good. Presence of multiple weed species, evidence of cattle, old signs of disturbance.
Sites	Quadrats KTF50, KTF52, KTF64, KTF136.

Plate 5.27: Unit M3 (KTF50).

Plate 5.28: Unit M3 (KTF64).

M4	*Acacia aptaneura*, *A ?macraneura* (*Hakea lorea* subsp. *lorea*) low open woodland over mixed tussock grasses, bunch grasses and herbs.
Distribution and habitat	This vegetation occurred on self-mulching clay flats of the Tom Price section of the survey area (Plate 5.29 and Plate 5.30) and is distinguished from type M3 by soil type. Scattered tall shrubs of *Acacia tetragonophylla* dominated the shrub layer. Various tussock grasses, bunch grasses and herbs made up the ground layer including *Eriachne benthamii, Eragrostis pergracilis* and *Arivela viscosa.*
Other associated species	Shrubs: *Grevillea berryana, Ptilotus exaltatus, P. xerophilus, Abutilon lepidum.* Grasses: *Chrysopogon fallax, Digitaria ctenantha, Urochloa occidentalis* var. *occidentalis, Enneapogon polyphyllus, Eragrostis leptocarpa, Themeda* sp. Hamersley Station (M.E. Trudgen 1143). Herbs: *Calandrinia ? stagnensis/tepperiana, Portulaca oleracea/intraterranea, Alternanthera denticulata, Ipomoea muelleri, Boerhavia coccinea, Spermacoce brachystema, Rhodanthe charsleyae, Indigofera linifolia.*
Vegetation condition	Very Good; scattered weeds (mainly **Bidens bipinnata*); old cattle scats.
Sites	Quadrats KTF11, KTF12.

Plate 5.29: Unit M4 (KTF11).

Plate 5.30: Unit M4 (KTF12).

5.3.4 Vegetation of Stony Plains and Sloping Plains

P1	*Corymbia deserticola* subsp. *deserticola*, *C. hamersleyana*, *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland.
Distribution and habitat	This vegetation type occurred on stony undulating plains in the Hamersley section of the survey area (Plate 5.31 and Plate 5.32). *Corymbia deserticola* subsp. *deserticola*, *C. hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* comprised the dominants of the tree layer, with *Acacia pruinocarpa* and *A. aptaneura* also scattered throughout the landscape. The sparse mallee layer was dominated by *Eucalyptus gamophylla.* Various species from family Fabaceae were present in the shrub layer including *Senna glutinosa* subsp. *pruinosa, A. ancistrocarpa*, *A. ptychophylla* and *A. tenuissima*. *Triodia wiseana* was the dominant hummock grass, with occasional *T. epactia.*
Other associated species	Shrubs: *Acacia bivenosa, Dodonaea coriacea, Hakea chordophylla, Senna artemisioides* subsp. *helmsii, S. glutinosa* subsp. *glutinosa*. Grasses: *Amphipogon sericeus, Aristida holathera* var. *holathera*, *Paraneurachne muelleri.* Herbs: *Trichodesma zeylanicum* var. *zeylanicum, Trachymene oleracea* subsp. *oleracea, Dolichocarpa crouchiana*.
Vegetation condition	Excellent.
Sites	KTF75, KTF82, KTF86, KTF116, KTF123, KTF124, KTF128, KTF137, KTF142, KTF145.

Plate 5.31: Unit P1 (KTF75).

Plate 5.32: Unit P1 (KTF124).

P2	*Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland.
Distribution and habitat	This vegetation type was common on gently undulating plains supporting minor drainages, in the northern (Coolawanyah) section of the survey area (Plate 5.33 and Plate 5.34). *Acacia pruinocarpa* was a common scattered tree in the sparse tree layer, in addition to the dominant *Corymbia hamersleyana.* The shrub layer was comprised of a mixture of *Acacia* species, including *A. ancistrocarpa*, *A. atkinsiana* and *A. trachycarpa*. *Triodia epactia* was the dominant hummock grass, however *T. wiseana* was also present in sparse patches. In addition, sparse tussocks of *Chrysopogon fallax* and *Eulalia aurea* were present.
Other associated species	Shrubs: *Acacia sclerosperma* subsp. *sclerosperma, A. dictyophleba, A. maitlandii, A. trudgeniana, Grevillea wickhamii* subsp. *hispidula, Carissa lanceolata, Eremophila longifolia, Indigofera monophyla.* Grasses: *Sporobolus australasicus, Paspalidium clementii, Eriachne pulchella.* Herbs: *Rhynchosia minima*, *Evolvulus alsinoides* var. *villosicalyx*
Vegetation condition	Good-Excellent; signs of historical disturbance, occasional weeds, signs of cattle.
Sites	Quadrat KTF18, KTF30, KTF31, KTF32, KTF40, KTF41, KTF43, KTF44, KTF48, KTF49, KTF51.

Plate 5.33: Unit P2 (KTF18).

Plate 5.34: Unit P2 (KTF43).

P3	*Hakea lorea* subsp. *lorea* low open woodland over shrubs over *Triodia epactia* very open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) very open tussock grassland.
Distribution and habitat	This vegetation type occurred on clay plains in the Tom Price section of the survey area (Plate 5.35 and Plate 5.36). *Hakea lorea* subsp. *lorea* was dominant in the tree layer, amongst scattered *Eucalyptus victrix*, *Acacia pruinocarpa* and *A. aptaneura.* The shrub layer was dominated by *A. inaequilatera*, with **Vachellia farnesiana* and *Eremophila longifolia* scattered throughout the landscape. The hummock grassland layer comprised *Triodia epactia* with occasional *T. wiseana,* while the sparse tussock grass layer was dominated by *Themeda* sp. Hamersley Station (M.E. Trudgen 11431). This vegetation unit is considered to have elevated conservation significance as it is important for the maintenance and functioning of the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC.
Other associated species	Shrubs: *Acacia bivenosa, A. tenuissima, Solanum lasiophyllum, Senna artemisioides* subsp. *oligophylla.* Grasses: *Chrysopogon fallax*, *Themeda triandra, Enneapogon lindleyanus, Urochloa occidentalis* var. *occidentalis* Herbs: *Trichodesma zeylanicum* var. *zeylanicum, Euphorbia biconvexa, Evolvulus alsinoides* var. *villosicalyx, Goodenia muelleriana*
Vegetation condition	Good to Very Good; Signs of intense grazing, with weeds present.
Sites	Quadrats KTF122, KTF126, KTF127.

Plate 5.35: Unit P3 (KTF122).

Plate 5.36: Unit P4 (KTF126).

P4	*Corymbia hamersleyana* scattered low trees over *Triodia epactia*, (*T. wiseana*) open hummock grassland and *Eulalia aurea* scattered tussock grasses.
Distribution and habitat	This restricted vegetation type occurred in the northern (Coolyawanyah) section of the survey area, in association with the C2 *Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses. The sparse shrub layer was comprised of scattered *Acacia inaequilatera*, *A. ancistrocarpa* and *Carissa lanceolata. Triodia epactia* was the dominant hummock grass, with occasional *Eulalia aurea* tussock grasses.
Other associated species	Shrubs: *Acacia victoriae* subsp. *victoriae*, *Sida* sp. spiciform panicles (E. Leyland s.n. 14/8/90), *Solanum diversiflorum, Triodia wiseana.* Grasses: *Eriachne aristidea, Digitaria brownii, Paraneurachne muelleri, Sporobolus australasicus.* Herbs: *Euphorbia biconvexa, Rhynchosia minima, Evolvulus alsinoides* var. *villosicalyx.*
Vegetation condition	Excellent.
Sites	Quadrat KTF35.

Plate 5.37: Unit P4 (KTF35).

P5	*Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia angusta* open hummock grassland with mixed tussock grasses.
Distribution and habitat	This vegetation type occurred on calcareous soils in the central Hamersley section of the survey area, adjacent to drainage and floodplain landscapes (Plate 5.38 and Plate 5.39). The predominant species in the scattered shrub layer was *Acacia bivenosa.* The open hummock grassland layer was dominated by *Triodia angusta*, and typically also included scattered *T. wiseana*.
Other associated species	Shrubs: *Codonocarpus cotinifolius*, *Scaevola amblyanthera* var. *centralis*, *Pluchea ferdinandi-muelleri, Atalaya hemiglauca.* Grasses: *Eragrostis desertorum*, **Cenchrus setiger, Chrysopogon fallax, Eulalia aurea.* Herbs: *Rhynchosia minima, Tribulus terrestris, Evolvulus alsinoides* var. *villosicalyx.*
Vegetation condition	Very Good; **Cenchrus ciliaris* and *C. setiger* often present in patches.
Sites	Quadrats KTF78, KTF80, KTF102, KTF108; relevé KTFREL16.

Plate 5.38: Unit P5 (KTF78).

Plate 5.39: Unit P5 (KTF102).

P6	*Hakea lorea* subsp. *lorea* low open woodland over **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.
Distribution and habitat	This vegetation type occurred on the cracking clay plains in the Tom Price section of the survey area, amongst the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC (see Plate 5.40 and Plate 5.41). This vegetation type aligns with C4 *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland, with the addition of a *Hakea lorea* subsp. *lorea* low open woodland overstorey. This unit aligns with the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)'" TEC.
Other associated species	Shrubs: *Acacia victoriae, *Vachellia farnesiana, Eremophila longifolia.* Grasses: *Urochloa occidentalis* var. *occidentalis, Dichanthium sericeum* subsp. *humilius, Chrysopogon fallax, Aristida latifolia.* Herbs: *Cullen cinereum, Indigofera linifolia, Polymeria longifolia, Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479), *Vigna* sp. Hamersley Clay (A.A. Mitchell PRP 113).
Vegetation condition	Good to Very Good; evidence of cattle grazing, occasional weeds.
Sites	Quadrats KTF70, KTF125; relevé KTFREL21.

Plate 5.40: Unit P6 (KTF70).

Plate 5.41: Unit P6 (KTF125).

P7	*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses.
Distribution and habitat	This vegetation type was restricted to the most northern section of the survey area, on stony plains with isolated patches of cracking clay (see Plate 5.42 and Plate 5.43). The open hummock grassland layer was dominated by *Triodia wiseana*, but typically also included scattered *T. epactia.* Tussock grasses were scattered throughout the landscape, most commonly featuring *Eriachne flaccida* and *Eragrostis xerophila.*
Other associated species	Shrubs: *Senna notabilis, Dolichandrone occidentalis, Acacia xiphophylla.* Grasses: *Dichanthium sericeum* subsp. *sericeum, Eriachne pulchella, Chrysopogon fallax, Eragrostis tenellula.* Herbs: *Neptunia dimorphantha, Stemodia kingii, Streptoglossa bubakii, Boerhavia burbidgeana, Alysicarpus muelleri.*
Vegetation condition	Excellent.
Sites	Quadrats KTF14, KTF16, KTF73.

Plate 5.42: Unit P7 (KTF14).

Plate 5.43: Unit P7 (KTF73).

P8	**Vachellia farnesiana* scattered tall shrubs over *Chrysopogon fallax* very open tussock grassland over mixed annual grassland and herbland.
Distribution and habitat	This vegetation type (see Plate 5.44 and Plate 5.45) occurred on scalded cracking clay plains to the south of the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC and "Brockman Iron cracking clay communities of the Hamersley Range" PEC. The tussock grassland layer was dominated by *Chrysopogon fallax*, but typically also included **Cenchrus ciliaris*, and *C. *setiger.* A variety of bunch grasses were present in the ground layer, including *Urochloa occidentalis* var. *ciliata*, *Dactyloctenium radulans* and *Chloris pectinata*. An open mixed herb layer contained species including *Cullen cinereum*, *Trianthema triquetrum* and *Boerhavia burbidgeana*.
Other associated species	Shrubs: *Acacia victoriae* subsp. *victoriae*, *A. synchronicia, Ptilotus exaltatus.* Grasses: *Dichanthium sericeum* subsp. *humilius*, *Enneapogon polyphyllus, Iseilema macratherum, I. dolichotrichum, Sporobolus australasicus, Eragrostis setifolia.* Herbs: *Convolvulus clementii, Cucumis picrocarpus, Cullen graveolens, Ipomoea lonchophylla, Rhynchosia minima.*
Vegetation condition	Very Good; evidence of cattle grazing, presence of weeds.
Sites	Quadrats KTF04, KTF07.

Plate 5.44: Unit P8 (KTF04).

Plate 5.45: Unit P8 (KTF07).

5.3.5 Vegetation of Drainage Lines

D1	*Eucalyptus victrix* (*E. camaldulensis* subsp. *refulgens*) woodland over *Melaleuca glomerata* tall open shrubland over *Triodia epactia* scattered hummock grasses over mixed tussock grasses and sedges.
Distribution and habitat	This vegetation (see Plate 5.46 and Plate 5.47) was restricted to major drainage lines, from the Fortescue River in the northern section of the survey area, to Weelumurra Creek, which flows through the Hamersley section of the survey area. The woodland overstorey included the phreatophyte *Eucalyptus camaldulensis* subsp. *refulgens* (River Gum), with scattered *Corymbia hamersleyana* and *Atalaya hemiglauca*. The scattered tall shrub layer comprised a variety of species including *Melaleuca glomerata, Grevillea wickhamii* subsp. *hispidula* and *Acacia tumida* var. *pilbarensis.* The low shrub layer typically included *Corchorus crozophorifolius* and *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186). Introduced tussock grasses were common (**Cenchrus setiger*, **C. ciliaris*), with the occasional sedge species *Cyperus difformis*, *Schoenoplectiella laevis* and *Eleocharis atropurpurea*.
Other associated species	Shrubs: *Carissa lanceolata, Indigofera monophylla, Acacia colei, A. pyrifolia* var. *pyrifolia, Waltheria indica, Aeschynomene indica, Sesbania cannabina.* Grasses: *Bothriochloa ewartiana, Eulalia aurea, Eragrostis tenellula, Elytrophorus spicatus, Eriachne benthamii.* Herbs: *Arivela viscosa, Boerhavia coccinea, Tribulus macrocarpus, Corchorus tridens, Alternanthera nodiflora.*
Vegetation condition	Good to Excellent; evidence of cattle activity, weeds common throughout.
Sites	Quadrats KTF37, KTF62, KTF63, KTF65, KTF66, KTF67, KTF104, KTF112, KTF143, KTF144; relevés KTFREL08, KTFREL09.

Plate 5.46: Unit D1 (KTF66).

Plate 5.47: Unit D1 (KTF112).

D2	*Eucalyptus camaldulensis* subsp. *refulgens*, *Melaleuca argentea* open forest over mixed scattered tussock grasses with *Cyperus vaginatus* scattered sedges.
Distribution and habitat	This vegetation was restricted to Weelumurra Creek and its tributaries, in a small area of the Hamersley section of the survey area (Plate 5.48 and Plate 5.49). The open forest overstorey included obligate phreatophytes *Eucalyptus camaldulensis* subsp. *refulgens* (River Gum) and *Melaleuca argentea* (Silver Cadjeput). The ground layer was dominated by a mixture of native and introduced tussock grasses (**Cenchrus ciliaris*,**C. setiger, Themeda triandra*) and scattered sedges (*Cyperus vaginatus).*
Other associated species	Shrubs: *Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618), *Corchorus crozophorifolius, C. parviflorus, Acacia pyrifolia* var. *pyrifolia, A. ampliceps, A. bivenosa, A. tumida* var. *pilbarensis, Gossypium robinsonii, Atalaya hemiglauca.* Grasses: *Triodia epactia, T. wiseana Enneapogon lindleyanus, Eriachne tenuiculmis, *Echinochloa colona, Cymbopogon ambiguous.* Herbs: *Rhynchosia minima, Boerhavia coccinea, Euphorbia biconvexa, Evolvulus alsinoides* var. *decumbens, Stemodia grossa, Ipomoea muelleri, Pluchea rubelliflora.*
Vegetation condition	Good to Very Good: low to moderate cover of **Cenchrus ciliaris* and **C. setiger* typically present, along with scattered other weeds; evidence of cattle.
Sites	Quadrats KTF110; relevés KTFREL20, KTFREL22, KTFREL23.

Plate 5.48: Unit D2 (KTF110).

Plate 5.49: Unit D2 (KTFREL20).

D3	*Eucalyptus victrix* low open woodland over **Vachellia farnesiana* scattered tall shrubs over mixed tussock grasses and bunch grasses.
Distribution and habitat	This vegetation was restricted to the tributaries of Barnett Creek, in the Tom Price section of the survey area, south of the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC (see Plate 5.50 and Plate 5.51). The sparse shrub layer typically contained **Vachellia farnesiana* with *Sesbania cannabina.* The ground layer generally comprised an open to closed tussock grassland of *Bothriochloa ewartiana, Eriachne benthamii* and introduced **Cenchrus* species. As this vegetation type supports patches of *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), it is considered important for the maintenance and functioning of the "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC.
Other associated species	Shrubs: *Abutilon malvifolium, Acacia xiphophylla, Aeschynomene indica, Santalum lanceolatum.* Grasses: *Chrysopogon fallax, Dichanthium sericeum* subsp. *sericeum, Iseilema vaginiflorum, Eragrostis xerophila, E. tenellula, Cynodon convergens, Themeda* sp. Hamersley Station (M.E. Trudgen 11431). Herbs: *Alternanthera nodiflora, Boerhavia paludosa, Rhynchosia minima, Ipomoea muelleri, Cullen graveolens.*
Vegetation condition	Good to Very Good: low to moderate cover of **Cenchrus ciliaris* and **C. setiger* typically present, along with scattered other weeds; evidence of cattle.
Sites	Quadrat KTF17; relevé KTFREL11.

Plate 5.50: Unit D3 (KTF17).

Plate 5.51: Unit D3 (KTFREL11).

5.3.6 Vegetation of Floodplains

F1	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* (*T. epactia*) open hummock grassland with mixed tussock grasses.
Distribution and habitat	This vegetation represents the broad floodplains either side of Weelumurra Creek and its tributaries, in the Hamersley section of the survey area (see Plate 5.52 and Plate 5.53). The low open woodland layer was mainly comprised of *Corymbia hamersleyana* with *Hakea lorea* subsp. *lorea.* The shrub layer typically contained a variety of Fabaceae species, including *Acacia ancistrocarpa* and *A. dictyophleba.* In addition to hummock grasses, a mixture of scattered tussock grasses including *Eriachne tenuiculmis, *Cenchrus ciliaris* and *Chrysopogon fallax.*
Other associated species	Shrubs: *Grevillea pyramidalis* subsp. *leucadendron, Senna glaucifolia, Gossypium australe*, *Hibiscus sturtii* var. *platychlamys, Acacia elachantha, Atalaya hemiglauca, Eremophila longifolia.* Grasses: *Eragrostis eriopoda, Eulalia simonii, Aristida inaequiglumis, Enneapogon caerulescens, Eragrostis cumingii.* Herbs: *Evolvulus alsinoides* var. *villosicalyx, Goodenia forrestii, G. nuda, Bonamia erecta, Alysicarpus muelleri.*
Vegetation condition	Very Good to Excellent: evidence of cattle presence, scattered weeds.
Sites	Quadrats KTF45, KTF53, KTF54, KTF55, KTF57, KTF58, KTF69, KTF81, KTF84, KTF99, KTF100, KTF140, KTF141.

Plate 5.52: Unit F1 (KTF81).

Plate 5.53: Unit F1 (KTF99).

F2	*Corymbia hamersleyana* low woodland over mixed *Acacia* tall open shrubland over *Triodia wiseana*, (*T. epactia*) open hummock grassland.
Distribution and habitat	This vegetation type was common throughout the survey area in the minor drainages and tributaries of the Fortescue River and Weelumurra Creek (see Plate 5.54 and Plate 5.55). *Corymbia hamersleyana* was the dominant tree species, with occasional *Eucalyptus xerothermica* and *Acacia citrinoviridis.* The tall shrub and shrubland layers typically comprised *Acacia* species, with *Grevillea wickhamii* subsp. *hispidula* and *G. pyramidalis* subsp. *leucadendron.* In addition to hummock grasses, scattered tussocks of *Bothriochloa ewartiana, Chrysopogon fallax* and *Themeda triandra*.
Other associated species	Shrubs: *Acacia ancistrocarpa, A. atkinsiana, A. colei, A. citrinoviridis, A. trachycarpa*, *Clerodendrum floribundum* var. *angustifolium, Indigofera monophyla, Atalaya hemiglauca.* Grasses: *Paraneurachne muelleri, Cymbopogon ambiguous, Sporobolus australasicus, Paspalidium clementii, Eulalia aurea, *Cenchrus ciliaris, *C. setiger.* Herbs: *Alternanthera nana, Alysicarpus muelleri, Arivela viscosa, Duperreya commixta.*
Vegetation condition	Good to Excellent: occasional evidence of cattle presence; scattered weeds.
Sites	Quadrats KTF19, KTF20, KTF28, KTF29, KTF42, KTF46, KTF47, KTF88, KTF90, KTF101, KTF105; relevés KTFREL02, KTFREL06, KTFREL10, KTFREL12, KTFREL18.

Plate 5.54: Unit F2 (KTF19).

Plate 5.55: Unit F2 (KTF47).

F3	*Corymbia hamersleyana* low open woodland over mixed *Acacia* open shrubland over *Triodia epactia* very open hummock grassland with *Chrysopogon fallax* very open tussock grassland.
Distribution and habitat	This vegetation type represented the broad open floodplains of minor tributaries of the Fortescue River, in the Coolawanyah section of the survey area (Plate 5.56 and Plate 5.57). The open woodland layer was dominated by *Corymbia hamersleyana.* A tall shrubland of *Acacia ancistrocarpa, A. atkinsiana* and *A. sclerosperma* subsp. *sclerosperma* was common. The ground layer comprised a variety of open hummock and tussock grasses.
Other associated species	Shrubs: *Acacia colei, A. pyrifolia* var. *pyrifolia, A. trachycarpa, Senna artemisioides* subsp. *oligophylla* (thinly sericeus form MET 15035), *S. artemisioides* subsp. *helmsii*, *Hakea lorea* subsp. *lorea, Carissa lanceolata.* Grasses: *Triodia wiseana, Chrysopogon fallax, Themeda triandra, Chrysopogon fallax, *Cenchrus ciliaris, Sporobolus australasicus.* Herbs: *Boerhavia coccinea, Arivela viscosa, Indigofera colutea, Dysphania kalpari, Polygala glaucifolia.*
Vegetation condition	Poor to Excellent: multiple weed species; evidence of cattle presence.
Sites	Quadrats KTF24, KTF27, KTF33, KTF36, KTF38.

Plate 5.56: Unit F3 (KTF33).

Plate 5.57: Unit F3 (KTF38).

F4	*Acacia citrinoviridis* low woodland over *Triodia epactia* open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.
Distribution and habitat	This vegetation type occurred in restricted patches on broad floodplains, in the Coolawanyah and Hamersley sections of the survey area (Plate 5.58 and Plate 5.59). The low woodland layer was dominated by *Acacia citrinoviridis,* with occasional *Eucalyptus victrix* and *Corymbia hamersleyana.* The ground layer generally consisted of a *Triodia epactia* open hummock grassland, with tussocks of *Chrysopogon fallax* and *Eriachne benthamii.*
Other associated species	Shrubs: *Acacia bivenosa, Senna artemisioides* subsp. *oligophylla, Isotropis atropurpurea, Solanum lasiophyllum* Grasses: **Cenchrus ciliaris, *C. setiger, Eriachne benthamii, *Setaria verticillata, Urochloa occidentalis* var. *occidentalis* Herbs: **Bidens bipinnata, Rostellularia adscendens* var. *clementii, *Malvastrum americanum*
Vegetation condition	Good to Very Good: multiple weed species; evidence of cattle presence.
Sites	Quadrats KTF56, KTF61, KTF98; relevé KTFREL13.

Plate 5.58: Unit F4 (KTF56).

Plate 5.59: Unit F4 (KTF61).

F5	*Corymbia hamersleyana* low open woodland over *Acacia bivenosa* tall shrubland over *Triodia epactia* scattered hummock grasses and **Cenchrus ciliaris* tussock grasses.
Distribution and habitat	This vegetation type occurred in restricted areas on broad open floodplains in conjunction with minor tributaries of Weelumurra Creek (Plate 5.60 and Plate 5.61). The low open woodland layer included *Corymbia hamersleyana, Eucalyptus victrix* and *E. leucophloia* subsp. *leucophloia.* A tall shrubland of *Acacia bivenosa* was typical, with a ground layer of scattered *Triodia epactia* hummock grasses and scattered introduced tussock grasses.
Other associated species	Shrubs: *Acacia dictyophleba, A. pyrifolia* var. *pyrifolia, A. tumida* var. *pilbarensis, Corchorus parviflorus, Indigofera monophylla, Corchorus crozophorifolius, Eremophila longifolia, Senna artemisioides* subsp. *oligophylla* Grasses: **Cenchrus setiger, Chrysopogon fallax, Eulalia aurea, Eriachne tenuiculmis, Sporobolus australasicus, Triodia wiseana, T. longiceps* Herbs: *Evolvulus alsinoides* var. *villosicalyx, Goodenia microptera, Euphorbia biconvexa, Rhynchosia minima, Arivela viscosa.*
Vegetation condition	Poor to Excellent: High cover of **Cenchrus* species in places, other scattered weeds; evidence of cattle presence.
Sites	Quadrats KTF87, KTF91, KTF93, KTF95, KTF97, KTF109.

Plate 5.60: Unit F5 (KTF91).

Plate 5.61: Unit F5 (KTF93).

5.3.7 Disturbed Areas

The survey area contained various disturbed areas associated with the Rio Tinto Rail Access Road, railway and historical mining works. These areas typically contained sparsely scattered native regrowth, interspersed with weed species, and did not represent a cohesive vegetation type. Disturbed areas represent 1.3% of the survey area (Table 5.1, Appendix 7).

5.3.8 Cleared Areas

These areas, which were completely devoid of native vegetation, had been cleared for works associated with the Rio Tinto Rail Access Road, current and historical mining exploration tracks and drill pads, and pastoral fences, tracks and other infrastructure. Cleared areas represent 4.1% of the survey area (Table 5.1, Appendix 7).

5.4 Results of the Floristic Analysis

At a 25% level of similarity, the sites were divided into 13 floristic groups (Table 5.2; Appendix 6):

- FG_a represented sites from two vegetation types of clay plains (C3 and P8), within or in the vicinity of the "Brockman Iron cracking clay communities of the Hamersley Range" PEC and "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC. *Urochloa occidentalis* and *Chrysopogon fallax* contributed the most to similarity.
- FG_b contained three sites from C1, and all sites from vegetation types C5 and D3, which were dominated by *Eriachne benthamii.*
- FG_c contained all sites from C4 and P6, as well as one site from C1 and three sites from C3. These vegetation types represent vegetation of clay plains within or in the vicinity of the "Brockman Iron cracking clay communities of the Hamersley Range" PEC and "Themeda grasslands on cracking clays (Hamersley Station, Pilbara)" TEC. *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) contributed the most to similarity, in addition to other tussock and bunch grasses.
- FG_d contained four sites from vegetation type P5, where *Triodia angusta* was dominant.
- FG_e represented 10 vegetation types in total, and contained almost all sites from the stony hillslopes, hillcrests and foothills landform (H1, H2, H3 and H4), as well as the majority of sites from P1, and all sites from P3. FG_e also include one site from F1, P2, and P5, two sites from P7. *Triodia wiseana* and *Eucalyptus leucophloia* subsp. *leucophloia* were the two most dominant species in this floristic group.
- FG_f contained all sites from the D2 vegetation type, which represents vegetation of Weelumurra Creek and its tributaries, where *Melaleuca argentea* and *Eucalyptus camaldulensis* subsp. *refulgens* are dominant.
- FG_g contained two M2 sites, where *Aristida contorta* and *Acacia macraneura* contributed most towards similarity.

- *FG$_h$* contained Mulga sites only; the majority of M1 sites (seven), two M2 sites, one M3 site and both M4 sites, where *Acacia aptaneura* was the dominant Mulga species and *Triodia epactia* the most common hummock grass species.
- *FG$_i$* contained a single site from vegetation type M2; comprising an open woodland of *Acacia pruinocarpa* with *A. aptaneura* and *Corymbia deserticola* subsp. *deserticola* over an understorey of *Triodia melvillei.*
- *FG$_i$* contained all three sites from vegetation type C2, where *Acacia xiphophylla* was dominant.
- *FG$_k$* was represented by four vegetation types of broad open floodplains and plains (F2, F3, P1 and P2), where *Triodia epactia* and *Acacia atkinsiana* contributed the most towards similarity.
- *FG$_l$* represented a mixture of sites from five different landforms and eleven different vegetation types. This floristic group contained the majority of sites from the floodplains landform (F1, F2, F3) and drainages landform (D1), all sites from F4 and F5, one site from H3, P4 and P7, four sites from M3 and five sites from P2. *Triodia epactia, Corymbia hamersleyana* and **Cenchrus spp.* contributed the most towards similarity.
- *FG$_m$* contained a single site from the D1 vegetation type; comprising the woodland of a major drainage line; this site was characterised by riparian species such as *Eucalyptus victrix* and *Melaleuca glomerata* over a variable understorey of shrubs, grasses and sedges.

Table 5.2: Floristic groups at the 25% level of similarity.

Floristic Group	Top 5 Species Contributing to Similarity (cumulative %)	Vegetation Types
a	*Urochloa occidentalis, Chrysopogon fallax, Dactyloctenium radulans, Chloris pectinata, Cullen cinereum* (50%)	C3 (1 site) and P8
b	*Eriachne benthamii, Cullen cinereum, Eragrostis tenellula, Cynodon convergens, Cullen graveolens* (29%)	C1, C5 (1 site) and D3
c	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Polymeria longifolia, Urochloa occidentalis, Cynodon convergens, Dichanthium sericeum* (46%)	C1 (1 site), C3, C4 and P6
d	*Triodia angusta, Eucalyptus xerothermica, Eulalia aurea Acacia bivenosa, Eragrostis desertorum* (85%)	P5
e	*Triodia wiseana, Eucalyptus leucophloia* subsp. *leucophloia, Eriachne pulchella, Senna glutinosa* subsp. *glutinosa Corymbia hamersleyana* (80%)	F1 (1 site), H1, H2, H3, H4 (1 site), P1, P2 (1 site), P3, P5 (1 site) and P7
f	*Melaleuca argentea, Eucalyptus camaldulensis subsp. refulgens, Cyperus vaginatus, Gossypium robinsonii, Acacia bivenosa* (66%)	D2
g	*Aristida contorta, Acacia macraneura, Acacia tetragonophylla, Grevillea berryana, Areocleome oxalidea* (48%)	M2
h	*Acacia aptaneura, Triodia epactia, Eriachne benthamii, Spermacoce brachystema, Evolvulus* alsinoides (24%)	M1, M2, M3 (1 site) and M4
i	NA (<2 samples)	M2 (1 site)
j	*Acacia xiphophylla, Triodia epactia, Eragrostis xerophila, Arivela viscosa, Boerhavia burbidgeana* (52%)	C2
k	*Triodia epactia, Acacia atkinsiana, Triodia wiseana, Acacia ancistrocarpa, Senna notabilis* (71%)	F2 (1 site), F3 (1 site), P1 and P2
l	*Triodia epactia, Corymbia hamersleyana, *Cenchrus spp., Ptilotus exaltatus, Arivela viscosa* (38%)	D1, F1, F2, F3, F4, F5, H3 (1 site), M3, P2, P4 (1 site) and P7 (1 site).
m	NA (<2 samples)	D1 (1 site)

5.5 Vegetation Condition

Mapping of vegetation condition is provided in Appendix 7 using condition categories from EPA (2016a). The condition of the vegetation ranged from 'Excellent' to 'Poor', however most vegetation was in 'Excellent' condition (Table 5.3).

The survey area contained various disturbed areas associated with the Rio Tinto Rail Access Road, current and historical mining exploration tracks and drill pads, and pastoral fences, tracks and other infrastructure; these areas were mapped as 'Completely Degraded'. Areas completely devoid of vegetation were considered 'cleared', and were not assigned a condition rating. Weeds were typically scattered along the verges of much of the road, however dense infestations were mainly confined to drainage lines and associated floodplains. **Cenchrus* spp., **Vachellia farnesiana* and **Bidens bipinnata* were particularly common weed species. Evidence of cattle was recorded from many sites, however heavy grazing was only noted near pastoral homesteads, and along major drainage lines.

Table 5.3: Extent of vegetation condition categories within the survey area.

Condition Rating	Area (ha)	Proportion of Survey Area
Excellent	4,186.3	47.9%
Excellent – Very Good	881.6	10.1%
Very Good	3,054.1	34.9%
Very Good - Good	50.6	0.6%
Good	88.6	1.0%
Good - Poor	0.6	0.0%
Poor	8.1	0.1%
Completely Degraded	117.8	1.3%
Cleared	358.7	4.1%

5.6 Vegetation of Significance

No TECs listed under the EPBC Act were identified within the survey area. One TEC listed for WA as Vulnerable, the "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)" TEC (DBCA 2018), was previously recorded within the survey area (see Section 5.1.1), and this occurrence was re-confirmed during the survey.

Vegetation units C4, C5 and P6 were all considered to represent this TEC, comprising a total of 115.3 ha in the Tom Price section of the survey area, which represents 1.3% of the total survey area (Table 5.1; Appendix 5). Including 182.1 ha of contextual extent, 38.8% of the mapped extent in the local area (Table 5.1) represents this TEC (see Plate 5.20, Plate 5.22 and Plate 5.40 for representative photographs). The P3 vegetation unit was associated with this TEC but was not considered to represent it. The vegetation condition of this TEC ranged between 'Good' to 'Very Good'.

The *Themeda* Grasslands TEC community is considered to be at risk from grazing and trampling by stock, weed invasion, changed fire regimes and alteration of hydrology(DBCA 2018).

One PEC, the Priority 1 "Brockman Iron cracking clay communities of the Hamersley Range" (described in Section 5.1.2) was recorded in the survey area. Vegetation type C3, 88.1 ha of which was mapped for the current study, is equivalent to this PEC (see Plate 5.18 and Plate 5.19), and was recorded in close proximity to the *Themeda* Grasslands TEC. The Brockman Iron cracking clay communities PEC within the survey area comprised 39.1% of the mapped extent in the local area (the survey area and contextual area combined, Table 5.1). The vegetation condition for this PEC was considered 'Good'. Threatening factors for this community are listed as "heavy grazing, clearing for mining and infrastructure/ agricultural developments and altered fire regimes"(DBCA 2020b).

5.6.1 Vegetation of Local Significance

Two areas of Snakewood or scattered Snakewood over scattered hummock and tussock grassland mosaic vegetation (vegetation types C2 and one site from P7) recorded on cracking clay in the far north of the survey area correspond with the Hooley Land System (Alluvial clay plains supporting a mosaic of snakewood shrublands and tussock grasslands). The Wona Land System (Basalt upland gilgai plains supporting tussock grasslands and minor hard spinifex grasslands), which represents a listed PEC, is recorded approximately 15 km to the northeast. Both share a component of tussock grasslands on cracking clay. Furthermore, these cracking clay

habitats in the survey area are composed of a number of grasses that constitute one of the four plant assemblages described for the Wona Land System (i.e. Mitchell grass and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai (Priority 3)).

In addition to this, the undescribed *Dipteracanthus* aff. *australasicus* was recorded and was restricted to these vegetation types. Although vegetation types C2 and P7 do not correspond with the listed Wona Land System PEC, given the proximity and similarity of associated species, these vegetation types are likely to have high local conservation significance.

6.0 Flora Results

6.1 Desktop Study

The framework for ranking species of conservation significance in WA is presented in Appendix 1. Based on the desktop study, this section describes flora of conservation significance previously recorded within the survey area, or assessed as having the potential to occur (see Table 4.3 and Appendix 8).

6.1.1 Threatened Flora

Five flora species, *Aluta quadrata, Quoya zonalis, Seringia exastia* and *Thryptomene wittweri*, are listed as Threatened for the Pilbara bioregion. None of these have previously been recorded from the survey area or the study area and, based on known distribution, none would be expected to occur. One species, *Lepidium catapycnon*, previously recorded in the study area was de-listed as a Threatened species in 2015 and is currently listed Priority 4. It is also not expected to occur in the survey area.

6.1.2 Priority Flora

A total of 66 Priority flora species have previously been recorded from the survey or study area (Table 4.3, Figure 6.1). An assessment of their likelihood to occur in the survey area is presented in Appendix 8.

Three species were ranked as Likely to Occur, comprising:

- Two Priority 3 species:
    - *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479)
    - *Themeda* sp. Hamersley Station (M.E. Trudgen 11431)
- One Priority 4 species:
    - *Goodenia nuda*

Forty additional species were ranked as May Occur, comprising:

- Seven Priority 1 species:
    - *Bothriochloa decipiens* var. *cloncurrensis*
    - *Calotis squamigera*
    - *Goodenia pedicellata*
    - *Helichrysum oligochaetum*
    - *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354)
    - *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684)
    - *Whiteochloa capillipes*
- Nine Priority 2 species:
    - *Euphorbia inappendiculata* var. *inappendiculata*
    - *Euphorbia inappendiculata* var. *queenslandica*
    - *Gompholobium karijini*
    - *Hibiscus* sp. Gurinbiddy Range (M.E. Trudgen MET 15708)
    - *Ipomoea racemigera*
    - *Oxalis* sp. Pilbara (M.E. Trudgen 12725)
    - *Paspalidium retiglume*
    - *Pentalepis trichodesmoides* subsp. *Hispida*
    - *Teucrium pilbaranum*

- Twenty-one Priority 3 species:
    - *Aristida jerichoensis* var. *subspinulifera*
    - *Astrebla lappacea*
    - *Eragrostis surreyana*
    - *Eremophila magnifica* subsp. *Velutina*
    - *Euphorbia australis* var. *glabra*
    - *Glycine falcata*
    - *Goodenia* sp. East Pilbara (A.A. Mitchell PRP 727)
    - *Grevillea saxicola*
    - *Gymnanthera cunninghamii*
    - *Indigofera gilesii*
    - *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)
    - *Iotasperma sessilifolium*
    - *Polymeria distigma*
    - *Ptilotus subspinescens*
    - *Rhagodia* sp. Hamersley (M. Trudgen 17794)
    - *Rostellularia adscendens* var. *latifolia*
    - *Sida* sp. Barlee Range (S. van Leeuwen 1642)
    - *Sida* sp. Hamersley Range (K. Newbey 10692)
    - *Solanum albostellatum*
    - *Swainsona thompsoniana*
    - *Triodia basitricha*
- Three Priority 4 species:
    - *Acacia bromilowiana*
    - *Eremophila magnifica* subsp. *magnifica*
    - *Rhynchosia bungarensis*

The 43 species listed as Likely to Occur or May Occur informed the targeted conservation significant flora searches during the survey.

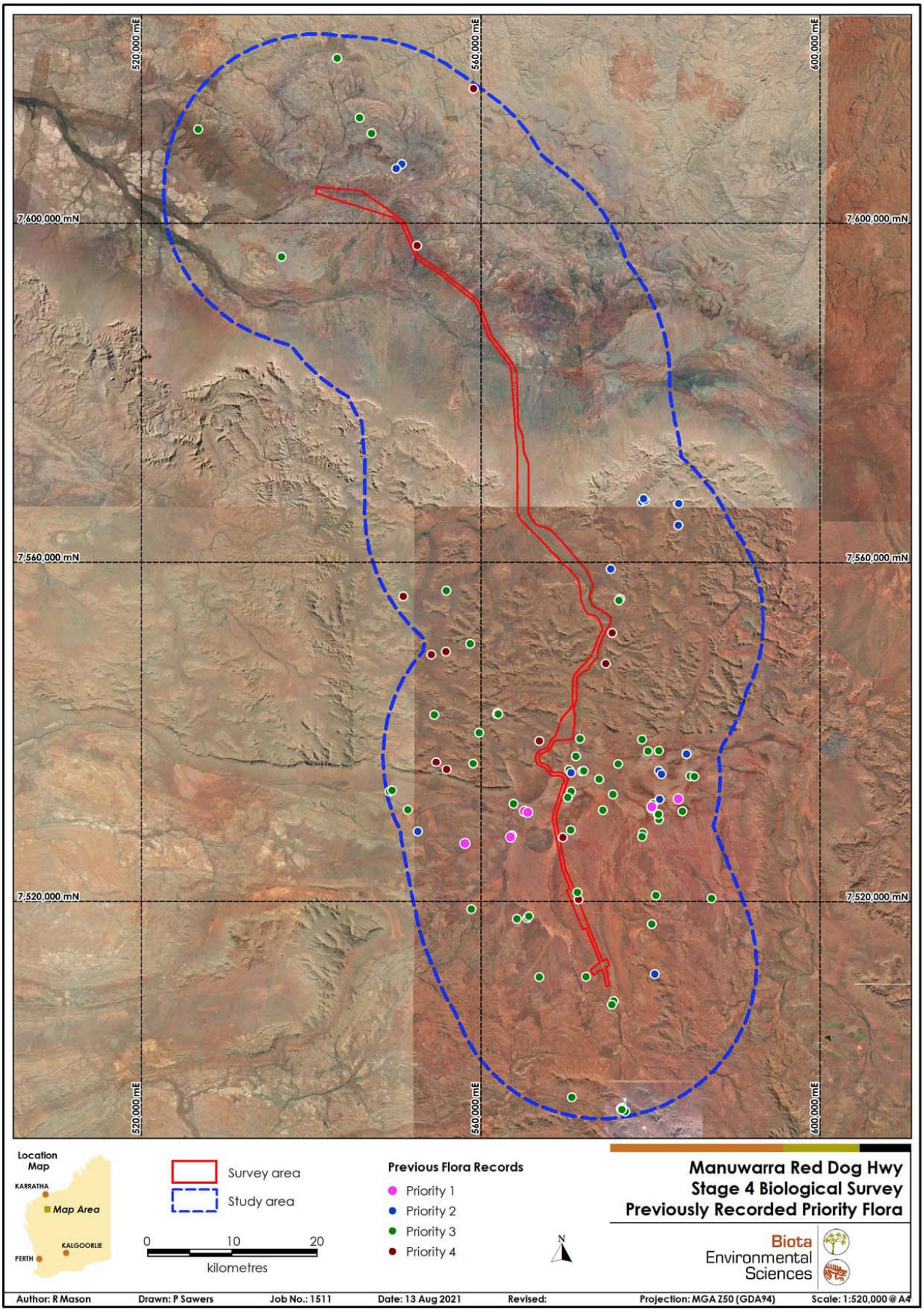


Figure 6.1 Priority flora records from the study area

6.2 Overview of Survey Findings

6.2.1 Flora Taxa Recorded From the Survey Area

A total of 590 native vascular flora species from 190 genera and 56 families were recorded from the survey area. The complete flora species list for the survey area is provided in Appendix 9 and all raw quadrat data are provided in Appendix 10. The dominant native plant families and genera recorded from the survey area are presented in Table 6.1. These families and genera are typically representative of species lists from this region.

In addition to the above, 16 introduced flora species (weeds) from 15 genera and nine families were recorded from the survey area (see Section 6.4).

Table 6.1: Dominant families and genera recorded from the survey area.

Family	No. of Native Species	Genus	No. of Native Species
Fabaceae	110	*Acacia*	39
Poaceae	92	*Senna*	22
Malvaceae	63	*Ptilotus*	21
Amaranthaceae	37	*Euphorbia*	18
Asteraceae	28	*Sida*	18

6.2.2 Sampling Adequacy

The species accumulation curve generated from the quadrat and relevé survey data is approaching a plateau, indicating that the sampling of the survey area was relatively thorough (Figure 6.2). However, the two estimates of species richness (ICE and Chao2) suggested that the actual number of species present in the sampled area was approximately 677, which would mean that 86% of the total flora (native and introduced species) was recorded during the site sampling for the current study (see Table 6.2). This proportion is similar to those reported for other surveys of a similar nature (e.g. 83% (Ecoedge 2014); 84% (Ecologia 2016), 82-88% (Ecologia 2009); 86-87% (Biota 2018b); and 87% (Coffey 2015)). It should be noted that an additional 27 taxa were recorded through the opportunistic sampling within the survey area; with inclusion of these taxa, the 2020 survey work has recorded 88% of the predicted total number of taxa.

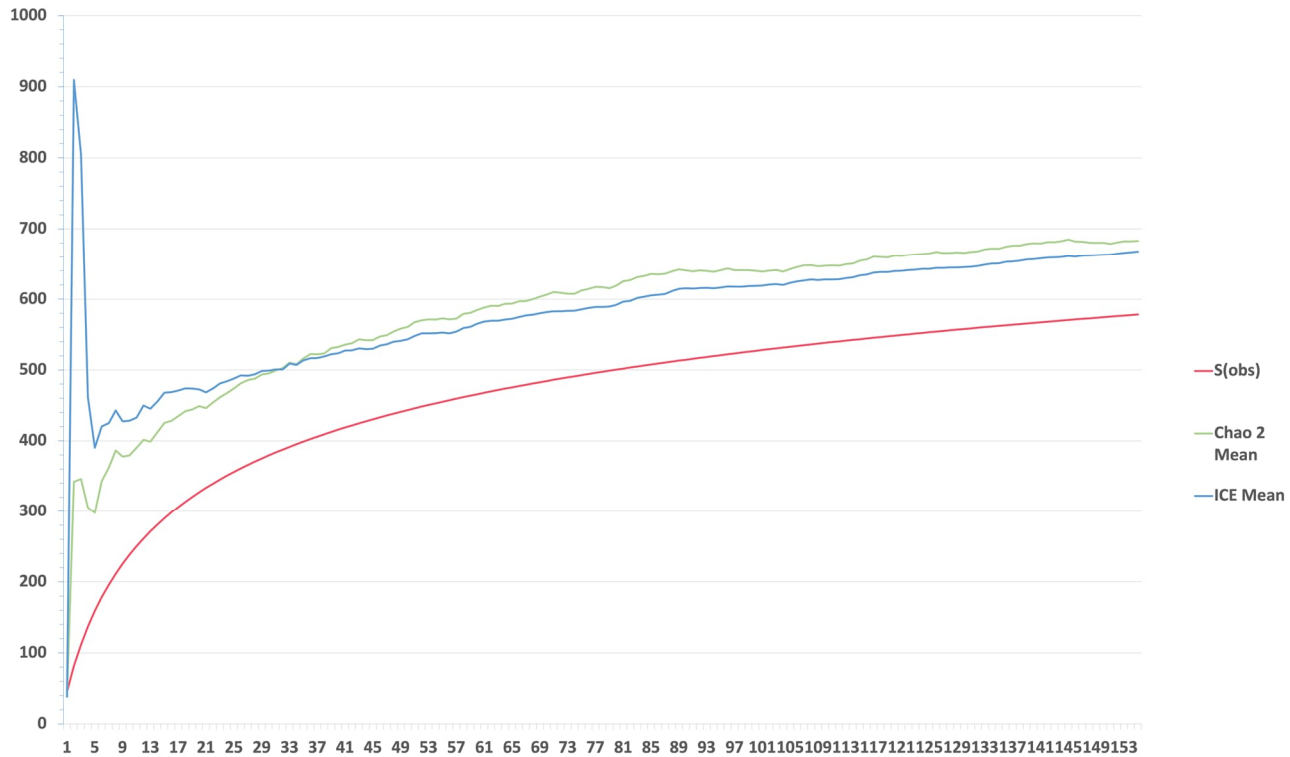


Figure 6.2 Randomised species accumulation curves for sites sampled in the survey area.

Table 6.2: Recorded species richness compared with predicted species richness using incidence-based estimators (without opportunistic records).

Parameter		Number of Species	Percent of Estimated Richness Recorded
Number of species recorded (from quadrats and relevés only)		579	
Estimated number of species	Chao 2 Mean	685	85
	ICE Mean	669	87

6.2.3 Species Richness

Species richness typically shows a positive relationship with various factors, including the size of the study area, the diversity of habitats present, the amount of rainfall received by the locality, and the survey effort expended. The total number of native species recorded by the current study is shown in Figure 6.3, compared to various other survey areas in the locality: Eliwana (Biota 2018a), Koodaideri (Biota 2012a), Emu Siding to Rosella Siding Development Areas (Biota 2010a), Galah, Gull, Ibis-Koala and Rosella Rail Sidings (Biota 2010b), and the Bellbird Siding to Juna Downs rail duplication (Biota 2008b).

The number of species recorded from the current survey area was higher than or similar to most other survey areas of a similar size, which is considered to reflect a variety of factors:

- the narrow linear shape of the survey area and that the survey area crosses a variety of landforms, land systems and geological types, meaning that a diverse array of habitats was intersected;
- the length of the corridor (110 km) crosses a broad geographic range, providing the opportunity to intersect the ranges of a greater number of species; and
- higher than average rainfall was received in January and February 2020, preceding the primary survey mobilisations by 4-8 weeks, resulting in optimal collecting conditions for most of the survey area.

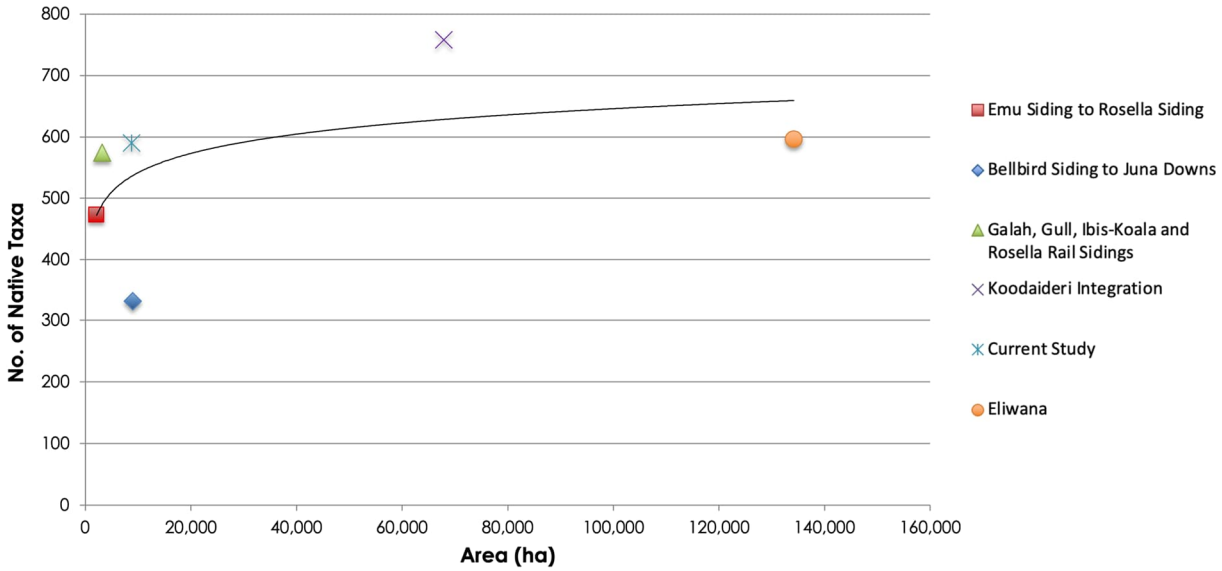


Figure 6.3: Species richness for the current survey area, compared to other survey areas in the locality.

6.3 Flora of Significance

6.3.1 Threatened Flora

One species currently listed as Threatened under State and Commonwealth legislation, *Seringia exastia* (Threatened), was recorded in the survey area, from four quadrats (KTF124, KTF137, KTF142

and KTF145) on the foothills and plains in the south-central section of the survey area. Locations of records are mapped in Appendix 5 and detailed further in Appendix 11.

Seringia exastia has recently been incorporated into the common and widespread species, *Seringia elliptica*. Given the much broader distribution of the resulting taxon, *S. exastia* is no longer considered to be of conservation significance (Binks et al. 2020). It is expected that *S. exastia* will be de-listed in future, and therefore this species is not discussed further.

No other Threatened species are expected to occur (see Section 6.1.1 and Appendix 8).

6.3.2 Priority Flora

A total of 21 Priority flora species were recorded during the field survey. Locations of records are mapped in Appendix 5 and detailed further in Appendix 11. The species comprised:

- Three Priority 1 species:
    - *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354),
    - *Josephinia* sp. Woodstock (A.A,. Mitchell PRP 989);
    - *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684);
- Three Priority 2 species:
    - *Aristida lazaridis,*
    - *Euphorbia inappendiculata* var*. inappendiculata,*
    - *Euphorbia inappendiculata* var*. queenslandica,*
- Twelve Priority 3 species:
    - *Aristida jerichoensis var. subspinulifera,*
    - *Astrebla lappacea,*
    - *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479),
    - *Euphorbia australis* var*. glabra,*
    - *Glycine falcata,*
    - *Gymnanthera cunninghamii,*
    - *Rhagodia* sp. Hamersley (M. Trudgen 17794),
    - *Sida* sp. Hamersley Range (K. Newbey 10692)
    - *Streptoglossa* sp. Cracking clays (S. van Leeuwen et al. PBS 7353),
    - *Swainsona thompsoniana,*
    - *Themeda* sp. Hamersley Station (M.E. Trudgen 11431),
    - *Triodia basitricha*; and
- Three Priority 4 species:
    - *Eremophila magnifica* subsp*. magnifica,*
    - *Goodenia berringbinensis*,
    - *Goodnia nuda*.

Hibiscus sp. Mt Brockman (E. Thoma ET 1354) (Priority 1)
This erect, spindly shrub grows to 3.5 m tall and is found on range crests and slopes. Seven opportunistic records were made in hilly habitat in the south-central section of the survey area. This species was found as scattered individuals with counts of between one and 10 at each recorded location , within vegetation types H1 and H3, associated with stony hillsopes, crests and foothills. There are 15 vouchered records from the Pilbara and its known range is relatively limited to the Tom Price locality and Karijini National Park. Identification of this species has been confirmed by the WA Herbarium.

Josephinia sp. Woodstock (A.A. Mitchell PRP 989) (Priority 1)
This small perennial shrub has woolly stems and leaves and pink flowers and has been recorded in both the Gascoyne and the Pilbara bioregions. There are five vouchered records from the Pilbara where it has mostly been recorded from rocky creeklines and plains. One individual was recorded from quadrat KTF52, in mulga woodland vegetation unit M3, approximately 4 km south of the Fortescue River. The identification of this species has been confirmed by the WA Herbarium and the specimen will be lodged as a voucher.

Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684) (Priority 1)
A low annual herb growing to 0.3 m tall typically occurring in drainage lines, on floodplains and clay plains, this species was recorded from one quadrat (KTF10) in the far southern section of the survey area in an area of banded mulga (vegetation type M1). Its range extends across the southern Pilbara, primarily between Tom Price and Newman, and is represented by 17 vouchered records.

Aristida lazaridis (Priority 2)
A tufted perennial grass growing to 1.5 m high, this species is known from sand or loam substrates in the Pilbara bioregion, extending approximately 300 km roughly between Tom Price and Newman. Although known from the broader locality - there are 21 vouchered records from the WA Herbarium – this species was not returned in any of the database searches conducted. One individual was recorded opportunistically from the foothills of the Hamersley Range, approximately 8 km south-east of Mt Sheila, on the stony undulating plains of the P1 vegetation type.

Euphorbia inappendiculata var. *inappendiculata* (Priority 2)
This small annual herb was recorded from one quadrat (KTF73) and four opportunistic locations all in the northern extent of the survey area, with the location closest to the road having approximately 150 individuals. This species occurred on cracking clay plains (C1) vegetation type and stony plains (P7 vegetation type). *Euphorbia inappendiculata* var. *inappendiculata* is distributed across a range of almost 500 km, with most records from the Pilbara, however there is one record from the adjacent Gascoyne bioregion. Eight records in total have been vouchered in WA for this species. The identification of this species was confirmed by the WA Herbarium and all specimens will be considered for lodgement as vouchers.

Euphorbia inappendiculata var. *queenslandica* (Priority 2)
This annual herb, which typically occurs on clay, was recorded from seven quadrats (KTF13, KTF17, KTF21, KTF23, KTF34, KTF70, KTF72) on a variety of vegetation types (C1, C4, C5, D3 and P6). The species is currently distributed in the south-central part of the Pilbara concentrated around the Tom Price locality, with one outlying historical record from the Kimberley, near Halls Creek. Nine records in total have been vouchered in WA for this species. The identification of this species was confirmed by the WA Herbarium and all specimens will be considered for lodgement as vouchers.

Aristida jerichoensis var. *subspinulifera* (Priority 3)
This perennial grass known to occur on hardpan plains was recorded from one quadrat (KTF03) in the southern section of the survey area in banded mulga habitat (M1). Approximately 10 individuals were encountered. Its range extends from approximately Mt Brockman and southeast to Newman in the Pilbara, with two isolated records in the Gascoyne and Murchison bioregions. There have been 39 records of *Aristida jerichoensis* var. *subspinulifera* vouchered in WA. The identification of this species has been confirmed by the WA Herbarium and the specimen will be lodged as a voucher.

Astrebla lappacea (Priority 3)
This tufted perennial grass, which grows to 0.8 m high and has green or purple flowers, occurs on clay and loam substrates primarily in the Tom Price locality and is know from 19 vouchered records. It was recorded from four quadrats (KTF04, KTF08, KTF17 and KTF59) and one relevé (KTFREL11) in the southern section of the survey area, on clay, in C3, D3 and P8 vegetation types. At site KTF08, this species made up approximately 60% of the ground cover, while at KTF59 cover was 2%.

Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479) (Priority 3)
This small annual herb was recorded from seven quadrats (KTF21, KTF22, KTF34, KTF70, KTF72, KTF73 and KTF74) and two opportunistic records in the northern tip and southern half of the survey area, associated with clay in a variety of drainage, floodplain and stony plains habitat (C1, C4, P6 and P7 vegetation types). This species is broadly distributed across the Pilbara, with 37 vouchered records from the Chichester, Hamersley, Fortescue and Roebourne subregions, but it is restricted to heavy clay soils.

Euphorbia australis var. *glabra* (Priority 3)
A prostrate annual which typically occurs on cracking clay and clay plains. This small herb was widely recorded in the survey area from six quadrats (KTF12, KTF19, KTF21, KTF22, KTF70 and KTF72), one relevé (KTFREL13) and 21 opportunistic collections in the northern and southern halves of the survey area. It was commonly associated with the *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland (C4) vegetation type, as well previously cleared areas. It is distributed widely in the central Pilbara, with 25 vouchered records from the Chichester, Hamersley and Fortescue subregions.

Glycine falcata (Priority 3)
This mat-forming perennial herb with blue-purple flowers typically occurs on clay soils along drainage depressions and in crabhole plains, or on river floodplains. It was recorded as scattered individuals from five quadrats (KTF21, KTF59, KTF60, KTF72, KTF125), two relevés (KTFREL11 and KTFREL21) and one opportunistic location within in the survey area, from the southern section in heavy clay and floodplain habitats of the C3, C4, D3 and P6 vegetation types. It is known to occur in the Pilbara, Central Kimberley and Ord Victoria Plain bioregions from 18 vouchered records.

Gymnanthera cunninghamii (Priority 3)
A shrub growing to 2 m tall, with cream-yellow or green flowers, this species occurs on sandy soils in drainage areas. It was recorded once opportunistically in the northern extent of the survey area in a drainage line (D1 vegetation type) . This species has a broad distribution in WA, ranging across the Carnarvon, Pilbara and Gascoyne IBRA regions, where 74 specimens have been vouchered.

Rhagodia sp. Hamersley (M. Trudgen 17794) (Priority 3)
This species is typically associated with mulga vegetation on plains with a clayey substrate. It was recorded as scattered individuals from five quadrats (KTF02, KTF06, KTF09, KTF10, KTF119) and four opportunistic records in the southern extent of the survey area mulga vegetation types M1 and M2. *Rhagodia* sp. Hamersley (M. Trudgen 17794) is distributed over a range of approximately 300 km through the south of the Pilbara and into the northern Gascoyne bioregions, from 68 vouchered records.

Sida sp. Hamersley Range (K. Newbey 10692) (Priority 3)
This upright, low spreading shrub grows to 0.3 m tall on, or at the base of rocky cliff habitats in red, skeletal stony soils over ironstone. It was recorded as scattered individuals from 18 opportunistic records and from one quadrat (KTF09), all in the southern half of the survey area within vegetation types H1, H3 and M1. *Sida* sp. Hamersley Range (K. Newbey 10692) occurs in the southern Pilbara, known only from the Hamersley subregion, from 27 vouchered records.

Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353) (Priority 3)
An annual, multi-stemmed herb with pink flowers, this species generally occurs in areas of cracking clay or damp areas. It was recorded from five quadrats (KTF07, KTF22, KTF59, KTF70 and

KTF72) and one relevé (KTFREL11) in the Tom Price section of the survey area, and intersected the five vegetation types (C3, c4, P6, P8 and D3). *Streptoglossa* sp. Cracking clays (S. van Leeuwen et al. PBS 7353) is known from 10 vouchered records from the Augustus, Fortescue and Hamersley subregions.

Swainsona thompsoniana (Priority 3)
This prostrate annual herb was recorded from four quadrats (KTF14, KTF34, KTF73 and KTF139) in the northern tip of the survey area in clay and stony plains of C1 and P7 vegetation types. This species is distributed across the Pilbara, known from all four subregions, over a broad range of approximately 400 km. A total of 23 records have been vouchered in WA.

Themeda sp. Hamersley Station (M.E. Trudgen 11431) (Priority 3)
This perennial tussock grass occurs throughout the southern section of the survey area associated with heavy clay, and in the northern and southern tip of the survey area, across a broad range of vegetation types associated with cracking clay, mulga, broad drainage and floodplain habitats. It was recorded from 15 quadrats (KTF08, KTF11, KTF13, KTF16, KTF17, KTF21, KTF22, KTF59, KTF60, KTF70, KTF72, KTF122, KTF125, KTF126 and KTF127), four relevés (KTFREL06, KTFREL07, KTFREL11 and KTFREL21) and one opportunistic record. Density ranged from scattered individuals to almost 70% cover at some sites. Significant cover was recorded at sites KTF08, KTF21, KTF22, KTF70, KTF72, KTF125, KTF127 and KTFREL21. The regional distribution of *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) is represented by 45 vouchered records in WA, and occurs over a range of approximately 400 km east-west and 300 km north-south through the Pilbara, with an outlying record another 200 km further south in the Little Sandy Desert bioregion. Records are typically associated with areas of cracking clay plain associated with the *Themeda* Grasslands TEC (see Section 5.1.1), or sometimes creeklines and mulga woodlands.

Triodia basitricha (Priority 3)
A low, perennial hummock grass with a fine inflorescence, it is morphologically similar to *T. melvillei* and *T. bitextura.* This species was recorded from quadrat (KTF111) in the centre of the survey area (H1 vegetation type) and comprised 25% of the lower vegetation stratum at that location. It is known from 24 vouchered records in WA.

Eremophila magnifica subsp. *magnifica* (Priority 4)
A shrub growing to 1.5 m tall with blue flowers, this species typically occurs on skeletal soils over ironstone on rocky screes. It was recorded seven times during targeted searching in the southern section of the survey area in hilly habitat (H3), with one to three individuals counted at each record. A total of 42 records have been vouchered from the Fortescue and Hamersley subregions in the Pilbara.

Goodenia berringbinensis (Priority 4)
This ascending annual herb with yellow flowers has a broad range with 35 vouchered records extending throughout the Coolgardie, Gascoyne, Murchison, Pilbara and Yalgoo bioregions. It is commonly associated with seasonally inundated areas including clay plains and ephemeral creeks. A total of 53 individuals were recorded from the survey area, made from two separate opportunistic records, and located in the northern section of the survey area within snakewood (*Acacia xiphophylla*) and tussock grassland vegetation mapped as vegetation type C2. There are currently two vouchered record from the Pilbara; the WA Herbarium has confirmed the identification of the species and recommended lodgement of the specimen as a voucher.

Goodenia nuda (Priority 4)
This slender annual herb was recorded from 40 records throughout the length of the survey area. It was found at 30 quadrats, three relevés and recorded from 10 locations during targeted searches. In total, 464 individuals were recorded in the survey area, across a variety of landforms and vegetation types. This species has a broad distribution over 900 km east-west and 720 km north-south, and is known from 126 vouchered records in WA. The vast majority of records are from the Pilbara region, with single outlying records from the adjacent Gascoyne, Murchison, Little Sandy Desert and Great Sandy Desert bioregions.

Although the above species were recorded during the survey, it is possible that other species listed in Section 6.1.2 may occur in the survey area if additional survey effort were to be applied. A final likelihood of occurrence ranking was made after the survey for these species and is presented in Appendix 8.

6.3.3 Unresolved Taxa and Species of Interest

Most of the specimens recorded (approximately 94%) were able to be resolved to the lowest level possible within the current taxonomic framework. The remaining mostly comprised those specimens for which insufficient material was present to confirm the species.

Some problematic taxa that have remained unresolved for this report include:

- *Dipteracanthus* aff. *australasicus*: Several specimens, which were collected from the Snakewood vegetation, C2, in the northern survey area are of interest. They have characters intermediate between *D. chichesterensis* and *D. australasicus* subsp. *australasicus* (indumentum and the mucilaginous rim on seed) and the habitat is atypical. They are likely to be representative of a species complex and would require further work to resolve.
- *Polymeria* sp.: This specimen was recorded from quadrat KTREL08 on a rocky hillslope mapped as H3 in the Hamersley Range (Appendix 11) . While it is from the genus *Polymeria*, it could not be identified further as any currently recognised species in the PERTH collection by either Biota botanists nor Mike Hislop (identification botanist at the WA Herbarium). Further work would be required to resolve the identification and thus the conservation significance of this taxon and it will be submitted to the WA Herbarium as a voucher and has been assigned as a 'species of interest' for the purpose of this report.
- *Tephrosia rosea* (sens. lat.): This taxa has been identified at WAH as being potentially distinct from *Tephrosia rosea* but would require further investigation to determine.
- *Acacia aneura/aptaneura*: identifications from the *Acacia aneura* complex are frequently tentative in the absence of pods. None of the specimens are considered to represent restricted taxa.
- *Amaranthus* aff. *undulatus* (round leaves, short tepals): this taxon is not uncommon in rocky areas through the Pilbara and is not considered to be of conservation significance.
- *Cynanchum ?floribundum* (4 colleters): This specimen is likely to *be Cynanchum floribundum*, but was found to have an abnormal number of colleters (*C. floribundum* should have two colleters but this specimen had four colleters). Similar specimens are frequently recorded on Pilbara surveys and are not considered to be of conservation significance at this stage.

6.4 Introduced Flora

A total of 16 introduced flora species (weeds) were recorded from the survey area (Table 6.3; Appendix 12). None of the species recorded are listed as WONS (Thorp and Lynch 2000)[7], or as declared pests for the Pilbara region under the BAM Act (DPIRD 2020). However, Buffel Grass (**Cenchrus ciliaris*), Birdwood Grass (**C. setiger*), Mimosa Bush (**Vachellia farnesiana*) and Ruby Dock (**Rumex vesicarius*) are all considered to be serious environmental weeds in WA (CALM 1999).

The then Department of Parks and Wildlife's Weed Species Ranking (Department of Parks and Wildlife 2013a), which was derived from the Department's Weed Prioritisation Process (WPP) (Department of Parks and Wildlife 2013), took into account the potential distribution, current distribution, ecological impact, invasiveness and feasibility of control to derive a broad qualitative weed species ranking corresponding to specific management actions. One of the species (**Flaveria trinervia*) recorded from the survey area was not ranked as part of this process (see Table 6.3). However, eight of the species recorded have a 'High' ranking for Ecological Impact: **Aerva javanica, *Cenchrus ciliaris, *C. setiger, *Cynodon dactylon, *Echinochloa colona,*

[7] For the current listing of Weeds of National Significance, go to http://www.weeds.org.au/WoNS/

Malvastrum americanum, *Setaria verticillata* and **Vachellia farnesiana* and 10 have a 'Rapid' ranking for Invasiveness (Aerva javanica, *Bidens bipinnata, *Cenchrus ciliaris, *C. setiger, *Cynodon dactylon, *Echinochloa colona, *Malvastrum americanum, *Setaria verticillata, *Sonchus oleraceus* and **Vachellia farnesiana).*

It should be noted that the Weed Species Ranking of Low for species such as **Cenchrus ciliaris* and **C. setiger* is a reflection of the low feasibility of control for these species, rather than an indication of their perceived invasiveness or potential for ecological impact. Several species (including **Aerva javanica, *Cenchrus ciliaris, *C. setiger, *Cynodon dactylon, *Echinochloa colona, *Malvastrum americanum, *Rumex vesicarius, *Setaria verticillata* and **Vachellia farnesiana*) were ranked by the Department of Parks and Wildlife (2013) as priority widespread weeds. These comprise weed species that are considered to have the potential for high ecological impact and are rapidly invasive, but which are already too widespread in the region to be feasible to control at the species level. Management of these species is targeted at the protection of specific assets on high conservation areas.

Table 6.3: Summary of Introduced taxa recorded within the survey area, including WPP rankings.
Descriptions from WA Herbarium (2020), unless otherwise cited.

Species	Description	Declared Pest (DP) / WoNS / DBCA Priority Alert Weed (PA)	WPP – Weed Species Ranking		Distribution in Survey Area
			Ecological Impact	Invasiveness	
**Aerva javanica* (Kapok Bush)	Erect perennial herb, often occurs on sandy soils. Originally introduced to assist with the revegetation of disturbed bushland; now widespread from Carnarvon to the Kimberley (Hussey et al. 2007).	–	H	R	Recorded in the central portion of the survey area from two quadrats (KTF56 and KTF112) and one opportunistic record.
**Bidens bipinnata* (Bipinnate Beggartick)	Annual daisy growing to 90 cm tall, with yellow flowers between March and September. Commonly observed in association with Mulga vegetation and creeklines in the Pilbara. May occur in high densities within suitable habitats and given appropriate conditions, but on its own does not appear to cause exclusion of native flora species.	–	U	R	Recorded in the northern and southern sections of the survey area from 17 quadrats, six relevés and five opportunistic records in clay areas.
**Cenchrus ciliaris* (Buffel Grass)	Perennial tussock grass growing to 1 m tall and flowering for most of the year. Introduced by pastoralists as a fodder species and now widespread through WA. This species has demonstrated allelopathic capacities, whereby it releases chemicals that inhibit the growth of other plants (Cheam 1984a, 1984b, Hussain et al. 2010), and it competes aggressively and effectively with native flora species. Commonly found along drainage lines, floodplains, in sandy coastal areas and disturbed sites, where it can form dense tussock grasslands. Reproduces by seed and short rhizomes and thought to be dispersed primarily by wind and water, but can also be spread through the movement of mammals, birds and vehicles.	–	H	R	Recorded in a variety of habitats along the length of the survey area from 55 quadrats, seven relevés and 10 opportunistic records.
**Cenchrus setiger* (Birdwood Grass)	Erect tussocky perennial grass closely related to Buffel Grass; grows in the same habitats, but is usually less common. Similarly introduced as a fodder species in pastoral areas and has since become a common weed in watercourses from Carnarvon to the Kimberley (Hussey et al. 2007).	–	H	R	Recorded in a variety of habitats along the length of the survey area from 39 quadrats, eight relevés and eight opportunistic records.
**Cynodon dactylon* (Feathertop Rhodes Grass)	Annual grass with green-purple flowers in April to May, commonly recorded from clay and sand. Widespread from the Kimberley through to Esperance.	–	H	R	Recorded from two quadrats (KTF38 and KTF104) and one relevé in the north and centre of the survey area.

Species	Description	Declared Pest (DP) / WoNS / DBCA Priority Alert Weed (PA)	WPP – Weed Species Ranking		Distribution in Survey Area
			Ecological Impact	Invasiveness	
**Datura leichhardtii* subsp. *leichhardtii* (Native Thornapple)	Stout annual herb growing to 1 m tall, with spiny fruits and white flowers from June to October. Common along watercourses and drainage areas in the Pilbara (WA Herbarium 1998).	–	U	U	Recorded from one quadrats (KTF03 and KTF12) in the southern section of the survey area in or bordering banded mulga habitat.
**Echinochloa colona* (Awnless Barnyard Grass)	Tufted annual grass, flowering from February to July. A common weed of creeklines and other damp habitats, particularly in the Pilbara and Kimberley. It can occur in moderate densities, but does not appear to exclude other native species.	–	H	R	Recorded from five quadrats, four relevés and one opportunistic record along the length of the survey area.
**Flaveria trinervia* (Speedy Weed)	Annual daisy growing to 40 cm tall, with an inflorescence consisting of a large dense cluster of yellowish flower heads. Widespread through the Pilbara and Kimberley in a variety of habitats, including drainages and disturbed areas (Hussey et al. 2007).	–	–	–	Recorded from 10 quadrats in the northern and central sections of the survey area in a variety of habitats.
**Malvastrum americanum (*Spiked Malvastrum)	Erect, perennial herb or shrub to 1.3 m tall, with yellow or orange flowers from April to July. A common introduced species associated with mulga vegetation, hills, rockpiles, plains, drainage lines and floodplains. This species is widespread throughout the Kimberley, Pilbara, Gascoyne and Carnarvon bioregions.	–	H	R	Recorded from 21 quadrats, five relevés and four opportunistic records along the length of the survey area in a variety of habitats.
**Portulaca pilosa* (Djanggara)	Prostrate, succulent annual with linear leaves and pink petals. Found in sandy and disturbed sites in the Kimberley and the Pilbara (Hussey et al. 2007).	–	Not assessed		Recorded from five quadrats (KTF23) in a in a variety of habitats.
**Rumex vesicarius* (Ruby Dock)	Stout, fleshy annual herb with densely clustered red-pink fruit between July and September. Common in disturbed areas in the arid zone from the Pilbara to the Nullarbor (Hussey et al. 2007).	–	H	R	Recorded from one quadrat (KTF110) adjacent to the road and 10 opportunistic records in hilly habitat in the centre and southern sections of the study area.
**Setaria verticellata* (Whorled Pigeon Grass)	Loosely tufted annual grass to 1.3 m tall. Commonly occurs in disturbed areas, in shrublands and on the edges of rivers and creeks from the Kimberley to the Pilbara (Hussey et al. 2007).	–	H	R	Recorded from six quadrats and two opportunistic record in the north, centre and south of the survey area, all in areas with clay.
**Sonchus oleraceus* (Common Sowthistle)	Short-lived annual herb growing to 1.5 m tall. This species is common and widespread in disturbed areas of WA from Wittenoom to the Nullarbor (Hussey et al. 2007).	–	L	R	Recorded from two quadrats (KFT45 and KTF56) in the northern half of the survey area.

Species	Description	Declared Pest (DP) / WoNS / DBCA Priority Alert Weed (PA)	WPP – Weed Species Ranking		Distribution in Survey Area
			Ecological Impact	Invasiveness	
**Tribulus terrestris* (Caltrop)	Prostrate vine with greyish pinnate leaves and small yellow flowers, often found on sandy soils. Widespread throughout the Eremaean and Northern botanical provinces.	–	U	M	Recorded from five quadrats, one relevé and two opportunistic records in the north, centre and south of the survey area.
**Tridax procumbens* (Tridax Daisy)	Low, perennial herb with stiffly hairy leaves and small yellow flowers. Widespread throughout the Eremaean and Northern botanical provinces (Hussey et al. 2007).	–	Not assessed		Recorded from one opportunistic collection within major drainage of the D2 vegetation type.
**Vachellia farnesiana* (Mimosa Bush)	Spreading, thorny shrub to 4 m tall, with dark grey bark, pinnate leaves, and yellow flowers in winter. Widespread from the Kimberley to near Perth, typically occurring along drainage systems and in adjacent low-lying areas (Hussey et al. 2007).	–	H	R	Recorded from 20 quadrats, five relevés and 13 opportunistic records in the north, centre and south of the survey area associated primarily with drainage systems.

WPP = Weed Prioritisation Process (Department of Parks and Wildlife 2013b); only species with rankings in both categories are listed:
Ecological Impact Ranking: H = High, L = Low, U = Unknown. Invasiveness Ranking: M = Moderate, R = Rapid, S = Slow, U = Unknown.

7.0 Fauna Results

7.1 Desktop Study

7.1.1 Potential Fauna Assemblage

The study area has been historically well surveyed with 10 relevant surveys, carried out between 2007 and 2017 (see Table 4.4).

Reviews of these past studies and database and literature searches yielded a total of 305 vertebrate species with the potential to occur in the survey area (Table 7.1). The consolidated potential species list is provided in Appendix 13. Records of significant fauna recorded within the study area are presented in Figure 7.1 and Figure 7.2 below.

Thirty-one of the species in the potential assemblage are listed as conservation significant (Table 7.1). A further 23 avifauna species are listed as 'Marine' under the EPBC Act, despite these species not using marine habitats. In fact, fewer than half of the 293 taxa listed by the EPBC Act as Marine gain all or most of their food at sea (Garnett 2013). As the survey area does not encompass any marine habitats, these taxa are not considered further in this report.

Table 7.1: Overview of vertebrate fauna species with potential to occur in the survey area.

Fauna Group	Status	No. of Species	No. of Significant Species
Ground-dwelling Mammals	Native	25	7
	Introduced	9	-
Bats	Native	11	2
Birds*	Native	141	12*
Reptiles	Native	111	5
Amphibians	Native	8	0
*excluding Marine	Total	305	31*

Five of the 10 reports reviewed cite the presence of primary habitat for Northern Quoll and/or Pilbara Olive Python within the survey area or the study area (see Table 4.4). Five reports document the presence of secondary or transitory habitat for the Pilbara Leaf-nosed Bat but did not detect any suitable cave or roost sites. Three studies noted the presence of cracking clay habitat suitable for the Short-tailed Mouse. The outcomes of the desktop study in respect of potential conservation significant fauna species likely to occur within the survey area was consistent with those targeted by the survey methodology (Section 4.5). The likelihood assessments for conservation significant fauna species within the survey area is provided in Appendix 14.

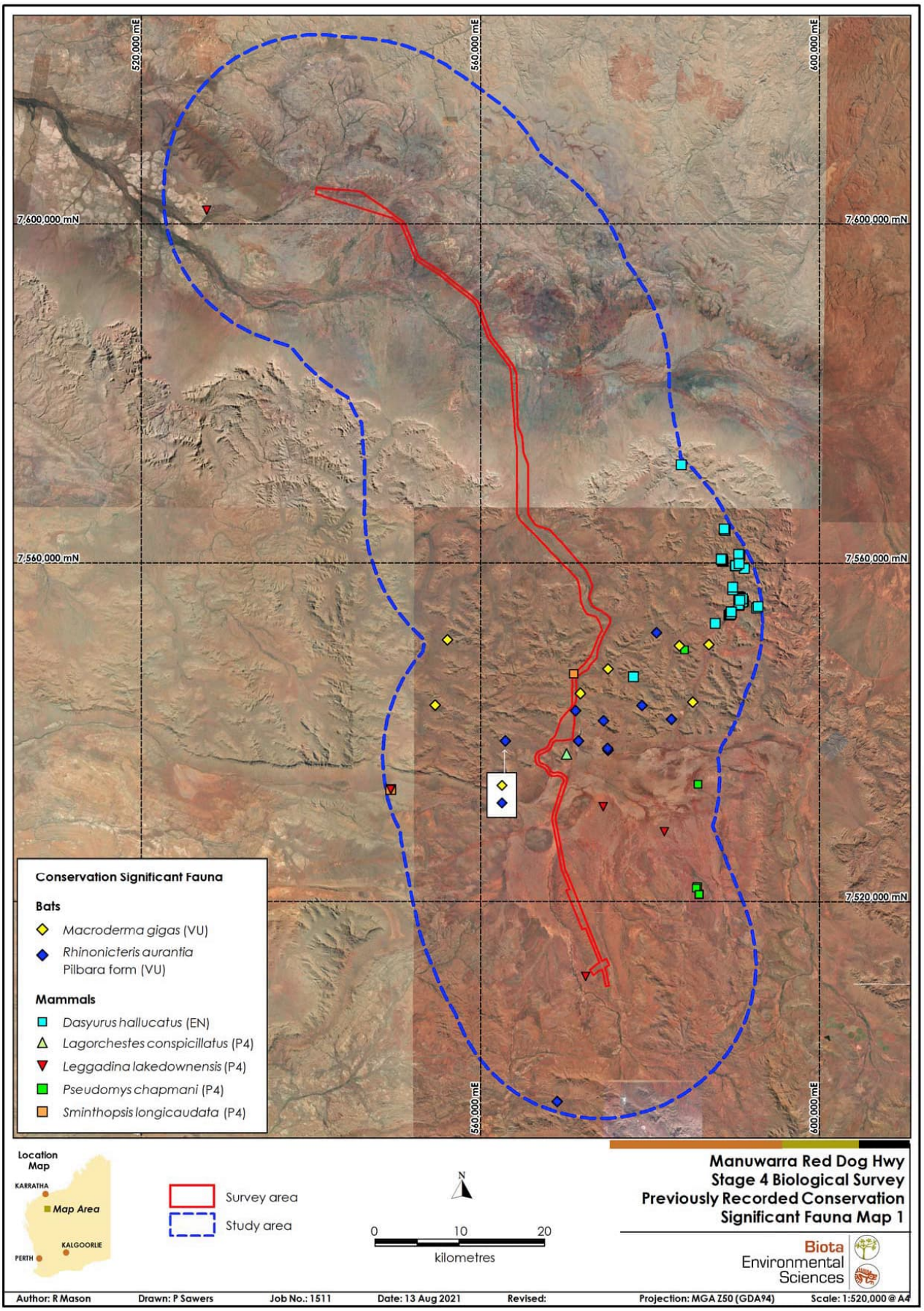


Figure 7.1 Significant fauna records in the study area

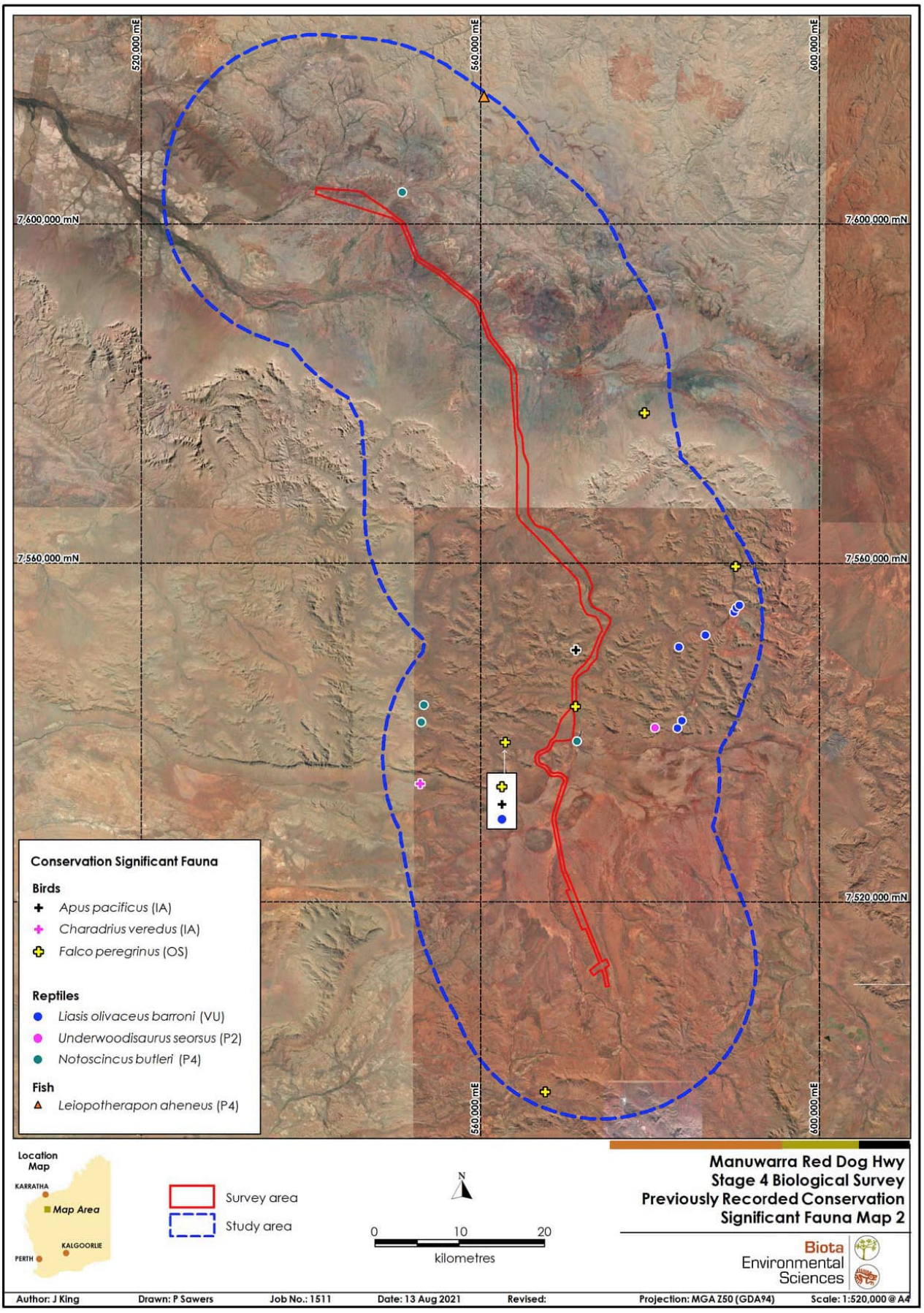


Figure 7.2 Significant fauna records in the study area

7.2 Field Survey

7.2.1 Overview

A combined total of 110 species of vertebrate fauna were recorded from within the survey and contextual areas during the field survey, including one bird species and two bat species of conservation significance (Table 7.1; Appendix 13).

Table 7.2: Overview of vertebrate fauna species recorded during the field survey work.

Fauna Group	Status	No. of Species	No. of Conservation Significant Species
Ground-dwelling Mammals	Native	2	1*
	Introduced	3	0
Bats	Native	11	2
Birds	Native	75	1
Reptiles	Native	15	0
Amphibians	Native	4	0
	Total	110	4

* Pebble-mound Mouse mounds.

Secondary evidence of two mammal species of conservation significance were recorded; defunct nest relics from the a stick-nest rat (likely Lesser Stick-nest Rate, extinct on the mainland) and recently active Pebble-mouse mounds (Table 7.2). The stick-nest rat was not included in the species list and total counts for the field survey due to its extinct status.

Locations where fauna species of conservation significance were recorded are mapped in context with their fauna habitats in Appendix 15.

7.2.2 Mammals

A total of 16 mammal species, including 11 bat species, were recorded during the field survey (Appendix 13). This total included two introduced species, Cattle (*Bos taurus*) and Feral Cat (*Felis catus*), and one naturalised exotic species Dog/Dingo (*Canis familiaris familiaris* and/or *C. f. dingo*).

Three mammal species of significance were recorded during the survey (Appendix 15). Call recordings confirmed the presence of Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form) (Section 7.2.2.1) and secondary signs of Ghost Bat (*Macroderma gigas*) (Section 7.2.2.2) and Pebble-mound Mouse were recorded. An additional three mammal taxa of significance were assessed as Likely to Occur or May Occur within the survey area (Appendix 14) and are discussed further in Sections 7.2.2.4 to 7.2.2.6.

7.2.2.1 Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form)

The Pilbara Leaf-nosed Bat is a sub-population of the Orange Leaf-nosed Bat that is endemic to the Pilbara and Ashburton regions of Western Australia, and is listed as Vulnerable under both the EPBC Act and BC Act. The Pilbara population is isolated from the main tropical populations in the Kimberley, Northern Territory and Queensland by 400 km of unsuitable habitat in the Great Sandy Desert. The Pilbara Leaf-nosed Bat is semi-desert adapted and has specific roosting requirements, requiring roost sites in caves or mine adits with stable, very hot (28 – 32ºC) and very humid (96 – 100 %) microclimates (Churchill 2008). Caves deep enough to create this environment are relatively uncommon in the Pilbara (van Dyck and Strahan 2008), which limits the availability of diurnal roosts for this species. Observed foraging habitat includes *Triodia* hummock grassland, sparse tree and shrub savannah and riparian vegetation along drainage lines (Duncan et al. 1999). The Pilbara Leaf-nosed Bat has a cryptic, high frequency call that has previously imparted low detectability of this species, and as such has potentially resulted in an underestimate of population size. However, McKenzie and Bullen (2009) found that this species is more common than previously recognised (Hancock and Timms 2002).

Pilbara Leaf-nosed Bat calls were recorded using ultrasonic ARUs at two locations within the survey area (KTP03BAT and KTP10BAT) on four occasions (Table 7.3). These areas represented suitable foraging habitat for the species (see Appendix 15). It has also been recorded frequently within the study area with the nearest record 0.27 km from the survey area boundary. No caves suitable for roosting were found during the targeted searches.

Table 7.3: Pilbara Leaf-nosed Bat records from the survey area.

Site	Habitat	Easting (mE)	Northing (mN)	Date
KTP03BAT	MDE (Eucalyptus fringed major drainage lines and associated tributaries)	563881	7583117	20/04/2020 21/04/2020
KTP10BAT	MG (Mulga grove)	569859	7524061	25/04/2020

7.2.2.2 Ghost Bat (*Macroderma gigas)*

The Ghost Bat is listed as Vulnerable under both the EPBC Act and BC Act. Ghost Bats previously occurred across most of inland and northern Australia, but are now restricted to the tropical north of the continent (Churchill 2008). The distribution of this species is fragmented, with each population showing some genetic differentiation (Armstrong and Wilmer 2004), and populations in the Pilbara bioregion appear to be isolated from those in the Kimberley and Northern Territory. Ghost Bats occur in a broad range of landforms, with distribution influenced by the availability of suitable caves for roost sites (Churchill 2008). Ghost Bats may forage over large areas, with foraging ranges of over ~60 ha (Churchill 1998), and the size of their foraging area is probably inversely related to the productivity of their landscape. Scat material from the Ghost Bat is quite distinctive and can be used to identify temporary roosts or feeding sites. Feeding sites are also usually readily identifiable based on the accumulation of discarded remains of prey animals (van Dyck and Strahan 2008).

Ghost Bat scats were recorded at two caves in the Hamersley section of the survey area during targeted searching, with one identified as a potential roost cave. In a third cave both scats and Ghost Bat remains were recorded (Plate 7.1, Plate 7.2).

Plate 7.1: Ghost Bat remains from cave.

Plate 7.2: Ghost Bat scats recorded from cave.

7.2.2.3 Western Pebble-mound Mouse (*Pseudomys chapmani)*

The Western Pebble-mound Mouse is listed as a Priority 4 species by the DBCA. Previously described as endemic to the central and eastern parts of the Pilbara (Menkhorst and Knight 2011), it is now known to occur much more widely across the entire Pilbara region and into the Gascoyne (DBCA 2020c), where it is commonly found on stony hillsides with hummock grasslands (Menkhorst and Knight 2011). The species is well known for the extensive mounds of small stones it constructs, which are the most obvious indication of the species' occurrence in an area. Mounds are most common on spurs and gentle slopes where suitably sized stones are present (van Dyck and Strahan 2008).

Three mounds constructed by this species were found during a targeted search in the southern part of the Hamersley section of the survey area. Two appeared recently active (Plate 7.3) while the other

was old and inactive. A fourth inactive mound was noted during a targeted search carried out in the middle to north of the Hamersley section of the survey area. There are numerous previous records in close proximity to the survey area, the closest one being 9 km from the survey area boundary and recorded in 2014.

Plate 7.3: Active Western Pebble-mound Mouse mound.

7.2.2.4 Northern Quoll (*Dasyurus hallucatus)*

The Northern Quoll is listed as Endangered under both the EPBC Act and BC Act. It formerly occurred across much of northern Australia but is now restricted to six major areas. Two of these areas are in Western Australia: the northwest Kimberley and the Pilbara (Braithwaite and Griffiths 1994). The species is most abundant in open, rocky habitat and commonly utilises gorges, breakaways and hills, particularly for denning purposes, but also occurs near creek lines and drainage lines, where adjacent plains and vegetated areas provide habitats for foraging and dispersal of young (van Dyck and Strahan 2008). Many records from the Pilbara bioregion have come from rocky mesa habitats particularly where in contact with dense vegetation along drainage areas (Garth Humphreys, Biota, pers. obs.) and from boulder tors of the Abydos-Woodstock Plain (How et al. 1991).

No observations or secondary evidence of Northern Quoll was recorded during the survey. However, there is good quality habitat for the species in the survey and contextual areas, particularly along major drainage lines and surrounding rocky areas, prominent in the Hamersley section of the survey area. Denning habitat for the species includes the Mesas, caves, cliffs and free faces habitat. The Northern Quoll has been recorded previously on numerous occasions in close proximity to the survey area, and there is suitable habitat for the species present in the survey area, so it is therefore considered Likely to Occur (Appendix 14).

7.2.2.5 Long-tailed Dunnart (*Sminthopsis longicaudata)*

The Long-tailed Dunnart is listed as Priority 4 by the DBCA. It inhabits rocky, rugged habitat from the Pilbara and adjacent upper Gascoyne region east to the central Northern Territory and South Australia (Menkhorst and Knight 2011). The species was once considered to be rare and possibly threatened, however research has shown that it is relatively common and widespread but is restricted to a specific habitat (Burbidge 2004). Core habitat includes rocky plateaux, breakaways and scree slopes with hummock grass and shrubs, and tall open *Acacia* shrubland and woodland (van Dyck and Strahan 2008).

The Long-tailed Dunnart was not recorded from the survey area or contextual area during the survey, but it has been infrequently recorded in close proximity. It is known from the study area, and suitable rocky habitat exists within the survey area so it May Occur (Appendix 14).

7.2.2.6 Short-tailed Mouse (*Leggadina lakedownensis)*

The Short-tailed Mouse is listed as Priority 4 by the DBCA. In Western Australia, its distribution includes the Pilbara and Kimberley regions (Menkhorst and Knight 2011). This species is known to occur in areas of open tussock and hummock grassland, *Acacia* shrubland and savannah

woodland, on sandy soils and cracking clays (Morris et al. 2008). The species has been recorded from cracking clay communities from Cape Preston (60 km west of Dampier) in the west to the northern flanks of the Fortescue Marshes in the east (Halpern Glick Maunsell et al. 2001). It has also been recorded from hilltops (Dr Peter Kendrick, DBCA Karratha, pers. comm. 2003) and sandy coastal areas near Onslow (G. Humphreys, Biota, pers. obs.).

While the Short-tailed Mouse was not recorded during the survey, areas of suitable cracking clay habitat was identified in the north end of the Coolawanyah section and the Themeda Grassland in the Tom Price section of the study area. The species has frequently been recorded previously in close proximity to the survey area and is therefore Likely to Occur (Appendix 14).

7.2.2.7 Other Notable Mammal Taxa

Other noteworthy mammal records from the survey include Rothschild's Rock-wallaby (*Petrogale rothschildi*), and a stick-nest rat (*Leporillus* sp.), the latter recorded from a defunct historical nest site (Plate 7.4). Lesser Stick-nest Rat (*L. apicalis*) is the more likely candidate based on published distributions (e.g. van Dyck and Strahan 2008). Lesser is considered extinct, while Greater was considered extinct on the mainland but has been re-introduced to some predator-free sanctuaries. Neither is currently considered extant in the Pilbara, though historical nest remnants are still encountered.

Plate 7.4: Stick-nest rat nest remnants.

7.2.3 Birds

A total of 75 bird species were recorded from the survey and contextual areas during the survey (Appendix 13). One significant species, the Grey Falcon, was recorded during the survey, and a further five were assessed as Likely to occur or May occur within the survey area, and are discussed further in Sections 7.2.3.1 to 7.2.3.6

7.2.3.1 Grey Falcon (*Falco hypoleucos)*

The Grey Falcon is listed as Vulnerable under the BC Act but is not currently listed under the EPBC Act. The species is sparsely distributed across much of arid inland Australia, including the Pilbara, occurring mainly on lightly wooded plains and along major watercourses (Johnstone et al. 2013). Breeding usually takes place in taller trees such as river red gums, or on isolated man-made structures such as communications towers.

The Grey Falcon was observed on one occasion during the survey (Appendix 13; Appendix 15), and has also been recorded previously in close proximity to the survey area. The individual observed during the current survey was observed in flight, likely foraging. All habitats within these areas are likely to be used for foraging, at least on occasion, with waterholes or other features attracting aggregations of birds likely to be particularly attractive. Taller trees offer potentially suitable breeding opportunities along the major drainage lines.

7.2.3.2 Pacific Swift (*Apus pacificus*)

The Fork-tailed Swift is listed as Migratory under both the EPBC Act and BC Act. It occurs as a non-breeding migrant across much of Australia from September to April, particularly in the northern half of the continent. In general, the species is most common closer to the coast, but occurs over much of the Pilbara. In Australia, the species is entirely aerial in habit, foraging for flying insects and even sleeping on the wing. It is highly mobile, often occurring in association with unsettled weather and low pressure systems (Johnstone and Storr 1998).

The Fork-tailed Swift was not recorded during the survey but occurs widely over the Pilbara, including the Hamersley Range. It is Likely to Occur as a sporadic visitor to airspace over all parts of the survey and contextual areas, particularly in association with thunderstorms and low-pressure systems (Appendix 14).

7.2.3.3 Oriental Plover (*Charadrius veredus)*

The Oriental Plover is listed as Migratory under both the EPBC Act and BC Act. The species is a summer migrant to Australia, occurring primarily from September to April (Johnstone and Storr 1998). The species breeds in Mongolia, northern China and southern Siberia, and is a non-breeding migrant to Australia (Johnstone and Storr 1998). However, unlike most shorebird species, they are not particularly tied to wetland and coastal habitats while in Australia. Their preferred foraging habitats are sparsely vegetated open areas, including short-grassed or bare plains, bare wetland margins, and recently burnt areas (Johnstone and Storr 1998). This also includes similar man-made habitats, such as sports fields and airfields. The species will also use tidal mudflats, beaches, sewage ponds and freshwater wetland areas, primarily while on migration or for roosting during the heat of the day (Johnstone and Storr 1998, Menkhorst et al. 2017). They are mobile in response to conditions, and disperse across inland northern Australia during the wet season (Minton et al. 2013).

In the Pilbara, the species is more common in near-coastal regions, but it also occurs inland at least as far as Newman (Johnstone et al. 2013). There are no previous records in close proximity to the survey area, but it has been recorded in the study area. There is also suitable habitat within the survey area. As such, the species May Occur within the survey area (Appendix 14).

7.2.3.4 Common Sandpiper (*Actitis hypoleucos*)

The Common Sandpiper is listed as Migratory under the EPBC Act. The species is a visitor to Australian coasts and offshore islands as far as Ashmore Reef and Barrow Island from late July to March (Johnstone and Storr 1998). It prefers sheltered locations and is more commonly observed along mangrove creeklines. However, it will utilise a variety of wetland habitats including coastal to far inland rivers and streams as well as mudflats, dams and sewage ponds, rocky or sandy beaches, drains and street gutters.

The Common Sandpiper was not recorded during the survey, but has previously been recorded in the Hamersley Range and May occur within the survey area where water is present (Appendix 14).

7.2.3.5 Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed as Other Specially Protected Fauna under the BC Act. It occurs almost Australia-wide, but is absent from most deserts and the Nullarbor Plain (Johnstone and Storr 1998). This species inhabits a wide range of habitats including forest, woodlands, wetlands and open country (Pizzey and Knight 2007). Individuals maintain large home ranges of up to 30 km^2, and nest in recesses of cliff faces, tree hollows and along rivers (Johnstone and Storr 1998).

The Peregrine Falcon was not recorded during the survey, but has previously been recorded in close proximity and is Likely to Occur within the survey area (Appendix 14). As for the Grey Falcon, all habitats within the survey area are likely to be used for foraging with cliffs and taller trees potentially suitable for breeding occur.

7.2.3.6 Night Parrot (*Pezoporus occidentalis*)

The Night Parrot is listed as Critically Endangered under both the EPBC Act and the BC Act. The species occurs in semi-arid and arid areas of inland Australia, with historical records indicating that it was widespread and relatively common in these areas up until the late 19th century (Murphy et al. 2017). Populations are currently known from the Murchison and north-eastern desert regions in Western Australia, as well as from western Queensland.

Descriptions of the species' habitat preferences in the literature are broad, reflecting the wide variety of habitats the species was historically known from. However, all currently known populations are associated with old-growth ringed spinifex (*Triodia* spp.; N. Jackett pers. comm. 2019). Foraging habitats are broadly described as grasses and herbs that may or may not contain shrubs or low trees, with recently-studied populations foraging primarily on chenopods and seeding spinifex and other grasses (Murphy et al. 2017).

The Grassland plains with cracking clay habitat present within the survey area (GPCC) may provide adequate foraging habitat for the Night Parrot and it therefore May Occur (Appendix 14).

7.2.4 Reptiles

A total of 15 species of reptile were recorded from the survey area and contextual area during the survey, none of which were of significance (Appendix 5). Five taxa of significance were assessed as Likely to Occur or May Occur within the survey area (Appendix 14).

7.2.4.1 Pilbara Olive Python (*Liasis olivaceus barroni)*

The Pilbara Olive Python is a distinct subspecies of the Olive Python found across northern Australia, and is listed as Vulnerable under the EPBC Act and BC Act. The subspecies has a known distribution coinciding roughly with the Pilbara bioregion, with important populations known to occur in four areas: Pannawonica, Millstream, Tom Price and the Burrup Peninsula (DSEWPaC 2012). Preferred habitat for the Pilbara Olive Python includes gorges, escarpments, rocky outcrops and water holes where it may find suitable prey (DoAWE 2020). It seeks shelter in caves, beneath boulders, in pools of water and occasionally in trees overhanging water (Bush and Maryan 2011). It is often associated with ephemeral or permanent water, but individuals have large home ranges (between 88 ha and 449 ha) and may be recorded in rocky habitats some distance from these features (Biota 2009b).

Suitable habitat for Pilbara Olive Python was documented in the survey area and contextual area, particularly along major drainage lines and surrounding rocky areas (Section 7.3). The species has also previously been recorded in close proximity to the survey area, and is therefore Likely to Occur (Appendix 14).

7.2.4.2 *Anilios ganei*

The blind snake *Anilios ganei* is listed as Priority 1 under the BC Act, and is known from scattered locations across the Pilbara, from the Newman area in the east, west to Pannawonica and Millstream (DBCA 2020c). Early records of the species indicated that it may be associated with moist gorges and gullies (Wilson and Swan 2017), but they have since also been recorded from mulga woodland and rocky scree slopes (Biota internal database), suggesting a wider range of habitat preferences.

Habitat preferences of the species are still not well-understood, making accurate assessment of habitat suitability difficult. However, habitats consistent with those of previous records are present within the survey area (Section 7.3 and Appendix 15), and the species is known from the study area. Hence, we consider that it May Occur within the survey area (Appendix 14).

7.2.4.3 Pilbara Barking Gecko (*Underwoodisaurus seorsus)*

The Pilbara Barking Gecko is listed as a Priority 2 species under the BC Act. The species is a Hamersley Range endemic that was discovered in 2006 but was not described until 2011 (Doughty and Oliver 2011). It was initially thought to be an isolated population of its more southerly relative, the Barking Gecko *Underwoodisaurus milii* (Menz and Cullen 2006) before morphological and molecular analysis showed it to be taxonomically distinct. To date there are very few records of this species, which occurs in a band from north of Tom Price in the western Hamersley to West Angelas mine in the south-east (Doughty and Oliver 2011). The habitats used by this species vary in their topography and vegetation but are usually associated with rocky ridges, slopes and gullies.

The Pilbara Barking Gecko was not recorded during the current survey, however, a previous record exists within close proximity to the survey area and suitable habitat is present (see Section 7.3), so it therefore May Occur (Appendix 14).

7.2.4.4 *Ctenotus uber johnstonei*

Ctenotus uber johnstonei is listed as a Priority 2 species under the BC Act. The species in only known from the Balgo Hills area of Western Australia. However, Biota (2002) have collected specimens from the western edge of the Fortescue Marshes that have tentatively been identified as *C*. aff. *uber johnstonei*. Specimens possibly belonging to this taxon collected by Biota (2002) in the Pilbara were recorded from *Acacia xiphophylla* over chenopods south of the Fortescue Marsh and *Acacia xiphophylla* scattered tall shrubs to high open shrubland over *Sclerolaena cuneata* herbland and open chenopods on the western edge of the Fortescue Marsh.

One possible record for this species within close proximity to the survey area was recorded in 2014 by Ecologia (Ecologia 2014b). Additionally, suitable habitat containing *Acacia xiphophylla* occurs within the survey area (fauna habitat ASCC; Section 7.3 and Appendix 15), so it therefore May Occur (Appendix 14).

7.2.4.5 Western Striped Snake-eyed Skink (*Notoscincus butleri)*

Notoscincus butleri is listed as a Priority 4 species under the BC Act and is endemic to Western Australia and restricted to the arid northwest (Storr et al. 1999) of the Pilbara bioregion. It has been associated with Spinifex-dominated areas near creek and river margins (Wilson and Swan 2008). This small skink is diurnal and egg laying (Wilson and Knowles 1988).

While the species was not recorded during the current survey, there have been previous records within close proximity to the survey area and suitable habitat is present throughout (see Section 7.3; Appendix 15), so it is therefore Likely to occur (Appendix 14).

7.2.5 Amphibians

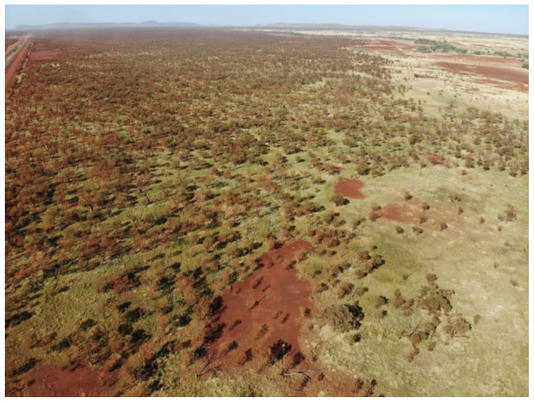
Four species of amphibian were recorded in the survey area and contextual area during the survey (Appendix 13). None of these amphibians were of significance and the desktop study indicated that none would occur within the survey area.

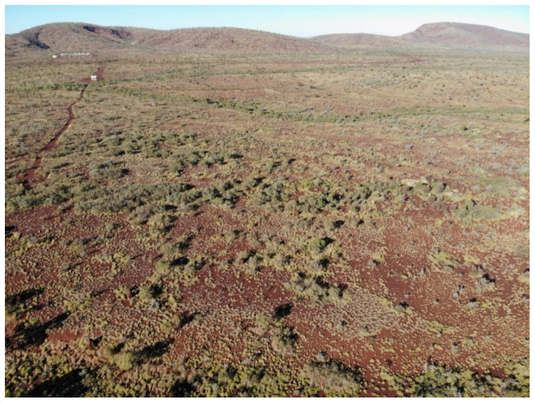
7.3 Fauna Habitats

The fauna habitats defined for the survey and contextual area aligned broadly with the landforms present, with further delineation of some isolated habitats that supported distinct fauna assemblages.

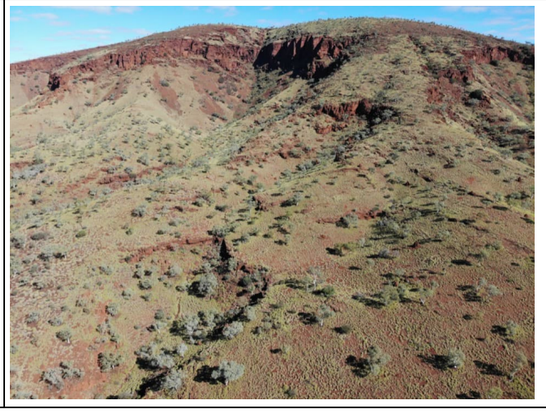
Twelve habitat types were described for the survey and contextual area. Details and attributes of these habitat types are presented in Table 7.4 and mapped in Appendix 15.

Table 7.4 Fauna habitats described within the survey area.

Habitat	Description	Area (ha) and Proportion of Survey Area	Area (ha) and Proportion of local area (survey area + contextual area)	Habitat Quality	Fauna Associations	Aerial photograph	Landscape Photograph
FLATS							
MG -Grove Mulga	Bands of *Acacia aneura* woodland over mixed shrubs over *Triodia melvillei/Triodia epactia* and annual herbs, alternating with bare ground.	871.58 (10.0%)	1,576.3 (11.6%)	Good	Grove Mulga provides a key refuge for a range of fauna, particularly avifauna. Bird species associated with this habitat consisted of the Spiny-cheeked Honeyeater, Chestnut-rumped Thornbill, Inland Thornbill, Western Gerygone and Grey Butcherbird. Ground fauna that would be associated with this habitat would include those that utilise Mulga bark and hollows as shelter, for example *Varanus caudolineatus* and *V. bushi.* *Lucasium stenodactylum* and *Diplodactylus pulcher*, were observed in this habitat type during nocturnal traversing. *Diporiphora valens* has also been reported, particularly where *Triodia melvillei* forms the understory. Mammals such as the Pilbara Ningaui (*Ningaui timealeyi),* the Long-tailed Dunnart *(Sminthopsis longicaudata*) and Stripe-faced Dunnart (*Sminthopsis macroura)* may utilise the open spaces between the mulga groves for nocturnal hunting.		
MWP - Mulga woodland plain	*Acacia aneura* open woodland plains over scattered shrubs over. *Triodia spp* open hummock grassland.	122.8 (1.4%)	242.7 (1.8%)	Good	As for the 1. Grove Mulga habitat but with less opportunity to provide refuge for species present. The Mulga Dragon (*Diporiphora amphiboluroides*) is associated with Mulga woodland habitat where it camouflages against the mulga bark. It relies heavily on crypsis rather than speed to avoid predators and therefore may benefit from a more continuous woodland over the mulga grove habitat.		
ASCC - *Acacia xiphophylla* shrublands over cracking clay.	*Acacia xiphopyllya* low woodland over *Triodia epactia* open hummock grassland with cracking clay substrate.	343.1 (3.9%)	363.5 (2.7%)	Excellent	The cracking clay substrate of this habitat may be used by Priority species *Leggadina lakedownensis*, which burrows in deep cracks formed in clay. Possible *Ctenotus uber johnstonei* specimens collected by Biota (2002) in the Pilbara were recorded from *Acacia xiphophylla* shrublands.		

Habitat	Description	Area (ha) and Proportion of Survey Area	Area (ha) and Proportion of local area (survey area + contextual area)	Habitat Quality	Fauna Associations	Aerial photograph	Landscape Photograph
ASM - Mixed Acacia shrublands	*Corymbia* trees with mixed *Acacia* shrublands over *Triodia epactia* and stony substrates.	2,033.9 (23.3%)	3,269.8 (24.1%)	Excellent	Species with particular associations to spinifex (e.g. mammals that forage on seeds, such as *Pseudomys hermannsburgensis* and *P. desertor*), or with associations to stony flats (e.g. the dragon species *Tympanocryptis fortescuensis, T. diabolicus* and *Diphoriphora valens*), along with a wide range of species that utilise shrubs and spinifex for cover and/or foraging would be expected to occur in this habitat. Some shrublands support Acacia species that contain root-dwelling larvae,an important food resource for the threatened Bilby (*Macrotis lagotis*). A small patch of open *Acacia trachycarpa*, known to have root dwelling larvae (Southgate et al. 2019), was identified in the section of the survey area, although no evidence of Bilbies was observed during the survey or reliable historic records occur in the area.		
GPCC - Grassland plains with cracking clay	Themeda grassland (TEC) in the south and in the north, *Astrebla* grasslands (PEC), both with crackling clay substrates	203.4 (2.3%)	522.5 (3.8%)	Good - Poor	A number of bird species have strong associations to open grasslands. In particular, the Brown Songlark were only recorded from this habitat type. The open habitat also provides ideal hunting opportunity for a range of raptor species, such as Grey Falcon and Spotted Harrier, however these species would not be restricted to this habitat. Grassland plains with or without shrubs may serve as foraging habitat for the Night Parrot. Species associated with cracking clay habitats include the Priority species *Leggadina lakedownensis*, which burrows in deep cracks formed in the clay and *Diplodactylus mitchelli* which is known to occur in habitats with heavy cracking clay soils in grasslands.		
CP - Floodplain	*Corymbia hamersleyana*/ *Eucalyptus victrix* low open woodland over mixed *Acacia* shublands over scattered *Triodia* hummock grasses and mixed tussock grasses.	2,072.2 (23.7%)	2,697.2 (19.9%)	Excellent	Floodplain habitat covers a large portion of the study area and is suitable foraging habitat for raptor species such as the Spotted Harrier, Grey Falcon and Peregrine Falcon. White-plumed Honeyeaters are associated with floodplain habitat and were observed during the field survey. Tree hollows may provide shelter for owl and bat species.		

Habitat	Description	Area (ha) and Proportion of Survey Area	Area (ha) and Proportion of local area (survey area + contextual area)	Habitat Quality	Fauna Associations	Aerial photograph	Landscape Photograph
HILLS AND SLOPES							
HS - Mesas, caves, cliffs and free faces.	*Eucalyptus leucophloia* over mixed acacia scattered-open shrubland over *Triodia wiseana/ Trioia epactia* hummock grassland.	8.4 (0.1%)	44.0 (0.3%)	Excellent	The caves and crevices supported in this habitat type represent core roosting and denning habitat for a number of Threatened fauna species, including the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*), Ghost Bat (*Macroderma gigas*) and Northern Quoll (*Dasyurus hallucatus*). Other species associated with this habitat include rock dwelling arboreal species such as *Oedura fimbria* and *Gehyra punctata* which were recorded from this habitat. Peregrine falcon are known to use cliff faces for nesting.		
RHS – Rocky hills and slopes with low open spinifex and scattered trees.	*Eucalyptus leucophloia* over mixed acacia scattered-open shrubland over *Triodia wiseana/Triodia epactia* hummock grassland.	718.2 (8.2%)	1,168.3 (8.6%)	Excellent	A number of fauna species are associated with rocky slopes with hummock grasslands, including the Long-tailed Dunnart and the Pebble-mound Mouse. The Pebble-mound Mouse builds mounds out of pebbles on rocky hillsides for shelter that are prominent landscape features even after they become inactive. Other associated species include the Pilbara Barking Gecko which prefers habitat characterized by rocky areas with spinifex and low tree cover.		
DRAINAGE							
MDE – Eucalyptus fringed major drainage lines and associated tributaries.	*Open Eucalyptus victrix*/*Eucalyptus camualdulensis*	1,816.7 (20.8%)	2,772.1 (20.4%)	Excellent	Species relying on water and moist refugia would be associated with this habitat type. This habitat also provides drinking resources for bats, and potential foraging and dispersal resources for the Northern Quoll (*Dasyurus hallucatus*) and Pilbara Olive Python (*Liasis olivaceus barroni*). The Priority species *Notoscincus butleri* is also associated with river margins dominated by spinifex.		

Habitat	Description	Area (ha) and Proportion of Survey Area	Area (ha) and Proportion of local area (survey area + contextual area)	Habitat Quality	Fauna Associations	Aerial photograph	Landscape Photograph
MDM - Melaleuca forest/major drainage lines	Melaleuca argentea and Mel glomerate over *Acacia bivenosa* and *Cyperus vaginatus*, with ephemeral pools.	65.6 (0.8%)	65.6 (0.5%)	Excellent	Bat species such as the Pilbara leaf-nosed bat and Ghost Bat may use Melaleuca forest drainage lines as flyways, foraging areas and water resources. This habitat also provides foraging and dispersal resources for the Northern Quoll (*Dasyurus hallucatus*) and Pilbara Olive Python (*Liasis olivaceus barroni*). The Priority species *Notoscincus butleri* is also associated and river margins dominated by spinifex. Ephemeral pools of water would serve as habitat for frog species and the taller fringing trees may provide nesting habitat for bird species such as the Grey Falcon.		
RG - Rocky gullies	*Eucalyptus leucophloia* and *Corymbia ferritcola* over mixed *Acacia spp.* (including A. *bivenosa*) over *Triodia epactia* open hummock grassland.	13.7 (0.2%)	20.7 (0.2%)	Excellent	This habitat provides foraging and dispersal resources for the Threatened species Northern Quoll (*Dasyurus hallucatus*) and Pilbara Olive Python (*Liasis olivaceus barroni*). Other species associated with rocky crevices include geckos such as *Oedura fimbria* and *Gehyra punctata*.		
MAN-MADE DEPRESSIONS							
MMW - Man-made water bodies		2.3 (0.03%)	2.3 (0.02%)	Poor	This habitat type also provides drinking resource for a wide range of bats and birds, and hunting opportunity for birds of prey. A number of amphibians (*Cyclorana maini, Literia rubella* and *Neobatrachus sutor*) and the Flat-shelled Turtle (*Chelodina steindachneri*). Man made water bodies may possibly serve as foraging and drinking habitat for the Night Parrot (*Pezoporus occidentalis*).		

7.3.1 Significant Fauna Habitat

7.3.1.1 Other Significant Species

The fauna habitats utilised by all other significant species recorded, likely to occur or that may occur in the survey area, are detailed in Table 7.5.

Table 7.5: Fauna habitat utilisation by significant species.

Species	Common Name	Fauna Habitats
Recorded		
Rhinonicteris aurantia Pilbara Form	Orange Leaf-nosed bat	HS, RHS, MDE, MDM and RG
Macroderma gigas	Ghost Bat	CP, HS, RHS, MDE, MDM, RG and MMW
Falco hypoleucos	Grey Falcon	All habitats, but particularly CP, MDE, MDM and MMW
Pseudomys chapmani	Western Pebble-mound Mouse	ASM and RHS
Likely to occur		
Dasyurus hallucatus	Northern Quoll	Denning: HS Foraging/Dispersal: RG, RHS, MDE and MDM
Leggadina lakedownensis	Northern Short-tailed Mouse	CPCC
Apus pacificus	Pacific Swift	All habitats
Falco peregrinus	Peregrine Falcon	All habitats, but particularly CP, MDE and MDM
Notoscincus butleri	-	MDE, MDM
Liasis olivaceus barroni	Pilbara Olive Python	CP, HS, RHS, MDE, MDM and RG
May occur		
Sminthopsis longicaudata	Long-tailed Dunnart	HS, RHS and RG
Charadrius veredus	Oriental Plover	GPCC
Actitis hypoleucos	Common Sandpiper	MMW
Glareola maldivarum	Oriental Pratincole	GPCC, CP and MMW
Pexoporus occidentalis	Night Parrot	GPCC
Underwoodisaurus seorsus	Pilbara Barking Gecko	HS and RHS
Ctenotus uber johnstonei	-	ASCC
Anilios ganei	Gane's Blind Snake	RG

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8.0 Conclusions

8.1 Communities of Significance

One TEC was identified in the survey area, the "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)" TEC, which is listed at State level as Vulnerable. The TEC occurred in the Tom Price section of the survey area where 115.3 ha was mapped, representing 38.8% of the extent of the TEC in the local area

One PEC, the Priority 1 "Brockman Iron cracking clay communities of the Hamersley Range", was recorded in the survey area: vegetation type C3, which was present in the Tom Price section with a total of 88.1 ha mapped, representing 39.1% of the extent of this vegetation type in the local area.

A third ecological community, represented by vegetation units C2 and one site from P7 corresponds to one of the four plant assemblages described for the Wona Land System, the "Mitchell grass and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai", which is a Priority 3 PEC. However, as these units did not occur on the Wona Land System but rather the Hooley Land System, it is considered to be of local conservation significance rather than representing the PEC.

8.2 Flora of Significance

One Threatened flora, *Seringia exastia*, has been recorded from the survey area, however this is expected to be de-listed in the near future. No other Threatened flora species would be Likely to Occur.

Twenty-one Priority flora species were recorded from the survey area (Table 8.1), with no other Priority species assessed as Likely to Occur.

Table 8.1: Significant flora recorded within the survey area.

Species	Conservation Status
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1
Josephinia sp. Woodstock (A.A,. Mitchell PRP 989)	P1
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	P1
Aristida lazaridis	P2
Euphorbia inappendiculata var. *inappendiculata*	P2
Euphorbia inappendiculata var. *queenslandica*	P2
Aristida jerichoensis var. subspinulifera	P3
Astrebla lappacea	P3
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3
Euphorbia australis var. *glabra*	P3
Glycine falcata	P3
Gymnanthera cunninghamii	P3
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3
Sida sp. Hamersley Range (K. Newbey 10692) PN	P3
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3
Swainsona thompsoniana	P3
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3
Triodia basitricha	P3
Eremophila magnifica subsp. *magnifica*	P4
Goodenia berringbinensis	P4
Goodenia nuda	P4

8.3 Fauna of Significance

Four fauna species of significance, three mammal species and one bird species, were recorded from the survey area:

- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* Pilbara form; State and Federal: Vulnerable);
- Ghost Bat (*Macroderma gigas;* State and Federal: Vulnerable);
- Western Pebble-mound Mouse (*Pseudomys chapmani*; State: Priority 4); and
- Grey Falcon (*Falco hypoleucos;* Vulnerable*).*

Two of the above species, the Pilbara Leaf-nosed Bat and the Grey Falcon, were recorded with certainty from the survey area through call recordings and sighting respectively. Secondary evidence of the other two species also confirmed their presence: Ghost Bat remains and scats were identified inside a cave within the survey area, and a recently active Pebble-mound Mouse mound was recorded.

Based on previous records from the study area, and an assessment of habitat within the survey area, six other conservation significant species were considered Likely to Occur (Table 8.2).

Table 8.2 Significant fauna recorded within the survey area or assessed as Likely to Occur.

Species	Common Name	Conservation Status	
		State	Federal
Recorded			
Rhinonicteris aurantia Pilbara Form	Pilbara Leaf-nosed Bat	VU	VU
Macroderma gigas	Ghost Bat	VU	VU
Falco hypoleucos	Grey Falcon	VU	-
Pseudomys chapmani	Western Pebble-mound Mouse	P4	-
Likely to Occur			
Dasyurus hallucatus	Northern Quoll	EN	EN
Leggadina lakedownensis	Short-tailed Mouse	P4	-
Apus pacificus	Pacific Swift	MI	M/MI
Falco peregrinus	Peregrine Falcon	OS	-
Liasis olivaceus barroni	Pilbara Olive Python	VU	VU
Notoscincus butleri	-	P4	-

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Appendix 1

Framework for Conservation Significance Ranking of Species and Communities in WA

A. Definitions, Categories and Criteria for Threatened and Priority Ecological Communities

Species and Communities Branch, Department of Environment and Conservation, December 2010.

1. General Definitions

Ecological Community
A naturally occurring biological assemblage that occurs in a particular type of habitat.

Note: The scale at which biological communities are defined will often depend on the level of detail in the information source, therefore no particular scale is specified.

A **threatened ecological community** (TEC) is one which is found to fit into one of the following categories; "presumed totally destroyed", "critically endangered", "endangered" or "vulnerable".

Possible threatened ecological communities that do not meet survey criteria are added to the Department of Parks and Wildlife's Priority Ecological Community Lists under Priorities 1, 2 and 3. Ecological Communities that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or 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.

An **assemblage** is a defined group of biological entities.

Habitat is defined as the areas in which an organism and/or assemblage of organisms lives. It includes the abiotic factors (e.g. substrate and topography), and the biotic factors.

Occurrence: a discrete example of an ecological community, separated from other examples of the same community by more than 20 metres of a different ecological community, an artificial surface or a totally destroyed community.

By ensuring that every discrete occurrence is recognised and recorded future changes in status can be readily monitored.

Adequately Surveyed is defined as follows:
"An ecological community that has been searched for thoroughly in most likely habitats, by relevant experts."

Community structure is defined as follows:
"The spatial organisation, construction and arrangement of the biological elements comprising a biological assemblage" (e.g. *Eucalyptus salmonophloia* woodland over scattered small shrubs over dense herbs; structure in a faunal assemblage could refer to trophic structure, e.g. dominance by feeders on detritus as distinct from feeders on live plants).

Definitions of **Modification** and **Destruction** of an ecological community:

Modification: "changes to some or all of ecological processes (including abiotic processes such as hydrology), species composition and community structure as a direct or indirect result of human activities. The level of damage involved could be ameliorated naturally or by human intervention."

Destruction: "modification such that reestablishment of ecological processes, species composition and community structure within the range of variability exhibited by the original community is unlikely within the foreseeable future even with positive human intervention."

Note: Modification and destruction are difficult concepts to quantify, and their application will be determined by scientific judgement. Examples of modification and total destruction are cited below:

Modification of ecological processes: The hydrology of Toolibin Lake has been altered by clearing of the catchment such that death of some of the original flora has occurred due to dependence on fresh water. The system may be bought back to a semblance of the original state by redirecting saline runoff and pumping waters of the rising underground watertable away to restore the hydrological balance. Total destruction of downstream lakes has occurred due to hydrology being altered to the point that few of the original flora or fauna species are able to tolerate the level of salinity and/or water logging.

Modification of structure: The understorey of a plant community may be altered by weed invasion due to nutrient enrichment by addition of fertiliser. Should the additional nutrients be removed from the system the balance may be restored, and the original plant species better able to compete. Total destruction may

occur if additional nutrients continue to be added to the system causing the understorey to be completely replaced by weed species, and death of overstorey species due to inability to tolerate high nutrient levels. Modification of species composition: Pollution may cause alteration of the invertebrate species present in a freshwater lake. Removal of pollutants may allow the return of the original inhabitant species. Addition of residual highly toxic substances may cause permanent changes to water quality, and total destruction of the community.

Threatening processes are defined as follows:
"Any process or activity that threatens to destroy or significantly modify the ecological community and/or affect the continuing evolutionary processes within any ecological community."

Examples of some of the continuing threatening processes in Western Australia include: general pollution; competition, predation and change induced in ecological communities as a result of introduced animals; competition and displacement of native plants by introduced species; hydrological changes; inappropriate fire regimes; diseases resulting from introduced micro-organisms; direct human exploitation and disturbance of ecological communities.

Restoration is defined as returning an ecological community to its pre-disturbance or natural state in terms of abiotic conditions, community structure and species composition.

Rehabilitation is defined as the re-establishment of ecological attributes in a damaged ecological community although the community will remain modified.

2. Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities

ECOLOGICAL COMMUNITIES

Presumed Totally Destroyed (PD)
An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B):

A) Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or

B) All occurrences recorded within the last 50 years have since been destroyed

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.

An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):

A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii):

   i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years);

   ii) modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated.

B) Current distribution is limited, and one or more of the following apply (i, ii or iii):

   i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years);

ii) there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes;

iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes.

C) The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).

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.

An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B, or C):

A) The geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement and either or both of the following apply (i or ii):

i) the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years);

ii) modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated.

B) Current distribution is limited, and one or more of the following apply (i, ii or iii):

i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years);

ii) there are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes;

iii) there may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes.

C) The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).

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.

An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B or C):

A) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated.

B) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations.

C) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes.

3. Definitions and Criteria for Priority Ecological Communities

PRIORITY ECOLOGICAL COMMUNITY LIST
Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community Lists under Priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological Communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or 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.

Priority One: Poorly-known ecological communities
Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist. 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 Two: Poorly-known ecological communities
Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent 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.

Priority Three: 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 within 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 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 Four: 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.

(a) 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.

(b) 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.

(c) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: 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.

B. Categories for Flora and Fauna Species

1. Western Australian *Biodiversity Conservation Act 2016,* and Priority Species Classification

In Western Australia, 'Threatened', 'Extinct' and 'Specially Protected' fauna and flora species are protected under the *Biodiversity Conservation Act 2016* (the BC Act), making it an offence to take or disturb these species without Ministerial approval. The definition of 'take' is broad, and includes killing, injuring, harvesting or capturing fauna, and gathering, cutting, destroying, harvesting or damaging flora.

Such species are classified within a framework of several categories.

Species of the highest conservation significance are designated as Threatened species and are protected under sections 19(1)(a), 19(1)(b) and 19(1)(c) of the BC Act. Species are listed within one of three categories:

- Critically endangered (CR), Endangered (EN), or Vulnerable (V), representing those species listed in Schedules 1 to 3 respectively of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* or the *Wildlife Conservation (Rare Flora) Notice 2018*.

Presumed extinct species are protected under sections 24 and 25 of the BC Act and are listed in one of two categories:

- Extinct (EX), representing those species listed in Schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* or the *Wildlife Conservation (Rare Flora) Notice 2018*; or
- Extinct in the wild (EW); there are currently no listed species under this category.

Specially protected species are protected under section 13(1) of the BC Act, and include species of special conservation interest, migratory species, cetaceans, species subject to international agreement, or species otherwise in need of special protection. Of these:

- Migratory species (MI) are those listed under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*;
- Species of special conservation interest (conservation dependent fauna) (CD) are those listed under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*; and
- Other specially protected fauna (OS) are those listed under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*;

In addition to the species formally designated as protected under the BC Act, the WA Department of Biodiversity, Conservation and Attractions (DBCA) also maintains a list of 'Priority species'.

Species that appear to be rare or threatened, but for which there is insufficient information to properly evaluate their conservation significance, are assigned to one of three Priority categories (Priority 1 to Priority 3), while species that are adequately known but require regular monitoring are assigned to Priority 4.

Note that of the above classifications, only 'Threatened', 'Extinct' and 'Specially Protected' species have statutory standing. The Priority flora and fauna classifications are employed by the WA DBCA to manage and classify their database of species considered potentially rare or at risk, but these categories have no legislative status.

Further explanations of the categories is provided in more detail in the following pages.

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

CONSERVATION CODES

For Western Australian Flora and Fauna

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016.*

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T **Threatened species**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

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. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

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. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

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. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting 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 species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or 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 fauna or 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 or other specially protected fauna lists for other than taxonomic reasons, 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.

1 Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

2 Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 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.

4 Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

[1] The definition of flora includes algae, fungi and lichens
[2]Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

2. Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Many of the species that are specially protected at State level are also listed as Threatened species at the Federal level, as one of the Matters of National Environmental Significance (MNES) identified under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). These may be classified as 'critically endangered', 'endangered', 'vulnerable' or 'lower risk', consistent with IUCN categories:

1. **Critically Endangered (CR):** a taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
2. **Endangered (EN):** a taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.
3. **Vulnerable (VU):** a taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.
4. **Lower Risk (LR):** a taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:
    - **Conservation Dependent (CD).** Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
    - **Near Threatened (NT).** Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.
    - **Least Concern (LC).** Taxa which do not qualify for Conservation Dependent or Near Threatened.

In addition, numerous Migratory species are listed as MNES under the EPBC Act (some of which are also listed as Threatened). Migratory species are those animals that migrate to Australia and its external territories, or pass through or over Australian waters during their annual migrations. The list of migratory species consists of those species listed under the following international conventions:

1. Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
2. China-Australia Migratory Bird Agreement (CAMBA);
3. Japan-Australia Migratory Bird Agreement (JAMBA); and,
4. Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Marine species are also protected under the EPBC Act, and are listed to ensure the long-term conservation of the species. Marine species include all Australian sea snakes, seals, crocodiles, dugongs, marine turtles, seahorses and seabirds that naturally occur in the Commonwealth marine area.

Under the terms of the EPBC Act, an action (e.g. a project or development) is required to be referred to the Australian Government Environment Minister for approval if it has, will have, or is likely to have, a significant impact on an MNES. The term 'action' includes projects and developments subsequent to commencement of the Act, however there are a number of exemptions (e.g. projects in Commonwealth areas). According to Department of the Environment (2013), a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

References:

Department of the Environment (2013). Matters of National Environmental Significance - Significant Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra, Australia.

Appendix 2

Database Searches

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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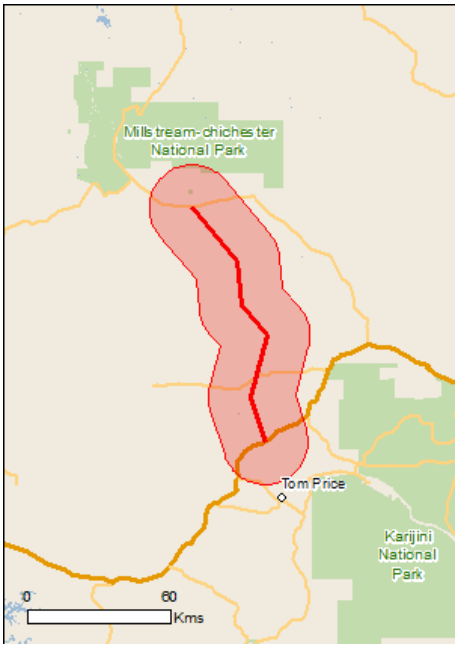

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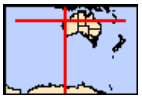

Summary

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:	10
Listed Migratory Species:	12

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:	18
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:	12
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		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Breeding known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat may occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	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 Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		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
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		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
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
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 likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may 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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Millstream Chichester	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
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
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
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		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
Rattus rattus Black Rat, Ship Rat [84]		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 likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to 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

-21.674296 117.446276,-21.863438 117.617909,-22.017518 117.634518,-22.122148 117.731687,-22.337121 117.668409,-22.493854 117.723366

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 All Species Report

Created By Guest user on 02/12/2020

Kingdom	Plantae
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Line'
Vertices	21° 40' 27" S,117° 26' 47" E 21° 51' 48" S,117° 37' 04" E 22° 01' 03" S,117° 38' 04" E 22° 07' 20" S,117° 43' 54" E 22° 20' 14" S,117° 40' 06" E 22° 29' 38" S,117° 43' 24" E
Group By	Family

Family	Species	Records
Aizoaceae	2	3
Amaranthaceae	9	13
Apocynaceae	1	1
Asteraceae	10	13
Boraginaceae	1	1
Capparaceae	2	2
Chenopodiaceae	2	2
Cleomaceae	1	1
Convolvulaceae	1	1
Cucurbitaceae	1	1
Cyperaceae	1	1
Euphorbiaceae	4	4
Fabaceae	24	28
Goodeniaceae	5	7
Loranthaceae	1	1
Malvaceae	12	13
Myrtaceae	2	2
Orobanchaceae	1	1
Pedaliaceae	1	1
Plantaginaceae	1	1
Poaceae	14	16
Portulacaceae	4	4
Sapindaceae	2	2
Solanaceae	4	5
Thymelaeaceae	1	2
Violaceae	1	1
TOTAL	**108**	**127**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Aizoaceae					
1.	44241	*Trianthema glossostigmum*			
2.	44362	*Trianthema triquetrum*			
Amaranthaceae					
3.	2651	*Alternanthera nana (Hairy Joyweed)*			
4.	2652	*Alternanthera nodiflora (Common Joyweed)*			
5.	20018	*Amaranthus undulatus*			
6.	2690	*Ptilotus aervoides*			
7.	2696	*Ptilotus astrolasius*			
8.	2706	*Ptilotus carinatus*			
9.	2728	*Ptilotus gomphrenoides*			
10.	2746	*Ptilotus nobilis (Tall Mulla Mulla)*			
11.	2755	*Ptilotus rotundifolius (Royal Mulla Mulla)*			
Apocynaceae					
12.	6567	*Carissa lanceolata (Conkerberry, Marnuwiji)*			
Asteraceae					
13.	7822	*Angianthus acrohyalinus (Hook-leaf Angianthus)*			
14.	48223	*Calocephalus pilbarensis*			
15.	7905	*Calotis multicaulis (Many-stemmed Burr-daisy)*			
16.	8030	*Helichrysum oligochaetum*		P1	
17.	42160	*Pentalepis trichodesmoides subsp. trichodesmoides*			
18.	34997	*Peripleura arida*			
19.	8167	*Pluchea dentex*			
20.	17817	*Pluchea dunlopii*			
21.	8213	*Senecio magnificus (Showy Groundsel)*			
22.	9367	*Sonchus hydrophilus (Native Sowthistle)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Boraginaceae					
23.	17309	*Heliotropium pachyphyllum*			
Capparaceae					
24.	2976	*Capparis lasiantha (Split Jack, Balqarda)*			
25.	2978	*Capparis mitchellii (Wild Orange)*			
Chenopodiaceae					
26.	11632	*Dysphania glomulifera subsp. eremaea*			
27.	20168	*Rhagodia sp. Hamersley (M. Trudgen 17794)*		P3	
Cleomaceae					
28.	2988	*Cleome viscosa (Tickweed, Tjinduwadhu)*			
Convolvulaceae					
29.	6651	*Operculina aequisepala*			
Cucurbitaceae					
30.	7371	*Cucumis melo (Ulcardo Melon)*			
Cyperaceae					
31.	12159	*Fimbristylis simulans*			
Euphorbiaceae					
32.	42843	*Euphorbia australis var. glabra*		P2	
33.	4623	*Euphorbia coghlanii (Namana)*			
34.	4635	*Euphorbia myrtoides*			
35.	42877	*Euphorbia vaccaria var. erucoides*			
Fabaceae					
36.	3205	*Acacia adsurgens*			
37.	37260	*Acacia aptaneura*			
38.	3228	*Acacia atkinsiana*			
39.	29015	*Acacia pyrifolia var. pyrifolia*			
40.	13070	*Acacia synchronicia*			
41.	3579	*Acacia trachycarpa (Minni Ritchi, Balgali)*			
42.	3606	*Acacia xiphophylla*			
43.	3680	*Aeschynomene indica (Budda Pea)*			
44.	17119	*Cullen leucochaites*			
45.	41245	*Gompholobium oreophilum*			
46.	3973	*Indigofera colutea (Sticky Indigo)*			
47.	3981	*Indigofera linnaei (Birdsville Indigo)*			
48.	3987	*Indigofera trita*			
49.	4061	*Lotus cruentus (Redflower Lotus)*			
50.	4191	*Rhynchosia minima (Rhynchosia)*			
51.	12280	*Senna artemisioides subsp. oligophylla*			
52.	18451	*Senna hamersleyensis*			
53.	12312	*Senna notabilis*			
54.	4198	*Sesbania formosa (White Dragon Tree)*			
55.	4231	*Swainsona kingii*			
56.	17768	*Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)*			
57.	42442	*Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)*			
58.	40060	*Tephrosia sp. clay soils (S. van Leeuwen et al. PBS 0273)*			
59.	30716	*Vachellia farnesiana (Mimosa Bush)*	Y		
Goodeniaceae					
60.	7515	*Goodenia heterochila*			
61.	12552	*Goodenia muelleriana*			
62.	7530	*Goodenia nuda*		P4	
63.	29381	*Goodenia sp. East Pilbara (A.A. Mitchell PRP 727) (O'Meara's Goodenia)*		P3	
64.	7654	*Velleia connata (Cup Velleia)*			
Loranthaceae					
65.	29080	*Amyema sanguinea var. pulchra*			
Malvaceae					
66.	4899	*Abutilon malvifolium (Bastard Marshmallow)*			
67.	13560	*Corchorus crozophorifolius*			
68.	18408	*Corchorus lasiocarpus subsp. parvus*			
69.	4862	*Corchorus parviflorus*			
70.	4865	*Corchorus tridens*			
71.	4910	*Gossypium australe (Native Cotton)*			
72.	4918	*Gossypium robinsonii (Wild Cotton)*			
73.	4925	*Hibiscus coatesii*			
74.	4933	*Hibiscus leptocladus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
75.	4962	*Malvastrum americanum (Spiked Malvastrum)*	Y		
76.	16923	*Sida trichopoda*			
77.	4875	*Triumfetta chaetocarpa (Urchins)*			
Myrtaceae					
78.	17093	*Corymbia hamersleyana*			
79.	14548	*Eucalyptus victrix*			
Orobanchaceae					
80.	7103	*Striga curviflora*			
Pedaliaceae					
81.	7118	*Josephinia eugeniae (Josephinia Burr)*			
Plantaginaceae					
82.	7099	*Stemodia kingii*			
Poaceae					
83.	212	*Aristida inaequiglumis (Feathertop Threeawn)*			
84.	228	*Astrebla lappacea (Curly Mitchell Grass, Wheat Mitchell)*		P3	
85.	229	*Astrebla pectinata (Barley Mitchell Grass)*			
86.	258	*Cenchrus ciliaris (Buffel Grass)*	Y		
87.	46558	*Cynodon convergens*			
88.	357	*Enneapogon caerulescens (Limestone Grass)*			
89.	392	*Eragrostis pergracilis*			
90.	393	*Eragrostis setifolia (Neverfail Grass)*			
91.	38505	*Eragrostis surreyana*		P3	
92.	399	*Eragrostis xerophila (Knotty-butt Neverfail)*			
93.	421	*Eriachne tenuiculmis*			
94.	17820	*Themeda sp. Hamersley Station (M.E. Trudgen 11431)*		P3	
95.	673	*Themeda triandra*			
96.	17877	*Triodia melvillei*			
Portulacaceae					
97.	2878	*Portulaca conspicua*			
98.	2882	*Portulaca intraterranea*			
99.	2884	*Portulaca oleracea (Purslane, Wakati)*			
100.	2886	*Portulaca pilosa (Djanggara)*	Y		
Sapindaceae					
101.	4759	*Dodonaea coriacea*			
102.	4773	*Dodonaea petiolaris*			
Solanaceae					
103.	47241	*Datura leichhardtii subsp. leichhardtii*	Y		
104.	11331	*Nicotiana occidentalis subsp. obliqua*			
105.	6998	*Solanum cleistogamum*			
106.	7002	*Solanum diversiflorum*			
Thymelaeaceae					
107.	5250	*Pimelea holroydii*			
Violaceae					
108.	5215	*Hybanthus aurantiacus*			

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
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NatureMap Species Report

Created By Guest user on 02/12/2020

Kingdom	Plantae
Conservation Status	Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Line'
Vertices	21° 40' 27" S,117° 26' 47" E 21° 51' 48" S,117° 37' 04" E 22° 01' 03" S,117° 38' 04" E 22° 07' 20" S,117° 43' 54" E 22° 20' 14" S,117° 40' 06" E 22° 29' 38" S,117° 43' 24" E
Group By	Conservation Status

Conservation Status	Species	Records
Priority 1	3	9
Priority 2	5	20
Priority 3	21	70
Priority 4	3	15
TOTAL	**32**	**114**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Priority 1					
1.	42861	*Euphorbia inappendiculata var. queenslandica*		P1	
2.	8030	*Helichrysum oligochaetum*		P1	
3.	33026	*Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)*		P1	
Priority 2					
4.	42843	*Euphorbia australis var. glabra*		P2	
5.	20856	*Gompholobium karijini*		P2	
6.	13895	*Paspalidium retiglume*		P2	
7.	20263	*Scaevola sp. Hamersley Range basalts (S. van Leeuwen 3675)*		P2	
8.	19366	*Teucrium pilbaranum*		P2	
Priority 3					
9.	228	*Astrebla lappacea (Curly Mitchell Grass, Wheat Mitchell)*		P3	
10.	20381	*Dampiera anonyma*		P3	
11.	38505	*Eragrostis surreyana*		P3	
12.	14894	*Eremophila magnifica subsp. velutina*		P3	
13.	4482	*Geijera salicifolia*		P3	
14.	3940	*Glycine falcata*		P3	
15.	29381	*Goodenia sp. East Pilbara (A.A. Mitchell PRP 727) (O'Meara's Goodenia)*		P3	
16.	44441	*Grevillea saxicola*		P3	
17.	19594	*Iotasperma sessilifolium*		P3	
18.	19640	*Oldenlandia sp. Hamersley Station (A.A. Mitchell PRP 1479)*		P3	
19.	9232	*Polymeria distigma*		P3	
20.	31596	*Ptilotus subspinescens*		P3	
21.	20168	*Rhagodia sp. Hamersley (M. Trudgen 17794)*		P3	
22.	11556	*Rostellularia adscendens var. latifolia*		P3	
23.	16616	*Sida sp. Barlee Range (S. van Leeuwen 1642)*		P3	
24.	33697	*Sida sp. Hamersley Range (K. Newbey 10692)*		P3	
25.	41820	*Solanum albostellatum*		P3	
26.	4729	*Stackhousia clementii*		P3	
27.	42142	*Swainsona thompsoniana*		P3	
28.	17820	*Themeda sp. Hamersley Station (M.E. Trudgen 11431)*		P3	
29.	45769	*Triodia basitricha (Pilbara Curly Spinifex)*		P3	
Priority 4					
30.	14893	*Eremophila magnifica subsp. magnifica*		P4	
31.	7530	*Goodenia nuda*		P4	
32.	20862	*Rhynchosia bungarensis*		P4	

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement

NatureMap is a collaborative project of the Department of Biodiversity, Conservation and Attractions and the Western Australian Museum.

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

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 Species Report

Created By Jacinta King on 27/03/2020

Kingdom	Animalia
Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Line'
Vertices	21° 40' 27" S,117° 26' 47" E 21° 51' 48" S,117° 37' 04" E 22° 01' 03" S,117° 38' 04" E 22° 07' 20" S,117° 43' 54" E 22° 20' 14" S,117° 40' 06" E 22° 29' 38" S,117° 43' 24" E
Group By	Species Group

Species Group	Species	Records
Amphibian	5	12270
Bird	127	2127
Fish	4	53
Invertebrate	240	845
Mammal	37	1333
Reptile	117	6375
TOTAL	**530**	**23003**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25375	*Cyclorana maini (Sheep Frog)*			
2.	25392	*Litoria rubella (Little Red Tree Frog)*			
3.	25432	*Pseudophryne douglasi (Gorge Toadlet)*			
4.	25445	*Uperoleia russelli (Northwest Toadlet)*			
5.	41428	*Uperoleia saxatilis (Pilbara Toadlet)*			
Bird					
6.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
7.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
8.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
9.	24264	*Acanthiza robustirostris (Slaty-backed Thornbill)*			
10.	24265	*Acanthiza uropygialis (Chestnut-rumped Thornbill)*			
11.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
12.	25536	*Accipiter fasciatus (Brown Goshawk)*			
13.	24282	*Accipiter fasciatus subsp. fasciatus (Brown Goshawk)*			
14.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
15.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
16.	25647	*Amytornis striatus (Striated Grasswren)*			
17.	24312	*Anas gracilis (Grey Teal)*			
18.	24316	*Anas superciliosa (Pacific Black Duck)*			
19.	25670	*Anthus australis (Australian Pipit)*			
20.	25554	*Apus pacificus (Fork-tailed Swift, Pacific Swift)*		IA	
21.	24285	*Aquila audax (Wedge-tailed Eagle)*			
22.	41324	*Ardea modesta (great egret, white egret)*			
23.	24340	*Ardea novaehollandiae (White-faced Heron)*			
24.	24341	*Ardea pacifica (White-necked Heron)*			
25.	24610	*Ardeotis australis (Australian Bustard)*			
26.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
27.	24355	*Artamus minor (Little Woodswallow)*			
28.	24356	*Artamus personatus (Masked Woodswallow)*			
29.	24357	*Artamus superciliosus (White-browed Woodswallow)*			
30.		*Barnardius zonarius*			
31.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
32.	25715	*Cacatua roseicapilla (Galah)*			
33.	25716	*Cacatua sanguinea (Little Corella)*			
34.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
35.	25600	*Centropus phasianinus (Pheasant Coucal)*			
36.	24564	*Certhionyx variegatus (Pied Honeyeater)*			
37.	24378	*Charadrius veredus (Oriental Plover)*		IA	
38.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
39.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
40.	24434	*Chrysococcyx osculans (Black-eared Cuckoo)*			
41.	24289	*Circus assimilis (Spotted Harrier)*			
42.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
43.	24361	*Coracina maxima (Ground Cuckoo-shrike)*			
44.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
45.	24363	*Coracina novaehollandiae subsp. subpallida (Black-faced Cuckoo-shrike)*			
46.	24416	*Corvus bennetti (Little Crow)*			
47.	25593	*Corvus orru (Torresian Crow)*			
48.	24671	*Coturnix pectoralis (Stubble Quail)*			
49.	25701	*Coturnix ypsilophora (Brown Quail)*			
50.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
51.	25595	*Cracticus tibicen (Australian Magpie)*			
52.	25596	*Cracticus torquatus (Grey Butcherbird)*			
53.	25547	*Dacelo leachii (Blue-winged Kookaburra)*			
54.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
55.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
56.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
57.	24470	*Dromaius novaehollandiae (Emu)*			
58.		*Egretta novaehollandiae*			
59.		*Elanus axillaris*			
60.	25540	*Elanus caeruleus (Black-shouldered Kite)*			
61.	24631	*Emblema pictum (Painted Finch)*			
62.	24570	*Epthianura tricolor (Crimson Chat)*			
63.	24837	*Eremiornis carteri (Spinifex-bird)*			
64.	24368	*Eurostopodus argus (Spotted Nightjar)*			
65.	25621	*Falco berigora (Brown Falcon)*			
66.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
67.	24473	*Falco hypoleucos (Grey Falcon)*		T	
68.	25623	*Falco longipennis (Australian Hobby)*			
69.	24474	*Falco longipennis subsp. longipennis (Australian Hobby)*			
70.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
71.	24475	*Falco peregrinus subsp. macropus (Australian Peregrine Falcon)*		S	
72.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
73.	42314	*Gavicalis virescens (Singing Honeyeater)*			
74.	24401	*Geopelia cuneata (Diamond Dove)*			
75.	25585	*Geopelia striata (Zebra Dove)*			
76.	24404	*Geophaps plumifera (Spinifex Pigeon)*			
77.	25530	*Gerygone fusca (Western Gerygone)*			
78.	24271	*Gerygone fusca subsp. fusca (Western Gerygone)*			
79.	47959	*Gerygone fusca subsp. mungi (Desert Gerygone)*			
80.	24443	*Grallina cyanoleuca (Magpie-lark)*			
81.	24295	*Haliastur sphenurus (Whistling Kite)*			
82.	24296	*Hamirostra isura (Square-tailed Kite)*			
83.	24297	*Hamirostra melanosternon (Black-breasted Buzzard)*			
84.	25734	*Himantopus himantopus (Black-winged Stilt)*			
85.	24491	*Hirundo neoxena (Welcome Swallow)*			
86.	24572	*Lacustroica whitei (Grey Honeyeater)*			
87.	24367	*Lalage tricolor (White-winged Triller)*			
88.	25661	*Lichmera indistincta (Brown Honeyeater)*			
89.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
90.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
91.	24583	*Manorina flavigula (Yellow-throated Miner)*			
92.	47997	*Melanodryas cucullata (Hooded Robin)*			
93.	25665	*Melithreptus gularis (Black-chinned Honeyeater)*			
94.	24736	*Melopsittacus undulatus (Budgerigar)*			
95.	24598	*Merops ornatus (Rainbow Bee-eater)*			
96.		*Microcarbo melanoleucos*			
97.	25545	*Mirafra javanica (Horsfield's Bushlark, Singing Bushlark)*			
98.	24302	*Mirafra javanica subsp. horsfieldii (Horsfield's Bushlark, Singing Bushlark)*			
99.	25685	*Neochmia ruficauda (Star Finch)*			
100.	24737	*Neophema bourkii (Bourke's Parrot)*			
101.		*Neopsephotus bourkii*			
102.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
103.	24742	*Nymphicus hollandicus (Cockatiel)*			
104.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
105.	24618	*Oreoica gutturalis (Crested Bellbird)*			
106.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
107.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
108.	24627	*Pardalotus rubricatus (Red-browed Pardalote)*			
109.	25682	*Pardalotus striatus (Striated Pardalote)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
110.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
111.	48060	*Petrochelidon ariel (Fairy Martin)*			
112.	48061	*Petrochelidon nigricans (Tree Martin)*			
113.	24659	*Petroica goodenovii (Red-capped Robin)*			
114.	25699	*Phalacrocorax varius (Pied Cormorant)*			
115.	24409	*Phaps chalcoptera (Common Bronzewing)*			
116.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
117.	25703	*Podargus strigoides (Tawny Frogmouth)*			
118.	25706	*Pomatostomus temporalis (Grey-crowned Babbler)*			
119.	24769	*Porzana fluminea (Australian Spotted Crake)*			
120.	24771	*Porzana tabuensis (Spotless Crake)*			
121.		*Ptilonorhynchus guttatus*			
122.	24757	*Ptilonorhynchus maculatus subsp. guttatus (Western Bowerbird)*			
123.	42323	*Ptilotula keartlandi (Grey-headed Honeyeater)*			
124.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
125.	30948	*Smicrornis brevirostris (Weebill)*			
126.	25656	*Stipiturus ruficeps (Rufous-crowned Emu-wren)*			
127.	30870	*Taeniopygia guttata (Zebra Finch)*			
128.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
129.	42351	*Todiramphus pyrrhopygius (Red-backed Kingfisher)*			
130.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
131.	24851	*Turnix velox (Little Button-quail)*			
132.	24386	*Vanellus tricolor (Banded Lapwing)*			
Fish					
133.		*Amniataba percoides*			
134.		*Leiopotherapon unicolor*			
135.		*Melanotaenia australis*			
136.		*Nematalosa sp.*			
Invertebrate					
137.		*Acariformes sp.*			
138.		*Aeolosoma sp. 1 (PSS)*			
139.		*Aeshnidae sp.*			
140.		*Allodessus bistrigatus*			
141.		*Aname marae*			
142.		*Aname mellosa*			
143.		*Anax papuensis*			
144.		*Ancylidae sp.*			
145.		*Anisops canaliculatus*			
146.		*Anisops gratus*			
147.		*Anisops hackeri*			
148.		*Anisops stali*			
149.		*Anopheles annulipes s.l.*			
150.		*Antichiropus sp.*			
151.		*Aphodius lividus*			
152.		*Areacandona 'korallion' (PSS)*			
153.		*Areacandona 'weelumurrae' (PSS)*			Y
154.		*Areacandona sp.*			
155.		*Argiope protensa*			
156.		*Atyidae sp.*			
157.		*Austropeplea lessoni*			
158.		*Austrostrophus stictopygus*			
159.		*Axonopsella sp. P2 (PSW)*			
160.		*Baetidae sp.*			
161.		*Bathynella sp.*			
162.		*Belostomatidae sp.*			
163.		*Bennelongia australis OrdX (PSW)*			
164.		*Bennelongia barangaroo lineage*			
165.		*Bennelongia nimala*			
166.		*Berosus dallasae*			
167.		*Berosus pulchellus*			
168.		*Berosus sp.*			
169.		*Bidessodes denticulatus*			
170.		*Boeckella triarticulata*			
171.		*Bolboleaus trifoveicollis*			
172.		*Bolboleaus truncatus*			
173.		*Brachionus bidentatus*			
174.		*Brachionus quadridentatus*			
175.		*Buddelundia sp.*			
176.		*Caenidae sp.*			

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177.		*Calamoecia tasmanica subattenuata*			
178.		*Calanoida sp.*			
179.		*Calosoma schayeri*			
180.		*Canthocamptidae sp.*			
181.		*Carenum pulchrum*			
182.		*Carenum venustum*			
183.		*Catadromus lacordairei*			
184.		*Ceratopogonidae sp.*			
185.		*Ceryerda cursitans*			
186.		*Chaoboridae sp.*			
187.		*Cherax quadricarinatus*			
188.		*Chironomidae sp.*			
189.		*Chironominae sp.*			
190.		*Chlaenius australis*			
191.		*Chydaekata sp.*			
192.		*Coelopynia pruinosa*			
193.		*Coenagrionidae sp.*			
194.		*Conchostraca (unident.)*			
195.		*Copelatus irregularis*			
196.		*Corduliidae sp.*			
197.		*Corixidae sp.*			
198.		*Cryptochironomus griseidorsum*			
199.		*Culicidae sp.*			
200.		*Cybister tripunctatus*			
201.		*Cypretta seurati*			
202.		*Cypretta sp PSW074*			
203.		*Dasyheleinae sp. P1 (PSW)*			
204.		*Dero furcata*			
205.		*Diacyclops cockingi*			
206.		*Diacyclops humphreysi humphreysi*			
207.		*Diacyclops scanloni*			
208.		*Diacyclops sobeprolatus*			
209.		*Diaphanosoma excisum*			
210.		*Diaphanosoma unguiculatum*			
211.		*Dicrotendipes jobetus*			
212.		*Dineutus australis*			
213.		*Diplacodes bipunctata*			
214.		*Diplacodes haematodes*			
215.		*Dytiscidae sp.*			
216.		*Ecnomidae sp.*			
217.		*Ecnomus pilbarensis*			
218.		*Encentridophorus sarasini*			
219.		*Enchytraeidae sp.*			
220.		*Enochrus deserticola*			
221.		*Eodiaptomus lumholtzi*			
222.		*Epistylis sp*			
223.		*Epithemia smithii Carruthers*			
224.		*Eunotia bilunaris (Ehr.) Mills.*			
225.		*Fittkauimyia disparipes*			
226.		*Fragilaria ulna (Nitz.) Lange Bertalot*			
227.		*Gastropoda marine sp. RCM1*			
228.		*Geoscaptus laevissimus*			
229.		*Gerridae sp.*			
230.		*Gigadema bostocki*			
231.		*Glacidorbis sp.*			
232.		*Gomphidae sp.*			
233.		*Gomphodella sp. 6 (PSS)*			
234.		*Gyrinidae sp.*			
235.		*Haliplidae sp.*			
236.		*Haliplus halsei*			
237.		*Harpacticoida sp*			
238.		*Hemicordulia koomina*			
239.		*Hemicordulia tau*			
240.		*Heteroceridae sp.*			
241.		*Hexarthra mira*			
242.		*Hoggicosa bicolor*			
243.		*Humphreyscandona 'janeae' (PSS)*			Y
244.		*Hydaticus consanguineus*			
245.		*Hydra sp.*			
246.		*Hydraena barbipes*			

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247.		*Hydraenidae sp.*			
248.		*Hydrodroma sp.*			
249.		*Hydroglyphus grammopterus (=trilineatus)*			
250.		*Hydroglyphus leai*			
251.		*Hydroglyphus orthogrammus*			
252.		*Hydrometra strigosa*			
253.		*Hydrophilidae sp.*			
254.		*Hydroptilidae sp.*			
255.		*Hyphydrus elegans*			
256.		*Hyphydrus lyratus*			
257.		*Ilyocypris australiensis*			
258.		*Ilyodromus sp. PB*			
259.		*Indolpium sp.*			
260.		*Ischnura aurora aurora*			
261.		*Isidorella egraria*			
262.		*Isocypris williamsi (ex Ilyodromus sp. 413)*			
263.		*Isostictidae sp.*			
264.		*Keratella slacki*			
265.		*Kiefferulus intertinctus*			
266.		*Laccophilus sharpi*			
267.		*Laccotrephes tristis*			
268.		*Lamponata daviesae*			
269.		*Lamponina scutata*			
270.		*Larsia albiceps*			
271.		*Leptoceridae sp.*			
272.		*Libellulidae sp.*			
273.		*Limnebius sp.*			
274.		*Limnesia sp. 4 (PSW)*			
275.		*Limnesia sp. 7 (PSW)*			
276.		*Limnocythere stationis*			
277.		*Lychas sp. 1*			
278.		*Lychas sp. 2*			
279.		*Lycidas sp. 1*			
280.		*Lycidas sp. 2*			
281.		*Macrothrix indistincta*			
282.		*Masasteron sampeyae*			
283.		*Meedo houstoni*			
284.		*Melitidae sp.*			
285.		*Mesocyclops brooksi*			
286.		*Mesovelia vittigera*			
287.		*Microcyclops varicans*			
288.		*Micronecta robusta*			
289.		*Microvelia (Austromicrovelia) peramoena*			
290.		*Monohelea sp. P2 (PSW)*			
291.		*Muscidae sp.*			
292.		*Necterosoma regulare*			
293.		*Necterosoma wollastoni*			
294.		*Nedsia sp.*			
295.		*Nedsia sp. 5 (PSS)*			
296.		*Nedsia sp. 6 (PSS)*			Y
297.		*Nematoda sp.*			
298.		*Nematoda sp. P2/P4 (PSW)*			
299.		*Neohydrocoptus subfasciatus*			
300.		*Nepidae sp.*			
301.		*Nilobezzia sp. P2 (PSW)*			
302.		*Nitzschia vitrea (cf) Norman*			Y
303.		*No invertebrates*			
304.		*Notobathynella sp.*			
305.		*Notonectidae sp.*			
306.		*Oecetis sp. Pilbara 4 (PSW)*			
307.		*Oecetis sp. Pilbara 5 (PSW)*			
308.		*Oecobius putus*			
309.		*Oligochaeta sp.*			
310.		*Onthophagus consentaneus*			
311.		*Onthophagus margaretensis*			
312.		*Onthophagus mjobergi*			
313.		*Onthophagus neboissi*			
314.		*Onthophagus pugnacior*			
315.		*Onthophagus villosus*			
316.		*Orthetrum caledonicum*			

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317.		*Orthocladiinae sp.*			
318.		*Ostracoda (unident.)*			
319.		*Ozestheria packardi*			
320.		*Paracymus spenceri*			
321.		*Paramelitidae sp.*			
322.		*Paramelitidae sp. 2 (PSS)*			
323.		*Paramerina sp. D (PSW)*			
324.		*Parastenocaris jane*			
325.		*Pezidae sp.*			
326.		*Phreodrilid with dissimilar ventral chaetae*			
327.		*Pilbarascutigera incola*			
328.		*Pilbarophreatoicus platyarthricus*			
329.		*Pilbarus millsi*			
330.		*Pilbarus sp.*			
331.		*Pinnularia nov sp.*			Y
332.		*Piona cumberlandensis*			
333.		*Planorbidae sp.*			
334.		*Platycoelus melliei*			
335.		*Pleidae sp.*			
336.		*Polycentropodidae sp.*			
337.		*Polypedilum nubifer*			
338.		*Polypedilum watsoni*			
339.		*Procladius paludicola*			
340.		*Prodidomus woodleigh*			
341.		*Pygolabis sp.*			
342.		*Pygolabis weeliwolli*			
343.		*Pyralidae sp.*			
344.		*Ranatra diminuta*			
345.		*Regimbartia attenuata*			
346.		*Rhantaticus congestus*			
347.		*Schizopera sp. 5 (PSS)*			Y
348.		*Scolopendra morsitans*			
349.		*Scopodes rugatus*			
350.		*Simuliidae sp.*			
351.		*Spinasteron woodstock*			
352.		*Spongillidae sp.*			
353.		*Staphylinidae sp.*			
354.		*Sternopriscus multimaculatus*			
355.		*Sternopriscus sp.*			
356.		*Synsphyronus gracilis*			
357.		*Tanypodinae sp.*			
358.		*Tanytarsus sp. P12 (PSW)*			
359.		*Tasmanocoenis arcuata*			
360.		*Teinogenys aurilegulus*			
361.		*Temnocephalidea sp.*			
362.		*Testudinella patina*			
363.		*Thermocyclops decipiens*			
364.		*Tiporus lachlani*			
365.		*Tiporus tambreyi*			
366.		*Trachyspina capensis*			
367.		*Trichocerca similis*			
368.		*Triplectides australis*			
369.		*Tubificidae stygo morphotype 2 (PSS)*			
370.		*Tubificidae stygo type 1 (imm Ainudrilus WA25/26?) (PSS)*			
371.		*Turbellaria sp.*			
372.		*Tyrannochthonius aridus*			
373.		*Veliidae sp.*			
374.		*Wydundra kennedy*			
375.		*Xenochironomus sp P1 (PSW)*			
376.		*Zenodorus orbiculatus*			
Mammal					
377.	24251	*Bos taurus (European Cattle)*	Y		
378.	24181	*Chaerephon jobensis (Greater Northern Freetail-bat, Northern Mastiff Bat)*			
379.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
380.	24091	*Dasykaluta rosamondae (Little Red Kaluta)*			
381.	24093	*Dasyurus hallucatus (Northern Quoll)*		T	
382.	24041	*Felis catus (Cat)*	Y		
383.	24122	*Lagorchestes conspicillatus subsp. leichardti (Spectacled Hare-wallaby (mainland))*		P4	
384.	24217	*Leggadina lakedownensis (Northern Short-tailed Mouse, Lakeland Downs Mouse, Kerakenga)*		P4	

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385.	24180	*Macroderma gigas (Ghost Bat)*		T	
386.	25489	*Macropus robustus (Euro, Biggada)*			
387.	24135	*Macropus robustus subsp. erubescens (Euro, Biggada)*			
388.	24136	*Macropus rufus (Red Kangaroo, Marlu)*			
389.	24168	*Macrotis lagotis (Bilby, Dalgyte, Ninu)*		T	
390.	24223	*Mus musculus (House Mouse)*	Y		
391.	24095	*Ningaui timealeyi (Pilbara Ningaui)*			
392.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
393.	48034	*Osphranter robustus (Euro, Biggada)*			
394.	24144	*Petrogale rothschildi (Rothschild's Rock-wallaby)*			
395.	24101	*Planigale ingrami (Long-tailed Planigale)*			
396.	24102	*Planigale maculata (Common Planigale)*			
397.	24106	*Pseudantechinus woolleyae (Woolley's Pseudantechinus)*			
398.	24233	*Pseudomys chapmani (Western Pebble-mound Mouse, Ngadji)*		P4	
399.	24234	*Pseudomys delicatulus (Delicate Mouse)*			
400.	24235	*Pseudomys desertor (Desert Mouse)*			
401.	24237	*Pseudomys hermannsburgensis (Sandy Inland Mouse)*			
402.	24172	*Pteropus alecto (Black Flying-fox)*			
403.	43368	*Rhinonicteris aurantia (Orange Leaf-nosed bat)*		P4	
404.	24174	*Saccolaimus flaviventris (Yellow-bellied Sheath-tailed Bat)*			
405.	24200	*Scotorepens greyii (Little Broad-nosed Bat)*			
406.	24115	*Sminthopsis longicaudata (Long-tailed Dunnart)*		P4	
407.	24116	*Sminthopsis macroura (Stripe-faced Dunnart)*			
408.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			
409.	24175	*Taphozous georgianus (Common Sheath-tailed Bat)*			
410.	24176	*Taphozous hilli (Hill's Sheathtail-bat)*			
411.	24157	*Trichosurus vulpecula subsp. arnhemensis (northern brushtail possum (Kimberley))*		T	
412.	24205	*Vespadelus finlaysoni (Finlayson's Cave Bat)*			
413.	24248	*Zyzomys argurus (Common Rock-rat)*			
Reptile					
414.	25243	*Acanthophis pyrrhus (Desert Death Adder)*			
415.	25332	*Acanthophis wellsi (Pilbara Death Adder)*			
416.	30833	*Amphibolurus longirostris (Long-nosed Dragon)*			
417.	25318	*Antaresia perthensis (Pygmy Python)*			
418.	25448	*Antaresia stimsoni (Stimson's Python)*			
419.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
420.	25320	*Aspidites melanocephalus (Black-headed Python)*			
421.	25331	*Brachyurophis approximans (North-western Shovel-nosed Snake)*			
422.	25015	*Carlia munda (Shaded-litter Rainbow Skink)*			
423.	25017	*Carlia triacantha (Desert Rainbow Skink)*			
424.	25339	*Chelodina steindachneri (Flat-shelled Turtle)*			
425.	25456	*Crenadactylus ocellatus (Clawless Gecko)*			
426.	30893	*Cryptoblepharus buchananii*			
427.	25020	*Cryptoblepharus plagiocephalus*			
428.	30892	*Cryptoblepharus ustulatus*			
429.	25458	*Ctenophorus caudicinctus (Ring-tailed Dragon)*			
430.	24865	*Ctenophorus caudicinctus subsp. caudicinctus (Ring-tailed Dragon)*			
431.	25459	*Ctenophorus isolepis (Crested Dragon, Military Dragon)*			
432.	24876	*Ctenophorus isolepis subsp. isolepis (Crested Dragon, Military Dragon)*			
433.	24886	*Ctenophorus reticulatus (Western Netted Dragon)*			
434.	25036	*Ctenotus duricola*			
435.	25462	*Ctenotus grandis*			
436.	25041	*Ctenotus grandis subsp. grandis*			
437.	25043	*Ctenotus grandis subsp. titan*			
438.	25044	*Ctenotus hanloni*			
439.	25045	*Ctenotus helenae*			
440.	25052	*Ctenotus leonhardii*			
441.	25463	*Ctenotus pantherinus (Leopard Ctenotus)*			
442.	25064	*Ctenotus pantherinus subsp. ocellifer (Leopard Ctenotus)*			
443.	25070	*Ctenotus robustus*			
444.	25072	*Ctenotus rubicundus*			
445.	25071	*Ctenotus rutilans*			
446.	25073	*Ctenotus saxatilis (Rock Ctenotus)*			
447.	25074	*Ctenotus schomburgkii*			
448.	25077	*Ctenotus serventyi*			
449.	25075	*Ctenotus severus*			
450.		*Ctenotus superciliaris*			
451.	25088	*Cyclodomorphus maximus (Giant Slender Blue-tongue)*			
452.	25466	*Cyclodomorphus melanops (Slender Blue-tongue)*			
453.	25090	*Cyclodomorphus melanops subsp. melanops (Slender Blue-tongue)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
454.	24997	*Delma butleri*			
455.	24998	*Delma elegans*			
456.	25001	*Delma nasuta*			
457.	25002	*Delma pax*			
458.	25004	*Delma tincta*			
459.	25468	*Demansia psammophis (Yellow-faced Whipsnake)*			
460.	25295	*Demansia psammophis subsp. cupreiceps (Yellow-faced Whipsnake)*			
461.	25247	*Demansia psammophis subsp. psammophis (Yellow-faced Whipsnake)*			
462.	25297	*Demansia rufescens (Rufous Whipsnake)*			
463.	24926	*Diplodactylus conspicillatus (Fat-tailed Gecko)*			
464.	41404	*Diplodactylus galaxias (Northern Pilbara Beak-faced Gecko)*			
465.	24937	*Diplodactylus mitchelli*			
466.	24944	*Diplodactylus savagei (Southern Pilbara Beak-faced Gecko)*			
467.	24899	*Diporiphora valens (Southern Pilbara Tree Dragon)*			
468.	41406	*Egernia cygnitos (Western Pilbara Spiny-tailed Skink)*			
469.	25094	*Egernia formosa*			
470.	25109	*Eremiascincus richardsonii (Broad-banded Sand Swimmer)*			
471.	25301	*Furina ornata (Moon Snake)*			
472.	24956	*Gehyra pilbara*			
473.	24958	*Gehyra punctata*			
474.	24959	*Gehyra variegata*			
475.	24961	*Heteronotia binoei (Bynoe's Gecko)*			
476.	24962	*Heteronotia spelea (Desert Cave Gecko, Pilbara Cave Gecko)*			
477.	30929	*Lerista jacksoni*			
478.	25155	*Lerista muelleri*			
479.	42411	*Lerista timida*			
480.	25183	*Lerista zietzi*			
481.	25005	*Lialis burtonis*			
482.	25486	*Liasis olivaceus (Olive Python)*			
483.	25238	*Liasis olivaceus subsp. barroni (Pilbara Olive Python)*		T	
484.	30933	*Lucasium stenodactylum*			
485.	30934	*Lucasium wombeyi*			
486.	25184	*Menetia greyii*			
487.	25491	*Menetia surda*			
488.	25187	*Menetia surda subsp. surda*			
489.	25495	*Morethia ruficauda*			
490.	25193	*Morethia ruficauda subsp. exquisita*			
491.	25498	*Nephrurus wheeleri*			
492.	24972	*Nephrurus wheeleri subsp. cinctus*			
493.	25196	*Notoscincus butleri (lined soil-crevice skink (Dampier))*		P4	
494.	25499	*Notoscincus ornatus*			
495.	24976	*Oedura marmorata (Marbled Velvet Gecko)*			
496.	25254	*Parasuta monachus*			
497.	25255	*Parasuta nigriceps*			
498.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
499.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
500.	24908	*Pogona minor subsp. mitchelli (Dwarf Bearded Dragon)*			
501.	25199	*Proablepharus reginae*			
502.	25261	*Pseudechis australis (Mulga Snake)*			
503.	42416	*Pseudonaja mengdeni (Western Brown Snake)*			
504.	25263	*Pseudonaja modesta (Ringed Brown Snake)*			
505.	25264	*Pseudonaja nuchalis (Gwardar, Northern Brown Snake)*			
506.	25009	*Pygopus nigriceps*			
507.	24982	*Rhynchoedura ornata (Western Beaked Gecko)*			
508.	24927	*Strophurus elderi*			
509.	24946	*Strophurus strophurus*			
510.	24949	*Strophurus wellingtonae*			
511.	25269	*Suta fasciata (Rosen's Snake)*			
512.	25307	*Suta punctata (Spotted Snake)*			
513.	25202	*Tiliqua multifasciata (Central Blue-tongue)*			
514.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
515.	30814	*Tympanocryptis cephalus (Pebble Dragon)*			
516.	24983	*Underwoodisaurus milii (Barking Gecko)*			
517.	41426	*Underwoodisaurus seorsus (Pilbara Barking Gecko)*		P2	
518.	25209	*Varanus acanthurus (Spiny-tailed Monitor)*			
519.	25210	*Varanus brevicauda (Short-tailed Pygmy Monitor)*			
520.	30825	*Varanus bushi (Pilbara Mulga Monitor)*			
521.	25211	*Varanus caudolineatus*			
522.	25212	*Varanus eremius (Pygmy Desert Monitor)*			
523.	25216	*Varanus giganteus (Perentie)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
524.	25215	*Varanus gilleni (Pygmy Mulga Monitor)*			
525.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
526.	25524	*Varanus panoptes (Yellow-spotted Monitor)*			
527.	25224	*Varanus pilbarensis (Pilbara Rock Monitor, Northern Pilbara Rock Goanna)*			
528.	25526	*Varanus tristis (Racehorse Monitor)*			
529.	25227	*Varanus tristis subsp. tristis (Racehorse Monitor)*			
530.	25311	*Vermicella snelli*			

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.

Appendix 3

Vegetation Structural Classification and Condition Ranking

Vegetation structural classes based on modifications of the vegetation classification system of Specht (1970) by Muir (1977) and Aplin (1979).

Stratum	**Canopy Cover (%)**				
	70-100%	**30-70%**	**10-30%**	**2-10%**	**<2%**
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland	Scattered tall trees
Trees 10-30 m	Closed forest	Open forest	Woodland	Open woodland	Scattered trees
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland	Scattered low trees
Shrubs over 2 m	Tall closed scrub	Tall open scrub	Tall shrubland	Tall open shrubland	Scattered tall shrubs
Shrubs 1-2 m	Closed heath	Open heath	Shrubland	Open shrubland	Scattered shrubs
Shrubs under 1 m	Low closed heath	Low open heath	Low shrubland	Low open shrubland	Scattered low shrubs
Hummock grasses	Closed hummock grassland	Hummock grassland	Open hummock grassland	Very open hummock grassland	Scattered hummock grasses
Grasses, Sedges, Herbs	Closed tussock grassland / bunch grassland / sedgeland / herbland	Tussock grassland / bunch grassland / sedgeland / herbland	Open tussock grassland / bunch grassland / sedgeland / herbland	Very open tussock grassland / bunch grassland / sedgeland / herbland	Scattered tussock grasses / bunch grasses / sedges / herbs

Extracts from the NVIS framework (see NVIS Technical Working Group 2017) of relevance to the current study.

Table 1: The NVIS Information Hierarchy.

Hierarchical Level	Description	NVIS structural/floristic components required
I	**Class***	Dominant growth form for the ecologically or structurally dominant stratum
II	**Structural Formation***	Dominant growth form, cover and height for the ecologically or structurally dominant stratum.
III	**Broad Floristic Formation****	Dominant growth form, cover, height and dominant land cover genus for the upper most or the ecologically or structurally dominant stratum.
IV	**Sub-Formation****	Dominant growth form, cover, height and dominant genus for each of the three traditional strata. (i.e. Upper, Mid and Ground)
V	**Association****	Dominant growth form, height, cover and species (3 species) for the three traditional strata. (i.e. Upper, Mid and Ground)
VI	**Sub-Association****	Dominant growth form, height, cover and species (5 species) for all layers/sub-strata.

* Walker & Hopkins (1990)
** NVIS (defined for the NVIS Information Hierarchy)

Table 4: NVIS structural Formation Terminology.

	Cover Characteristics							
	Foliage cover *	70-100	30-70	10-30		» 0	0-5	unknown
	Crown cover **	>80	50-80	20-50	0.25-20		0-5	unknown
	% Cover ***	>80	50-80	20-50	0.25-20		0-5	unknown
	Cover code	d	c	i	r	bi	bc	unknown
Growth Form	**Height Ranges (m)**	**Structural Formation Classes**						
tree, palm	30	closed forest	open forest	woodland	open woodland	isolated trees	isolated clumps of trees	trees
shrub, cycad, grass-tree, tree-fern	2	closed shrubland	shrubland	open shrubland	sparse shrubland	isolated shrubs	isolated clumps of shrubs	shrubs
heath shrub	2	closed heathland	heathland	open heathland	sparse heathland	isolated heath shrubs	isolated clumps of heath shrubs	heath shrubs
tussock grass	0.5	closed tussock grassland	tussock grassland	open tussock grassland	sparse tussock grassland	isolated tussock grasses	isolated clumps of tussock grasses	tussock grasses
other grass	0.5	closed grassland	grassland	open grassland	sparse grassland	isolated grasses	isolated clumps of grasses	other grasses
sedge	0.5	closed sedgeland	sedgeland	open sedgeland	sparse sedgeland	isolated sedges	isolated clumps of sedges	sedges
rush	0.5	closed rushland	rushland	open rushland	sparse rushland	isolated rushes	isolated clumps of rushes	rushes
forb	0.5	closed forbland	forbland	open forbland	sparse forbland	isolated forbs	isolated clumps of forbs	forbs
fern	2	closed fernland	fernland	open fernland	sparse fernland	isolated ferns	isolated clumps of ferns	ferns
vine	30	closed vineland	vineland	open vineland	sparse vineland	isolated vines	isolated clumps of vines	vines

* Foliage Cover is defined for each stratum as 'the proportion of the ground that would be shaded if sunshine came from directly overhead'. It includes branches and leaves and is similar to the Crown type of Walker & Hopkins (1990) but is applied to a stratum or plot rather than an individual crown. It is generally not directly measured in the field for the upper stratum, although it can be measured by various line interception methods for ground layer vegetation. For the attribute COVER CODE in the Stratum table, the ground cover category refers to ground foliage cover not percentage cover.
** Crown Cover (canopy cover) as per Walker & Hopkins (1990). Although relationships between the two are dependent on season, species, species age etc (Walker & Hopkins (1990), the crown cover category classes have been adopted as the defining measure.
*** The percentage cover is defined as the percentage of a strictly defined plot area, covered by vegetation. This can be an estimate and is a less precise measure than using, for example, a point intercept transect methods on ground layer, or overstorey vegetative cover. That is for precisely measured values (e.g. crown densitometer or point intercept transects) the value measured would be 'foliage' cover. Where less precise or qualitative measures are used these will most probably be recorded as 'percentage' cover.

Table 6: Example usage of the NVIS Information Hierarchy (Note: For definitions of U, M, G, U1, U2, U3, M1, M2, M3, G1, and G2 refer to Table 1.)**

Level	Description	Species	Growth form	Cover	Height
I	**CLASS**	-	1 dominant growth form for the dominant stratum	-	-
	Example	*Tree*			
II	**STRUCTURAL FORMATION**	-	1 dominant growth form for the dominant stratum	1 cover class for the dominant stratum	1 height class for the dominant stratum
	Example	*Open woodland*			
III	**BROAD FLORISTIC FORMATION**	1 dominant genus name for the dominant stratum	1 dominant growth form for dominant stratum	1 cover class for dominant stratum	1 height class for dominant stratum
	Example	*Eucalyptus open woodland*			
IV	**SUB-FORMATION**	1 dominant genus name for each stratum ((max 3 strata; i.e. for U, M, G where substantially present)	1 dominant growth form for each stratum (max 3 strata)	1 cover class for each stratum (max 3 strata)	1 height class for each stratum (max 3 strata)
	Example	*+Eucalyptus open woodland\Acacia tall sparse shrubland\Aristida open tussock grassland*			
V	**ASSOCIATION**	Up to 3 dominant species for each stratum (max 3 strata; i.e. for U, M, G where present)	Up to 3 dominant growth forms for each stratum (max 3 strata; i.e. for U, M, G where present)	1 cover class code for each stratum (max 3 strata; i.e. for U, M, G where present)	1 height class code for each stratum (max 3 strata; i.e. for U, M, G where present)
	Example	*U+ ^Eucalyptus coolabah,Casuarina cristata,Flindersia maculosa\^tree\7\r;M ^Acacia salicina,Alectryon oleifolius,Acacia stenophylla\^shrub\4\r;G ^Aristida ramosa,Astrebla squarrosa,Bothriochloa decipiens\^tussock grass,forb,sedge\2\i*			
VI	**SUB-ASSOCIATION**	Up to 5 dominant species for each sub-stratum (i.e. for U1, U2, U3, M1, M2, M3, G1, G2 where present) • Indicate characteristic genus in each sub-stratum with an up arrow or hat "^". Must match characteristic growth form.	Up to 5 dominant growth forms for each sub-stratum. • Indicate characteristic growth form with an up arrow or hat "^". Must match characteristic genus	1 cover class code for each sub-stratum	1 height class code for each sub-stratum
	Example	*U1+ ^Eucalyptus coolabah,Casuarina cristata,Flindersia maculosa\Eucalyptus\^tree\7\r;M1 ^Acacia salicina,Alectryon oleifolius ,Acacia stenophylla,Acacia victoriae subsp. victoriae,Eremophila bignoniiflora\Acacia\^shrub\4\bi;M2 Eremophila longifolia,Muehlenbeckia florulenta\Eremophila\shrub\3\r;G1 ^Aristida ramosa,Astrebla squarrosa,Bothriochloa decipiens,Dichanthium sericeum,Enteropogon acicularis\Aristida\^tussock grass,forb,sedge\2*			

Vegetation condition scale taken from EPA (2016a), based on scales developed by Keighery (1994) and Trudgen (1988).

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

Appendix 4

Fauna License

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

FAUNA TAKING (BIOLOGICAL ASSESSMENT) LICENCE

Regulation 27, Biodiversity Conservation Regulations 2018

Licence Number: BA27000237

Licence Holder: Ms Jacinta Phillippa King
Biota Environmental Sciences P/L
Level 1, 228 Carr Place
Leederville WA 6007

Date of Issue: 08/04/2020

Date Valid From: 14/04/2020
Date of Expiry: 13/04/2021

LICENSED ACTIVITIES

Subject to the terms and conditions on this licence, the licence holder may –

1. Take and disturb fauna for level 1 survey using acoustic recorders (SM4), visual observation, spotlighting / head torches, secondary signs / evidence, habitat assessment and motion cameras for Main Roads Karratha to Tom Price road construction.

LOCATIONS

1. Karratha to Tom Price (110 km length of Karratha-Tom Price Road from Wallyinya Pool to the Nanutarra Munjina Road. The study area is a 400m wide corridor extending along the length of this road.).

AUTHORISED PERSONS

The following persons or persons of the specified class may assist in carrying out the licensed activities:

1. Stewart Ford
2. Michael Greenham
3. Penny Brooshooft
4. John Graff
5. Josh Keen
6. Nathan Beerkens
7. Brandon King
8. Daniel Kamien
9. Garth Humphreys
10. Roy Teale
11. Sylvie Schmidt

CONDITIONS

1. Fauna must not be taken on CALM land, (as defined in the Conservation and Land Management Regulations 2002*),* unless authorised by a written notice of a lawful authority issued under regulations 4 and 8 of the Conservation and Land Management Regulations 2002.

2. If persons, other than the licence holder, are authorised to carry out/assist in carrying out the activities under the licence, the licence holder must ensure those persons have read and understand the licence terms and conditions.
3. The written authorisation of the person in possession or occupation of the land accessed and upon which fauna is taken, as required under regulation 101(2) and referred to in "Additional information" below, must:
   a) state location details (including lot or location number, street/road, suburb and local government authority);
   b) state land owner or occupier name, and contact phone number;
   c) specify the time period that the authorisation is valid for;
   d) be signed and dated; and
   e) be attached to this licence at all times.
4. This licence, and any written authorisation or lawful authority which authorises the take of fauna on specified locations must be carried at all times while conducting licensed activities and be produced on demand by a wildlife officer.
5. If a species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* is inadvertently captured, that species is to be released immediately at the point of capture. If the fauna is injured or deceased, the licence holder shall contact the DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) for advice on treatment or disposal. Details of any capture of threatened fauna must be included in the "Return of Fauna Taken."
6. The licence holder must not:
   a) release any fauna in any area where it does not naturally occur;
   b) transfer fauna to any other person or authority (other than the Western Australian Museum) unless approved in writing by the CEO; or
   c) dispose of the remains of fauna in any manner likely to interfere the natural or present day distribution of the species.
7. The licence holder must not take and remove more than ten specimens of any one protected species of fauna from any location less than 20km apart. Where exceptional circumstances make it necessary to take a larger number of specimens from a particular location in order to obtain adequate statistical data, the collector must proceed with circumspection and justify their actions to the Director General in advance.
8. All holotypes and syntypes and a half share of paratypes of species or subspecies permitted to be permanently taken under this licence must be donated to the Western Australian Museum. Duplicates (one pair in each case) of any species collected, which represents a significant extension of geographic range must be offered to the Western Australian Museum.
9. All specimens and material retained under the authority of this licence must be offered to the Western Australian Museum for loan, for inclusion in its collection, or on request be made available to other persons involved in relevant scientific studies.
10. The licence holder must create, compile and maintain records and information as required in a DBCA approved "Return of Fauna Taken" of all fauna taking activities as they occur.
11. A DBCA approved "Return of Fauna Taken" must be completed in full (including nil taking details) and submitted to DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) prior to the end of each annual period of the licence (from the valid from date) (refer to "Additional Information" section below).

Danny Stefoni
LICENSING OFFICER
WILDLIFE PROTECTION BRANCH

Delegate of CEO

ADDITIONAL INFORMATION

1. It is an offence to take any species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* unless the person is authorised under Section 40. The penalty ranges between $300 000 and $500 000; Section 150 Biodiversity Conservation Act 2016.
2. Regulation 82 empowers the CEO to add, substitute or delete a term or condition of a licence or to correct errors. Such power may be exercised on application of a licence holder or by the CEO's own initiative. If an amendment to a licence term or condition is required, please contact the CEO or the Licensing Section on wildlifelicensing@dbca.wa.gov.au in the first instance. The licence holder, if adversely affected by a condition imposed in this licence, may apply to the State Administrative Tribunal for review of the decision of the CEO to impose that condition on a licence: regulation 89(2) Biodiversity Conservation Regulations 2018.
3. A person must not contravene a condition of a licence. The penalty for an offence involving the contravention of a condition of a licence is a fine of $10 000: regulation 84 of the Biodiversity Conservation Regulations 2018.
4. It is an offence for persons authorised by this licence to enter land that is not in their possession or under their control without first having the *prior* written authorisation of the current owner or occupier of the land to:

   a) enter the land; and

   b) carry out the activity authorised by this licence.

   The penalty for this offence is a fine of $5 000: regulation 101(2) of the Biodiversity Conservation Regulations 2018.
5. The licence holder must be able to produce for inspection upon request any information or records required by regulation 85(2) of the Biodiversity Conservation Regulations 2018 Penalty $10 000. It is an offence to knowingly include false or misleading information or make statements in records: regulation 85(3) of the Biodiversity Conservation Regulations 2018 Penalty $10 000. It is an offence to include any information or make any statement in a return that the licence holder knows to be false or misleading in a material particular: regulation 86 (2) of the Biodiversity Conservation Regulations 2018 Penalty $10 000.
6. The approved DBCA "Return of Fauna Taken" data file can be downloaded from the DBCA webpage (https://www.dpaw.wa.gov.au/plants-and-animals/licences-and-authorities).
7. The issuing of a licence under the Biodiversity Conservation Regulations 2018 does not constitute an animal ethics approval or a licence to use animals for scientific purposes as required under the *Animal Welfare Act 2002,* Animal Welfare (Scientific Purposes) Regulations 2003. It is the responsibility of a licence applicant / licence holder to ensure that they comply with the requirements of all applicable legislation. Enquiries relating to the Animal Welfare Act licences and animal ethics approvals are to be

directed to the Department of Primary Industries and Regional Development (https://www.agric.wa.gov.au/animalwelfare).

8. Threatened fauna can only be taken under a *Biodiversity Conservation Act 2016* Section 40 authorisation, Occurrences of threatened species must be reported to the CEO. For more information please see https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals.

9. Any interaction involving Nationally Listed Threatened Fauna that may be invasive and/or harmful to the fauna may require approval from the Commonwealth Department of the Environment and Energy http://www.environment.gov.au/about-us/business-us/permits-assessments-licences. Interaction with such species is controlled by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and Environment Protection and Biodiversity Conservation Regulations 2000 as well as the *Biodiversity Conservation Act 2016* and Biodiversity Conservation Regulations 2018.

Appendix 5

Mapping of Vegetation Types and Priority Flora

Manuwarra Red Dog Highway Vegetation Mapping Descriptions

Vegetation of Stony Hillslopes, Hillcrests and Foothills

H1	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Triodia wiseana* hummock grassland.
H2	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland.
H3	*Eucalyptus leucophloia* subsp. *leucophloia, (Corymbia hamersleyana)*low open woodland over mixed *Acacia* shrubs over *Triodia wiseana* open hummock grassland.
H4	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.

Vegetation of Cracking Clays

C1 (PEC)	*Eriachne benthamii, Eragrostis xerophila, Astrebla elymoides* very open tussock grassland over *Cynodon convergens* very bunch grassland.
C2	*Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses.
C3 (PEC)	Mixed *Astrebla* tussock grassland over *Urochloa occidentalis* var. *occidentalis* bunch grassland.
C4 (TEC)	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.
C5 (TEC)	*Eucalyptus victrix* scattered low trees over *Eriachne benthamii, (Themeda* sp. Hamersley Station (M.E. Trudgen 11431)) very open tussock grassland over mixed open herbland.

Mulga Vegetation

M1	*Acacia aptaneura (A. pruinocarpa)* low woodland over *Triodia epactia (T. melvillei)* very open hummock grassland over *Chrysopogon fallax* scattered tussock grasses.
M2	*Acacia ?macraneura, A. aptaneura* over *Triopia epactia* scattered hummock grasses.
M3	*Acacia aneura/aptaneura, (A. ?macraneura,)*low woodland over bunch grasses.
M4	*Acacia aptaneura, A. ?macraneura (Hakea lorea* subsp. *lorea)* low open woodland over mixed tussock grasses, bunch grasses and herbs.

Vegetation of Stony Plains and Sloping Plains

P1	*Corymbia deserticola* subsp. *deserticola, C. hamesleyana, Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland.
P2	*Corymbia hamersleyana* low open woodland over mixed *Acacia* shrubland over *Triodia epactia* hummock grassland.
P3	*Hakea lorea* subsp. *lorea* low open woodland over shrubs over *Triodia epactia* very open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) very open tussock grassland.
P4	*Corymbia hamersleyana* scattered low trees over *Triodia epactia, (T. wiseana)* open hummock grassland and *Eulalia aurea* scattered tussock grasses.
P5	*Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia angusta* open hummock grassland with mixed tussock grasses.
P6 (TEC)	*Hakea lorea* subsp. *lorea* low open woodland over **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.
P7	*Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses.
P8	**Vachellia farnesiana* scattered tall shrubs over *Chrysopogon fallax* very open tussock grassland over mixed annual grassland and herbland.

Vegetation Descriptions for Manuwarra Red Dog Highway Vegetation Maps

Biota Environmental Sciences

Manuwarra Red Dog Highway Vegetation Mapping Descriptions

Vegetation of Drainage Lines

D1 *Eucalyptus victrix (E. camaldulensis* subsp. *refulgens)* woodland over *Melaleuca glomerata* tall open shrubland over *Triodia epactia* scattered hummock grasses over mixed tussock grasses and sedges.

D2 *Eucalyptus camaldulensis* subsp. *refulgens, Melaleuca argentea* open forest over mixed scattered tussock grasses with *Cyperus vaginatus* scattered sedges.

D3 *Eucalyptus victrix* low open woodland over **Vachellia farnesiana* scattered tall shrubs over mixed tussock grasses and bunch grasses.

Vegetation of Floodplains

F1 *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana (T. epactia)* open hummock grassland with mixed tussock grasses.

F2 *Corymbia hamersleyana* low woodland over mixed *Acacia* tall open shrubland over *Triodia wiseana, (T. epactia)* open hummock grassland.

F3 *Corymbia hamersleyana* low open woodland over mixed *Acacia* open shrubland over *Triodia epactia* very open hummock grassland with *Chrysopogon fallax* very open tussock grassland.

F4 *Acacia citrinoviridis* low woodland over *Triodia epactia* open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.

F5 *Corymbia hamersleyana* low open woodland over *Acacia bivenosa* tall shrubland over *Triodia epactia* scattered hummock grasses and **Cenchrus ciliaris* tussock grasses.

Other Mapping Units

Disturbed

Cleared

Vegetation Descriptions for Manuwarra Red Dog Highway Vegetation Maps

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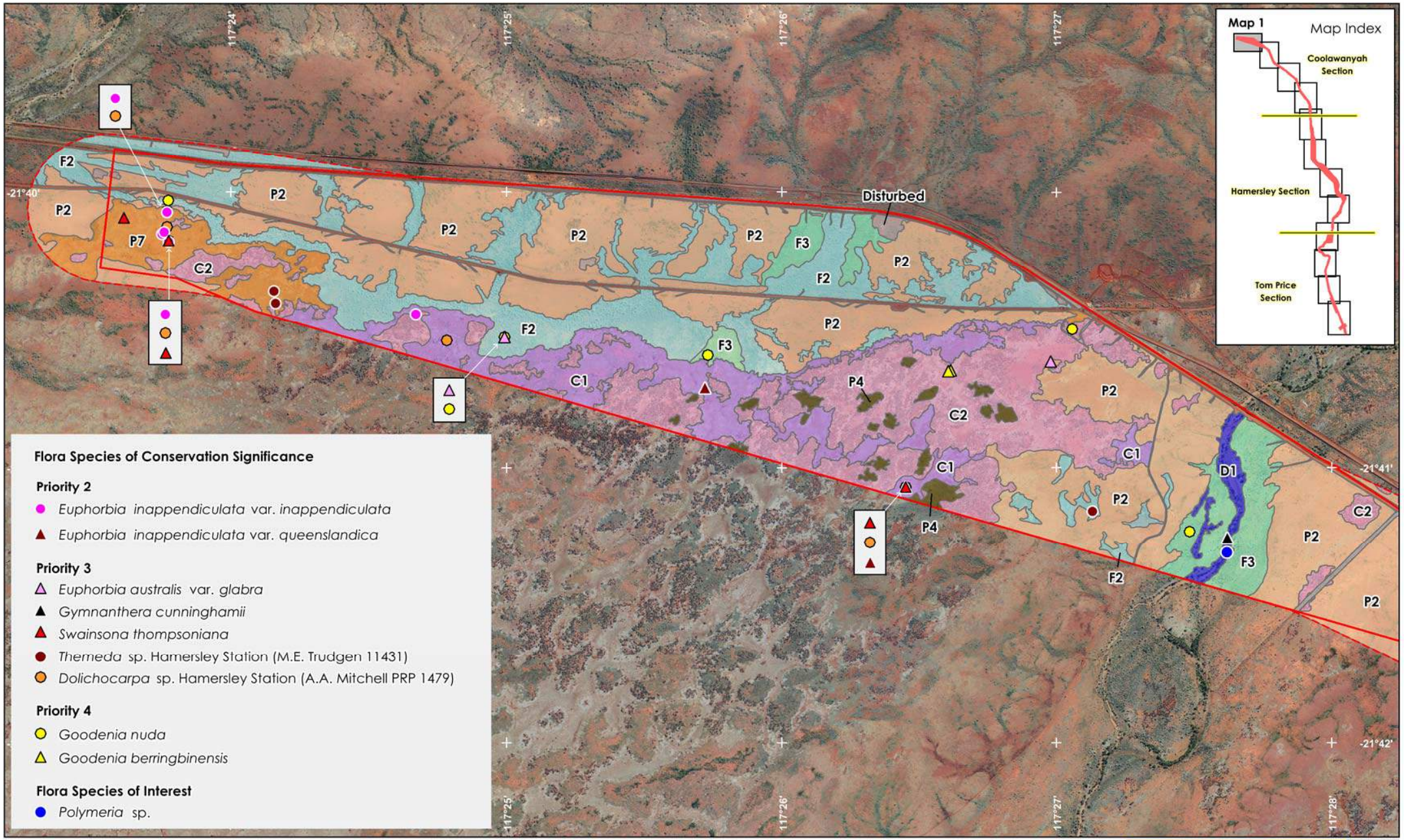


Location Map

Survey area

Contextual area

N

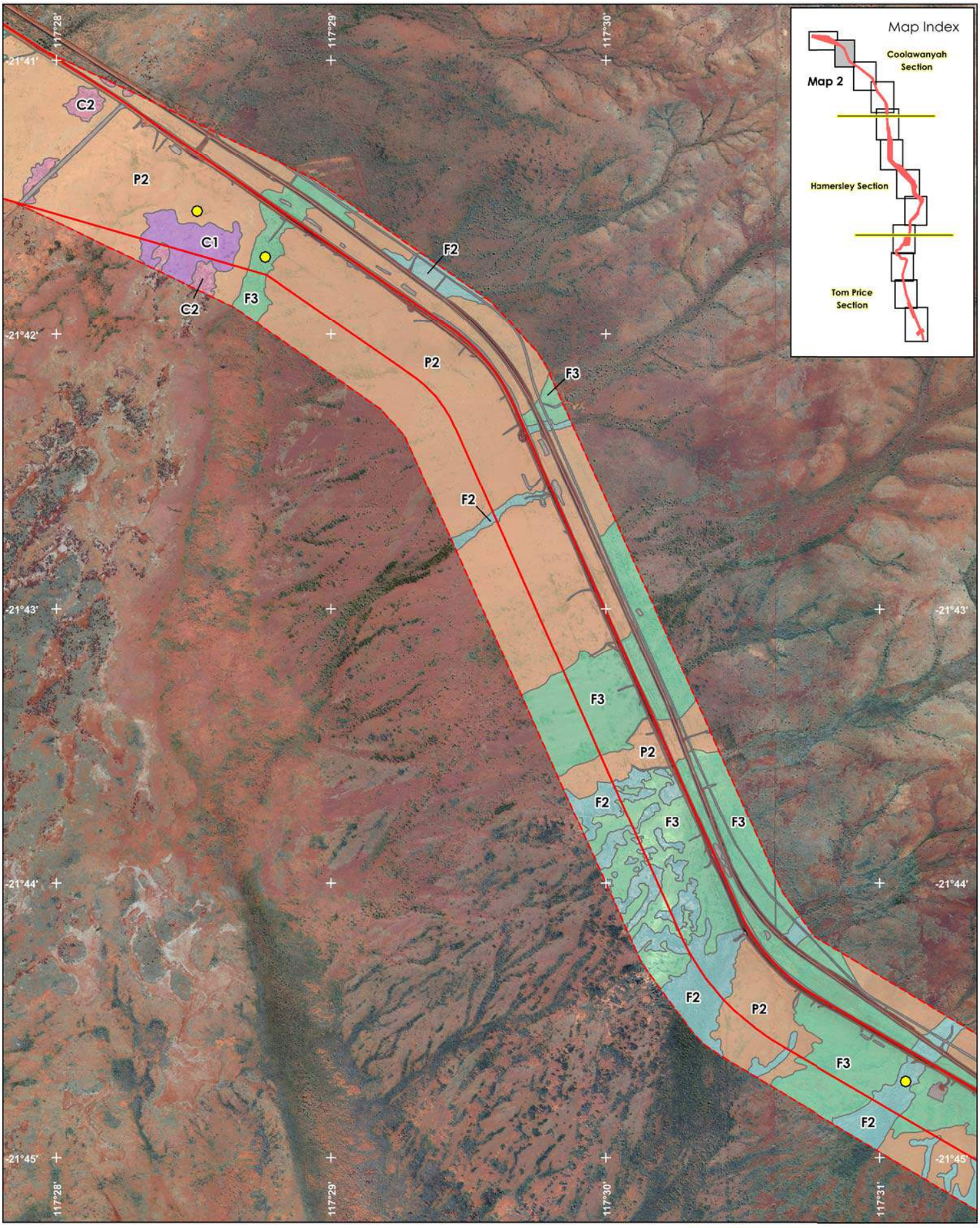
0 0.5 1

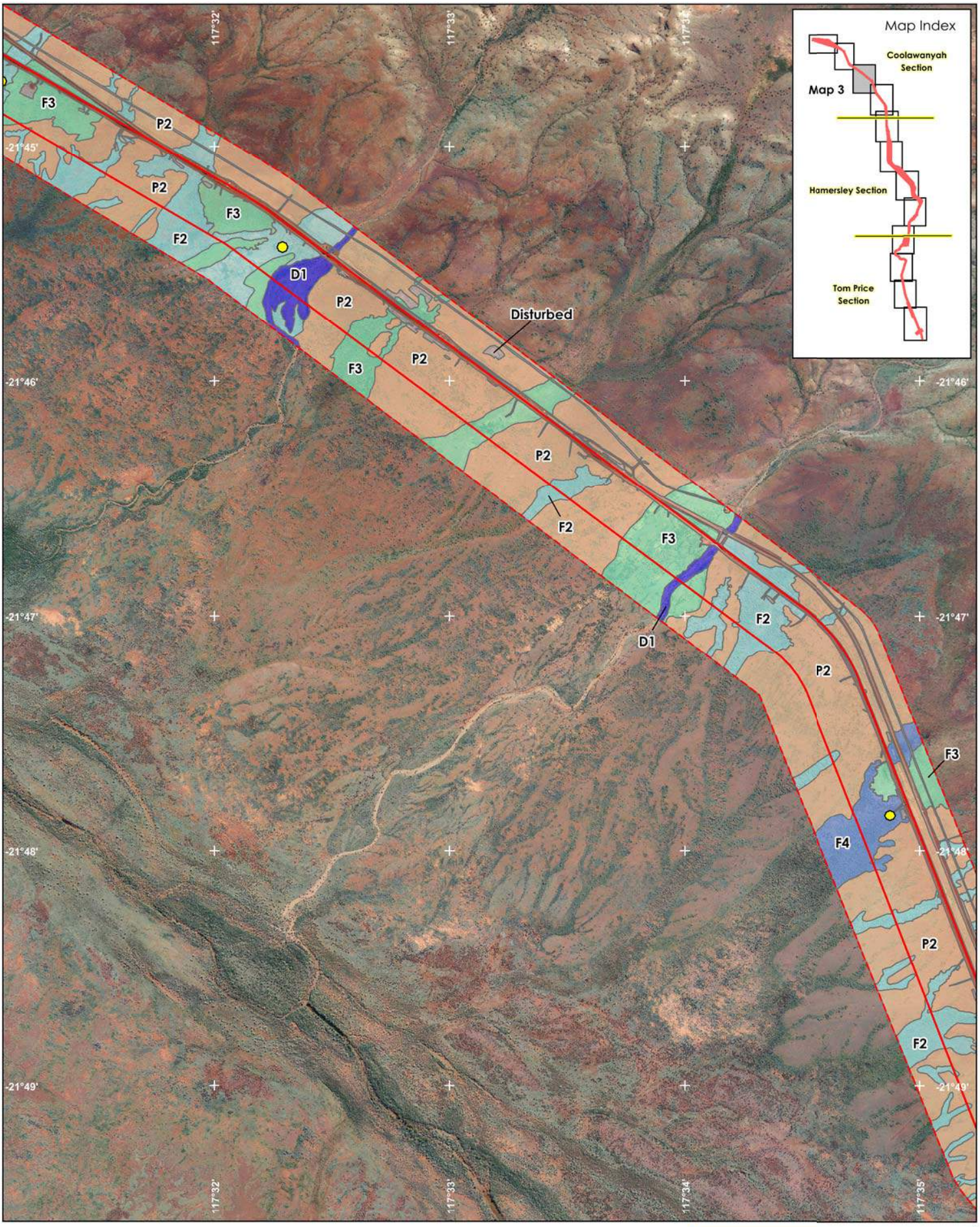
kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 1

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 07 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:30,000 @ A4


Map Index
Coolawanyah Section
Map 2
Hamersley Section
Tom Price Section
117°28'
117°29'
117°30'
117°31'
-21°41'
-21°42'
-21°43'
-21°44'
-21°45'
C2
P2
C1
F2
F3
Location Map
KARRATHA
Map Area
KALGOORLIE
PERTH
Survey area
Contextual area
Flora Species of Conservation Significance
Goodenia nuda (Priority 4)
0
0.5
1
kilometres
N
Manuwarra Red Dog Highway
Stage 4 - Vegetation Mapping &
Priority Flora Species - Map 2
Biota Environmental Sciences
Author: R Mason
Drawn: P Sawers
Job No.: 1511
Date: 7 Jan 2021
Revised: 9 Aug 2021
Datum: GDA94
Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Flora Species of Conservation Significance

Goodenia nuda (Priority 4)

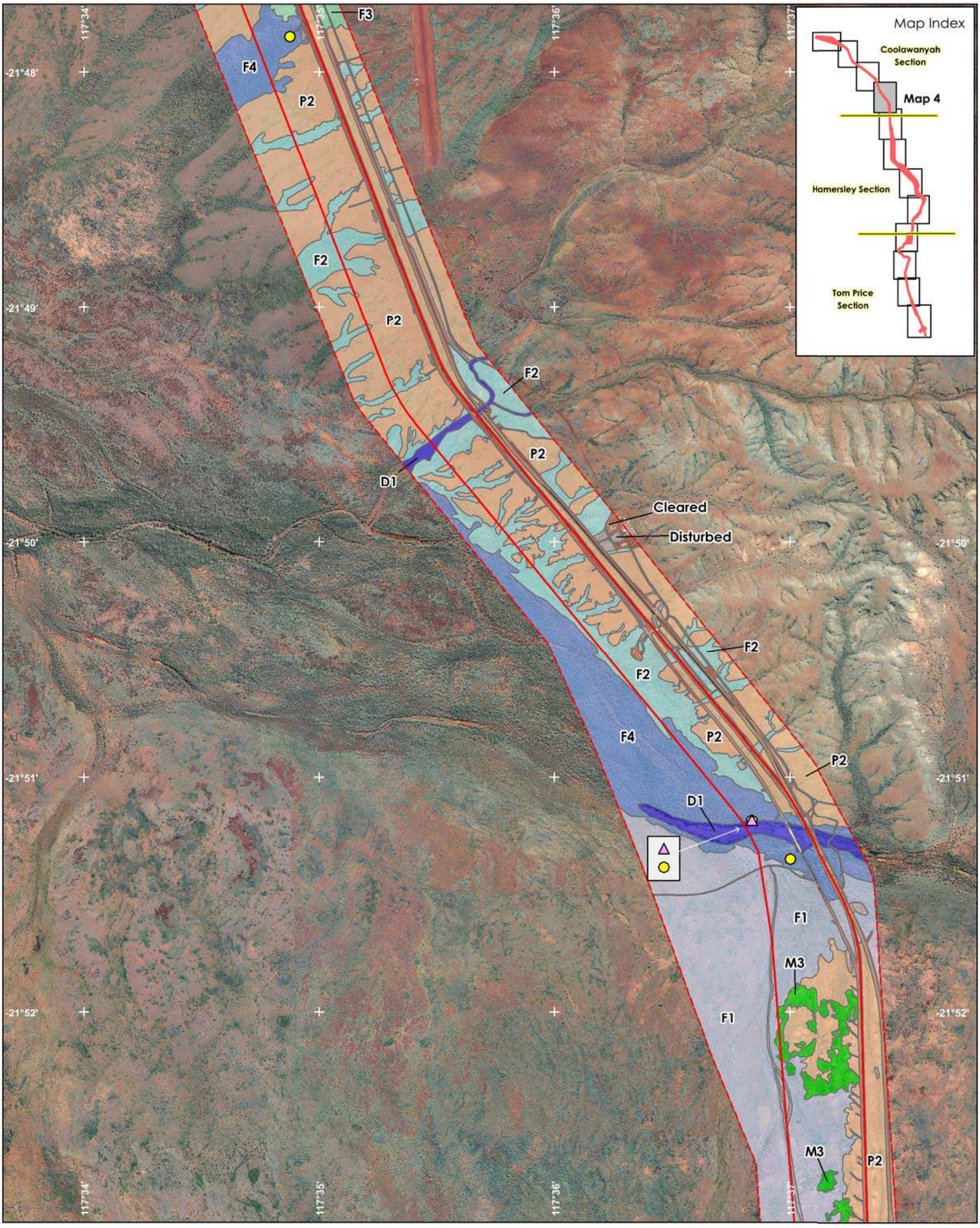
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 3

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Flora Species of Conservation Significance

- *Goodenia nuda* (Priority 4)
- *Euphorbia australis* var. *glabra* (Priority 3)

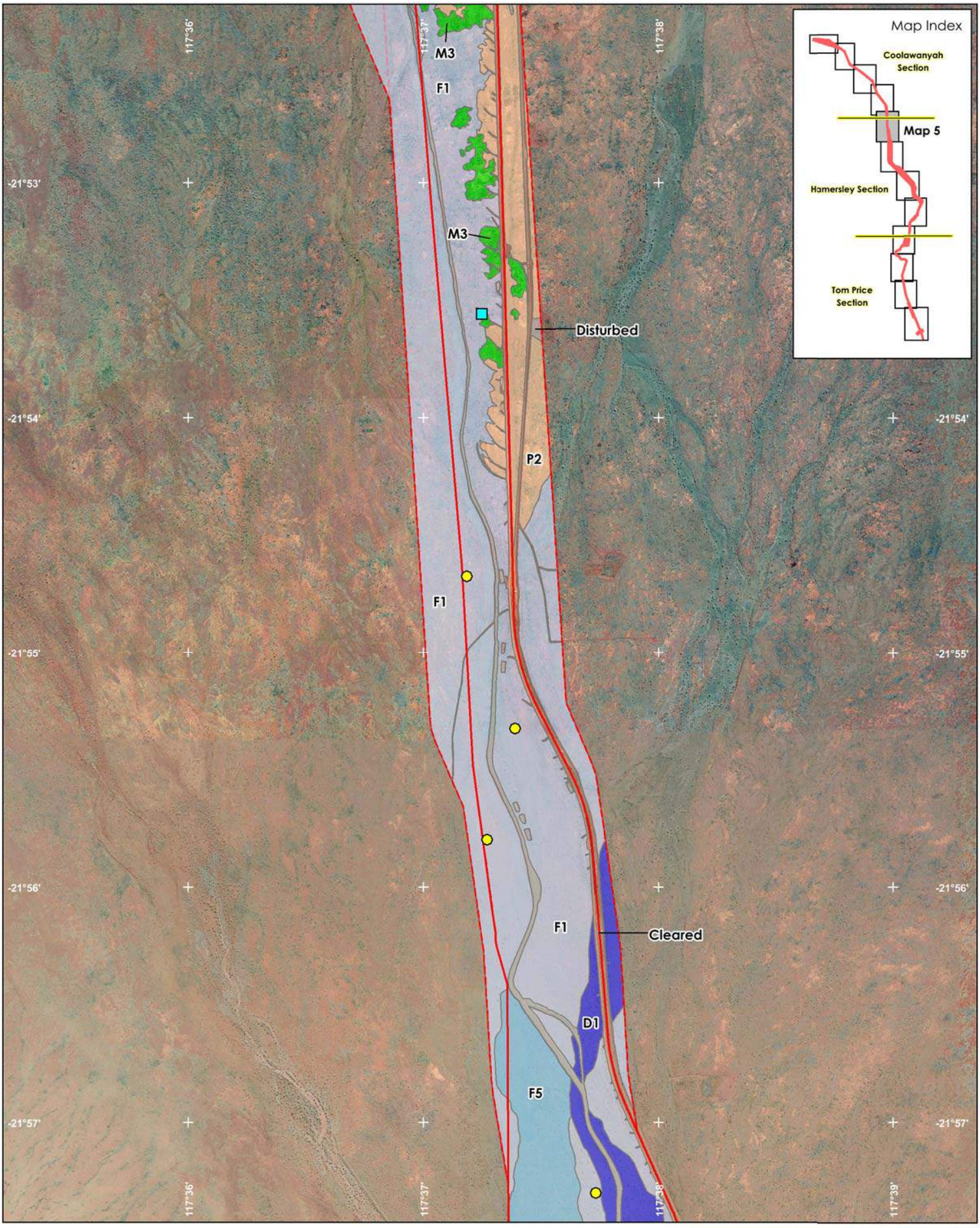
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 4

Biota Environmental Sciences

Author: R Mason	Drawn: P Sawers	Job No.: 1511	Date: 7 Jan 2021	Revised: 9 Aug 2021	Datum: GDA94	Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

0 0.5 1

kilometres

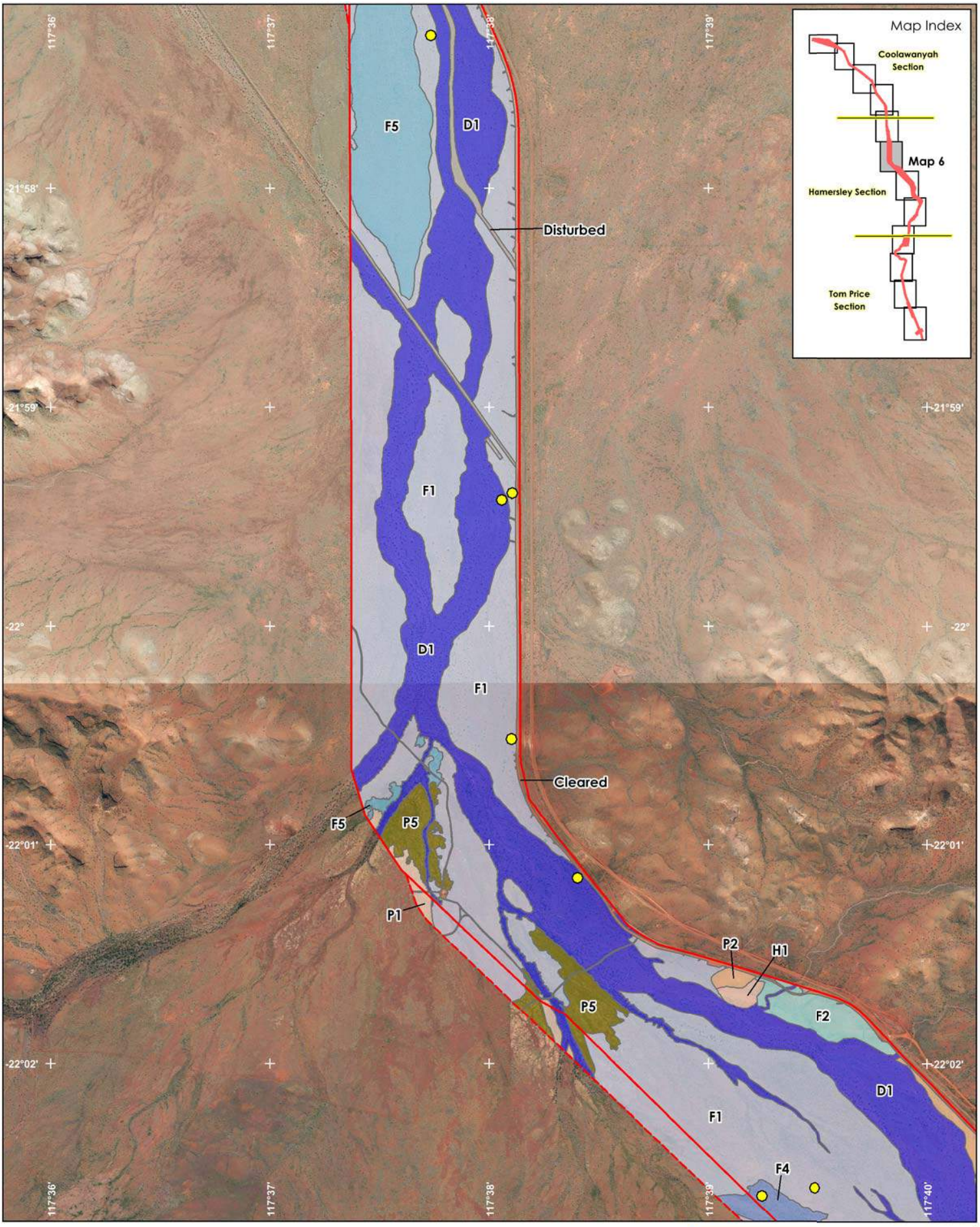
Flora Species of Conservation Significance

- *Josephina* sp. Woodstock (A.A. Mitchell PRP 989) (Priority 1)
- *Goodenia nuda* (Priority 4)

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 5

Biota Environmental Sciences

Author: R Mason	Drawn: P Sawers	Job No.: 1511	Date: 7 Jan 2021	Revised: 9 Aug 2021	Datum: GDA94	Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Flora Species of Conservation Significance

Goodenia nuda (Priority 4)

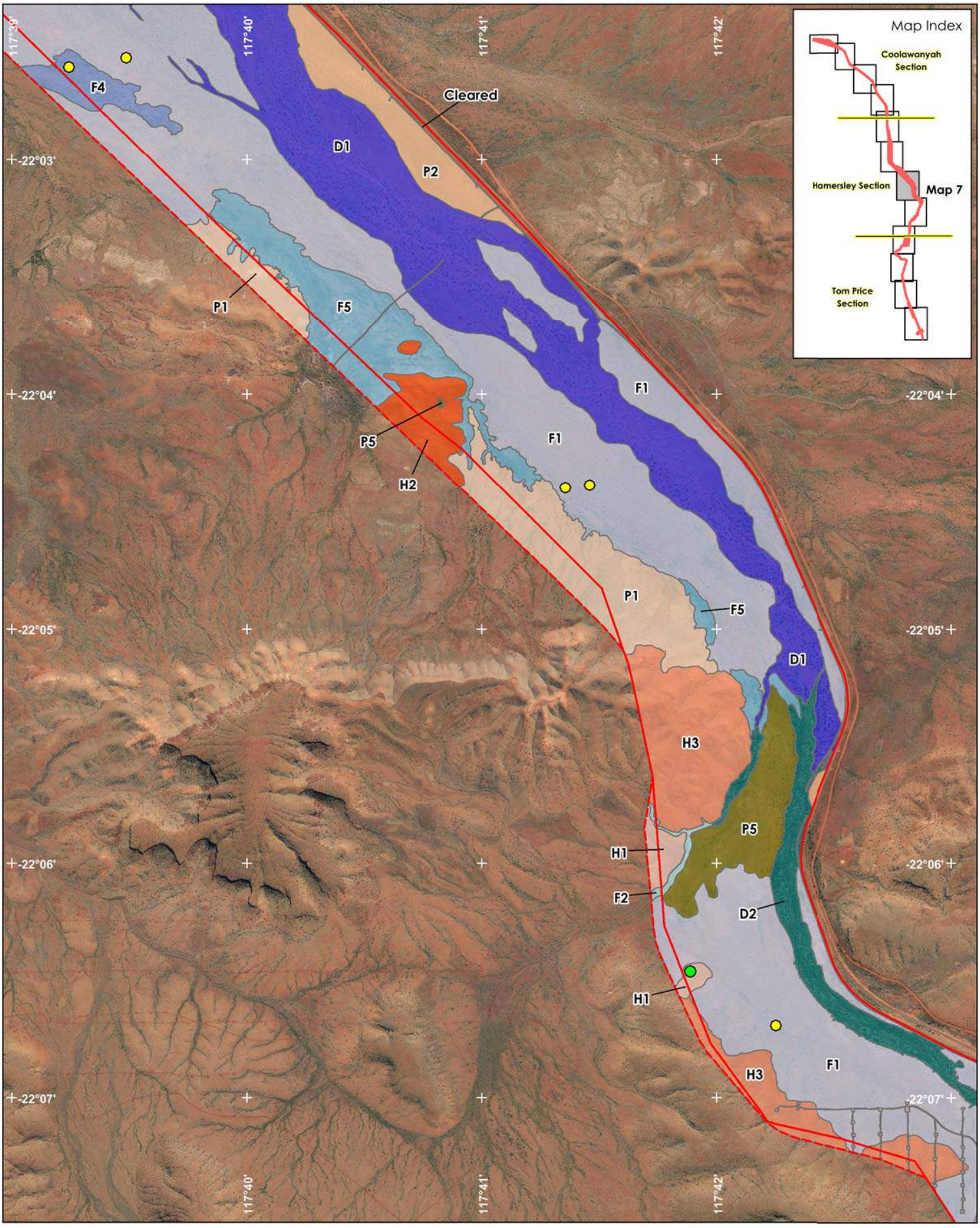
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 6

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:37,500 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Flora Species of Conservation Significance

- *Goodenia nuda* (Priority 4)
- *Triodia basitricha* (Priority 3)

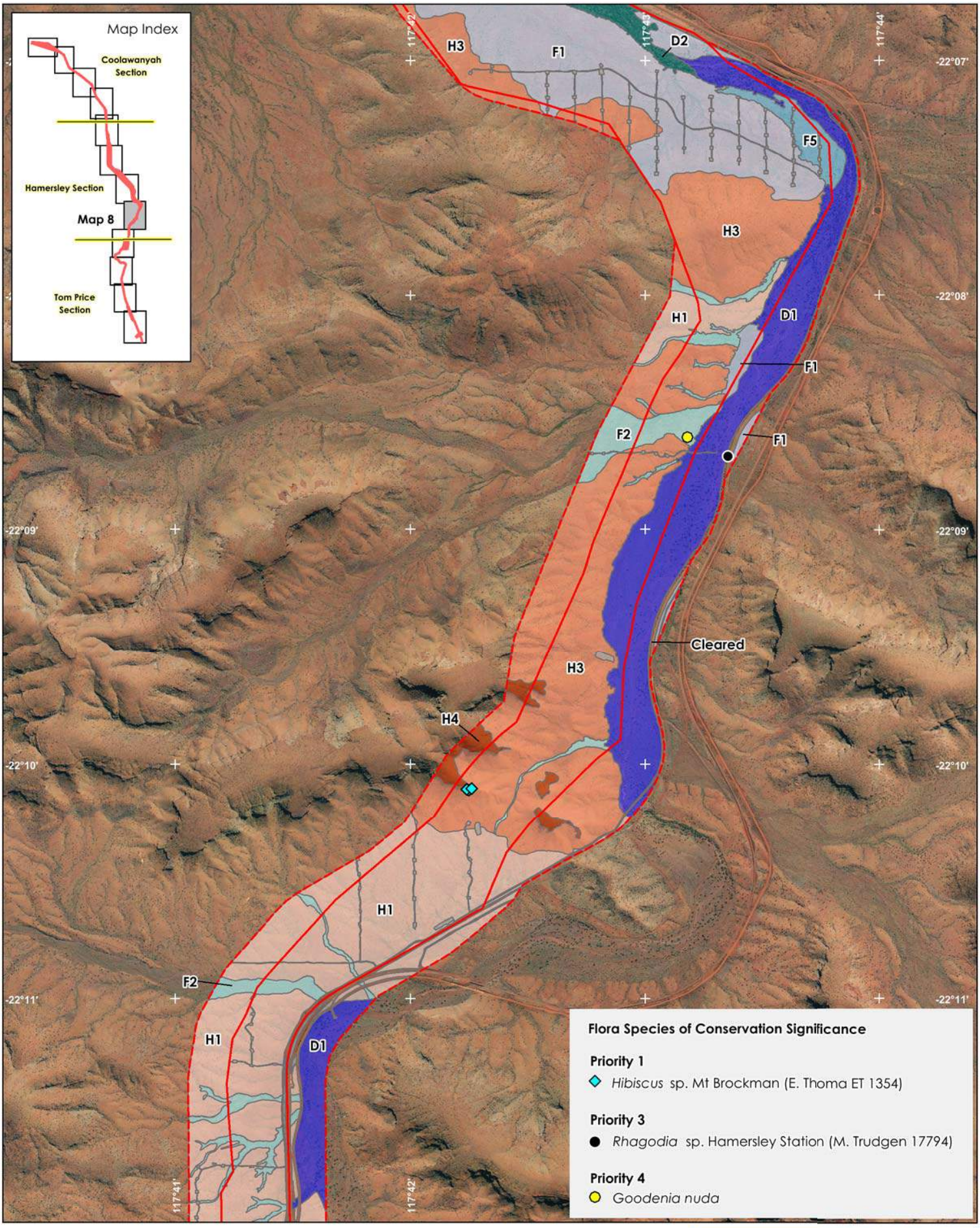
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 7

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

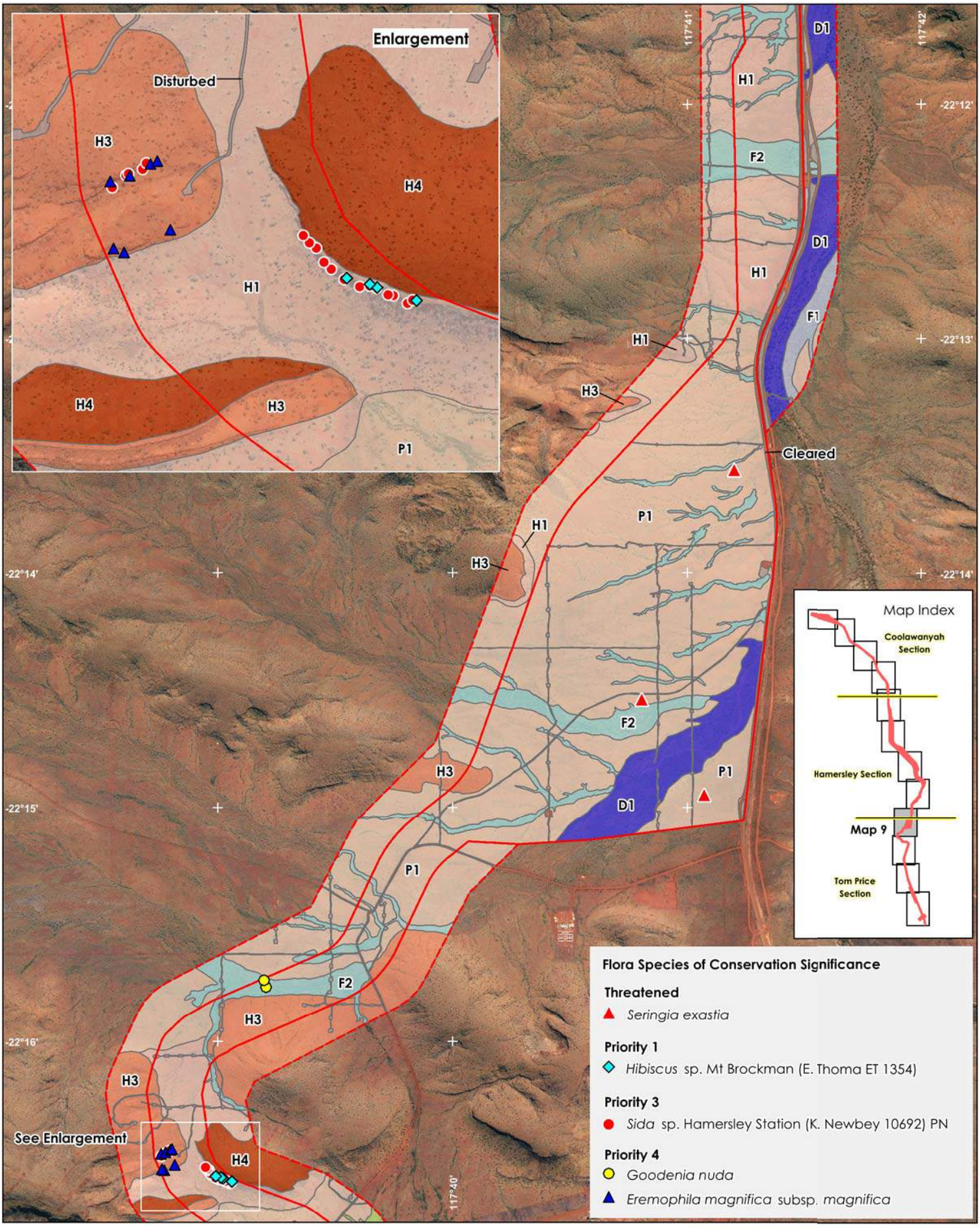
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 8

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

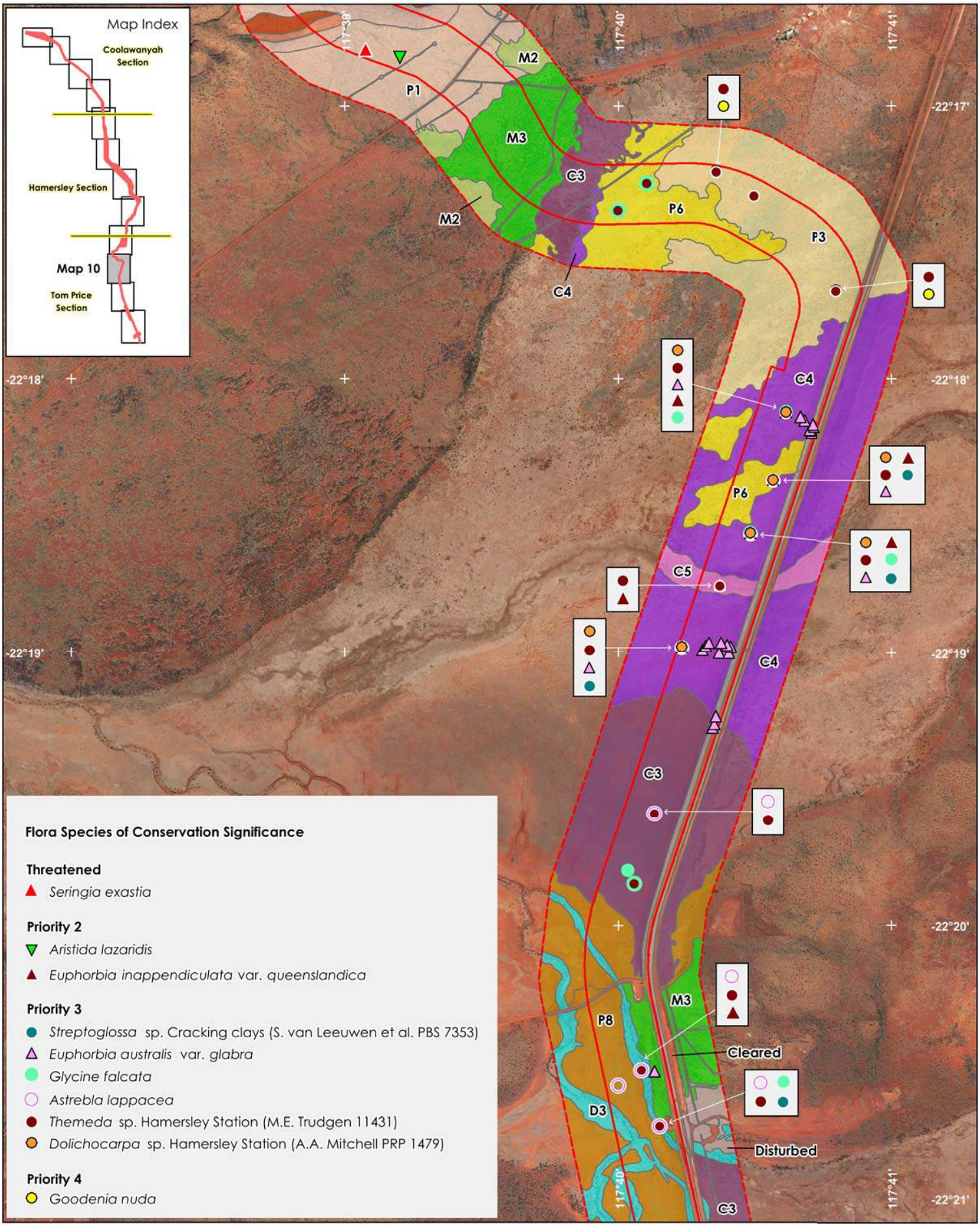
0 0.5 1

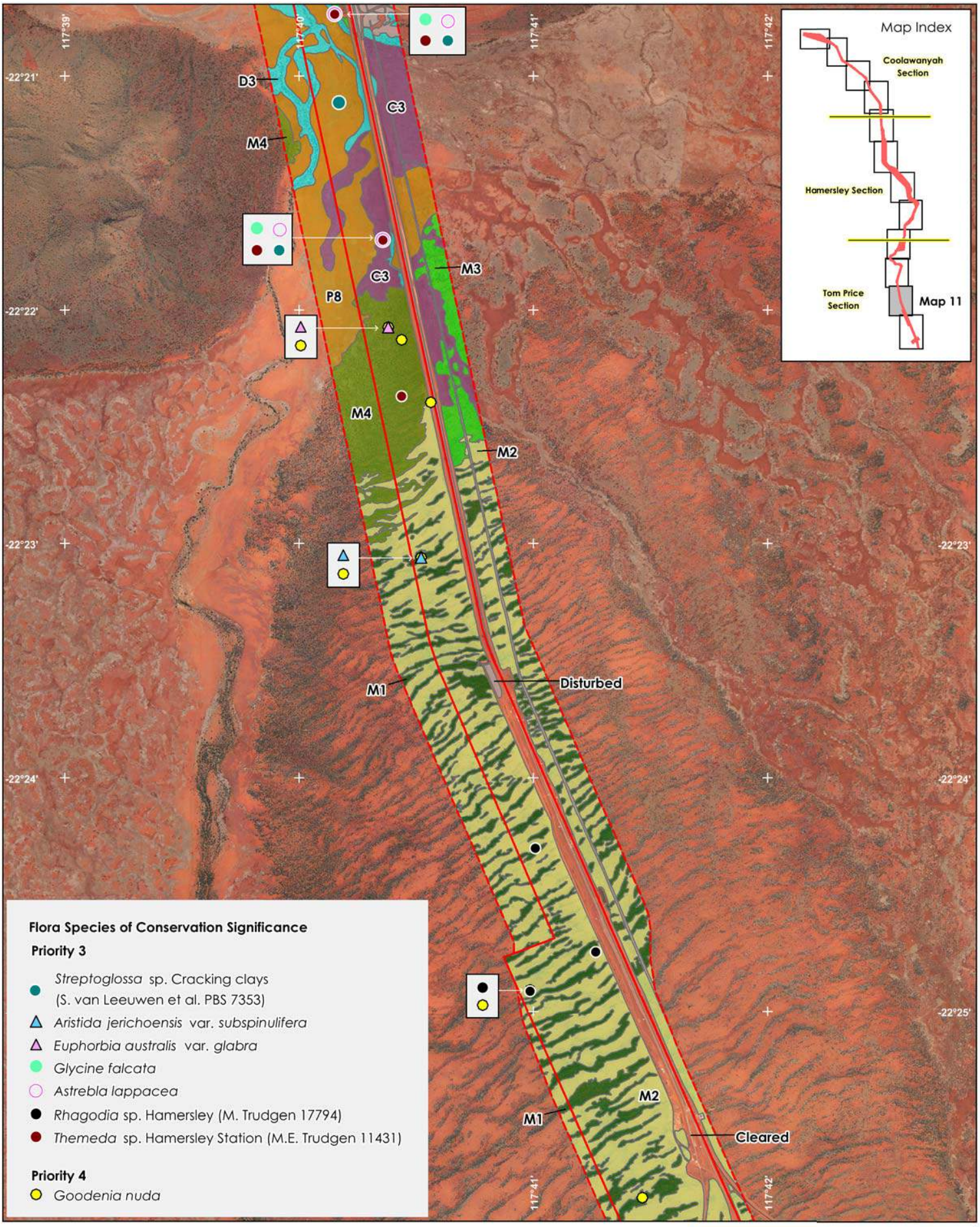
kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 9

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4


Map Index
Coolawanyah Section
Hamersley Section
Map 10
Tom Price Section
117°39'
117°40'
117°41'
-22°17'
-22°18'
-22°19'
-22°20'
-22°21'
M2
P1
M3
C3
P6
P3
C4
C5
P8
D3
Cleared
Disturbed
Flora Species of Conservation Significance
Threatened
Seringia exastia
Priority 2
Aristida lazaridis
Euphorbia inappendiculata var. queenslandica
Priority 3
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)
Euphorbia australis var. glabra
Glycine falcata
Astrebla lappacea
Themeda sp. Hamersley Station (M.E. Trudgen 11431)
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)
Priority 4
Goodenia nuda
Location Map
KARRATHA
Map Area
PERTH
KALGOORLIE
Survey area
Contextual area
N
0
0.5
1
kilometres
Manuwarra Red Dog Highway
Stage 4 - Vegetation Mapping & Priority Flora Species - Map 10
Biota Environmental Sciences
Author: R Mason
Drawn: P Sawers
Job No.: 1511
Date: 7 Jan 2021
Revised: 9 Aug 2021
Datum: GDA94
Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

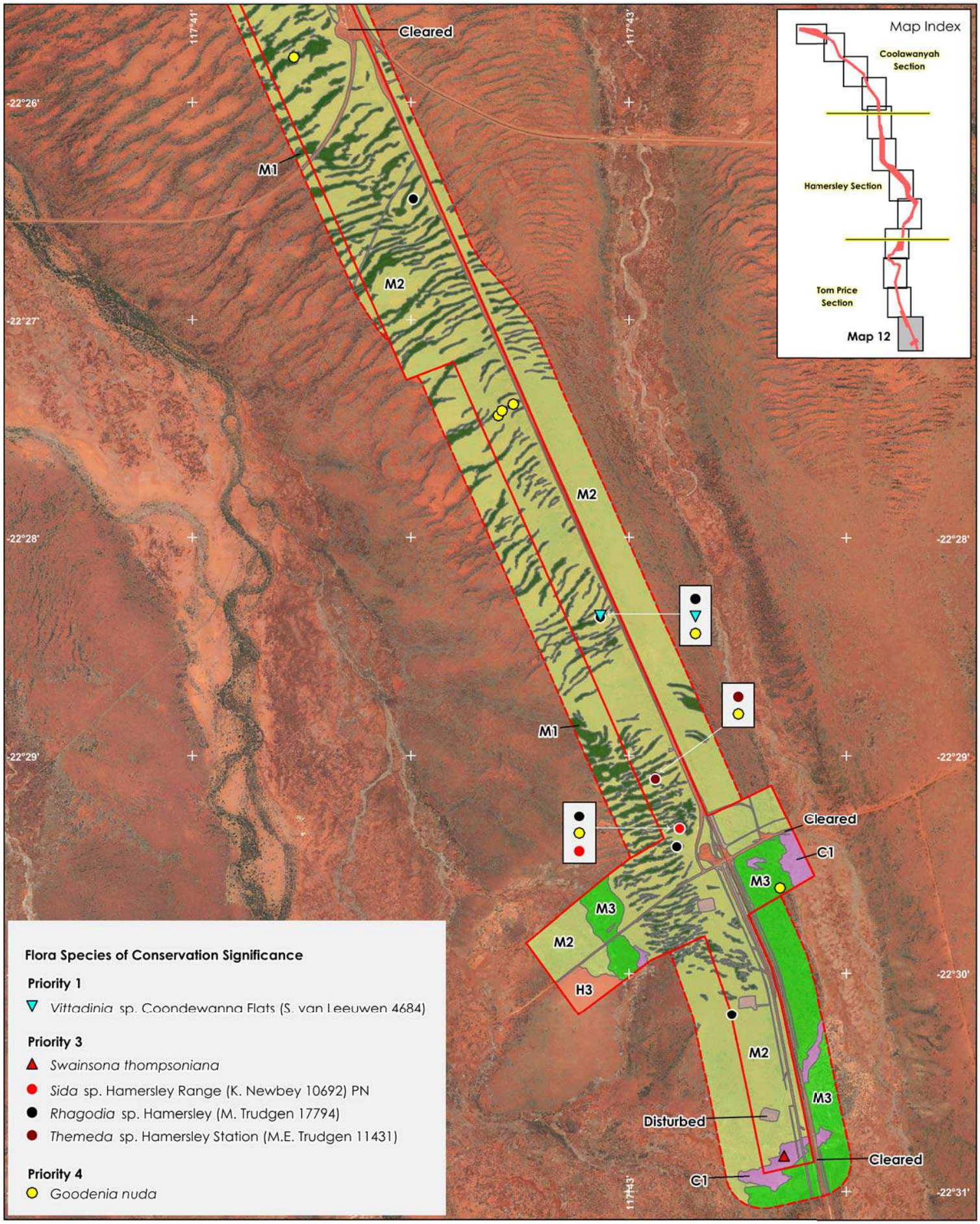
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 11

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Flora Species of Conservation Significance

Priority 1

- *Vittadinia* sp. Coondewanna Flats (S. van Leeuwen 4684)

Priority 3

- *Swainsona thompsoniana*
- *Sida* sp. Hamersley Range (K. Newbey 10692) PN
- *Rhagodia* sp. Hamersley (M. Trudgen 17794)
- *Themeda* sp. Hamersley Station (M.E. Trudgen 11431)

Priority 4

- *Goodenia nuda*

Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Mapping & Priority Flora Species - Map 12

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 9 Aug 2021 | Projection: MGA Z50 (GDA94) | Scale: 1:37,500 @ A4

Appendix 6

Selected Inputs and Outputs of the Floristic Analyses

Table 1: List of taxa that were omitted or treated as other taxa for the purposes of the floristic analysis.

Taxon	Name Referred to for Analysis
*Cenchrus ciliaris	Cenchrus spp.
*Cenchrus setiger	Cenchrus spp.
Dichanthium sericeum subsp. humilius	Dichanthium sericeum
Dichanthium sericeum subsp. polystachyum	Dichanthium sericeum
Dichanthium sericeum subsp. sericeum	Dichanthium sericeum
Dysphania rhadinostachya subsp. inflata	Dysphania rhadinostachya
Eremophila ? fraseri subsp. fraseri	Eremophila fraseri subsp. fraseri
Evolvulus alsinoides var. decumbens	Evolvulus alsinoides
Evolvulus alsinoides var. villosicalyx	Evolvulus alsinoides
Gossypium australe (Burrup Peninsula form)	Gossypium australe
Grevillea wickhamii subsp. aprica	Grevillea wickhamii
Grevillea wickhamii subsp. hispidula	Grevillea wickhamii
Portulaca ? decipiens	Portulaca decipiens
Senna artemisioides subsp. oligophylla x ? S. glutinosa subsp. glutinosa	Senna artemisioides subsp. oligophylla
Senna glutinosa subsp. glutinosa x	Senna glutinosa subsp. glutinosa
Senna glutinosa subsp. glutinosa x S. stricta	Senna glutinosa subsp. glutinosa
Urochloa occidentalis var. ciliata	Urochloa occidentalis
Urochloa occidentalis var. occidentalis	Urochloa occidentalis
Calandrinia sp.	omitted; indeterminate taxon
Corchorus sp.	omitted; indeterminate taxon
Dysphania sp.	omitted; indeterminate taxon
Euphorbia sp. (boophthona/tannensis)	omitted; indeterminate taxon
Haloragis sp.	omitted; indeterminate taxon
Panicum sp.	omitted; indeterminate taxon
Ptilotus sp.	omitted; indeterminate taxon
Sida sp.	omitted; indeterminate taxon
Chara sp.	omitted; singleton
Cheilanthes brownii	omitted; singleton
Cyperus pulchellus	omitted; singleton
? Bothriochloa ewartiana	omitted; singleton
Aristida ? inaequiglumis	omitted; singleton
Paspalidium ? basicladum	omitted; singleton
Triodia basitricha	omitted; singleton
Aristida jerichoensis var. subspinulifera	omitted; singleton
Aristida pruinosa	omitted; singleton
Aristida sp.	omitted; singleton
Chloris pumilio	omitted; singleton
Cymbopogon sp.	omitted; singleton
Enneapogon avenaceus	omitted; singleton
Enneapogon robustissimus	omitted; singleton
Eragrostis elongata	omitted; singleton
Eragrostis exigua	omitted; singleton
Eragrostis setifolia	omitted; singleton
Eriachne mucronata (typical form)	omitted; singleton
Eriochloa pseudoacrotricha	omitted; singleton
Paspalidium basicladum	omitted; singleton
Setaria surgens	omitted; singleton
Triodia longiceps	omitted; singleton
Triraphis mollis	omitted; singleton
Urochloa piligera	omitted; singleton
Grevillea ? pyrimidalis subsp. leucadendron	omitted; singleton
Grevillea pyramidalis	omitted; singleton
Grevillea wickhamii subsp. macrodonta	omitted; singleton
Gonocarpus ephemerus	omitted; singleton
Acacia ? victoriae	omitted; singleton
Acacia ancistrocarpa x trachycarpa	omitted; singleton
Acacia exigua	omitted; singleton
Senna glutinosa subsp. glutinosa x subsp. x luerssenii	omitted; singleton
Senna stricta x S. glutinosa subsp. glutinosa	omitted; singleton
Swainsona ? formosa	omitted; singleton
Tephrosia sp. Newman (A.A. Mitchell PRP 29) PN	omitted; singleton

Taxon	Name Referred to for Analysis
Cullen martinii	omitted; singleton
Indigofera rugosa	omitted; singleton
Senna artemisioides subsp. x artemisioides	omitted; singleton
Senna ferraria	omitted; singleton
Senna sp. Meekatharra (E. Bailey 1-26)	omitted; singleton
Senna stricta	omitted; singleton
Senna venusta	omitted; singleton
Sesbania formosa	omitted; singleton
Swainsona kingii	omitted; singleton
Swainsona sp.	omitted; singleton
Tephrosia rosea var. clementii	omitted; singleton
Acacia melleodora	omitted; singleton
Acacia pteraneura	omitted; singleton
Acacia pyrifolia	omitted; singleton
Acacia sp.	omitted; singleton
Stylobasium spathulatum	omitted; singleton
Ficus brachypoda	omitted; singleton
Euphorbia inappendiculata var. inappendiculata	omitted; singleton
Euphorbia sp. (biconvexa/coghlanii/trigonosperma; sterile)	omitted; singleton
Euphorbia careyi	omitted; singleton
Euphorbia sp.	omitted; singleton
Flueggea virosa subsp. melanthesoides	omitted; singleton
Corymbia ferriticola	omitted; singleton
Alectryon oleifolius subsp. oleifolius	omitted; singleton
Dodonaea lanceolata var. lanceolata	omitted; singleton
Seringia ? exastia	omitted; singleton
Seringia sp.	omitted; singleton
Sida ? laevis	omitted; singleton
Abutilon sp.	omitted; singleton
Corchorus aestuans	omitted; singleton
Hibiscus brachysiphonius	omitted; singleton
Sida clementii	omitted; singleton
Sida rohlenae subsp. rohlenae	omitted; singleton
Sida sp. dark green fruits (S. van Leeuwen 2260)	omitted; singleton
Sida sp. Hamersley Range (K. Newbey 10692) PN	omitted; singleton
Sida sp. Shovelanna Hill (S. van Leeuwen 3842)	omitted; singleton
Pimelea ammocharis	omitted; singleton
Pimelea holroydii	omitted; singleton
Amyema preissii	omitted; singleton
Diplatia grandibractea	omitted; singleton
Lysiana casuarinae	omitted; singleton
Rumex vesicarius	omitted; singleton
Ptilotus ? xerophilus	omitted; singleton
Achyranthes aspera	omitted; singleton
Gomphrena canescens	omitted; singleton
Gomphrena canescens subsp. canescens	omitted; singleton
Ptilotus incanus	omitted; singleton
Dissocarpus paradoxus	omitted; singleton
Enchylaena tomentosa	omitted; singleton
Maireana georgei	omitted; singleton
Boerhavia sp.	omitted; singleton
Glinus lotoides	omitted; singleton
Portulaca conspicua	omitted; singleton
Cynanchum viminale subsp. australe	omitted; singleton
Heliotropium sp.	omitted; singleton
Heliotropium tanythrix	omitted; singleton
Bonamia alatisemina	omitted; singleton
Cuscuta victoriana	omitted; singleton
Polymeria sp.	omitted; singleton
Solanum cleistogamum	omitted; singleton
Solanum horridum	omitted; singleton
Solanum sp.	omitted; singleton
Eremophila ? clarkei	omitted; singleton
Eremophila cuneifolia	omitted; singleton

Taxon	Name Referred to for Analysis
Eremophila forrestii	omitted; singleton
Eremophila forrestii x latrobei	omitted; singleton
Eremophila lanceolata	omitted; singleton
Eremophila latrobei	omitted; singleton
Eremophila latrobei subsp. filiformis	omitted; singleton
Eremophila maculata subsp. brevifolia	omitted; singleton
Josephinia sp. Woodstock (A.A. Mitchell PRP 989) PN	omitted; singleton
? Buchnera / Striga sp.	omitted; singleton
Dolichandrone occidentalis	omitted; singleton
Goodenia connata	omitted; singleton
Brunonia sp. Long hairs (D.E. Symon 2440) PN	omitted; singleton
Pterocaulon serrulatum var. velutinum	omitted; singleton
Chrysocephalum gilesii	omitted; singleton
Peripleura virgata	omitted; singleton
Pluchea dunlopii	omitted; singleton
Pluchea ferdinandi-muelleri	omitted; singleton
Pterocaulon serrulatum	omitted; singleton
Senecio magnificus	omitted; singleton
Streptoglossa liatroides	omitted; singleton
Streptoglossa sp.	omitted; singleton
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	omitted; singleton
*Aerva javanica	omitted; weed
*Bidens bipinnata	omitted; weed
*Flaveria trinervia	omitted; weed
*Sonchus oleraceus	omitted; weed
*Vachellia farnesiana	omitted; weed
*Malvastrum americanum	omitted; weed
*Cynodon dactylon	omitted; weed
*Echinochloa colona	omitted; weed
*Setaria verticillata	omitted; weed
*Portulaca pilosa	omitted; weed
*Datura leichhardtii subsp. leichhardtii	omitted; weed
*Tribulus terrestris	omitted; weed

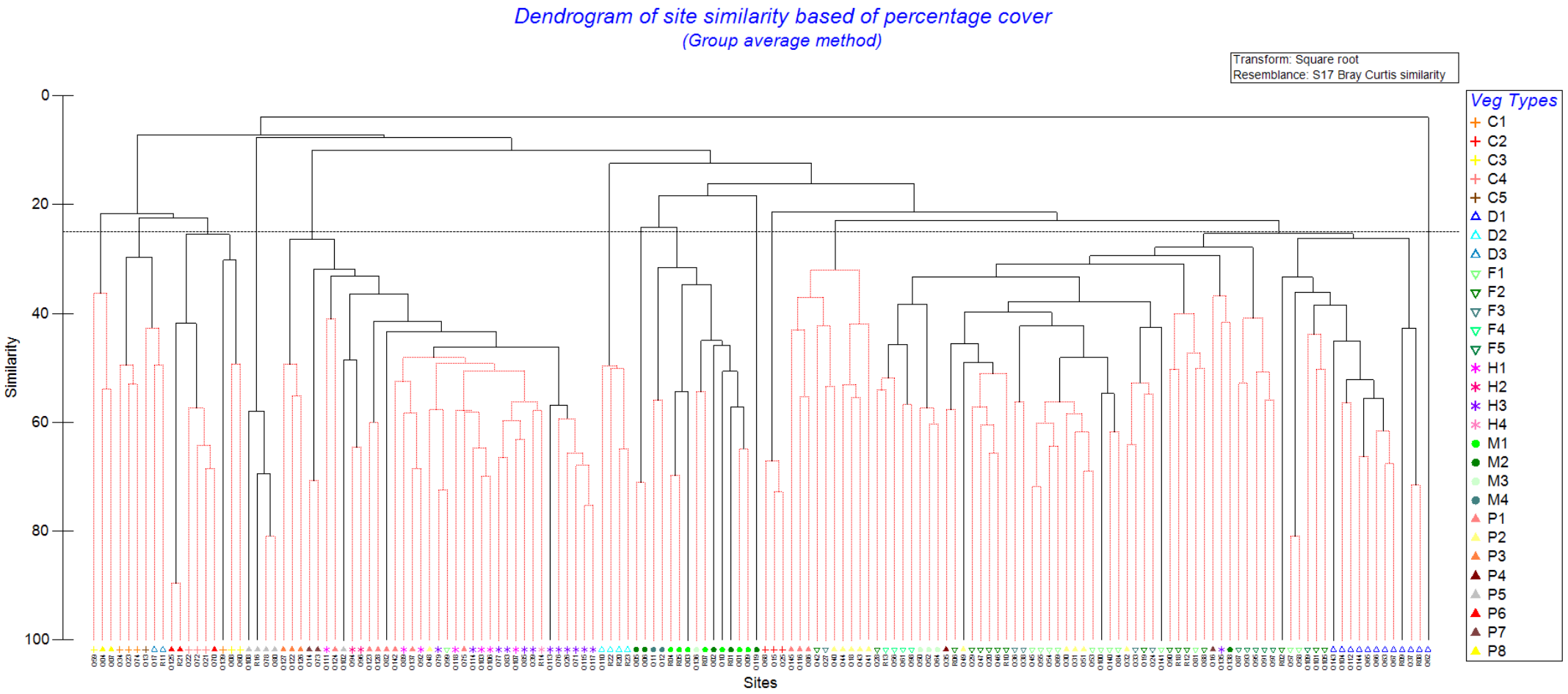


Figure 1: **Dendrogram based on percent cover of all species at each site sampled during the survey.**

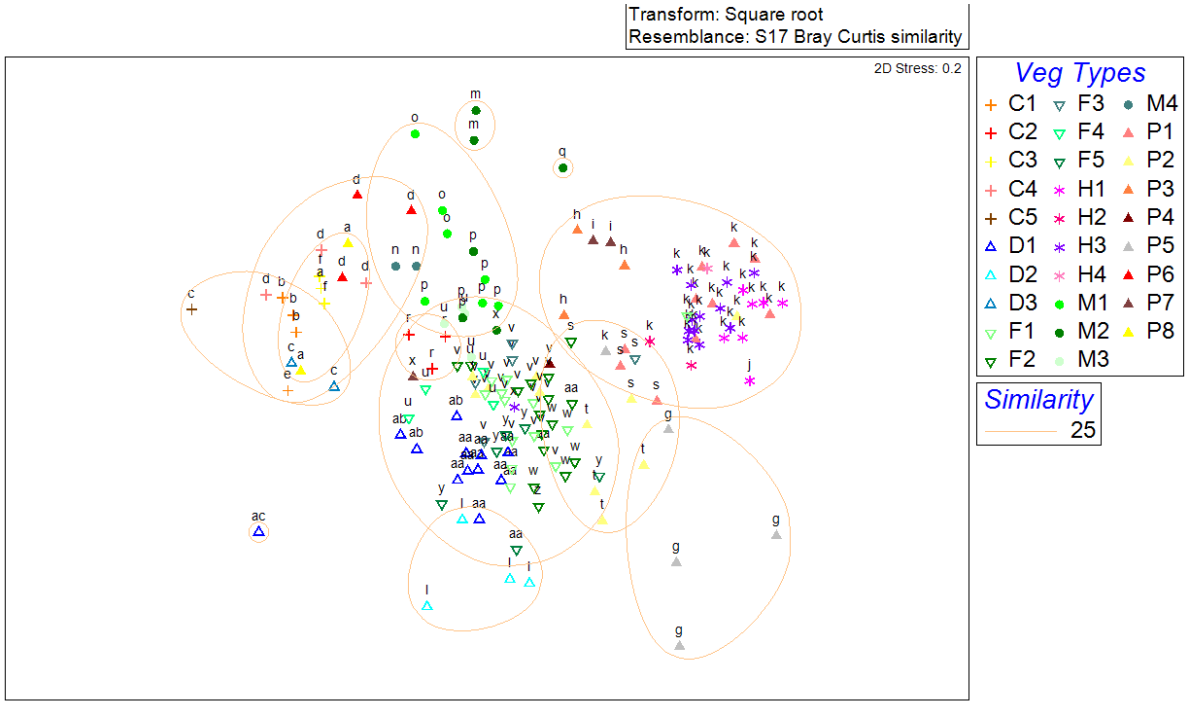


Figure 2: NMDS plot based on percent cover of all species at each site sampled during the current survey work (symbols indicate veg unit; letters indicate floristic group at 35% similarity).

Table 2: Number of sites from the current surveys in each floristic group at 25% similarity (based on cover of all species).

Veg Code	Floristic Group												
	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*J*	*k*	*l*	*m*
C1		3	1										
C2										3			
C3	1		2										
C4			3										
C5		1											
D1												11	1
D2						4							
D3		2											
F1					1							12	
F2											1	15	
F3											1	4	
F4												4	
F5												6	
H1					7								
H2					2								
H3					12							1	
H4					1								
M1								7					
M2							2	2	1			1	
M3								1				3	
M4											2		
P1					7					3			
P2					1						5	5	
P3					3								
P4												1	
P5							4				1		
P6			3										
P7					2							1	
P8	2												

Table 3: Indicator species for the floristic groups identified from the current survey (based on cover of all species), together with sites in each vegetation type.

Floristic Group	SIMPER Indicator Species (maximum of top 5) (Cumulative Similarity)	Veg Code	Sites
a	NA (<2 samples)	D1	1 (Q62)
b	*Urochloa occidentalis, Chrysopogon fallax, Dactyloctenium radulans, Chloris pectinata, Cullen cinereum* (50%)	C3	1 (Q59)
		P8	2 (Q04, Q07)
c	*Cynodon convergens, Eragrostis xerophila, Eragrostis tenellula, Astrebla elymoides, Operculina aequisepala* (29%)	C1	3 (Q23, Q34, Q74)
d	*Eriachne benthamii, Eucalyptus victrix, Cullen cinereum, Cullen graveolens, Themeda* sp. Hamersley Station (M.E. Trudgen 11431) (50%)	C5	1 (Q13)
		D3	2 (Q17, R11)
e	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Hakea lorea* subsp. *lorea, Chrysopogon fallax, Urochloa occidentalis, Acacia victoriae subsp. victoriae* (76%)	P6	2 (Q125, R21)
f	*Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Polymeria longifolia, Cullen cinereum, Crotalaria dissitiflora* subsp. *benthamiana, Panicum laevinode* (51%)	C4	3 (Q21, Q22, Q72)
		P6	1 (Q70)
g	NA (<2 samples)	C1	1 (Q139)
h	*Abutilon malvifolium, Alysicarpus muelleri, Boerhavia burbidgeana, Chloris pectinata, Corchorus tridens* (13%)	C3	2 (Q08, Q60)
i	NA (<2 samples)	P5	1 (Q108)
j	NA (<2 samples)	P5	1 (R16)
k	*Triodia angusta, Eucalyptus xerothermica, Acacia bivenosa, Eulalia aurea, Eragrostis desertorum* (90%)	P5	2 (Q78, Q80)
l	*Triodia wiseana, Hakea lorea* subsp. *lorea, Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Acacia inaequilatera, Chrysopogon fallax* (67%)	P3	3 (Q122, Q126, Q127)
m	*Triodia wiseana, Eriachne flaccida, Arivela viscosa, Bulbostylis turbinata, Chrysopogon fallax* (68%)	P7	2 (Q14, Q73)
n	*Triodia wiseana, Acacia ancistrocarpa* (93%)	H1	1 (Q111)
		P1	1 (Q124)
o	NA (<2 samples)	P5	1 (Q102)
p	*Triodia wiseana, Acacia inaequilatera, Corchorus tectus, Corymbia hamersleyana, Acacia ancistrocarpa* (51%)	H2	2 (Q94, Q96)
q	*Triodia wiseana, Acacia pruinocarpa* (90%)	P1	2 (Q123, Q128)
r	NA (<2 samples)	P1	1 (Q82)

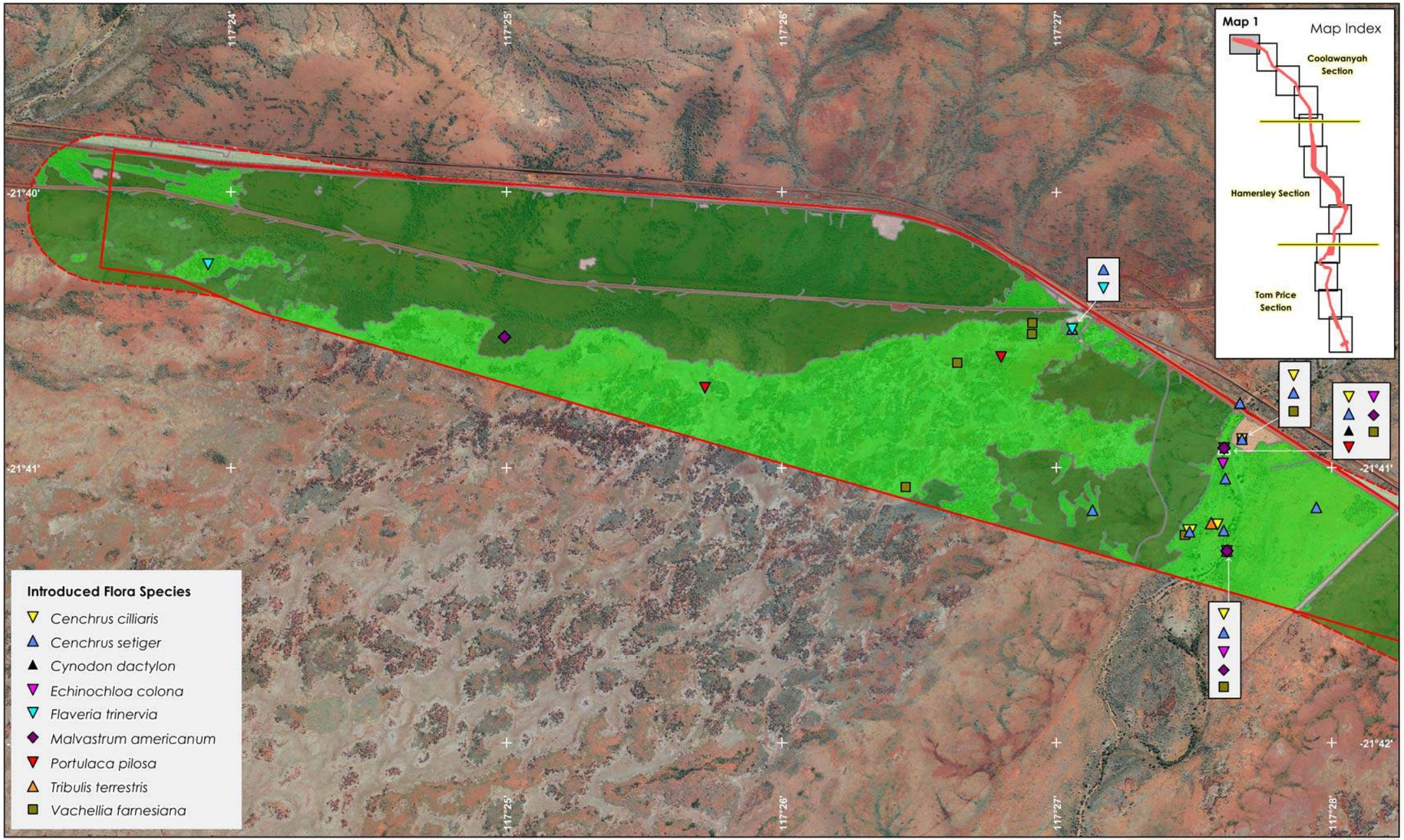
Floristic Group	SIMPER Indicator Species (maximum of top 5) (Cumulative Similarity)	Veg Code	Sites
s	NA (<2 samples)	H3	1 (Q113)
t	*Triodia wiseana, Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana, Eriachne mucronata, Acacia adoxa* var. *adoxa* (58%)	H3	5 (Q26, Q71, Q76, Q115, Q117)
u	*Triodia wiseana, Eucalyptus leucophloia* subsp. *leucophloia, Eriachne pulchella, Senna glutinosa* subsp. *glutinosa, Ptilotus calostachyus* (84%)	F1	1 (Q99)
		H1	6 (Q89, Q92, Q103, Q106 Q118, Q107)
		H3	6 (Q39, Q77, Q79, Q83, Q85, Q114)
		H4	1 (R14)
		P1	3 (Q75, Q137, Q142)
		P2	1 (Q48)
v	*Melaleuca argentea, Eucalyptus camaldulensis* subsp. *refulgens, Cyperus vaginatus, Gossypium robinsonii, Acacia bivenosa,* 66%)	D2	3 (Q110, R20, R22)
w	*Acacia xiphophylla, Triodia epactia, Eragrostis xerophila, Arivela viscosa, Boerhavia burbidgeana* (52%)	C2	3 (Q15, Q25, Q68)
x	*Triodia epactia, Acacia atkinsiana, Triodia wiseana, Acacia ancistrocarpa, Senna notabilis,* (71%)	F2	1 (Q42)
		F3	1 (Q27)
		P1	3 (Q86, Q116, Q145)
		P2	5 (Q18, Q40, Q41, Q43, Q44)
y	*Acacia bivenosa, Cenchrus spp., Triodia epactia, Corymbia hamersleyana, Chrysopogon fallax* (59%)	F5	5 (Q87, Q91, Q93, Q95, Q97)
Z	*Triodia epactia, Eriachne pulchella, Chrysopogon fallax, Goodenia muelleriana, Polygala glaucifolia* (68%)	H3	1 (Q135)
		M2	1 (Q138)
		P7	1 (Q16)
aa	*Triodia epactia, Eulalia simonii, Corymbia hamersleyana, Themeda triandra, Eucalyptus xerothermica* (48%)	F1	1 (Q81)
		F2	4 (Q88, Q90, R12, R18)
ab	*Arivela viscosa, Acacia pruinocarpa, Sporobolus australasicus, Acacia aneura / aptaneura, Acacia citrinoviridis* (20%)	M3	3 (Q50, Q52, Q64)
ac	*Acacia citrinoviridis, Triodia epactia, Corymbia hamersleyana, Abutilon otocarpum, Acacia pyrifolia var. pyrifolia* (47%)	F4	2 (Q61, Q98)
ad	*Acacia citrinoviridis, Triodia epactia, Eucalyptus victrix, Arivela viscosa, Corchorus tridens* (56%)	F2	1 (Q28)
		F4	1 (Q56, R13)
ae	NA (≤2 samples)	F1	1 (Q141)

Floristic Group	SIMPER Indicator Species (maximum of top 5) (Cumulative Similarity)	Veg Code	Sites
af	*Acacia ancistrocarpa, Corymbia hamersleyana, Chrysopogon fallax, Triodia epactia, Acacia trachycarpa* (48%)	F2	1 (Q19)
		F3	2 (Q24, Q33)
		P2	1 (Q32)
ag	*Triodia epactia, Triodia wiseana, Acacia ancistrocarpa, Corymbia hamersleyana, Abutilon lepidum* (55%)	F2	1 (R06)
		P4	1 (Q35)
ah	NA (<2 samples)	P2	1 (Q49)
ai	*Triodia epactia, Corymbia hamersleyana, Themeda triandra, Acacia atkinsiana, Indigofera monophylla* (47%)	F2	5 (Q20, Q29, Q46, Q47, R10)
aj	*Triodia epactia, Carissa lanceolata, Acacia ancistrocarpa, Acacia trachycarpa*, *Cenchrus* spp. (35%)	F3	2 (Q36, Q38)
ak	*Triodia epactia, Acacia ancistrocarpa, Cenchrus spp., Eriachne pulchella, Euphorbia boophthona* (40%)	F1	5 (Q45, Q53, Q54, Q55, Q69)
		P2	3 (Q30, Q31, Q51)
al	NA (<2 samples)	F1	1 (Q100)
am	*Triodia epactia, Cenchrus* spp., *Acacia bivenosa, Corymbia hamersleyana, Acacia ancistrocarpa* (51%)	F1	2 (Q140, Q100)
an	NA (<2 samples)	D1	1 (R09)
ao	*Eucalyptus camaldulensis* subsp. *refulgens, Cenchrus* spp., *Eulalia aurea, Melaleuca glomerata, Carissa lanceolata* (22%)	D1	2 (Q37, R08)
ap	NA (<2 samples)	F2	1 (R02)
aq	*Arivela viscosa, Corymbia hamersleyana, Eriachne tenuiculmis, Corchorus crozophorifolius, Abutilon* sp. Pilbara (W.R. Barker 2025) PN (45%)	F1	2 (Q57, Q58)
ar	NA (<2 samples)	D1	1 (Q143)
as	*Cenchrus* spp., *Corchorus crozophorifolius, Eucalyptus victrix, Atalaya hemiglauca, Acacia pyrifolia* var. *pyrifolia* (55%)	D1	2 (Q104, Q112)
at	*Triodia epactia, Eucalyptus victrix, Corchorus crozophorifolius, Eriachne tenuiculmis, Atalaya hemiglauca* (49%)	D1	2 (Q65, Q144)
au	*Eucalyptus victrix, Cenchrus spp., Indigofera monophylla, Corchorus crozophorifolius, Triodia epactia,* (36%)	D1	3 (Q63, Q66, Q67)
av	*Eriachne tenuiculmis, Cenchrus* spp., *Acacia pyrifolia* var. *pyrifolia, Indigofera monophylla, Grevillea pyramidalis* subsp. *leucadendron* (41%)	F2	2 (Q101, Q105)
		F5	1 (Q109)
aw	NA (<2 samples)	M2	1 (Q119)

Floristic Group	SIMPER Indicator Species (maximum of top 5) (Cumulative Similarity)	Veg Code	Sites
ax	*Aristida contorta, Acacia macraneura, Acacia tetragonophylla, Grevillea berryana, Areocleome oxalidea* (48%)	M2	2 (Q05, Q06)
ay	*Urochloa occidentalis, Arivela viscosa, Eragrostis pergracilis, Ptilotus xerophilus, Bulbostylis turbinata* (20%)	M4	2 (Q11, Q12)
az	NA (<2 samples)	M1	1 (Q03)
ba	*Eriachne benthamii, Acacia aptaneura, Acacia tetragonophylla, Areocleome oxalidea, Aristida obscura* (67%)	M1	2 (R04, R05)
bb	*Acacia aptaneura, Triodia epactia, Chrysopogon fallax, Abutilon lepidum, Abutilon otocarpum* (34%)	M1	1 (R07)
		M3	1 (Q136)
bc	NA (<2 samples)	M2	1 (Q02)
bd	NA (<2 samples)	M1	1 (Q10)
be	NA (<2 samples)	M2	1 (R01)
bf	*Triodia epactia, Acacia aptaneura, Acacia pruinocarpa, Abutilon otocarpum, Aristida contorta* (34%)	M1	2 (Q01, Q09)

Appendix 7

Mapping of Vegetation Condition and Weeds



Location Map

Survey area

Contextual area

Vegetation Condition

- Excellent
- Very Good
- Good
- Poor
- Completely Degraded
- Cleared

N

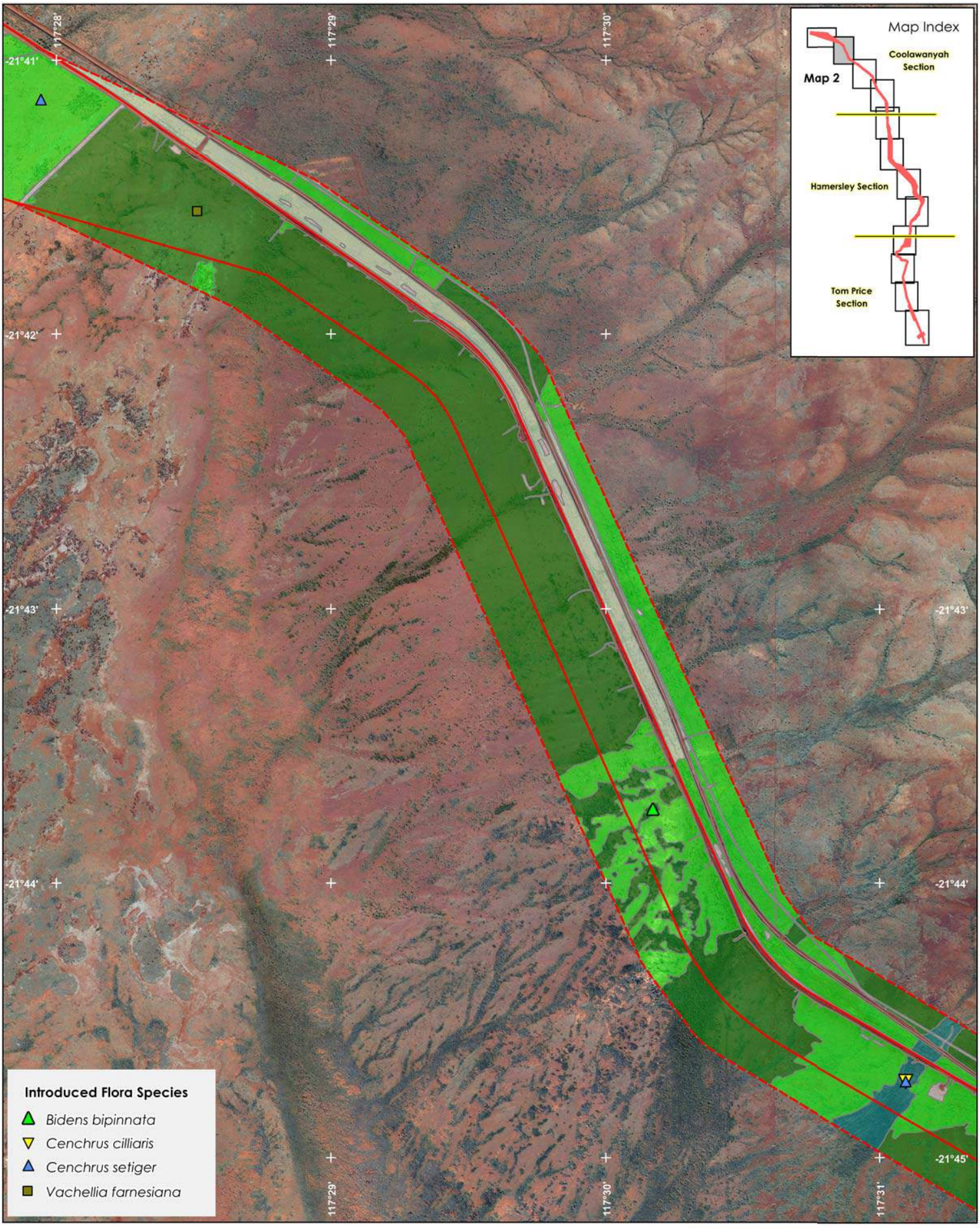
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 1

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 07 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

PERTH

KALGOORLIE

Survey area

Contextual area

N

0 0.5 1

kilometres

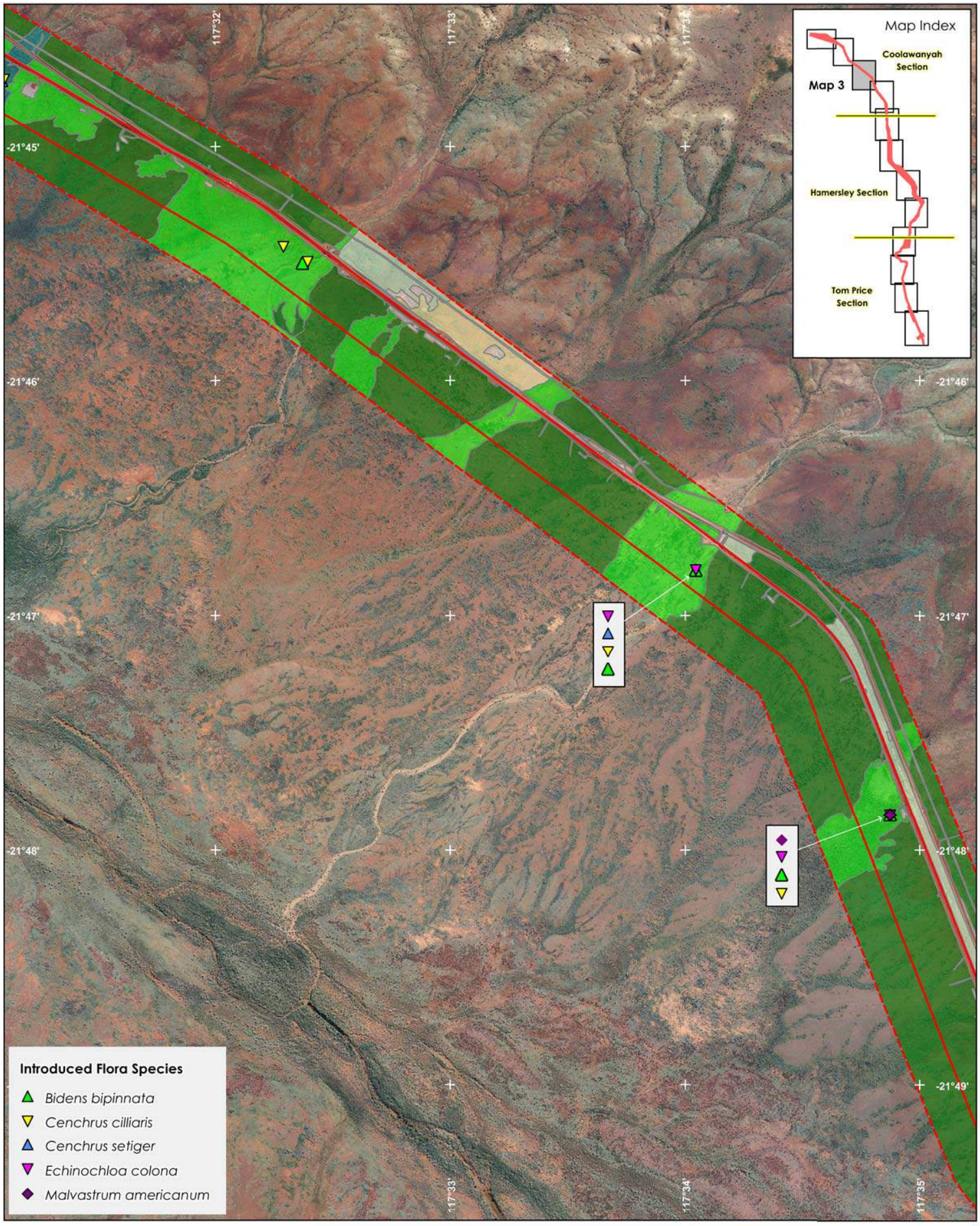
Vegetation Condition

- Excellent
- Excellent to Very Good
- Very Good
- Good
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 2

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 19 Aug 2021 | Datum: GDA94 | Scale: 1:30,000 @ A4



Location Map

KARRATHA
Map Area
PERTH
KALGOORLIE

Survey area
Contextual area

0 0.5 1
kilometres

Vegetation Condition

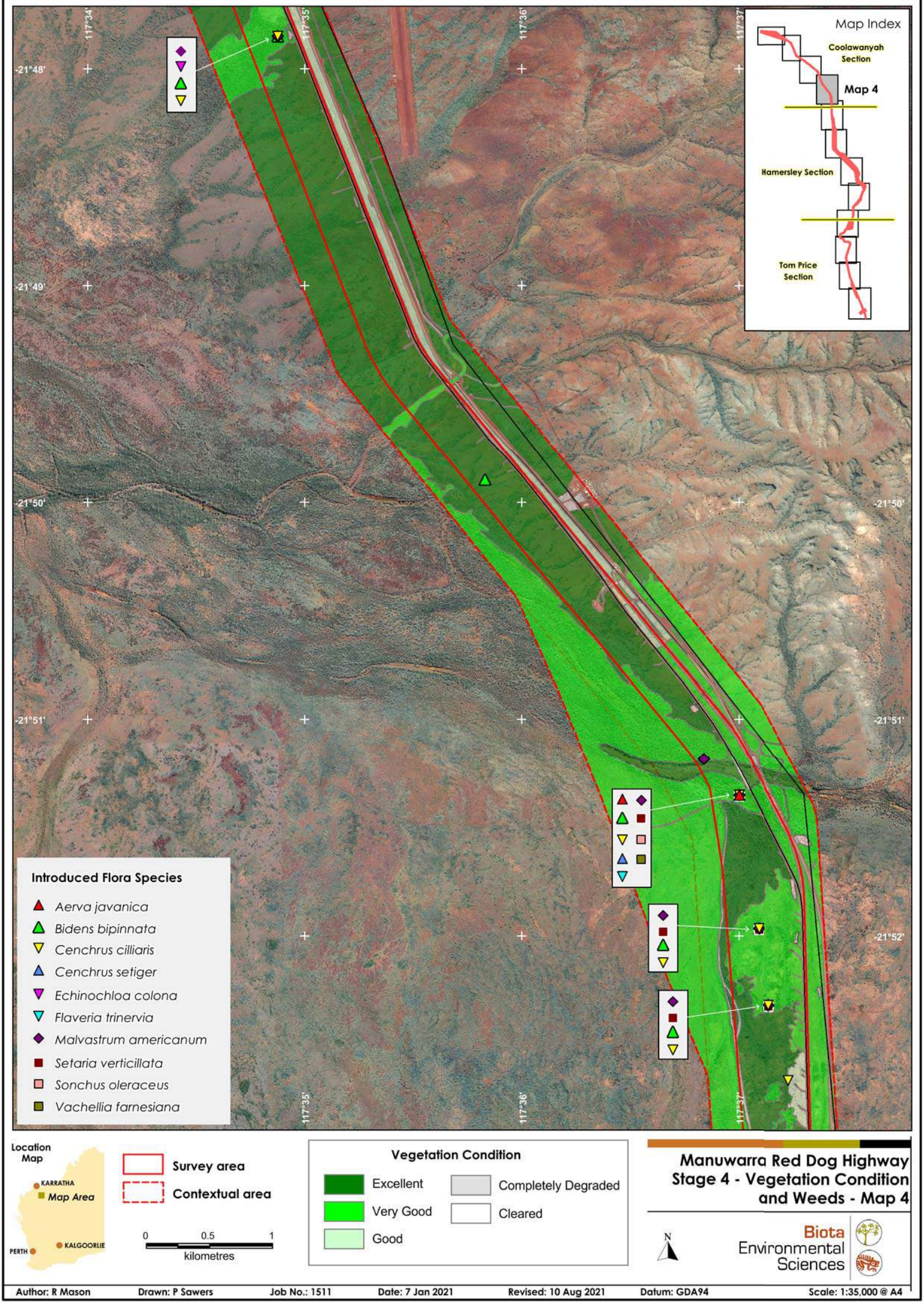
- Excellent
- Excellent to Very Good
- Very Good
- Good
- Good to Poor
- Completed Degraded
- Cleared

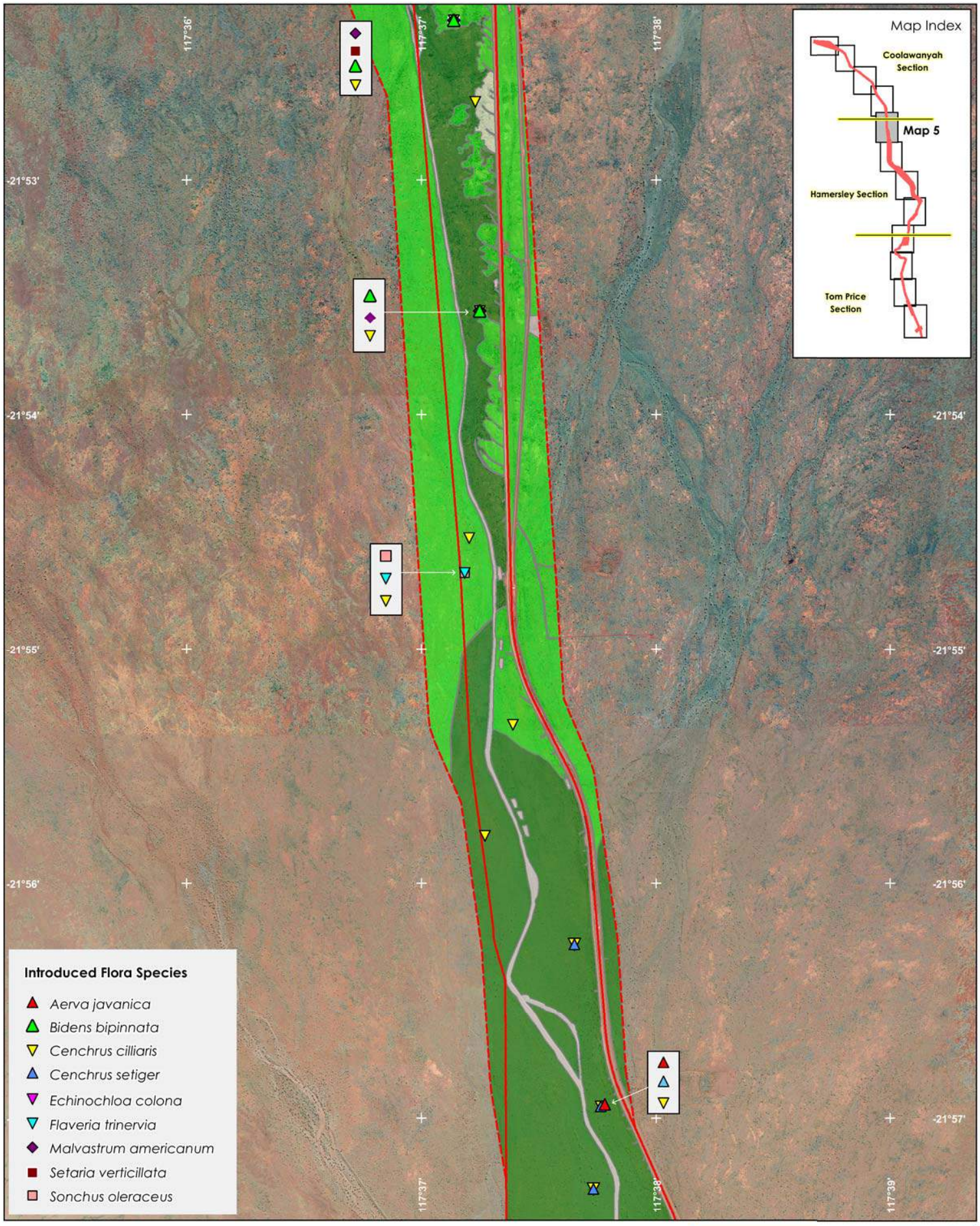
Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 3

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4


Map Index
Coolawanyah Section
Map 4
Hamersley Section
Tom Price Section
-21°48'
-21°49'
-21°50'
-21°51'
-21°52'
117°34'
117°35'
117°36'
117°37'
Introduced Flora Species
Aerva javanica
Bidens bipinnata
Cenchrus cilliaris
Cenchrus setiger
Echinochloa colona
Flaveria trinervia
Malvastrum americanum
Setaria verticillata
Sonchus oleraceus
Vachellia farnesiana
Location Map
KARRATHA
Map Area
PERTH
KALGOORLIE
Survey area
Contextual area
0
0.5
1
kilometres
Vegetation Condition
Excellent
Very Good
Good
Completely Degraded
Cleared
Manuwarra Red Dog Highway
Stage 4 - Vegetation Condition and Weeds - Map 4
N
Biota Environmental Sciences
Author: R Mason
Drawn: P Sawers
Job No.: 1511
Date: 7 Jan 2021
Revised: 10 Aug 2021
Datum: GDA94
Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

PERTH

KALGOORLIE

Survey area

Contextual area

0 0.5 1

kilometres

Vegetation Condition

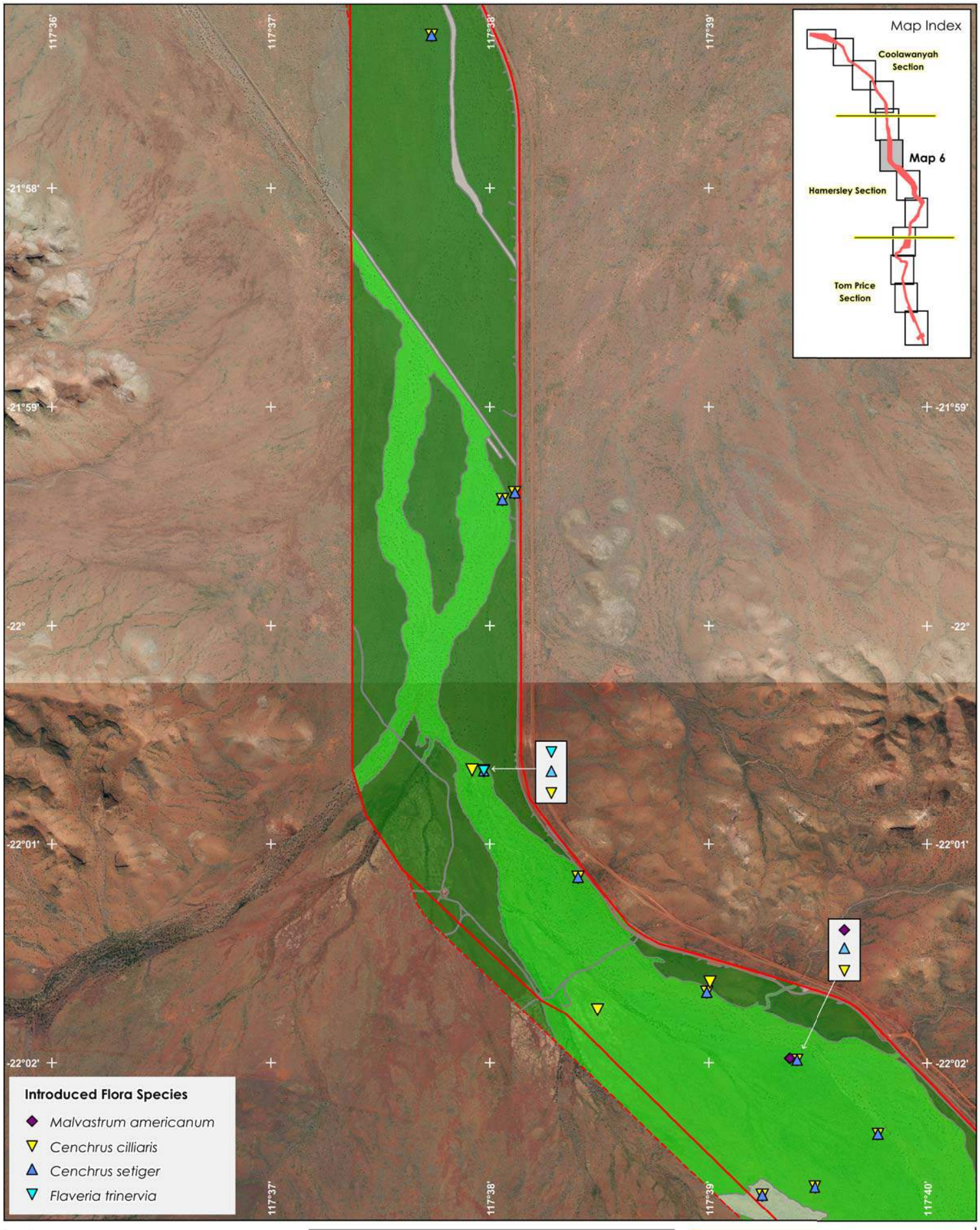
- Excellent
- Very Good
- Good
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 5

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

PERTH

KALGOORLIE

Survey area

Contextual area

0 0.5 1

kilometres

Vegetation Condition

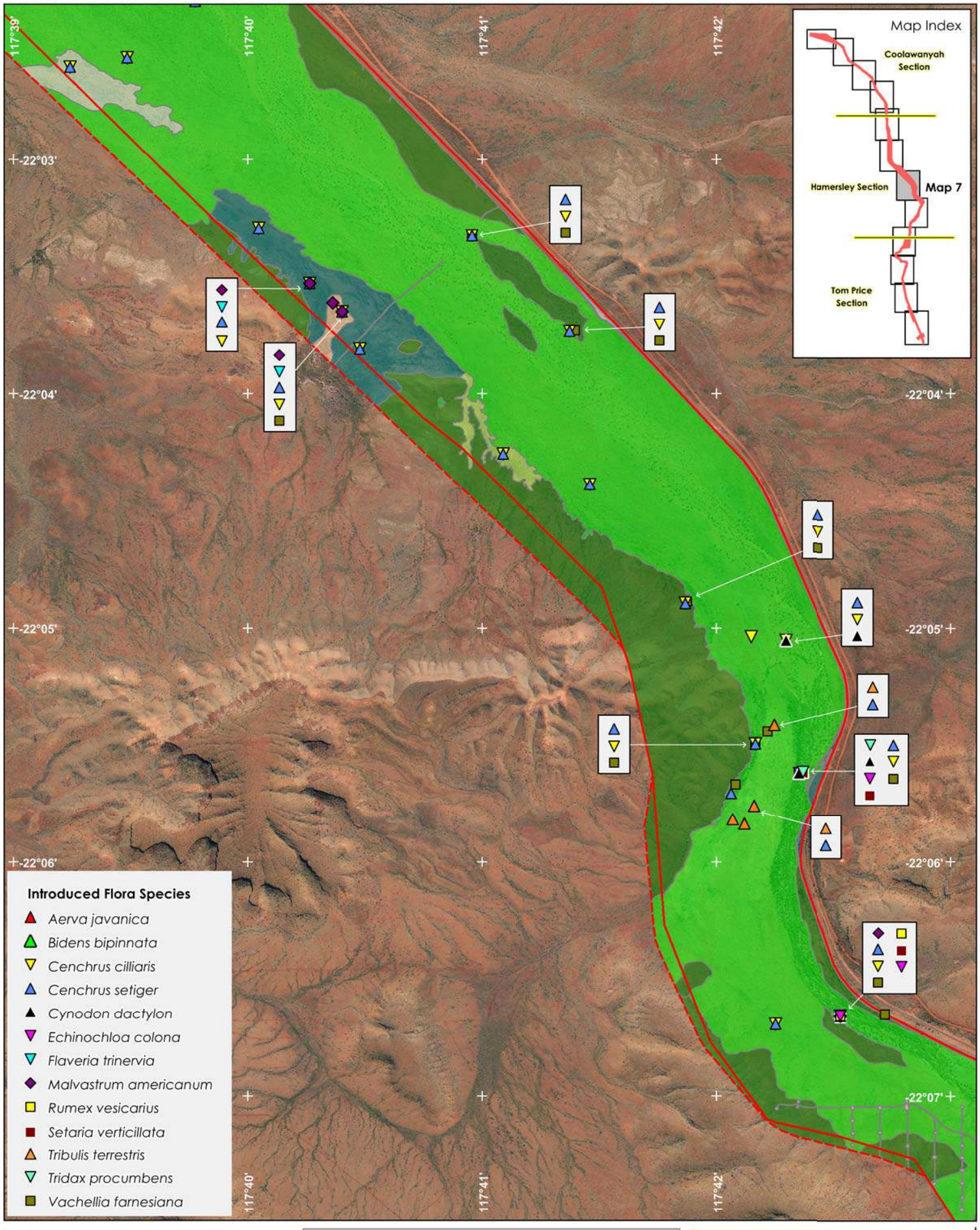
- Excellent
- Very Good
- Good
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 6

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:37,500 @ A4



Location Map

KARRATHA
Map Area
PERTH
KALGOORLIE

Survey area

Contextual area

0 0.5 1
kilometres

Vegetation Condition

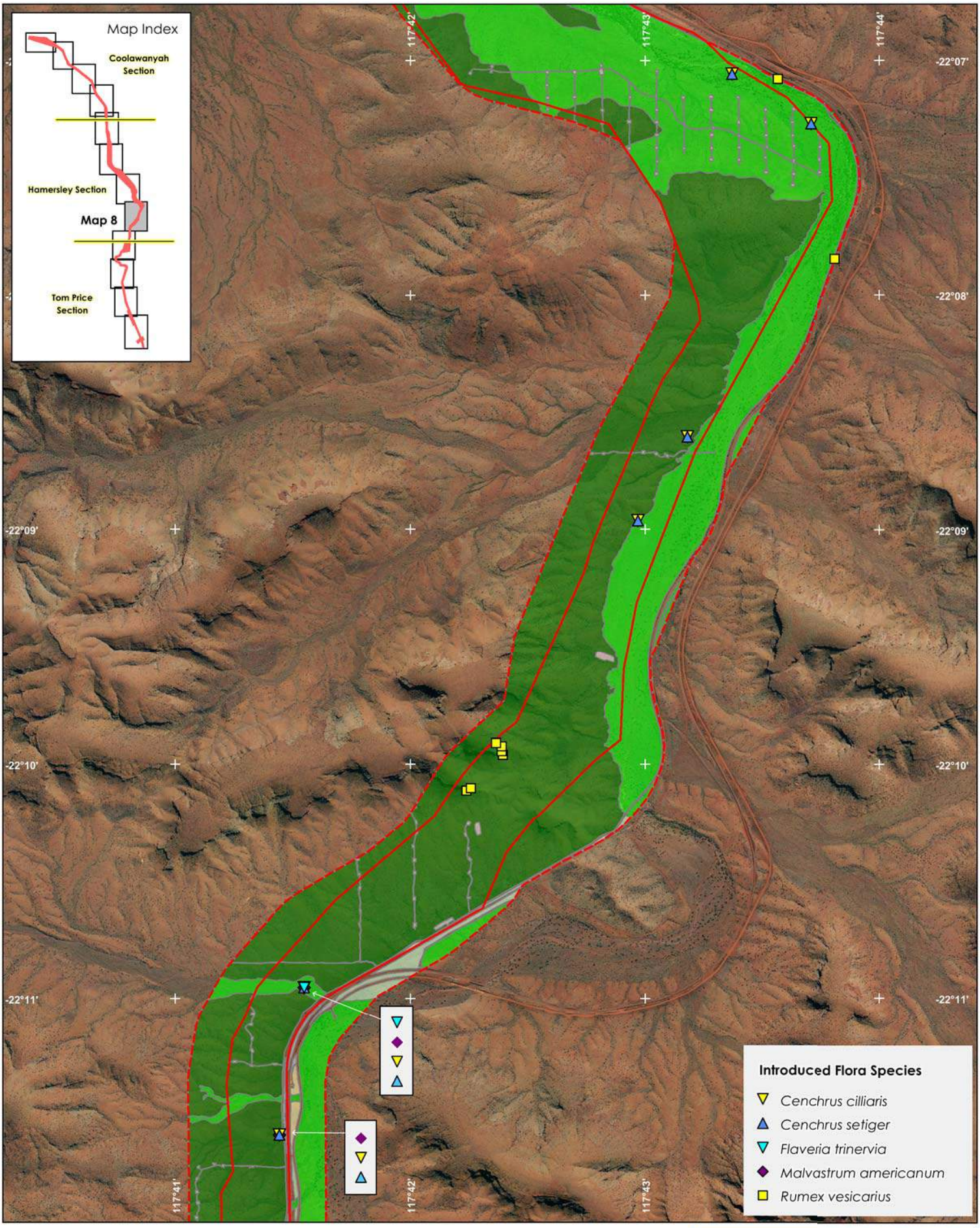
- Excellent
- Excellent to Very Good
- Very Good
- Very Good to Good
- Good
- Poor
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 7

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA
Map Area
PERTH
KALGOORLIE

Survey area
Contextual area

0 0.5 1
kilometres

Vegetation Condition

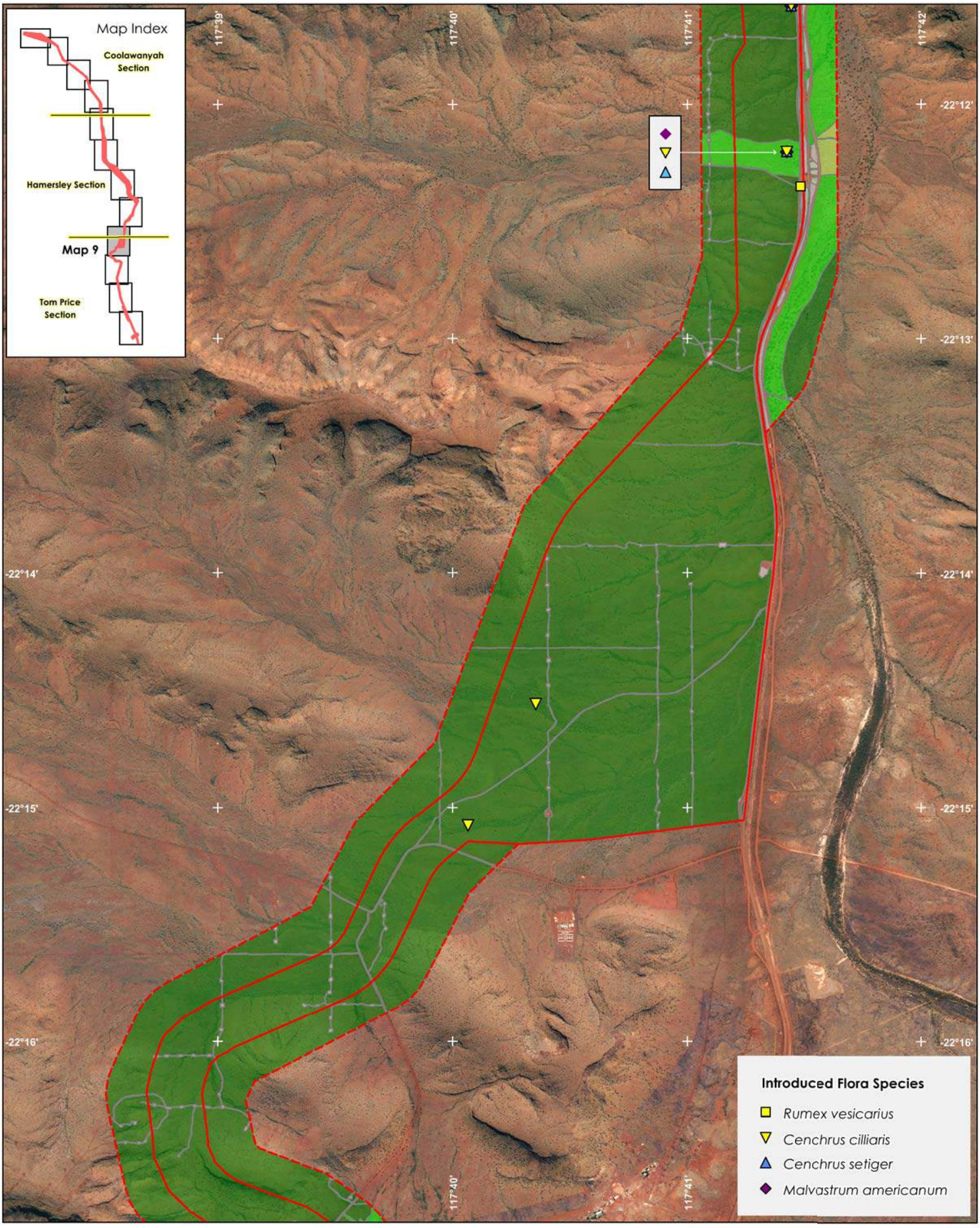
- Excellent
- Very Good
- Good
- Good to Poor
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 8

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

PERTH

KALGOORLIE

Survey area

Contextual area

0 0.5 1

kilometres

Vegetation Condition

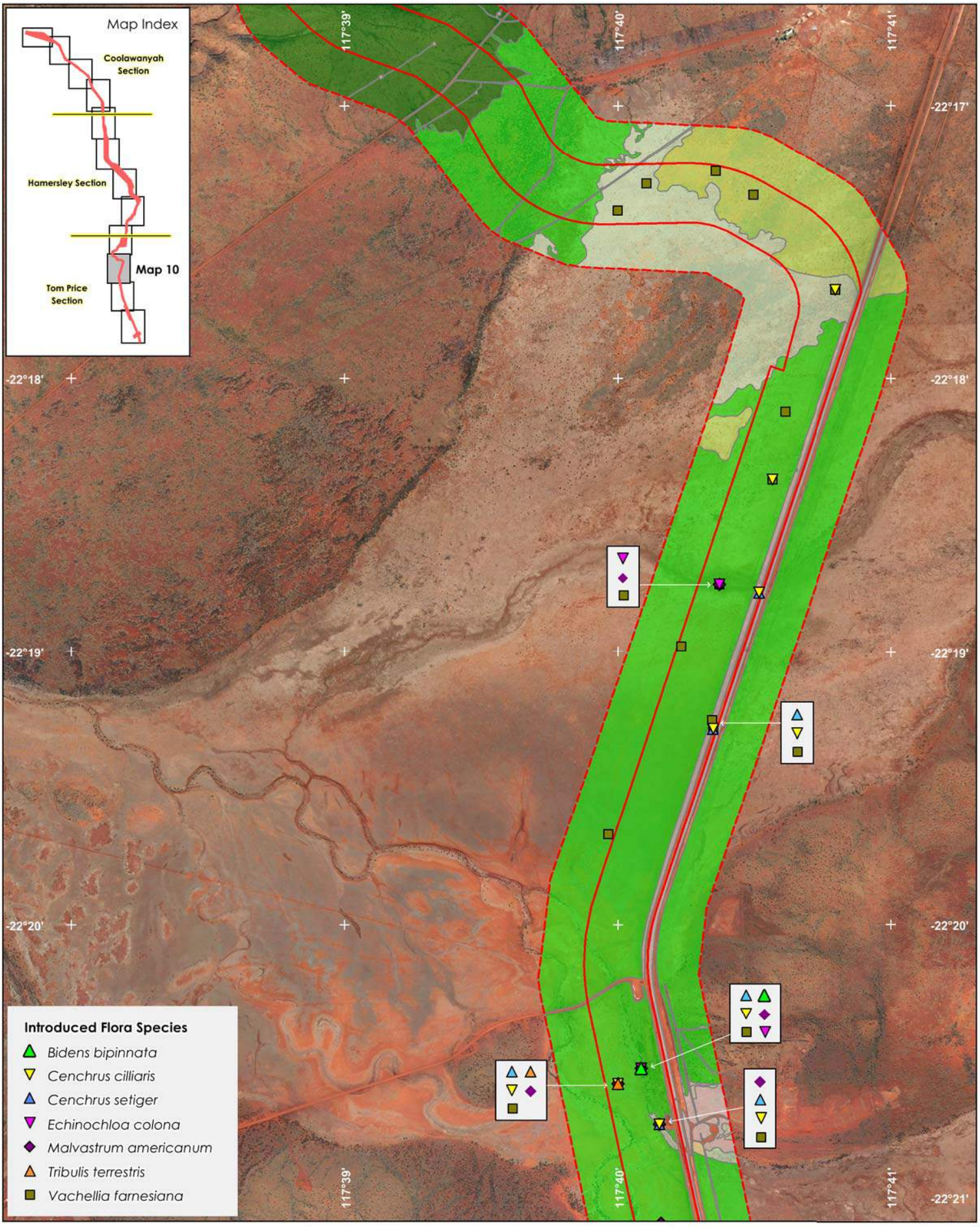
- Excellent
- Very Good
- Very Good to Good
- Good
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 9

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA
Map Area
PERTH
KALGOORLIE

Survey area

Contextual area

0 0.5 1
kilometres

Vegetation Condition

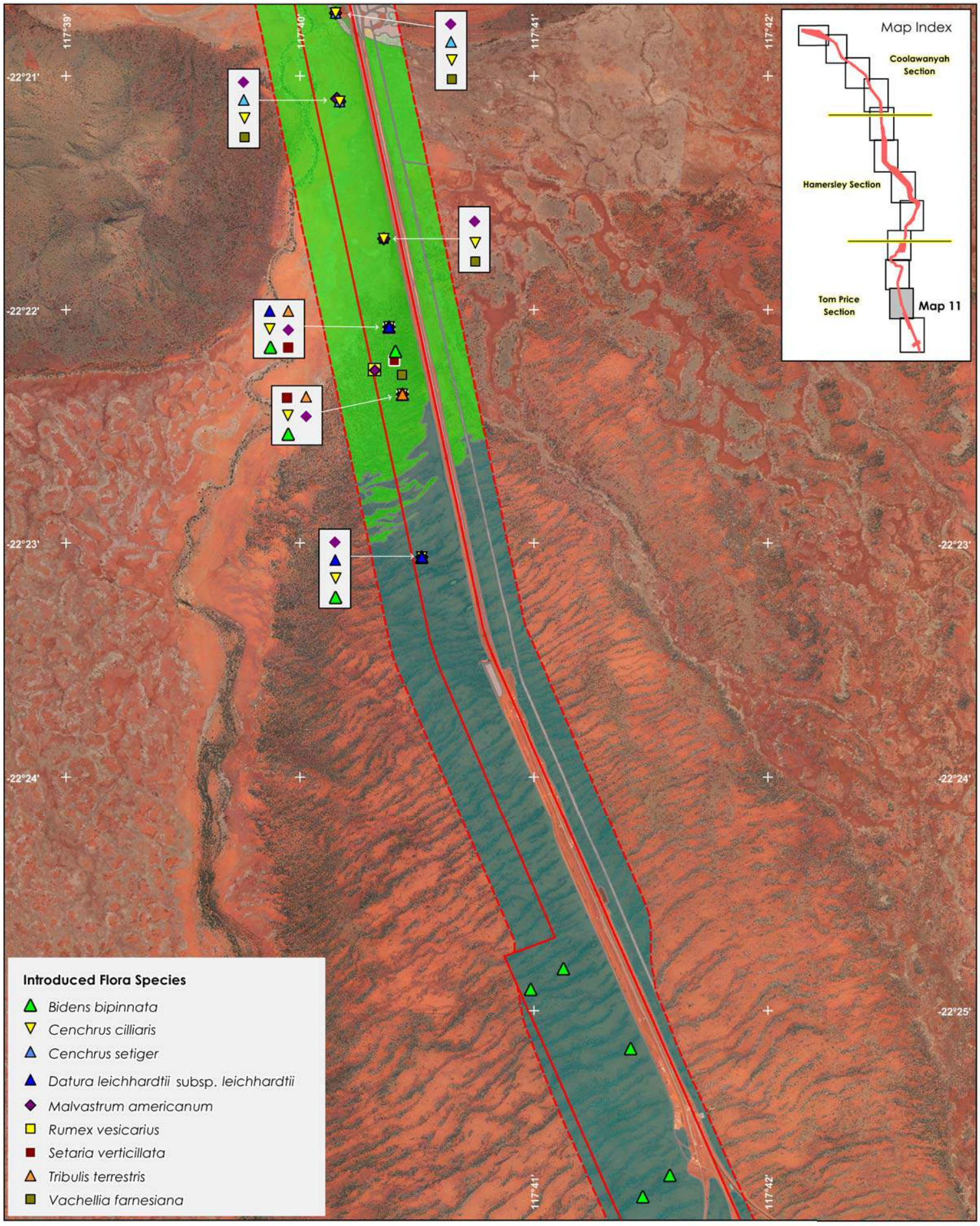
- Excellent
- Very Good
- Very Good to Good
- Good
- Good to Poor
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 10

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

PERTH

KALGOORLIE

Survey area

Contextual area

0 0.5 1

kilometres

Vegetation Condition

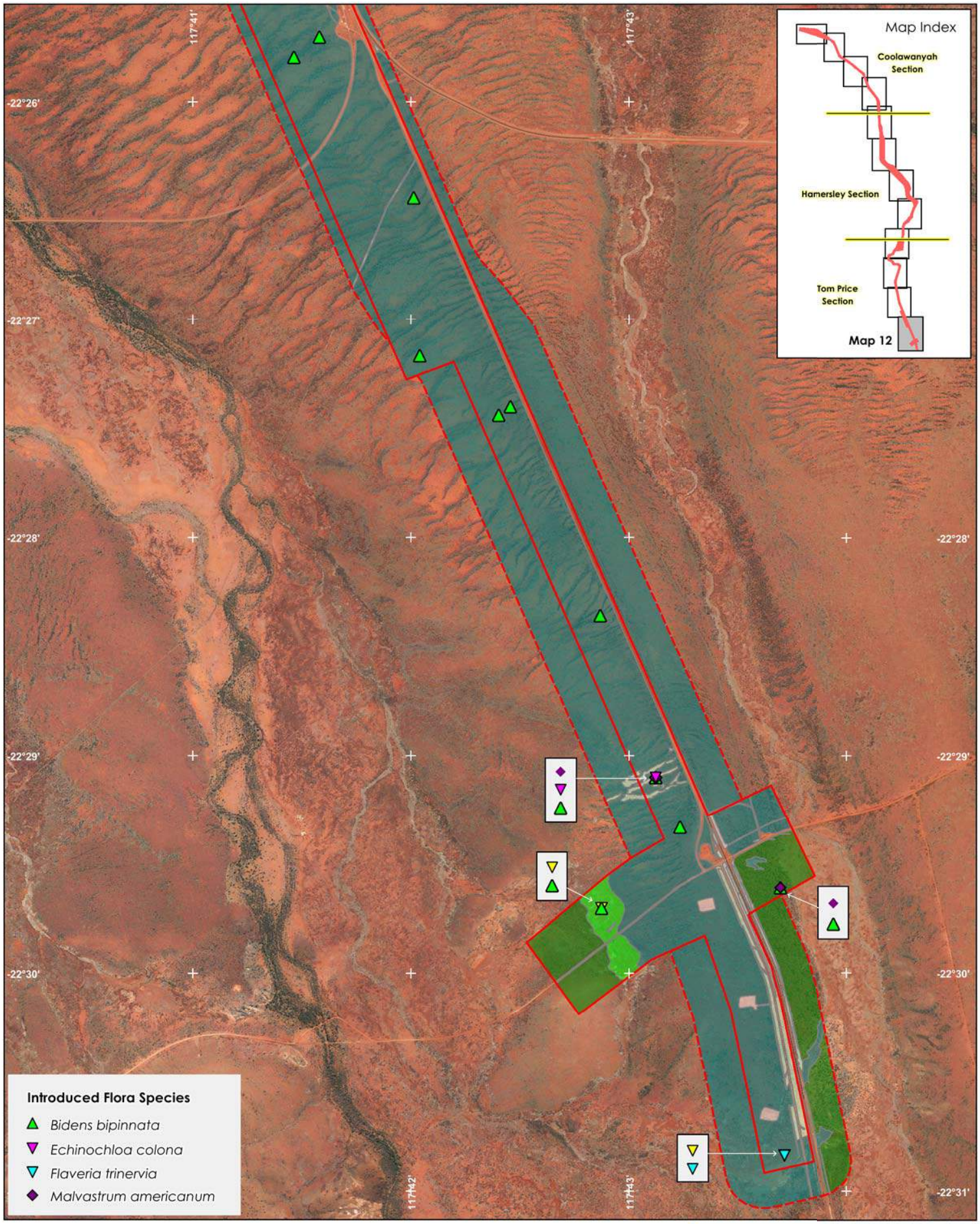
- Excellent to Very Good
- Very Good
- Good
- Good to Poor
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 11

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA
Map Area
PERTH
KALGOORLIE

Survey area
Contextual area

0 0.5 1
kilometres

Vegetation Condition

- Excellent
- Excellent to Very Good
- Very Good
- Good
- Completely Degraded
- Cleared

Manuwarra Red Dog Highway Stage 4 - Vegetation Condition and Weeds - Map 12

N

Biota Environmental Sciences

Author: R Mason | Drawn: P Sawers | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 10 Aug 2021 | Datum: GDA94 | Scale: 1:37,500 @ A4

Appendix 8

Likelihood of Occurrence of Flora of Conservation Significance

Taxon	Habit (WA Herbarium 2020)	Habitat (WA Herbarium 2020)	Databases				Previous Surveys*			Likelihood of Occurrence in the Survey Area	
			Nature Map	DBCA TPFL	WA Herbarium	MRWA database	Eliwana	Bellbird-Juna	Koodaideri Int.	Initial Ranking Based on Desktop Review	Final Ranking Including Results of 2020 Field Survey
Priority 1											
Bothriochloa decipiens var. *cloncurrensis*	Perennial, grass-like or herb, to 1.4 m high.	Seasonally damp depressions, clay plains.	-	-	-	✓	-	-	-	May occur. Some suitable habitat present however this species has been infrequently recorded in the SA locality. NR 24 km S of the southern tip of SA.	May occur.
Calotis squamigera	Procumbent annual daisy to 20 cm tall.	Pebbly loam.	-	-	-	✓	✓	✓	-	May occur. Some suitable habitat present, and this species is likely to be difficult to find due to its annual nature. NR 34 km SE of the southern tip of SA. Also recorded from RSA during Eliwana survey.	May occur.
Eucalyptus lucens	Mallee, to 4.5 m high.	Ironstone. Rocky slopes and mountain tops, high in the landscape.	-	-	-	✓	-	-	-	Unlikely to occur, little suitable habitat present and it has been infrequently recorded in the locality. NR 25 km S of the southern tip of SA.	Not found during current survey; unlikely to occur
Goodenia pedicellata	Single-stemmed perennial, herb to 25 cm high.	Rocky clayey soils. Rocky slopes and crests of small hills.	-	-	-	✓	-	-	-	May occur, some suitable habitat is present however species is infrequently recorded in locality. NR 27 km SW of the southern tip of SA.	May occur.
Helichrysum oligochaetum	Erect annual daisy to 25 cm tall.	Red clay on alluvial plains.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat present. NR 5 km W of the southern section of SA.	May occur.
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	Erect shrub to 2.5 m tall.	Creek lines, gullies, hilltops, hill slopes.	-	-	-	✓	✓	-	-	May occur, some suitable habitat present. NR 21 km W of the southern section of SA.	Occurs. Seven records in survey area; 1-10 individuals recorded in hilly habitat in south-central part of SA.
Josephinia sp. Woodstock (A.A. Mitchell PRP 989)	Woolly stemmed perennial shrub to 0.5 m.	Rocky creek lines and plains.	-	-	-	-	-	-	-	Unlikely to occur. Some suitable habitat present however no records in proximity of SA. Nearest vouchered records are approximately 130 km NNE of SA.	Occurs. One record in survey area – site KTF52, approximately 4 km south of the Fortescue River.
Tetratheca butcheriana	Small sub-shrub.	Northeast-facing cliff faces and breakaways.	-	-	-	✓	-	-	-	Unlikely to occur. Little suitable habitat present and species has not previously been recorded in locality. NR 32 km W of southern tip of SA.	Unlikely to occur.
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	Erect annual herb.	Red sandy clay loam. Plains, low in the landscape.	✓	-	✓	✓	✓	-	-	May occur, suitable habitat present. NR 11 km W of the southern section of SA.	Occurs. One record in survey area – site KTF10 in southern tip of survey area.
Whiteochloa capillipes	Annual or short-lived perennial grass.	Flat crabhole plain.	-	-	-	-	✓	-	-	May occur, some suitable habitat present. Species was recorded in the RSA during Eliwana survey (NB. Identification subsequently queried on basis of re-determination of voucher specimens).	May occur.
Priority 2											
Aristida lazaridis	Tufted perennial grass.	Sand or loam substrates on plains and foothills.	-	-	-	-	-	-	-	Unlikely to occur. Some suitable habitat present however nearest vouchered records are approximately 75 km E of the southern tip of the SA.	Occurs. One record in survey area – recorded opportunistically in the foothills of the Hamersley Range.
Adiantum capillus-veneris	Rhizomatous, perennial fern, 0.1-0.2 m high.	Moist, sheltered sites in gorges and on cliff walls.	-	-	-	✓	-	-	-	Would not occur, habitat is not present in SA. NR 32 km E of the centre of the SA.	Would not occur.
Cladium procerum	Densely tufted perennial sedge.	Perennial pools.	✓	-	✓	✓	-	-	-	Would not occur, habitat is not present in SA. NR 34 km NW from the northern tip of SA.	Would not occur.
Euphorbia inappendiculata var. *inappendiculata*	Annual herb.	Cracking clay plains.	-	-	-	✓	✓	-	-	May occur; some suitable habitat present in the southern section of SA. NR 27 km E of the SA.	Occurs. Five records in the survey area in the north of survey area; approximately 175 individuals.
Euphorbia inappendiculata var. *queenslandica*	Prostrate annual herb.	Dark reddish brown cracking clay. Clay plains.	-	-	✓	✓	✓	-	-	May occur; some suitable habitat present in the southern section and NR is 3 km to the W of SA. The species has also been recorded at several locations in the locality.	Occurs. Seven records in the survey area in the south-central section and northern tip; scattered individuals at each site.
Gompholobium karijini	Shrub with coarsely fibrous, grey bark that grows to 70 cm tall.	Red-brown loam. Rocky hill tops, hill sides.	✓	-	✓	✓	✓	-	-	May occur; some suitable habitat present in the central section and NR is 3 km E of SA. The species has also been recorded at several locations in the locality.	May occur.
Hibiscus sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	Tall spindly shrub.	Crests and upper slopes of hills.	-	-	-	✓	-	-	-	May occur; some suitable habitat present, however species is infrequently recorded in the locality. NR 26 km S of the southern tip of SA.	Not found during current survey; unlikely to occur

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Indigofera ixocarpa	Shrub, to 1 m high.	Skeletal red soils over massive ironstone.	-	-	-	✓	-	-	-	Unlikely to occur, no particularly suitable habitat present in SA. NR 23 km S of the southern tip of SA.	Unlikely to occur.
Ipomoea racemigera	Annual creeper with white flowers.	Creeklines and floodplains.	-	-	✓	✓	✓	-	-	May occur, some suitable habitat is present. NR 24 km N of the northern tip of SA.	May occur.
Oxalis sp. Pilbara (M.E. Trudgen 12725)	Annual herb.	Hillslopes and gorges on loam.	-	-	-	✓	-	-	-	May occur, some suitable habitat present in the SA. NR 37 km SW of southern tip of SA.	May occur.
Paspalidium retiglume	Tufted annual, grass, 0.1-0.5 m high.	Clay.	✓	✓	✓	✓	-	-	-	May occur, suitable habitat present. NR 5 km NE of the northern tip of SA.	May occur.
Pentalepis trichodesmoides subsp. *hispida*	Erect perennial shrub to 1 m.	Skeletal red-brown gravelly loam. Hilltops, hill slopes, creeklines.	-	-	✓	✓	✓	-	-	May occur, some suitable habitat present. NR 22 km SW of southern section of SA.	May occur.
Scaevola sp. Hamersley Range basalts (S. van Leeuwen 3675)	Shrub, to 1 m high.	Skeletal, brown gritty soil over basalt. Summits of hills, steep hills.	✓	✓	-	✓	-	-	-	Unlikely to occur, no suitable habitat in SA. NR 6 km SE of southern tip of SA.	Unlikely to occur.
Teucrium pilbaranum	Low perennial herb or shrub.	Clay, floodplains, margins of calcrete.	✓	-	✓	-	-	-	-	May occur, some suitable habitat present in the SA. NR 11 km E of the southern section of SA.	May occur.
Priority 3											
Acacia daweana	Spreading shrub, 0.3-2 m high.	Stony red loamy soils. Low rocky rises, along drainage lines.	-	-	-	✓	-	-	-	Unlikely to occur. Some suitable habitat is present however this species has been infrequently recorded in the locality. NR 38 km SE of the southern tip of SA.	Not found during current survey; unlikely to occur
Acacia effusa	Low, dense, spreading, somewhat viscid shrub, 0.3-1 m high.	Stony red loam. Scree slopes of low ranges.	-	-	-	✓	-	-	-	Unlikely to occur, little suitable habitat in the SA. NR is 38 km SE of the southern tip of SA.	Not found during current survey; unlikely to occur
Aristida jerichoensis var. *subspinulifera*	Compactly tufted perennial, grass-like or herb, 0.3-0.8 m high, lemma groove muricate.	Hardpan plains.	-	-	-	✓	✓	-	-	May occur, some suitable habitat present in the SA. NR 25 km W of the southern section of SA.	Occurs. One record in the southern section of survey area; approximately 10 individuals.
Astrebla lappacea	Tufted perennial, grass-like or herb, 0.3-0.8 m high.	Clay, loam.	✓	✓	✓	✓	✓	✓	-	May occur. Some suitable habitat present in the SA. NR 800 m from the SE boundary of the SA.	Occurs. Five records in the southern section of survey area with up to 60% cover at KTF08.
Cyanthillium gracile	Perennial herb to 40 cm tall.	Skeletal red gritty soil over ironstone.	-	-	-	-	✓	-	-	Unlikely to occur; no particularly suitable habitat in the SA. Species was recorded in the MSA during the Eliwana survey.	Unlikely to occur.
Dampiera anonyma	Multi-stemmed perennial, herb, to 0.5-1 m high.	Hill summits, upper slopes (above 1,000 m).	✓	✓	✓	✓	-	-	-	Would not occur, no suitable habitat in the SA. NR 7 km from the E boundary of the SA.	Would not occur.
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	Spreading annual herb to 10 cm tall.	Cracking clay plains.	✓	-	✓	✓	✓	-	✓	Likely to occur. Suitable habitat present in the southern section of SA and several records in the locality. NR 800m W of the SA.	Occurs. Nine records in the north and south of survey area. Up to 200 individuals counted at some locations.
Eragrostis crateriformis	Annual, grass, 0.17-0.42 m high.	Clayey loam or clay. Creek banks, depressions.	-	✓	✓	-	-	-	-	Unlikely, some suitable habitat is present, however this is unlikely as NR is 39 km N of the northern tip of SA and there are no other records nearby.	Unlikely to occur.
Eragrostis surreyana	Tufted annual grass to 15 cm.	Seasonally wet, shallow, grey alluvial soils over rock, with some from deeper soils in seasonal drainage areas.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat is present. NR 2 km E of the central portion of SA.	May occur.
Eremophila magnifica subsp. *velutina*	Shrub, 0.5-1.5 m high.	Skeletal soils over ironstone. Summits.	✓	✓	✓	✓	✓	-	-	May occur, some suitable habitat is present in the SA. NR 2 km E of the centre of the SA.	May occur.

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Euphorbia australis var. *glabra*	Prostrate, mid-dense, semi-woody annual to 1 cm tall.	Moderately drained, red clay loam. Extensive sub-saline flat.	-	-	-	✓	✓	-	-	May occur, some suitable habitat is present. NR 800 m E of the central portion of SA.	Occurs. Recorded 28 times in the north and south of survey area. Up to 150 individuals counted at some locations.
Fimbristylis sieberiana	Shortly rhizomatous, tufted perennial sedge, 0.25-0.6 m high.	Mud, skeletal soil pockets. Pool edges, sandstone cliffs.	-	✓	✓	✓	-	-	-	Would not occur, no suitable habitat present. NR 33 km E of the centre of the SA.	Would not occur.
Geijera salicifolia	Tree, 1.5-6 m high.	Skeletal soils, stony soils. Massive rock scree, gorges.	✓	-	✓	✓	-	-	-	Would not occur, no suitable habitat present. NR 17 km S of southern tip of SA.	Would not occur.
Glycine falcata	Mat-forming perennial, herb, to 0.2 m high.	Black clayey sand. Along drainage depressions in crabhole plains on river floodplains.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat present. NR 15 km E of the southern portion of the SA.	Occurs. Eight records in the southern section of survey area; scattered individuals.
Goodenia sp. East Pilbara (A.A. Mitchell PRP 727)	Open, erect annual or biennial, herb, to 0.2 m high.	Red-brown clay soil, calcrete pebbles. Low undulating plain, swampy plains.	✓	✓	-	✓	✓	-	✓	May occur, some suitable habitat is present. NR 3 km E of central section of SA.	May occur.
Grevillea saxicola	Shrub or tree growing to 7 m tall.	Skeletal red-brown sandy loam. Steep slopes, rocky hills, ridges.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat in the SA. NR 16 km S of the southern tip of SA.	Not found during current survey; unlikely to occur.
Gymnanthera cunninghamii	Erect shrub, 1-2 m high.	Sandy soils in drainages.	-	-	✓	✓	-	-	✓	May occur, some suitable habitat present. NR 19 km SW of the southern tip of SA.	Occurs. One record in the north of survey area; 1 individual.
Indigofera gilesii	Shrub, to 1.5 m high.	Pebbly loam. Amongst boulders & outcrops, hills.	-	-	-	-	✓	-	-	May occur, some suitable habitat present and species was recorded from Eliwana RSA. NR unknown however RSA intersects southern section of SA.	May occur.
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	Erect, shrub, spindly shrub (broom-like).	Drainage lines.	-	-	-	✓	✓	-	-	May occur, some suitable habitat present. NR 19 km W of the southern section of the SA.	May occur.
Iotasperma sessilifolium	Erect annual daisy.	Cracking clay plains.	✓	-	✓	✓	✓	-	-	May occur, suitable habitat present in the SA and several records in the locality. NR 5 km W of the central section of SA.	May occur.
Olearia mucronata	Densely branched, unpleasantly aromatic shrub, 0.6-1 m high.	Schistose hills, along drainage channels.	-	-	-	✓	-	-	-	Unlikely to occur; no particularly suitable habitat present in the SA. NR 26 km S of the southern tip of SA.	Unlikely to occur.
Owenia acidula	Tree, 3-8 m high.	Clay.	-	✓	✓	-	-	-	-	Unlikely to occur, some suitable habitat may be present but species is infrequently recorded in locality. NR 34 km W of the northern tip of SA.	Not found during current survey; unlikely to occur.
Polymeria distigma	Prostrate trailing herb.	Sandy soils.	✓	-	✓	✓	-	-	-	May occur, some suitable habitat present however species is infrequently recorded in the locality. NR 10 km W of the southern section of SA.	May occur.
Ptilotus subspinescens	Compact shrub, to 0.8 m high.	Gentle rocky slopes, screes and the bases of screes.	✓	✓	-	✓	✓	-	-	May occur, some suitable habitat is present and there are several records in the locality. NR 10 km E of the southern section of SA.	May occur.
Rhagodia sp. Hamersley (M. Trudgen 17794)	Slender spindly chenopod shrub to 2 m tall.	Hardpan plains and stony plains, typically associated with mulga.	✓	-	✓	✓	✓	✓	-	May occur, suitable habitat is present. NR 300 m E of southern section of SA.	Occurs. Recorded 9 times in southern section of survey area. Scattered individuals.
Rostellularia adscendens var. *latifolia*	Perennial herb or low shrub to 30 cm tall.	Various habitats, including Ironstone soils near creeks, rocky hills.	✓	-	✓	✓	✓	✓	✓	May occur, suitable habitat present. NR 11 km E of the southern section of SA.	May occur.
Sida sp. Barlee Range (S. van Leeuwen 1642)	Low spreading shrub.	Skeletal soils on steep rocky slopes.	✓	-	✓	✓	-	-	✓	May occur, some suitable habitat present. NR 7 km W of southern section of SA.	May occur.

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Sida sp. Hamersley Range (K. Newbey 10692)	Low shrub.	Skeletal stony soils on rocky hills, breakaways.	✓	-	✓	✓	-	-	-	May occur, some suitable habitat present. NR 15 km W of the central section of SA.	Occurs. Recorded 19 times as scattered individuals in the south of survey area.
Solanum albostellatum	Low perennial herb or shrub.	Red-brown cracking clay. Open floodplains, crabholed plains.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat present. NR 9 km NW of the northern tip of SA.	May occur.
Solanum kentrocaule	Erect shrub.	Basalt scree, gorges, slopes and crests of hills.	-	-	-	✓	-	-	-	Unlikely to occur, no suitable habitat and species has been infrequently recorded in the locality. NR 24 km S of the southern tip of SA.	Unlikely to occur.
Solanum sp. Red Hill (S. van Leeuwen et al. PBS 5415)	Perennial, upright or spreading resinous shrub to 0.3 m high.	Hillslopes, summits or gorges.	-	-	-	✓	-	-	-	Unlikely to occur, little suitable habitat present. NR 28 km E of the southern section of SA.	Unlikely to occur.
Stackhousia clementii	Dense broom-like perennial, herb, to 0.45 m high.	Skeletal soils. Sandstone hills.	✓	-	✓	✓	✓	-	-	Unlikely to occur; no particularly suitable habitat present in the SA and species is very infrequently recorded. NR 4 km E of the southern sections of SA.	Unlikely to occur.
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	Annual, multi-stemmed herb with pink	Cracking clay, damp areas, floodplains	-	-	-	-	-	-	-	Unlikely to occur, some suitable habitat present, however previous records do not occur with 150 km of the SA.	Occurs. Recorded from 6 locations on cracking clay in the south of the survey area.
Swainsona thompsoniana	Small erect annual herb.	Cracking clay plains.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat present and several records in the locality. NR 2 km S of the southern tip of SA.	Occurs. Recorded 3 times in the northern extent and once in the southern tip of the survey area. Approximately 21 individuals.
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	Perennial tussock grass to 1.8 m tall.	Red clay (often cracking) in clay pans and on plains, sometimes along creeklines.	✓	-	✓	✓	✓	-	✓	Likely to occur, suitable habitat present in southern section of SA. Several records in the locality. NR 650 m E of the SA.	Occurs as part of '*Themeda* grasslands on cracking clays' TEC. Recorded 20 times in the survey area, many sites had significant population (up to 68% cover).
Triodia basitricha	Hummock grass.	Rocky hillslopes.	✓	-	✓	✓	✓	-	-	May occur, some suitable habitat present and several records in the locality. NR 7 km N of northern tip of SA.	Occurs. Recorded once in the centre of survey area; density 25% cover.
Triodia pisoliticola	Hummock grass.	Rocky skeletal slopes and free-faces of mesas and hills.	-	-	✓	✓	-	-	-	Unlikely to occur, little suitable habitat present, and species is infrequently recorded in the locality. NR 30 km E of southern section of SA.	Unlikely to occur.
Priority 4											
Acacia bromilowiana	Tree or shrub, to 12 m high.	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaways, scree slopes, gorges, creek beds.	✓	-	-	✓	✓	-	-	May occur; while there is some suitable habitat in the SA, the NR is 26 km S of the southern tip of SA.	Not found during current survey; unlikely to occur.
Eremophila magnifica subsp. *magnifica*	Shrub, 0.5-1.5 m high.	Skeletal soils over ironstone. Rocky screes.	✓	-	✓	✓	-	-	✓	May occur, some suitable habitat is present, and this species has been recorded numerous times in the locality. NR 10 km W of the central portion of SA.	Occurs. Recorded 7 times in the south of the survey area; 12 individuals.
Goodenia berringbinensis	Ascending annual herb, yellow fls.	Seasonally inundated areas, claypans.	-	-	-	-	-	-	-	Unlikely to occur, some suitable habitat is present, however no vouchered records occur in proximity to the SA.	Occurs. Recorded in two locations in the northern extent of the survey area; 53 individuals.
Goodenia nuda	Slender erect herb to 50 cm tall.	Creeks, floodplains, low-lying areas.	✓	-	✓	✓	✓	-	✓	Likely to occur. Suitable habitat is present and NR 100 m from the SA boundary in floodplain habitat that occurs extensively in the southern section.	Occurs. Recorded 43 times throughout the length of the survey area. 464 individuals.
Lepidium catapycnon	Open, woody perennial, herb or shrub, 0.2-0.3 m high.	Skeletal soils. Hillsides.	-	-	-	✓	-	-	✓	Unlikely to occur, little suitable habitat present, and species is infrequently recorded in the locality. NR 25 km S of the southern tip of SA.	Unlikely to occur.
Livistona alfredii	Tree-like palm.	Permanent pools and watercourses.	-	-	-	✓	-	-	-	Would not, no suitable habitat present in the SA. NR 18 km NE of the northern tip of SA.	Would not occur.

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Ptilotus mollis	Compact perennial shrub to 50 cm tall.	Stony hills and screes.	-	-	-	✓	✓	-	✓	Unlikely to occur. Some suitable habitat present but species is infrequently recorded in locality and NR is 39 km SW of southern tip of SA,	Unlikely to occur.
Ptilotus trichocephalus	Prostrate, spreading perennial, herb.	Sandy soils. Colluvial plains.	-	-	-	✓	-	-	-	Unlikely to occur, although some suitable habitat is present, the species is infrequently recorded in locality. NR 31 km E of the southern section of SA.	Unlikely to occur.
Rhynchosia bungarensis	Compact, prostrate shrub, to 0.5 m high.	Banks of flow lines, mouth of a gully, valley wall.	✓	-	✓	✓	✓	-	✓	May occur, little suitable habitat present. NR 20 km E of centre of SA.	May occur.

* Data from the most relevant (e.g., survey area size and location) and most comprehensive previous surveys has been utilised for this purpose.

Appendix 9

Flora Species Recorded During the Survey

Family	Species	Status
Acanthaceae	*Dipteracanthus aff. australasicus*	
	Dipteracanthus australasicus subsp. *australasicus*	
	Rostellularia adscendens var. *clementii*	
Aizoaceae	*Trianthema glossostigmum*	
	Trianthema pilosum	
	Trianthema triquetrum	
Amaranthaceae	*Achyranthes aspera*	
	**Aerva javanica*	Weed
	Alternanthera angustifolia	
	Alternanthera denticulata	
	Alternanthera nana	
	Alternanthera nodiflora	
	Amaranthus aff. undulatus (round leaves, short tepals)	
	Amaranthus cuspidifolius	
	Amaranthus induratus	
	Amaranthus interruptus	
	Amaranthus undulatus	
	Gomphrena affinis subsp. *pilbarensis*	
	Gomphrena canescens	
	Gomphrena canescens subsp. *canescens*	
	Gomphrena cunninghamii	
	Gomphrena kanisii	
	Gomphrena lanata	
	Ptilotus ? xerophilus	
	Ptilotus aervoides	
	Ptilotus astrolasius	
	Ptilotus auriculifolius	
	Ptilotus axillaris	
	Ptilotus calostachyus	
	Ptilotus carinatus	
	Ptilotus clementii	
	Ptilotus exaltatus	
	Ptilotus fusiformis	
	Ptilotus gaudichaudii	
	Ptilotus gomphrenoides	
	Ptilotus helipteroides	
	Ptilotus incanus	
	Ptilotus obovatus var. *obovatus*	
	Ptilotus polystachyus	
	Ptilotus roei	
	Ptilotus rotundifolius	
	Ptilotus schwartzii var. *schwartzii*	
	Ptilotus sp.	
	Ptilotus xerophilus	
Apocynaceae	*Carissa lanceolata*	
	Cynanchum ? floribundum (4 colleters)	
	Cynanchum floribundum	
	Cynanchum viminale subsp. *australe*	

	Gymnanthera cunninghamii	Priority 3
	Vincetoxicum lineare	
Araliaceae	*Trachymene oleracea* subsp. *oleracea*	
Asteraceae	*Apowollastonia hamersleyensis*	
	**Bidens bipinnata*	Weed
	Blumea tenella	
	Calotis multicaulis	
	Calotis plumulifera	
	Centipeda minima subsp. *macrocephala*	
	Chrysocephalum gilesii	
	**Flaveria trinervia*	Weed
	Pentalepis trichodesmoides subsp. *trichodesmoides*	
	Peripleura arida	
	Peripleura obovata	
	Peripleura virgata	
	Pluchea dunlopii	
	Pluchea ferdinandi-muelleri	
	Pluchea rubelliflora	
	Pseudognaphalium luteoalbum	
	Pterocaulon serrulatum	
	Pterocaulon serrulatum var. *velutinum*	
	Pterocaulon sphacelatum	
	Rhodanthe charsleyae	
	Rhodanthe margarethae	
	Roebuckiella similis	
	Senecio magnificus	
	**Sonchus oleraceus*	Weed
	Streptoglossa adscendens	
	Streptoglossa bubakii	
	Streptoglossa decurrens	
	Streptoglossa liatroides	
	Streptoglossa sp.	
	Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	Priority 3
	**Tridax procumbens*	Weed
	Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	Priority 1
Bignoniaceae	*Dolichandrone occidentalis*	
Boraginaceae	*Ehretia saligna* var. *saligna*	
	Heliotropium conocarpum	
	Heliotropium cunninghamii	
	Heliotropium heteranthum	
	Heliotropium inexplicitum	
	Heliotropium pachyphyllum	
	Heliotropium sp.	
	Heliotropium tanythrix	
	Heliotropium tenuifolium	
	Trichodesma zeylanicum var. *zeylanicum*	
Brassicaceae	*Lepidium echinatum*	
	Lepidium pedicellosum	
	Lepidium phlebopetalum	
Campanulaceae	*Wahlenbergia tumidifructa*	
Capparaceae	*Capparis lasiantha*	

	Capparis spinosa subsp. *nummularia*	
	Capparis umbonata	
Caryophyllaceae	*Polycarpaea corymbosa* var. *corymbosa*	
	Polycarpaea holtzei	
	Polycarpaea longiflora	
Chenopodiaceae	*Dissocarpus paradoxus*	
	Dysphania glomulifera subsp. *eremaea*	
	Dysphania kalpari	
	Dysphania melanocarpa forma melanocarpa	
	Dysphania rhadinostachya	
	Dysphania rhadinostachya subsp. *inflata*	
	Dysphania sp.	
	Enchylaena tomentosa	
	Enchylaena tomentosa var. *tomentosa*	
	Maireana georgei	
	Maireana planifolia	
	Maireana planifolia x villosa	
	Maireana villosa	
	Rhagodia eremaea	
	Rhagodia sp. Hamersley (M. Trudgen 17794)	Priority 3
	Salsola australis	
	Sclerolaena bicornis var. *bicornis*	
	Sclerolaena cornishiana	
	Sclerolaena costata	
Cleomaceae	*Areocleome oxalidea*	
	Arivela viscosa	
Commelinaceae	*Commelina ensifolia*	
Convolvulaceae	*Bonamia alatisemina*	
	Bonamia erecta	
	Bonamia pannosa	
	Bonamia pilbarensis	
	Convolvulus clementii	
	Cuscuta victoriana	
	Duperreya commixta	
	Evolvulus alsinoides	
	Evolvulus alsinoides var. *decumbens*	
	Evolvulus alsinoides var. *villosicalyx*	
	Ipomoea coptica	
	Ipomoea diamantinensis	
	Ipomoea lonchophylla	
	Ipomoea muelleri	
	Ipomoea polymorpha	
	Operculina aequisepala	
	Polymeria ambigua	
	Polymeria longifolia	
	Polymeria sp.	
Cucurbitaceae	*Austrobryonia pilbarensis*	
	Cucumis melo	
	Cucumis picrocarpus	
	Cucumis variabilis	
Cyperaceae	*Bulbostylis barbata*	

	Bulbostylis turbinata	
	Cyperus bifax	
	Cyperus cunninghamii subsp. *cunninghamii*	
	Cyperus difformis	
	Cyperus iria	
	Cyperus ixiocarpus	
	Cyperus leptocarpus	
	Cyperus pulchellus	
	Cyperus squarrosus	
	Cyperus vaginatus	
	Eleocharis atropurpurea	
	Fimbristylis dichotoma	
	Fimbristylis littoralis	
	Fimbristylis microcarya	
	Fimbristylis phaeoleuca	
	Fimbristylis simulans	
	Schoenoplectiella dissachantha	
	Schoenoplectiella laevis	
Elatinaceae	*Bergia pedicellaris*	
Euphorbiaceae	*Adriana tomentosa* var. *tomentosa*	
	Euphorbia australis var. *glabra*	Priority 2
	Euphorbia australis var. *hispidula*	
	Euphorbia australis var. *subtomentosa*	
	Euphorbia biconvexa	
	Euphorbia boophthona	
	Euphorbia careyi	
	Euphorbia coghlanii	
	Euphorbia drummondii	
	Euphorbia ferdinandi var. *ferdinandi*	
	Euphorbia inappendiculata var. *inappendiculata*	Priority 2
	Euphorbia inappendiculata var. *queenslandica*	Priority 1
	Euphorbia sp.	
	Euphorbia sp. (biconvexa/coghlanii/trigonosperma; sterile)	
	Euphorbia sp. (boophthona/tannensis)	
	Euphorbia tannensis subsp. *eremophila*	
	Euphorbia trigonosperma	
	Euphorbia vaccaria var. *erucoides*	
	Euphorbia vaccaria var. *vaccaria*	
Fabaceae	*Acacia ? victoriae*	
	Acacia adoxa var. *adoxa*	
	Acacia ampliceps	
	Acacia ancistrocarpa	
	Acacia ancistrocarpa x trachycarpa	
	Acacia aneura / aptaneura	
	Acacia aptaneura	
	Acacia arida	
	Acacia atkinsiana	
	Acacia bivenosa	
	Acacia citrinoviridis	
	Acacia colei	
	Acacia cowleana	

	Acacia dictyophleba	
	Acacia elachantha	
	Acacia exigua	
	Acacia hamersleyensis	
	Acacia hilliana	
	Acacia inaequilatera	
	Acacia macraneura	
	Acacia maitlandii	
	Acacia melleodora	
	Acacia monticola	
	Acacia orthocarpa	
	Acacia pruinocarpa	
	Acacia pteraneura	
	Acacia ptychophylla	
	Acacia pyrifolia	
	Acacia pyrifolia var. *pyrifolia*	
	Acacia sclerosperma subsp. *sclerosperma*	
	Acacia sp.	
	Acacia spondylophylla	
	Acacia synchronicia	
	Acacia tenuissima	
	Acacia tetragonophylla	
	Acacia trachycarpa	
	Acacia trudgeniana	
	Acacia tumida var. *pilbarensis*	
	Acacia victoriae subsp. *victoriae*	
	Acacia xiphophylla	
	Aeschynomene indica	
	Alysicarpus muelleri	
	Crotalaria dissitiflora subsp. *benthamiana*	
	Crotalaria medicaginea var. *neglecta*	
	Cullen cinereum	
	Cullen graveolens	
	Cullen leucanthum	
	Cullen leucochaites	
	Cullen martinii	
	Cullen pogonocarpum	
	Desmodiopsis campylocaulon	
	Glycine canescens	
	Glycine falcata	Priority 3
	Gompholobium oreophilum	
	Grona muelleri	
	Indigastrum parviflorum	
	Indigofera colutea	
	Indigofera georgei	
	Indigofera linifolia	
	Indigofera linnaei	
	Indigofera monophylla	
	Indigofera rugosa	
	Indigofera trita subsp. *trita*	
	Isotropis atropurpurea	

	Lotus cruentus	
	Mirbelia viminalis	
	Neptunia dimorphantha	
	Neptunia gracilis forma gracilis	
	Rhynchosia minima	
	Senna artemisioides subsp. *helmsii*	
	Senna artemisioides subsp. *oligophylla*	
	Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	
	Senna artemisioides subsp. *oligophylla x ? S. glutinosa* subsp. *glutinosa*	
	Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	
	Senna artemisioides subsp. x *artemisioides*	
	Senna ferraria	
	Senna glaucifolia	
	Senna glutinosa subsp. *glutinosa*	
	Senna glutinosa subsp. *glutinosa* x	
	Senna glutinosa subsp. *glutinosa* x *S. stricta*	
	Senna glutinosa subsp. *glutinosa* x subsp. x *luerssenii*	
	Senna glutinosa subsp. *pruinosa*	
	Senna glutinosa subsp. x *luerssenii*	
	Senna hamersleyensis	
	Senna notabilis	
	Senna sp. Karijini (M.E. Trudgen 10392)	
	Senna sp. Meekatharra (E. Bailey 1-26)	
	Senna stricta	
	Senna stricta x *S. glutinosa* subsp. *glutinosa*	
	Senna symonii	
	Senna venusta	
	Sesbania cannabina	
	Sesbania formosa	
	Swainsona ? formosa	
	Swainsona formosa	
	Swainsona kingii	
	Swainsona sp.	
	Swainsona thompsoniana	Priority 3
	Tephrosia densa	
	Tephrosia oxalidea	
	Tephrosia rosea (sens. lat.)	
	Tephrosia rosea var. *clementii*	
	Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	
	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	
	Tephrosia sp. clay soils (S. van Leeuwen et al. PBS 0273)	
	Tephrosia sp. Newman (A.A. Mitchell PRP 29)	
	Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	
	Tephrosia supina	
	Tephrosia virens	
	**Vachellia farnesiana*	Weed
	Vigna lanceolata var. *lanceolata*	
	Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	
Goodeniaceae	*Brunonia* sp. Long hairs (D.E. Symon 2440)	
	Dampiera candicans	
	Goodenia berringbinensis	Priority 4

	Goodenia connata	
	Goodenia cusackiana	
	Goodenia forrestii	
	Goodenia heterochila	
	Goodenia lamprosperma	
	Goodenia microptera	
	Goodenia muelleriana	
	Goodenia nuda	Priority 4
	Goodenia pascua	
	Goodenia prostrata	
	Goodenia stellata	
	Goodenia stobbsiana	
	Goodenia triodiophila	
	Scaevola amblyanthera var. *centralis*	
	Scaevola parvifolia subsp. *pilbarae*	
	Scaevola spinescens	
Gyrostemonaceae	*Codonocarpus cotinifolius*	
Haloragaceae	*Gonocarpus ephemerus*	
	Haloragis sp.	
Lamiaceae	*Basilicum polystachyon*	
	Clerodendrum floribundum var. *angustifolium*	
	Prostanthera albiflora	
Lauraceae	*Cassytha capillaris*	
Loranthaceae	*Amyema preissii*	
	Diplatia grandibractea	
	Lysiana casuarinae	
Lythraceae	*Ammannia baccifera*	
	Ammannia multiflora	
	Rotala diandra	
	Rotala mexicana	
Malvaceae	*Abelmoschus ficulneus*	
	Abutilon cunninghamii	
	Abutilon fraseri subsp. *fraseri*	
	Abutilon lepidum	
	Abutilon macrum	
	Abutilon malvifolium	
	Abutilon otocarpum	
	Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266)	
	Abutilon sp.	
	Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	
	Abutilon sp. Pilbara (W.R. Barker 2025)	
	Brachychiton acuminatus	
	Corchorus aestuans	
	Corchorus crozophorifolius	
	Corchorus incanus subsp. *incanus*	
	Corchorus lasiocarpus subsp. *parvus*	
	Corchorus parviflorus	
	Corchorus sidoides subsp. *sidoides*	
	Corchorus sp.	
	Corchorus tectus	
	Corchorus tridens	

	Corchorus trilocularis	
	Gossypium australe	
	Gossypium australe (Burrup Peninsula form)	
	Gossypium robinsonii	
	Hibiscus brachysiphonius	
	Hibiscus burtonii	
	Hibiscus coatesii	
	Hibiscus leptocladus	
	Hibiscus sp. Gardneri (A.L. Payne PRP 1435)	
	Hibiscus sp. Mt Brockman (E. Thoma ET 1354*)*	Priority 1
	Hibiscus sturtii var. *campylochlamys*	
	Hibiscus sturtii var. *grandiflorus*	
	Hibiscus sturtii var. *platychlamys*	
	Hibiscus verdcourtii	
	**Malvastrum americanum*	Weed
	Melhania oblongifolia	
	Seringia ? exastia	
	Seringia exastia	Threatened
	Seringia nephrosperma	
	Seringia sp.	
	Sida ? laevis	
	Sida arenicola	
	Sida arsiniata	
	Sida clementii	
	Sida echinocarpa	
	Sida fibulifera	
	Sida laevis	
	Sida platycalyx	
	Sida rohlenae subsp. *rohlenae*	
	Sida sp.	
	Sida sp. Articulation below (A.A. Mitchell PRP 1605)	
	Sida sp. dark green fruits (S. van Leeuwen 2260)	
	Sida sp. Hamersley Range (K. Newbey 10692)	Priority 3
	Sida sp. L (A.M. Ashby 4202)	
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)	
	Sida sp. Shovelanna Hill (S. van Leeuwen 3842)	
	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	
	Sida spinosa	
	Triumfetta chaetocarpa	
	Triumfetta clementii	
	Triumfetta maconochieana	
	Waltheria indica	
	Waltheria virgata	
Marsileaceae	*Marsilea hirsuta*	
Molluginaceae	*Glinus lotoides*	
	Glinus oppositifolius	
	Trigastrotheca molluginea	
Moraceae	*Ficus brachypoda*	
Myrtaceae	*Corymbia deserticola* subsp. *deserticola*	
	Corymbia ferriticola	
	Corymbia hamersleyana	

	Eucalyptus camaldulensis subsp. *refulgens*	
	Eucalyptus gamophylla	
	Eucalyptus leucophloia subsp. *leucophloia*	
	Eucalyptus victrix	
	Eucalyptus xerothermica	
	Melaleuca argentea	
	Melaleuca glomerata	
Nyctaginaceae	*Boerhavia burbidgeana*	
	Boerhavia coccinea	
	Boerhavia paludosa	
	Boerhavia repleta	
	Boerhavia sp.	
Oleaceae	*Jasminum didymum* subsp. *lineare*	
Onagraceae	*Ludwigia perennis*	
Orobanchaceae	*? Buchnera / Striga sp.*	
	Striga curviflora	
	Striga squamigera	
Pedaliaceae	*Josephinia eugeniae*	
	Josephinia sp. Woodstock (A.A. Mitchell PRP 989)	Priority 1
Phrymaceae	*Mimulus gracilis*	
Phyllanthaceae	*Flueggea virosa* subsp. *melanthesoides*	
	Notoleptopus decaisnei	
	Phyllanthus erwinii	
	Phyllanthus exilis	
	Phyllanthus maderaspatensis	
Plantaginaceae	*Stemodia grossa*	
	Stemodia kingii	
Poaceae	*? Bothriochloa ewartiana*	
	Amphipogon sericeus	
	Aristida ? inaequiglumis	
	Aristida burbidgeae	
	Aristida contorta	
	Aristida holathera var. *holathera*	
	Aristida inaequiglumis	
	Aristida jerichoensis var. *subspinulifera*	Priority 3
	Aristida latifolia	
	Aristida lazaridis	Priority 2
	Aristida obscura	
	Aristida pruinosa	
	Aristida sp.	
	Astrebla elymoides	
	Astrebla lappacea	Priority 3
	Astrebla pectinata	
	Bothriochloa ewartiana	
	**Cenchrus ciliaris*	Weed
	**Cenchrus setiger*	Weed
	Chloris pectinata	
	Chloris pumilio	
	Chrysopogon fallax	
	Cymbopogon ambiguus	
	Cymbopogon obtectus	

	Cymbopogon sp.	
	Cynodon convergens	
	**Cynodon dactylon*	Weed
	Dactyloctenium radulans	
	Dichanthium sericeum	
	Dichanthium sericeum subsp. *humilius*	
	Dichanthium sericeum subsp. *polystachyum*	
	Dichanthium sericeum subsp. *sericeum*	
	Digitaria brownii	
	Digitaria ctenantha	
	**Echinochloa colona*	Weed
	Elytrophorus spicatus	
	Enneapogon avenaceus	
	Enneapogon caerulescens	
	Enneapogon lindleyanus	
	Enneapogon polyphyllus	
	Enneapogon robustissimus	
	Enteropogon ramosus	
	Eragrostis cumingii	
	Eragrostis desertorum	
	Eragrostis elongata	
	Eragrostis eriopoda	
	Eragrostis exigua	
	Eragrostis falcata	
	Eragrostis leptocarpa	
	Eragrostis pergracilis	
	Eragrostis setifolia	
	Eragrostis tenellula	
	Eragrostis xerophila	
	Eriachne aristidea	
	Eriachne benthamii	
	Eriachne ciliata	
	Eriachne flaccida	
	Eriachne mucronata	
	Eriachne mucronata (typical form)	
	Eriachne pulchella	
	Eriachne tenuiculmis	
	Eriochloa pseudoacrotricha	
	Eulalia aurea	
	Eulalia simonii	
	Heteropogon contortus	
	Iseilema dolichotrichum	
	Iseilema macratherum	
	Iseilema membranaceum	
	Iseilema vaginiflorum	
	Mnesithea formosa	
	Panicum decompositum	
	Panicum effusum	
	Panicum laevinode	
	Panicum sp.	
	Paraneurachne muelleri	

	Paspalidium ? basicladum	
	Paspalidium basicladum	
	Paspalidium clementii	
	Paspalidium rarum	
	Perotis rara	
	Schizachyrium fragile	
	Setaria dielsii	
	Setaria surgens	
	**Setaria verticillata*	Weed
	Sporobolus australasicus	
	Themeda sp. Hamersley Station (M.E. Trudgen 11431)	Priority 3
	Themeda sp. Mt Barricade (M.E. Trudgen 2471)	
	Themeda triandra	
	Tragus australianus	
	Triodia angusta	
	Triodia basitricha	Priority 3
	Triodia brizoides	
	Triodia epactia	
	Triodia longiceps	
	Triodia melvillei	
	Triodia wiseana	
	Tripogonella loliiformis	
	Triraphis mollis	
	Urochloa occidentalis	
	Urochloa occidentalis var. *ciliata*	
	Urochloa occidentalis var. *occidentalis*	
	Urochloa piligera	
	Yakirra australiensis var. *australiensis*	
Polygalaceae	*Polygala glaucifolia*	
Polygonaceae	**Rumex vesicarius*	Weed
Portulacaceae	*Calandrinia pumila*	
	Calandrinia sp.	
	Portulaca ? decipiens	
	Portulaca conspicua	
	Portulaca intraterranea	
	Portulaca oleracea	
	Portulaca oleracea/intraterranea	
	**Portulaca pilosa*	Weed
Proteaceae	*Grevillea ? pyramidalis* subsp. *leucadendron*	
	Grevillea berryana	
	Grevillea pyramidalis	
	Grevillea pyramidalis subsp. *leucadendron*	
	Grevillea wickhamii	
	Grevillea wickhamii subsp. *aprica*	
	Grevillea wickhamii subsp. *hispidula*	
	Grevillea wickhamii subsp. *macrodonta*	
	Hakea chordophylla	
	Hakea lorea subsp. *lorea*	
Pteridaceae	*Cheilanthes austrotenuifolia*	
	Cheilanthes brownii	
	Cheilanthes sieberi subsp. *sieberi*	

Rubiaceae	*Dolichocarpa crouchiana*	
	Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	Priority 3
	Psydrax latifolia	
	Psydrax suaveolens	
	Scleromitrion galioides	
	Spermacoce brachystema	
	Synaptantha tillaeacea var. *tillaeacea*	
Santalaceae	*Anthobolus leptomerioides*	
	Santalum lanceolatum	
Sapindaceae	*Alectryon oleifolius* subsp. *oleifolius*	
	Atalaya hemiglauca	
	Dodonaea coriacea	
	Dodonaea lanceolata var. *lanceolata*	
	Dodonaea pachyneura	
	Dodonaea petiolaris	
Scrophulariaceae	*Eremophila ? clarkei*	
	Eremophila ? fraseri subsp. *fraseri*	
	Eremophila cuneifolia	
	Eremophila forrestii	
	Eremophila forrestii subsp. *forrestii*	
	Eremophila forrestii x latrobei	
	Eremophila fraseri subsp. *fraseri*	
	Eremophila lanceolata	
	Eremophila latrobei	
	Eremophila latrobei subsp. *filiformis*	
	Eremophila longifolia	
	Eremophila maculata subsp. *brevifolia*	
	Eremophila magnifica subsp. *magnifica*	Priority 4
Solanaceae	**Datura leichhardtii* subsp. *leichhardtii*	Weed
	Nicotiana benthamiana	
	Nicotiana simulans	
	Solanum cleistogamum	
	Solanum diversiflorum	
	Solanum ferocissimum	
	Solanum gabrielae	
	Solanum horridum	
	Solanum lasiophyllum	
	Solanum piceum	
	Solanum sp.	
Surianaceae	*Stylobasium spathulatum*	
Thymelaeaceae	*Pimelea ammocharis*	
	Pimelea holroydii	
Typhaceae	*Typha domingensis*	
Violaceae	*Afrohybanthus aurantiacus*	
Zygophyllaceae	*Tribulopis angustifolia*	
	Tribulus astrocarpus	
	Tribulus hirsutus	
	Tribulus macrocarpus	
	Tribulus platypterus	
	**Tribulus terrestris*	Weed

Accession Number:	**8698**
Specimen Number	**Formal Identification**
AL02	*Goodenia berringbinensis*
KTF-BB-07	*Hibiscus coatesii*
KTF01-22	*Streptoglossa adscendens*
KTF02-21	*Portulaca pilosa* s. lat.
KTF03-29	*Nicotiana simulans*
KTF03-36	*Aristida jerichoensis* var. *subspinulifera*
KTF04-42	*Streptoglossa adscendens*
KTF07-27	*Streptoglossa* sp. Cracking Clays (S. van Leeuwen et al. BBS 7353)
KTF08-34	*Sida laevis*
KTF09-10	*Acacia macraneura*
KTF10-07	*Aristida inaequiglumis*
KTF10-09	*Euphorbia ferdinandi* var. *ferdinandi*
KTF106-01	*Euphorbia vaccaria* var. *vaccaria*
KTF11-03	*Calandrinia pumila*
KTF11-28	*Josephinia eugeniae*
KTF117-02	*Corchorus lasiocarpus* subsp. *parvus*
KTF118-01	*Aristida inaequiglumis*
KTF12-01	*Acacia macraneura*
KTF12-17	*Aristida ?inaequiglumis*
KTF122-08	*Acacia dictyophleba*
KTF17-22	*Eriochloa pseudoacrotricha*
KTF19-10	*Themeda triandra*
KTF22-02	*#Streptoglossa* sp. Cracking Clays (S. van Leeuwen et al. BBS 7353)
KTF23-17	*Portulaca pilosa s. lat.*
KTF32-19	*Themeda triandra*
KTF36-08	*Aristida inaequiglumis*
KTF37-01	*Themeda triandra*
KTF37-06	*Desmodium muelleri*
KTF37-21	*Bothriochloa ewartiana*
KTF37-30	*Striga* sp./*Buchnera* sp.
KTF39-05	*Polymeria* sp.
KTF49-01	*Aristida inaequiglumis*
KTF50-32	*Tephrosia rosea s. lat.*
KTF52-16	*Josephinia* sp. *Woodstock (A.A. Mitchell PRP 989)*
KTF59-09A	*Streptoglossa* sp. Cracking Clays (S. van Leeuwen et al. BBS 7353)
KTF62-02	*Lipocarpha microcephala*
KTF68-09	*Sida* sp. (aff. *fibulifera)*
KTF70-09	*Euphorbia coghlanii*
KTF70-12	*Euphorbia inappendiculata* var. *queenslandica*
KTF73-02	*Euphorbia inappendiculata* var. *inappendiculata*
KTF73-10	*Euphorbia coghlanii*
KTFPL14a	*Marsilea hirsuta*
KTFPL14b	*Marsilea hirsuta*
KTFPL16	*Fimbristylis phaeoleuca*
KTFPL35	*Grevillea wickhamii* subsp. *macrodonta*
KTFPL38	*Hibiscus* sp. Mt Brockman (E. Thoma ET 1354)
KTFREL01-10	*Euphorbia ferdinandi* var. *ferdinandi*
KTFREL04-15	*Nicotiana simulans*
KTFREL05-38	*Themeda triandra*
KTFREL06-21	*Themeda* sp. Hamersley Station (M.E. Trudgen MET 11431)
KTFREL07-09	*Nicotiana simulans*
KTFREL11-08	*Streptoglossa* sp. Cracking Clays (S. van Leeuwen et al. BBS 7353)

Appendix 10

Flora Site Data and Photographs

Site **KTF01**

Described by BRMMG **Date** 19/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 572676 mE, 7516390 mN

Habitat Plain.

Soil Dark reddish brown (2.5YR 2.5/4) sandy clay loam.

Rock Type Ironstone, quartz.

Vegetation *Acacia aptaneura*, (*A. pruinocarpa*) low open woodland over *Hibiscus burtonii* scattered low shrubs over *Triodia epactia* hummock grassland over *Goodenia muelleriana, G. microptera* scattered herbs.

Veg Condition Excellent: very occasional **Bidens*.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia aptaneura,Acacia pruinocarpa*\^tree\6\r;M1 ^*Hibiscus burtonii*\^shrub\1\bi;G1 ^*Triodia epactia*\^hummock grass\1\c;G2 ^*Goodenia muelleriana,G. microptera*\^forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40	KTF01-38, 37B	
Acacia aptaneura	3	250	KTF01-04	
Acacia pruinocarpa	1.5	400		
Acacia tetragonophylla	0.1	30		
Areocleome oxalidea	0.1	10	KTF01-12	
Aristida contorta	0.1	40	KTF01-20	
Arivela viscosa	0.1	12		
Bidens bipinnata	0.1	25	KTF01-26	N=15.
Blumea tenella	0.1	20	KTF01-07	
Brunonia sp. Long hairs (D.E. Symon 2440) PN	0.1	40	KTF01-16	
Bulbostylis barbata	0.1	4		
Bulbostylis turbinata	0.1	15	KTF01-29	
Calandrinia pumila	0.1	4	KTF01-24	Formal ID by M. Hislop (WAH)
Calandrinia sp.	0.1	2	KTF01-09	Sterile.
Cheilanthes sieberi subsp. *sieberi*	0.1	20	KTF01-08	
Chloris pectinata	0.1	30	KTF01-30	
Chrysopogon fallax	0.1	100		
Cucumis variabilis	0.1	40		
Dysphania kalpari	0.1	15	KTF01-41	
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	40	KTF01-14	
Eragrostis cumingii	0.1	20		
Eragrostis pergracilis	0.1	20	KTF01-02	
Eriachne aristidea	0.1	6		
Eriachne pulchella	0.1	15		
Euphorbia australis var. *hispidula*	0.1	5	KTF01-28	
Euphorbia drummondii	0.1	4	KTF01-13	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena kanisii	0.1	25	KTF01-27	
Goodenia microptera	0.1	35	KTF01-36	
Goodenia muelleriana	0.1	30	KTF01-06	
Goodenia nuda	0.1	35	KTF01-03	N=120.
Goodenia prostrata	0.1	10	KTF01-11	
Hibiscus burtonii	0.1	20		
Iseilema membranaceum	0.1	12	KTF01-34	

Name	Cover (%)	Height (cm)	Specimen	Notes
Nicotiana simulans	0.1	60	KTF01-25	Formal ID by M. Hislop (WAH)
Paspalidium clementii	0.1	50	KTF01-23	
Paspalidium rarum	0.1	12	KTF01-01	
Peripleura arida	0.1	30	KTF01-15	
Perotis rara	0.1	20		
Polycarpaea corymbosa var. *corymbosa*	0.1	7		
Polygala glaucifolia	0.1	5	KTF01-10	
Portulaca oleracea/intraterranea	0.1	5		
Psydrax latifolia	0.1	80		
Pterocaulon sphacelatum	0.1	15	KTF01-40	
Ptilotus auriculifolius	0.1	30		
Ptilotus exaltatus	0.1	15		
Ptilotus fusiformis	0.1	45		
Ptilotus gaudichaudii	0.1	35		
Ptilotus helipteroides	0.1	25		
Ptilotus polystachyus	0.1	50	KTF01-31	
Ptilotus roei	0.1	5	KTF01-35	
Ptilotus schwartzii var. *schwartzii*	0.1	60		
Ptilotus xerophilus	0.1	40	KTF01-32	
Roebuckiella similis	0.1	15	KTF01-33	
Schizachyrium fragile	0.1	30		
Senna glaucifolia	0.1	45		
Senna glutinosa subsp. x *luerssenii*	0.1	10	KTF01-39a	Juvenile.
Senna notabilis	0.1	10		
Sesbania cannabina	0.1	50		
Sida platycalyx	0.1	20	KTF01-37	
Solanum ferocissimum	0.1	40	KTF01-17	
Spermacoce brachystema	0.1	20	KTF01-19	
Sporobolus australasicus	0.1	15		
Streptoglossa adscendens	0.1	30	KTF01-22	Formal ID by M. Hislop (WAH).
Streptoglossa bubakii	0.1	15	KTF01-21	
Synaptantha tillaeacea var. *tillaeacea*	0.1	6	KTF01-18	
Trachymene oleracea subsp. *oleracea*	0.1	20		
Triodia epactia	40	50	KTF01-05	
Vincetoxicum lineare	0.1	60		

Site **KTF02**
Described by BRMMG **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 572047 mE, 7518263 mN
Habitat Plain.
Soil Dark reddish brown (2.5YR 3/4) clay loam.
Rock Type Ironstone.
Vegetation *Acacia pruinocarpa, A. aptaneura* scattered low trees *over Eremophila fraseri* subsp. *fraseri* scattered shrubs over *Triodia epactia* scattered hummock grasses.
Veg Condition Excellent: very occasional **Bidens*.
Fire Age No sign of recent fire.
Notes U1+ ^A*cacia pruinocarpa,*^A*cacia aptaneura*\^tree\6\bi;M1 ^*Eremophila fraseri* subsp. *fraseri*\^shrub\3\bi;G1 ^*Triodia epactia*\^hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	6		
Acacia aptaneura	0.5	400	KTF01-04=	
Acacia pruinocarpa	1	450		
Acacia tetragonophylla	0.1	230		
Areocleome oxalidea	0.1	5	KTF01-12=	
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	20	KTF02-14	
Arivela viscosa	0.1	20		
Bidens bipinnata	0.1	30	KTF01-26=	N=20.
Boerhavia coccinea	0.1	10	KTF02-03	
Bulbostylis barbata	0.1	3		
Cucumis variabilis	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	25		
Digitaria ctenantha	0.1	35	KTF02-10	
Dysphania kalpari	0.1	3	KTF01-41=	
Enneapogon polyphyllus	0.1	30	KTF02-04	
Eragrostis cumingii	0.1	20	KTF02-08	
Eragrostis pergracilis	0.1	12	KTF01-02=	
Eremophila fraseri subsp. *fraseri*	0.25	110		
Eremophila latrobei subsp. *filiformis*	0.1	110	KTF02-18	
Eriachne aristidea	0.1	20	KTF02-01	
Euphorbia ferdinandii var. *ferdinandii*	0.1	15	KTF02-06	Formal ID by M. Hislop (WAH) KTF10-09= or REL01-10=
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Grevillea berryana	0.1	100		
Hibiscus burtonii	0.1	10		
Maireana planifolia x *villosa*	0.1	12	kTF02-20	
Neptunia dimorphantha	0.1	10	KTF02-09	
Panicum effusum	0.1	25	KTF02-11	
Paspalidium clementii	0.1	20	KTF02-07	
Perotis rara	0.1	10		
Phyllanthus erwinii	0.1	15	KTF02-13	
Portulaca pilosa s. lat	0.1	12	KTF02-21	Formal ID by M. Hislop (WAH).
Portulaca oleracea/intraterranea	0.1	3		
Ptilotus exaltatus	0.1	5		
Ptilotus gaudichaudii	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus roei	0.1	10	KTF02-02	
Ptilotus schwartzii var. *schwartzii*	0.1	40		
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.1	170		N=1.
Sclerolaena cornishiana	0.1	30	KTF02-17	
Senna artemisioides subsp. oligophylla x subsp. helmsii	0.1	10	KTF02-19	
Senna notabilis	0.1	10		
Sida platycalyx	0.1	3		
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF02-12	
Spermacoce brachystema	0.1	20	KTF01-19=	
Tribulus astrocarpus	0.1	5		
Triodia epactia	1	30		Sterile.
Triodia melvillei	0.1	40	KTF02-15	
Tripogonella loliiformis	0.1	30	KTF02-05	
Urochloa occidentalis var. *occidentalis*	0.1	25	KTF02-16	

Site **KTF03**

Described by BRMMG **Date** 20/4/2020

Type Quadrat 62.5 x 40 m

Central Coord 50 569487 mE, 7524481 mN

Habitat Plain.

Soil Dark reddish brown (2.5YR 2.5/4) sandy clay loam.

Rock Type Ironstone; only a small amount of gravel present, no rocks as such.

Vegetation *Acacia aptaneura* low woodland over *Grevillea berryana* scattered tall shrubs over *Eremophila forrestii* subsp. *forrestii* scattered shrubs over *Triodia melvillei* scattered hummock grasses over *Eriachne benthamii*, (*Chrysopogon fallax*) open tussock grassland over *Eragrostis pergracilis, Eragrostis exigua* very open bunch grassland and *Portulaca oleracea*, *Spermacoce brachystema*, **Bidens bipinnata*, *Calandrinia* sp., (*Blumea tenella*) very open herbland.

Veg Condition Good to Very Good: small patches of dense **Bidens bipinnata*, **Cenchrus*.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia aptaneura*\^tree\6\i;M1 ^*Grevillea berryana*\^shrub\4\bi;M2 *Eremophila forrestii* subsp. *forrestii*\shrub\3\bi;G1 ^*Eriachne benthamii*,*Chrysopogon fallax*\^tussock grass\2\i;G2 *Triodia melvillei*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia aptaneura	25	600	KTF03-09	
Alternanthera angustifolia	0.1	20	KTF03-11	
Areocleome oxalidea	0.1	10		
Aristida jerichoensis var. *subspinulifera*	0.1	50	KTF03-36	N=10. Formal ID by M. Hislop (WAH).
Aristida contorta	0.1	40	KTF03-51	
Aristida obscura	0.1	40	KTF03-35	
Arivela viscosa	0.1	10		
Bidens bipinnata	2	35	N=2000.	
Blumea tenella	1	20	KTF03-10	
Boerhavia coccinea	0.1	30	KTF03-5,24	
Bulbostylis barbata	0.1	12		
Bulbostylis turbinata	0.1	15	KTF03-03	
Calandrinia pumila	0.1	3	KTF03-02	Formal ID by M. Hislop (WAH)
Calandrinia sp.	2	3	KTF01-09=	Sterile.
Cenchrus ciliaris	0.1	40	N=10.	
Centipeda minima subsp. *macrocephala*	0.1	10	KTF03-17	
Cheilanthes sieberi subsp. *sieberi*	0.1	30	KTF01-08=	
Chloris pectinata	0.1	40	KTF03-44	
Chrysopogon fallax	0.5	140		
Corchorus tridens	0.1	15	KTF03-47	
Cucumis picrocarpus	0.1	40	KTF03-38	12 large plants.
Cucumis variabilis	0.1	20		
Cyperus iria	0.1	30	KTF03-40	
Datura leichhardtii subsp. *leichhardtii*	0.1	20	KTF03-31	N=10. Also KTF03-33.
Dichanthium sericeum subsp. *humilius*	0.1	45		
Digitaria brownii	0.1	40	KTF03-26	
Digitaria ctenantha	0.1	40	KTF03-27	
Dysphania glomulifera subsp. *eremaea*	0.1	10	KTF03-21	
Dysphania melanocarpa forma	0.1	25	KTF03-07	

Name	Cover (%)	Height (cm)	Specimen	Notes
melanocarpa				
Dysphania rhadinostachya subsp. inflata	0.1	30	KTF03-43	
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	40	KTF01-14=	
Eragrostis cumingii	0.1	20	KTF03-15	
Eragrostis exigua	1	20	KTF03-12	
Eragrostis leptocarpa	0.1	35	KTF03-23	
Eragrostis pergracilis	4	20	KTF01-02=	
Eremophila forrestii subsp. *forrestii*	1	120		
Eremophila longifolia	0.1	20		
Eriachne benthamii	25	80	KTF03-4,52	
Eriachne mucronata	0.1	50	KTF03-25	Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	20		
Euphorbia ferdinandii var. *ferdinandii*	0.1	12	KTF03-19	Formal ID by M. Hislop (WAH) KTF10-09= or REL01-10=
Euphorbia drummondii	0.1	15	KTF03-13	
Evolvulus alsinoides var. villosicalyx	0.1	20		
Gomphrena cunninghamii	0.1	10		
Gomphrena lanata	0.1	10	KTF03-22	
Goodenia muelleriana	0.1	30	KTF01-06=	
Goodenia nuda	0.1	40	N=45.	
Goodenia prostrata	0.1	20		
Grevillea berryana	1	350		
Hibiscus burtonii	0.1	40		
Indigofera georgei	0.1	100	KTF03-34	
Indigofera linifolia	0.1	20	KTF03-32	
Indigofera linnaei	0.1	20	KTF03-08	
Iseilema membranaceum	0.1	25	KTF03-45	
Maireana planifolia x villosa	0.1	40	KTF03-20	Also KTF03-50.
Malvastrum americanum	0.1	40	N=10.	
Nicotiana simulans	0.1	50	KTF03-29	Formal ID by M. Hislop (WAH)
Panicum effusum	0.1	20	REL01-13=	
Paspalidium rarum	0.1	20	KTF03-16	
Perotis rara	0.1	15		
Phyllanthus erwinii	0.1	20	KTF03-41	
Polycarpaea corymbosa var. *corymbosa*	0.1	15		
Portulaca oleracea/intraterranea	2	10		
Psydrax latifolia	0.1	110		
Psydrax suaveolens	0.1	150	KTF03-30	
Ptilotus exaltatus	0.1	5		
Ptilotus gaudichaudii	0.1	45	KTF03-06	
Ptilotus helipteroides	0.1	30		
Ptilotus polystachyus	0.1	20		
Ptilotus roei	0.1	5	KTF02-02=	
Ptilotus xerophilus	0.1	45	KTF03-01	
Rhodanthe charsleyae	0.1	8	KTF03-33B	
Rhynchosia minima	0.1	20	KTF03-39	
Roebuckiella similis	0.1	25	KTF03-18	
Rostellularia adscendens var. *clementii*	0.1	20	KTF03-42	
Senna notabilis	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Sida platycalyx	0.1	20		
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF03-14	
Solanum piceum	0.1	50	KTF03-37	
Spermacoce brachystema	2	20	KTF01-19=	
Streptoglossa bubakii	0.1	20	KTF01-21=	
Swainsona ? formosa	0.1	15	KTF03-49	Inadequate material.
Trichodesma zeylanicum var. zeylanicum	0.1	20		
Triodia melvillei	0.25	120	KTF03-28	
Triodia wiseana	0.1	40	KTF03-46	
Urochloa occidentalis var. *ciliata*	0.1	30	KTF03-48	

Site **KTF04**

Described by BRMMG **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 568617 mE, 7529062 mN

Habitat Plain.

Soil Dark reddish brown (2.5YR 2.5/4) cracking clay.

Rock Type N/A.

Vegetation **Vachellia farnesiana, Acacia victoriae* scattered shrubs over **Cenchrus setiger, *C. ciliaris,* (*Chrysopogon fallax*) very open tussock grassland over *Urochloa occidentalis* var. *ciliata,* (*Chloris pectinata, Dactyloctenium radulans, Dichanthium sericeum* subsp. *humilius, Iseilema dolichotrichum*) closed annual grassland.

Veg Condition Good to Very Good: scattered shrubs of **Vachellia farnesiana*, and other weeds also present.

Fire Age No sign of recent fire.

Notes Site is very dry and difficult to find specimens with fruit; **Cenchrus* cover also difficult to assess.
M1 ^*Vachellia farnesiana*,^*Acacia victoriae*\^shrub\4\bi;G1+ ^*Cenchrus setiger*,^*Cenchrus ciliaris,Chrysopogon fallax*\^tussock grass\2\r;G2 *Urochloa occidentalis* var. *ciliata,Chloris pectinata,Dactyloctenium radulans,Dichanthium sericeum* subsp. *humilius,Iseilema dolichotrichum*\other grass\1\d.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	20	KTF04-08	
Acacia victoriae subsp. victoriae	0.5	120	KTF04-20	
Astrebla elymoides	0.1	50	KTF04-38	
Astrebla lappacea	0.1	50	KTF04-41	N=3.
Astrebla pectinata	0.1	40	KTF04-14	
Boerhavia burbidgeana	0.1	20		
Boerhavia coccinea	0.1	30	KTF04-39	
Bothriochloa ewartiana	0.1	70	KTF04-17	
Cenchrus ciliaris	2	50	N=300.	
Cenchrus setiger	2	50	N=300.	
Chloris pectinata	3	40	KTF04-2,34	
Chrysopogon fallax	1	110	Grazed.	
Cullen cinereum	0.1	20	KTF04-11	
Cullen graveolens	0.1	30	KTF04-03	
Cynodon convergens	0.1	40	KTF04-36	
Dactyloctenium radulans	3	20		
Desmodiopsis campylocaulon	0.1	30	KTF04-12	N=3.
Dichanthium sericeum subsp. *humilius*	3	45		
Enneapogon avenaceus	0.1	35	KTF04-21	Also KTF04-45.
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	50	KTF04-19	Also KTF04-29.
Eragrostis setifolia	0.1	45	KTF04-18	Also KTF04-22.
Indigofera linifolia	0.1	30	KTF04-06	
Ipomoea polymorpha	0.1	12	KTF04-13	
Iseilema dolichotrichum	0.5	20	KTF04-16	
Iseilema macratherum	0.1	45	KTF04-16B	
Lotus cruentus	0.1	10	KTF04-43	N=1.
Maireana villosa	0.1	10	KTF04-28	
Malvastrum americanum	0.1	20	N=20.	
Neptunia dimorphantha	0.1	35	KTF04-37	

Name	Cover (%)	Height (cm)	Specimen	Notes
Panicum laevinode	0.1	45	KTF04-4,40	
Polymeria longifolia	0.1	20	KTF04-35	
Portulaca intraterranea	0.1	20	KTF04-15	
Portulaca oleracea/intraterranea	0.1	15	KTF04-46	Seeds ~1mm long, distinctly nippled, black
Ptilotus aervoides	0.1	5		
Ptilotus exaltatus	0.1	5		
Ptilotus gomphrenoides	0.1	6	KTF04-01	
Ptilotus roei	0.1	5		
Rhynchosia minima	0.1	30		
Rostellularia adscendens var. *clementii*	0.1	15	KTF04-09	
Sclerolaena bicornis var. bicornis	0.1	40	KTF04-32	
Sclerolaena cornishiana	0.1	25	KTF04-44	
Sclerolaena costata	0.1	15	KTF04-33	
Sida fibulifera	0.1	30		
Sporobolus australasicus	0.1	20		
Streptoglossa adscendens	0.1	12	KTF04-42	N=5. Formal ID by M. Hislop (WAH).
Tragus australianus	0.1	30	KTF04-23	
Trianthema triquetrum	0.1	10	KTF04-31, 25	N=5.
Tribulus terrestris	0.1	15	KTF04-24	
Urochloa occidentalis var. *ciliata*	80	40	KTF04-7,27	
Vachellia farnesiana	0.5	190		N=15.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	30	KTF04-05	N=15.

Site **KTF05**
Described by RM/SY **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 570269 mE, 7522189 mN
Habitat Plain, sloping very gently to W; between Mulga groves.
Soil Dark reddish brown silty clay.
Rock Type Scattered ironstone.
Vegetation *Acacia macraneura, Grevillea berryana* scattered low trees over *A. tetragonophylla* scattered tall shrubs over *Aristida contorta* scattered bunch grasses and *Ptilotus roei*, (*Areocleome oxalidea*) very open herbland.
Veg Condition Very Good: some cattle scats.
Fire Age No sign of recent fire.
Notes Naturally low species richness. U1+ ^*Acacia macraneura*,^*Grevillea berryana*\^tree\6\bi;M1 ^*Acacia tetragonophylla*\^shrub\4\bi;G1 *Aristida contorta*\other grass\1\bi;G2 ^*Ptilotus roei,Areocleome oxalidea*\^forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia macraneura	1	500	KTF05-04	Formal ID by M. Hislop (WAH) KTF12-01=
Acacia tetragonophylla	0.5	250	KTF05-14	
Areocleome oxalidea	0.5	15	KTF05-01	
Aristida contorta	2	30	KTF05-07	
Boerhavia coccinea	0.1	20	KTF05-05	
Dysphania sp.	0.1	5	KTF05-25	Sterile, seedling.
Enneapogon polyphyllus	0.1	10	KTF05-06	
Eriachne benthamii	0.1	30	KTF05-19	
Eriachne pulchella	0.1	5	KTF05-12	
Euphorbia ferdinandii var. *ferdinandii*	0.1	3	KTF05-09	Formal ID by M. Hislop (WAH) KTF10-09= or REL01-10=
Evolvulus alsinoides	0.1	3	KTF05-21	Sterile.
Goodenia prostrata	0.1	5	KTF05-11	
Grevillea berryana	0.5	350	KTF05-16	
Lepidium echinatum	0.1	10	KTF05-24	
Maireana planifolia x villosa	0.1	20	KTF05-18	
Paspalidium rarum	0.1	20	KTF05-13	
Portulaca intraterranea	0.1	3	KTF05-17	
Ptilotus gaudichaudii	0.1	30	KTF05-08	
Ptilotus helipteroides	0.1	10	KTF05-23	
Ptilotus roei	1	15	KTF05-03	
Ptilotus schwartzii var. *schwartzii*	0.1	50	KTF05-15	
Sida platycalyx	0.1	5	KTF05-10	
Solanum piceum	0.1	10	KTF05-20	
Tribulus astrocarpus	0.1	10	KTF05-02	

Site **KTF06**
Described by RM/SY **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 570275 mE, 7521085 mN
Habitat Plain, sloping very gently to W; between Mulga groves.
Soil Dark reddish brown silty clay.
Rock Type N/A.
Vegetation *Acacia macraneura*, (*Grevillea berryana*) scattered low trees over *A. tetragonophylla* scattered tall shrubs over *Aristida contorta* scattered bunch grasses.
Veg Condition Very Good: cattle scats; occasional weeds.
Fire Age No sign of recent fire.
Notes U1+ ^A*cacia macraneura,Grevillea berryana*\^tree\6\bi;M1 ^A*cacia tetragonophylla*\^shrub\4\bi;G1 ^*Aristida contorta*\^other grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia macraneura	1.5	500	KTF05-04=	Formal ID by M. Hislop (WAH) KTF12-01=.
Acacia tetragonophylla	0.5	350	KTF05-14=	
Areocleome oxalidea	0.1	15	KTF05-01=	
Aristida contorta	2	30	KTF05-07=	
Bidens bipinnata	0.1	20	N=3.	
Boerhavia coccinea	0.1	20	KTF05-05=	
Bulbostylis turbinata	0.1	5	KTF06-14	
Cheilanthes sieberi subsp. *sieberi*	0.1	10	KTF06-12	
Cucumis picrocarpus	0.1	10	KTF06-08	
Eragrostis pergracilis	0.1	15	KTF06-04	
Eremophila fraseri subsp. *fraseri*	0.1	110	KTF06-02	
Eriachne pulchella	0.1	10	KTF06-03	
Euphorbia ferdinandii var. ferdinandii	0.1	7	KTF05-09=	Formal ID by M. Hislop (WAH)KTF10-09= or REL01-10=
Evolvulus alsinoides	0.1	3	KTF05-21=	Sterile.
Goodenia microptera	0.1	5	KTF06-20	
Goodenia muelleriana	0.1	7	KTF06-01	
Goodenia nuda	0.1	20	KTF06-06	
Grevillea berryana	0.5	350	KTF05-16=	
Iseilema membranaceum	0.1	10	KTF06-13	
Lepidium echinatum	0.1	10	KTF05-24=	
Maireana planifolia x villosa	0.1	30	KTF06-07	
Paspalidium rarum	0.1	20	KTF05-13=	
Portulaca intraterranea	0.1	3	KTF05-17=	
Ptilotus gaudichaudii	0.1	30	KTF05-08=	
Ptilotus helipteroides	0.1	10	KTF05-23=	
Ptilotus roei	0.1	15	KTF05-03=	
Ptilotus schwartzii var. *schwartzii*	0.1	60	KTF05-15=	
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.1	170	KTF06-19	N=1.
Senna artemisioides subsp. *oligophylla x subsp. helmsii*	0.1	15	KTF06-10	
Senna glaucifolia	0.1	100	KTF06-16	
Sida platycalyx	0.1	5	KTF05-10=	
Sida sp.	0.1	5	KTF06-15	Poor material; juvenile.
Solanum lasiophyllum	0.1	30	KTF06-18	

Name	Cover (%)	Height (cm)	Specimen	Notes
Spermacoce brachystema	0.1	10	KTF06-11	
Tribulus astrocarpus	0.1	10	KTF05-02=	

Site **KTF07**
Described by RM/SY **Date** 20/4/2020
Type Quardat 50 x 50 m
Central Coord 50 568908 mE, 528101 mN
Habitat Cracking clay plain; scalded.
Soil Dark reddish brown silty clay; cracking.
Rock Type N/A.
Vegetation **Vachellia farnesiana* scattered tall shrubs over *Chrysopogon fallax* very open tussock grassland over *Urochloa occidentalis* var. *ciliata,* (*Dactyloctenium radulans, Chloris pectinata*) annual grassland and *Cullen cinereum*, (*Trianthema triquetrum*, *Boerhavia burbidgeana*) very open herbland.
Veg Condition Very Good: scattered weeds; signs of cattle.
Fire Age No sign of recent fire.
Notes Very dry, most species dying off. M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1+ ^*Chrysopogon fallax*\^tussock grass\2\r;G2 *Urochloa occidentalis* var. *ciliata,Dactyloctenium radulans,Chloris pectinata,Cullen cinereum,Trianthematriquetrum*\other grass,forb\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia synchronicia	0.1	50	KTF07-18	
Arivela viscosa	0.1	70	KTF07-35	
Boerhavia burbidgeana	0.5	90	KTF07-14	
Cenchrus ciliaris	0.1	30		N=200.
Cenchrus setiger	0.1	40		N=1.
Chloris pectinata	1	50	KTF07-20	
Chrysopogon fallax	7	110	KTF07-01	
Convolvulus clementii	0.1	50	KTF07-7,32	
Cucumis picrocarpus	0.1	30	KTF07-17	
Cullen cinereum	2	20	KTF07-05	
Cullen graveolens	0.1	15	KTF07-36	
Dactyloctenium radulans	5	30	KTF07-02	
Dichanthium sericeum subsp. *humilius*	0.1	40	KTF07-21	
Dysphania rhadinostachya subsp. *inflata*	0.1	10	KTF07-15	
Enneapogon polyphyllus	0.1	10	KTF07-30	
Euphorbia ferdinandii var. *ferdinandii*	0.1	5	KTF07-19	Formal ID by M. Hislop (WAH) KTF10-09= or REL01-10=
Indigofera linifolia	0.1	30	KTF07-28	
Indigofera trita subsp. *trita*	0.1	30	KTF07-33	
Ipomoea lonchophylla	0.1	10	KTF07-32A	
Iseilema macratherum	0.1	60	KTF07-34	
Lotus cruentus	0.1	10	KTF07-22	
Maireana planifolia x *villosa*	0.1	20	KTF07-25	
Malvastrum americanum	0.1	30	N=10.	
Portulaca oleracea	2	30	KTF07-03	
Ptilotus aervoides	0.1	5	KTF07-10	
Ptilotus exaltatus	0.1	5	KTF07-13	
Ptilotus helipteroides	0.1	10	KTF07-11	
Ptilotus xerophilus	0.1	40	KTF07-9,29	
Rhynchosia minima	0.1	7	KTF07-06	
Salsola australis	0.1	70		
Sclerolaena cornishiana	0.1	20	KTF07-12	
Sclerolaena costata	0.1	30	KTF07-24a	
Sida fibulifera	0.1	15	KTF07-24b	'sens. lat.'

Name	Cover (%)	Height (cm)	Specimen	Notes
Sporobolus australasicus	0.1	10		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	15	KTF07-27	Formal ID by M. Hislop (WAH).
Tragus australianus	0.1	15	KTF07-26	
Trianthema triquetrum	1	20	KTF07-08	
Urochloa occidentalis var. *ciliata*	30	40	KTF07-04	
Vachellia farnesiana	1.5	250		N=23.

Site **KTF08**
Described by RM/SY **Date** 20/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 568870 mE, 7530919 mN
Habitat Cracking clay plain.
Soil Dark reddish brown light clay; self-mulching.
Rock Type N/A.
Vegetation *Astrebla lappacea*, (*Themeda* sp. Hamersley Station (M.E. Trudgen 11431)) tussock grassland.
Veg Condition Very Good: signs of cattle; old track running through.
Fire Age No sign of recent fire.
Notes G1+ ^*Astrebla lappacea*,*Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\^tussock grass\2\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	20	KTF08-4,36	
Acacia victoriae subsp. *victoriae*	0.1	100	KTF08-42	
Alysicarpus muelleri	0.1	40	KTF08-17	Also KTF08-20.
Astrebla lappacea	60	80	KTF08-1,27	
Boerhavia burbidgeana	0.1	40	KTF07-14=	
Chloris pectinata	0.1	20	KTF07-20=	
Corchorus tridens	0.1	40	KTF08-22	
Crotalaria dissitiflora subsp. *benthamiana*	0.1	45	KTF08-10	
Cucumis picrocarpus	0.1	50	KTF08-39	
Cullen graveolens	0.1	30	KTF08-29	
Dactyloctenium radulans	0.1	25	KTF07-02=	
Desmodiopsis campylocaulon	0.1	30	KTF08-41	
Dichanthium sericeum subsp. *humilius*	0.1	30	KTF08-38	
Enneapogon caerulescens	0.1	15	KTF08-11	
Enneapogon polyphyllus	0.1	30	KTF08-21	
Eragrostis pergracilis	0.1	7	KTF08-09	
Euphorbia trigonosperma	0.1	20	KTF08-26	Match to WAH ID.
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Goodenia pascua	0.1	25	KTF08-37	
Heliotropium conocarpum	0.1	20	KTF08-18	
Hibiscus verdcourtii	0.1	50	KTF08-12	
Indigastrum parviflorum	0.1	40	KTF08-07	
Indigofera linifolia	0.1	40	KTF08-31	
Indigofera trita subsp. *trita*	0.1	30	KTF08-40	
Ipomoea lonchophylla	0.1	50	KTF08-05	
Iseilema macratherum	0.1	50	KTF08-28	
Operculina aequisepala	0.1	30	N=1.	
Panicum decompositum	0.1	40	KTF08-30	Also KTF08-43.
Panicum laevinode	0.1	60	KTF08-35	
Phyllanthus maderaspatensis	0.1	30	KTF08-3,25	
Polymeria longifolia	0.1	30	KTF08-06	
Portulaca intraterranea	0.1	15	KTF08-15	
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus carinatus	0.1	20	KTF08-32	
Ptilotus exaltatus	0.1	20		
Rhynchosia minima	0.1	30		
Sida laevis	0.1	30	KTF08-34	Formal ID by M. Hislop (WAH).
Sida laevis	0.1	20	KTF08-13	Formal ID by

Name	Cover (%)	Height (cm)	Specimen	Notes
				M. Hislop (WAH) KTF08-34=
Sida fibulifera	0.1	30	KTF08-24	'sens. lat.'
Sida spinosa	0.1	30	KTF08-8,23	
Sporobolus australasicus	0.1	25		
Streptoglossa bubakii	0.1	10	KTF08-19	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	2	120	KTF08-02	
Trianthema triquetrum	0.1	10	KTF07-08=	
Urochloa occidentalis var. *ciliata*	0.1	30	KTF08-16	
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF08-33	
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	15	KTF08-14	

Site **KTF09**
Described by PL/AL **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 574095 mE, 7512912 mN
Habitat Flat plain.
Soil Reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *A. pruinocarpa*, (*A. aptaneura, A.* macraneura*, A. ? aneura, Corymbia hamersleyana*) low woodland over *Senna glutinosa* subsp. x *luerssenii* scattered shrubs over *Triodia epactia*, (*T. melvillei*) open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.
Veg Condition Very Good: cattle tracks and scats; scattered weeds.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia pruinocarpa,Acacia aptaneura,Acacia* macraneura*,Acacia ? aneura,Corymbia hamersleyana*\^tree\6\i;M1 ^*Senna glutinosa* subsp. x *luerssenii*\^shrub\3\bi;G1 ^*Triodia epactia,Triodia melvillei*\^hummock grass\1\i;G2 *Chrysopogon fallax*\tussock grass\2\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30		
Acacia macraneura	2	750	KTF09-10	Formal ID by M. Hislop (WAH)
Acacia aneura / aptaneura	1	500	KTF09-09	
Acacia aptaneura	2.5	850	KTF09-01	
Acacia pruinocarpa	11	700		
Acacia sclerosperma subsp. *sclerosperma*	0.1	400		
Aristida contorta	0.1	20		
Arivela viscosa	0.1	25		
Austrobryonia pilbarensis	0.1	10	KTF09-14	
Bidens bipinnata	0.1	15		N=35.
Blumea tenella	0.1	10	KTF09-06	
Bulbostylis barbata	0.1	5		
Bulbostylis turbinata	0.1	10		
Cheilanthes sieberi subsp. *sieberi*	0.1	15		
Chrysopogon fallax	0.5	160		
Corymbia hamersleyana	0.5	500		
Cucumis variabilis	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	20		
Digitaria brownii	0.1	40		
Duperreya commixta	0.1	20		
Dysphania kalpari	0.1	10	KTF09-11	
Enchylaena tomentosa var. *tomentosa*	0.1	30		
Enneapogon caerulescens	0.1	20		
Enneapogon polyphyllus	0.1	20		
Eragrostis cumingii	0.1	15		
Eragrostis pergracilis	0.1	15	KTF09-03	
Eremophila forrestii subsp. *forrestii*	0.1	100		
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	10		
Euphorbia australis var. *hispidula*	0.1	5	KTF09-02	
Euphorbia boophthona	0.1	25		
Euphorbia drummondii	0.1	15	KTF09-08	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia forrestii	0.1	3		
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	2		
Goodenia nuda	0.1	40		N=10.
Hibiscus burtonii	0.1	7		
Indigofera georgei	0.1	10		
Iseilema membranaceum	0.1	20	KTF09-07	
Maireana planifolia x *villosa*	0.1	60	KTF09-16	
Maireana villosa	0.1	40		
Panicum effusum	0.1	20		
Paraneurachne muelleri	0.1	3		
Paspalidium basicladum	0.1	40	KTF09-04	
Paspalidium clementii	0.1	20	KTF09-05	
Paspalidium rarum	0.1	15	KTF09-13	
Perotis rara	0.1	20		
Phyllanthus erwinii	0.1	5		
Polycarpaea corymbosa var. *corymbosa*	0.1	15		
Polygala glaucifolia	0.1	8	KTF09-15	
Portulaca oleracea/intraterranea	0.1	5	KTF09-12	Seeds to ~0.6mm, long, black, finely nippled
Ptilotus astrolasius	0.1	30		
Ptilotus auriculifolius	0.1	30		
Ptilotus exaltatus	0.1	20		
Ptilotus fusiformis	0.1	40		
Ptilotus gaudichaudii	0.1	15		
Ptilotus helipteroides	0.1	20		
Ptilotus obovatus var. *obovatus*	0.1	20		
Ptilotus polystachyus	0.1	40		
Ptilotus roei	0.1	20	KTF09-18	
Ptilotus rotundifolius	0.1	5		
Ptilotus schwartzii var. *schwartzii*	0.1	40		
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.1	100		N=2.
Sclerolaena cornishiana	0.1	40		
Senna glutinosa subsp. *glutinosa*	0.1	150		
Senna glutinosa subsp. x *luerssenii*	0.5	140	KTF09-17	
Senna notabilis	0.1	5		
Sida platycalyx	0.1	10		
Sida sp. Hamersley Range (K. Newbey 10692) PN	0.1	50		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Spermacoce brachystema	0.1	15		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	5		
Synaptantha tillaeacea var. tillaeacea	0.1	10		
Trachymene oleracea subsp. *oleracea*	0.1	20	KTF10-11X=	
Tribulus astrocarpus	0.1	5		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	15	80		
Triodia melvillei	3	90		
Vincetoxicum lineare	0.1	80		

Site **KTF10**

Described by PL/AL **Date** 19/4/2020

Type Quadrat 62.5 x 40 m

Central Coord 50 573467 mE, 7514680 mN

Habitat Plain

Soil Dark reddish brown silty clay loam.

Rock Type Scattered ironstone.

Vegetation *Acacia macraneura*, (*Grevillea berryana*, *A. pruinocarpa*) low woodland over *Psydrax latifolia*, (*Rhagodia* sp. Hamersley (M. Trudgen 17794)) tall open shrubland over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Dodonaea petiolaris*, (*Maireana villosa*) scattered low shrubs over *Triodia epactia*, (*T. melvillei*) very open hummock grassland over *Aristida obscura* very open tussock grassland and **Bidens bipinnata*, (*Ptilotus gaudichaudii*) very open herbland.

Veg Condition Very Good: cattle scats; some weeds, particularly **Bidens*.

Fire Age Very long unburnt.

Notes U1+ ^*Acacia macraneura,Grevillea berryana,Acacia pruinocarpa*\^tree\6\i;M1 ^*Psydrax latifolia,Rhagodia* sp. Hamersley (M. Trudgen 17794)\^shrub\4\r;M2 *Senna glutinosa* subsp. *glutinosa*\shrub\3\bi;M3 *Dodonaea petiolaris,Maireana villosa*\shrub\1\bi;G1 ^*Triodia epactia,Triodia melvillei*\^hummock grass\1\r;G2 *Aristida obscura,Bidens bipinnata,Ptilotus gaudichaudii*\tussock grass,forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		Form 1.
Abutilon otocarpum	0.1	20		N=1000.
Acacia macraneura	18	700	KTF10-01a	Formal ID by M. Hislop (WAH)KTF12-01=
Acacia pruinocarpa	2	650		N=1.
Amaranthus cuspidifolius	0.1	30		N=3.
Amaranthus undulatus	0.1	40		
Areocleome oxalidea	0.1	10		
Aristida inaequiglumis	0.1	40	KTF10-07	Formal ID by M. Hislop (WAH).
Aristida obscura	3	30		
Arivela viscosa	0.1	50		
Bidens bipinnata	3	40		N=1000.
Boerhavia coccinea	0.1	30		
Cheilanthes sieberi subsp. *sieberi*	0.1	25		
Chrysopogon fallax	0.1	120		
Cucumis variabilis	0.1	60		
Cynanchum viminale subsp. *australe*	0.1	50		
Dodonaea petiolaris	1	60		
Duperreya commixta	0.1	60		
Dysphania kalpari	0.1	20		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30		
Eragrostis pergracilis	0.1	20	KTF01-02=	
Eremophila forrestii subsp. *forrestii*	0.1	100		
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	15		
Euphorbia ferdinandii var. *ferdinandii*	0.1	15	KTF10-09	N=1. Formal ID by M. Hislop (WAH)
Euphorbia boophthona	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Euphorbia drummondii	0.1	20	KTF10-03	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena kanisii	0.1	25		
Goodenia muelleriana	0.1	30		
Goodenia nuda	0.1	30	KTF10-11	N=1.
Goodenia prostrata	0.1	8		
Grevillea berryana	3	800		
Hibiscus burtonii	0.1	40		
Hibiscus sturtii var. *grandiflorus*	0.1	10	KTF10-04	
Indigofera georgei	0.1	40		
Iseilema membranaceum	0.1	25	KTF10-06	
Lepidium phlebopetalum	0.1	10	KTF10-05	
Maireana planifolia x *villosa*	0.1	40		
Maireana villosa	0.5	50		
Nicotiana simulans (type 1)	0.1	50	KTF10-12	Formal ID by M. Hislop (WAH) REL07-09=
Nicotiana simulans (type 2)	0.1	40	KTF10-01b	Formal ID by M. Hislop (WAH) REL04-15=.
Panicum effusum	0.1	40		
Paspalidium clementii	0.1	30		
Perotis rara	0.1	15		
Phyllanthus erwinii	0.1	8		
Portulaca oleracea/intraterranea	0.1	15		
Psydrax latifolia	4	300		
Ptilotus aervoides	0.1	10		
Ptilotus exaltatus	0.1	20		
Ptilotus gaudichaudii	0.5	40		
Ptilotus helipteroides	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	50		
Ptilotus polystachyus	0.1	40		
Ptilotus roei	0.1	25		
Ptilotus schwartzii var. *schwartzii*	0.1	60		
Ptilotus xerophilus	0.1	40	REL07-11=	
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.5	250		N=3.
Roebuckiella similis	0.1	20	REL07-04=	
Salsola australis	0.1	30		
Senna glaucifolia	0.1	40		
Senna glutinosa subsp. *glutinosa*	1	140		
Senna notabilis	0.1	30		
Sida sp. dark green fruits (S. van Leeuwen 2260)	0.1	80		
Sida sp. L (A.M. Ashby 4202) PN	0.25	30		
Solanum ferocissimum	0.1	25		
Solanum lasiophyllum	0.1	30		
Spermacoce brachystema	0.1	15		
Sporobolus australasicus	0.1	30		
Trachymene oleracea subsp. *oleracea*	0.1	10	KTF11X	
Tribulus astrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	9	40		
Triodia melvillei	0.5	160		

Name	Cover (%)	Height (cm)	Specimen	Notes
Tripogonella loliiformis	0.1	25		
Urochloa occidentalis var. *occidentalis*	0.1	30		
Vincetoxicum lineare	0.1	60		
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	0.1	30	KTF10-02	

Site **KTF11**
Described by PL/AL **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 569356 mE, 7525785 mN
Habitat Flat plain bordering TEC.
Soil Dark reddish brown silty clay loam; occasional crab holes.
Rock Type Ironstone.
Vegetation *Acacia aptaneura* low open woodland over *Eriachne benthamii*, (*Chrysopogon fallax*, *Digitaria ctenantha*) very open tussock grassland over *Eragrostis pergracilis*, *Urochloa occidentalis* var. *occidentalis*, (*U. occidentalis* var. *ciliata, Eragrostis leptocarpa*) very open bunch grassland over *Calandrinia* pumila, *Portulaca oleracea/intraterranea*, (*Alternanthera denticulata, Arivela viscosa, Ptilotus xerophilus*) open herbland.
Veg Condition Very Good: scattered weeds (mainly **Bidens bipinnata*); old cattle scats.
Fire Age No sign of recent fire.
Notes Some crab holes present; herb-rich vegetation.
U1+ ^*Acacia aptaneura*\^tree\6\r;G1 ^*Eriachne benthamii,Chrysopogon fallax,Digitaria ctenantha*\^tussock grass\1\r;G2 *Eragrostis pergracilis,Urochloa occidentalis* var. *occidentalis,Urochloa occidentalis* var. *ciliata,Eragrostis leptocarpa*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	170		Form 1.
Abutilon macrum	0.1	30		
Abutilon otocarpum	0.1	40		
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266) PN	0.1	25	KTF11-14	Also KTF11-29.
Acacia aptaneura	9	700	KTF11-01	
Alternanthera denticulata	1.5	30		
Alysicarpus muelleri	0.1	70		
Amaranthus cuspidifolius	0.1	20	KTF11-07	
Aristida holathera var. *holathera*	0.1	40		
Aristida latifolia	0.1	100	KTF11-27	
Arivela viscosa	1	80	KTF11-23	
Bidens bipinnata	0.1	60		N=300.
Blumea tenella	0.1	15	KTF11-16	
Boerhavia burbidgeana	0.1	30		
Boerhavia coccinea	0.1	35		
Bulbostylis turbinata	0.25	20		
Calandrinia pumila	5	8	KTF11-03,21	Formal ID by M. Hislop (WAH).
Calandrinia sp.	0.1	10	KTF11-22	Sterile.
Calotis plumulifera	0.1	25	KTF11-04	
Cenchrus ciliaris	0.1	40		N=1.
Centipeda minima subsp. *macrocephala*	0.1	10		
Chloris pectinata	0.1	45	KTF11-18	N=15.
Chrysopogon fallax	1	130		
Commelina ensifolia	0.1	40		
Convolvulus clementii	0.1	60		
Corchorus tridens	0.1	35	KTF11-25	
Cucumis picrocarpus	0.1	40		
Cullen cinereum	0.1	30	KTF11-15	
Cullen graveolens	0.1	25	KTF11-32	
Cyperus iria	0.1	20		N=5.

Name	Cover (%)	Height (cm)	Specimen	Notes
Cyperus squarrosus	0.1	10		
Dactyloctenium radulans	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria ctenantha	0.5	30		
Dysphania glomulifera subsp. *eremaea*	0.1	10	KTF11-11b	
Dysphania rhadinostachya subsp. *inflata*	0.1	35	KTF11-34	
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	40		
Eragrostis leptocarpa	0.5	40	KTF11-08	
Eragrostis pergracilis	3.5	25	KTF09-03=	
Eragrostis tenellula	0.1	30		
Eriachne aristidea	0.1	40		
Eriachne benthamii	3	70		
Euphorbia biconvexa	0.1	20	KTF11-12a	
Euphorbia drummondii	0.1	25	KTF11-19	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia muelleriana	0.1	30		
Grevillea berryana	0.1	400		
Hakea lorea subsp. *lorea*	0.1	300		
Indigofera colutea	0.1	30		
Indigofera linifolia	0.25	30		
Indigofera linnaei	0.1	20		
Ipomoea lonchophylla	0.1	30	KTF11-30	
Ipomoea muelleri	0.5	70		
Iseilema macratherum	0.1	30	KTF11-12b	
Iseilema membranaceum	0.1	25	KTF11-05	
Josephinia eugeniae	0.1	55	KTF11-28	N=5. Formal ID by M. Hislop (WAH).
Malvastrum americanum	0.1	50		N=5.
Marsilea hirsuta	0.1	8		
Neptunia dimorphantha	0.1	30	KTF11-31	
Nicotiana simulans (type 2)	0.1	50	KTF11-24	Formal ID by M. Hislop (WAH) REL04-15=
Panicum effusum	0.1	30		
Paspalidium rarum	0.1	30		
Perotis rara	0.1	20		
Phyllanthus erwinii	0.1	15		
Portulaca ? decipiens	0.1	10	KTF11-10	Poor material.
Portulaca oleracea/intraterranea	3	15	KTF11-13	Seeds to ~0.6mm, long, black, finely nippled.
Pterocaulon sphacelatum	0.1	10		
Ptilotus aervoides	0.1	8		
Ptilotus exaltatus	0.1	30		
Ptilotus gaudichaudii	0.1	30		
Ptilotus gomphrenoides	0.1	15	KTF11-17	
Ptilotus helipteroides	0.1	40		
Ptilotus polystachyus	0.1	50		
Ptilotus xerophilus	1	60	KTF11-09	
Rhodanthe charsleyae	0.25	30	KTF11-02	
Rostellularia adscendens var. *clementii*	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Setaria verticillata	0.1	30		N=1.
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sida spinosa	0.1	20		
Spermacoce brachystema	0.25	20		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	25		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	120	KTF11-26	N=1.
Tragus australianus	0.1	15		
Tribulus astrocarpus	0.1	10		
Tribulus terrestris	0.1	10	KTF11-33	
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Urochloa occidentalis var. *ciliata*	1	40		
Urochloa occidentalis var. *occidentalis*	2	30		

Site **KTF12**

Described by PL/AL **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 569267 mE, 7526320 mN

Habitat Plain; occasional crab holes.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Acacia macraneura*, (*Hakea lorea* subsp. *lorea*) low open woodland over *A. tetragonophylla* scattered tall shrubs over *Urochloa occidentalis* var. *occidentalis*, (*Enneapogon polyphyllus*, *Eragrostis pergracilis*) very open bunch grassland over *Bulbostylis turbinata* scattered sedges and *Arivela viscosa*, (*Portulaca oleracea/intraterranea*) open herbland.

Veg Condition Very Good: occasional weeds.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia macraneura,Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Acacia tetragonophylla*\^shrub\4\bi;G1 ^*Urochloa occidentalis* var. *occidentalis,Enneapogon polyphyllus,Eragrostis pergracilis*\^other grass\1\r;G2 *Bulbostylis turbinata,Arivela viscosa,Portulaca oleracea/intraterranea*\sedge,forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	20		Form 4.
Abutilon lepidum	0.1	140		Form 1.
Abutilon macrum	0.1	80		
Abutilon otocarpum	0.1	25		
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266) PN	0.1	30	KTF12-10	Also KTF12-12.
Acacia macraneura	8	900	KTF12-01	Formal ID by M. Hislop (WAH)
Acacia tetragonophylla	0.5	400		
Alternanthera denticulata	0.1	30		
Alysicarpus muelleri	0.5	90		
Amaranthus cuspidifolius	0.1	35	KTF11-07=	
Aristida ? inaequiglumis	0.1	30	KTF12-17	Submitted to WAH for formal ID-unable to ascertain ID.
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	14	100		
Bidens bipinnata	0.1	50		N=10.
Boerhavia burbidgeana	0.25	30		
Boerhavia coccinea	0.25	30		
Boerhavia repleta	0.1	30		
Bulbostylis turbinata	1	10		
Calandrinia sp.	0.25	8	KTF11-22=	Sterile.
Cenchrus ciliaris	0.1	80		N=4.
Chloris pectinata	0.1	60	KTF12-15	
Chrysocephalum gilesii	0.1	25	KTF12-04,6	
Chrysopogon fallax	0.25	100		
Convolvulus clementii	0.1	60		
Cullen cinereum	0.1	50	KTF11-15=	
Cuscuta victoriana	0.1	20	KTF12-18	
Cynodon convergens	0.1	40		
Cyperus iria	0.1	20		
Datura leichhardtii subsp. *leichhardtii*	0.1	60		N=4.
Dichanthium sericeum subsp. *humilius*	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Digitaria ctenantha	0.25	50		
Dysphania melanocarpa forma *melanocarpa*	0.1	25	KTF12-03	
Dysphania rhadinostachya subsp. *inflata*	0.1	25	KTF12-09	
Enneapogon polyphyllus	2	35		
Eragrostis cumingii	0.1	15		
Eragrostis leptocarpa	0.25	35	KTF11-08=	
Eragrostis pergracilis	0.5	25	KTF12-02	
Eragrostis tenellula	0.1	25		
Eremophila ? clarkei	0.1	40	KTF12-13	Regrowth.
Eriachne pulchella	0.1	15		
Euphorbia australis var. *glabra*	0.1	8	KTF12-07	N=1.
Euphorbia biconvexa	0.1	30	KTF11-12a=	
Euphorbia boophthona	0.1	20		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia heterochila	0.1	15		
Goodenia muelleriana	0.1	30		
Goodenia nuda	0.1	30		N=1.
Hakea lorea subsp. *lorea*	0.75	350		
Heliotropium tanythrix	0.1	10	KTF12-08	
Indigofera colutea	0.1	25		
Indigofera linifolia	0.5	30		
Indigofera linnaei	0.1	30		
Ipomoea muelleri	0.25	70		
Iseilema macratherum	0.1	30	KTF11-12=	
Iseilema membranaceum	0.1	25	KTF11-05=	
Josephinia eugeniae	0.1	40	KTF11-28=	N=20. Formal ID by M. Hislop (WAH).
Maireana planifolia x *villosa*	0.1	45		
Malvastrum americanum	0.1	50		N=3.
Paspalidium rarum	0.1	35		
Perotis rara	0.1	15		
Phyllanthus erwinii	0.1	10		
Portulaca ? decipiens	0.1	25	KTF11-10=	Poor material.
Portulaca oleracea/intraterranea	0.25	30	KTF12-14	Large seeds; finely nippled
Portulaca oleracea/intraterranea	0.25	10	KTF12-05	Small flower. Some from KTF11 flower 3N=size. Seeds to~0.6mm, long, black, finely nippled
Portulaca oleracea/intraterranea	3	10	KTF11-13=	Small flower. Seeds to ~0.6mm, long, black, finely nippled
Ptilotus aervoides	0.1	8		
Ptilotus exaltatus	0.1	30		
Ptilotus gaudichaudii	0.25	35		
Ptilotus gomphrenoides	0.1	20		
Ptilotus helipteroides	0.1	30		
Ptilotus polystachyus	0.1	40		
Ptilotus xerophilus	0.5	80	KTF11-09=	
Rhodanthe charsleyae	0.25	30	KTF11-02=	
Rhynchosia minima	0.1	20		
Salsola australis	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna notabilis	0.1	10		
Setaria dielsii	0.1	90		
Setaria verticillata	0.1	40		N=1.
Sida fibulifera	0.1	30		
Spermacoce brachystema	0.1	15		
Sporobolus australasicus	0.1	30		
Streptoglossa bubakii	0.5	40		
Synaptantha tillaeacea var. *tillaeacea*	0.1	8	KTF12-16	
Tragus australianus	0.1	15		
Trianthema triquetrum	0.1	15		
Tribulus astrocarpus	0.1	15		
Tribulus terrestris	0.1	15	KTF11-33=	
Urochloa occidentalis var. *ciliata*	0.25	50		
Urochloa occidentalis var. *occidentalis*	4	40		

Site **KTF13**

Described by PL/AL **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 569269 mE, 7532445 mN

Habitat Slightly lower 'flow' zone in between areas of TEC.

Soil Dark reddish brown light clay.

Rock Type Calcrete.

Vegetation *Eucalyptus victrix* scattered low trees over **Vachellia farnesiana* scattered tall shrubs over *Eriachne benthamii*, (*Themeda* sp Hamersley Station (M.E. Trudgen 11431)) very open tussock grassland over *Polymeria longifolia*, *Cullen graveolens*, (*C. cinereum, Ptilotus gomphrenoides*) very open herbland.

Veg Condition Very Good: occasional weeds; some cattle activity.

Fire Age No sign of recent fire.

Notes *Eucalyptus victrix* are just small saplings.
U1 ^*Eucalyptus victrix*\^tree\2\bi;M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1+ ^*Eriachne benthamii,Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\^tussock grass\1\r;G2 *Polymeria longifolia*,^*Cullen graveolens,Cullen cinereum,Ptilotus gomphrenoides*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Alternanthera nodiflora	0.1	30		
Blumea tenella	0.1	15		
Calotis multicaulis	0.1	25	KTF13-13	
Centipeda minima subsp. *macrocephala*	0.1	8		
Cucumis picrocarpus	0.1	30		
Cullen cinereum	2	30	KTF21-01=	
Cullen graveolens	3	25		
Cyperus bifax	0.1	80	KTF13-07	MM: SPECIMEN MISSING; have assumed field det correct.
Dichanthium sericeum subsp. *polystachyum*	0.1	80	KTF13-10	
Echinochloa colona	0.1	40		N=20.
Eragrostis tenellula	0.1	40		
Eriachne benthamii	7	80		
Eucalyptus victrix	0.25	100		
Euphorbia inappendiculata var. *queenslandica*	0.1	8	KTF13-8,12	Formal ID by M. Hislop (WAH) KTF70-12=
Iseilema macratherum	0.1	25	KTF13-5,15	
Lotus cruentus	0.1	10	KTF13-11	
Malvastrum americanum	0.1	40		N=1.
Marsilea hirsuta	0.1	8	KTF13-04	
Mimulus gracilis	0.1	10	KTF13-06	
Panicum laevinode	0.1	70	KTF13-16	
Phyllanthus maderaspatensis	0.1	40		
Pimelea holroydii	0.1	30	KTF13-09	
Polymeria longifolia	3	25		
Ptilotus gomphrenoides	1	10	KTF13-01	
Rhagodia eremaea	0.1	25	KTF13-03	N=6.
Stemodia kingii	0.1	40		
Synaptantha tillaeacea var. *tillaeacea*	0.1	8	KTF13-14	

Name	Cover (%)	Height (cm)	Specimen	Notes
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	1	140		N=500.
Urochloa occidentalis var. *occidentalis*	0.1	25		
Vachellia farnesiana	0.5	200		N=6.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	30	KTF13-17	

Site **KTF14**

Described by RM/SY **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 540698 mE, 7603870 mN

Habitat Plain gently sloping east to a drainage.

Soil Dark reddish brown sandy clay loam; cracking clay in patches.

Rock Type Ironstone.

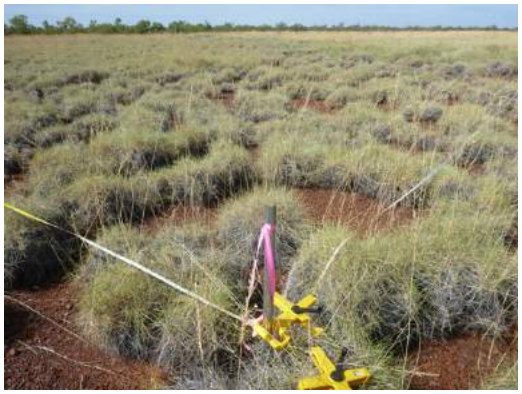
Vegetation *Triodia wiseana* hummock grassland with *Eriachne flaccida* scattered tussock grasses and *Dichanthium sericeum* subsp. *sericeum* very open bunch grasses.

Veg Condition Excellent.

Fire Age Very long unburnt.

Notes Small clay depressions occur throughout this vegetation type.
G1+ ^*Triodia wiseana*\^hummock grass\1\c;G2 *Eriachne flaccida,Dichanthium sericeum* subsp. *sericeum*\ tussock grass,other grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Alysicarpus muelleri	0.1	15	KTF08-17=	
Arivela viscosa	0.1	15		
Boerhavia burbidgeana	0.1	30		Dead.
Bulbostylis turbinata	0.1	10	KTF14-16	
Chrysopogon fallax	0.1	90		
Crotalaria dissitiflora subsp. *benthamiana*	0.1	20	KTF08-10=	
Cucumis picrocarpus	0.1	50	KTF14-10	
Cucumis picrocarpus	0.1	50	KTF14-18	
Cynodon convergens	0.1	30	KTF14-04	
Dichanthium sericeum subsp. *humilius*	0.1	15	KTF14-06	
Dichanthium sericeum subsp. *sericeum*	2.5	40	KTF14-02	
Eragrostis tenellula	0.1	10		
Eriachne flaccida	1	40	KTF14-03	
Eriachne pulchella	0.1	5		Dead.
Grona muelleri	0.1	30	KTF14-12	
Heliotropium heteranthum	0.1	5	KTF14-20	
Hibiscus verdcourtii	0.1	5	KTF08-12=	
Indigofera linifolia	0.1	20	KTF08-31=	
Ipomoea lonchophylla	0.1	70	KTF14-19	
Iseilema macratherum	0.1	20	KTF14-11	
Neptunia dimorphantha	0.1	70	KTF14-05	
Phyllanthus maderaspatensis	0.1	15		
Ptilotus gomphrenoides	0.1	10	KTF14-17	
Rhynchosia minima	0.1	30		
Senna notabilis	0.1	20	KTF14-09	
Sida fibulifera	0.1	15	KTF14-07	'sens. lat.'
Sida spinosa	0.1	30	KTF14-14	
Sporobolus australasicus	0.1	15		
Stemodia kingii	0.1	30	KTF14-15	
Streptoglossa bubakii	0.1	7	KTF14-08	
Swainsona thompsoniana	0.1	20	KTF14-13	
Triodia wiseana	45	60	KTF14-01	



Site **KTF15**

Described by RM/SY **Date** 22/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 541236 mE, 7603566 mN

Habitat Cracking clay plain, sloping gently to the E.

Soil Dark reddish brown cracking clay.

Rock Type Ironstone.

Vegetation *Acacia xiphophylla* low woodland over *Triodia epactia*, (*T. wiseana*) very open hummock grassland over *Eragrostis xerophila* scattered tussock grasses over *Neptunia dimorphantha*, *Arivela viscosa* scattered herbs.

Veg Condition Very Good: some cattle scats; occasional **Flaveria trinervia*.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia xiphophylla*\^tree\6\i;G1 ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\r;G2 *Eragrostis xerophila,Neptunia dimorphantha,Arivela viscosa*\tussock grass,forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abelmoschus ficulneus	0.1	15	KTF15-09	
Acacia xiphophylla	25	450		
Alysicarpus muelleri	0.1	15	KTF15-25	
Aristida latifolia	0.1	30	KTF15-26	
Arivela viscosa	0.5	40		Dead.
Boerhavia burbidgeana	0.1	80		
Boerhavia repleta	0.1	20	KTF15-17	
Carissa lanceolata	0.1	180	KTF15-20	
Corchorus tridens	0.1	15		
Cucumis picrocarpus	0.1	15	KTF15-04	
Cynodon convergens	0.1	20	KTF15-02	
Dipteracanthus aff. *australasicus*	0.1	20	KTF15-18	MM: SPECIMEN MISSING; have assumed field det correct.
Enchylaena tomentosa var. *tomentosa*	0.1	15	KTF15-23	
Eragrostis xerophila	1.5	30	KTF15-12	
Eriachne flaccida	0.1	50	KTF15-15	
Eriachne pulchella	0.1	15		
Euphorbia biconvexa	0.1	20	KTF15-6,30	
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Flaveria trinervia	0.1	15		N=7.
Gomphrena affinis subsp. *pilbarensis*	0.1	20	KTF15-27	
Grona muelleri	0.1	15	KTF15-11	
Indigofera trita subsp. *trita*	0.1	10	KTF15-07	
Ipomoea lonchophylla	0.1	15	KTF15-10	
Neptunia dimorphantha	1.5	25		
Notoleptopus decaisnei	0.1	10	KTF15-28	
Paspalidium clementii	0.1	15	KTF15-24	
Phyllanthus maderaspatensis	0.1	20		
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus exaltatus	0.1	5		
Ptilotus obovatus var. *obovatus*	0.1	20		
Rhagodia eremaea	0.1	110		
Rhynchosia minima	0.1	15		
Senna glutinosa subsp. x *luerssenii*	0.1	90	KTF15-22	
Senna hamersleyensis	0.1	20	KTF15-19	
Senna notabilis	0.1	7		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna sp. Meekatharra (E. Bailey 1-26)	0.1	60	KTF15-16	'sens. lat.'
Sida fibulifera	0.1	25	KTF15-5,13	
Sida spinosa	0.1	15	KTF15-03	
Solanum sp.	0.1	10	KTF15-29	Poor material; juvenile.
Sporobolus australasicus	0.1	15		
Stemodia kingii	0.1	30	KTF15-14	
Streptoglossa bubakii	0.1	10	KTF15-08	
Triodia epactia	5	30		
Triodia wiseana	0.5	30	KTF15-21	

Site **KTF16**
Described by RM/SY **Date** 22/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 541642 mE, 7603390 mN
Habitat Broad plain, sloping gently to west.
Soil Dark reddish brown silty clay; patches of cracking clay.
Rock Type Scattered ironstone.
Vegetation *Dolichandrone occidentalis, Acacia xiphophylla* scattered shrubs over *Triodia epactia* hummock grassland over *Eriachne flaccida* very open tussock grassland over *E. pulchella* very open bunch grassland and *Boerhavia burbidgeana* scattered herbs.
Veg Condition Excellent: minor signs of cattle.
Fire Age No sign of recent fire.
Notes M1 ^*Dolichandrone occidentalis*,^*Acacia xiphophylla*\^shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Eriachne flaccida*,*Eriachne pulchella*\tussock grass,other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia synchronicia	0.1	110		
Acacia xiphophylla	0.25	130		
Alysicarpus muelleri	0.1	30	KTF16-15	
Aristida latifolia	0.1	30	KTF15-26=	
Arivela viscosa	0.1	60		
Boerhavia burbidgeana	1	30		
Bulbostylis turbinata	0.1	7	KTF14-16=	
Chrysopogon fallax	0.1	90		
Crotalaria dissitiflora subsp. *benthamiana*	0.1	15	KTF16-02	
Crotalaria medicaginea var. *neglecta*	0.1	15	KTF16-05	
Dolichandrone occidentalis	0.5	120		
Dysphania rhadinostachya subsp. *inflata*	0.1	10	KTF16-16	
Enneapogon caerulescens	0.1	20	KTF16-08	
Eriachne flaccida	3	40	KTF14-03=	
Eriachne pulchella	3	5		
Euphorbia trigonosperma	0.1	30	KTF16-04	Match to WAH ID.
Euphorbia vaccaria var. *vaccaria*	0.1	10	KTF16-07	
Fimbristylis dichotoma	0.1	25	KTF16-10	
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF15-27=	
Goodenia muelleriana	0.1	10	KTF16-12	
Grona muelleri	0.1	40	KTF16-14	
Iseilema dolichotrichum	0.1	20	KTF16-11	
Neptunia dimorphantha	0.1	30		
Operculina aequisepala	0.1	200		
Phyllanthus maderaspatensis	0.1	40		
Polygala glaucifolia	0.1	4	KTF16-09	
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus gomphrenoides	0.1	30	KTF16-13	
Rhynchosia minima	0.1	30		
Senna notabilis	0.1	10		
Sida fibulifera	0.1	30	KTF16-06	
Solanum lasiophyllum	0.1	30		
Sporobolus australasicus	0.1	15		
Tephrosia sp. clay soils (S. van Leeuwen et al. PBS 0273) PN	0.1	15	KTF16-03	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	90		N=30.

Name	Cover (%)	Height (cm)	Specimen	Notes
Triodia epactia	45	30		

Site **KTF17**
Described by BRMMG **Date** 20/4/2020
Type Quadrat 62.5 x 40 m
Central Coord 50 568765 mE, 7529176 mN
Habitat Flow area.
Soil Dark reddish brown (2.5YR 2.5/4) sandy clay loam.
Vegetation *Eucalyptus victrix* woodland over *Acacia xiphophylla* low open woodland over *Sesbania cannabina*, **Vachellia farnesiana* scattered tall shrubs to tall open shrubland over *Bothriochloa ewartiana*, (*Eriachne benthamii*, **Cenchrus setiger, Chrysopogon fallax*) closed tussock grassland over *Cullen graveolens,* (*Cullen cinereum, *Malvastrum americanum*) very open herbland.
Veg Condition Very Good: cattle pads and tracks present; scattered weeds.
Fire Age No sign of recent fire.
Notes U1+ ^*Eucalyptus victrix*\^tree\7\i;U2 *Acacia xiphophylla*\tree\6\r;M1 ^*Sesbania cannabina*,^*Vachellia farnesiana*\^shrub\4\bi;G1 ^*Bothriochloa ewartiana,Eriachne benthamii,Cenchrus setiger,Chrysopogon fallax*\^tussock grass\1\d;G2 *Cullen graveolens,Cullen cinereum,Malvastrum americanum*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia xiphophylla	2.5	500	KTF17-01	
Achyranthes aspera	0.1	50		
Aeschynomene indica	0.1	60		
Alternanthera nana	0.1	30		
Alternanthera nodiflora	0.1	40		
Alysicarpus muelleri	0.1	100		
Arivela viscosa	0.1	80		
Astrebla lappacea	0.1	80	KTF17-27	
Bidens bipinnata	0.1	30		N=5.
Blumea tenella	0.1	8		
Boerhavia burbidgeana	0.1	40		
Bothriochloa ewartiana	75	130	KTF17-29	
Bothriochloa ewartiana	0.1	70	KTF17-11	
Calotis plumulifera	0.1	15	KTF17-14	
Cenchrus ciliaris	0.1	80		N=30.
Cenchrus setiger	5	40		N=50.
Centipeda minima subsp. *macrocephala*	0.1	8		
Chrysopogon fallax	2	110		
Convolvulus clementii	0.1	70		
Cucumis picrocarpus	0.1	15		
Cucumis variabilis	0.1	170		
Cullen cinereum	3	40	KTF17-03	
Cullen graveolens	3	50	KTF17-10	
Cyperus bifax	0.5	70	KTF17-07	
Dactyloctenium radulans	0.1	15		
Dichanthium sericeum subsp. *humilius*	0.1	60		
Dichanthium sericeum subsp. *polystachyum*	0.1	100	KTF17-30	
Dysphania melanocarpa forma *melanocarpa*	0.1	30	KTF17-16	
Dysphania rhadinostachya subsp. *inflata*	0.1	45	KTF17-25	
Echinochloa colona	0.1	40		N=10.
Enteropogon ramosus	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
Eragrostis leptocarpa	0.1	40	KTF17-13	
Eragrostis tenellula	0.1	40	KTF17-04	
Eremophila longifolia	0.1	30		
Eriachne benthamii	10	70	KTF17-09	
Eriochloa pseudoacrotricha	0.1	120	KTF17-22	Formal ID by M. Hislop (WAH).
Eucalyptus victrix	12	1200		
Eulalia aurea	0.1	60		
Euphorbia inappendiculata var. *queenslandica*	0.1	20	KTF17-26	Formal ID by M. Hislop (WAH) KTF70-12=
Euphorbia biconvexa	0.1	40	KTF17-08	
Euphorbia ferdinandi var. *ferdinandi*	0.1	15	KTF17-21	
Hibiscus verdcourtii	0.1	80		
Ipomoea lonchophylla	0.1	30		
Ipomoea muelleri	0.1	40		
Iseilema macratherum	0.1	30	KTF17-23	
Lotus cruentus	0.1	20	KTF17-24	
Malvastrum americanum	1	60		N=100.
Neptunia dimorphantha	0.1	50	KTF17-15	
Notoleptopus decaisnei	0.1	30	KTF17-18	
Operculina aequisepala	0.1	15		
Operculina aequisepala	0.1	110		
Panicum laevinode	0.1	70	KTF17-12	
Phyllanthus maderaspatensis	0.1	30		
Portulaca oleracea/intraterranea	0.1	20	KTF17-20	Seeds ~1mm long, distinctly nippled, black
Ptilotus gomphrenoides	0.1	30		
Ptilotus xerophilus	0.1	70		
Rhynchosia minima	0.1	40		
Santalum lanceolatum	0.1	90		
Sclerolaena cornishiana	0.1	40	KTF17-44	
Sclerolaena costata	0.1	30	KTF17-33	
Senna notabilis	0.1	10		
Sesbania cannabina	1	280		
Setaria dielsii	0.1	80		
Sida fibulifera	0.1	20	KTF17-28	'sens. lat.'
Stemodia kingii	0.1	40		
Streptoglossa bubakii	0.1	40	KTF17-17	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.5	130		N=20.
Urochloa occidentalis	0.5	40		Sterile.
Vachellia farnesiana	1	220		N=30.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	20		

Site	**KTF18**
Described by	BRMMG **Date** 21/4/2020
Type	Quadrat 50 x 50 m
Central Coord	50 542742 mE, 7603438 mN
Habitat	Very gentle, southwest-facing lower slope of broad low rise.
Soil	Weak red (10R 4/4) sandy loam.
Rock Type	Chert, ironstone.
Vegetation	*Acacia ancistrocarpa* scattered tall shrubs over *Triodia epactia* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	M1 ^*Acacia ancistrocarpa*\^shrub\4\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i.

Name	**Cover (%)**	**Height (cm)**	**Specimen**
Acacia ancistrocarpa	0.5	300	
Acacia atkinsiana	0.1	120	KTF18-04
Bonamia erecta	0.1	40	
Fimbristylis simulans	0.1	10	KTF18-02
Hakea lorea subsp. *lorea*	0.1	280	
Senna notabilis	0.1	10	
Seringia nephrosperma	0.1	60	KTF18-03
Triodia epactia	20	30	KTF18-01

Site **KTF19**

Described by BRMMG **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 543093 mE, 7603036 mN

Habitat Plain

Soil Dark reddish brown (2.5YR 2.5/4) clay loam.

Vegetation *Corymbia hamersleyana* low woodland over *Acacia ancistrocarpa*, (*A. colei*) tall shrubland over *Senna artemisioides* subsp. *oligophylla* x subsp. *helmsii*, *S. notabilis, Sida* sp. L (A.M. Ashby 4202) low open shrubland over *Triodia epactia* scattered hummock grasses and *Chrysopogon fallax*, (*Bothriochloa ewartiana, Eulalia simonii*) very open tussock grassland with *Sporobolus australasicus* very open bunch grassland.

Veg Condition Excellent: a few **Malvastrum*.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\i;M1+ ^*Acacia ancistrocarpa,Acacia colei*\^shrub\4\i;M2 *Senna artemisioides* subsp. *oligophylla* x subsp. *helmsii,Senna notabilis,Sida* sp. L (A.M. Ashby 4202)\shrub\2\r;G1 ^*Chrysopogon fallax,Bothriochloa ewartiana,Eulalia simonii*\^tussock grass\2\c;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	80	KTF19-14	
Abutilon otocarpum	0.1	40		
Acacia ancistrocarpa	20	250		
Acacia citrinoviridis	0.1	330		
Acacia colei	1	350	KTF19-19	Sterile.
Alternanthera nana	0.1	30	KTF19-01	
Alysicarpus muelleri	0.1	45		
Arivela viscosa	0.1	90		
Boerhavia coccinea	0.1	20	KTF19-21	
Bothriochloa ewartiana	2	70	KTF19-17	
Carissa lanceolata	0.1	70		
Chrysopogon fallax	5	130		
Corchorus tectus	0.1	30	KTF19-34	
Corchorus tridens	0.1	20	KTF19-07	
Corymbia hamersleyana	11	500		
Crotalaria medicaginea var. *neglecta*	0.1	45		
Cucumis picrocarpus	0.1	20		
Cucumis variabilis	0.1	20		
Cullen pogonocarpum	0.1	8	KTF19-31	
Cynodon convergens	0.1	20	KTF19-06	
Duperreya commixta	0.1	110		
Dysphania kalpari	0.1	20	KTF19-25	
Dysphania rhadinostachya subsp. *inflata*	0.1	15	KTF19-20	
Enneapogon polyphyllus	0.1	30		
Eragrostis cumingii	0.1	12		
Eriachne aristidea	0.1	30		
Eulalia aurea	0.1	60	KTF19-30	
Eulalia simonii	2	50	KTF19-28	
Euphorbia australis var. *glabra*	0.1	10	KTF19-29	
Euphorbia biconvexa	0.1	30	KTF19-03	
Euphorbia boophthona	0.1	20	KTF19-13	
Evolvulus alsinoides var. *decumbens*	0.1	30	KTF19-27	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Gomphrena affinis subsp. *pilbarensis*	0.1	40	KTF19-11	
Goodenia microptera	0.1	20		
Goodenia nuda	0.1	40	KTF19-09	N=50.
Gossypium australe	0.1	140	KTF19-26	Burrup Peninsula form.
Grevillea wickhamii	0.1	150		Sterile.
Haloragis sp.	0.1	15	KTF19-05	Inadequate material.
Hibiscus sturtii var. *grandiflorus*	0.1	25	KTF19-18	
Indigofera linifolia	0.1	60	KTF19-37	
Indigofera monophylla	0.1	60		
Indigofera trita subsp. *trita*	0.1	20	KTF19-24	
Ipomoea muelleri	0.1	15	KTF19-32	
Ipomoea polymorpha	0.1	20	KTF19-23	
Iseilema membranaceum	0.1	25	KTF19-08	
Malvastrum americanum	0.1	45		N=10.
Neptunia dimorphantha	0.1	40	KTF19-36	
Paspalidium clementii	0.1	20	KTF19-35	
Paspalidium rarum	0.1	20	KTF19-12	
Perotis rara	0.1	15		
Phyllanthus erwinii	0.1	30		
Phyllanthus maderaspatensis	0.1	15		
Polygala glaucifolia	0.1	3	KTF19-04	
Portulaca oleracea/intraterranea	0.1	12		
Ptilotus exaltatus	0.1	10		
Ptilotus gaudichaudii	0.1	45		
Ptilotus helipteroides	0.1	20		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *oligophylla*	0.1	70	KTF19-22	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	1	90	KTF19-16	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.5	40		
Sida sp. L (A.M. Ashby 4202) PN	0.5	30	KTF19-02	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	50		
Sida spinosa	0.1	30	KTF19-15	
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	3	20		
Streptoglossa bubakii	0.1	12	KTF01-21=	
Tephrosia supina	0.1	30	KTF19-33	
Themeda triandra	0.1	70	KTF19-10	Formal ID by M. Hislop (WAH).
Trigastrotheca molluginea	0.1	20		
Triodia epactia	1	70		
Waltheria indica	0.1	60		

Site **KTF20**

Described by BRMMG **Date** 22/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 544884 mE, 7603428 mN

Habitat Broad flow area with shallow, narrow, minor flowlines and associated flood banks.

Soil Dark reddish brown (2.5YR 2.5/4) sandy loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* low woodland over *Acacia ancistrocarpa*, *A. trachycarpa*, (*A. maitlandii*) tall open shrubland over *Grevillea wickhamii* scattered shrubs over *Bonamia erecta*, (*Isotropis atropurpurea*, *Indigofera monophylla*) low open shrubland over *Triodia epactia* open hummock grassland over *Themeda triandra*, (*Paraneurachne muelleri,*) very open tussock grassland.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes Numerous dead tall *Acacia* shrubs fallen within quadrat, with many juveniles; likely due to fires 3-5 years ago and some good recent rainfall. Would previously have been a tall shrubland.
U1+ ^*Corymbia hamersleyana*\^tree\6\i;M1 ^*Acacia ancistrocarpa*,^*Acacia trachycarpa,Acacia maitlandii*\^shrub\4\r;M2 *Grevillea wickhamii*\shrub\3\bi;M3 *Bonamia erecta,Isotropis atropurpurea,Indigofera monophylla*\shrub\1\r;G1 *Themeda triandra,Paraneurachne muelleri,*\tussock grass\2\r;G2 ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	1	280		
Acacia maitlandii	0.25	280		
Acacia pyrifolia var. *pyrifolia*	0.1	90		
Acacia trachycarpa	1	220		
Acacia tumida var. *pilbarensis*	0.1	120		
Afrohybanthus aurantiacus	0.1	25		
Aristida holathera var. *holathera*	0.1	35	KTF20-06	
Aristida inaequiglumis	0.1	90	KTF20-10	
Arivela viscosa	0.1	40		
Bonamia erecta	3	25		
Carissa lanceolata	0.1	180		
Chrysopogon fallax	0.1	100		
Corchorus tectus	0.1	45	KTF20-11	
Corymbia hamersleyana	13	600		
Cucumis picrocarpus	0.1	20	KTF20-07	
Cucumis variabilis	0.1	10		
Cymbopogon ambiguus	0.1	90		
Dampiera candicans	0.1	40		
Digitaria brownii	0.1	60	KTF20-02	
Duperreya commixta	0.1	350		
Enneapogon caerulescens	0.1	40		
Eragrostis cumingii	0.1	12		
Eragrostis tenellula	0.1	30	KTF20-12	
Eriachne mucronata	0.1	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	15		
Eulalia aurea	0.1	40		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF20-08	
Euphorbia biconvexa	0.1	20	KTF20-05	

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia microptera	0.1	15		
Gossypium robinsonii	0.1	25		
Grevillea wickhamii	0.25	150		Sterile.
Hibiscus sturtii var. *campylochlamys*	0.1	35	KTF20-03	
Indigofera monophylla	0.5	65		
Isotropis atropurpurea	1	40	KTF20-04	
Paraneurachne muelleri	1	50		
Paspalidium clementii	0.1	25	KTF20-14	
Ptilotus astrolasius	0.1	20	KTF20-13	MM: SPECIMEN MISSING; assumed field det correct.
Ptilotus calostachyus	0.1	90		
Ptilotus exaltatus	0.1	20		
Rhynchosia minima	0.1	40		
Solanum diversiflorum	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	20	KTF20-09	
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	10	KTF20-15	
Themeda triandra	4	70		
Trachymene oleracea subsp. *oleracea*	0.1	12		
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	15	50	KTF20-01	
Waltheria indica	0.1	40		

Site KTF21
Described by PL/AL **Date** 20/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 569701 mE, 7533617 mN
Habitat Cracking clay plain in broad valley.
Soil Dark reddish brown light clay; crab holes.
Rock Type Calcrete nodules to 20cm.
Vegetation *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) tussock grassland over *Polymeria longifolia, Cullen cinereum* very open herbland.
Veg Condition Very Good: cattle scats; a few **Vachellia farnesiana*.
Fire Age No sign of recent fire.
Notes G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\c;G2 *Polymeria longifolia,Cullen cinereum*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	30	KTF21-30	
Acacia pruinocarpa	0.1	120		
Acacia victoriae subsp. *victoriae*	0.1	5		
Alysicarpus muelleri	0.1	40		
Austrobryonia pilbarensis	0.1	10		
Boerhavia paludosa	0.1	50		
Calotis multicaulis	0.1	15	KTF21-11	
Chrysopogon fallax	0.25	80		
Convolvulus clementii	0.1	20		
Crotalaria dissitiflora subsp. *benthamiana*	0.25	50	KTF21-04	
Cucumis picrocarpus	0.1	15		
Cullen cinereum	4	25	KTF21-01	
Cullen graveolens	0.1	25		
Cynodon convergens	0.1	40		
Dactyloctenium radulans	0.1	8		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	8		
Eragrostis pergracilis	0.1	25	KTF21-29	
Euphorbia inappendiculata var. *queenslandica*	0.1	15	KTF21-9,18	N=5. Formal ID by M. Hislop (WAH) KTF70-12=
Euphorbia australis var. *glabra*	0.1	5	KTF21-20	N=11.
Euphorbia trigonosperma	0.1	20	KTF21-08	Match to WAH ID.
Glycine falcata	0.5	15	KTF21-03	
Goodenia pascua	0.1	8	KTF21-13	
Heliotropium conocarpum	0.1	8	KTF21-21	
Hibiscus verdcourtii	0.1	50	KTF21-22	
Indigofera linifolia	0.1	15		
Ipomoea lonchophylla	0.1	40	KTF21-31	
Iseilema macratherum	0.25	20	KTF21-10	
Iseilema macratherum	0.1	40	KTF21-26	
Neptunia gracilis forma *gracilis*	0.1	40	KTF21-19	
Operculina aequisepala	0.1	40		
Panicum laevinode	0.25	45	KTF21-06	
Phyllanthus maderaspatensis	0.1	25		
Polygala glaucifolia	0.1	8	KTF21-28	
Polymeria longifolia	5	30	KTF21-07	

Name	Cover (%)	Height (cm)	Specimen	Notes
Portulaca oleracea/intraterranea	0.1	10	KTF21-17	Seeds ~1mm long, not nippled, black.
Pseudognaphalium luteoalbum	0.1	8	KTF21-12	Sterile, juvenile.
Pterocaulon sphacelatum	0.1	20		
Ptilotus gomphrenoides	0.1	15		
Ptilotus xerophilus	0.1	15	KTF21-14	
Rostellularia adscendens var. *clementii*	0.1	25		
Senna notabilis	0.1	10		
Sida spinosa	0.1	25		
Sporobolus australasicus	0.1	20	KTF21-25	
Sporobolus australasicus	0.1	30	KTF21-15	MM - SPECIMEN MISSING; field det assumed correct.
Streptoglossa bubakii	0.1	40		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	68	120		N=6000.
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		
Urochloa occidentalis var. *ciliata*	0.1	40		
Urochloa occidentalis var. *occidentalis*	0.1	20	KTF21-02	
Vachellia farnesiana	0.1	80		N=3.

Site **KTF22**

Described by PL/AL **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 569027 mE, 7532024 mN

Habitat Cracking clay plain.

Soil Dark reddish brown light clay; crab holes.

Rock Type Calcrete nodules to 20cm.

Vegetation *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Astrebla pectinata*, *A. elymoides*) tussock grassland over *Polymeria longifolia*, (*Crotalaria dissitiflora* subsp. *benthamiana*) very open herbland.

Veg Condition Very Good: some cattle disturbance (scats, grazing and tracks); 1 x **Vachellia farnesiana*.

Fire Age No sign of recent fire.

Notes G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Astrebla pectinata,Astrebla elymoides*\^tussock grass\3\c;G2 *Polymeria longifolia,Crotalaria dissitiflora* subsp. *benthamiana*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	25	KTF22-07	
Acacia victoriae subsp. *victoriae*	0.1	60		
Astrebla elymoides	0.5	90	KTF22-08	N=50. PL camera: 774.
Astrebla pectinata	0.75	80	KTF22-01	
Austrobryonia pilbarensis	0.1	8		
Boerhavia paludosa	0.1	50		
Calotis plumulifera	0.1	25		
Corchorus tridens	0.1	20	KTF22-03	
Crotalaria dissitiflora subsp. *benthamiana*	1	40		
Cucumis picrocarpus	0.1	30		
Cullen graveolens	0.1	25		
Cynodon convergens	0.25	40		
Dactyloctenium radulans	0.1	25		
Dichanthium sericeum subsp. *humilius*	0.5	40		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	15		N=1.
Eragrostis tenellula	0.1	30		
Eragrostis xerophila	0.1	30	KTF22-04	
Eriachne benthamii	0.1	40		
Euphorbia australis var. *glabra*	0.5	10		N=600. PL camera: 775-776.
Euphorbia trigonosperma	0.1	40	KTF21-08=	Match to WAH ID.
Goodenia pascua	0.1	25		
Hibiscus verdcourtii	0.1	30		
Indigofera linifolia	0.1	30		
Ipomoea lonchophylla	0.1	40		
Iseilema macratherum	0.1	40	KTF21-26=	
Neptunia gracilis forma *gracilis*	0.1	40	KTF21-19=	
Panicum laevinode	0.25	50	KTF21-06=	
Phyllanthus maderaspatensis	0.1	30		
Polymeria longifolia	3	30		
Portulaca oleracea/intraterranea	0.1	20	KTF21-17=	Seeds ~1mm long, not nippled, black.

Name	Cover (%)	Height (cm)	Specimen	Notes
Pterocaulon sphacelatum	0.1	25		
Rhynchosia minima	0.1	25		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	40		
Sida fibulifera	0.1	25		
Sida spinosa	0.1	30		
Sporobolus australasicus	0.25	25		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.25	15	KTF22-02	Formal ID by M. Hislop (WAH).
Streptoglossa bubakii	0.1	25		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	29	160		N=1800.
Urochloa occidentalis var. *ciliata*	0.1	30		
Vachellia farnesiana	0.1	80		N=1.
Vigna lanceolata var. *lanceolata*	0.1	25	KTF22-06	
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	40		

Site **KTF23**
Described by PL/AL **Date** 21/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 544320 mE, 7602719 mN
Habitat Cracking clay plain.
Soil Dark reddish brown light clay.
Rock Type Ironstone.
Vegetation *Eriachne benthamii*, (*Eragrostis xerophila, Astrebla elymoides*) very open tussock grassland over *Panicum laevinode, Cynodon convergens* very open bunch grassland over *Cullen cinereum*, (*Cullen graveolens, Neptunia dimorphantha, Operculina aequisepala*) open herbland.
Veg Condition Very Good: some cattle scats.
Fire Age No sign of recent fire.
Notes Mosaic of *Acacia xiphophylla* and tussock grassland vegetation; probably has elevated conservation significance.
G1+ ^*Eriachne benthamii,Eragrostis xerophila,Astrebla elymoides,Panicum laevinode,Cynodon convergens*\^tussock grass,other grass\1\r;G2 *Cullen cinereum,Cullen graveolens,Neptunia dimorphantha,Operculina aequisepala*\forb\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abelmoschus ficulneus	0.1	40	KTF23-11	N=2.
Abutilon malvifolium	0.1	25	KTF23-16b	
Acacia xiphophylla	0.1	60		
Alternanthera nodiflora	0.1	25	KTF23-13	
Ammannia multiflora	0.1	8	KTF23-03	
Arivela viscosa	0.1	50		
Astrebla elymoides	0.5	80	KTF23-04	Ph 790. N=20.
Austrobryonia pilbarensis	0.1	10		
Bergia pedicellaris	0.1	8		
Bulbostylis turbinata	0.1	15		
Centipeda minima subsp. *macrocephala*	0.1	10		
Corchorus trilocularis	0.1	25	KTF23-16a	
Crotalaria dissitiflora subsp. *benthamiana*	0.1	40		
Cucumis picrocarpus	0.1	25		
Cullen cinereum	8	40	KTF23-09	
Cullen graveolens	2	30		
Cynodon convergens	2	50		
Cyperus difformis	0.1	8	KTF23-10	
Cyperus iria	0.1	25		
Dichanthium sericeum subsp. *humilius*	0.1	60		
Dysphania rhadinostachya subsp. *inflata*	0.1	30	KTF23-08	
Elytrophorus spicatus	0.1	10		
Eragrostis tenellula	0.25	40		
Eragrostis xerophila	1	50		
Eriachne benthamii	7	70		
Euphorbia inappendiculata var. *queenslandica*	0.1	10	KTF23-1,14	Formal ID by M. Hislop (WAH) KTF70-12=
Gomphrena affinis subsp. *pilbarensis*	0.1	30		
Goodenia microptera	0.1	30		
Grona muelleri	0.1	30	KTF23-15	

Name	Cover (%)	Height (cm)	Specimen	Notes
Hibiscus verdcourtii	0.1	40		
Indigofera linifolia	0.1	25		
Indigofera trita subsp. *trita*	0.1	25		
Ipomoea lonchophylla	0.1	30		
Iseilema membranaceum	0.1	10	KTF23-18	
Marsilea hirsuta	0.1	8	KTF23-05	
Mimulus gracilis	0.1	10		
Neptunia dimorphantha	0.5	30	KTF23-06	
Operculina aequisepala	0.5	50		
Panicum laevinode	2.5	80	KTF21-06=	
Phyllanthus maderaspatensis	0.1	40		
Portulaca pilosa s. lat	0.1	10	KTF23-17	Formal ID by M. Hislop (WAH)
Portulaca intraterranea	0.1	15	KTF23-02	
Ptilotus gomphrenoides	0.1	25		
Rhynchosia minima	0.1	40		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sida spinosa	0.1	25		
Stemodia kingii	0.25	35		
Streptoglossa bubakii	0.1	40		
Striga squamigera	0.1	15	KTF23-12	
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	25	KTF23-07	

Site **KTF24**

Described by PL/AL **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 544351 mE, 7602947 mN

Habitat Flat plain; slight linear depression.

Soil Dark reddish brown clay loam.

Rock Type Ironstone, quartz.

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* tall shrubland over *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035), (*A. sclerosperma* subsp. *sclerosperma*, *A. trachycarpa*) open shrubland over S. *artemisioides* subsp. *helmsii* scattered low shrubs over *Triodia epactia* very open hummock grassland.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes Part of quadrat burnt 2 years ago, but no change to species.

U1 ^*Corymbia hamersleyana*\^tree\6\r;M1+ ^*Acacia ancistrocarpa*\^shrub\4\i;M2 *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035),*Acacia sclerosperma* subsp. *sclerosperma,Acacia trachycarpa*\shrub\3\r;M3 *Senna artemisioides* subsp. *helmsii*\shrub\1\bi;G1 ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Acacia ancistrocarpa	18	260		
Acacia sclerosperma subsp. *sclerosperma*	1	190		
Acacia trachycarpa	0.5	100		
Alysicarpus muelleri	0.1	70		
Aristida contorta	0.1	25	KTF24-09a	
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Boerhavia coccinea	0.1	40		
Bothriochloa ewartiana	0.1	90	KTF24-10	
Chrysopogon fallax	0.1	90		
Corymbia hamersleyana	2.5	500		
Cullen pogonocarpum	0.1	35	KTF24-02	
Cynodon convergens	0.1	10	KTF24-09b	
Dactyloctenium radulans	0.1	10		
Dysphania kalpari	0.1	15		
Eriachne aristidea	0.1	40		
Eriachne mucronata	0.1	40		
Eriachne pulchella	0.1	15		
Eulalia aurea	0.1	60		
Euphorbia biconvexa	0.1	25	KTF24-03	
Euphorbia boophthona	0.1	50		
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena cunninghamii	0.1	20		
Goodenia microptera	0.1	15		
Goodenia nuda	0.1	30		N=2.
Gossypium australe	0.1	70		
Grevillea wickhamii subsp. *hispidula*	0.1	160		
Heliotropium inexplicitum	0.1	30	KTF24-04	
Hibiscus sturtii var. *grandiflorus*	0.1	50		
Indigofera colutea	0.1	25		
Indigofera linifolia	0.1	30		
Indigofera monophylla	0.1	80		
Iseilema membranaceum	0.1	25	KTF24-08	

Name	Cover (%)	Height (cm)	Specimen	Notes
Maireana villosa	0.1	30		
Paspalidium rarum	0.1	30		
Perotis rara	0.1	10		
Polygala glaucifolia	0.1	5	KTF24-06	
Polymeria ambigua	0.1	20		
Ptilotus astrolasius	0.1	50		
Ptilotus calostachyus	0.1	80		
Ptilotus exaltatus	0.1	25		
Ptilotus gaudichaudii	0.1	20		
Ptilotus helipteroides	0.1	20		
Ptilotus obovatus var. *obovatus*	0.1	50		
Senna artemisioides subsp. *helmsii*	1.5	80		
Senna artemisioides subsp. *oligophylla*	0.1	120		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	2	140		
Senna notabilis	0.1	20		
Sida sp. L (A.M. Ashby 4202) PN	0.1	30		
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	40		
Tephrosia supina	0.1	40	KTF24-07	
Tribulus macrocarpus	0.1	30		
Triodia epactia	4	60		

Site **KTF25**
Described by RM/SY **Date** 22/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 546636 mE, 7603112 mN
Habitat Plain, sloping gently to the E; ironstone over clay.
Soil Dark reddish brown silty clay, cracking.
Rock Type Ironstone.
Vegetation *Acacia xiphophylla* low woodland over *Triodia epactia* very open hummock grassland over *Chrysopogon fallax, Eragrostis xerophila* scattered tussock grasses.
Veg Condition Very Good: cattle scats, some rubbish, old ground disturbance, occasional weeds.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia xiphophylla*\^tree\6\i;G1 ^*Triodia epactia*\^hummock grass\1\r;G2 *Chrysopogon fallax,Eragrostis xerophila*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abelmoschus ficulneus	0.1	15	KTF15-09=	
Abutilon lepidum	0.1	30	KTF25-04	
Acacia xiphophylla	22	400		
Arivela viscosa	0.1	40		Dead.
Boerhavia burbidgeana	0.1	80		
Boerhavia repleta	0.1	20	KTF15-17=	
Carissa lanceolata	0.1	50	KTF15-20=	
Cenchrus setiger	0.1	40		N=50.
Chrysopogon fallax	0.5	90		
Corchorus tridens	0.1	15		
Cucumis variabilis	0.1	30		
Cynodon convergens	0.1	20	KTF15-02=	
Dactyloctenium radulans	0.1	20		
Dipteracanthus aff. *australasicus*	0.1	20	KTF15-18=	MM: SPECIMEN MISSING; have assumed field det correct.
Duperreya commixta	0.1	110		
Dysphania rhadinostachya subsp. *inflata*	0.1	10	KTF16-16=	
Enteropogon ramosus	0.1	40	KTF25-01	
Eragrostis xerophila	0.5	30	KTF15-12=	
Eriachne flaccida	0.1	50	KTF15-15=	
Eriachne pulchella	0.1	15		
Euphorbia trigonosperma	0.1	15	KTF16-04=	Match to WAH ID.
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Flaveria trinervia	0.1	20		N=10.
Goodenia nuda	0.1	30	KTF25-09	N=6.
Indigofera trita subsp. *trita*	0.1	15	KTF15-07=	
Ipomoea lonchophylla	0.1	15	KTF15-10=	
Maireana planifolia x *villosa*	0.1	30	KTF25-02	
Neptunia dimorphantha	0.1	25		
Paspalidium clementii	0.1	15	KTF15-24=	
Phyllanthus maderaspatensis	0.1	20		
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus aervoides	0.1	15	KTF25-07	
Ptilotus exaltatus	0.1	20		
Ptilotus obovatus var. *obovatus*	0.1	60		
Rhagodia eremaea	0.1	120		

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	30		
Salsola australis	0.1	10		
Senna artemisioides subsp. *oligophylla*	0.1	110		
Senna glutinosa subsp. x *luerssenii*	0.1	130	KTF15-22=	
Senna hamersleyensis	0.1	20	KTF15-19=	
Senna notabilis	0.1	20		
Sesbania cannabina	0.1	20		
Sida fibulifera	0.1	25	KTF25-08	
Sida spinosa	0.1	20	KTF15-03=	
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	10	KTF15-08=	
Themeda triandra	0.1	40	KTF25-05	
Trianthema triquetrum	0.1	10	KTF25-10	
Tribulus macrocarpus	0.1	30		
Triodia epactia	8	30		

Site **KTF26**
Described by PL/SC **Date** 23/5/2020
Type Quadrat 25 x 100 m
Central Coord 50 568843 mE, 7539584 mN
Habitat Slope of low hill.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\bi;M2 *Senna glutinosa* subsp. *glutinosa*\shrub\3\bi;G1+ ^*Triodia wiseana*^\hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	70		Form 1.
Acacia adoxa var. *adoxa*	0.1	40		
Acacia inaequilatera	0.5	400		
Acacia pyrifolia var. *pyrifolia*	0.1	160		
Acacia tenuissima	0.1	50		
Amphipogon sericeus	0.1	40	KTF26-02	
Aristida holathera var. *holathera*	0.1	40	KTF26-03	
Arivela viscosa	0.1	30		
Bonamia pilbarensis	0.1	10		
Bulbostylis barbata	0.1	15		
Cassytha capillaris	0.1	30		
Corchorus parviflorus	0.1	60		
Corymbia hamersleyana	0.75	700		
Diplatia grandibractea	0.1	50		On *Eucalyptus leucophloia*.
Dodonaea coriacea	0.1	40		
Dolichocarpa crouchiana	0.1	20		
Eriachne mucronata	0.1	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	15		
Eucalyptus leucophloia subsp. *leucophloia*	9	700		
Euphorbia sp. (biconvexa/coghlanii/trigonosperma; sterile)	0.1	40		Sterile.
Goodenia stobbsiana	0.1	40		
Gossypium robinsonii	0.1	300		
Hakea chordophylla	0.1	400		
Hibiscus sturtii var. *campylochlamys*	0.1	25		
Indigofera monophylla	0.1	40		
Jasminum didymum subsp. *lineare*	0.1	40		
Paraneurachne muelleri	0.1	40		
Polycarpaea holtzei	0.1	5		
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	50		
Ptilotus clementii	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	40		
Schizachyrium fragile	0.1	25		
Senna artemisioides subsp. *oligophylla*	0.1	50		
Senna glutinosa subsp. *glutinosa*	0.5	160		
Senna glutinosa subsp. *pruinosa*	0.1	160		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	190		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	70		Ferruginous form.
Solanum lasiophyllum	0.1	70		
Trianthema glossostigmum	0.1	5	KTF26-01	
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia wiseana	22	60		
Triumfetta maconochieana	0.1	35		

Site **KTF27**
Described by RM/SY **Date** 23/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 551697 mE, 7597983 mN
Habitat Undulating stony plain.
Soil Dark reddish brown silty clay loam.
Rock Type Scattered ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* tall open shrubland over A. *ancistrocarpa*, *Hakea lorea* subsp. *lorea* scattered shrubs over *Acacia trachycarpa* scattered low shrubs over *Triodia wiseana, (T. epactia*) very open hummock grassland.
Veg Condition Excellent.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1+ ^*Acacia atkinsiana*\^shrub\4\r;M2 *Acacia ancistrocarpa,Hakea lorea* subsp. *lorea*\shrub\3\bi;M3 *Acacia trachycarpa*\shrub\2\bi;G1 ^Triodia *wiseana,Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.5	180		
Acacia atkinsiana	5	280	KTF27-07	
Acacia maitlandii	0.1	25		
Acacia tenuissima	0.1	50	KTF27-10	
Acacia trachycarpa	0.5	90		
Aristida contorta	0.1	30		
Arivela viscosa	0.1	20		
Corchorus sp.	0.1	20	KTF27-05	Inadequate material.
Corymbia hamersleyana	0.25	450		
Dodonaea coriacea	0.1	50	KTF27-02	
Eriachne mucronata	0.1	30	KTF27-04	Typical form. Erect
	hairs under sheaths.			
Evolvulus alsinoides var. villosicalyx	0.1	10		
Goodenia microptera	0.1	5		
Grevillea wickhamii	0.1	50	Sterile.	
Hakea lorea subsp. lorea	0.25	170	KTF27-11	
Hibiscus sturtii var. campylochlamys	0.1	10	KTF27-06	
Indigofera monophylla	0.1	10		
Polygala glaucifolia	0.1	2	KTF16-09=	
Ptilotus calostachyus	0.1	20		
Ptilotus exaltatus	0.1	10		
Ptilotus obovatus var. obovatus	0.1	30	KTF27-08	
Senna glutinosa subsp. glutinosa	0.1	170		
Senna notabilis	0.1	5		
Seringia nephrosperma	0.1	60	KTF27-01	
Sida fibulifera	0.1	7		
Tephrosia sp. Bungaroo Creek (M.E.	0.1	20	KTF27-03	
Trudgen 11601)				
Triodia epactia	0.5	40		
Triodia wiseana	5	40	KTF27-09	


XUG

Site **KTF28**
Described by RM/SY **Date** 24/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 551970 mE, 7597118 mN
Habitat Lower part of undulating plain.
Soil Red silty clay to light clay.
Vegetation *Acacia citrinoviridis* low woodland over *Triodia epactia* very open hummock grassland over *Paspalidium clementii*, (*Sporobolus australasicus*) very open bunch grassland.
Veg Condition Very Good: signs of cattle; very occasional weeds.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia citrinoviridis*\^tree\6\i;G1 ^*Triodia epactia*\^hummock grass\1\r;G2 *Paspalidium clementii,Sporobolus australasicus*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	160		
Acacia atkinsiana	0.1	280	KTF28-10	
Acacia citrinoviridis	28	350	KTF28-01	
Acacia pyrifolia var. *pyrifolia*	0.1	90	KTF28-09	
Alysicarpus muelleri	0.1	30		
Aristida contorta	0.1	30		
Arivela viscosa	0.1	60		
Bidens bipinnata	0.1	30		N=50.
Boerhavia burbidgeana	0.1	60		
Boerhavia coccinea	0.1	15	KTF28-18A	
Bulbostylis barbata	0.1	10		
Cheilanthes sieberi subsp. *sieberi*	0.1	20	REL04-09=	
Chrysopogon fallax	0.1	90		
Corchorus tridens	0.1	10		
Cucumis picrocarpus	0.1	50		
Cucumis variabilis	0.1	30		
Cullen pogonocarpum	0.1	25	KTF28-04	
Dichanthium sericeum subsp. *humilius*	0.1	30		
Digitaria brownii	0.1	30	KTF28-16	
Duperreya commixta	0.1	70		
Dysphania kalpari	0.1	20	KTF28-21	
Eremophila forrestii subsp. *forrestii*	0.1	110	KTF28-24	
Eriachne aristidea	0.1	30		
Eulalia aurea	0.1	100	KTF28-14	
Euphorbia biconvexa	0.1	30	KTF28-03	
Euphorbia boophthona	0.1	40	KTF28-02	
Euphorbia drummondii	0.1	10	KTF28-11	
Evolvulus alsinoides var. *villosicalyx*	0.1	40		
Goodenia microptera	0.1	20		
Goodenia muelleriana	0.1	30	KTF28-15	
Hakea lorea subsp. *lorea*	0.1	120	KTF27-11=	
Heliotropium pachyphyllum	0.1	20	KTF28-25	
Hibiscus burtonii	0.1	30	KTF28-13	
Hibiscus sturtii var. *grandiflorus*	0.1	15	KTF28-22	
Indigofera monophylla	0.1	40		
Ipomoea muelleri	0.1	40	KTF28-05	
Iseilema membranaceum	0.1	20	KTF28-17	
Maireana planifolia	0.1	80	KTF28-19	
Notoleptopus decaisnei	0.1	20		
Paspalidium clementii	2	20	REL06-03=	
Phyllanthus maderaspatensis	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus auriculifolius	0.1	40	KTF28-23	
Ptilotus exaltatus	0.1	40		
Ptilotus gomphrenoides	0.1	30	KTF14-17=	
Ptilotus obovatus var. *obovatus*	0.1	60		
Rhynchosia minima	0.1	20		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	5	KTF28-07	
Senna glutinosa subsp. *glutinosa* x *S. stricta*	0.1	10	KTF28-20	
Senna notabilis	0.1	5		
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.5	20		
Streptoglossa bubakii	0.1	10	KTF14-08=	
Striga squamigera	0.1	20	KTF28-06	
Tephrosia rosea s. lat	0.1	20	KTF28-08	Formal ID by M. Hislop (WAH) KTF50-32=.
Tribulus astrocarpus	0.1	30		
Tribulus macrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	8	40		
Vincetoxicum lineare	0.1	150	KTF28-18	

Site **KTF29**
Described by RM/SY **Date** 24/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 553566 mE, 7595292 mN
Habitat Broad drainage line with channels running E-W.
Soil Red silty clay.
Vegetation *Corymbia hamersleyana, Acacia citrinoviridis* low open woodland over *Grevillea wickhamii* subsp. *hispidula* scattered tall shrubs over *Triodia epactia*, (*T. wiseana*) open hummock grassland with *Themeda triandra* scattered tussock grasses.
Veg Condition Excellent: very occasional weeds.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*,^*Acacia citrinoviridis*\^tree\6\r;M1 ^*Grevillea wickhamii* subsp. *hispidula*\^shrub\4\bi;G1+ ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\i;G2 *Themeda triandra*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	45		
Abutilon macrum	0.1	25	KTF29-09	
Acacia adoxa var. *adoxa*	0.1	50	KTF29-17	
Acacia atkinsiana	0.1	230	KTF27-07=	
Acacia citrinoviridis	3	600	KTF28-01=	
Acacia colei	0.1	150	REL06-09=	Sterile.
Acacia pyrifolia var. *pyrifolia*	0.1	60	KTF28-09=	
Acacia trachycarpa	0.1	110		
Acacia tumida var. *pilbarensis*	0.1	130	KTF29-23	
Afrohybanthus aurantiacus	0.1	50		
Alternanthera nana	0.1	20	KTF29-18	
Alysicarpus muelleri	0.1	20		
Aristida inaequiglumis	0.1	70	KTF29-07	
Arivela viscosa	0.1	80		
Boerhavia burbidgeana	0.1	70		
Bonamia erecta	0.1	30	KTF29-19	
Bulbostylis barbata	0.1	5		
Cenchrus ciliaris	0.1	50		N=10.
Cenchrus setiger	0.1	40		N=5.
Chrysopogon fallax	0.1	110		
Corchorus tectus	0.1	40	KTF29-11	
Corchorus tridens	0.1	5		
Corymbia hamersleyana	5	650		
Crotalaria medicaginea var. *neglecta*	0.1	60	KTF29-02	
Cucumis variabilis	0.1	70		
Cymbopogon ambiguus	0.1	90	KTF29-15	
Cynodon convergens	0.1	25		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria brownii	0.1	20	REL06-01=	
Duperreya commixta	0.1	60		
Dysphania kalpari	0.1	20	KTF28-21=	
Enneapogon polyphyllus	0.1	20		
Eriachne aristidea	0.1	30		
Eriachne tenuiculmis	0.1	40	KTF29-16	
Eulalia aurea	0.1	70	KTF28-14=	
Euphorbia australis var. *subtomentosa*	0.1	5	KTF29-03	
Euphorbia biconvexa	0.1	30	KTF28-03=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena cunninghamii	0.1	5	KTF29-14	
Goodenia microptera	0.1	5		
Goodenia muelleriana	0.1	20	KTF28-15=	
Goodenia nuda	0.1	40	KTF29-20	N=19.
Grevillea wickhamii subsp. *hispidula*	0.5	270	KTF29-08	
Hibiscus sturtii var. *grandiflorus*	0.1	25	KTF28-22=	
Indigofera monophylla	0.1	50		
Iseilema membranaceum	0.1	20	KTF28-17=	
Isotropis atropurpurea	0.1	20	KTF29-05	
Jasminum didymum subsp. *lineare*	0.1	200		
Melhania oblongifolia	0.1	60	KTF29-24	
Notoleptopus decaisnei	0.1	15		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	25	REL06-03=	
Phyllanthus maderaspatensis	0.1	20		
Pterocaulon sphacelatum	0.1	40	KTF29-22	
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	20		
Ptilotus fusiformis	0.1	40	KTF29-25	Also KTF29-26.
Rhynchosia minima	0.1	30		
Rostellularia adscendens var. *clementii*	0.1	20	KTF29-13	
Senna glutinosa subsp. *glutinosa*	0.1	40		
Senna notabilis	0.1	20		
Sesbania cannabina	0.1	60		
Sida fibulifera	0.1	5		
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF29-01	
Solanum diversiflorum	0.1	10		
Sporobolus australasicus	0.1	10		
Streptoglossa bubakii	0.1	20	KTF14-08=	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50	KTF29-12	
Themeda triandra	2	50		
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Trigastrotheca molluginea	0.1	30		
Triodia epactia	20	40		
Triodia wiseana	0.5	50	KTF27-09=	
Triumfetta chaetocarpa	0.1	20	KTF29-4,27	
Urochloa occidentalis var. *ciliata*	0.1	30	REL06-06=	
Waltheria indica	0.1	30	KTF29-06	

Site **KTF30**
Described by BRMMG **Date** 22/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 548170 mE, 7601920 mN
Habitat Very gentle south-facing slope, low rise on plain.
Soil Dark reddish brown sandy loam.
Rock Type Ironstone.
Vegetation *Acacia ancistrocarpa* scattered tall shrubs over *Carissa lanceolata* scattered shrubs over *Triodia epactia* open hummock grassland.
Veg Condition Very Good: occasional weeds; signs of cattle.
Fire Age No sign of recent fire.
Notes *Corymbia hamersleyana* is sparsely scattered over this plain. Rise is very low above surrounding plain.
M1 ^*Acacia ancistrocarpa*\^shrub\4\bi;M2 *Carissa lanceolata*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia ancistrocarpa	0.5	210		
Acacia pyrifolia var. *pyrifolia*	0.1	60		
Acacia trachycarpa	0.1	70		
Alysicarpus muelleri	0.1	40		
Bonamia pannosa	0.1	4	KTF30-06	
Carissa lanceolata	0.5	150		
Cenchrus setiger	0.1	40		N=10.
Chrysopogon fallax	0.1	100		
Corchorus tectus	0.1	20	KTF20-11=	
Corchorus tridens	0.1	3	KTF30-05	
Corymbia hamersleyana	0.1	210		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Dichanthium sericeum subsp. *humilius*	0.1	25		
Enneapogon polyphyllus	0.1	30	KTF04-19=	
Eragrostis xerophila	0.1	30	KTF30-03	
Eriachne aristidea	0.1	8		
Eriachne pulchella	0.1	20		
Euphorbia biconvexa	0.1	40	KTF30-01	
Euphorbia boophthona	0.1	15	KTF30-16	
Euphorbia vaccaria var. *vaccaria*	0.1	20	KTF30-07	
Evolvulus alsinoides var. *villosicalyx*	0.1	5		
Gomphrena affinis subsp. *pilbarensis*	0.1	20	KTF30-09	
Gomphrena cunninghamii	0.1	20		
Goodenia microptera	0.1	10		
Gossypium australe	0.1	70		Burrup Peninsula form.
Heliotropium inexplicitum	0.1	10	KTF30-17	
Hibiscus leptocladus	0.1	30	KTF30-19	
Hibiscus sturtii var. *grandiflorus*	0.1	10	KTF30-08	
Indigofera colutea	0.1	20		
Indigofera linifolia	0.1	20	KTF30-15	
Ipomoea muelleri	0.1	30	KTF30-18	
Iseilema dolichotrichum	0.1	20	KTF30-2,14	
Neptunia dimorphantha	0.1	20	KTF30-04	
Notoleptopus decaisnei	0.1	12	KTF30-13	
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus exaltatus	0.1	3		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	40		
Ptilotus obovatus var. *obovatus*	0.1	4	KTF30-11	
Rhynchosia minima	0.1	35		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	50	KTF19-16=	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	15		
Sida arsiniata	0.1	20	KTF30-12	
Sida sp.	0.1	5	KTF30-22	Poor material; juvenile.
Sida sp.	0.1	6	KTF30-21	Poor material; juvenile.
Solanum diversiflorum	0.1	5		
Sporobolus australasicus	0.1	30		
Streptoglossa bubakii	0.1	10	KTF01-21=	
Tribulus hirsutus	0.1	20		
Triodia epactia	25	60	KTF20-01=	
Yakirra australiensis var. *australiensis*	0.1	20	KTF30-10	Also KTF30-20.

Site **KTF31**

Described by BRMMG **Date** 22/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 548817 mE, 7601571 mN

Habitat Plain.

Soil Dark reddish brown sandy loam.

Rock Type Chert, ironstone, sandstone; no rocks, only sparse gravel and a few small cobbles.

Vegetation *Acacia ancistrocarpa*, (*A. sclerosperma* subsp. *sclerosperma*, *Eremophila longifolia*) tall open shrubland over *Acacia trachycarpa*, *Senna artemisioides* subsp. *oligophylla* scattered shrubs over *Triodia epactia* hummock grassland over *Eulalia aurea*, (*Chrysopogon fallax*) very open tussock grassland and *Rhynchosia minima* scattered herbs.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes M1 ^*Acacia ancistrocarpa,Acacia sclerosperma* subsp. *sclerosperma,Eremophila longifolia*\^shrub\4\r;M2 *Acacia trachycarpa,Senna artemisioides* subsp. *oligophylla*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Eulalia aurea,Chrysopogon fallax,Rhynchosia*\tussock grass,forb\2\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	35	KTF31-14	
Abutilon otocarpum	0.1	15		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia ancistrocarpa	3	210		
Acacia sclerosperma subsp. *sclerosperma*	0.5	250		
Acacia trachycarpa	0.5	160		
Aristida contorta	0.1	30		
Aristida inaequiglumis	0.1	120	KTF31-09	
Arivela viscosa	0.1	50		
Bonamia erecta	0.1	30		
Chrysopogon fallax	0.5	120		
Corchorus tectus	0.1	30	KTF20-11=	
Crotalaria medicaginea var. *neglecta*	0.1	45		
Cucumis variabilis	0.1	10		
Dysphania kalpari	0.1	10	KTF31-11	
Enneapogon polyphyllus	0.1	20		
Eremophila forrestii subsp. *forrestii*	0.1	120	KTF31-13	
Eremophila longifolia	0.5	220		
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	20		
Eulalia aurea	3	60		
Euphorbia biconvexa	0.1	15	KTF31-02	
Euphorbia boophthona	0.1	5	KTF31-06	
Euphorbia vaccaria var. *vaccaria*	0.1	1	KTF31-12	
Evolvulus alsinoides var. *villosicalyx*	0.1	12		
Gomphrena cunninghamii	0.1	20		
Goodenia forrestii	0.1	30	KTF31-1,15	
Goodenia microptera	0.1	30		
Gossypium australe	0.1	80	KTF19-26=	Burrup Peninsula form.
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF30-08=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera monophylla	0.1	45		
Ipomoea muelleri	0.1	10	KTF30-18=	
Ipomoea polymorpha	0.1	20	KTF31-16	
Iseilema membranaceum	0.1	30	KTF31-21	
Isotropis atropurpurea	0.1	40	KTF20-04=	
Maireana planifolia x *villosa*	0.1	40	KTF31-19	
Neptunia dimorphantha	0.1	12	KTF30-04=	
Paraneurachne muelleri	0.1	20		
Paspalidium rarum	0.1	15	KTF31-03	
Polygala glaucifolia	0.1	3	KTF31-18	
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus astrolasius	0.1	40		
Ptilotus exaltatus	0.1	10		
Ptilotus fusiformis	0.1	30		
Ptilotus gaudichaudii	0.1	12		
Ptilotus helipteroides	0.1	40		
Rhynchosia minima	0.5	40		
Senna artemisioides subsp. *oligophylla*	0.25	140	KTF31-04	
Senna notabilis	0.1	10		
Sida echinocarpa	0.1	20	KTF31-20	
Sida sp.	0.1	5	KTF31-08	Poor material; juvenile.
Sida sp. L (A.M. Ashby 4202) PN	0.1	15	KTF31-05	
Sida spinosa	0.1	20	KTF31-10	
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	10	KTF01-21=	
Tribulus macrocarpus	0.1	8	KTF31-17	
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	35	110	KTF20-01=	
Triumfetta chaetocarpa	0.1	20	KTF31-07	
Yakirra australiensis var. *australiensis*	0.1	15	KTF30-10=	

Site **KTF32**

Described by BRMMG **Date** 23/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 549146 mE, 7601167 mN

Habitat Drainage area.

Soil Dusky red (10R 3/4) sandy clay loam.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa*, (*A. inaequilatera*) tall shrubland over *A. trachycarpa* shrubland over *Triodia epactia* very open hummock grassland and C*hrysopogon fallax*, (*Eulalia aurea*) very open tussock grassland.

Veg Condition Excellent: 1 x **Vachellia.*

Fire Age No sign of recent fire.

Notes Several bare patches within quadrat - possibly recent fire?; no other sign overall.
U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1+ ^*Acacia ancistrocarpa,Acacia inaequilatera*\^shrub\4\i;M2 *Acacia trachycarpa*\shrub\3\i;G1 ^*Chrysopogon fallax,Eulalia aurea*\^tussock grass\2\r;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	30	KTF32-16	
Abutilon otocarpum	0.1	70	KTF32-05B	
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia ancistrocarpa	20	210		
Acacia inaequilatera	0.25	220		
Acacia tenuissima	0.1	120	KTF32-13	
Acacia trachycarpa	15	160		
Alysicarpus muelleri	0.1	60		
Arivela viscosa	0.1	40		
Bonamia erecta	0.1	30		
Bonamia pannosa	0.1	20	KTF32-03	
Chrysopogon fallax	7	110		
Corchorus sp.	0.1	30	KTF32-05C	Inadequate material.
Corchorus tectus	0.1	30	KTF32-01	
Corymbia hamersleyana	2	450		
Cucumis picrocarpus	0.1	20	KTF03-38=	
Eriachne aristidea	0.1	10		
Eriachne pulchella	0.1	20		
Eulalia aurea	0.5	50		
Euphorbia biconvexa	0.1	20	KTF32-04	
Euphorbia vaccaria var. *vaccaria*	0.1	1	KTF32-17	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena cunninghamii	0.1	15		
Goodenia forrestii	0.1	30	KTF31-15=	
Goodenia microptera	0.1	40		
Goodenia nuda	0.1	40	KTF19-09=	
Gossypium australe	0.1	30	KTF19-26=	
Hakea lorea subsp. *lorea*	0.1	170	KTF32-07	
Heliotropium cunninghamii	0.1	25	KTF32-09	
Heliotropium pachyphyllum	0.1	30	KTF32-08	
Hibiscus coatesii	0.1	5	KTF32-18	
Hibiscus sturtii var. *grandiflorus*	0.1	25	KTF30-08=	
Indigofera linifolia	0.1	30	KTF30-15=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera monophylla	0.1	30		
Isotropis atropurpurea	0.1	20	KTF20-04=	
Notoleptopus decaisnei	0.1	20	KTF32-11	
Paraneurachne muelleri	0.1	40		
Polygala glaucifolia	0.1	5	KTF31-18=	
Portulaca oleracea/intraterranea	0.1	3		
Ptilotus astrolasius	0.1	10		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	10		
Scaevola parvifolia subsp. *pilbarae*	0.1	20	KTF32-15	
Senna glutinosa subsp. *glutinosa*	0.1	220		
Senna glutinosa subsp. *pruinosa*	0.1	170		
Senna notabilis	0.1	20		
Seringia nephrosperma	0.1	70	KTF18-03=	
Sida echinocarpa	0.1	30	KTF32-20	
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF32-05	
Sida spinosa	0.1	30	KTF31-10=	
Solanum diversiflorum	0.1	30		
Solanum lasiophyllum	0.1	50	KTF32-06	
Sporobolus australasicus	0.1	15		
Themeda triandra	0.1	50	KTF32-19	Formal ID by M. Hislop (WAH).
Tribulus hirsutus	0.1	2		
Triodia epactia	7	70	KTF20-01=	
Triodia wiseana	0.1	50	KTF32-10	
Triumfetta chaetocarpa	0.1	20	KTF31-07=	
Triumfetta clementii	0.1	40	KTF32-12	
Vachellia farnesiana	0.1	45		N=1.
Yakirra australiensis var. *australiensis*	0.1	15	KTF32-2,14	

Site **KTF33**
Described by BRMMG **Date** 23/4/2020
Type Quadrat 62.5 x 40 m
Central Coord 50 549575 mE, 7600854 mN
Habitat Broad shallow drainage line.
Soil Dusky red (10R 3/4) sandy clay loam.
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa,* (*A. colei*) tall shrubland over *A. trachycarpa*, (*A, tenuissima*) open shrubland over *Chrysopogon fallax*, (*Themeda triandra*) very open tussock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes A few open areas, which may have been burnt a few years ago.
U1 ^*Corymbia hamersleyana*\^tree\6\r;M1+ ^*Acacia ancistrocarpa,Acacia colei*\^shrub\4\i;M2 *Acacia trachycarpa,Acacia tenuissima*\shrub\3\r;G1 ^*Chrysopogon fallax,Themeda triandra*\^tussock grass\2\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	5		
Acacia ancistrocarpa	20	210		
Acacia colei	1	250	Sterile.	
Acacia maitlandii	0.1	180		
Acacia tenuissima	1	120	KTF32-13=	
Acacia trachycarpa	2.5	140		
Alysicarpus muelleri	0.1	35		
Aristida contorta	0.1	5		
Aristida holathera var. *holathera*	0.1	45	KTF33-07	
Aristida latifolia	0.1	20	KTF33-09	
Arivela viscosa	0.1	40		
Bonamia erecta	0.1	30		
Capparis spinosa subsp. *nummularia*	0.1	20		
Chrysopogon fallax	7	110		
Corchorus tectus	0.1	30	KTF32-01=	
Corchorus tridens	0.1	10	KTF33-02	
Corymbia hamersleyana	6	600		
Crotalaria medicaginea var. *neglecta*	0.1	40		
Cucumis picrocarpus	0.1	10		
Cucumis variabilis	0.1	60		
Cullen pogonocarpum	0.1	25	KTF33-03	
Cynodon convergens	0.1	20	KTF33-14	
Digitaria brownii	0.1	30		
Duperreya commixta	0.1	280		
Dysphania rhadinostachya subsp. *inflata*	0.1	25	KTF33-05	
Enneapogon caerulescens	0.1	15		
Enneapogon polyphyllus	0.1	15		
Eriachne pulchella	0.1	20		
Eulalia aurea	0.1	30		
Euphorbia biconvexa	0.1	30	KTF32-04=	
Euphorbia vaccaria var. *vaccaria*	0.1	1	KTF32-17=	
Evolvulus alsinoides var. *decumbens*	0.1	25	KTF33-13	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF33-12	
Goodenia microptera	0.1	15		
Goodenia nuda	0.1	40	KTF33-04	N=40.

Name	Cover (%)	Height (cm)	Specimen	Notes
Hakea lorea subsp. *lorea*	0.1	170	KTF33-16	
Heliotropium pachyphyllum	0.1	30	KTF32-08=	
Hibiscus burtonii	0.1	30		
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF30-08=	
Indigofera monophylla	0.1	40		
Isotropis atropurpurea	0.1	30	KTF20-04=	
Perotis rara	0.1	12		
Polymeria ambigua	0.1	5	KTF33-15	
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus aervoides	0.1	6	KTF33-10	
Ptilotus astrolasius	0.1	10		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	20		
Rhynchosia minima	0.1	60		
Senna artemisioides subsp. *oligophylla*	0.1	15	KTF31-04=	
Senna glutinosa subsp. *glutinosa*	0.1	45		
Senna notabilis	0.1	20		
Seringia nephrosperma	0.1	90	KTF18-03=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF32-05=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	45		
Sida spinosa	0.1	25	KTF33-01	
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	15	KTF01-21=	
Streptoglossa decurrens	0.1	15	KTF33-08	
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	12	KTF33-11	
Themeda triandra	0.5	90		
Tribulus hirsutus	0.1	15		
Vincetoxicum lineare	0.1	40		
Yakirra australiensis var. *australiensis*	0.1	20	KTF32-02=	

Site **KTF34**
Described by PL/AL **Date** 22/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 545572 mE, 7602035 mN
Habitat Cracking clay plain.
Soil Dark reddish brown light clay; crab holes.
Rock Type Basalt, ironstone.
Vegetation **Vachellia farnesiana* scattered tall shrubs over *Astrebla elymoides* very open tussock grassland over *Cynodon convergens*, (*Eragrostis tenellula*) very open bunch grassland with *Sida spinosa*, (*Grona muelleri, Hibiscus verdcourtii, Operculina aequisepala, Stemodia kingii*) very open herbland.
Veg Condition Very Good: cattle tracks, scats and grazing; a few **Vachellia* present.
Fire Age No sign of recent fire.
Notes Herb rich. M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1+ ^*Astrebla elymoides*\^tussock grass\2\r;G2 *Cynodon convergens,Eragrostis tenellula,Sida spinosa,Grona muelleri,Hibiscus verdcourtii*\other grass,forb\2\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abelmoschus ficulneus	0.1	40	KTF34-06	N=40.
Abutilon malvifolium	0.1	30		
Arivela viscosa	0.1	40		
Astrebla elymoides	5	90	KTF34-01	N=120. Flowering culms strongly recurved.
Austrobryonia pilbarensis	0.1	40		
Boerhavia paludosa	0.1	40		
Corchorus tridens	0.1	30	KTF34-08	
Cucumis picrocarpus	0.1	30		
Cynodon convergens	6	40		
Grona muelleri	0.5	20	KTF34-07	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	15		N=1.
Dysphania rhadinostachya	0.1	30		Sterile.
Eragrostis tenellula	1	30		
Eragrostis xerophila	0.1	30		
Eriachne benthamii	0.1	35		
Eriachne flaccida	0.1	35	KTF34-09	
Euphorbia inappendiculata var. *queenslandica*	0.1	15	KTF34-02	Formal ID by M. Hislop (WAH) KTF70-12=
Euphorbia boophthona	0.1	40		
Gomphrena affinis subsp. *pilbarensis*	0.1	50		
Hibiscus verdcourtii	0.5	40		
Indigastrum parviflorum	0.1	40	KTF34-03	
Indigofera trita subsp. *trita*	0.1	25		
Ipomoea lonchophylla	0.1	30		
Iseilema membranaceum	0.1	40	KTF34-05	
Lotus cruentus	0.1	20	KTF13-11=	
Marsilea hirsuta	0.1	10		
Mimulus gracilis	0.1	15	KTF13-06=	
Neptunia dimorphantha	0.1	40	KTF23-06=	
Operculina aequisepala	0.5	40		
Phyllanthus maderaspatensis	0.1	40		
Portulaca oleracea/intraterranea	0.1	25		Small flower.
Ptilotus gomphrenoides	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna notabilis	0.1	15		
Sida sp. L (A.M. Ashby 4202) PN	0.1	30		
Sida spinosa	1	35		
Sporobolus australasicus	0.1	30		
Stemodia kingii	0.5	40		
Streptoglossa bubakii	0.1	40		
Striga squamigera	0.1	20	KTF23-12=	
Swainsona thompsoniana	0.1	15	KTF34-04	N=20.
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vachellia farnesiana	0.5	280		N=5.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	20		

Site **KTF35**
Described by PL/AL **Date** 22/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 545805 mE, 7601999 mN
Habitat Stony plain.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera*, *A. ancistrocarpa* scattered tall shrubs over *Carissa lanceolata* scattered shrubs over *Triodia epactia*, (*T. wiseana*) open hummock grassland and *Eulalia aurea* scattered tussock grasses.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes *Acacia xiphophylla* accidentally included in site; however no other clay taxa under the shrub.
U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia inaequilatera*,^*Acacia ancistrocarpa*\^shrub\4\bi;M2 *Carissa lanceolata*\shrub\3\bi;G1+ ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\i;G2 *Eulalia aurea*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	60	KTF35-05	Form 4.
Abutilon lepidum	0.1	25	KTF35-04	Form 1.
Abutilon otocarpum	0.1	40		
Acacia ancistrocarpa	1	350		
Acacia colei	0.1	180		Sterile.
Acacia inaequilatera	1	400		
Acacia victoriae subsp. *victoriae*	0.5	120	KTF35-08	
Acacia xiphophylla	0.75	400		Generally not part of vegetation unit; unintentionally included in site.
Aristida latifolia	0.1	130	KTF35-11	
Bonamia pilbarensis	0.1	15	KTF35-02	
Carissa lanceolata	1	120		
Chrysopogon fallax	0.1	120		
Corchorus tridens	0.1	25	KTF35-13	
Corymbia hamersleyana	0.5	400		
Grona muelleri	0.1	25	KTF34-07=	
Digitaria brownii	0.1	40		
Duperreya commixta	0.1	100		
Enneapogon caerulescens	0.1	25		
Eriachne aristidea	0.1	35		
Eulalia aurea	0.5	70		
Euphorbia biconvexa	0.1	30	KTF35-01	
Evolvulus alsinoides var. *decumbens*	0.1	40		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia forrestii	0.1	20		
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	30	KTF35-10	
Gossypium australe	0.1	30		
Hakea lorea subsp. *lorea*	0.1	80		
Hibiscus coatesii	0.1	40		
Indigofera linifolia	0.1	25		

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera monophylla	0.1	40		
Ipomoea polymorpha	0.1	10		
Iseilema membranaceum	0.1	8	KTF35-07	
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	15		
Paspalidium rarum	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Polygala glaucifolia	0.1	5	KTF35-06	
Ptilotus calostachyus	0.1	60		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	40		
Senna glutinosa subsp. x *luerssenii*	0.1	120		
Senna notabilis	0.1	20		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	30		Ferruginous form.
Sida spinosa	0.1	30		
Solanum diversiflorum	0.1	40		
Solanum lasiophyllum	0.1	50		
Sporobolus australasicus	0.1	25		
Streptoglossa bubakii	0.1	10		
Striga curviflora	0.1	35	KTF35-12	
Tephrosia supina	0.1	30	KTF35-03	
Themeda triandra	0.1	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia epactia	24	60		
Triodia wiseana	4	70		
Waltheria indica	0.1	30		

Site **KTF36**

Described by PL/AL **Date** 22/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 547367 mE, 7601751 mN

Habitat Floodplain adjacent to a major drainage line.

Soil Dark reddish brown (2.5YR 2.5/4) sandy loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. sclerosperma* subsp. *sclerosperma*) tall open shrubland over *Carissa lanceolata*, (*A. trachycarpa*) open shrubland over *Triodia epactia* very open hummock grassland and *Chrysopogon fallax, *Cenchrus ciliaris* scattered tussock grasses.

Veg Condition Very Good: cattle disturbance (tracks, scats and grazing); some weeds.

Fire Age No sign of recent fire.

Notes Near cattle yard and tank.

U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*,^*Acacia sclerosperma* subsp. *sclerosperma*\^shrub\4\r;M2 *Carissa lanceolata,Acacia trachycarpa*\shrub\3\r;G1 *Chrysopogon fallax,Cenchrus ciliaris*\tussock grass\2\bi;G2+ ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	60		Form 4.
Abutilon lepidum	0.1	50		Form 1.
Abutilon otocarpum	0.1	40		
Abutilon sp. dioicum (A.A. Mitchell PRP 1618)	0.1	60		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40		
Acacia ancistrocarpa	2.5	250		
Acacia sclerosperma subsp. *sclerosperma*	1.5	220		
Acacia trachycarpa	0.5	160		
Afrohybanthus aurantiacus	0.1	30		
Alternanthera nana	0.1	25		
Alysicarpus muelleri	0.1	40		
Aristida inaequiglumis	0.1	80	KTF36-08	Formal ID by M. Hislop (WAH).
Arivela viscosa	0.5	60		
Boerhavia burbidgeana	0.1	35		
Boerhavia coccinea	0.1	40		
Boerhavia repleta	0.1	20		
Bonamia erecta	0.1	50		
Carissa lanceolata	2.5	190		
Cenchrus ciliaris	0.5	65		N=230.
Cenchrus setiger	0.1	60		N=40.
Chrysopogon fallax	0.5	80		
Corchorus sp.	0.1	40	KTF36-06	Inadequate material.
Corchorus tridens	0.1	20		
Corymbia hamersleyana	0.25	400		
Crotalaria medicaginea var. *neglecta*	0.1	40		
Cucumis picrocarpus	0.1	10		
Cullen pogonocarpum	0.1	20	KTF36-04	
Cynodon convergens	0.1	40		
Dactyloctenium radulans	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Dysphania kalpari	0.1	10		
Dysphania rhadinostachya	0.1	35		Sterile.
Enneapogon polyphyllus	0.1	25		
Eragrostis xerophila	0.1	30		
Eremophila longifolia	0.1	100		
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	25		
Euphorbia australis var. *subtomentosa*	0.1	5	KTF36-02	
Euphorbia biconvexa	0.1	25	KTF36-01	
Evolvulus alsinoides var. *decumbens*	0.1	30		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Goodenia forrestii	0.1	25		
Goodenia microptera	0.1	40		
Goodenia nuda	0.1	30		N=15.
Gossypium australe	0.1	50		
Gossypium robinsonii	0.1	10		
Heliotropium inexplicitum	0.1	8	KTF36-09	
Heliotropium pachyphyllum	0.1	25		
Heliotropium tenuifolium	0.1	30		
Hibiscus sturtii var. *grandiflorus*	0.1	40		
Indigofera colutea	0.1	20		
Indigofera linnaei	0.1	20		
Indigofera monophylla	0.1	60		
Ipomoea muelleri	0.1	30		
Ipomoea polymorpha	0.1	15		
Iseilema membranaceum	0.1	25	KTF36-03	
Notoleptopus decaisnei	0.1	30		
Paspalidium clementii	0.1	20		
Paspalidium rarum	0.1	25		
Phyllanthus erwinii	0.1	8		
Portulaca oleracea/intraterranea	0.1	8		Small flower.
Ptilotus exaltatus	0.1	10		
Rhynchosia minima	0.1	30		
Salsola australis	0.1	25		
Scaevola spinescens	0.1	30		Broad leaf form.
Sclerolaena cornishiana	0.1	8		
Senna artemisioides subsp. *helmsii*	0.1	50		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	80		
Sida arsiniata	0.1	20		
Sida fibulifera	0.1	25		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Solanum diversiflorum	0.1	50		
Sporobolus australasicus	0.25	25		
Streptoglossa bubakii	0.1	15		
Streptoglossa decurrens	0.1	40		
Streptoglossa decurrens	0.1	30		
Tribulopis angustifolia	0.1	20	AL09=	
Tribulus hirsutus	0.1	25		
Tribulus macrocarpus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	7	50		
Triodia wiseana	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triumfetta chaetocarpa	0.1	15	KTF36-07	
Triumfetta clementii	0.1	25		
Urochloa occidentalis var. *occidentalis*	0.1	20		

Site **KTF37**
Described by PL/AL **Date** 23/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 547581 mE, 7602308 mN
Habitat Major drainage; bed, bank and island.
Soil Dark reddish brown sandy loam in bed; sandy clay loam on banks.
Rock Type Calcrete, ironstone.
Vegetation *Eucalyptus camaldulensis* subsp. *refulgens* woodland over *Melaleuca glomerata* scattered tall shrubs over *Carissa lanceolata* scattered shrubs over *Eulalia aurea, *Cenchrus setiger*, (*C. ciliaris*) very open tussock grassland with *Triodia epactia* scattered hummock grasses and mixed scattered sedges.
Veg Condition Very Good: cattle scats, tracks and grazing; some weeds.
Fire Age No sign of recent fire.
Notes Site not pegged; located in heritage exclusion zone.
U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens*\^tree\7\i;M1 ^*Melaleuca glomerata*\^shrub\4\bi;M2 *Carissa lanceolata*\shrub\3\bi;G1 ^*Eulalia aurea*,^*Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\r;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Striga sp./ *Buchnera sp.*	0.1	25	KTF37-30a	Submitted to WAH for formal ID-unable to ascertain ID (sterile).
Abutilon lepidum	0.1	60		Form 4.
Acacia arida	0.1	140	KTF37-27	
Acacia colei	0.75	280		Sterile.
Acacia pyrifolia var. *pyrifolia*	0.5	210		
Aeschynomene indica	0.1	170		
Aeschynomene indica	0.1	50		
Afrohybanthus aurantiacus	0.1	40		
Alternanthera angustifolia	0.1	30	KTF37-07	
Alternanthera denticulata	0.1	25		
Alternanthera nana	0.1	25		
Alysicarpus muelleri	0.1	50		
Amaranthus undulatus	0.1	50		
Ammannia multiflora	0.1	10		
Arivela viscosa	0.1	50		
Basilicum polystachyon	0.1	25		
Bergia pedicellaris	0.1	8		
Blumea tenella	0.1	25		
Boerhavia burbidgeana	0.1	30		
Boerhavia coccinea	0.1	25		
Bothriochloa ewartiana	0.25	120	KTF37-21	Formal ID by M. Hislop (WAH).
Bothriochloa ewartiana	0.5	120	KTF37-02	
Bulbostylis turbinata	0.1	10		
Carissa lanceolata	2	160		
Cenchrus ciliaris	0.5	80		N=200.
Cenchrus setiger	3	90		N=800.
Centipeda minima subsp. *macrocephala*	0.1	10		
Chara sp.	0.1	8	KTF37-14	In water.
Cheilanthes sieberi subsp. *sieberi*	0.1	15		
Chloris pumilio	0.1	40	KTF37-03	N=10.
Chrysopogon fallax	0.1	110		

Name	Cover (%)	Height (cm)	Specimen	Notes
Corchorus aestuans	0.1	30	KTF37-15b	
Corchorus tridens	0.1	20		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis picrocarpus	0.1	30	KTF37-28	
Cucumis variabilis	0.1	45		
Cymbopogon ambiguus	0.1	100	KTF37-24	
Cynanchum floribundum	0.1	25	KTF37-29	2 colleters.
Cynodon convergens	0.1	30	KTF37-22	
Cynodon dactylon	0.1	10		
Cyperus difformis	0.25	40	KTF37-11	
Cyperus iria	0.1	25		
Cyperus ixiocarpus	0.1	80		
Cyperus squarrosus	0.1	10		
Dactyloctenium radulans	0.1	15		
Grona muelleri	0.1	30	KTF37-06	Formal ID by M. Hislop (WAH).
Dichanthium sericeum subsp. *humilius*	0.1	25		
Dichanthium sericeum subsp. *polystachyum*	0.1	160	KTF37-16	
Duperreya commixta	0.1	30		
Echinochloa colona	0.1	40		N=1.
Eleocharis atropurpurea	0.25	10	KTF37-08	
Elytrophorus spicatus	0.25	25		
Eragrostis cumingii	0.1	30		
Eragrostis tenellula	0.5	40		
Eriachne benthamii	0.1	40		
Eriachne pulchella	0.1	20		
Eriachne tenuiculmis	0.1	40		
Eucalyptus camaldulensis subsp. *refulgens*	18	1400		
Eulalia aurea	5	80		
Euphorbia australis var. *subtomentosa*	0.1	5	KTF37-25	
Euphorbia trigonosperma	0.1	40	KTF37-04	Match to WAH ID.
Evolvulus alsinoides var. *decumbens*	0.1	25		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis littoralis	0.25	25	KTF37-10	
Flueggea virosa subsp. *melanthesoides*	0.1	150		
Glinus oppositifolius	0.1	1	KTF37-17	
Gomphrena affinis subsp. *pilbarensis*	0.1	25		
Gomphrena cunninghamii	0.1	10		
Goodenia forrestii	0.1	25		
Goodenia lamprosperma	0.1	40		
Gossypium robinsonii	0.1	130		
Haloragis sp.	0.1	25	KTF37-40	Inadequate material.
Heliotropium cunninghamii	0.1	25		
Heteropogon contortus	0.1	120		
Indigofera linifolia	0.1	30		
Indigofera linnaei	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ipomoea coptica	0.1	30		
Ipomoea muelleri	0.1	70	KTF37-18	
Ipomoea polymorpha	0.1	40		
Iseilema membranaceum	0.1	25	KTF37-05	
Malvastrum americanum	0.1	60		N=30.
Marsilea hirsuta	0.1	8	KTF37-12	
Melaleuca glomerata	1.5	320		
Mimulus gracilis	0.1	10		
Notoleptopus decaisnei	0.1	30		
Panicum decompositum	0.1	120	KTF37-19	
Phyllanthus exilis	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Pluchea rubelliflora	0.1	25		
Portulaca pilosa s. lat	0.1	15	KTF37-31	Formal ID by M. Hislop (WAH) KTF23-17=
Portulaca oleracea/intraterranea	0.1	15		Small flower.
Pterocaulon sphacelatum	0.1	50		
Ptilotus axillaris	0.1	10	KTF37-23	
Ptilotus exaltatus	0.1	40		
Ptilotus obovatus var. *obovatus*	0.1	70		
Rhynchosia minima	0.1	50		
Rostellularia adscendens var. *clementii*	0.1	25		
Rotala diandra	0.1	10	KTF37-13	
Rotala mexicana	0.1	30	KTF37-15a	
Schoenoplectiella laevis	0.25	30	KTF37-09	
Scleromitrion galioides	0.1	25		
Sesbania cannabina	0.1	130		
Sida fibulifera	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	30		Ferruginous form.
Sida spinosa	0.1	25		
Solanum diversiflorum	0.1	40		
Sporobolus australasicus	0.1	15		
Stemodia grossa	0.1	10		
Streptoglossa bubakii	0.1	30		
Tephrosia rosea var. *clementii*	0.1	40	KTF37-20	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Themeda triandra	0.1	130	KTF37-01	N=25. Formal ID by M. Hislop (WAH)
Themeda triandra	0.1	140		
Tribulus macrocarpus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	0.5	60		
Triumfetta chaetocarpa	0.1	10	KTF36-07=	
Urochloa occidentalis var. *ciliata*	0.1	40		
Vachellia farnesiana	0.1	170		N=15.
Vigna lanceolata var. *lanceolata*	0.1	40		
Wahlenbergia tumidifructa	0.1	30		
Waltheria indica	0.1	25		

Site **KTF38**

Described by PL/AL **Date** 23/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 547708 mE, 7602377 mN

Habitat Floodplain; small floodbank dissecting N edge quadrat; similar veg and species present.

Soil Dark reddish brown sandy clay loam.

Vegetation *Corymbia hamersleyana*, (*Hakea lorea* subsp. *lorea*) low open woodland over *Acacia tumida* var. *pilbarensis*, *A. pyrifolia* var. *pyrifolia*, *A. ancistrocarpa*, **Vachellia farnesiana*, (*A. trachycarpa*) tall shrubland over *Carissa lanceolata* open shrubland over **Cenchrus setiger*, (**C. ciliaris*) open tussock grassland and *Triodia epactia* very open hummock grassland.

Veg Condition Poor: high cover of **Cenchrus* spp., **Vachellia farnesiana* also present, cattle scats, tracks and grazing.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana,Hakea lorea* subsp. *lorea*\^tree\6\r;M1+ ^*Acacia tumida* var. *pilbarensis*,^*Acacia pyrifolia* var. *pyrifolia,Acacia ancistrocarpa,Vachellia farnesiana,Acacia trachycarpa*\^shrub\4\i;M2 *Carissa lanceolata*\shrub\3\r;G1 ^*Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\i;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	20		
Abutilon otocarpum	0.1	40		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40		
Acacia ancistrocarpa	2	270		
Acacia ancistrocarpa x *trachycarpa*	0.1	260	KTF38-09	
Acacia colei	0.25	350		Sterile.
Acacia pyrifolia var. *pyrifolia*	3	250		
Acacia trachycarpa	0.5	250		
Acacia tumida var. *pilbarensis*	3	350		
Afrohybanthus aurantiacus	0.1	35		
Alysicarpus muelleri	0.1	70		
Arivela viscosa	0.1	40		
Boerhavia coccinea	0.1	35		
Boerhavia repleta	0.1	35		
Bonamia alatisemina	0.1	15	KTF38-10	
Bonamia erecta	0.1	50		
Capparis lasiantha	0.1	40		
Carissa lanceolata	3	150		
Cenchrus ciliaris	5	70		N=1500.
Cenchrus setiger	15	90		N=3500.
Chrysopogon fallax	0.25	130		
Corchorus sp.	0.1	25	KTF38-01	Inadequate material.
Corchorus tridens	0.1	30		
Corymbia hamersleyana	2	400		
Crotalaria medicaginea var. *neglecta*	0.1	50		
Dysphania rhadinostachya	0.1	20		Sterile.
Eremophila longifolia	0.1	160		
Eulalia aurea	0.1	90		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF38-04	
Euphorbia trigonosperma	0.1	35	KTF37-04=	
Goodenia forrestii	0.1	25		
Gossypium australe	0.1	60		
Grevillea pyramidalis subsp. *leucadendron*	0.1	280		

Name	Cover (%)	Height (cm)	Specimen	Notes
Grevillea wickhamii subsp. *hispidula*	0.1	190		
Hakea lorea subsp. *lorea*	1	350		
Heliotropium cunninghamii	0.1	30	KTF38-08	
Indigofera monophylla	0.1	60		
Ipomoea muelleri	0.1	30		
Ipomoea polymorpha	0.1	40		
Maireana planifolia	0.1	40		
Polymeria ambigua	0.1	10	KTF38-06	
Portulaca oleracea/intraterranea	0.1	25		Small flower.
Ptilotus astrolasius	0.1	60		
Ptilotus auriculifolius	0.1	40		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	50		
Salsola australis	0.1	30		
Sclerolaena cornishiana	0.1	40		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	70		
Senna notabilis	0.1	20		
Sida arsiniata	0.1	25		
Sida clementii	0.1	70	KTF38-07	
Sida fibulifera	0.1	25		
Sida sp.	0.1	10	KTF38-03	Poor material; juvenile.
Sida sp. L (A.M. Ashby 4202) PN	0.1	10		
Solanum diversiflorum	0.1	50		
Solanum lasiophyllum	0.1	50		
Sporobolus australasicus	0.1	25		
Stylobasium spathulatum	0.1	160		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	10	KTF38-05	
Themeda triandra	0.1	70		
Tribulopis angustifolia	0.1	30		
Tribulus hirsutus	0.1	25		
Tribulus macrocarpus	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		
Trigastrotheca molluginea	0.1	10		
Triodia epactia	4	60		
Triumfetta chaetocarpa	0.1	30	KTF36-07=	
Vachellia farnesiana	2	250		N=15.

Site **KTF39**
Described by PL/SC **Date** 23/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 572971 mE, 7548243 mN
Habitat Hill slope; west of low mesa.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia trudgeniana* scattered tall shrubs over *Triodia wiseana* hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;M1 ^*Acacia trudgeniana*\^shrub\4\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia elachantha	0.1	30		
Acacia trudgeniana	0.25	300		
Crotalaria medicaginea var. *neglecta*	0.1	10		
Cullen leucochaites	0.1	25		
Dolichocarpa crouchiana	0.1	10		
Dysphania rhadinostachya	0.1	8		Sterile.
Enneapogon caerulescens	0.1	10		
Enneapogon polyphyllus	0.1	30		
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	600		
Euphorbia trigonosperma	0.1	25		
Gomphrena cunninghamii	0.1	20		
Indigofera monophylla	0.1	40		
Mnesithea formosa	0.1	30		
Paspalidium clementii	0.1	20		
Polycarpaea holtzei	0.1	8		
Polycarpaea longiflora	0.1	25		
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	25		
Schizachyrium fragile	0.1	30		
Themeda sp. Mt Barricade (M.E. Trudgen 2471)	0.1	70		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia wiseana	34	40		

Site **KTF40**

Described by PL/AL **Date** 24/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 554487 mE, 7594648 mN

Habitat Gently sloping plain, sloping west.

Soil Dark reddish-brown loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa*, (*A. atkinsiana, Grevillea wickhamii* subsp. *hispidula*) tall open shrubland over *A. trachycarpa* scattered shrubs over *Triodia epactia*, (*T. wiseana*) very open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1+ ^*Acacia ancistrocarpa,Acacia atkinsiana,Grevillea wickhamii* subsp. *hispidula*\^shrub\4\r;M2 *Acacia trachycarpa*\shrub\3\bi;G1 ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	4	280		
Acacia atkinsiana	2	240		
Acacia maitlandii	0.1	170		
Acacia tenuissima	0.1	140		
Acacia trachycarpa	1	140		
Aristida holathera var. *holathera*	0.1	25		
Bonamia pilbarensis	0.1	10	KTF40-01	
Corchorus sp.	0.1	20	KTF40-02	Inadequate material.
Corymbia hamersleyana	1.5	600		
Duperreya commixta	0.1	50		
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	15		
Goodenia microptera	0.1	10		
Grevillea wickhamii subsp. *hispidula*	0.5	220		
Hakea chordophylla	0.1	160		
Heliotropium pachyphyllum	0.1	10		
Indigofera monophylla	0.1	40		
Ptilotus calostachyus	0.1	80		
Ptilotus fusiformis	0.1	10		
Senna notabilis	0.1	20		
Sida arenicola	0.1	30		
Solanum diversiflorum	0.1	5		
Triodia epactia	4	60		
Triodia wiseana	2	60		

Site **KTF41**
Described by PL/AL **Date** 24/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 556111 mE, 7593504 mN
Habitat Gently sloping plain, sloping SW.
Soil Dark reddish-brown loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana, Acacia pruinocarpa* low open woodland over *A. ancistrocarpa,* (*A. maitlandii, A. trudgeniana, Grevillea wickhamii* subsp. *hispidula*) tall open shrubland over *Triodia epactia* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*,^*Acacia pruinocarpa*\^tree\6\r;M1 ^*Acacia ancistrocarpa,Acacia maitlandii,Acacia trudgeniana,Grevillea wickhamii* subsp. *hispidula*\^shrub\4\r;G1+ ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen
Acacia ancistrocarpa	2	320	
Acacia bivenosa	0.1	160	
Acacia maitlandii	1	250	
Acacia pruinocarpa	1	400	
Acacia tenuissima	0.25	120	
Acacia trudgeniana	0.5	260	
Aristida inaequiglumis	0.1	90	KTF41-03
Codonocarpus cotinifolius	0.1	40	
Corchorus tectus	0.1	40	KTF41-01
Corymbia hamersleyana	2	700	
Cucumis variabilis	0.1	25	
Dodonaea coriacea	0.1	50	
Eriachne mucronata	0.1	40	
Eriachne pulchella	0.1	15	
Eulalia aurea	0.1	70	
Euphorbia australis var. *hispidula*	0.1	10	KTF41-05
Euphorbia australis var. *hispidula*	0.1	25	KTF41-06
Goodenia forrestii	0.1	40	
Goodenia microptera	0.1	20	
Goodenia stobbsiana	0.1	60	
Grevillea wickhamii subsp. *hispidula*	0.5	260	
Hakea chordophylla	0.1	120	
Hibiscus burtonii	0.1	50	
Hibiscus leptocladus	0.1	2	KTF41-07
Indigofera monophylla	0.1	40	
Ptilotus calostachyus	0.1	70	
Ptilotus exaltatus	0.1	10	
Ptilotus fusiformis	0.1	25	KTF41-02
Senna notabilis	0.1	10	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	60	
Sporobolus australasicus	0.1	15	
Tribulus hirsutus	0.1	15	
Trichodesma zeylanicum var. *zeylanicum*	0.1	8	
Trigastrotheca molluginea	0.1	10	
Triodia epactia	12	60	
Triumfetta chaetocarpa	0.1	40	KTF41-04

Site **KTF42**
Described by RM/SY **Date** 24/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 555642 mE, 7593993 mN
Habitat Bank and floodplain of broad drainage line.
Soil Dark reddish brown silty clay to light clay.
Vegetation *Acacia citrinoviridis*, (*A. pruinocarpa*) low open woodland over *A. atkinsiana* tall open shrubland over *Triodia wiseana*, (*T. epactia*) very open hummock grassland.
Veg Condition Very Good: small amount of cattle scats.
Fire Age Very long unburnt.
Notes U1+ ^*Acacia citrinoviridis,Acacia pruinocarpa*\^tree\6\r;M1 ^*Acacia atkinsiana*\^shrub\4\r;G1 ^*Triodia wiseana,Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	20		
Acacia ancistrocarpa	0.1	180		
Acacia atkinsiana	4	300	KTF27-07=	
Acacia citrinoviridis	3	450	KTF28-01=	
Acacia pruinocarpa	1.5	300		
Acacia pyrifolia var. *pyrifolia*	0.1	110		
Afrohybanthus aurantiacus	0.1	40		
Arivela viscosa	0.1	30		
Boerhavia burbidgeana	0.1	50		
Cenchrus ciliaris	0.1	30		N=50.
Cucumis variabilis	0.1	120		
Duperreya commixta	0.1	70		
Dysphania kalpari	0.1	10	KTF42-01	
Eriachne pulchella	0.1	15		
Eulalia aurea	0.1	60	KTF28-14=	
Euphorbia biconvexa	0.1	40	KTF28-03=	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Goodenia microptera	0.1	5		
Goodenia muelleriana	0.1	30	KTF28-15=	
Goodenia nuda	0.1	40	KTF42-04	
Hibiscus burtonii	0.1	20	KTF28-13=	
Indigofera monophylla	0.1	30		
Maireana planifolia x *villosa*	0.1	30	KTF42-03	
Paraneurachne muelleri	0.1	30		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus aervoides	0.1	5		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	20		
Senna glutinosa subsp. *glutinosa*	0.1	150		
Senna glutinosa subsp. *pruinosa*	0.1	30		
Senna glutinosa subsp. x *luerssenii*	0.1	170		
Senna glutinosa subsp. x *luerssenii*	0.1	170		
Senna notabilis	0.1	30		
Sida fibulifera	0.1	10		
Sida fibulifera	0.1	20	KTF15-13=	'sens. lat.'
Sida spinosa	0.1	20	KTF15-03=	
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	20		
Trianthema glossostigmum	0.1	5	KTF42-02	
Triodia epactia	2	40		
Triodia wiseana	5	40		

Site **KTF43**
Described by RM/SY **Date** 25/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 560946 mE, 7587008 mN
Habitat Plain.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Acacia pruinocarpa* scattered low trees over *A. dictyophleba*, (*A. ancistrocarpa*) tall open shrubland over *Triodia epactia* hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Acacia pruinocarpa*\^tree\6\bi;M1 ^*Acacia dictyophleba,Acacia ancistrocarpa*\^shrub\4\r;G1+ ^*Triodia epactia*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	5		
Acacia ancistrocarpa	1	280		
Acacia dictyophleba	2.5	350	KTF43-01	
Acacia pruinocarpa	1	300		
Acacia tenuissima	0.1	90		
Acacia trachycarpa	0.1	50		
Eriachne aristidea	0.1	10		
Goodenia microptera	0.1	5		
Grevillea wickhamii	0.1	5	Sterile.	
Hakea chordophylla	0.1	110		
Hibiscus sturtii var. *campylochlamys*	0.1	30	KTF43-05	
Indigofera monophylla	0.1	10		
Maireana planifolia	0.1	50	KTF43-02	
Ptilotus calostachyus	0.1	50		
Ptilotus sp.	0.1	5	KTF43-04	Inadequate material; juvenile.
Senna notabilis	0.1	20		
Trianthema glossostigmum	0.1	5		
Triodia epactia	18	40	KTF43-03	

Site **KTF44**

Described by RM/SY **Date** 25/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 562179 mE, 7585256 mN

Habitat Plain, sloping toward drainage to S.

Soil Dark reddish brown silty clay loam.

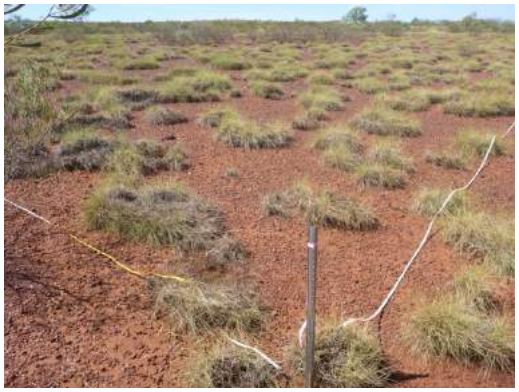
Vegetation *Acacia atkinsiana* open shrubland over *Triodia epactia* open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes *Corymbia hamersleyana* scattered low trees present outside quadrat.
M1 ^*Acacia atkinsiana*\^shrub\3\r;G1+ ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	5		
Acacia ancistrocarpa	0.1	90		
Acacia atkinsiana	3	180		
Amphipogon sericeus	0.1	50	KTF44-01	
Codonocarpus cotinifolius	0.1	70		
Cymbopogon obtectus	0.1	90		
Eucalyptus leucophloia subsp. *leucophloia*	0.1	180		Juvenile.
Goodenia microptera	0.1	5		
Goodenia stobbsiana	0.1	60		
Hakea chordophylla	0.1	110		
Ptilotus calostachyus	0.1	50		
Ptilotus sp.	0.1	5	KTF43-04=	Inadequate material; juvenile.
Senna notabilis	0.1	20		
Triodia epactia	12	40		
Triodia wiseana	0.1	50		



Site **KTF45**

Described by RM/SY **Date** 25/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 563994 mE, 7576895 mN

Habitat Light clay plain.

Soil Dark reddish brown silty clay loam to light clay.

Vegetation *Acacia citrinoviridis*, (*Corymbia hamersleyana*) scattered low trees over *A. ancistrocarpa* scattered tall shrubs over *A. dictyophleba* scattered shrubs over *Triodia epactia* open hummock grassland and **Cenchrus ciliaris* scattered tussock grasses.

Veg Condition Very Good: cattle scats; scattered weeds.

Fire Age No sign of recent fire.

Notes U1 ^*Acacia citrinoviridis,Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\bi;M2 *Acacia dictyophleba*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Cenchrus ciliaris*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	10		
Acacia ancistrocarpa	1	280		
Acacia citrinoviridis	1	400	KTF45-01	
Acacia dictyophleba	0.5	150	KTF43-01=	
Acacia inaequilatera	0.1	230		
Alysicarpus muelleri	0.1	15		
Alysicarpus muelleri	0.1	40	KTF45-09	
Aristida contorta	0.1	25		
Arivela viscosa	0.1	50		
Boerhavia burbidgeana	0.1	70		
Bulbostylis barbata	0.1	15	KTF45-03	
Bulbostylis barbata	0.1	8		
Cenchrus ciliaris	1	30		N=100.
Chrysopogon fallax	0.1	100		
Corchorus sidoides subsp. *sidoides*	0.1	20	KTF45-24	
Corchorus tridens	0.1	20		
Corymbia hamersleyana	0.5	450		
Cucumis variabilis	0.1	90		
Cullen leucochaites	0.1	10	KTF45-21	
Cullen pogonocarpum	0.1	20	KTF45-05	
Cynodon convergens	0.1	30		
Cynodon convergens	0.1	30		
Digitaria ctenantha	0.1	30	KTF45-22	
Dysphania kalpari	0.1	5	KTF28-21=	
Enneapogon caerulescens	0.1	15		
Enneapogon polyphyllus	0.1	20	KTF45-15	
Eragrostis cumingii	0.1	15	REL10-06=	
Eremophila longifolia	0.1	60	KTF45-23	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	7		
Eulalia aurea	0.1	70		
Euphorbia biconvexa	0.1	40	KTF45-04	
Euphorbia boophthona	0.1	20	KTF28-02=	
Euphorbia vaccaria var. *vaccaria*	0.1	7	KTF45-20	
Evolvulus alsinoides	0.1	15		Sterile.
Flaveria trinervia	0.1	30		N=2.
Gomphrena affinis subsp. *pilbarensis*	0.1	15	KTF45-16	

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia forrestii	0.1	40	KTF45-06	
Goodenia microptera	0.1	20		
Goodenia nuda	0.1	40	KTF45-17	
Gossypium australe	0.1	100		
Indigofera colutea	0.1	20	KTF45-02	
Iseilema membranaceum	0.1	10	KTF28-17=	
Isotropis atropurpurea	0.1	20	KTF29-05=	
Paspalidium rarum	0.1	30	KTF45-18	
Perotis rara	0.1	10		
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus exaltatus	0.1	8		
Ptilotus fusiformis	0.1	30	KTF29-25=	
Rhynchosia minima	0.1	30		
Sclerolaena cornishiana	0.1	30	KTF45-19	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	10	KTF45-13	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	20		
Sida arsiniata	0.1	50	KTF45-12	
Sida fibulifera	0.1	15		
Sida sp.	0.1	10	KTF45-25	Poor material; juvenile.
Solanum lasiophyllum	0.1	50		
Sonchus oleraceus	0.1	20		N=10.
Sporobolus australasicus	0.1	20		
Trianthema pilosum	0.1	15	KTF45-07	
Tribulus astrocarpus	0.1	10		
Tribulus macrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	22	30		
Yakirra australiensis var. *australiensis*	0.1	10	KTF45-14	

Site **KTF46**

Described by BRMMG **Date** 24/4/2020

Type Quadrat 72 x 35 m

Central Coord 50 551094 mE, 7599169 mN

Habitat Very shallow, broad flowline and flood banks.

Soil Dusky red (10R 3/4) sandy loam.

Vegetation *Corymbia hamersleyana* low woodland over *Acacia tumida* var. *pilbarensis*, (*Grevillea wickhamii* subsp. *hispidula, A. atkinsiana*) tall shrubland over *Indigofera monophylla* scattered low shrubs over *Triodia epactia* open hummock grassland over *Themeda triandra*, (*Eulalia aurea*) very open tussock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\i;M1+ ^*Acacia tumida* var. *pilbarensis,Grevillea wickhamii* subsp. *hispidula,Acacia atkinsiana*\^shrub\4\i;M2 *Indigofera monophylla*\shrub\1\bi;G1 *Themeda triandra,Eulalia aurea*\tussock grass\2\r;G2 ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia atkinsiana	1	240		
Acacia maitlandii	0.1	110		
Acacia tenuissima	0.1	45	KTF32-13=	
Acacia trachycarpa	0.1	70		
Acacia tumida var. *pilbarensis*	15	450		A lot of the *A. tumida* has died off.
Afrohybanthus aurantiacus	0.1	30		
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	1	30		
Aristida inaequiglumis	0.1	110	KTF46-02	
Arivela viscosa	0.1	50		
Bonamia erecta	0.1	20		
Bonamia pannosa	0.1	5	KTF46-06	
Corchorus tectus	0.1	30	KTF32-01=	
Corymbia hamersleyana	12	800		
Cucumis variabilis	0.1	45		
Cynodon convergens	0.1	30	KTF33-14=	
Dampiera candicans	0.1	45		
Digitaria brownii	0.1	40	KTF46-15	
Duperreya commixta	0.1	70		
Enneapogon polyphyllus	0.1	25	KTF46-07	
Eragrostis cumingii	0.1	20	KTF46-13	
Eriachne aristidea	0.1	30		
Eriachne mucronata	0.1	40	KTF46-10	Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	15		
Eulalia aurea	0.5	70		
Euphorbia australis var. *subtomentosa*	0.1	3	KTF46-11	
Euphorbia biconvexa	0.1	30	KTF46-04	
Evolvulus alsinoides var. *decumbens*	0.1	30	KTF33-13=	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena cunninghamii	0.1	20		
Goodenia microptera	0.1	30		
Grevillea wickhamii subsp. *hispidula*	1	500	KTF46-09	

Name	Cover (%)	Height (cm)	Specimen	Notes
Haloragis sp.	0.1	15	KTF46-14	Inadequate material.
Hibiscus sturtii var. *campylochlamys*	0.1	30	KTF46-03,8	
Indigofera monophylla	1	70		
Isotropis atropurpurea	0.1	40		
Paraneurachne muelleri	0.1	40		
Polymeria ambigua	0.1	15	KTF33-15=	
Ptilotus calostachyus	0.1	50		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	20		
Senna notabilis	0.1	3		
Seringia nephrosperma	0.1	70	KTF18-03=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF46-16	
Solanum diversiflorum	0.1	3		
Sporobolus australasicus	0.1	30		
Streptoglossa bubakii	0.1	8	KTF01-21=	
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	15	KTF46-05	
Themeda triandra	4	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	12	60	KTF46-01	
Triumfetta chaetocarpa	0.1	15	KTF46-12	
Waltheria indica	0.1	3		

Site **KTF47**

Described by BRMMG **Date** 24/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 552403 mE, 7596057 mN

Habitat Floodplain.

Soil Dark reddish brown sandy clay loam.

Rock Type Quartz.

Vegetation *Corymbia hamersleyana* low woodland over *Acacia atkinsiana*, (*A. trachycarpa, Grevillea wickhamii* subsp. *hispidula*) tall open shrubland over *Indigofera monophylla* scattered low shrubs over *Triodia epactia* open hummock grassland and *Themeda triandra* scattered tussock grasses.

Veg Condition Excellent.

Fire Age Very long unburnt.

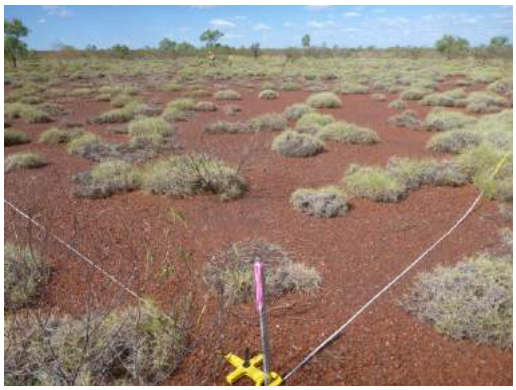
Notes Many *A. tumida* seedlings and many tall dead fallen adults.
U1+ ^*Corymbia hamersleyana*\^tree\6\i;M1 ^*Acacia atkinsiana,Acacia trachycarpa,Grevillea wickhamii* subsp. *hispidula*\^shrub\4\r;*M2 Indigofera monophylla*\shrub\1\bi;G1 ^*Triodia epactia*\^hummock grass\1\i;*G2 Themeda triandra*\tussock grass\2\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	45	KTF47-01b	
Acacia ancistrocarpa	0.1	240		
Acacia atkinsiana	5	210	KTF47-02	
Acacia trachycarpa	1.5	230		
Acacia tumida var. *pilbarensis*	0.1	110		
Alysicarpus muelleri	0.1	30		
Aristida holathera var. *holathera*	0.1	30		
Bonamia erecta	0.1	45		
Codonocarpus cotinifolius	0.1	30	KTF47-09	
Corchorus tectus	0.1	1	KTF32-01=	
Corymbia hamersleyana	12	700		
Cucumis variabilis	0.1	40		
Cullen leucochaites	0.1	3	KTF47-06	
Cullen pogonocarpum	0.1	5	kTF33-03=	
Dolichocarpa crouchiana	0.1	15	KTF47-04	
Duperreya commixta	0.1	40		
Eriachne aristidea	0.1	20		
Eulalia aurea	0.1	60		
Euphorbia biconvexa	0.1	40	KTF46-04=	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia connata	0.1	10	KTF47-08	
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	30	KTF01-06=	
Gossypium australe	0.1	45	KTF19-26=	
Grevillea wickhamii subsp. *hispidula*	0.1	280		
Haloragis sp.	0.1	20	KTF47-05	Inadequate material.
Heliotropium pachyphyllum	0.1	3	KTF47-03	
Hibiscus sturtii var. *grandiflorus*	0.1	30	KTF30-08=	
Indigofera monophylla	0.5	40		
Isotropis atropurpurea	0.1	40	KTF20-04=	
Paraneurachne muelleri	0.1	60		
Perotis rara	0.1	12		
Portulaca oleracea/intraterranea	0.1	2		
Ptilotus calostachyus	0.1	35		
Ptilotus exaltatus	0.1	5		
Rhynchosia minima	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna glutinosa subsp. *glutinosa*	0.1	170		
Senna notabilis	0.1	10		
Sida echinocarpa	0.1	45	KTF32-20=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	6	KTF46-16=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	70		
Solanum diversiflorum	0.1	5		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	5		
Themeda triandra	1	80		
Trachymene oleracea subsp. *oleracea*	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	14	50	KTF46-01=	
Triodia wiseana	0.1	40		
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF47-10	
Waltheria indica	0.1	10	KTF47-07	

Site	**KTF48**
Described by	BRMMG **Date** 24/4/2020
Type	Quadrat 50 x 50 m
Central Coord	50 552639 mE, 7595891 mN
Habitat	Very gently sloping plain, W-facing.
Soil	Weak red (10R 4/4) sandy clay loam.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen
Acacia ancistrocarpa	0.1	280	
Acacia atkinsiana	0.1	90	
Corchorus tectus	0.1	2	KTF32-01=
Corymbia hamersleyana	0.5	400	
Hakea lorea subsp. *lorea*	0.1	140	KTF48-02
Hibiscus coatesii	0.1	2	KTF48-03
Ptilotus calostachyus	0.1	10	KTF48-04
Senna notabilis	0.1	15	
Triodia wiseana	20	40	KTF48-01



Site **KTF49**
Described by BRMMG **Date** 24/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 557032 mE, 7592611 mN
Habitat Plain.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia atkinsiana*, (*A. ancistrocarpa*) tall shrubland over *A. trachycarpa* open shrubland over *Indigofera monophylla* scattered low shrubs over *Triodia epactia* hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes Large open patches with very little vegetation in surrounds.
U1 ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia atkinsiana,Acacia ancistrocarpa*\^shrub\4\i;M2 *Acacia trachycarpa*\shrub\3\r;M3 *Indigofera monophylla*\shrub\1\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40		
Acacia ancistrocarpa	4	280		
Acacia atkinsiana	12	380		
Acacia maitlandii	0.1	210		
Acacia trachycarpa	3	170		
Alternanthera nana	0.1	30	KTF49-08	
Aristida inaequiglumis	0.1	80	KTF49-01	Formal ID by M. Hislop (WAH)
Bonamia erecta	0.1	45		
Cassytha capillaris	0.1	60		
Corchorus tectus	0.1	30	KTF32-01=	
Corymbia hamersleyana	2.5	550		
Cucumis picrocarpus	0.1	10	KTF49-04	
Cucumis variabilis	0.1	30		
Cullen leucochaites	0.1	5	KTF47-06=	
Dodonaea coriacea	0.1	40		
Duperreya commixta	0.1	30		
Enneapogon polyphyllus	0.1	35		
Eulalia aurea	0.1	60		
Euphorbia biconvexa	0.1	30	KTF49-03	
Euphorbia boophthona	0.1	20	KTF49-05	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia microptera	0.1	5		
Hakea lorea subsp. *lorea*	0.1	350	KTF33-16=	
Hibiscus burtonii	0.1	40		
Indigofera monophylla	0.5	30		
Maireana planifolia x *villosa*	0.1	45	KTF49-02	
Paspalidium clementii	0.1	20	KTF49-06	
Phyllanthus erwinii	0.1	10		
Polygala glaucifolia	0.1	8	KTF31-18=	
Ptilotus calostachyus	0.1	70		
Ptilotus exaltatus	0.1	15		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	20		
Senna glutinosa subsp.	0.1	150		

Name	Cover (%)	Height (cm)	Specimen	Notes
glutinosa				
Senna glutinosa subsp. x *luerssenii*	0.1	140		
Senna notabilis	0.1	20		
Sida sp.	0.1	40	KTF49-10	Poor material.
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF49-07	
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	5	KTF01-21=	
Tribulus macrocarpus	0.1	10	KTF49-09	
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	35	80	KTF46-01=	
Triumfetta chaetocarpa	0.1	40	KTF49-11	
Vincetoxicum lineare	0.1	40		

Site **KTF50**

Described by BRMMG **Date** 25/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 563851 mE, 7581891 mN

Habitat Plain

Soil Dark reddish brown (2.5YR 2.5/4) light clay.

Vegetation *Acacia aneura/aptaneura*, (*A. pruinocarpa, Corymbia hamersleyana*) low woodland over *A. bivenosa* scattered shrubs over *Abutilon lepidum* scattered low shrubs over **Bidens bipinnata*, (*Arivela viscosa, Cullen pogonocarpum*) very open herbland with *Perotis rara*, (*Sporobolus australasicus*) very open bunch grassland.

Veg Condition Very Good: some weeds (particularly **Bidens*).

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia aneura/aptaneura,Acacia pruinocarpa,Corymbia hamersleyana*\^tree\6\i;M1 ^*Acacia bivenosa*\shrub\3\bi;M2 *Abutilon lepidum*\shrub\1\bi;G1 *Bidens bipinnata,Arivela viscosa,Cullen pogonocarpum*\forb\1\r;G2 ^*Perotis rara,Sporobolus australasicus*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	1	60	KTF50-05	
Abutilon macrum	0.1	20	KTF50-36	
Abutilon otocarpum	0.1	15		
Acacia aneura / aptaneura	15	600	KTF50-02	Sterile.
Acacia bivenosa	0.5	190		
Acacia pruinocarpa	3	900		
Alternanthera angustifolia	0.1	30	KTF50-42	
Alysicarpus muelleri	0.1	30		
Amaranthus induratus	0.1	40	KTF50-21	
Arivela viscosa	1	60		
Bidens bipinnata	4	30	KTF50-01	N=3000.
Blumea tenella	0.1	20	KTF50-28	
Boerhavia repleta	0.1	20	KTF50-17	
Bulbostylis barbata	0.1	15		
Bulbostylis turbinata	0.1	10	KTF50-20	
Calandrinia sp.	0.1	5	KTF01-09=	Sterile.
Calotis multicaulis	0.1	15	KTF50-29	
Cenchrus ciliaris	0.1	30	N=10.	
Chrysopogon fallax	0.1	110		
Convolvulus clementii	0.1	15	KTF50-12	
Corchorus sp.	0.1	20	KTF50-19	Inadequate material.
Corchorus tridens	0.1	20	KTF50-27	
Corymbia hamersleyana	1	600		
Crotalaria medicaginea var. *neglecta*	0.1	20		
Cucumis melo	0.1	30	KTF50-25	
Cucumis variabilis	0.1	30		
Cullen pogonocarpum	1	30	KTF50-04	
Dactyloctenium radulans	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	30		
Duperreya commixta	0.1	40		
Dysphania kalpari	0.1	20	KTF50-13	
Dysphania rhadinostachya subsp. *inflata*	0.1	30	KTF50-10	
Enneapogon caerulescens	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Enneapogon polyphyllus	0.1	30	KTF46-07=	
Eragrostis cumingii	0.1	30		
Eragrostis leptocarpa	0.1	30	KTF50-22	
Eremophila lanceolata	0.1	60	KTF50-34	
Euphorbia biconvexa	0.1	30	KTF50-14	
Euphorbia boophthona	0.1	30	KTF50-03	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis dichotoma	0.1	30	KTF50-16	
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF50-24	
Gomphrena cunninghamii	0.1	12		
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	5		
Goodenia prostrata	0.1	5	KTF50-09	
Hakea lorea subsp. *lorea*	0.1	170	KTF48-02=	
Haloragis sp.	0.1	15	KTF50-39	Inadequate material.
Indigofera monophylla	0.1	20		
Ipomoea muelleri	0.1	100	KTF50-23	
Iseilema membranaceum	0.1	25	KTF50-06	
Malvastrum americanum	0.1	15		N=2.
Nicotiana simulans (type 2)	0.1	50	KTF50-38	Formal ID by M. Hislop (WAH) REL04-15=.
Notoleptopus decaisnei	0.1	10		
Paspalidium clementii	0.1	10	KTF50-33	
Paspalidium rarum	0.1	20	KTF50-07	
Perotis rara	3	15		
Phyllanthus erwinii	0.1	15	KTF50-08	
Pluchea dunlopii	0.1	20	KTF50-35	
Portulaca oleracea/intraterranea	0.1	12		
Pterocaulon sphacelatum	0.1	15	KTF50-44	
Ptilotus aervoides	0.1	20	KTF50-26	
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	30		
Ptilotus gaudichaudii	0.1	30		
Ptilotus gomphrenoides	0.1	20	KTF50-40	
Ptilotus obovatus var. *obovatus*	0.1	20	KTF50-41	
Ptilotus xerophilus	0.1	60	KTF01-32=	
Rhynchosia minima	0.1	20		
Rostellularia adscendens var. *clementii*	0.1	12	KTF03-42=	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	100	KTF50-31	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	20		
Setaria verticillata	0.1	30	KTF50-11	
Sida arsiniata	0.1	20		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF50-15	
Sida spinosa	0.1	30	KTF33-01=	
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	1	30		
Streptoglossa bubakii	0.1	40	KTF01-21=	
Tephrosia rosea s. lat	0.1	20	KTF50-32	4 pairs. Formal ID by M. Hislop (WAH).

Name	Cover (%)	Height (cm)	Specimen	Notes
Trachymene oleracea subsp. *oleracea*	0.1	15		
Trianthema pilosum	0.1	20	KTF50-30	
Tribulus astrocarpus	0.1	20		
Tribulus macrocarpus	0.1	60	KTF50-43	
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Urochloa occidentalis var. *occidentalis*	0.1	15	KTF50-18	
Vincetoxicum lineare	0.1	170		

Site **KTF51**
Described by BRMMG **Date** 25/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564079 mE, 7580594 mN
Habitat Plain.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone gravel and pebbles.
Vegetation *Acacia pruinocarpa* scattered low trees over *A. ancistrocarpa* scattered tall shrubs over *A. dictyophleba* scattered shrubs over *Triodia epactia* hummock grassland with *Sporobolus australasicus* scattered annual grasses.
Veg Condition Good: occasional weeds; old track through quadrat.
Fire Age No sign of recent fire.
Notes Western edge of quadrat appears to have very old remnants of track; not the best quadrat location due to some disturbance.
U1 ^*Acacia pruinocarpa*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\bi;M2 *Acacia dictyophleba*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Sporobolus australasicus*\other grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40	KTF51-13	
Abutilon otocarpum	0.1	12		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	30	KTF51-14	
Acacia ancistrocarpa	1	300		
Acacia citrinoviridis	0.1	320		
Acacia dictyophleba	0.5	120	KTF51-07	
Acacia pruinocarpa	1.5	380		
Alysicarpus muelleri	0.1	60	KTF51-17	
Arivela viscosa	0.1	40		
Boerhavia repleta	0.1	30	KTF51-09	
Bulbostylis barbata	0.1	15		
Cenchrus ciliaris	0.1	30		N=20.
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	20		
Cullen pogonocarpum	0.1	30	KTF50-04=	
Dichanthium sericeum subsp. humilius	0.1	40		
Dysphania kalpari	0.1	25	KTF51-01	
Enneapogon polyphyllus	0.1	30		
Eragrostis cumingii	0.1	20		
Eriachne pulchella	0.1	10		
Euphorbia biconvexa	0.1	20	KTF50-14=	
Euphorbia boophthona	0.1	20	KTF51-15	
Euphorbia vaccaria var. *vaccaria*	0.1	5	KTF51-10	
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF51-04	
Gomphrena cunninghamii	0.1	10		
Goodenia microptera	0.1	40		
Goodenia prostrata	0.1	5	KTF50-09=	
Gossypium australe	0.1	80		
Hibiscus sturtii var. *grandiflorus*	0.1	12	KTF51-12	
Ipomoea muelleri	0.1	20	KTF51-02	
Iseilema macratherum	0.1	20	KTF51-11	
Iseilema membranaceum	0.1	12	KTF51-05	
Paspalidium rarum	0.1	20	KTF50-07=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus exaltatus	0.1	15		
Ptilotus fusiformis	0.1	30	KTF51-18	
Rhynchosia minima	0.1	20		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	160	KTF51-16	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	170	KTF51-08	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	45		
Sida arsiniata	0.1	35	KTF51-06	
Sida fibulifera	0.1	20	KTF50-15	
Sporobolus australasicus	0.5	25		
Streptoglossa bubakii	0.1	20	KTF01-21=	
Striga squamigera	0.1	10	KTF51-03	
Tribulus astrocarpus	0.1	5		
Tribulus macrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		
Triodia epactia	35	70		

Site **KTF52**
Described by BRMMG **Date** 25/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564106 mE, 7578957 mN
Habitat Plain.
Soil Dark reddish brown sandy clay loam.
Vegetation *Acacia pruinocarpa, A. citrinoviridis, A. aneura/aptaneura* low open woodland over *Triodia epactia* open hummock grassland over *Sporobolus australasicus* very open bunch grassland and *Arivela viscosa* very open herbland.
Veg Condition Very Good: adjacent to old overgrown track; cattle pads present; very occasional weeds.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia pruinocarpa*,^*Acacia citrinoviridis*,*Acacia aneura/aptaneura*\^tree\6\r;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Sporobolus australasicus*,*Arivela viscosa*\other grass,forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50	KTF51-13=	
Acacia ancistrocarpa	0.1	260		
Acacia aneura / aptaneura	3	400	KTF50-02=	Sterile.
Acacia citrinoviridis	3	400		
Acacia pruinocarpa	3.5	500		
Acacia pyrifolia var. *pyrifolia*	0.1	140		
Acacia tetragonophylla	0.1	180		
Alternanthera nana	0.1	30	KTF52-09	
Alysicarpus muelleri	0.1	30	KTF51-17=	
Amaranthus induratus	0.1	30	KTF52-20	
Anthobolus leptomerioides	0.1	50		
Arivela viscosa	2.5	40		
Bidens bipinnata	0.1	30	KTF50-01=	
Blumea tenella	0.1	20	KTF52-08	
Boerhavia coccinea	0.1	20	KTF52-10	
Boerhavia repleta	0.1	20	KTF52-19	
Bulbostylis barbata	0.1	12		
Bulbostylis turbinata	0.1	20	KTF50-20=	
Calandrinia sp.	0.1	6	KTF52-17	Sterile.
Cenchrus ciliaris	0.1	30		N=20.
Cheilanthes sieberi subsp. *sieberi*	0.1	20	KTF52-22	
Chloris pectinata	0.1	40	KTF52-21	
Chrysopogon fallax	0.1	110		
Convolvulus clementii	0.1	30	KTF52-18	
Corchorus sp.	0.1	15	KTF50-19=	Inadequate material.
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis melo	0.1	30	KTF50-25=	
Cucumis variabilis	0.1	60		
Cullen leucochaites	0.1	10	KTF47-06=	
Cullen pogonocarpum	0.1	25	KTF50-04=	
Cynodon convergens	0.1	25	KTF52-06	
Dactyloctenium radulans	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	30		
Digitaria ctenantha	0.1	40	KTF52-11	
Duperreya commixta	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Dysphania kalpari	0.1	15	KTF50-13=	
Dysphania rhadinostachya subsp. *inflata*	0.1	35	KTF52-13	
Enneapogon caerulescens	0.1	25		
Enneapogon polyphyllus	0.1	35		
Eragrostis cumingii	0.1	20	KTF52-04	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	20		
Euphorbia biconvexa	0.1	30	KTF52-02	
Euphorbia boophthona	0.1	30	KTF52-01	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Glycine canescens	0.1	90	KTF52-12	
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF51-04=	
Gomphrena cunninghamii	0.1	10		
Goodenia forrestii	0.1	40	KTF31-15=	
Goodenia microptera	0.1	20		
Gossypium australe	0.1	40		Burrup Peninsula form.
Hakea lorea subsp. *lorea*	0.1	280		
Heliotropium inexplicitum	0.1	10	KTF52-15	
Hibiscus sturtii var. *platychlamys*	0.1	25	KTF52-23	
Ipomoea muelleri	0.1	15	KTF51-02=	
Iseilema macratherum	0.1	20	KTF51-11=	
Jasminum didymum subsp. *lineare*	0.1	130		
Josephinia sp. *Woodstock (A.A. Mitchell PRP 989)*	0.1	30	KTF52-16	Formal ID by M. Hislop (WAH).
Maireana planifolia	0.1	40		
Malvastrum americanum	0.1	20		N=20.
Nicotiana simulans (type 2)	0.1	50	KTF50-38=	Formal ID by M. Hislop (WAH) REL04-15=.
Notoleptopus decaisnei	0.1	15		
Paspalidium clementii	0.1	10	KTF52-07	
Paspalidium rarum	0.1	20	KTF50-07=	
Pentalepis trichodesmoides subsp. *trichodesmoides*	0.1	45	KTF52-05	
Perotis rara	0.1	20		
Phyllanthus erwinii	0.1	25		
Portulaca oleracea/intraterranea	0.1	10		
Pterocaulon sphacelatum	0.1	2	KTF50-44=	
Ptilotus aervoides	0.1	4	KTF50-26=	
Ptilotus calostachyus	0.1	10		
Ptilotus exaltatus	0.1	20		
Rhynchosia minima	0.1	30		
Salsola australis	0.1	20		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	20	KTF51-08=	Closer to straight subsp. helmsii, but not quite right.
Senna notabilis	0.1	30		
Sida arsiniata	0.1	20	KTF51-06=	
Sida echinocarpa	0.1	15	KTF52-14	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF50-15=	
Solanum diversiflorum	0.1	30		
Solanum lasiophyllum	0.1	12	KTF32-06=	
Sporobolus australasicus	5	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Streptoglossa bubakii	0.1	20	KTF01-21=	
Streptoglossa liatroides	0.1	20	KTF52-03	
Striga squamigera	0.1	20	KTF51-03=	
Trianthema pilosum	0.1	20	KTF50-30	
Tribulus astrocarpus	0.1	10		
Tribulus hirsutus	0.1	15		
Tribulus macrocarpus	0.1	10		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Triodia epactia	12	50		
Urochloa occidentalis var. *occidentalis*	0.1	20	KTF50-18=	

Site **KTF53**
Described by BRMMG **Date** 20/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564017 mE, 7577162 mN
Habitat Plain.
Soil Dusky red (10R 3/3) loamy sand.
Rock Type Ironstone.
Vegetation *Acacia pruinocarpa* low open woodland over *A. ancistrocarpa*, (*A. dictyophleba*) tall open shrubland over *Eremophila longifolia*, (*Acacia trachycarpa*) open shrubland over *Triodia epactia* hummock grassland with **Cenchrus ciliaris* very open tussock grassland.
Veg Condition Very Good: some **Cenchrus*; adjacent to broad drainage line excavated for flood wall construction - probably some old impact areas in quadrat.
Fire Age No sign of recent fire.
Notes U1 ^*Acacia pruinocarpa*\^tree\6\r;M1 ^*Acacia ancistrocarpa,Acacia dictyophleba*\^shrub\4\r;M2 *Eremophila longifolia,Acacia trachycarpa*\shrub\3\r;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Cenchrus ciliaris*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	20		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia ancistrocarpa	2.5	260		
Acacia dictyophleba	0.25	220	KTF51-07=	
Acacia pruinocarpa	3	400		
Acacia trachycarpa	0.5	170		
Alysicarpus muelleri	0.1	30		
Anthobolus leptomerioides	0.1	45	KTF53-19	
Aristida contorta	0.1	30		
Arivela viscosa	0.1	45		
Boerhavia coccinea	0.1	15	KTF53-06	
Bulbostylis barbata	0.1	10		
Cassytha capillaris	0.1	130		
Cenchrus ciliaris	3	60		N=120.
Chrysopogon fallax	0.1	110		
Corchorus tectus	0.1	3	KTF32-01=	
Crotalaria medicaginea var. *neglecta*	0.1	20		
Cucumis variabilis	0.1	110		
Cullen leucochaites	0.1	15	KTF47-06=	
Cullen pogonocarpum	0.1	20	KTF50-04=	
Cynodon convergens	0.1	30	KTF52-06=	
Dysphania rhadinostachya subsp. *inflata*	0.1	35	KTF53-20	
Enneapogon polyphyllus	0.1	20	KTF53-12	
Eragrostis cumingii	0.1	25	KTF53-17	
Eremophila longifolia	2	190		
Eriachne pulchella	0.1	15		
Eulalia aurea	0.1	40		
Euphorbia biconvexa	0.1	30	KTF53-05	
Euphorbia boophthona	0.1	30	KTF53-13	
Euphorbia vaccaria var. *vaccaria*	0.1	3	KTF53-15	
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Gomphrena affinis subsp. *pilbarensis*	0.1	30	KTF53-02	
Gomphrena cunninghamii	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia forrestii	0.1	30		
Goodenia microptera	0.1	30		
Gossypium australe	0.1	45		Burrup Peninsula form.
Hakea lorea subsp. *lorea*	0.1	180	KTF33-16=	
Heliotropium cunninghamii	0.1	12	KTF53-03	
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF53-10	
Indigofera colutea	0.1	15		
Indigofera monophylla	0.1	10		
Ipomoea muelleri	0.1	30	KTF51-02=	
Iseilema membranaceum	0.1	25	KTF53-11	
Notoleptopus decaisnei	0.1	25		
Paspalidium clementii	0.1	20	KTF53-09	
Paspalidium rarum	0.1	15	KTF53-08	
Phyllanthus erwinii	0.1	6		
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus aervoides	0.1	5	KTF50-26=	
Ptilotus exaltatus	0.1	20		
Ptilotus polystachyus	0.1	40	KTF53-07	
Rhynchosia minima	0.1	15		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	30	KTF53-18	Closer to straight subsp. *helmsii*, but not quite right.
Sida arsiniata	0.1	25	KTF53-14	
Sida echinocarpa	0.1	80	KTF53-16	
Solanum diversiflorum	0.1	15		
Solanum lasiophyllum	0.1	60		
Sporobolus australasicus	0.1	25		
Streptoglossa bubakii	0.1	15		
Trianthema pilosum	0.1	30	KTF50-30=	
Tribulus astrocarpus	0.1	10		
Tribulus macrocarpus	0.1	15		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	35	60	KTF53-01	
Yakirra australiensis var. *australiensis*	0.1	15	KTF53-04	

Site **KTF54**

Described by BRMMG **Date** 20/4/2020

Type Quadrat 62.5 x 40 m

Central Coord 50 564125 mE, 7574823 mN

Habitat Floodplain.

Soil Dark reddish brown sandy loam.

Rock Type Ironstone scattered gravel, pebbles and cobbles.

Vegetation *Corymbia hamersleyana*, (*Hakea lorea* subsp. *lorea*) scattered low trees over *Acacia dictyophleba, A. inaequilatera* scattered tall shrubs over *Triodia epactia* hummock grassland and *Bothriochloa ewartiana, *Cenchrus ciliaris*, (*Chrysopogon fallax*) very open tussock grassland.

Veg Condition Excellent: scattered **Cenchrus*.

Fire Age No sign of recent fire.

Notes Mostly unburnt but 5% burnt 2-3 years ago; no obvious species growth in response to fire. *Chrysopogon fallax* and *Dichanthium* both occurring in small shallow depressions in quadrat. *Goodenia nuda* associated with *Chrysopogon fallax*.
U1 ^*Corymbia hamersleyana,Hakea lorea* subsp. *lorea*\^tree\6\bi;M1 ^*Acacia dictyophleba*,^*Acacia inaequilatera*\^shrub\4\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Bothriochloa ewartiana,Cenchrus ciliaris,Chrysopogon fallax*\tussock grass\1\r.

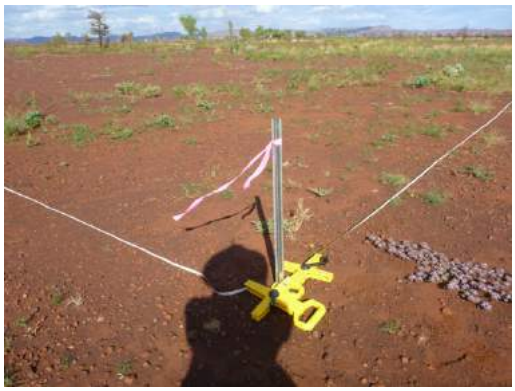
Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	15		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	45		
Acacia dictyophleba	0.5	250	KTF51-07=	
Acacia inaequilatera	0.25	210		
Acacia pyrifolia var. *pyrifolia*	0.1	40		
Amyema preissii	0.1	160	KTF54-09	Mistletoe in *A. dictyophleba.*
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	15	KTF54-11	
Arivela viscosa	0.1	30		
Boerhavia coccinea	0.1	10	KTF53-06=	
Bothriochloa ewartiana	1	90	KTF54-07	
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	1	45	N=100.	
Chrysopogon fallax	0.5	110		
Corchorus sidoides subsp. *sidoides*	0.1	30	KTF54-06	
Corymbia hamersleyana	1	400		
Crotalaria medicaginea var. *neglecta*	0.1	50		
Cucumis variabilis	0.1	45		
Enneapogon caerulescens	0.1	25		
Eragrostis cumingii	0.1	10	KTF53-17=	
Eragrostis tenellula	0.1	50	KTF54-04	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	20		
Euphorbia boophthona	0.1	10	KTF 54-01=	
Euphorbia vaccaria var. *vaccaria*	0.1	3	KTF53-15=	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia forrestii	0.1	30		
Goodenia microptera	0.1	30		
Goodenia nuda	0.1	40	KTF54-08	N=7.
Gossypium australe	0.1	30		Burrup Peninsula form.

Name	Cover (%)	Height (cm)	Specimen	Notes
Hakea lorea subsp. *lorea*	0.25	220	KTF54-02	
Heliotropium inexplicitum	0.1	10	KTF54-10	
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF53-10=	
Hibiscus sturtii var. *platychlamys*	0.1	15	KTF54-12	
Indigofera colutea	0.1	20		
Jasminum didymum subsp. *lineare*	0.1	90		
Polycarpaea corymbosa var. *corymbosa*	0.1	20		
Portulaca oleracea/intraterranea	0.1	3		
Pterocaulon serrulatum var. *velutinum*	0.1	45	KTF54-05	
Pterocaulon sphacelatum	0.1	50	KTF54-03	
Ptilotus exaltatus	0.1	20		
Ptilotus helipteroides	0.1	12		
Rhynchosia minima	0.1	30		
Senna notabilis	0.1	45		
Solanum lasiophyllum	0.1	45		
Sporobolus australasicus	0.1	10		
Streptoglossa bubakii	0.1	15		
Trianthema pilosum	0.1	5	KTF50-30=	
Tribulus hirsutus	0.1	15		
Tribulus macrocarpus	0.1	15		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	60	90	KTF53-01=	
Yakirra australiensis var. *australiensis*	0.1	10	KTF53-04=	

Site **KTF55**
Described by RM/SY **Date** 25/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564329 mE, 7575684 mN
Habitat Clay plain.
Soil Dark reddish brown silty clay loam to light clay.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* very open hummock grassland.
Veg Condition Very Good: cattle scats; scattered **Cenchrus*.
Fire Age Burnt 1-2 years ago.
Notes SW corner lacks peg.
U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia inaequilatera*\^shrub\4\bi;G1+ ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	10		
Abutilon otocarpum	0.1	30	KTF55-01	
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	50	KTF55-04	
Acacia ancistrocarpa	0.1	60		
Acacia colei	0.1	50	REL06-09=	Sterile.
Acacia dictyophleba	0.1	60	KTF43-01=	
Acacia inaequilatera	0.5	300		
Alysicarpus muelleri	0.1	40	KTF45-09=	
Aristida contorta	0.1	25		
Aristida holathera var. *holathera*	0.1	60		
Arivela viscosa	0.1	50		
Boerhavia burbidgeana	0.1	70		
Bonamia erecta	0.1	20	KTF55-07	
Bulbostylis barbata	0.1	15	KTF45-03=	
Cenchrus ciliaris	0.1	30		N=30.
Codonocarpus cotinifolius	0.1	20		
Corchorus sidoides subsp. *sidoides*	0.1	20	KTF45-24=	
Corchorus tridens	0.1	20		
Corymbia hamersleyana	0.5	450		
Cucumis variabilis	0.1	90		
Cullen leucochaites	0.1	40	KTF55-06	
Cullen pogonocarpum	0.1	20	KTF45-05=	
Cynodon convergens	0.1	30		
Digitaria brownii	0.1	30	REL06-01=	
Dysphania kalpari	0.1	5	KTF28-21=	
Eremophila longifolia	0.1	90	KTF45-23=	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	7		
Eulalia aurea	0.1	40		
Euphorbia biconvexa	0.1	40	KTF46-04=	
Euphorbia boophthona	0.1	20	KTF28-02=	
Euphorbia vaccaria var. *vaccaria*	0.1	7	KTF45-20=	
Evolvulus alsinoides	0.1	15		Sterile.
Gomphrena affinis subsp. *pilbarensis*	0.1	15	KTF45-16=	
Gomphrena cunninghamii	0.1	25	KTF55-03	
Goodenia forrestii	0.1	40	KTF45-06=	
Goodenia microptera	0.1	20		
Goodenia nuda	0.1	40	KTF45-17=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Gossypium australe	0.1	90		
Grevillea wickhamii	0.1	30		Sterile.
Hakea lorea subsp. *lorea*	0.1	90	KTF27-11=	
Heliotropium inexplicitum	0.1	20	KTF55-09	
Indigofera colutea	0.1	20	KTF45-02=	
Paraneurachne muelleri	0.1	40		
Paspalidium rarum	0.1	30	KTF45-18=	
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus astrolasius	0.1	30		
Ptilotus exaltatus	0.1	20		
Ptilotus helipteroides	0.1	20	KTF55-02	
Rhynchosia minima	0.1	30		
Salsola australis	0.1	20		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	10	KTF45-13=	Closer to straight subsp. helmsii, but not quite right.
Senna notabilis	0.1	20		
Sida arsiniata	0.1	50	KTF45-12=	
Sida echinocarpa	0.1	70	KTF55-05	
Sida fibulifera	0.1	10		
Sida sp.	0.1	10	KTF45-25=	Poor material; juvenile.
Solanum diversiflorum	0.1	50		
Solanum lasiophyllum	0.1	30		
Sporobolus australasicus	0.1	20		
Stemodia grossa	0.1	40		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	30	KTF55-08	
Trianthema pilosum	0.1	15	KTF45-07=	
Tribulus astrocarpus	0.1	10		
Tribulus macrocarpus	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	8	30		
Yakirra australiensis var. *australiensis*	0.1	10	KTF45-14=	



Site **KTF56**
Described by RM/SY **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 563688 mE, 7583009 mN
Habitat Broad floodplain of Fortescue River.
Soil Dark reddish brown silty clay loam.
Vegetation *Acacia citrinoviridis*, (*Eucalyptus victrix*) low woodland over *Isotropis atropurpurea* scattered low shrubs over *Triodia epactia* very open hummock grassland over *Eriachne benthamii* very open tussock grassland over *Urochloa occidentalis* var. *occidentalis* very open bunch grassland and **Malvastrum americanum*, (*Rostellularia adscendens* var. *clementii*, **Bidens bipinnata*) very open herbland.
Veg Condition Very Good: several weed species; cattle scats and tracks.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia citrinoviridis,Eucalyptus victrix*\^tree\6\i;M1 ^*Isotropis atropurpurea*\^shrub\1\bi;G1 ^*Triodia epactia*\^tussock grass\1\r;G2 *Eriachne benthamii,Urochloa occidentalis* var. *occidentalis,Malvastrum americanum,Rostellularia adscendens* var. *clementii,Bidens bipinnata*\tussock grass,other grass,forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	15		
Acacia ancistrocarpa	0.1	280		
Acacia citrinoviridis	17	550		
Aerva javanica	0.1	40		N=1.
Afrohybanthus aurantiacus	0.1	50		
Alternanthera nodiflora	0.1	25		
Alysicarpus muelleri	0.1	30		
Arivela viscosa	0.1	50		
Bidens bipinnata	0.5	30		N=1000.
Boerhavia burbidgeana	0.1	70		
Boerhavia repleta	0.1	15	KTF56-27	
Cenchrus ciliaris	0.1	50		N=150.
Cenchrus setiger	0.1	40		N=1.
Chrysopogon fallax	0.25	110		
Commelina ensifolia	0.1	20	KTF56-25	
Convolvulus clementii	0.1	110	KTF56-12	
Corchorus crozophorifolius	0.1	50	KTF56-11	
Corchorus tridens	0.1	4		
Cucumis melo	0.1	150	KTF56-15	
Cucumis picrocarpus	0.1	150	KTF15-04=	
Cucumis variabilis	0.1	70		
Cullen cinereum	0.1	40	KTF56-04,7	
Cynodon convergens	0.1	30		
Dichanthium sericeum subsp. humilius	0.1	40		
Duperreya commixta	0.1	150		
Dysphania sp.	0.1	20		Sterile, seedling.
Enneapogon polyphyllus	0.1	40		
Eriachne benthamii	9	70	KTF56-1,19	
Eucalyptus victrix	11	700		
Eulalia aurea	0.1	50		
Euphorbia sp. (boophthona/tannensis)	0.1	40		Sterile.
Evolvulus alsinoides var. villosicalyx	0.1	15		
Flaveria trinervia	0.1	50		N=25.
Gomphrena cunninghamii	0.1	30	KTF55-03=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia forrestii	0.1	5	KTF56-08	
Goodenia nuda	0.1	40	KTF56-20	
Gossypium australe	0.1	70		
Hibiscus verdcourtii	0.1	20		
Indigofera monophylla	0.1	50		
Ipomoea lonchophylla	0.1	20	KTF56-09	
Ipomoea muelleri	0.1	60	KTF56-06	
Isotropis atropurpurea	1	30	KTF20-04=	
Malvastrum americanum	5	40	N=1000.	
Nicotiana simulans (type 2)	0.1	40	KTF56-10	Formal ID by M. Hislop (WAH)REL04-15=.
Notoleptopus decaisnei	0.1	30		
Operculina aequisepala	0.1	60		
Panicum laevinode	0.1	40	KTF56-14	
Phyllanthus maderaspatensis	0.1	15		
Polymeria longifolia	0.1	20	KTF56-24	
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus exaltatus	0.1	20		
Ptilotus fusiformis	0.1	40	KTF51-18=	
Ptilotus gomphrenoides	0.1	20	KTF56-17	
Ptilotus xerophilus	0.1	40	KTF56-23	
Rhynchosia minima	0.1	50		
Rostellularia adscendens var. clementii	1	30	KTF56-03	
Senna artemisioides subsp. oligophylla (thinly sericeous form MET 15,035)	0.1	170	KTF56-21	
Senna glutinosa subsp. glutinosa x S. stricta	0.1	200	KTF56-18	
Senna notabilis	0.1	25		
Sesbania cannabina	0.1	120		
Setaria dielsii	0.1	30	KTF56-05	
Setaria verticillata	0.25	60		N=1.
Solanum cleistogamum	0.1	20	KTF56-26	
Solanum diversiflorum	0.1	20		
Solanum lasiophyllum	0.1	50		
Sonchus oleraceus	0.1	15		N=10.
Sporobolus australasicus	0.1	25		
Streptoglossa bubakii	0.1	15	KTF01-21=	
Striga squamigera	0.1	20	KTF56-13a	Small purple flower.
Themeda triandra	0.1	90		
Trichodesma zeylanicum var. zeylanicum	0.1	30		
Triodia epactia	9	40		
Urochloa occidentalis var. occidentalis	5	40	KTF56-02	
Vachellia farnesiana	0.1	230		N=9.
Waltheria indica	0.1	20	KTF56-16	

Site **KTF57**

Described by RM/SY **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 564971 mE, 7572691 mN

Habitat Undulating plain.

Soil Dark reddish brown silty clay loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* low open woodland over *Corchorus crozophorifolius* scattered low shrubs over *Eriachne tenuiculmis* very open tussock grassland and *Arivela viscosa* very open herbland.

Veg Condition Excellent: only occasional weeds.

Fire Age Burnt 1-2 years ago.

Notes U1+ ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Corchorus crozophorifolius*\^shrub\2\bi;G1 ^*Eriachne tenuiculmis*\^tussock grass\1\r;G2 *Arivela viscosa*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	35	KTF57-10	
Acacia pyrifolia var. *pyrifolia*	0.1	25		
Afrohybanthus aurantiacus	0.1	40	KTF57-02	
Aristida contorta	0.1	15		
Arivela viscosa	10	50		
Boerhavia burbidgeana	0.1	50		
Bonamia pilbarensis	0.1	30	KTF57-1,12	
Bulbostylis barbata	0.1	15	KTF57-07	
Cenchrus ciliaris	0.1	30		N=10.
Cenchrus setiger	0.1	30		N=40.
Corchorus crozophorifolius	0.5	50	KTF56-11=	
Corymbia hamersleyana	2.5	700		
Crotalaria medicaginea var. *neglecta*	0.1	60	KTF57-11	
Eriachne pulchella	0.1	10		
Eriachne tenuiculmis	3	40	KTF57-03	
Euphorbia australis var. *subtomentosa*	0.1	20	KTF57-09	
Goodenia microptera	0.1	30		
Gossypium australe	0.1	100		
Grevillea wickhamii	0.1	60		Sterile.
Heliotropium cunninghamii	0.1	25	KTF57-05	
Indigofera colutea	0.1	20		
Indigofera monophylla	0.1	50		
Notoleptopus decaisnei	0.1	15		
Phyllanthus maderaspatensis	0.1	35		
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus astrolasius	0.1	40		
Ptilotus exaltatus	0.1	50		
Senna artemisioides subsp. *oligophylla*	0.1	10		
Senna notabilis	0.1	50		
Solanum lasiophyllum	0.1	50		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	15	KTF57-04	
Trianthema pilosum	0.1	20	KTF57-08	
Tribulus macrocarpus	0.1	70		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Trigastrotheca molluginea	0.1	30		
Triodia epactia	0.1	30		
Waltheria indica	0.1	40	KTF57-07b	

Site **KTF58**
Described by RM/SY **Date** 19/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564904 mE, 7572037 mN
Habitat Undulating broad floodplain.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* low open woodland over *Corchorus crozophorifolius, Atalaya hemiglauca* scattered low shrubs over *Eriachne tenuiculmis, (*Cenchrus ciliaris*) scattered tussock grasses and *Arivela viscosa*, (*Trianthema pilosum*) open herbland.
Veg Condition Excellent; scattered weeds.
Fire Age Burnt 1-2 years ago.
Notes U1+ ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Corchorus crozophorifolius,Atalaya hemiglauca*\^shrub\2\bi;G1 ^*Eriachne tenuiculmis,Cenchrus ciliaris*\^tussock grass\1\bi;G2 *Arivela viscosa,Trianthema pilosum*\forb\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	15		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	35	KTF57-10=	
Acacia pyrifolia var. *pyrifolia*	0.1	70		
Afrohybanthus aurantiacus	0.1	25		
Aristida contorta	0.1	20		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	10	50		
Atalaya hemiglauca	0.5	90		
Boerhavia burbidgeana	0.1	50		
Bonamia pilbarensis	0.1	30	KTF57-01=	
Cenchrus ciliaris	0.5	30		N=100.
Cenchrus setiger	0.1	30		N=40.
Corchorus crozophorifolius	1	50	KTF56-11=	
Corymbia hamersleyana	3	800		
Crotalaria medicaginea var. *neglecta*	0.1	60	KTF57-11=	
Cucumis variabilis	0.1	50		
Cullen leucanthum	0.1	70	KTF58-06	
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	15		
Eriachne tenuiculmis	2	40	KTF57-03=	
Euphorbia australis var. *subtomentosa*	0.1	20	KTF57-09=	
Goodenia forrestii	0.1	30	KTF58-03	
Goodenia microptera	0.1	30		
Goodenia nuda	0.1	30	KTF58-02	
Gossypium australe	0.1	100		
Grevillea wickhamii	0.1	70		Sterile.
Heliotropium cunninghamii	0.1	25	KTF57-05=	
Indigofera colutea	0.1	20		
Indigofera monophylla	0.1	70	KTF58-04	
Melhania oblongifolia	0.1	20	KTF58-01	
Notoleptopus decaisnei	0.1	20		
Paraneurachne muelleri	0.1	30		
Portulaca oleracea/intraterranea	0.1	10		
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	0.1	70		
Salsola australis	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna notabilis	0.1	70		
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	20		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	15	KTF57-04=	
Trianthema pilosum	1	20	KTF57-08=	
Tribulus macrocarpus	0.1	70		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Trigastrotheca molluginea	0.1	30		
Triodia epactia	0.1	30		
Waltheria indica	0.1	40	KTF57-07b=	
Yakirra australiensis var. *australiensis*	0.1	20	KTF30-10=	

Site **KTF59**

Described by RM/SY **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 569229 **mE**, 7527013 **mN**

Habitat Cracking clay plain; scalded.

Soil Dark reddish brown silty clay.

Vegetation **Vachellia farnesiana* scattered shrubs over *Astrebla elymoides, Eriachne flaccida*, (*Chrysopogon fallax, Astrebla lappacea*) open tussock grassland over *Urochloa occidentalis* var. *occidentalis, Iseilema macratherum, Panicum laevinode*, (*Chloris pectinata, Dactyloctenium radulans, Dichanthium sericeum* subsp. *humilius*) open annual grassland and *Cullen cinereum, Rostellularia adscendens* var. *clementii*, (*Convolvulus clementii*) open herbland.

Veg Condition Very Good: scattered weeds; signs of cattle.

Fire Age No sign of recent fire.

Notes Very dry, most species dying off. Probably equivalent to the PEC.
M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1+ ^*Astrebla elymoides*,^*Eriachne flaccida,Chrysopogon fallax,Astrebla lappacea*\^tussock grass\2\i;G2 *Urochloa occidentalis* var. *occidentalis,Iseilema macratherum,Panicum laevinode,Chloris pectinata,Dactyloctenium radulans*\other grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	40	KTF59-07	
Alysicarpus muelleri	0.1	40		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	70		
Astrebla elymoides	10	60	KTF59-12	
Astrebla lappacea	2	60	KTF59-13	
Boerhavia burbidgeana	0.1	90	KTF07-14=	
Cenchrus ciliaris	0.1	30		N=200.
Chloris pectinata	1	50	KTF07-20=	
Chrysopogon fallax	7	110		
Convolvulus clementii	2	50	KTF07-07=	
Corchorus trilocularis	0.1	30	KTF59-09	
Cucumis picrocarpus	0.1	30	KTF07-17=	
Cullen cinereum	5	20	KTF07-05=	
Cullen graveolens	0.1	20	KTF59-02	
Cynodon convergens	0.1	30		
Dactyloctenium radulans	1	30		
Dichanthium sericeum subsp. *humilius*	1	40	KTF07-21=	
Dichanthium sericeum subsp. *sericeum*	0.1	70	KTF59-14	
Enneapogon polyphyllus	0.1	15	KTF07-30=	
Eragrostis tenellula	0.1	40		
Eriachne flaccida	10	50	KTF59-04	
Euphorbia ferdinandii var. *ferdinandii*	0.1	5	KTF07-19=	Formal ID by M. Hislop (WAH) KTF10-09= or REL01-10=
Euphorbia trigonosperma	0.1	20	KTF08-26=	Match to WAH ID.
Glycine falcata	0.1	20	KTF59-08	
Heliotropium conocarpum	0.1	20	KTF08-18=	
Hibiscus verdcourtii	0.1	40	KTF59-11	
Indigofera linifolia	0.1	30	KTF07-28=	
Iseilema macratherum	7	30	KTF59-01	
Lotus cruentus	0.1	20	KTF59-03	

Name	Cover (%)	Height (cm)	Specimen	Notes
Malvastrum americanum	0.1	50		N=10.
Operculina aequisepala	0.1	70		
Panicum laevinode	5	60	KTF08-35=	
Phyllanthus maderaspatensis	0.1	30	KTF08-25=	
Portulaca oleracea/intraterranea	0.1	30		
Ptilotus aervoides	0.1	10	KTF07-10=	
Ptilotus exaltatus	0.1	20		
Ptilotus gaudichaudii	0.1	20		
Ptilotus gomphrenoides	0.1	40	KTF59-05	
Ptilotus xerophilus	0.1	40	KTF59-06	
Rhynchosia minima	0.1	30		
Rostellularia adscendens var. *clementii*	5	30	KTF56-03=	
Salsola australis	0.1	70		
Sporobolus australasicus	0.1	10		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	15	KTF59-09A	Formal ID by M. Hislop (WAH).
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	110		N=50.
Tragus australianus	0.1	15	KTF07-26=	
Trianthema triquetrum	0.1	20	KTF07-08=	
Urochloa occidentalis var. *occidentalis*	10	30	KTF08-33=	
Vachellia farnesiana	1.5	250		N=23.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	40	KTF08-14=	

Site **KTF60**
Described by RM/SY **Date** 21/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 568722 mE, 7530421 mN
Habitat Cracking clay plain.
Soil Dark reddish brown light clay; self-mulching.
Vegetation *Astrebla pectinata*, (*A, elymoides*) tussock grassland over *Urochloa occidentalis* var. *occidentalis*, (*U. occidentalis* var. *ciliata*) bunch grassland.
Veg Condition Very Good: signs of cattle.
Fire Age No sign of recent fire.
Notes G1+ ^*Astrebla pectinata,Astrebla elymoides*\^tussock grass\1\c;G2 *Urochloa occidentalis* var. *occidentalis,Urochloa occidentalis* var. *ciliata*\other grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	20	KTF08-04=	
Alysicarpus muelleri	0.1	40	KTF08-20=	
Arivela viscosa	0.1	30		
Astrebla elymoides	0.5	30	KTF59-12=	
Astrebla pectinata	40	30	KTF60-01	
Boerhavia burbidgeana	0.1	40	KTF07-14=	
Chloris pectinata	0.1	20	KTF07-20=	
Chrysopogon fallax	0.1	110		
Corchorus tridens	0.1	40	KTF08-22=	
Crotalaria dissitiflora subsp. *benthamiana*	0.1	45	KTF08-10=	
Cucumis picrocarpus	0.1	45	KTF08-39=	
Cullen graveolens	0.1	30	KTF59-02=	
Cynodon convergens	0.1	30		
Dactyloctenium radulans	0.1	25		
Dichanthium sericeum subsp. *humilius*	0.1	30	KTF08-38=	
Enneapogon caerulescens	0.1	25	KTF08-11=	
Enneapogon polyphyllus	0.1	25	KTF08-21=	
Eragrostis pergracilis	0.1	7	KTF08-09=	
Eriachne flaccida	0.1	40	KTF59-04=	
Euphorbia trigonosperma	0.1	20	KTF08-26	Match to WAH ID.
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Glycine falcata	0.1	20	KTF59-08=	
Goodenia pascua	0.1	30	KTF60-02	
Heliotropium conocarpum	0.1	20	KTF08-18=	
Hibiscus verdcourtii	0.1	50	KTF08-12=	
Indigastrum parviflorum	0.1	45	KTF08-07=	
Indigofera linifolia	0.1	40	KTF08-31=	
Indigofera trita subsp. *trita*	0.1	35	KTF08-40=	
Ipomoea lonchophylla	0.1	50	KTF08-05=	
Iseilema macratherum	0.1	50	KTF59-01=	
Operculina aequisepala	0.1	30		
Panicum decompositum	0.1	45	KTF08-43=	
Panicum laevinode	0.1	60	KTF08-35=	
Phyllanthus maderaspatensis	0.1	30	KTF08-25=	
Polymeria longifolia	0.1	30	KTF08-06=	
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus exaltatus	0.1	5		
Ptilotus gomphrenoides	0.1	30	KTF59-05=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	30		
Rostellularia adscendens var. *clementii*	0.1	20	KTF56-03=	
Sida laevis	0.1	25	KTF08-13=	Formal ID by M. Hislop (WAH)KTF08-34=
Sida fibulifera	0.1	30	KTF08-24=	'sens. lat.'
Sporobolus australasicus	0.1	25		
Streptoglossa bubakii	0.1	10	KTF08-19=	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	120	KTF08-02=	
Trianthema triquetrum	0.1	10	KTF07-08=	
Urochloa occidentalis var. *ciliata*	0.5	40	KTF08-16=	
Urochloa occidentalis var. *occidentalis*	40	30	KTF08-33=	
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	15	KTF08-14=	

Site **KTF61**

Described by RM/SY **Date** 25/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 560081 mE, 7589508 mN

Habitat Broad floodplain, with minor flowline through centre. (Channel has similar species.)

Soil Dark reddish brown silty clay loam.

Rock Type Ironstone.

Vegetation *Acacia citrinoviridis*, (*Corymbia hamersleyana, A.* macraneura) low woodland over *A. atkinsiana* scattered tall shrubs over *Triodia epactia* open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.

Veg Condition Very Good: scattered weeds.

Fire Age Very long unburnt.

Notes U1+ ^*Acacia citrinoviridis,Corymbia hamersleyana,Acacia* macraneura\^tree\6\i;M1 ^*Acacia atkinsiana*\^shrub\4\bi;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Chrysopogon fallax*\tussock grass\2\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	40		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40		
Acacia macraneura	1	500	KTF61-07	Formal ID by M. Hislop (WAH) KTF09-10=
Acacia atkinsiana	0.5	300		
Acacia citrinoviridis	18	600		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Acacia trachycarpa	0.1	160		
Alternanthera nana	0.1	25		
Alysicarpus muelleri	0.1	40		
Aristida contorta	0.1	15		
Arivela viscosa	0.1	50		
Bidens bipinnata	0.1	40		N=150.
Boerhavia coccinea	0.1	25		
Cassytha capillaris	0.1	40		
Cenchrus ciliaris	0.1	40		N=50.
Chrysopogon fallax	0.5	110		
Corchorus sidoides subsp. *sidoides*	0.1	30	KTF45-24=	
Corchorus tridens	0.1	25		
Corymbia hamersleyana	3	600		
Cucumis melo	0.1	40	KTF61-10	
Cucumis picrocarpus	0.1	25		
Cucumis variabilis	0.1	30		
Cullen leucochaites	0.1	25		
Cullen pogonocarpum	0.1	25	KTF61-02	
Dactyloctenium radulans	0.1	15		
Digitaria brownii	0.1	30		
Duperreya commixta	0.1	60		
Dysphania rhadinostachya	0.1	35		Sterile.
Echinochloa colona	0.1	30		N=10.
Enneapogon caerulescens	0.1	25		
Enneapogon polyphyllus	0.1	30		
Eragrostis cumingii	0.1	25		
Eragrostis tenellula	0.1	20		
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	15		
Eulalia aurea	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
Euphorbia biconvexa	0.25	35	KTF61-04	
Euphorbia boophthona	0.1	25		
Euphorbia vaccaria var. *vaccaria*	0.1	10	KTF61-03	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena affinis subsp. *pilbarensis*	0.1	25		
Gomphrena cunninghamii	0.1	15		
Goodenia forrestii	0.1	40		
Goodenia heterochila	0.25	25		
Goodenia microptera	0.1	25		
Goodenia nuda	0.1	40		N=1.
Gossypium australe	0.1	30		
Grevillea wickhamii	0.1	15		Sterile.
Hibiscus sturtii var. *grandiflorus*	0.1	35		
Indigofera monophylla	0.1	40		
Ipomoea muelleri	0.1	40		
Iseilema membranaceum	0.1	25	KTF61-01	
Iseilema vaginiflorum	0.1	25	KTF61-09	
Maireana planifolia x *villosa*	0.1	25	KTF61-11	
Malvastrum americanum	0.1	40		N=1.
Notoleptopus decaisnei	0.1	30		
Paspalidium clementii	0.1	25		
Paspalidium rarum	0.1	30		
Perotis rara	0.1	15		
Phyllanthus erwinii	0.1	20		
Polymeria ambigua	0.1	25		
Portulaca oleracea	0.1	15	KTF64-05=	
Psydrax suaveolens	0.1	40		
Pterocaulon sphacelatum	0.1	15		
Ptilotus aervoides	0.1	15		
Ptilotus auriculifolius	0.1	40		
Ptilotus calostachyus	0.1	80		
Ptilotus exaltatus	0.1	25		
Ptilotus gaudichaudii	0.1	35		
Ptilotus obovatus var. *obovatus*	0.1	60		
Ptilotus obovatus var. *obovatus*	0.1	15	KTF61-08	
Ptilotus polystachyus	0.1	40		
Rhynchosia minima	1	40		
Rostellularia adscendens var. *clementii*	0.1	25		
Salsola australis	0.1	25		
Senna artemisioides subsp. *oligophylla*	0.1	70		
Senna notabilis	0.1	25		
Sida arsiniata	0.1	30		
Sida echinocarpa	0.1	40	KTF61-05	
Sida fibulifera	0.1	15		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	50		Ferruginous form.
Sida spinosa	0.1	40		
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	30		
Streptoglossa decurrens	0.1	10		
Striga squamigera	0.1	25	KTF61-06	
Themeda triandra	0.1	80		

Name	Cover (%)	Height (cm)	Specimen	Notes
Tribulus macrocarpus	0.1	35		
Trichodesma zeylanicum var. zeylanicum	0.1	30		
Triodia epactia	12	50		
Triumfetta chaetocarpa	0.1	30	KTF41-04=	
Urochloa occidentalis var. *occidentalis*	0.1	25		
Vincetoxicum lineare	0.1	90	KTF61-12	

Site	**KTF62**
Described by	PL/AL **Date** 25/4/2020
Type	Quadrat 50 x 50 m
Central Coord	50 563470 **mE**, 7583270 **mN**
Habitat	Major drainage (Fortescue River); riverbed site.
Soil	Dark reddish brown loamy sand.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix* low open woodland over *Melaleuca glomerata* tall open shrubland.
Veg Condition	Excellent.
Fire Age	Very long unburnt.
Notes	Only NW corner pegged; high traffic, high water flow and difficult to hammer in droppers. U1+ ^*Eucalyptus victrix*\^tree\6\r;M1 ^*Melaleuca glomerata*\^shrub\4\r.

Name	**Cover (%)**	**Height (cm)**	**Specimen**	**Notes**
Lipocarpha microcephala	0.1	5	KTF62-02	N=200. Formal ID by M. Hislop (WAH).
Alternanthera angustifolia	0.1	10		
Alternanthera nodiflora	0.1	30	KTF62-01	
Arivela viscosa	0.1	30		
Eragrostis tenellula	0.1	10		
Eriachne benthamii	0.1	80		
Eucalyptus victrix	3	800		
Fimbristylis microcarya	0.1	20		
Glinus lotoides	0.1	8		
Goodenia lamprosperma	0.1	25		
Marsilea hirsuta	0.1	8		
Melaleuca glomerata	8	600		
Phyllanthus maderaspatensis	0.1	30		
Sesbania cannabina	0.1	50		
Stemodia grossa	0.1	4		

Site **KTF64**

Described by PL/AL **Date** 19/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 563923 mE, 7581237 mN

Habitat Slightly elevated clay plain

Soil Dark reddish brown silty clay loam.

Rock Type Ironstone.

Vegetation *Acacia macraneura*, (*A. citrinoviridis*) low woodland over *Acacia pruinocarpa* scattered tall shrubs over *Abutilon lepidum* scattered low shrubs over *Triodia epactia*, (*T. wiseana*) very open hummock grassland over *Arivela viscosa*, (**Bidens bipinnata*) very open herbland.

Veg Condition Very Good to Good: weeds present (mainly **Bidens*); cattle scats.

Fire Age Very long unburnt.

U1+ ^*Acacia macraneura,Acacia citrinoviridis*\^tree\6\i;M1 ^*Acacia pruinocarpa*\^shrub\4\bi;M2 *Abutilon lepidum*\shrub\1\bi;G1 ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\r;G2 *Arivela viscosa,Bidens bipinnata*\forb\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.5	70		Form 1.
Acacia macraneura	9	600	KTF64-01	Formal ID by M. Hislop (WAH) KTF12-01=
Acacia citrinoviridis	4	650		
Acacia pruinocarpa	0.5	210		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Alternanthera angustifolia	0.1	25		
Alternanthera nana	0.1	10		
Alysicarpus muelleri	0.1	40		
Amaranthus induratus	0.1	50	KTF64-15	
Arivela viscosa	7	60		
Bidens bipinnata	2	60		N=5000.
Blumea tenella	0.1	25		
Boerhavia burbidgeana	0.1	40		
Boerhavia coccinea	0.1	40		
Boerhavia repleta	0.25	30		
Bulbostylis barbata	0.1	15		
Bulbostylis turbinata	0.5	20		
Calandrinia sp.	0.1	8	KTF64-03	Sterile.
Calotis plumulifera	0.1	30	KTF64-12	
Cenchrus ciliaris	0.1	50		N=10.
Cheilanthes sieberi subsp. *sieberi*	0.1	20		
Chloris pectinata	0.1	30	KTF64-07	
Chrysopogon fallax	0.1	90		
Convolvulus clementii	0.1	60		
Corchorus sidoides subsp. *sidoides*	0.1	30	PL25=	
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	40		
Cucumis melo	0.1	60		
Cucumis picrocarpus	0.1	30		
Cucumis variabilis	0.1	70		
Cullen leucochaites	0.1	30		
Cullen pogonocarpum	0.1	30	KTF64-13	

Name	Cover (%)	Height (cm)	Specimen	Notes
Dactyloctenium radulans	0.1	10		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria ctenantha	0.1	40		
Duperreya commixta	0.1	60		
Dysphania kalpari	0.1	40		
Dysphania melanocarpa forma *melanocarpa*	0.1	25		
Enneapogon polyphyllus	0.1	50		
Eragrostis cumingii	0.1	25		
Eragrostis leptocarpa	0.1	50	KTF64-11	
Euphorbia biconvexa	0.1	40	KTF63-03=	
Euphorbia boophthona	0.1	50		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis dichotoma	0.1	30	KTF64-14	
Glycine canescens	0.1	50		
Gomphrena affinis subsp. *pilbarensis*	0.1	25		
Gomphrena cunninghamii	0.1	15		
Goodenia microptera	0.1	40		
Goodenia prostrata	0.1	15		
Ipomoea muelleri	0.1	50		
Ipomoea polymorpha	0.1	15		
Iseilema membranaceum	0.25	30	KTF64-06	
Jasminum didymum subsp. *lineare*	0.1	40		
Malvastrum americanum	0.1	50		N=40.
Notoleptopus decaisnei	0.25	40		
Paspalidium clementii	0.5	50		
Paspalidium rarum	0.1	35		
Perotis rara	0.25	20		
Phyllanthus erwinii	0.1	8		
Portulaca pilosa s. lat	0.1	10	KTF64-02	Formal ID by M. Hislop (WAH) KTF23-17=
Portulaca oleracea	0.1	15	KTF64-05	Small flower.
Pterocaulon sphacelatum	0.1	10		
Ptilotus aervoides	0.1	10		
Ptilotus carinatus	0.1	15		
Ptilotus exaltatus	0.1	40		
Ptilotus gaudichaudii	0.1	40		
Ptilotus gomphrenoides	0.1	25		
Ptilotus xerophilus	0.1	50		
Rhynchosia minima	0.1	40		
Setaria dielsii	0.1	60		
Setaria verticillata	0.1	60		N=50.
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Sida spinosa	0.1	30		
Sporobolus australasicus	1	30		
Streptoglossa bubakii	0.1	30		
Striga squamigera	0.1	25	KTF64-04	
Tephrosia rosea s. lat	0.1	30	KTF64-09	Formal ID by M. Hislop (WAH) KTF50-32=
Trianthema pilosum	0.1	25		
Tribulus astrocarpus	0.1	10		
Triodia epactia	3	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triodia wiseana	0.5	40		
Urochloa occidentalis var. *ciliata*	0.25	40		
Urochloa occidentalis var. *occidentalis*	0.5	40		
Vincetoxicum lineare	0.1	60		
Waltheria indica	0.1	30		

Site **KTF65**

Described by PL/AL **Date** 19/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 565445 mE, 7568115 mN

Habitat Moderate drainage; braided flow channels.

Soil Dark reddish brown loamy sand.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix* open woodland over *Corymbia hamersleyana, Atalaya hemiglauca* scattered low trees over *Grevillea wickhamii* subsp. *hispidula*, *Acacia tumida* var. *pilbarensis* scattered tall shrubs over *Corchorus crozophorifolius, (Indigofera monophylla, Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186)) low open shrubland over *Triodia epactia* very open hummock grassland with *Eriachne tenuiculmis*, (**Cenchrus ciliaris, *C. setiger*) very open tussock grassland.

Veg Condition Very Good: cattle scats; scattered **Cenchrus* spp.

Fire Age No sign of recent fire.

Notes U1+ ^*Eucalyptus victrix*\^tree\7\r;U2 *Corymbia hamersleyana,Atalaya hemiglauca*\tree\6\bi;M1 *Grevillea wickhamii* subsp. *hispidula,Acacia tumida* var. *pilbarensis*\shrub\4\bi;M2 ^*Corchorus crozophorifolius,Indigofera monophylla,Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186)\^shrub\2\r;G1 ^*Triodia epactia*\^hummock grass\1\r;G2 *Eriachne tenuiculmis,Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	60		
Acacia ancistrocarpa	0.1	250		
Acacia pyrifolia var. *pyrifolia*	0.1	100		
Acacia tumida var. *pilbarensis*	0.5	250		
Afrohybanthus aurantiacus	0.1	40		
Arivela viscosa	0.1	30		
Atalaya hemiglauca	1	400		
Boerhavia coccinea	0.1	25		
Bonamia pilbarensis	0.1	35		
Bulbostylis barbata	0.1	15		
Cenchrus ciliaris	0.5	70		N=300 (many juveniles).
Cenchrus setiger	0.5	80		N=200.
Corchorus crozophorifolius	1.5	70		
Corchorus sidoides subsp. *sidoides*	0.1	30	PL25=	
Corymbia hamersleyana	1	400		
Cucumis variabilis	0.1	25		
Cynanchum floribundum	0.1	20	KTF65-04	2 colleters.
Digitaria ctenantha	0.1	40		
Dysphania sp.	0.1	10		Sterile, seedling.
Eragrostis cumingii	0.1	25		
Eriachne pulchella	0.25	15		
Eriachne tenuiculmis	4	50		
Eucalyptus victrix	6	1600		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia biconvexa	0.1	40	KTF65-02	
Euphorbia tannensis subsp. *eremophila*	0.1	30		
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Gomphrena cunninghamii	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia forrestii	0.1	40		
Goodenia nuda	0.1	25		N=1.
Gossypium australe	0.1	15		
Grevillea wickhamii subsp. *hispidula*	1	300		
Heliotropium cunninghamii	0.1	25	KTF65-01	
Indigofera monophylla	0.5	50		
Ipomoea muelleri	0.1	50		
Notoleptopus decaisnei	0.1	10		
Paspalidium clementii	0.1	25		
Pentalepis trichodesmoides subsp. trichodesmoides	0.1	20	PL23=	
Phyllanthus maderaspatensis	0.1	30		
Pluchea rubelliflora	0.1	10		
Polycarpaea holtzei	0.1	5		
Polymeria ambigua	0.1	20		
Pterocaulon sphacelatum	0.1	5		
Ptilotus exaltatus	0.1	20		
Ptilotus sp.	0.1	10	KTF65-03	Inadequate material; juvenile.
Senna artemisioides subsp. *oligophylla*	0.1	90		
Solanum diversiflorum	0.1	40		
Sporobolus australasicus	0.1	15		
Stemodia grossa	0.1	5		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.25	50		
Themeda triandra	0.1	70		
Tribulus hirsutus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	8	50		
Triodia wiseana	0.1	60		
Triumfetta chaetocarpa	0.1	30		
Waltheria indica	0.1	15		

Site **KTF66**

Described by PL/AL **Date** 19/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 565323 mE, 7565850 mN

Habitat Major drainage with defined channel; elsewhere a series of braided

Soil Dark reddish brown loamy sand.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix* woodland over *Atalaya hemiglauca* scattered low trees over *Melaleuca glomerata* scattered shrubs over *Corchorus crozophorifolius*, *Indigofera monophylla, Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186)) low open shrubland over **Cenchrus ciliaris*, (**C. setiger, Eriachne tenuiculmis, Cymbopogon ambiguus*) very open tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Very Good: **Cenchrus* spp. present.

Fire Age Burnt 3-5 years ago.

Notes Some *E. victrix* in site resemble *E. camaldulensis* in the colour and patterning of stem bark. Some parts may have been burnt 1-2 years ago; however species composition not dissimilar to pre-fire.
U1+ ^*Eucalyptus victrix*\^tree\7\i;U2 *Atalaya hemiglauca*\tree\6\bi;M1 *Melaleuca glomerata*\shrub\3\bi;M2 ^*Corchorus crozophorifolius*,^*Indigofera monophylla,Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186)\^shrub\2\r;G1 ^*Cenchrus ciliaris,Cenchrus setiger,Eriachne tenuiculmis,Cymbopogon ambiguus*\^tussock grass\1\r;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	60		Form 4.
Acacia bivenosa	0.1	190		
Acacia dictyophleba	0.1	190		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Acacia tumida var. *pilbarensis*	0.1	250		
Afrohybanthus aurantiacus	0.1	25		
Ammannia baccifera	0.1	15		
Ammannia multiflora	0.1	25		
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	25		
Arivela viscosa	0.1	25		
Atalaya hemiglauca	1	600		
Bergia pedicellaris	0.1	8		
Boerhavia coccinea	0.1	40		
Cenchrus ciliaris	2	80		N=800.
Cenchrus setiger	1	80		N=300.
Corchorus crozophorifolius	1	70		
Corchorus lasiocarpus subsp. *parvus*	0.25	60		
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cullen pogonocarpum	0.1	25	KTF24-02=	
Cymbopogon ambiguus	0.5	130		Procerus form.
Cyperus iria	0.1	30		
Cyperus vaginatus	0.1	70		
Digitaria brownii	0.1	50		
Dysphania rhadinostachya	0.1	20		Sterile.
Enneapogon lindleyanus	0.1	40		
Eragrostis tenellula	0.1	30		
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	30	KTF66-01	

Name	Cover (%)	Height (cm)	Specimen	Notes
Eriachne tenuiculmis	1	40		
Eucalyptus victrix	20	1100		
Eulalia aurea	0.1	70		
Euphorbia australis var. *subtomentosa*	0.1	15		
Euphorbia biconvexa	0.1	30	KTF65-02=	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis microcarya	0.1	20		
Flaveria trinervia	0.1	25		N=1.
Gomphrena cunninghamii	0.1	20		
Goodenia lamprosperma	0.1	30		
Goodenia microptera	0.1	35		
Heliotropium tenuifolium	0.1	40		
Indigofera colutea	0.1	25		
Indigofera monophylla	0.75	90		
Ipomoea muelleri	0.1	40		
Melaleuca glomerata	0.5	350		
Notoleptopus decaisnei	0.1	30		
Paspalidium clementii	0.1	25		
Phyllanthus maderaspatensis	0.1	60		
Pluchea rubelliflora	0.1	30		
Polycarpaea holtzei	0.1	8		
Ptilotus exaltatus	0.1	40		
Ptilotus fusiformis	0.1	30		
Sida arsiniata	0.1	20		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.5	15		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.5	60		
Tribulus hirsutus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	1	50		
Triodia wiseana	0.1	40		
Waltheria indica	0.1	25		

Site **KTF67**

Described by PL/AL **Date** 19/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 566058 mE, 7564910 mN

Habitat Major drainage with defined channel; elsewhere a series of braided

Soil Dark reddish brown loamy sand.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix* open woodland over *Grevillea wickhamii* subsp. *hispidula* scattered tall shrubs over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), (*Indigofera monophylla, Corchorus crozophorifolius, C. lasiocarpus* subsp. *parvus*) low open shrubland over *Triodia epactia* scattered hummock grasses and **Cenchrus setiger, *C. ciliaris, Cymbopogon ambiguus* scattered tussock grasses.

Veg Condition Very Good: **Cenchrus* spp. present.

Fire Age Burnt 1-2 years ago.

Notes Higher abundance of fire ephemerals (*Tephrosia rosea, Indigofera monophylla, Corchorus* spp.), however site not dissimilar from pre-fire state. *Triodia epactia* cover low due to fire. Would normally constitute a higher cover of Acacia pyrifolia var pyrifolia and other large perennial shrubs.

U1+ ^Eucalyptus victrix\^tree\7\r;M1 Grevillea wickhamii subsp. hispidula\shrub\4\bi;M2 ^Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186),Indigofera monophylla,Corchorus crozophorifolius,Corchorus lasiocarpus subsp. parvus\^shrub\2\r;G1 ^Triodia epactia\^hummock grass\1\bi;G2 Cenchrus setiger,Cenchrus ciliaris,Cymbopogon ambiguus\tussock grass\1\bi.

Name	Cover:	Height:	Field No:	Notes
Abutilon lepidum	0.1	140		Form 4.
Acacia dictyophleba	0.1	190		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Acacia tumida var. *pilbarensis*	0.1	250		
Afrohybanthus aurantiacus	0.1	25		
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	25		
Arivela viscosa	0.5	25		
Atalaya hemiglauca	0.1	190		
Boerhavia coccinea	0.1	40		
Bonamia pilbarensis	0.1	25		
Cenchrus ciliaris	0.5	80		N=200.
Cenchrus setiger	1	80		N=300.
Chrysopogon fallax	0.1	90		
Corchorus crozophorifolius	1	70		
Corchorus lasiocarpus subsp. *parvus*	1	60		
Corchorus tectus	0.1	70	KTF67-01	
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cymbopogon ambiguus	0.5	130	REL20-01=	Procerus form.
Digitaria ctenantha	0.1	40		
Enneapogon lindleyanus	0.1	40	KTF67-06	
Enneapogon polyphyllus	0.1	40		
Eragrostis tenellula	0.1	30		
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	10		
Eriachne tenuiculmis	0.25	40		
Eucalyptus victrix	9	1100		

Eulalia aurea	0.1	80		
Eulalia simonii	0.1	70		N=4.
Euphorbia australis var. *subtomentosa*	0.1	15		
Euphorbia biconvexa	0.1	30	KTF65-02=	
Euphorbia tannensis subsp. *eremophila*	0.1	25		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Goodenia forrestii	0.1	40		
Goodenia lamprosperma	0.1	30		
Goodenia microptera	0.1	35		
Goodenia nuda	0.1	30		N=6.
Gossypium australe	0.1	40		
Gossypium robinsonii	0.1	60		
Grevillea pyramidalis subsp. *leucadendron*	0.1	100		
Grevillea wickhamii subsp. *hispidula*	0.5	220		
Heliotropium cunninghamii	0.1	40	KTF67-03	
Hibiscus coatesii	0.1	40		
Hibiscus sturtii var. *platychlamys*	0.1	50		
Indigofera monophylla	2	90		
Ipomoea muelleri	0.1	40		
Melhania oblongifolia	0.1	25		
Notoleptopus decaisnei	0.1	30		
Paspalidium clementii	0.1	25		
Phyllanthus maderaspatensis	0.1	60		
Polymeria ambigua	0.1	25		
Ptilotus astrolasius	0.1	40		
Ptilotus auriculifolius	0.1	40		
Ptilotus axillaris	0.1	40	KTF67-04	
Ptilotus calostachyus	0.1	80		
Ptilotus exaltatus	0.1	40		
Ptilotus fusiformis	0.1	30		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *helmsii*	0.1	60		
Senna artemisioides subsp. *oligophylla*	0.1	120	KTF67-05	
Senna notabilis	0.1	40		
Sesbania cannabina	0.1	25	KTF67-07	
Sida echinocarpa	0.1	60		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	50		Ferruginous form.
Solanum diversiflorum	0.1	40		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.5	15		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	4	60		
Themeda triandra	0.25	90		
Tribulus hirsutus	0.1	25		
Tribulus platypterus	0.1	70		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	1	50		
Triumfetta chaetocarpa	0.1	80	KTF67-02	

Waltheria indica	0.1	25		

Site **KTF68**

Described by PL/AL **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 546189 mE, 7602923 mN

Habitat Cracking clay plain.

Soil Dark reddish brown light clay; self-mulching; occasional crab holes.

Rock Type Basalt, ironstone.

Vegetation *Acacia xiphophylla* low woodland over *Triodia epactia* scattered hummock grasses over *Eragrostis xerophila* scattered tussock grasses and *Sporobolus australasicus* scattered bunch grasses.

Veg Condition Very Good: cattle scats.

Fire Age Very long unburnt.

Notes Vegetation of conservation significance; associated with Wona Land System and habitat for *Dipteracanthus* aff. *australasicus* (unusual taxon).
U1+ ^*Acacia xiphophylla*\^tree\6\i;G1 ^*Triodia epactia*\^hummock grass\1\bi;G2 *Eragrostis xerophila,Sporobolus australasicus*\tussock

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50		
Abutilon malvifolium	0.1	20		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	30		
Acacia xiphophylla	26	500		
Amaranthus cuspidifolius	0.1	25	KTF68-02	
Arivela viscosa	0.1	30		
Boerhavia burbidgeana	0.1	30		
Boerhavia coccinea	0.1	30		
Carissa lanceolata	0.1	90		
Corchorus tridens	0.1	20		
Cucumis picrocarpus	0.1	25		
Cucumis variabilis	0.1	40		
Cynodon convergens	0.1	30	KTF68-10	
Dipteracanthus aff. *australasicus*	0.1	30	KTF68-11	Stem indumentum atypical. N=3.
Duperreya commixta	0.1	50		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30		
Enteropogon ramosus	0.1	50		
Eragrostis xerophila	1	30		
Eriachne pulchella	0.1	25		
Hibiscus brachysiphonius	0.1	25		
Indigofera linifolia	0.1	25		
Maireana georgei	0.1	25		
Neptunia dimorphantha	0.1	30	KTF68-04	
Paspalidium clementii	0.1	20		
Phyllanthus maderaspatensis	0.1	30		
Portulaca pilosa s. lat	0.1	10	KTF68-12	Formal ID by M. Hislop (WAH) KTF23-17=
Portulaca conspicua	0.1	5	KTF68-07	
Portulaca intraterranea	0.1	25	KTF68-03	
Portulaca oleracea/intraterranea	0.1	10		Small flower.
Ptilotus aervoides	0.1	5	KTF68-08	
Ptilotus obovatus var. *obovatus*	0.1	60		
Rhagodia eremaea	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Salsola australis	0.1	10		
Senna artemisioides subsp. *oligophylla*	0.1	40		
Senna glutinosa subsp. x *luerssenii*	0.1	160	KTF68-06	
Senna hamersleyensis	0.1	40	KTF68-01	
Senna notabilis	0.1	10		
Sida sp. *(*aff *fibulifera)*	0.1	25	KTF68-09	Submitted to WAH for formal ID-unable to ascertain ID.
Sida spinosa	0.1	25		
Solanum diversiflorum	0.1	40		
Solanum lasiophyllum	0.1	40		
Sporobolus australasicus	0.25	25		
Streptoglossa bubakii	0.1	30		
Trianthema triquetrum	0.1	25		
Tribulus astrocarpus	0.1	20		
Tribulus hirsutus	0.1	25		
Triodia epactia	1.5	50		

Site **KTF69**
Described by BRMMG **Date** 20/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 564774 mE, 7573962 mN
Habitat Floodplain.
Soil Dark reddish brown sandy loam.
Rock Type Scattered ironstone gravel.
Vegetation *Acacia dictyophleba, A. inaequilatera, A. ancistrocarpa, Hakea lorea* subsp. *lorea* scattered tall shrubs over *Senna artemisioides* subsp. *oligophylla* x subsp. *helmsii*, *Ptilotus calostachyus* scattered shrubs over *Triodia epactia* hummock grassland with *Eulalia aurea*, (*Paraneurachne muelleri, *Cenchrus ciliaris*) scattered tussock grasses.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes Quadrat located in small apparently unburnt area, which is surrounded by area 'burnt 18 to 24 months ago'.
M1 ^*Acacia dictyophleba,Acacia inaequilatera,Acacia ancistrocarpa,Hakea lorea* subsp. *lorea*\^shrub\4\bi;M2 *Senna artemisioides* subsp. *oligophylla* x subsp. *helmsii,Ptilotus calostachyus*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Eulalia aurea,Paraneurachne muelleri,Cenchrus ciliaris*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	10		
Acacia ancistrocarpa	0.25	300		
Acacia citrinoviridis	0.1	350		
Acacia dictyophleba	1	250		
Acacia inaequilatera	0.25	220		
Aristida holathera var. *holathera*	0.1	35	KTF69-03	
Aristida inaequiglumis	0.1	80	KTF69-10	
Arivela viscosa	0.1	35		
Boerhavia coccinea	0.1	30	KTF69-16	
Bonamia pilbarensis	0.1	20	KTF69-14	
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	0.5	30		N=60.
Cenchrus setiger	0.1	50		N=10.
Chrysopogon fallax	0.1	120		
Corchorus sidoides subsp. *sidoides*	0.1	20	KTF54-06=	
Cucumis variabilis	0.1	170		
Cullen leucochaites	0.1	100	KTF69-15	
Cullen pogonocarpum	0.1	20	KTF50-04=	
Cymbopogon obtectus	0.1	70	KTF69-11	
Cynodon convergens	0.1	50	KTF52-06=	
Digitaria ctenantha	0.1	40	KTF69-06	
Dysphania rhadinostachya subsp. *inflata*	0.1	12	KTF53-20=	
Eragrostis eriopoda	0.1	45	KTF69-01	
Eriachne aristidea	0.1	25		
Eriachne pulchella	0.1	20		
Eulalia aurea	1	60		
Euphorbia biconvexa	0.1	30	KTF53-05=	
Euphorbia boophthona	0.1	20	KTF54-01	
Euphorbia vaccaria var. *vaccaria*	0.1	3	KTF69-09	
Gomphrena affinis subsp.	0.1	20	KTF69-05	

Name	Cover (%)	Height (cm)	Specimen	Notes
pilbarensis				
Gomphrena cunninghamii	0.1	15		
Goodenia forrestii	0.1	45		
Goodenia microptera	0.1	20		
Gossypium australe	0.1	90		Burrup Peninsula form.
Grevillea wickhamii subsp. *hispidula*	0.1	450		
Hakea lorea subsp. lorea	0.5	240	KTF69-13	
Heliotropium inexplicitum	0.1	10	KTF54-10=	
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF69-12	
Hibiscus sturtii var. *platychlamys*	0.1	45	KTF52-23=	
Indigofera colutea	0.1	5		
Notoleptopus decaisnei	0.1	25		
Paraneurachne muelleri	0.5	40		
Paspalidium clementii	0.1	25	KTF69-08	
Paspalidium rarum	0.1	30	KTF69-04	
Phyllanthus erwinii	0.1	4		
Portulaca oleracea/intraterranea	0.1	6		
Pterocaulon sphacelatum	0.1	10	KTF50-44=	
Ptilotus astrolasius	0.1	15		
Ptilotus calostachyus	1	120		
Ptilotus exaltatus	0.1	15		
Ptilotus gomphrenoides	0.1	15		
Ptilotus polystachyus	0.1	12	KTF53-07=	
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	1	130	KTF69-02	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	20		
Sida arsiniata	0.1	12	KTF69-07	
Sporobolus australasicus	0.1	30		
Trianthema pilosum	0.1	25		
Tribulus hirsutus	0.1	20		
Tribulus macrocarpus	0.1	10		
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	40	80		
Yakirra australiensis var. *australiensis*	0.1	5	KTF53-04=	

Site **KTF70**

Described by BRMMG **Date** 21/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 569611 mE, 7533159 mN

Habitat Plain.

Soil Dark reddish brown clay.

Rock Type Calcrete.

Vegetation *Hakea lorea* subsp. *lorea* scattered low trees over **Vachellia farnesiana* scattered tall shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland over *Cullen cinereum*, (*Indigofera linifolia, Polymeria longifolia*) open herbland.

Veg Condition Very Good: cattle grazing, scats and compacting; very occasional weeds.

Fire Age No sign of recent fire.

Notes U1 ^*Hakea lorea* subsp. *lorea*\^tree\6\bi;M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\^tussock grass\3\c;G2 *Cullen cinereum,Indigofera linifolia,Polymeria longifolia*\forb\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	40	KTF70-4,45	
Acacia victoriae subsp. *victoriae*	0.1	25	KTF70-41	
Aristida latifolia	0.1	30	KTF70-34	
Arivela viscosa	0.1	40		
Boerhavia paludosa	0.1	30	KTF70-17	
Calotis multicaulis	0.1	15	KTF70-36	N=2.
Cenchrus ciliaris	0.1	40		N=5.
Chrysopogon fallax	0.1	90		
Convolvulus clementii	0.1	30	KTF70-28	
Corchorus tridens	0.1	15	KTF70-21	
Crotalaria dissitiflora subsp. *benthamiana*	0.1	30	KTF70-13	
Cucumis picrocarpus	0.1	15	KTF70-06	
Cullen cinereum	8	20	KTF70-02	
Cullen graveolens	0.1	20	KTF70-27	
Cynodon convergens	0.1	25	KTF52-06=	
Dactyloctenium radulans	1	12		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	10	KTF70-24	N=200.
Enneapogon polyphyllus	0.1	15	KTF70-39	
Eragrostis desertorum	0.1	40	KTF70-37	
Eremophila longifolia	0.1	120		
Euphorbia coghlanii	0.1	20	KTF70-09	Formal ID by M. Hislop (WAH).
Euphorbia inappendiculata var. *queenslandica*	0.1	4	KTF70-12	N=15. Formal ID by M. Hislop (WAH).
Euphorbia inappendiculata var. *queenslandica*	0.1	2	KTF70-22	Formal ID by M. Hislop (WAH) KTF70-12=.
Euphorbia australis var. *glabra*	0.1	10	KTF70-31	N=15.
Flaveria sp. Tom Price (M.E. Trudgen 11246) PN	0.1	20	KTF70-33	N=2.
Goodenia pascua	0.1	10	KTF70-42	
Hakea lorea subsp. *lorea*	1.5	450	KTF70-07	
Heliotropium conocarpum	0.1	15	KTF70-05	
Hibiscus verdcourtii	0.1	40	KTF70-32	

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera linifolia	3	40	KTF70-10	
Iseilema dolichotrichum	0.5	30	KTF04-16=	
Panicum laevinode	0.1	45	KTF70-3,40	
Phyllanthus maderaspatensis	0.1	20	KTF70-20	
Polygala glaucifolia	0.1	4	KTF70-23	
Polymeria longifolia	1	30	KTF70-14	
Portulaca intraterranea	0.1	25	KTF70-26	
Pseudognaphalium luteoalbum	0.1	10	KTF70-43	Sterile, juvenile.
Pterocaulon sphacelatum	0.1	30	KTF70-44	
Ptilotus exaltatus	0.1	25	KTF70-11	
Ptilotus gomphrenoides	0.1	10		
Ptilotus xerophilus	0.1	30		
Rhynchosia minima	0.1	20		
Senecio magnificus	0.1	60	KTF70-19	
Senna stricta	0.1	90	KTF70-18	
Sida fibulifera	0.1	20	KTF70-29	
Sida spinosa	0.1	12	KTF70-30	
Solanum lasiophyllum	0.1	45	KTF70-15	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	12	KTF70-38	Formal ID by M. Hislop (WAH)KTF22-02=
Streptoglossa bubakii	0.1	30		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	60	150	KTF70-01	
Trichodesma zeylanicum var. *zeylanicum*	0.1	10	KTF70-16	
Urochloa occidentalis var. *occidentalis*	0.5	15	KTF70-08	
Vachellia farnesiana	0.5	210		N=10.
Vigna lanceolata var. *lanceolata*	0.1	8	KTF70-35	
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	20		

Site **KTF71**
Described by PL/SC **Date** 23/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 574542 mE, 7552845 mN
Habitat Low hill: crest and slopes.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Grevillea wickhamii* subsp. *hispidula* scattered shrubs over *Mirbelia viminalis*, *Acacia hilliana* scattered low shrubs over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Grevillea wickhamii* subsp. *hispidula*\^shrub\3\bi;M2 *Mirbelia viminalis,Acacia hilliana*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\iG2 *Eriachne mucronata*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. adoxa	0.1	40		
Acacia hilliana	0.5	40		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	8		
Corchorus parviflorus	0.1	60		
Corymbia hamersleyana	1	300		
Dolichocarpa crouchiana	0.1	30		
Eriachne ciliata	0.1	10		
Eriachne mucronata	0.25	40		Arid form.
Eriachne mucronata	0.25	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. leucophloia	4	700		
Euphorbia careyi	0.1	30	KTF71-01	
Fimbristylis dichotoma	0.1	25		
Goodenia stobbsiana	0.1	50		
Goodenia triodiophila	0.1	40		
Grevillea wickhamii subsp. hispidula	1	140		
Hakea chordophylla	0.1	300		
Jasminum didymum subsp. lineare	0.1	100		
Mirbelia viminalis	1	40		
Paspalidium clementii	0.1	25		
Ptilotus astrolasius	0.1	10		
Ptilotus calostachyus	0.1	70		
Ptilotus fusiformis	0.1	40		
Schizachyrium fragile	0.1	8		
Senna glutinosa subsp. glutinosa	0.1	100		
Senna notabilis	0.1	30		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	160		
Tephrosia oxalidea	0.1	20		
Themeda triandra	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triodia epactia	0.1	40		
Triodia wiseana	23	30		
Waltheria virgata	0.1	40		

Site **KTF72**
Described by RM/SY **Date** 20/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 569474 mE, 7532802 mN
Habitat Clay plain.
Soil Dark reddish brown light clay.
Rock Type Calcrete.
Vegetation *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) tussock grassland.
Veg Condition Very Good: signs of cattle.
Fire Age No sign of recent fire.
Notes G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\^tussock

Name	Cover (%)	Height (cm)	Specimen	Notes
Aristida holathera var. *holathera*	0.1	70		
Boerhavia burbidgeana	0.1	30		
Boerhavia paludosa	0.1	15	KTF72-08	
Calotis multicaulis	0.1	20	KTF72-3,22	
Calotis plumulifera	0.1	15	KTF72-21	
Chloris pectinata	0.1	25	KTF07-20=	
Chrysopogon fallax	0.1	110		
Convolvulus clementii	0.1	20	KTF07-32=	
Corchorus tridens	0.1	20	KTF72-02	
Crotalaria dissitiflora subsp. *benthamiana*	0.1	30	KTF72-16	
Cucumis picrocarpus	0.1	70	KTF72-12	
Cullen cinereum	0.1	20	KTF07-05=	
Cynodon convergens	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	30		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	20	KTF72-17	
Dysphania rhadinostachya subsp. *inflata*	0.1	5	KTF07-15=	
Enneapogon polyphyllus	0.1	30		
Eragrostis tenellula	0.1	30		
Eriachne flaccida	0.1	40	KTF59-04=	
Euphorbia inappendiculata var. *queenslandica*	0.1	15	KTF72-13	Formal ID by M. Hislop (WAH) KTF70-12=.
Euphorbia australis var. *glabra*	0.1	20	KTF72-05	
Euphorbia trigonosperma	0.1	20	KTF72-06	
Glycine falcata	0.1	20	KTF72-11	
Goodenia forrestii	0.1	30	KTF72-20	
Goodenia microptera	0.1	15		
Hakea lorea subsp. *lorea*	0.1	70	KTF27-11=	
Heliotropium conocarpum	0.1	20	KTF72-10	
Hibiscus verdcourtii	0.1	35	KTF72-15	
Indigofera linifolia	0.1	40		
Iseilema macratherum	0.1	30	KTF59-01=	
Iseilema vaginiflorum	0.1	20		
Panicum laevinode	0.1	30	KTF08-35=	
Phyllanthus maderaspatensis	0.1	30		
Polymeria longifolia	0.1	25	KTF72-04	
Portulaca oleracea/intraterranea	0.1	10		
Pseudognaphalium luteoalbum	0.1	20	KTF72-07	Sterile, juvenile.
Ptilotus exaltatus	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus gomphrenoides	0.1	20	KTF72-19	
Ptilotus helipteroides	0.1	20	KTF07-11=	
Ptilotus xerophilus	0.1	20	KTF72-23	
Rhynchosia minima	0.1	30		
Senna notabilis	0.1	30		
Sida spinosa	0.1	30	KTF72-09	
Sporobolus australasicus	0.1	30		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	15	KTF72-18	Formal ID by M. Hislop (WAH) KTF22-02=
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	45	110		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triraphis mollis	0.1	20		
Urochloa occidentalis var. *occidentalis*	0.1	45		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	30	KTF72-01	

Site **KTF73**

Described by PL/AL **Date** 20/4/2020

Type Quadrat 50 x 50 m

Central Coord 50 540965 mE, 7603710 mN

Habitat Slightly elevated stony plain; isolated minor areas of crab holes.

Soil Dark reddish brown silty clay loam, self-mulching.

Rock Type Basalt.

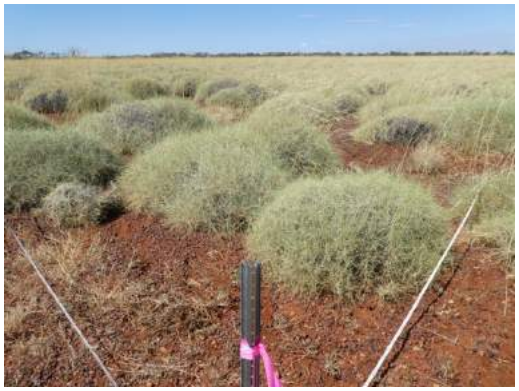
Vegetation *Triodia wiseana* hummock grassland with *Eriachne flaccida*, (*Eragrostis xerophila*) scattered tussock grasses and *Neptunia dimorphantha, Stemodia kingii, Streptoglossa bubakii* scattered herbs.

Veg Condition Excellent.

Fire Age Very long unburnt.

Notes An odd unit however, seems extensive in landscape. *Rhagada* shells in site; 1 collection.
G1+ ^*Triodia wiseana*\^hummock grass\1\c;G2 ^*Eriachne flaccida,Eragrostis xerophila,Neptunia dimorphantha,Stemodia kingii,Streptoglossa bubakii*\tussock grass,forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	20		
Aristida latifolia	0.1	40	KTF73-07	
Arivela viscosa	0.1	40		
Boerhavia paludosa	0.1	60		
Bothriochloa ewartiana	0.1	80	KTF73-05	
Bulbostylis turbinata	0.1	15		
Chrysopogon fallax	0.1	20		
Corchorus tridens	0.1	30		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	10	KTF73-01	N=200.
Dysphania kalpari	0.1	15		
Eragrostis tenellula	0.1	25		
Eragrostis xerophila	0.25	60		
Eriachne flaccida	1	40	KTF73-04	
Eriachne pulchella	0.1	20		
Euphorbia coghlanii	0.1	15	KTF73-10	Formal ID by M. Hislop (WAH).
Euphorbia inappendiculata var. *inappendiculata*	0.1	20	KTF73-02	N=50 I Formal ID by M. Hislop (WAH).
Gomphrena affinis subsp. *pilbarensis*	0.1	30		
Indigofera colutea	0.1	40		
Indigofera linifolia	0.1	25		
Iseilema vaginiflorum	0.1	25	KTF73-09	
Neptunia dimorphantha	0.25	20	KTF68-04=	
Phyllanthus maderaspatensis	0.1	30		
Ptilotus gomphrenoides	0.1	20		
Rhynchosia minima	0.1	40		
Senna notabilis	0.1	25		
Sida fibulifera	0.1	25		
Sporobolus australasicus	0.1	15		
Stemodia kingii	0.25	40		
Streptoglossa bubakii	0.25	40		
Swainsona thompsoniana	0.1	20	KTF73-08	
Tephrosia sp. clay soils (S. van Leeuwen et al. PBS 0273) PN	0.1	25	KTF73-06	
Triodia wiseana	50	90		



Site **KTF74**
Described by PL/AL **Date** 21/4/2020
Type Quadrat 50 x 50 m
Central Coord 50 542706 mE, 7603041 mN
Habitat Cracking clay plain.
Soil Dark reddish brown light clay; self-mulching, crab holes.
Rock Type Basalt.
Vegetation *Eriachne flaccida, Eragrostis xerophila* very open tussock grassland over *Cynodon convergens* very open bunch grassland.
Veg Condition Very Good: cattle scats.
Fire Age No sign of recent fire.
Notes G1+ ^*Eriachne flaccida*,^*Eragrostis xerophila*\^tussock grass\1\r;G2 *Cynodon convergens*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	25		
Abutilon otocarpum	0.1	30		
Aeschynomene indica	0.1	50		
Alternanthera nodiflora	0.1	30		
Alysicarpus muelleri	0.1	25		
Ammannia multiflora	0.1	10		
Aristida latifolia	0.1	100	KTF74-09	
Astrebla elymoides	0.1	60	PL31=	N=3.
Austrobryonia pilbarensis	0.1	20	KTF74-12	
Bergia pedicellaris	0.1	10		
Boerhavia paludosa	0.1	60		
Bulbostylis turbinata	0.1	25		
Centipeda minima subsp. *macrocephala*	0.1	8	KTF74-07	
Corchorus tridens	0.1	20		
Crotalaria dissitiflora subsp. *benthamiana*	0.1	35	KTF74-02	
Cucumis picrocarpus	0.1	30		
Cullen cinereum	0.1	30	KTF74-01	
Cynodon convergens	2	40		
Cyperus iria	0.1	25		
Grona muelleri	0.1	30	KTF74-03	
Dichanthium sericeum subsp. *humilius*	0.1	50		
Dichanthium sericeum subsp. *sericeum*	0.1	50	KTF74-04	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	0.1	10		N=60.
Elytrophorus spicatus	0.1	15		
Eragrostis tenellula	0.25	40	KTF74-05	
Eragrostis xerophila	4	40		
Eriachne flaccida	6	50	KTF73-04=	
Euphorbia biconvexa	0.1	30	KTF74-11	
Gomphrena affinis subsp. *pilbarensis*	0.1	30		
Heliotropium conocarpum	0.1	10	KTF74-10	
Hibiscus verdcourtii	0.1	30		
Indigofera linifolia	0.1	25		
Indigofera trita subsp. *trita*	0.1	30		
Ipomoea coptica	0.1	25		
Ipomoea lonchophylla	0.1	30		
Ipomoea polymorpha	0.1	15		
Iseilema macratherum	0.25	40	KTF74-13	

Lotus cruentus	0.1	25	KTF74-06	
Marsilea hirsuta	0.1	10		
Mimulus gracilis	0.1	10		
Neptunia dimorphantha	0.1	25	KTF68-04=	
Operculina aequisepala	0.1	40		
Panicum laevinode	0.1	80	KTF74-08	
Phyllanthus maderaspatensis	0.1	40		
Portulaca oleracea/intraterranea	0.1	20		Small flower.
Ptilotus auriculifolius	0.1	25		
Ptilotus exaltatus	0.1	20		
Ptilotus gomphrenoides	0.1	25		
Rhynchosia minima	0.1	40		
Sida fibulifera	0.1	25		
Sida spinosa	0.1	25		
Sporobolus australasicus	0.25	30		
Stemodia kingii	0.1	40		
Streptoglossa bubakii	0.1	30		
Tribulus hirsutus	0.1	20		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	30		

Site **KTF75**

Described by BRM/RM **Date** 23/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 570167 mE, 7542266 mN

Habitat Gentle E-facing slope of range.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Corymbia deserticola* subsp. *deserticola* scattered low trees over *Senna glutinosa* subsp. *pruinosa* scattered shrubs over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age Burnt 2-3 years ago.

Notes U1 ^*Corymbia deserticola* subsp. *deserticola*\^tree\6\bi;M1 ^*Senna glutinosa* subsp. *pruinosa*\^shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	30		
Acacia inaequilatera	0.1	50		
Acacia ptychophylla	0.1	60	KTF75-05	
Acacia tenuissima	0.1	50	KTF75-08	
Amphipogon sericeus	0.1	25	KTF75-04	
Bonamia pilbarensis	0.1	50	KTF75-07	
Corymbia deserticola subsp. *deserticola*	1	550		
Eriachne ciliata	0.1	20	KTF75-02	
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	0.1	90		Juvenile.
Fimbristylis simulans	0.1	20	KTF75-01	
Gompholobium oreophilum	0.1	40		
Goodenia stobbsiana	0.1	30		
Grevillea wickhamii	0.1	50		Juvenile.
Hakea chordophylla	0.1	90		
Hibiscus sturtii var. *campylochlamys*	0.1	20	KTF75-10	
Ptilotus calostachyus	0.1	70		
Schizachyrium fragile	0.1	15		
Senna glutinosa subsp. *glutinosa*	0.1	50		
Senna glutinosa subsp. *pruinosa*	0.5	120		
Seringia nephrosperma	0.1	5	KTF75-06	
Sida arenicola	0.1	10	KTF75-03	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	20	KTF75-11	
Themeda sp. Mt Barricade (M.E. Trudgen 2471)	0.1	30	KTF75-09	
Triodia wiseana	12	20		

Site **KTF76**
Described by PL/SC **Date** 23/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 574409 mE, 7553029 mN
Habitat Hill slope.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia hilliana, A. adoxa* var. *adoxa* scattered low shrubs over *Triodia wiseana* very open hummock grassland with *Eriachne mucronata* scattered tussock
Veg Condition Excellent.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;M1 ^*Acacia hilliana*,^*Acacia adoxa* var. *adoxa*\^shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\r;G2 *Eriachne mucronata*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.25	40		
Acacia hilliana	0.5	50		
Acacia inaequilatera	0.1	100		
Acacia monticola	0.1	50		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	15		
Clerodendrum floribundum var. *angustifolium*	0.1	160		
Corymbia hamersleyana	0.1	300		
Dolichocarpa crouchiana	0.1	15		
Eriachne aristidea	0.1	30		
Eriachne ciliata	0.1	15		
Eriachne mucronata	0.25	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	15		
Eucalyptus leucophloia subsp. *leucophloia*	3	400		
Fimbristylis dichotoma	0.1	25		
Goodenia microptera	0.1	30		
Goodenia triodiophila	0.1	40		
Hakea chordophylla	0.1	90		
Indigofera monophylla	0.1	40		
Paspalidium clementii	0.1	20		
Polycarpaea holtzei	0.1	8		
Ptilotus clementii	0.1	5		
Ptilotus fusiformis	0.1	50		
Schizachyrium fragile	0.1	25		
Senna glutinosa subsp. *glutinosa*	0.1	40		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	40		Ferruginous form.
Themeda triandra	0.1	60		
Trigastrotheca molluginea	0.1	20		
Triodia wiseana	9	40		
Triumfetta chaetocarpa	0.1	40	KTF76-01	

Site **KTF77**

Described by BRM/RM **Date** 23/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 573157 mE, 7549218 mN

Habitat Moderate spur, E-facing.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

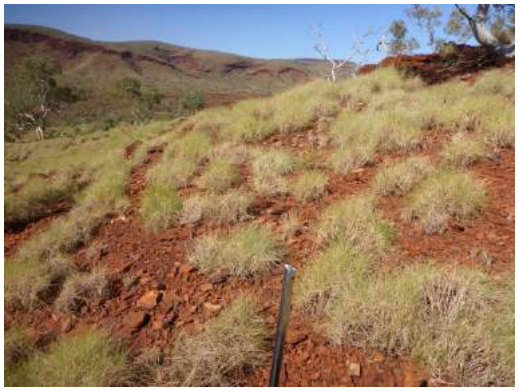
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia wiseana* hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia dictyophleba	0.1	130		
Acacia maitlandii	0.1	50		
Acacia pruinocarpa	0.1	170		
Aristida contorta	0.1	25	KTF77-04	
Arivela viscosa	0.1	5		
Corymbia hamersleyana	0.1	90		
Cymbopogon sp.	0.1	20		Dead.
Dampiera candicans	0.1	45		
Dolichocarpa crouchiana	0.1	10	KTF77-03	
Duperreya commixta	0.1	50		
Eriachne ciliata	0.1	20	KTF75-02=	
Eriachne mucronata	0.1	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	12		
Eucalyptus leucophloia subsp. *leucophloia*	3	600		
Goodenia cusackiana	0.1	15		
Goodenia stobbsiana	0.1	25		
Hakea chordophylla	0.1	230		
Jasminum didymum subsp. *lineare*	0.1	120		
Paspalidium clementii	0.1	10	KTF77-01	
Ptilotus exaltatus	0.1	5		
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF77-05	
Senna glutinosa subsp. *glutinosa*	0.1	90		
Sida sp. Shovelanna Hill (S. van Leeuwen 3842)	0.1	20	KTF77-02	
Trachymene oleracea subsp. *oleracea*	0.1	5		
Triodia wiseana	45	40		



Site	**KTF78**
Described by	PL/SC **Date** 24/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 572218 mE, 7556002 mN
Habitat	Semi calcareous floodplain.
Soil	Reddish brown silty clay loam.
Rock Type	Calcrete.
Vegetation	*Eucalyptus xerothermica* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia angusta*, (*T. wiseana*) open hummock grassland with *Eulalia aurea*, (*Eragrostis desertorum*) scattered tussock grasses.
Veg Condition	Very Good: signs of cattle.
Fire Age	Very long unburnt.
Notes	U1 ^*Eucalyptus xerothermica*\^tree\6\bi;M1 ^*Acacia bivenosa*\^shrub\3\r;G1+ ^*Triodia angusta,Triodia wiseana*\^hummock grass\1\i;G2 *Eulalia aurea,Eragrostis desertorum*\tussock grass\1\bi.

Name	**Cover (%)**	**Height (cm)**	**Specimen**
Acacia bivenosa	5	140	
Cassytha capillaris	0.1	40	
Codonocarpus cotinifolius	0.1	60	
Eragrostis desertorum	0.25	40	KTF78-01
Eucalyptus xerothermica	2	600	
Eulalia aurea	1	70	
Santalum lanceolatum	0.1	140	
Scaevola amblyanthera var. *centralis*	0.1	10	KTF78-02
Triodia angusta	28	50	
Triodia wiseana	1	60	

Site **KTF79**

Described by BRM/RM **Date** 23/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572509 mE, 7554406 mN

Habitat Footslope of low range to W.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Triodia wiseana* hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia inaequilatera*\^shrub\4\bi;M2 *Senna glutinosa* subsp. *glutinosa*\shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia inaequilatera	1.5	400	
Acacia spondylophylla	0.1	90	
Acacia tumida var. *pilbarensis*	0.1	330	
Aristida holathera var. *holathera*	0.1	15	KTF79-01
Bonamia erecta	0.1	30	
Bonamia pilbarensis	0.1	20	KTF79-02
Corymbia hamersleyana	1	450	
Eriachne pulchella	0.1	5	
Fimbristylis simulans	0.1	20	KTF75-01=
Hakea lorea subsp. *lorea*	0.1	250	
Jasminum didymum subsp. *lineare*	0.1	170	
Ptilotus calostachyus	0.1	10	
Senna glutinosa subsp. *glutinosa*	0.25	120	
Triodia wiseana	35	30	

Site	**KTF80**
Described by	PL/SC **Date** 24/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 572458 mE, 7556406 mN
Habitat	Floodplain; semi-calcareous.
Soil	Reddish brown silty clay loam.
Rock Type	Calcrete.
Vegetation	*Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia angusta* open hummock grassland with *Eulalia aurea*, (*Eragrostis desertorum*) very open tussock grassland.
Veg Condition	Very Good: signs of cattle; very occasional weeds.
Fire Age	Very long unburnt.
Notes	U1 ^*Eucalyptus xerothermica*\^tree\6\r;M1 ^*Acacia bivenosa*\^shrub\3\bi;G1+ ^*Triodia angusta*\^hummock grass\1\i;G2 *Eulalia aurea,Eragrostis desertorum*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	1	120		
Cassytha capillaris	0.1	40		
Cenchrus setiger	0.1	50		N=2.
Codonocarpus cotinifolius	0.1	500		
Eragrostis desertorum	0.25	40	KTF78-01=	
Eucalyptus xerothermica	4	800		
Eulalia aurea	2	60		
Jasminum didymum subsp. *lineare*	0.1	80		
Lepidium pedicellosum	0.1	40		
Scaevola amblyanthera var. *centralis*	0.1	25	KTF78-02=	
Tribulus terrestris	0.1	25		N=20.
Triodia angusta	26	50		

Site **KTF81**

Described by BRM/RM **Date** 24/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572622 mE, 7554694 mN

Habitat Minor flowline / floodplain.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana*, (*Eucalyptus xerothermica*) low open woodland over *Acacia elachantha, A. dictyophleba* scattered tall shrubs over *Senna glaucifolia, A. ancistrocarpa* scattered shrubs over *Triodia epactia* hummock grassland with *Eulalia simonii,* (*Chrysopogon fallax, *Cenchrus setiger*) very open tussock grassland.

Veg Condition Very Good: signs of cattle; scattered weeds.

Fire Age Very long unburnt.

Notes U1 ^*Corymbia hamersleyana,Eucalyptus xerothermica*\^tree\6\r;M1 ^*Acacia elachantha*,^*Acacia dictyophleba*\^shrub\4\bi;M2 *Senna glaucifolia,Acacia ancistrocarpa*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 ^*Eulalia simonii,Chrysopogon fallax,Cenchrus setiger*\^tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.25	120		
Acacia citrinoviridis	0.1	260		
Acacia dictyophleba	0.5	240		
Acacia elachantha	0.5	280	KTF81-07	
Acacia inaequilatera	0.1	120		
Acacia monticola	0.1	180		
Acacia tenuissima	0.1	170	KTF75-08=	
Acacia tumida var. *pilbarensis*	0.1	150		
Alternanthera nana	0.1	20	KTF81-08	
Aristida holathera var. *holathera*	0.1	30	KTF79-01=	
Aristida inaequiglumis	0.1	90	KTF81-11	
Atalaya hemiglauca	0.1	230		
Bonamia erecta	0.1	25		
Cenchrus ciliaris	0.1	30		N=3.
Cenchrus setiger	0.5	30		N=50.
Chrysopogon fallax	0.5	90		
Corymbia hamersleyana	5	700		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cullen martinii	0.1	30	KTF81-16	
Eragrostis eriopoda	0.1	40	KTF81-14	
Eucalyptus xerothermica	0.5	450		
Eulalia aurea	0.1	50		
Eulalia simonii	3	30	KTF81-04	
Euphorbia biconvexa	0.1	30	KTF81-06	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia forrestii	0.1	30	KTF81-05	
Goodenia nuda	0.1	30	KTF81-02	N=13.
Gossypium australe	0.1	50		
Grevillea wickhamii subsp. macrodonta	0.1	90	KTF81-15	Formal ID by M. Hislop (WAH)PL35=.
Hakea lorea subsp. *lorea*	0.1	210		
Hibiscus sturtii var. *platychlamys*	0.1	30	KTF81-13	
Jasminum didymum subsp. *lineare*	0.1	250		
Paraneurachne muelleri	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	90		
Ptilotus obovatus var. *obovatus*	0.1	30		
Rhynchosia minima	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	100	KTF81-09	
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	0.1	90	KTF81-03	
Senna glaucifolia	0.5	110	KTF81-01	
Senna glutinosa subsp. *glutinosa*	0.1	90		
Sida echinocarpa	0.1	90	KTF81-10	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	KTF81-12	
Sporobolus australasicus	0.1	20		
Themeda triandra	0.1	90		
Tribulus hirsutus	0.1	20		
Trigastrotheca molluginea	0.1	10		
Triodia epactia	60	50		
Triodia wiseana	0.5	50		

Site **KTF82**

Described by PL/SC **Date** 24/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 571674 mE, 7557751 mN

Habitat Footslopes.

Soil Dark reddish brown clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia spondylophylla* low open shrubland over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes *Acacia spondylophylla* variable in landscape. *Acacia atkinsiana* dense in very minor flows. PMM in quadrat.
U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;M1 ^*Acacia spondylophylla*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	90		
Acacia pruinocarpa	0.1	50		
Acacia spondylophylla	3	60		
Acacia synchronicia	0.1	70		
Amphipogon sericeus	0.1	40		
Bulbostylis barbata	0.1	10		
Dolichocarpa crouchiana	0.1	10		
Eriachne mucronata	0.1	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	1	800		
Fimbristylis simulans	0.1	15		
Goodenia stobbsiana	0.1	40		
Grevillea pyramidalis subsp. *leucadendron*	0.1	100		
Hibiscus sturtii var. *campylochlamys*	0.1	25		
Paraneurachne muelleri	0.1	40		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus calostachyus	0.1	70		
Ptilotus clementii	0.1	2		
Ptilotus exaltatus	0.1	25		
Senna symonii	0.1	120		
Triodia wiseana	12	40		

Site **KTF83**
Described by BRM/RM **Date** 24/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 571902 mE, 7557018 mN
Habitat Hill crest.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Senna glutinosa* subsp. *pruinosa* scattered shrubs over *Acacia hilliana* scattered low shrubs over *Triodia wiseana* hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;M1 ^*Senna glutinosa* subsp. *pruinosa*\^shrub\3\bi;M2 *Acacia hilliana*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	50		
Acacia hilliana	1.5	40		
Acacia spondylophylla	0.1	40		
Amphipogon sericeus	0.1	30	KTF75-04=	
Arivela viscosa	0.1	20		
Corymbia hamersleyana	0.1	110		
Dolichocarpa crouchiana	0.1	15	KTF77-03=	
Dysphania rhadinostachya	0.1	5	KTF83-02	Sterile.
Eriachne mucronata	0.1	40		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	30		
Eucalyptus leucophloia subsp. *leucophloia*	1.5	500		
Goodenia cusackiana	0.1	15		
Grevillea wickhamii	0.1	3		Juvenile.
Hakea chordophylla	0.1	60		
Hakea lorea subsp. *lorea*	0.1	60		
Indigofera monophylla	0.1	40		
Paraneurachne muelleri	0.1	30		
Ptilotus calostachyus	0.1	30		
Ptilotus clementii	0.1	5	KTF83-01	
Senna glutinosa subsp. *glutinosa*	0.1	150		
Senna glutinosa subsp. *pruinosa*	0.25	190		
Trigastrotheca molluginea	0.1	10		
Triodia wiseana	40	30		

Site **KTF84**
Described by PL/SC **Date** 24/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 571296 mE, 7558952 mN
Habitat Broad floodplain.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana*, (*Hakea lorea* subsp. *lorea*) low open woodland over *Grevillea pyramidalis* subsp. *leucadendron*, *Acacia inaequilatera* scattered tall shrubs over *Acacia bivenosa* scattered shrubs over *Triodia epactia* open hummock grassland with **Cenchrus setiger, *C. ciliaris*, (*Chrysopogon fallax*) very open tussock grassland.
Veg Condition Very Good: some weeds.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana,Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Grevillea pyramidalis* subsp. *leucadendron*,^*Acacia inaequilatera*\^shrub\4\bi;M2 *Acacia bivenosa*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Cenchrus setiger,Cenchrus ciliaris,Chrysopogon fallax*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.25	100		
Acacia bivenosa	2	140		
Acacia dictyophleba	0.1	50		
Acacia inaequilatera	0.25	350		
Acacia pyrifolia var. *pyrifolia*	0.1	40		
Aristida contorta	0.1	20		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	50		
Bonamia erecta	0.1	40		
Bulbostylis barbata	0.1	8		
Capparis spinosa subsp. *nummularia*	0.1	120		
Cenchrus ciliaris	1.5	50		N=400.
Cenchrus setiger	2.5	50		N=600.
Chrysopogon fallax	0.5	110		
Corchorus lasiocarpus subsp. *parvus*	0.1	50		
Corymbia hamersleyana	3	800		
Cucumis variabilis	0.1	80		
Dysphania rhadinostachya	0.1	25		Sterile.
Eulalia aurea	0.1	70		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia tannensis subsp. *eremophila*	0.1	70		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena cunninghamii	0.1	20		
Goodenia forrestii	0.1	30		
Goodenia microptera	0.1	40		
Goodenia nuda	0.1	30		N=20.
Gossypium australe	0.1	40		
Grevillea pyramidalis subsp. *leucadendron*	0.5	300		
Hakea lorea subsp. *lorea*	0.5	400		
Heliotropium pachyphyllum	0.1	30		
Hibiscus sturtii var. *platychlamys*	0.1	20		
Indigofera colutea	0.1	25		

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera monophylla	0.1	50		
Notoleptopus decaisnei	0.1	25		
Pentalepis trichodesmoides subsp. *trichodesmoides*	0.1	80		
Phyllanthus erwinii	0.1	25		
Polymeria ambigua	0.1	15		
Portulaca intraterranea	0.1	8	KTF84-01	
Ptilotus exaltatus	0.1	50		
Senna artemisioides subsp. *helmsii*	0.1	90		
Senna artemisioides subsp. *oligophylla*	0.1	100		
Senna glutinosa subsp. *glutinosa* x	0.1	60		Hybrid of unknown origin.
Solanum diversiflorum	0.1	25		
Sporobolus australasicus	0.1	25		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40		
Trianthema pilosum	0.1	30		
Tribulus hirsutus	0.1	25		
Tribulus macrocarpus	0.1	25		
Trigastrotheca molluginea	0.1	30		
Triodia epactia	24	50		
Yakirra australiensis var. *australiensis*	0.1	10		

Site **KTF85**

Described by BRM/RM **Date** 24/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572017 mE, 7557416 mN

Habitat Spur of a moderate range, sloping E.

Soil Dark reddish brown sandy clay loam.

Rock Type Shale.

Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Triodia wiseana* open hummock grassland with *Eriachne mucronata* scattered tussock grasses.

Veg Condition Excellent.

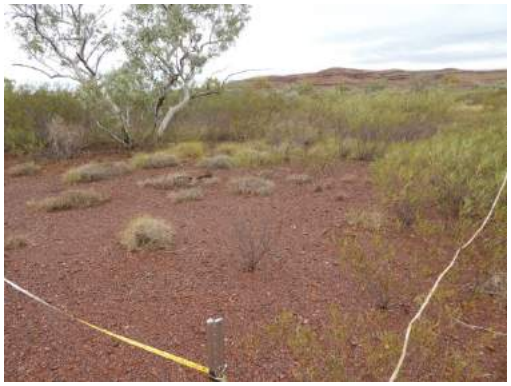
Fire Age No sign of recent fire.

Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;M1 ^*Senna glutinosa* subsp. *glutinosa*\^shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i;G2 *Eriachne mucronata*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Eriachne mucronata	0.5	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	3	500		
Fimbristylis simulans	0.1	15	KTF85-02	
Goodenia muelleriana	0.1	30	KTF85-01	
Paraneurachne muelleri	0.1	40		
Polycarpaea holtzei	0.1	5	KTF85-03	
Ptilotus calostachyus	0.1	50		Dead.
Senna glutinosa subsp. *glutinosa*	0.5	150		
Senna glutinosa subsp. x *luerssenii*	0.1	45		
Senna symonii	0.1	140		
Triodia wiseana	28	40		

Site	**KTF86**
Described by	PL/SC **Date** 24/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 570950 mE, 7558740 mN
Habitat	Slightly elevated plain; just west of floodplain.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana, Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Acacia atkinsiana*, (*A. inaequilatera*) tall shrubland over *A. bivenosa* scattered shrubs over *Triodia epactia*, (*T. wiseana*) very open hummock grassland.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	Almost footslopes of hills to S. U1 ^*Corymbia hamersleyana*,^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1+ ^*Acacia atkinsiana,Acacia inaequilatera*\^shrub\4\i;M2 *Acacia* bivenosa\shrub\3\bi;G1 ^*Triodia epactia,Triodia wiseana*\^hummock *grass*\1\r.

Name	Cover (%)	Height (cm)	Specimen
Acacia ancistrocarpa	0.1	140	
Acacia atkinsiana	13	260	
Acacia bivenosa	1	120	
Acacia inaequilatera	0.5	400	
Acacia spondylophylla	0.1	50	
Acacia tenuissima	0.1	100	
Bonamia erecta	0.1	40	
Chrysopogon fallax	0.1	100	
Codonocarpus cotinifolius	0.1	40	
Corymbia hamersleyana	1	400	
Duperreya commixta	0.1	80	
Eremophila forrestii subsp. *forrestii*	0.1	80	
Eriachne pulchella	0.1	15	
Eucalyptus gamophylla	1	500	
Eucalyptus leucophloia subsp. *leucophloia*	1	650	
Hakea lorea subsp. *lorea*	0.1	40	
Ptilotus astrolasius	0.1	40	
Ptilotus calostachyus	0.1	25	
Senna artemisioides subsp. *oligophylla*	0.1	60	
Senna glutinosa subsp. *glutinosa*	0.1	100	
Senna glutinosa subsp. x *luerssenii*	0.1	120	
Triodia epactia	4	60	
Triodia wiseana	1	70	



Site **KTF87**
Described by BRM/RM **Date** 24/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 569606 mE, 7560026 mN
Habitat Broad drainage.
Soil Light brown silty clay.
Rock Type Calcrete.
Vegetation *Corymbia hamersleyana*, (*Eucalyptus victrix, E. leucophloia* subsp. *leucophloia*) low open woodland over *Acacia bivenosa* tall closed scrub over **Cenchrus ciliaris,* (**C. setiger*) very open tussock grassland.
Veg Condition Excellent to Very Good: scattered weeds.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana,Eucalyptus victrix,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;M1+ ^*Acacia bivenosa*\^shrub\4\c;G1 ^Cenchrus *ciliaris,Cenchrus setiger*\^tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	5	KTF87-07	
Abutilon fraseri subsp. *fraseri*	0.1	50	KTF87-08	
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia ancistrocarpa	0.1	160		
Acacia bivenosa	90	280		
Acacia dictyophleba	0.1	90		
Acacia inaequilatera	0.1	90		
Acacia spondylophylla	0.1	90		
Aristida holathera var. *holathera*	0.1	30		
Bonamia erecta	0.1	50		
Cenchrus ciliaris	6	30		
Cenchrus setiger	1	40		
Chrysopogon fallax	0.1	140		
Codonocarpus cotinifolius	0.5	350		
Corchorus sp.	0.1	5	KTF87-04	Inadequate material.
Corymbia hamersleyana	1.5	550		
Cyperus vaginatus	0.1	40		
Eremophila longifolia	0.1	140		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	250		
Eucalyptus victrix	0.5	450		
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia microptera	0.1	30	KTF87-06	
Gossypium australe	0.1	45		
Hibiscus sturtii var. *grandiflorus*	0.1	60	KTF87-03	
Hibiscus sturtii var. *platychlamys*	0.1	70	KTF81-13=	
Ptilotus exaltatus	0.1	30		
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF87-5,10	
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna notabilis	0.1	5		
Sida echinocarpa	0.1	30	KTF87-01	
Sida sp.	0.1	5	KTF87-02	Poor material; juvenile.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	6		
Solanum diversiflorum	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Sporobolus australasicus	0.1	20		
Themeda triandra	0.1	70		
Triodia epactia	0.1	30		
Triodia longiceps	0.1	50	KTF87-09	
Triodia wiseana	0.1	40		

Site **KTF88**
Described by PL/SC **Date** 24/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 569303 mE, 7540193 mN
Habitat Floodplain, immediately adjacent to minor drainage line.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. pyrifolia* var. *pyrifolia* scattered shrubs over *Triodia epactia* open hummock grassland with *Themeda triandra* scattered tussock grasses.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia inaequilatera*\^shrub\4\bi;M2 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;G1 *Themeda triandra*\tussock grass\2\bi;G2+ ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	30	KTF88-01	
Acacia inaequilatera	1	280		
Acacia pyrifolia var. *pyrifolia*	1	180		
Acacia tenuissima	0.1	60		
Acacia tumida var. *pilbarensis*	0.1	120		
Afrohybanthus aurantiacus	0.1	70		
Alternanthera nana	0.1	30		
Aristida holathera var. *holathera*	0.1	15		
Arivela viscosa	0.1	60		
Bonamia erecta	0.1	30		
Capparis lasiantha	0.1	110		
Capparis umbonata	0.1	180		
Cenchrus ciliaris	0.1	50		N=1.
Chrysopogon fallax	0.1	70		
Corchorus parviflorus	0.1	50		
Corchorus tectus	0.1	50	KTF88-02	
Corymbia hamersleyana	1.5	600		
Crotalaria medicaginea var. *neglecta*	0.1	20		
Digitaria brownii	0.1	60		
Duperreya commixta	0.1	50		
Enneapogon robustissimus	0.1	80		
Eremophila longifolia	0.1	250		
Euphorbia australis var. *subtomentosa*	0.1	10		
Euphorbia trigonosperma	0.1	30		
Evolvulus alsinoides var. *decumbens*	0.1	10		
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Gomphrena cunninghamii	0.1	20		
Gossypium australe	0.1	50		
Gossypium robinsonii	0.1	150		
Grevillea pyramidalis subsp. *leucadendron*	0.1	80		
Hakea lorea subsp. *lorea*	0.1	220		
Hibiscus sturtii var. *grandiflorus*	0.1	40		
Hibiscus sturtii var. *platychlamys*	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Indigofera colutea	0.1	20		
Jasminum didymum subsp. *lineare*	0.1	70		
Maireana planifolia x *villosa*	0.1	40		
Melhania oblongifolia	0.1	10		
Paraneurachne muelleri	0.1	30		
Polymeria ambigua	0.1	25		
Pterocaulon sphacelatum	0.1	30		
Ptilotus astrolasius	0.1	40		
Ptilotus obovatus var. *obovatus*	0.1	80		
Rhagodia eremaea	0.1	100		
Rhynchosia minima	0.1	10		
Santalum lanceolatum	0.1	150		
Scaevola spinescens	0.1	70		Broad leaf form.
Senna artemisioides subsp. *oligophylla*	0.1	80		
Senna artemisioides subsp. *oligophylla* x	0.1	50		
subsp. helmsii				
Senna glutinosa subsp. *glutinosa*	0.1	80		
Senna glutinosa subsp. x *luerssenii*	0.1	150		
Senna notabilis	0.1	5		
Setaria surgens	0.1	10		
Sida arsiniata	0.1	30		
Sida echinocarpa	0.1	80		
Sida sp. L (A.M. Ashby 4202) PN	0.1	50		
Solanum lasiophyllum	0.1	50		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40		
Themeda triandra	1	60		
Tribulus hirsutus	0.1	5		
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		
Triodia epactia	20	40		
Triodia wiseana	0.1	50		
Vincetoxicum lineare	0.1	80		

Site **KTF89**

Described by BRM/RM **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 570902 mE, 7543485 mN

Habitat Crest of small stony hill.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus gamophylla* low mallee woodland over *Senna glutinosa* subsp. *glutinosa* scattered tall shrubs over *Triodia wiseana* open hummock

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees present outside quadrat.
U1 ^*Eucalyptus gamophylla*\^tree mallee\5\i;M1 ^*Senna glutinosa* subsp. *glutinosa*\^shrub\4\bi;G1+ ^*Triodia wiseana*\^hummock

Name	Cover (%)	Height (cm)	Specimen
Acacia atkinsiana	0.1	70	
Acacia bivenosa	0.1	90	
Acacia inaequilatera	0.1	60	
Acacia ptychophylla	0.1	60	KTF75-05=
Amphipogon sericeus	0.1	30	KTF75-04=
Corymbia deserticola subsp. *deserticola*	0.1	280	
Eriachne pulchella	0.1	10	
Eucalyptus gamophylla	15	350	
Fimbristylis simulans	0.1	15	KTF75-01=
Hakea chordophylla	0.1	480	
Mirbelia viminalis	0.1	50	KTF89-01
Ptilotus calostachyus	0.1	3	
Ptilotus rotundifolius	0.1	50	
Schizachyrium fragile	0.1	5	
Senna glutinosa subsp. *glutinosa*	0.25	280	
Themeda triandra	0.1	80	
Triodia wiseana	25	30	

Site **KTF90**

Described by PL/SC **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 571138 mE, 7544525 mN

Habitat Floodplain, drainage.

Soil Dark reddish brown sandy clay loam to silty clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus xerothermica*, (*Corymbia hamersleyana*, *Atalaya hemiglauca*, *Hakea lorea* subsp. *lorea*) low open woodland over *Acacia pyrifolia* var. *pyrifolia* open shrubland *over Isotropis atropurpurea*, (*Bonamia erecta*, *Corchorus parviflorus*) low open shrubland over *Themeda triandra*, (*Eulalia simonii, *Cenchrus ciliaris, *C. setiger*) tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Very Good to Good: **Cenchrus* spp. present.

Fire Age Burnt 3-5 years ago.

Notes U1+ ^*Eucalyptus xerothermica,Corymbia hamersleyana,Atalaya hemiglauca,Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Acacia pyrifolia* var. *pyrifolia*\^shrub\3\r;M2 *Isotropis atropurpurea,Bonamia erecta,Corchorus parviflorus*\shrub\1\r;G1 ^*Themeda triandra,Eulalia simonii,Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\c;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia adoxa var. *adoxa*	0.1	50		
Acacia dictyophleba	0.1	100		
Acacia pyrifolia var. *pyrifolia*	10	180		
Afrohybanthus aurantiacus	0.1	20		
Alternanthera nana	0.1	20		
Aristida holathera var. *holathera*	0.1	20		
Arivela viscosa	0.1	40		
Atalaya hemiglauca	1	220		
Boerhavia coccinea	0.1	5		
Bonamia erecta	0.5	20		
Capparis lasiantha	0.1	50		
Cenchrus ciliaris	5	50		
Cenchrus setiger	2	50		
Chrysopogon fallax	0.1	60		
Corchorus parviflorus	0.5	70		
Corymbia hamersleyana	2	700		
Crotalaria medicaginea var. *neglecta*	1	60		
Digitaria brownii	0.1	50		
Duperreya commixta	0.1	80		
Dysphania rhadinostachya	0.1	15	KTF90-01	Sterile.
Eragrostis eriopoda	0.1	30		
Eriachne aristidea	0.1	20		
Eriachne mucronata	0.1	30	KTF90-02	
Eucalyptus xerothermica	5	700		
Eulalia aurea	0.1	30		
Eulalia simonii	6	40		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia tannensis subsp. *eremophila*	0.1	30		
Euphorbia trigonosperma	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Evolvulus alsinoides var. *villosicalyx*	0.1	5		
Goodenia forrestii	0.1	10		
Goodenia microptera	0.1	20		
Gossypium australe	0.1	120		
Grevillea wickhamii subsp. *hispidula*	0.1	210		
Hakea lorea subsp. *lorea*	0.5	400		
Heliotropium cunninghamii	0.1	20	KTF90-04	
Heliotropium pachyphyllum	0.1	30		
Hibiscus sturtii var. *campylochlamys*	0.1	30	KTF90-05	
Hibiscus sturtii var. *grandiflorus*	0.1	30		
Hibiscus sturtii var. *platychlamys*	0.1	20		
Indigofera colutea	0.1	20		
Indigofera monophylla	0.1	70		
Isotropis atropurpurea	2	60		
Jasminum didymum subsp. *lineare*	0.1	50		
Malvastrum americanum	0.1	50		N=2.
Melhania oblongifolia	0.1	20		
Paraneurachne muelleri	0.1	30		
Polycarpaea corymbosa var. *corymbosa*	0.1	5		
Polymeria ambigua	0.1	15		
Portulaca intraterranea	0.1	5	KTF84-01=	
Ptilotus astrolasius	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus fusiformis	0.1	30		
Salsola australis	0.1	30		
Santalum lanceolatum	0.1	150		
Senna notabilis	0.1	40		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		Ferruginous form.
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	30		
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356) PN	0.1	15	KTF90-03	
Themeda triandra	25	50		
Trianthema pilosum	0.1	5		
Tribulopis angustifolia	0.1	5		
Tribulus hirsutus	0.1	5		
Trichodesma zeylanicum var. zeylanicum	0.1	50		
Trigastrotheca molluginea	0.1	15		
Triodia epactia	1	30		

Site **KTF91**

Described by BRM/RM **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 570622 mE, 7559177 mN

Habitat Broad floodplain.

Soil Dark reddish brown silty clay.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia bivenosa*, (*A. atkinsiana, A. ancistrocarpa*) tall open scrub over *Eremophila longifolia*, *Senna artemisioides* subsp. *oligophylla* scattered shrubs over *Triodia epactia* open hummock grassland and *Chrysopogon fallax, *Cenchrus setiger*, (**C. ciliaris*) open tussock grassland.

Veg Condition Very Good to Good: **Cenchrus* spp. present.

Fire Age Very long unburnt.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\r;M1+ ^*Acacia bivenosa,Acacia atkinsiana,Acacia ancistrocarpa*\^shrub\4\c;M2 *Eremophila longifolia,Senna artemisioides* subsp. *oligophylla*\shrub\3\bi;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Chrysopogon fallax,Cenchrus setiger,Cenchrus ciliaris*\tussock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon fraseri subsp. *fraseri*	0.1	30	KTF91-08	
Abutilon otocarpum	0.1	25		
Acacia ancistrocarpa	3	240		
Acacia atkinsiana	3	350		
Acacia bivenosa	55	280		
Aristida contorta	0.1	25		
Arivela viscosa	0.1	30		
Bonamia erecta	0.1	40		
Capparis lasiantha	0.1	120		
Cenchrus ciliaris	1	40		N=100.
Cenchrus setiger	4	40		N=1000.
Chrysopogon fallax	7	90		
Corymbia hamersleyana	2.5	600		
Cucumis variabilis	0.1	70		
Digitaria brownii	0.1	30	KTF91-09	
Duperreya commixta	0.1	120		
Dysphania rhadinostachya	0.1	10	KTF91-03	Sterile.
Eragrostis cumingii	0.1	10		
Eremophila forrestii subsp. *forrestii*	0.1	110		
Eremophila longifolia	0.5	160		
Eulalia aurea	0.1	40		
Euphorbia biconvexa	0.1	30	KTF91-01	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia forrestii	0.1	20	KTF81-05=	
Goodenia microptera	0.1	5		
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	130		
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF91-06	
Notoleptopus decaisnei	0.1	15		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	3	KTF91-07	
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *oligophylla*	0.5	150	KTF91-02	
Senna notabilis	0.1	25		
Sida arsiniata	0.1	25	KTF91-04	
Sida fibulifera	0.1	15	KTF91-05	
Sida sp.	0.1	5	KTF91-10	Poor material; juvenile.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60		
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Themeda triandra	0.1	90		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Triodia epactia	22	40		

Site **KTF92**

Described by PL/SC **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 571134 mE, 7545257 mN

Habitat Stony rise.

Soil Dark reddish brown clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Acacia atkinsiana, A. inaequilatera*, (*A. bivenosa*) tall open shrubland over *Triodia wiseana* open hummock

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia atkinsiana*,^*Acacia inaequilatera,Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen
Acacia atkinsiana	4	300	
Acacia bivenosa	1	200	
Acacia inaequilatera	3	300	
Aristida holathera var. *holathera*	0.1	15	
Codonocarpus cotinifolius	0.1	50	
Digitaria brownii	0.1	50	
Eriachne aristidea	0.1	10	
Eriachne pulchella	0.1	15	
Eucalyptus gamophylla	2	400	
Eucalyptus leucophloia subsp. *leucophloia*	1	400	
Fimbristylis simulans	0.1	15	
Hakea lorea subsp. *lorea*	0.1	100	
Lysiana casuarinae	0.1	100	
Ptilotus calostachyus	0.1	50	
Ptilotus rotundifolius	0.1	50	
Senna glutinosa subsp. *glutinosa*	0.1	150	
Senna glutinosa subsp. *glutinosa* x subsp. x *luerssenii*	0.1	210	
Senna glutinosa subsp. *pruinosa*	0.1	120	
Senna symonii	0.1	80	
Triodia wiseana	15	30	

Site **KTF93**
Described by BRM/RM **Date** 25/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 569467 mE, 7560321 mN
Habitat Broad floodplain.
Soil Dark reddish brown silty clay.
Rock Type Ironstone.
Vegetation *Eucalyptus victrix* scattered low trees over *Acacia bivenosa* tall open scrub over *Senna artemisioides* subsp. *oligophylla*, (*A. ancistrocarpa*) open shrubland over **Cenchrus ciliaris, *C. setiger* tussock grassland.
Veg Condition Poor: high cover of **Cenchrus*; other weeds also present.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus vic*trix\^tree\6\bi;M1+ ^*Acacia bivenosa*\^shrub\4\c;M2 *Senna artemisioides* subsp. *oligophylla,Acacia ancistrocarpa*\shrub\3\r;G1 ^*Cenchrus ciliaris*,^*Cenchrus setiger*\^tussock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	30	KTF93-01	
Acacia ancistrocarpa	0.5	180		
Acacia bivenosa	40	320		
Acacia dictyophleba	0.1	180		
Cenchrus ciliaris	30	60		
Cenchrus setiger	30	60		N=150.
Corchorus tectus	0.1	40	KTF93-04A	Mixed collection; split from 93-04
Corchorus tridens	0.1	20	KTF93-14	
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	120		
Cullen leucochaites	0.1	10	KTF93-05	
Cyperus vaginatus	0.1	40		
Enneapogon lindleyanus	0.1	50	KTF93-10	
Eragrostis falcata	0.1	30	KTF93-11	
Eriachne aristidea	0.1	20		
Eucalyptus victrix	1.5	600		
Euphorbia australis var. *subtomentosa*	0.1	10	KTF93-19	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Flaveria trinervia	0.1	30		N=2.
Goodenia forrestii	0.1	30		
Gossypium australe	0.1	90		
Hibiscus sturtii var. *grandiflorus*	0.1	30	KTF93-13	
Hibiscus sturtii var. *platychlamys*	0.1	30	KTF81-13=	
Indigofera linifolia	0.1	15	KTF93-15	
Malvastrum americanum	0.1	20		N=35.
Melaleuca glomerata	0.1	170	KTF93-17	
Melhania oblongifolia	0.1	40	KTF93-08	
Pluchea rubelliflora	0.1	5	KTF93-16	
Portulaca oleracea/intraterranea	0.1	10		
Pterocaulon sphacelatum	0.1	5	KTF93-09	
Ptilotus astrolasius	0.1	50		
Ptilotus clementii	0.1	30		
Ptilotus exaltatus	0.1	20		
Ptilotus obovatus var. *obovatus*	0.1	20		
Rhynchosia minima	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Salsola australis	0.1	20		
Senna artemisioides subsp. *oligophylla*	4	130	KTF93-07	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	70	KTF93-18	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	30		
Sida arsiniata	0.1	20	KTF91-04=	
Sida echinocarpa	0.1	50	KTF93-02	
Sida fibulifera	0.1	30	KTF93-06	
Sida fibulifera	0.1	40	KTF93-04B	'sens. lat.' Mixed collection; split from 93-04.
Sida fibulifera	0.1	5	KTF93-03	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	50		
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	30		
Swainsona kingii	0.1	20	KTF93-12	Mauve flower. N=1
Tribulus hirsutus	0.1	10		
Triodia epactia	0.1	40		
Vachellia farnesiana	0.1	160		N=2.

Site **KTF94**

Described by PL/SC **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 569938 mE, 7559739 mN

Habitat Low hill; crest and slopes.

Soil Reddish brown clay loam.

Rock Type Basalt, chert, mudstone.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. spondylophylla*, (*Corchorus tectus*) low open shrubland over *Triodia wiseana* very open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes Not a common unit; restricted geology (basal Wittenoom Formation?). Only NW and SE corners pegged. Similar to *Eremophila fraseri* sites from West Angelas.
U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 *Acacia inaequilatera*\shrub\4\bi;M2 ^*Acacia spondylophylla,Corchorus tectus*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	110		
Acacia bivenosa	0.1	60		
Acacia dictyophleba	0.1	40		
Acacia inaequilatera	0.5	250		
Acacia spondylophylla	4	40		
Afrohybanthus aurantiacus	0.1	25		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	25		
Corchorus tectus	0.25	60	KTF94-01	
Corymbia hamersleyana	0.25	450		
Dolichocarpa crouchiana	0.1	8		
Euphorbia biconvexa	0.1	30	KTF94-02	
Gossypium australe	0.1	120		Whim Creek form.
Grevillea pyramidalis subsp. *leucadendron*	0.1	70		
Hakea lorea subsp. *lorea*	0.1	50		
Heliotropium pachyphyllum	0.1	25		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	25		
Ptilotus rotundifolius	0.1	100		
Senna glutinosa subsp. *glutinosa*	0.1	70		
Tribulus hirsutus	0.1	25		
Triodia wiseana	9	40		

Site **KTF95**

Described by BRM/RM **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 569221 **mE**, 7560542 **mN**

Habitat Broad floodplain.

Soil Dark brown clay loam.

Vegetation *Corymbia hamersleyana*, (*Eucalyptus victrix*) scattered low trees over *Acacia bivenosa*, (*A. dictyophleba*) tall open shrubland over *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035) low open shrubland over Eulalia aurea, (*Chrysopogon fallax, *Cenchrus ciliaris, *C. setiger*) closed tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Very Good: scattered weeds.

Fire Age No sign of recent fire.

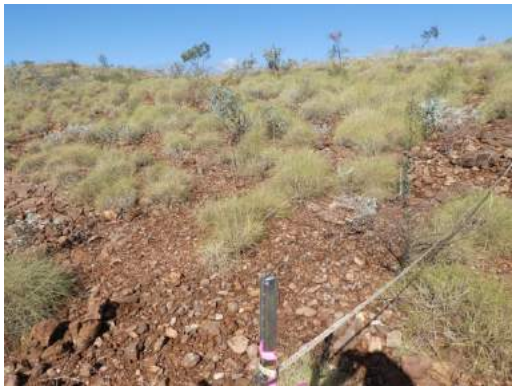
Notes U1 ^*Corymbia hamersleyana,Eucalyptus victrix*\^tree\6\bi;M1 ^*Acacia bivenosa,Acacia dictyophleba*\^shrub\4\r;M2 *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035)\shrub\1\r;G1+ ^*Eulalia aurea, Chrysopogon fallax,Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\d;G1 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	170		
Acacia bivenosa	9	280		
Acacia dictyophleba	1	250		
Acacia inaequilatera	0.1	30		
Arivela viscosa	0.1	30		
Cenchrus ciliaris	2	30		N=1000.
Cenchrus setiger	1	40		
Chrysopogon fallax	10	90		
Corchorus sp.	0.1	20	KTF95-09	Inadequate material.
Corchorus tridens	0.1	10	KTF95-03	
Corymbia hamersleyana	1	500		
Cynodon convergens	0.1	30		
Dysphania rhadinostachya	0.1	10	KTF91-03=	Sterile.
Enneapogon polyphyllus	0.1	30	KTF95-07	
Eragrostis cumingii	0.1	15		
Eucalyptus victrix	0.5	300		
Eulalia aurea	60	60		
Euphorbia biconvexa	0.1	30	KTF95-01	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Flaveria trinervia	0.1	30	KTF95-04	N=5.
Goodenia forrestii	0.1	25	KTF81-05	
Gossypium australe	0.1	60		
Hakea lorea subsp. *lorea*	0.1	70		
Heliotropium cunninghamii	0.1	15	KTF95-05	
Indigofera linifolia	0.1	20	KTF93-15=	
Malvastrum americanum	0.1	5		N=80.
Notoleptopus decaisnei	0.1	10		
Paspalidium rarum	0.1	30	KTF95-08	
Pterocaulon sphacelatum	0.1	15	KTF93-09=	
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	30		
Scaevola spinescens	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF95-12	
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	3	90	KTF95-02	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	30	KTF95-11	Closer to straight subsp. *helmsii*, but not quite right.
Seringia nephrosperma	0.1	90	KTF75-06=	
Sida fibulifera	0.1	20	KTF95-10	
Sporobolus australasicus	0.1	20		
Streptoglossa decurrens	0.1	20		
Themeda triandra	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	1	60	KTF95-06	
Triodia wiseana	0.1	30		

Site **KTF96**
Described by PL/SC **Date** 25/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 570237 mE, 7559725 mN
Habitat Low hill; crest and slopes.
Soil Reddish brown clay loam.
Rock Type Basalt, chert, mudstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Indigofera rugosa, A. bivenosa* low open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes Not a common unit; restricted geology (basal Wittenoom Formation?). Similar to *Erem. fraseri* sites from West Angelas.
U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 *Acacia inaequilatera*\shrub\4\bi;M2 ^*Indigofera rugosa*,^*Acacia bivenosa*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	110		
Acacia bivenosa	2	60		
Acacia inaequilatera	2	250		
Acacia maitlandii	0.1	50		
Acacia spondylophylla	0.1	40		
Afrohybanthus aurantiacus	0.1	25		
Aristida holathera var. *holathera*	0.1	40		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	25		
Corchorus tectus	0.25	60	KTF94-01=	
Corymbia hamersleyana	0.5	450		
Dolichocarpa crouchiana	0.1	8		
Dysphania rhadinostachya	0.1	15		Sterile.
Ehretia saligna var. saligna	0.1	70		
Enneapogon caerulescens	0.1	10		
Euphorbia biconvexa	0.1	30	KTF94-02=	
Goodenia triodiophila	0.1	40	KTF96-01	N=1.
Gossypium australe	0.1	50		
Gossypium robinsonii	0.1	80		
Grevillea pyramidalis subsp. *leucadendron*	0.75	70		
Hakea lorea subsp. *lorea*	0.1	50		
Heliotropium cunninghamii	0.1	40	KTF96-02	
Indigofera rugosa	3	60		
Iseilema membranaceum	0.1	25	KTF96-03	
Jasminum didymum subsp. *lineare*	0.1	70		
Notoleptopus decaisnei	0.1	20		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	10		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	60		
Ptilotus rotundifolius	0.1	100		
Senna glutinosa subsp. *glutinosa*	0.1	70		
Senna glutinosa subsp. x *luerssenii*	0.1	80		
Sporobolus australasicus	0.1	15		
Tribulus hirsutus	0.1	25		
Triodia wiseana	17	40		



Site **KTF97**
Described by BRM/RM **Date** 26/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 568862 mE, 7560983 mN
Habitat Broad floodplain.
Soil Dark brown clay loam.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* shrubland over *Senna artemisioides* subsp. *oligophylla* scattered low shrubs over *Triodia epactia* hummock grassland with *Eulalia aurea*, (**Cenchrus ciliaris, *C. setiger*) very open tussock grassland.
Veg Condition Very Good: scattered weeds.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia bivenosa*\^shrub\3\i;M2 *Senna artemisioides* subsp. *oligophylla*\shrub\2\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Eulalia aurea,Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	20	180		
Acacia inaequilatera	0.1	70		
Acacia sclerosperma subsp. *sclerosperma*	0.1	100	KTF97-07	
Acacia synchronicia	0.1	80		
Arivela viscosa	0.1	30		
Bothriochloa ewartiana	0.1	60	KTF97-03	
Cenchrus ciliaris	1	30		N=1000.
Cenchrus setiger	1	40		
Chrysopogon fallax	0.1	90		
Corchorus tectus	0.1	48	KTF93-04=	
Corymbia hamersleyana	0.5	500		
Cynodon convergens	0.1	30		
Dysphania rhadinostachya	0.1	5	KTF91-03=	Sterile.
Enneapogon polyphyllus	0.1	20	KTF95-07=	
Eulalia aurea	3	60		
Euphorbia biconvexa	0.1	30	KTF95-01=	
Euphorbia vaccaria var. *vaccaria*	0.1	10	KTF97-04	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Gossypium australe	0.1	60		
Hakea lorea subsp. *lorea*	0.1	70		
Heliotropium cunninghamii	0.1	15	KTF95-05=	
Hibiscus sturtii var. *grandiflorus*	0.1	30	KTF97-02	
Indigofera linifolia	0.1	20	KTF93-15=	
Notoleptopus decaisnei	0.1	10		
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	1.5	90	KTF97-01	
Sida arsiniata	0.1	5	KTF97-05	
Sporobolus australasicus	0.1	20		
Streptoglossa sp.	0.1	5		Grazed; poor condition.

Name	Cover (%)	Height (cm)	Specimen	Notes
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	35	60		

Site **KTF98**
Described by PL/SC **Date** 25/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 567459 mE, 7562236 mN
Habitat Floodplain.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Acacia citrinoviridis*, (*Corymbia hamersleyana*) low woodland over *A. bivenosa* scattered shrubs over *Senna artemisioides* subsp. *oligophylla* scattered low shrubs over *Triodia epactia* very open hummock grassland and **Cenchrus ciliaris*, (**C. setiger*) very open tussock grassland.
Veg Condition Good: **Cenchrus* spp. present.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia citrinoviridis,Corymbia hamersleyana*\^tree\6\i;M1 ^*Acacia bivenosa*\^shrub\3\bi;M2 *Senna artemisioides* subsp. *oligophylla*\shrub\1\bi;G1 ^*Triodia epactia*\^hummock grass\1\r;G2 *Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	5		
Acacia bivenosa	2	150		
Acacia citrinoviridis	15	220		
Acacia inaequilatera	0.1	250		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Acacia synchronicia	0.1	60		
Acacia trachycarpa	0.1	110		
Alternanthera nana	0.1	15		
Aristida contorta	0.1	15		
Arivela viscosa	0.1	20		
Boerhavia coccinea	0.1	5		
Boerhavia repleta	0.1	5		
Cenchrus ciliaris	0.1	20		Long bristled form.
Cenchrus ciliaris	3	50		
Cenchrus setiger	0.5	50		
Chrysopogon fallax	0.1	60		
Corymbia hamersleyana	1	500		
Cynodon convergens	0.1	30		
Dichanthium sericeum subsp. *humilius*	0.1	5		
Dysphania kalpari	0.1	10		
Dysphania rhadinostachya	0.1	15		Sterile.
Enneapogon caerulescens	0.1	15		
Enneapogon polyphyllus	0.1	30		
Eulalia aurea	0.1	50		
Euphorbia biconvexa	0.1	20	KTF98-02	
Euphorbia boophthona	0.1	15		
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Gomphrena kanisii	0.1	15		
Goodenia forrestii	0.1	5		
Goodenia nuda	0.1	20		N=1.
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	60		
Paspalidium clementii	0.1	25		
Perotis rara	0.1	5		
Phyllanthus erwinii	0.1	5		
Polycarpaea corymbosa var.	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
corymbosa				
Portulaca oleracea	0.1	5	KTF98-01	
Ptilotus exaltatus	0.1	15		
Ptilotus obovatus var. *obovatus*	0.1	20		
Rhynchosia minima	0.1	5		
Senna artemisioides subsp. *oligophylla*	0.5	100		
Sida arsiniata	0.1	15		
Sida echinocarpa	0.1	20		
Sida sp. L (A.M. Ashby 4202) PN	0.1	10		
Sporobolus australasicus	0.1	15		
Themeda triandra	0.1	50		
Tribulus macrocarpus	0.1	5		
Triodia epactia	9	40		

Site **KTF99**
Described by BRM/RM **Date** 26/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 573255 mE, 7554567 mN
Habitat Elevated floodplain.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\i;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	70		
Acacia dictyophleba	0.1	30		
Acacia inaequilatera	2.5	280		
Aristida holathera var. *holathera*	0.1	20		
Bonamia pilbarensis	0.1	10	KTF75-07=	
Corchorus sp.	0.1	30	KTF95-09=	Inadequate material.
Corymbia hamersleyana	3	700		
Eriachne pulchella	0.1	10		
Euphorbia tannensis subsp. *eremophila*	0.1	15	KTF99-02	
Hakea lorea subsp. *lorea*	0.1	300	KTF99-03	
Heliotropium inexplicitum	0.1	10	KTF99-01	
Hibiscus sturtii var. *platychlamys*	0.1	15	KTF99-06	
Paspalidium clementii	0.1	20	KTF99-04	
Ptilotus exaltatus	0.1	15		
Senna glaucifolia	0.1	70	KTF81-01=	
Senna glutinosa subsp. *glutinosa*	0.1	140		
Sida arsiniata	0.1	40	KTF91-04=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		
Tribulus hirsutus	0.1	20		
Triodia wiseana	30	40		

Site **KTF100**

Described by PL/SC **Date** 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 567883 mE, 7562313 mN

Habitat Flat semi-floodplain.

Soil Dark reddish brown clay loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *A. ancistrocarpa*, *A. trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland and *Chrysopogon fallax, Eulalia aurea, *Cenchrus ciliaris*, **C. setiger* very open tussock grassland.

Veg Condition Very Good: scattered weeds; old track.

Fire Age No sign of recent fire.

Notes Small old track through NW corner; vegetation unchanged. Only 2 pegs, at NW and SE corners.
U1 ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;M2 *Acacia ancistrocarpa,Acacia trachycarpa*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Chrysopogon fallax,Eulalia aurea,Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	10		
Acacia ancistrocarpa	1	120		
Acacia atkinsiana	0.1	150		
Acacia bivenosa	0.1	180		
Acacia dictyophleba	0.1	50	KTF100-02	
Acacia elachantha	0.1	200		
Acacia inaequilatera	4	350		
Acacia pyrifolia var. *pyrifolia*	0.1	60		
Acacia synchronicia	0.1	30		
Acacia tenuissima	0.1	80		
Acacia trachycarpa	1	110		
Aristida contorta	0.1	10		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Boerhavia coccinea	0.1	5		
Bonamia erecta	0.1	20		
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	0.5	50		
Cenchrus setiger	0.5	50		
Chrysopogon fallax	1	80		
Corchorus lasiocarpus subsp. *parvus*	0.1	5		
Corymbia hamersleyana	3	800		
Cullen pogonocarpum	0.1	5	KTF100-01	
Cymbopogon obtectus	0.1	60		
Dysphania kalpari	0.1	5		
Dysphania rhadinostachya	0.1	15		Sterile.
Enneapogon polyphyllus	0.1	30		
Eremophila forrestii subsp. *forrestii*	0.1	50		
Eriachne pulchella	0.1	10		
Eulalia aurea	0.5	50		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia boophthona	0.1	20		
Euphorbia trigonosperma	0.1	15		
Evolvulus alsinoides var. *villosicalyx*	0.1	5		
Goodenia microptera	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia nuda	0.1	30		N=35.
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	150		
Hibiscus sturtii var. *grandiflorus*	0.1	5		
Paraneurachne muelleri	0.1	10		
Paspalidium clementii	0.1	10		
Portulaca oleracea	0.1	5	KTF98-01=	
Ptilotus astrolasius	0.1	10		
Ptilotus exaltatus	0.1	5		
Ptilotus obovatus var. *obovatus*	0.1	30		
Rhynchosia minima	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	80		
Sida arsiniata	0.1	10		
Sida echinocarpa	0.1	30		
Sporobolus australasicus	0.1	10		
Tribulus hirsutus	0.1	5		
Tribulus macrocarpus	0.1	10		
Triodia epactia	25	40		
Yakirra australiensis var. *australiensis*	0.1	5		

Site **KTF101**
Described by BRM/RM **Date** 26/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 574209 mE, 7551160 mN
Habitat Broad creekwash / flowline.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Ptilotus astrolasius*, (*Corchorus parviflorus, Indigofera monophylla*) low open shrubland over *Triodia epactia*, *T. wiseana* very open hummock grassland with *Eriachne tenuiculmis*, (*E. mucronata*, **Cenchrus setiger*) very open tussock grassland.
Veg Condition Excellent; only scattered weeds.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Ptilotus astrolasius,Corchorus* parviflorus, Indigofera *monophylla*\^shrub\1\r;G1+ ^*Eriachne tenuiculmis,Eriachne mucronata,Cenchrus setiger*\^tussock grass\1\r;G2 *Triodia epactia,Triodia wiseana*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia inaequilatera	0.1	160		
Acacia pyrifolia var. *pyrifolia*	0.1	60		
Afrohybanthus aurantiacus	0.1	30		
Aristida holathera var. *holathera*	0.5	30		
Arivela viscosa	0.1	20		
Boerhavia coccinea	0.1	30	KTF101-08	
Bonamia erecta	0.1	30		
Bonamia pilbarensis	0.1	10	KTF101-03	
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	0.1	30		N=5.
Cenchrus setiger	1	40		N=300.
Clerodendrum floribundum var. *angustifolium*	0.1	30	KTF101-05	
Corchorus parviflorus	1	25	KTF101-04	
Corchorus sp.	0.1	35	KTF101-06B	Inadequate material.
Corymbia hamersleyana	1.5	600		
Cucumis variabilis	0.1	70		
Cynodon convergens	0.1	25		
Dolichocarpa crouchiana	0.1	5	KTF101-14	
Dysphania rhadinostachya	0.1	20		Sterile.
Enneapogon caerulescens	0.1	30		
Enneapogon lindleyanus	0.1	30		
Eriachne aristidea	0.1	20		
Eriachne mucronata	1.5	40	KTF101-01	Typical form.
Eriachne pulchella	0.1	5		
Eriachne tenuiculmis	4	40	KTF101-02	
Euphorbia australis var. *subtomentosa*	0.1	20	KTF101-06	
Euphorbia biconvexa	0.1	20	KTF101-11	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia forrestii	0.1	30	KTF101-13	
Goodenia microptera	0.1	25		
Goodenia nuda	0.1	25	KTF101-09	N=3.
Goodenia triodiophila	0.1	30		
Gossypium australe	0.1	50		
Grevillea pyramidalis subsp. *leucadendron*	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Grevillea wickhamii	0.1	20		Juvenile.
Hakea lorea subsp. *lorea*	0.1	110		
Heliotropium cunninghamii	0.1	20	KTF101-07	
Heliotropium pachyphyllum	0.1	30	KTF101-12	
Indigofera colutea	0.1	25		
Indigofera monophylla	0.5	30		
Jasminum didymum subsp. *lineare*	0.1	90		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus astrolasius	3	30		
Ptilotus calostachyus	0.1	70		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	25		
Schizachyrium fragile	0.1	5		
Sida arsiniata	0.1	40	KTF101-06A	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	70		
Swainsona formosa	0.1	60		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	20	KTF101-10	
Themeda triandra	0.1	60		
Tribulus hirsutus	0.1	12		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Trigastrotheca molluginea	0.1	25		
Triodia epactia	2	30		
Triodia wiseana	1	40		

Site **KTF102**
Described by PL/SC **Date** 26/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 566176 mE, 7563811mN
Habitat Small calcrete rises.
Soil Dark reddish brown clay loam.
Rock Type Calcrete, ironstone.
Vegetation *Corymbia hamersleyana, Hakea lorea* subsp. *lorea* scattered low trees over *Acacia bivenosa* tall open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition Very Good: signs of cattle; very occasional *Cenchrus.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*,^*Hakea lorea* subsp. *lorea*\^tree\6\bi;M1 ^*Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	4	210		
Acacia inaequilatera	0.1	150		
Acacia pyrifolia var. *pyrifolia*	0.1	50		
Acacia trachycarpa	0.1	120		
Aristida contorta	0.1	10		
Aristida holathera var. *holathera*	0.1	20		
Arivela viscosa	0.1	15		
Bonamia pilbarensis	0.1	15		
Cenchrus ciliaris	0.1	30		N=5.
Chrysopogon fallax	0.1	60		
Corchorus sp.	0.1	1		Seedling; not collected.
Corymbia hamersleyana	1	400		
Duperreya commixta	0.1	50		
Enneapogon caerulescens	0.1	10		
Eriachne aristidea	0.1	5		
Eriachne pulchella	0.1	10		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia biconvexa	0.1	20		
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Goodenia forrestii	0.1	25		
Gossypium australe	0.1	50		
Grevillea pyramidalis subsp. *leucadendron*	0.1	180		
Hakea lorea subsp. *lorea*	1	500		
Notoleptopus decaisnei	0.1	15		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus astrolasius	0.1	40		
Ptilotus clementii	0.1	20		
Ptilotus exaltatus	0.1	10		
Scaevola spinescens	0.1	50		Broad leaf form.
Senna artemisioides subsp. *oligophylla*	0.1	40		
Senna glutinosa subsp. *glutinosa*	0.1	30		
Sida echinocarpa	0.1	5		
Solanum diversiflorum	0.1	5		
Sporobolus australasicus	0.1	5		
Tephrosia supina	0.1	20		
Themeda triandra	0.1	50		
Tribulus macrocarpus	0.1	5		
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triodia epactia	0.1	20		
Triodia wiseana	20	40		

Site **KTF103**

Described by BRM/RM **Date** 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 571075 mE, 7546370 mN

Habitat Crest of a low hill.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Corymbia deserticola* subsp. *deserticola*, *Eucalyptus leucophloia* subsp. *leucophloia*, (*Hakea lorea* subsp. *lorea*) low open woodland over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia deserticola* subsp. *deserticola*,^*Eucalyptus leucophloia* subsp. *leucophloia*,*Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Senna glutinosa* subsp. *glutinosa*\^shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40		
Acacia tenuissima	0.1	50	KTF75-08=	
Amphipogon sericeus	0.1	40	KTF75-04=	
Aristida pruinosa	0.1	60	KTF103-01	
Bulbostylis barbata	0.1	10		
Corymbia deserticola subsp. *deserticola*	2.5	550		
Eriachne mucronata	0.1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	50		
Eucalyptus leucophloia subsp. *leucophloia*	2	400		
Fimbristylis simulans	0.1	15	KTF75-01=	
Hakea chordophylla	0.1	160		
Hakea lorea subsp. *lorea*	0.5	210		
Indigofera monophylla	0.1	40		
Mirbelia viminalis	0.1	90	KTF89-01=	
Ptilotus calostachyus	0.1	70		
Ptilotus rotundifolius	0.1	70		
Schizachyrium fragile	0.1	5		
Senna glutinosa subsp. *glutinosa*	1	160		
Senna symonii	0.1	90	KTF103-02	
Triodia wiseana	25	30		

Site **KTF104**

Described by PL/SC **Date** 26/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572690 mE, 7557697 mN

Habitat Major drainage.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix, Atalaya hemiglauca* low open woodland over *Acacia pyrifolia* var. *pyrifolia* scattered shrubs over *Corchorus crozophorifolius*, (*Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), *Indigofera monophylla*) low open shrubland over *Triodia epactia*, (*T. wiseana*) very open hummock grassland with **Cenchrus ciliaris*, (**C. setiger, Cymbopogon ambiguus*) very open tussock grassland.

Veg Condition Very Good: **Cenchrus* spp. present.

Fire Age No sign of recent fire.

Notes NE and SW corners not pegged. Ev (Ec) in broader drainage; not GDV, rather Potential GDV.

U1+ ^*Eucalyptus victrix*,^*Atalaya hemiglauca*\^tree\6\r;M1 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M2 ^*Corchorus crozophorifolius,Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Indigofera monophylla*\^shrub\2\r;G1 ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\r;G2 *Cenchrus ciliaris,Cenchrus setiger,Cymbopogon ambiguus*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	0.1	200		
Acacia pyrifolia var. *pyrifolia*	0.5	140		
Acacia tumida var. *pilbarensis*	0.1	240		
Adriana tomentosa var. *tomentosa*	0.1	140		
Afrohybanthus aurantiacus	0.1	40		
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	50		
Atalaya hemiglauca	2	400		
Cenchrus ciliaris	2	40		
Cenchrus setiger	1	50		
Corchorus crozophorifolius	3	90		
Cucumis variabilis	0.1	30		
Cymbopogon ambiguus	0.5	140	KTF104-01	Procerus form.
Cynodon dactylon	0.1	25		N=1.
Enneapogon lindleyanus	0.1	50		
Eriachne pulchella	0.1	20		
Eriachne tenuiculmis	0.1	50		
Eucalyptus victrix	3	900		
Eulalia aurea	0.1	70		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia trigonosperma	0.1	40		
Heliotropium cunninghamii	0.1	30	KTF104-02	
Indigofera monophylla	0.25	40		
Notoleptopus decaisnei	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Polycarpaea corymbosa var. *corymbosa*	0.1	25		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	60		
Rhynchosia minima	0.1	60		
Sesbania cannabina	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Sporobolus australasicus	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.25	60		
Triodia epactia	3	80		
Triodia wiseana	0.5	90		

Site **KTF105**
Described by BRM/RM **Date** 27/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 571381 mE, 7546837 mN
Habitat Broad drainage with narrow channels.
Soil Dark brown silty clay.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia*, (*Grevillea pyramidalis* subsp. *leucadendron*, *A. tumida* var. *pilbarensis*) tall open shrubland over *Corchorus crozophorifolius* scattered shrubs over *Indigofera monophylla* scattered low shrubs over *Triodia epactia*, (*T. wiseana*) hummock grassland and *Eriachne tenuiculmis*, **Cenchrus ciliaris*, (*Themeda triandra*, **C. setiger*) very open tussock grassland.
Veg Condition Very Good: some weeds present, mainly **Cenchrus* spp.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia pyrifolia* var. *pyrifolia,Grevillea pyramidalis* subsp. *leucadendron,Acacia tumida* var. *pilbarensis*\^shrub\4\r;M2 *Corchorus crozophorifolius*\shrub\3\bi;M3 *Indigofera monophylla*\shrub\1\bi;G1+ ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\c;G2 *Eriachne tenuiculmis,Cenchrus ciliaris,Themeda triandra,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.1	100	KTF105-05	
Acacia ptychophylla	0.1	70		
Acacia pyrifolia var. *pyrifolia*	5	350		
Acacia tumida var. *pilbarensis*	1	300		
Afrohybanthus aurantiacus	0.1	25		
Alectryon oleifolius subsp. *oleifolius*	0.1	280	KTF105-12	N=2.
Alternanthera nana	0.1	15	KTF105-15	
Amaranthus cuspidifolius	0.1	30	KTF105-07	
Arivela viscosa	0.1	30		
Atalaya hemiglauca	0.1	330		
Boerhavia coccinea	0.1	30	KTF105-06	
Bonamia pilbarensis	0.1	50	KTF105-10	
Cenchrus ciliaris	3	40		N=1000.
Cenchrus setiger	0.5	40		N=200.
Corchorus crozophorifolius	1	150	KTF105-03	
Corchorus parviflorus	0.1	40	KTF105-08	
Corymbia hamersleyana	3	600		
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cucumis variabilis	0.1	175		
Cymbopogon ambiguus	0.1	120		
Duperreya commixta	0.1	70		
Dysphania rhadinostachya	0.1	5	KTF83-02=	Sterile.
Enneapogon lindleyanus	0.1	20	KTF93-10=	
Eriachne tenuiculmis	4	60		
Euphorbia biconvexa	0.1	50	KTF105-02	
Euphorbia tannensis subsp. eremophila	0.1	40	KTF105-01	
Evolvulus alsinoides var. *decumbens*	0.1	20	KTF105-16	
Flaveria trinervia	0.1	10		N=2.
Goodenia forrestii	0.1	30	KTF81-05=	
Gossypium australe	0.1	80	KTF105-09	Whim Creek form.

Name	Cover (%)	Height (cm)	Specimen	Notes
Gossypium robinsonii	0.1	280		
Grevillea pyramidalis subsp. *leucadendron*	2	270		
Grevillea wickhamii subsp. *hispidula*	0.1	160		
Hibiscus leptocladus	0.1	40	KTF105-11	
Indigofera monophylla	0.5	40		
Jasminum didymum subsp. *lineare*	0.1	120		
Malvastrum americanum	0.1	5		N=1.
Melhania oblongifolia	0.1	35		
Notoleptopus decaisnei	0.1	20		
Paspalidium clementii	0.1	25	KTF105-04	
Phyllanthus maderaspatensis	0.1	50		
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	0.1	20		
Ptilotus fusiformis	0.1	40		
Ptilotus obovatus var. *obovatus*	0.1	40		
Rhynchosia minima	0.1	20		
Santalum lanceolatum	0.1	170		
Schizachyrium fragile	0.1	5		
Senna artemisioides subsp. *oligophylla*	0.1	80	KTF95-12=	
Senna glutinosa subsp. *glutinosa*	0.1	130	KTF105-13	
Sida rohlenae subsp. *rohlenae*	0.1	30	KTF105-14	
Swainsona formosa	0.1	30		
Tephrosia rosea var. *Fortescue creeks (M.I.H. Brooker 2186)*	0.1	25		
Themeda triandra	1.5	70		
Trachymene oleracea subsp. *oleracea*	0.1	70		
Tribulus hirsutus	0.1	25		
Tribulus platypterus	0.1	50		
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia epactia	40	30		
Triodia wiseana	1	50		
Waltheria indica	0.1	70		
Waltheria virgata	0.1	70	KTF105-17	

Site **KTF106**

Described by PL/SC **Date** 26/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572265 mE, 7547907 mN

Habitat Ridge; slopes and crest of footslope.

Soil Dark reddish brown silty clay loam.

Rock Type Ironstone.

Vegetation *Corymbia deserticola* subsp. *deserticola*, (*C. hamersleyana*, *Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age Very long unburnt.

Notes U1 ^*Corymbia deserticola* subsp. *deserticola, Corymbia hamersleyana,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia elachantha	0.1	60		
Acacia ptychophylla	0.1	50		
Acacia tenuissima	0.1	90		
Corymbia deserticola subsp. *deserticola*	4	600		
Corymbia hamersleyana	1	500		
Eriachne ciliata	0.1	10		
Eriachne mucronata	0.1	40		Arid form.
Eriachne pulchella	0.1	20		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	600		
Fimbristylis dichotoma	0.1	15		
Gompholobium oreophilum	0.1	60		Dead.
Hakea chordophylla	0.1	150		
Ptilotus calostachyus	0.1	40		
Schizachyrium fragile	0.1	15		
Senna glutinosa subsp. *glutinosa*	0.1	100		
Triodia wiseana	22	40		

Site	**KTF107**
Described by	BRM/RM **Date** 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571405 mE, 7547202 mN
Habitat	Footslope of major range, gently sloping to S.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia deserticola* subsp. *deserticola*) scattered low trees over *Acacia ptychophylla* low open shrubland over *Triodia wiseana* hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia deserticola* subsp. *deserticola*\^tree\6\bi;M1 ^*Acacia ptychophylla*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia adoxa var. *adoxa*	0.1	30	
Acacia bivenosa	0.1	160	
Acacia ptychophylla	4	70	
Capparis spinosa subsp. *nummularia*	0.1	160	
Codonocarpus cotinifolius	0.1	80	
Corymbia deserticola subsp. *deserticola*	0.5	500	
Eucalyptus gamophylla	0.1	70	
Eucalyptus leucophloia subsp. *leucophloia*	1.5	600	
Hakea chordophylla	0.1	50	
Ptilotus calostachyus	0.1	2	
Senna glutinosa subsp. *glutinosa*	0.1	70	
Senna glutinosa subsp. *x luerssenii*	0.1	160	
Triodia wiseana	35	40	

Site **KTF108**
Described by PL/SC **Date** 27/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 572612 mE, 7557040 mN
Habitat Floodplain.
Soil Reddish brown silty clay loam.
Rock Type Calcrete, ironstone.
Vegetation *Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* tall open shrubland over *Triodia angusta*, (*T. wiseana*) open hummock grassland with **Cenchrus setiger*, (*Chrysopogon fallax*) very open tussock grassland.
Veg Condition Very Good: **Cenchrus setiger* present.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus xerothermica*\^tree\6\r;M1 ^*Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia angusta,Triodia wiseana*\^hummock grass\1\i;G2 *Cenchrus setiger,Chrysopogon fallax*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	3	150		
Atalaya hemiglauca	0.1	300		
Cassytha capillaris	0.1	40		
Cenchrus setiger	2	60		
Chrysopogon fallax	0.5	100		
Codonocarpus cotinifolius	0.1	500		
Eragrostis desertorum	0.1	40		
Eucalyptus xerothermica	4	500		
Eulalia aurea	0.1	60		
Euphorbia vaccaria var. vaccaria	0.1	2	KTF106-01	Formal ID by M. Hislop (WAH); Intermediate morphology.
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Hakea lorea subsp. lorea	0.1	300		
Jasminum didymum subsp. *lineare*	0.1	80		
Melhania oblongifolia	0.1	40		
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla*	0.1	50		
Senna glutinosa subsp. glutinosa x	0.1	50	REL20-02=	Hybrid of unknown origin.
Solanum diversiflorum	0.1	8		
Sporobolus australasicus	0.1	10		
Themeda triandra	0.1	80		
Tribulus macrocarpus	0.1	25		
Tribulus terrestris	0.1	20		N=1.
Triodia angusta	16	60		
Triodia wiseana	6	60		

Site **KTF109**

Described by BRM/RM **Date** 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 575127mE, 7553622 mN

Habitat Floodplain.

Soil Dark brown silty loam.

Rock Type Ironstone.

Vegetation *Hakea lorea* subsp. *lorea* scattered low trees over *Grevillea pyramidalis* subsp. *leucadendron* scattered tall shrubs over *Acacia pyrifolia* var. *pyrifolia*, (*Corchorus parviflorus*, *A. tumida* var. *pilbarensis*, Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)) open shrubland over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), (*Indigofera monophylla*, *Corchorus crozophorifolius*) low open shrubland over *Eriachne tenuiculmis*, (**Cenchrus setiger*, **C ciliaris*) tussock grassland.

Veg Condition Good: *Cenchrus spp. present; signs of cattle.

Fire Age No sign of recent fire.

Notes U1 ^*Hakea lorea* subsp. lorea\^tree\6\bi;M1 *Grevillea pyramidalis* subsp. *leucadendron*\shrub\4\bi;M2+ ^*Acacia pyrifolia* var. *pyrifolia,Corchorus parviflorus,Acacia tumida* var. *pilbarensis,Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618)\^shrub\3\r;M3 *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Indigofera monophylla,Corchorus crozophorifolius*\shrub\2\r;G1^*Eriachne tenuiculmis,Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.5	180	KTF109-04	
Acacia pyrifolia var. *pyrifolia*	3	190		
Acacia tumida var. *pilbarensis*	0.5	190		
Afrohybanthus aurantiacus	0.1	20		
Aristida holathera var. *holathera*	0.1	35		
Arivela viscosa	0.1	60		
Atalaya hemiglauca	0.1	300		
Bonamia erecta	0.1	30		
Bonamia pilbarensis	0.1	30	KTF109-2,3	
Cenchrus ciliaris	1.5	30		
Cenchrus setiger	3	40		
Corchorus crozophorifolius	0.25	90	KTF105-03=	
Corchorus parviflorus	1	120	KTF105-08=	
Enneapogon lindleyanus	0.1	30	KTF109-01	
Eriachne tenuiculmis	35	60		
Euphorbia australis var. *subtomentosa*	0.1	20	KTF109-07	
Gomphrena cunninghamii	0.1	20		
Gossypium australe	0.1	80		
Grevillea pyramidalis subsp. *leucadendron*	2	350		
Hakea lorea subsp. *lorea*	1	400		
Hibiscus sturtii var. *platychlamys*	0.1	40	KTF81-13=	
Indigofera monophylla	1	50		
Jasminum didymum subsp. *lineare*	0.1	300		
Notoleptopus decaisnei	0.1	20		
Pentalepis trichodesmoides subsp. *trichodesmoides*	0.1	90	KTF109-05	N=5.
Phyllanthus maderaspatensis	0.1	40		
Polycarpaea longiflora	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	40		
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF109-06	
Senna glutinosa subsp. *glutinosa*	0.1	120	KTF105-13=	
Sporobolus australasicus	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	4	60		
Themeda triandra	0.1	70		
Trigastrotheca molluginea	0.1	20		

Site **KTF110**

Described by PL/SC **Date** 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 573104 mE, 7554755 mN

Habitat Wide drainage; river.

Soil Dark reddish brown sandy to clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus camaldulensis* subsp. *refulgens, Melaleuca argentea* open forest over *Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618) scattered shrubs over *Indigofera monophylla, Corchorus crozophorifolius*, (*Acacia pyrifolia* var. *pyrifolia, Gossypium robinsonii*, *C. parviflorus*) low open shrubland over **Cenchrus ciliaris*, (**C. setiger*) very open tussock grassland with *Cyperus vaginatus* scattered sedges.

Veg Condition Good: weeds present, mainly **Cenchrus* spp.

Fire Age Burnt 3-5 years ago.

Notes E and W corners not pegged.

U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens*,^*Melaleuca argentea*\^tree\7\c;M1 *Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618)\shrub\3\bi;M2 ^*Indigofera monophylla*,^*Corchorus crozophorifolius,Acacia pyrifolia* var. *pyrifolia,Gossypium robinsonii,Corchorus parviflorus*\^shrub\2\r;G1 ^*Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\r;G2 *Cyperus vaginatus*\sedge\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50		Form 4.
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.5	180		
Acacia bivenosa	0.1	50		
Acacia pyrifolia var. *pyrifolia*	1	50		
Afrohybanthus aurantiacus	0.1	20		
Alternanthera nana	0.1	10		
Amaranthus undulatus	0.1	20		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Atalaya hemiglauca	0.1	180		
Boerhavia coccinea	0.1	10		
Bonamia pilbarensis	0.1	10		
Capparis spinosa subsp. *nummularia*	0.1	80		
Cenchrus ciliaris	5	40		
Cenchrus setiger	1	40		
Chrysopogon fallax	0.1	80		
Corchorus crozophorifolius	2	50		
Corchorus parviflorus	0.5	50		
Corchorus tectus	0.1	50	KTF110-01	
Cucumis variabilis	0.1	50		
Cymbopogon ambiguus	0.1	50		
Cymbopogon ambiguus	0.1	20		Procerus form.
Cyperus vaginatus	2	80		
Digitaria brownii	0.1	30		
Echinochloa colona	0.1	20		
Enneapogon caerulescens	0.1	20		
Enneapogon lindleyanus	0.1	40		
Eriachne tenuiculmis	0.1	15		
Eucalyptus camaldulensis subsp. *refulgens*	20	1600		
Euphorbia australis var. *subtomentosa*	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
Euphorbia biconvexa	0.1	20		
Euphorbia vaccaria var. *erucoides*	0.1	10	KTF110-02	
Evolvulus alsinoides var. *decumbens*	0.1	10		
Gossypium australe	0.1	50		
Gossypium robinsonii	1	80		
Grevillea wickhamii subsp. *hispidula*	0.1	30		
Heliotropium cunninghamii	0.1	20	KTF110-03	
Indigofera monophylla	3	50		
Ipomoea muelleri	0.1	10		
Malvastrum americanum	0.1	40		N=15.
Melaleuca argentea	20	1600		
Melhania oblongifolia	0.1	30		
Notoleptopus decaisnei	0.1	30		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	10		
Phyllanthus maderaspatensis	0.1	20		
Pluchea rubelliflora	0.1	20		
Pterocaulon sphacelatum	0.1	30		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	20		
Ptilotus incanus	0.1	40	KTF110-04	
Rhynchosia minima	0.5	10		
Rumex vesicarius	0.1	5		N=1.
Senna notabilis	0.1	10		
Sesbania cannabina	0.1	50		
Setaria dielsii	0.1	10		
Setaria verticillata	0.1	20		N=10.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		
Solanum diversiflorum	0.1	15		
Stemodia grossa	0.1	20		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	50		
Vachellia farnesiana	0.1	80		N=5.
Waltheria indica	0.1	50		

Site **KTF111**

Described by BRM/RM **Date** 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 572009 mE, 7555128 mN

Habitat Lower slope of low range, sloping E.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* tall open shrubland over *Triodia basitricha*, (*T. wiseana*) hummock grassland.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\r;G1+ ^*Triodia basitricha,Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia ancistrocarpa	6	230	
Acacia spondylophylla	0.1	120	
Bonamia erecta	0.1	35	
Corymbia hamersleyana	1	250	
Cymbopogon ambiguus	0.1	90	
Hakea lorea subsp. *lorea*	0.1	140	
Senna glutinosa subsp. *pruinosa*	0.1	150	
Triodia basitricha	25	30	KTF111-01
Triodia wiseana	6	30	

Site **KTF112**
Described by PL/SC **Date** 27/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 574537 mE, 7554019 mN
Habitat Major drainage.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus victrix* woodland over *Atalaya hemiglauca* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* scattered shrubs over *Corchorus crozophorifolius*, (*Indigofera monophylla*) low open shrubland over **Cenchrus ciliaris*, (*Eriachne tenuiculmis*, **C. setiger*) open tussock grassland with *Triodia epactia* scattered hummock grasses.
Veg Condition Good: *Cenchrus spp. present.
Fire Age No sign of recent fire.
Notes Definitely dominated by Eucalyptus victrix, therefore Potential GDV. Occasional E. camaldulensis in broader veg type.
U1+ ^*Eucalyptus victrix*\^tree\7\i;U2 *Atalaya hemiglauca*\tree\6\bi;M1 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M2 ^*Corchorus crozophorifolius,Indigofera monophylla*\^shrub\2\r;G1 ^*Cenchrus ciliaris,Eriachne tenuiculmis,Cenchrus setiger*\^tussock grass\1\i;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.1	200		
Acacia bivenosa	0.1	120		
Acacia pyrifolia var. *pyrifolia*	1	200		
Acacia tumida var. *pilbarensis*	0.1	100		
Aerva javanica	0.1	50		N=1.
Afrohybanthus aurantiacus	0.1	40		
Amaranthus undulatus	0.1	40		
Aristida contorta	0.1	40		
Aristida holathera var. *holathera*	0.1	30		
Atalaya hemiglauca	2	400		
Boerhavia coccinea	0.1	30		
Bonamia pilbarensis	0.1	20		
Cenchrus ciliaris	20	70	KTF112-02	
Cenchrus setiger	2	80		
Corchorus crozophorifolius	3	80		
Corchorus lasiocarpus subsp. *parvus*	0.1	60		
Corchorus parviflorus	0.1	90		
Corchorus tectus	0.1	70	KTF110-01=	
Cucumis variabilis	0.1	50		
Cymbopogon ambiguus	0.1	90		Procerus form.
Enneapogon lindleyanus	0.1	80		
Eremophila longifolia	0.1	150		
Eriachne tenuiculmis	3	40		
Eucalyptus victrix	28	1400		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia biconvexa	0.1	50		
Evolvulus alsinoides var. *decumbens*	0.1	25		
Gossypium australe	0.1	40		
Gossypium robinsonii	0.1	90		
Grevillea wickhamii subsp. *hispidula*	0.1	300		
Hakea lorea subsp. lorea	0.1	320		
Heliotropium cunninghamii	0.1	40	KTF112-01	

Name	Cover (%)	Height (cm)	Specimen	Notes
Heliotropium pachyphyllum	0.1	50		
Indigofera monophylla	0.5	40		
Jasminum didymum subsp. *lineare*	0.1	100		
Notoleptopus decaisnei	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Ptilotus calostachyus	0.1	80		
Rhynchosia minima	0.1	50		
Salsola australis	0.1	50		
Sida fibulifera	0.1	25		
Solanum diversiflorum	0.1	60		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	80		
Triodia epactia	0.5	70		

Site **KTF113**
Described by BRM/RM **Date** 28/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 568240 mE, 7538282 mN
Habitat Lower slope of moderate range, W-facing.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Acacia monticola* tall open shrubland over *Grevillea pyramidalis* subsp. *leucadendron*, *Gossypium robinsonii* scattered shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia monticola*\^shrub\4\r;M2 *Grevillea pyramidalis* subsp. *leucadendron,Gossypium robinsonii*\shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	40	KTF113-02	
Acacia adoxa var. *adoxa*	0.1	30		
Acacia bivenosa	0.1	180		
Acacia inaequilatera	0.1	130		
Acacia monticola	7	220		
Acacia orthocarpa	0.25	170	KTF113-01	
Acacia pyrifolia var. *pyrifolia*	0.1	110		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	5	KTF113-10	
Bulbostylis barbata	0.1	5		
Cheilanthes brownii	0.1	10	KTF113-14	
Clerodendrum floribundum var.	0.1	170	KTF113-15	
angustifolium				
Corchorus parviflorus	0.1	120	KTF113-05	
Corymbia hamersleyana	1	400		
Dampiera candicans	0.1	5		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30	KTF95-07=	
Eriachne ciliata	0.1	20	KTF113-04	
Eriachne mucronata	0.1	25		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	5		
Eucalyptus leucophloia subsp. *leucophloia*	1.5	450		
Euphorbia sp. (boophthona/tannensis)	0.1	40		Sterile.
Fimbristylis simulans	0.1	20	KTF75-01=	
Gossypium robinsonii	1	160		
Grevillea pyramidalis subsp. *leucadendron*	1	170		
Indigofera monophylla	0.1	30		
Mirbelia viminalis	0.1	40	KTF89-01=	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	10	KTF113-11	
Polycarpaea holtzei	0.1	5	KTF113-13	
Polycarpaea longiflora	0.1	20		
Ptilotus calostachyus	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	20		
Santalum lanceolatum	0.1	120		
Senna glutinosa subsp. *glutinosa*	0.25	170		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.25	290	KTF113-09	
Tephrosia densa	0.1	25	KTF113-12	
Tephrosia oxalidea	0.1	5	KTF113-06	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	5	KTF113-03	
Tephrosia virens	0.5	130	KTF113-08	
Trigastrotheca molluginea	0.1	25		
Triodia wiseana	20	40		
Triumfetta maconochieana	0.1	40	KTF113-07	

Site **KTF114**

Described by PL/SC **Date** 28/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 573625 mE, 7550648 mN

Habitat Undulating foot slopes; slopes and crest.

Soil Dark reddish brown silty clay loam.

Rock Type Ironstone.

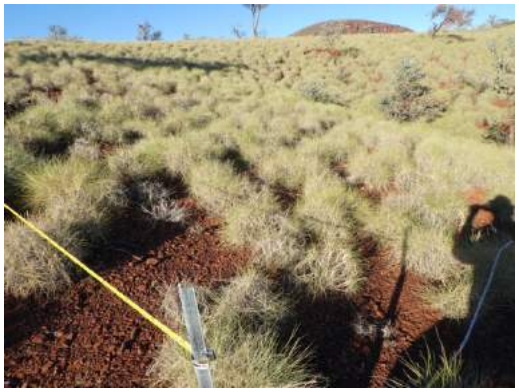
Vegetation *Corymbia deserticola* subsp. *deserticola, C. hamersleyana*, (*Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Ptilotus rotundifolius* scattered low shrubs over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes Only N and S corners pegged.
U1 ^*Corymbia deserticola* subsp. *deserticola*,^*Corymbia hamersleyana,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\bi;M2 *Ptilotus rotundifolius*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia inaequilatera	1	240		
Corymbia deserticola subsp. *deserticola*	1	800		
Corymbia hamersleyana	0.75	600		
Dolichocarpa crouchiana	0.1	15		
Dysphania rhadinostachya	0.1	8		Sterile.
Eriachne ciliata	0.1	15		
Eriachne pulchella	0.1	20		
Eucalyptus leucophloia subsp. *leucophloia*	0.25	500		
Euphorbia boophthona	0.1	60		
Fimbristylis dichotoma	0.1	20	KTF114-01	
Fimbristylis simulans	0.1	15		
Paspalidium clementii	0.1	25		
Ptilotus rotundifolius	1.5	80		
Schizachyrium fragile	0.1	15		
Senna glutinosa subsp. *glutinosa*	0.1	50		
Triodia wiseana	25	60		



Site **KTF115**
Described by BRM/RM **Date** 28/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 567361 mE, 7537708 mN
Habitat Mid-lower slope of spur.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Triodia wiseana* hummock grassland with *Eriachne mucronata* scattered tussock grasses.
Veg Condition Excellent.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c;G2 *Eriachne mucronata*\tussock grass\1\bi

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	30		
Acacia maitlandii	0.1	40		
Acacia monticola	0.1	90		
Acacia tenuissima	0.1	60	KTF75-08=	
Arivela viscosa	0.1	30		
Bonamia pilbarensis	0.1	10	KTF113-10	
Corchorus parviflorus	0.1	90	KTF113-05=	
Corymbia hamersleyana	0.5	600		
Dampiera candicans	0.1	30		
Dolichocarpa crouchiana	0.1	10	KTF101-14=	
Eremophila longifolia	0.1	40	KTF115-02	
Eriachne ciliata	0.1	15	KTF113-04=	
Eriachne mucronata	1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	6	600		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Fimbristylis dichotoma	0.1	30	KTF115-01	
Fimbristylis simulans	0.1	25	KTF75-01=	
Gompholobium oreophilum	0.1	30		
Gomphrena cunninghamii	0.1	20		
Goodenia stobbsiana	0.1	50		Dead.
Goodenia triodiophila	0.1	30		
Gossypium robinsonii	0.1	170		
Hakea lorea subsp. lorea	0.1	110		
Indigofera monophylla	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	80		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	15	KTF113-11=	
Ptilotus calostachyus	0.1	70		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	15		
Senna artemisioides subsp. *oligophylla*	0.1	70	KTF109-06=	
Senna glutinosa subsp. *glutinosa*	0.1	170		
Senna glutinosa subsp. *pruinosa*	0.1	50		
Sida sp. Articulation below (A.A. Mitchell *PRP 1605)*	0.1	270	KTF113-09=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Tephrosia densa	0.1	40	KTF115-03	
Tephrosia oxalidea	0.1	20	KTF113-06=	
Tephrosia virens	0.1	90	KTF113-08=	
Trigastrotheca molluginea	0.1	30		
Triodia wiseana	35	40		

Site **KTF116**
Described by PL/SC **Date** 28/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 569454 mE, 7540805 mN
Habitat Low foothills, E aspect; almost flat plains.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Corymbia deserticola* subsp. *deserticola*, (*Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia atkinsiana*, *A. inaequilatera* tall open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana*, (*T. epactia*) open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia deserticola* subsp. *deserticola,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia atkinsiana,*^*Acacia inaequilatera*\^shrub\4\r;M2 *Acacia bivenosa*\shrub\3\bi;G1+ ^*Triodia wiseana,Triodia epactia*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	5		
Acacia atkinsiana	3	400		
Acacia bivenosa	0.5	180		
Acacia inaequilatera	3	300		
Acacia tenuissima	0.1	80		
Amphipogon sericeus	0.1	40		
Aristida holathera var. *holathera*	0.1	30		
Chrysopogon fallax	0.1	50		
Corymbia deserticola subsp. *deserticola*	2	600		
Cymbopogon obtectus	0.1	60		
Duperreya commixta	0.1	50		
Enneapogon polyphyllus	0.1	20		
Eriachne pulchella	0.1	10		
Eucalyptus gamophylla	1	400		
Eucalyptus leucophloia subsp. *leucophloia*	1	300		
Eulalia aurea	0.1	40		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia boophthona	0.1	10		
Goodenia microptera	0.1	10		
Hakea lorea subsp. *lorea*	0.1	20		
Hibiscus sturtii var. *platychlamys*	0.1	50		
Isotropis atropurpurea	0.1	40		
Jasminum didymum subsp. *lineare*	0.1	110		
Paraneurachne muelleri	0.1	30		
Ptilotus calostachyus	0.1	80		
Ptilotus clementii	0.1	5		
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	15		
Ptilotus obovatus var. *obovatus*	0.1	60		
Schizachyrium fragile	0.1	5		
Senna artemisioides subsp. *helmsii*	0.1	150		
Senna artemisioides subsp. *oligophylla*	0.1	120		
Senna glutinosa subsp. *glutinosa*	0.1	120		
Senna glutinosa subsp. *glutinosa* x	0.1	180		Hybrid taxon.
Senna glutinosa subsp. *x luerssenii*	0.1	180		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna notabilis	0.1	20		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	50	KTF116-01	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	120		
Trichodesma zeylanicum var. *zeylanicum*	0.1	80		
Triodia epactia	5	50		
Triodia wiseana	10	30		
Vincetoxicum lineare	0.1	180		
Yakirra australiensis var. *australiensis*	0.1	5		

Site **KTF117**

Described by BRM/RM **Date** 28/5/2020

Type Quadrat 62.5 x 40 m

Central Coord 50 566612 mE, 7536726 mN

Habitat Mid to lower slope of spur of large range; E-facing.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Acacia orthocarpa* scattered tall shrubs over *Triumfetta maconochieana* scattered low shrubs over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia orthocarpa*\^shrub\4\bi;M2 *Triumfetta maconochieana*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	30		
Acacia orthocarpa	0.5	220	KTF117-01	
Acacia pruinocarpa	0.1	70		
Acacia pyrifolia var. *pyrifolia*	0.1	160		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Bonamia pilbarensis	0.1	10	KTF113-10	
Corchorus lasiocarpus subsp. parvus	0.1	90	KTF117-02	Formal ID by M. Hislop (WAH).
Corymbia hamersleyana	2	600		
Cymbopogon ambiguus	0.1	70		
Dampiera candicans	0.1	30		
Dodonaea coriacea	0.1	70		
Dolichocarpa crouchiana	0.1	10	KTF101-14=	
Eriachne ciliata	0.1	15	KTF113-04=	
Eriachne mucronata	0.1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	5	600		
Fimbristylis dichotoma	0.1	30	KTF115-01=	
Fimbristylis simulans	0.1	25	KTF75-01=	
Gompholobium oreophilum	0.1	30		
Gomphrena cunninghamii	0.1	20		
Goodenia cusackiana	0.1	20		
Goodenia stobbsiana	0.1	50		Dead.
Goodenia triodiophila	0.1	30		
Gossypium robinsonii	0.1	260		
Grevillea pyramidalis subsp. *leucadendron*	0.1	280		
Grevillea wickhamii subsp. *hispidula*	0.1	130		
Hakea chordophylla	0.1	110		
Indigofera monophylla	0.1	30		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	15	KTF113-11=	
Polycarpaea holtzei	0.1	3	KTF113-13=	
Polycarpaea longiflora	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus calostachyus	0.1	70		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	15		
Senna artemisioides subsp. *oligophylla*	0.1	70	KTF109-06=	
Senna glutinosa subsp. *glutinosa*	0.1	170		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	270	KTF113-09=	
Tephrosia densa	0.1	40	KTF115-03	
Tephrosia oxalidea	0.1	20	KTF113-06=	
Tephrosia virens	0.1	90	KTF113-08=	
Triodia wiseana	25	40		
Triumfetta maconochieana	0.5	30	KTF113-07=	

Site **KTF118**
Described by PL/SC **Date** 28/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 566717 mE, 7537508 mN
Habitat Footslope.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Corymbia deserticola* subsp. *deserticola*, (*Eucalyptus leucophloia* subsp. *leucophloia, C. hamersleyana*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia monticola* scattered tall shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Corymbia deserticola* subsp. *deserticola,Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia monticola*\^shrub\4\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40		
Acacia ancistrocarpa	0.1	110		
Acacia atkinsiana	0.1	250		
Acacia bivenosa	0.1	140		
Acacia cowleana	0.1	160		
Acacia inaequilatera	0.1	100		
Acacia monticola	0.5	260		
Aristida inaequiglumis	0.1	120	KTF118-01	Formal ID by M. Hislop (WAH).
Aristida holathera var. *holathera*	0.1	40		
Corymbia deserticola subsp. *deserticola*	2	550		
Corymbia hamersleyana	0.1	110		
Eriachne pulchella	0.1	15		
Eucalyptus gamophylla	0.5	300		
Eucalyptus leucophloia subsp. *leucophloia*	1	400		
Euphorbia tannensis subsp. *eremophila*	0.1	30		
Fimbristylis simulans	0.1	25		
Goodenia stobbsiana	0.1	40		Dead.
Hakea chordophylla	0.1	300		
Hakea lorea subsp. *lorea*	0.1	100		
Hibiscus sturtii var. *campylochlamys*	0.1	35		
Jasminum didymum subsp. *lineare*	0.1	120		
Paspalidium clementii	0.1	25		
Ptilotus calostachyus	0.1	80		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	70		
Senna ferraria	0.1	90	KTF118-02	
Senna glutinosa subsp. *glutinosa*	0.1	150		
Triodia wiseana	16	60		
Vincetoxicum lineare	0.1	80		

Site **KTF119**
Described by RMJK **Date** 20/10/2020
Type Quadrat 50 x 50 m
MGA Zone 50 574500 mE, 7511336 mN
Habitat Stony plain.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Acacia pruinocarpa*, (*Corymbia deserticola* subsp. *deserticola*, *A. aptaneura*) low open woodland over *Triodia melvillei* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1+ ^Acacia pruinocarpa,Corymbia deserticola subsp. deserticola,Acacia aptaneura\^tree\6\r;G1 ^Triodia melvillei\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	5	KTF119-10	
Acacia aptaneura	1.5	230	KTF119-04	
Acacia pruinocarpa	2.5	320		
Anthobolus leptomerioides	0.1	180	KTF119-02	
Aristida contorta	0.1	40		
Aristida sp.	0.1	40	KTF119-03	Inadequate material.
Corymbia deserticola subsp. *deserticola*	1.5	450		
Enneapogon polyphyllus	0.1	20	KTF119-06	
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	5		
Goodenia microptera	0.1	20	KTF119-07	
Hibiscus burtonii	0.1	20	KTF119-08	
Maireana villosa	0.1	30	KTF119-11	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	20	KTF119-09	
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	15		
Ptilotus rotundifolius	0.1	60		
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.1	180		
Senna glutinosa subsp. *glutinosa*	0.1	180		
Sporobolus australasicus	0.1	10		
Triodia melvillei	25	40	KTF119-01	

Site **KTF122**
Described by RMJK **Date** 21/10/2020
Type Quadrat 50 x 50 m
Central Coord 50 570030 mE, 7534443 mN
Habitat Floodplain.
Soil Dark reddish brown clay loam.
Rock Type Mudstone.
Vegetation *Hakea lorea* subsp. *lorea*, (*Acacia pruinocarpa*) low open woodland over *A. inaequilatera* tall open shrubland over *Triodia wiseana*, (*T. epactia*) very open hummock grassland over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Chrysopogon fallax* scattered tussock grasses.
Veg Condition Good to Poor: heavily grazed by cattle.
Fire Age No sign of recent fire.
Notes U1+ ^*Hakea lorea* subsp. *lorea,Acacia pruinocarpa*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;G1 *Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\tussock grass\3\bi;G2 ^*Triodia wiseana,Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp.	0.1	10	KTF122-02	Poor material; best guess ? *A. oxycarpum* subsp. Prostrate.
Acacia dictyophleba	0.5	320	KTF122-08	Formal ID by M. Hislop (WAH).
Acacia bivenosa	0.1	90		
Acacia inaequilatera	6	380		
Acacia pruinocarpa	1.5	450		
Alternanthera nana	0.1	5	KTF122-03	
Boerhavia sp.	0.1	30		Dead.
Cenchrus ciliaris	0.1	30		
Chrysopogon fallax	0.5	90		
Cullen graveolens	0.1	30		
Duperreya commixta	0.1	120		
Enneapogon caerulescens	0.1	15		
Enneapogon lindleyanus	0.1	30		
Eremophila longifolia	0.1	130		
Eriachne pulchella	0.1	5		
Eulalia aurea	0.1	90		
Euphorbia biconvexa	0.1	30	KTF122-06	
Euphorbia sp. (*boophthona/tannensis*)	0.1	20		Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia muelleriana	0.1	15		
Goodenia nuda	0.1	25	KTF122-01	
Hakea lorea subsp. *lorea*	8	550		
Indigofera linifolia	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	150		
Notoleptopus decaisnei	0.1	15		
Pterocaulon sphacelatum	0.1	40	KTF122-04	
Ptilotus clementii	0.1	25		
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	25		
Scaevola spinescens	0.1	60		
Sclerolaena cornishiana	0.1	40	KTF122-07	
Senna artemisioides subsp. *helmsii*	0.1	50		
Senna artemisioides subsp.	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
oligophylla				
Senna notabilis	0.1	40		
Senna venusta	0.1	90		
Sida fibulifera	0.1	30		
Solanum diversiflorum	0.1	50		
Solanum lasiophyllum	0.1	90		
Sporobolus australasicus	0.1	5		
Streptoglossa bubakii	0.1	30	KTF122-05	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	1.5	130		
Themeda triandra	0.1	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	90		
Triodia epactia	1.5	50		
Triodia wiseana	7	60		
Urochloa occidentalis var. *occidentalis*	0.1	30		
Vachellia farnesiana	0.1	90		

Site	**KTF123**
Described by	RMJK **Date** 21/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 567843 mE, 7535914 mN
Habitat	Sloping plain.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Acacia aptaneura* scattered low trees over *A. atkinsiana, A. exigua* scattered tall shrubs over *A. pruinocarpa* open shrubland over *Triodia wiseana* hummock grassland.
Veg Condition	Excellent.
Fire Age	Very long unburnt.
Notes	U1 ^*Acacia aptaneura*\^tree\6\bi;M1 *Acacia atkinsiana,Acacia exigua*\shrub\4\bi;M2 ^*Acacia pruinocarpa*\^shrub\3\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia aptaneura	0.5	300	KTF121-01=
Acacia atkinsiana	0.5	280	KTF123-02
Acacia exigua	0.25	280	KTF123-01
Acacia pruinocarpa	6	170	
Aristida holathera var. *holathera*	0.1	30	
Dodonaea petiolaris	0.1	70	KTF123-03
Ptilotus obovatus var. *obovatus*	0.1	50	
Senna glutinosa subsp. *glutinosa*	0.1	140	
Senna glutinosa subsp. *pruinosa*	0.1	160	
Senna glutinosa subsp. x *luerssenii*	0.1	170	
Triodia wiseana	50	50	

Site **KTF124**

Described by RMJK **Date** 21/10/2020

Type Quadrat 50 x 50 m

Central Coord 50 567086 mE, 7536080 mN

Habitat Floodplain between drainage channels.

Soil Dark reddish brown clay loam.

Rock Type Ironstone.

Vegetation *Acacia pruinocarpa* scattered low trees over *A. ancistrocarpa*, (*Senna glutinosa* subsp. *pruinosa*) open shrubland over *Triodia wiseana* open hummock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1 ^*Acacia pruinocarpa*\^tree\6\bi;M1 ^*Acacia ancistrocarpa,Senna glutinosa* subsp. *pruinosa*\^shrub\3\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	3	160		
Acacia bivenosa	0.1	140		
Acacia pruinocarpa	1.5	280		
Acacia sp.	0.1	90		Dead.
Acacia tenuissima	0.1	50	KTF124-03	
Amphipogon sericeus	0.1	30		
Aristida holathera var. *holathera*	0.1	30		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF124-04	
Dodonaea coriacea	0.1	60		
Enneapogon caerulescens	0.1	5		
Eriachne aristidea	0.1	30		
Eucalyptus leucophloia subsp. *leucophloia*	0.1	90		
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Gossypium australe	0.1	20		
Gossypium robinsonii	0.1	210		
Hakea chordophylla	0.1	160		
Paraneurachne muelleri	0.1	30		
Ptilotus auriculifolius	0.1	50		
Ptilotus calostachyus	0.1	60		
Ptilotus fusiformis	0.1	50		
Senna artemisioides subsp. *helmsii*	0.1	50		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna glutinosa subsp. *pruinosa*	0.25	120		
Seringia exastia	0.1	50	KTF124-01	
Seringia sp.	0.1	60	KTF124-02	Poor material.
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	160		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	70	KTF124-05	
Trachymene oleracea subsp. *oleracea*	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	160		
Triodia wiseana	12	50		

Site **KTF125**

Described by RMJK **Date** 22/10/2020

Type Quadrat 50 x 50 m

Central Coord 50 568666 mE, 7534987 mN

Habitat Clay plain.

Soil Dark reddish brown clay loam.

Rock Type Mudstone.

Vegetation *Hakea lorea* subsp. *lorea* low open woodland over *Acacia victoriae*, **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) tussock grassland.

Veg Condition Good: heavily grazed.

Fire Age No sign of recent fire.

Notes Equal to KTF70 but very dry and grazed.
U1 ^*Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Acacia victoriae*,^*Vachellia farnesiana*\^shrub\3\bi;G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia victoriae subsp. *victoriae*	0.5	150	KTF125-04	
Boerhavia burbidgeana	0.1	10	KTF125-07	
Chrysopogon fallax	4	90		
Cynodon convergens	0.1	20	KTF125-09	
Dichanthium sericeum subsp. *humilius*	0.1	40		
Glycine falcata	0.1	20	KTF125-02	
Hakea lorea subsp. *lorea*	9	600	KTF125-01	
Indigofera linifolia	0.1	40		
Notoleptopus decaisnei	0.1	5		
Operculina aequisepala	0.1	60		
Panicum sp.	0.1	40	KTF125-05	May be P. decompositum but base looks too fine.
Polymeria longifolia	0.1	10	KTF125-3,8	
Sida spinosa	0.1	40	KTF125-06	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	29	120		
Themeda triandra	0.1	50		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Urochloa occidentalis var. *occidentalis*	1	30		
Vachellia farnesiana	0.5	120		

Site **KTF126**

Described by RMJK **Date** 22/10/2020

Type Quadrat 50 x 50 m

Central Coord 50 569286 mE, 7535252 mN

Habitat Clay plain.

Soil Dark reddish brown clay loam.

Rock Type Calcrete, mudstone.

Vegetation *Hakea lorea* subsp. *lorea,* (*Acacia aptaneura*, *Eucalyptus victrix*) low open woodland over *A. inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) scattered tussock grasses.

Veg Condition Very Good to Good: signs of cattle.

Fire Age No sign of recent fire.

Notes U1 ^*Hakea lorea* subsp. *lorea,Acacia aptaneura,Eucalyptus victrix*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;G1 *Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\tussock grass\3\bi;G2+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia aptaneura	1	350	KTF121-01=	
Acacia bivenosa	0.1	160		
Acacia cowleana	0.1	210	KTF126-01	
Acacia inaequilatera	6	380		
Acacia pruinocarpa	0.1	120		
Acacia tenuissima	0.1	140		
Afrohybanthus aurantiacus	0.1	15		
Aristida contorta	0.1	30		
Chrysopogon fallax	0.1	110		
Dichanthium sericeum subsp. *humilius*	0.1	25		
Eremophila longifolia	0.1	150		
Eucalyptus victrix	0.25	450		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF126-02	
Euphorbia sp. (boophthona/tannensis)	0.1	15		Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Goodenia muelleriana	0.1	30		
Goodenia nuda	0.1	15		N=3.
Hakea lorea subsp. *lorea*	3	250		
Indigofera linifolia	0.1	20		
Salsola australis	0.1	5		
Senna glutinosa subsp. *glutinosa*	0.1	170	KTF126-04	
Senna notabilis	0.1	15		
Sida fibulifera	0.1	20	KTF126-03	
Solanum lasiophyllum	0.1	60		
Sporobolus australasicus	0.1	10		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.5	110		
Triodia wiseana	22	60		
Vachellia farnesiana	0.1	150		

Site **KTF127**

Described by RMJK **Date** 23/10/2020

Type Quadrat 50 x 50 m

Central Coord 50 569510 mE, 7535086 mN

Habitat Clay plain.

Soil Dark reddish brown clay loam.

Rock Type Calcrete, mudstone.

Vegetation *Hakea lorea* subsp. *lorea*, (*Eucalyptus victrix*) low open woodland over **Vachellia farnesiana* scattered tall shrubs over *Eremophila longifolia* scattered shrubs over *Triodia epactia* very open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) very open tussock grassland.

Veg Condition Very Good to Good: signs of cattle; some weeds.

Fire Age No sign of recent fire.

Notes U1+ ^*Hakea lorea* subsp. *lorea,Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\4\bi;M2 *Eremophila longifolia*\shrub\3\bi;G1 ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\r;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia victoriae subsp. *victoriae*	0.1	40		
Chrysopogon fallax	0.5	90		
Cullen graveolens	0.1	30		
Cynodon convergens	0.1	30		
Enneapogon caerulescens	0.1	10		
Eremophila longifolia	0.25	140		
Eucalyptus victrix	1	600		
Euphorbia sp.	0.1	10		Dead.
Euphorbia sp. *(boophthona/tannensis)*	0.1	20		Sterile.
Hakea lorea subsp. lorea	2.5	600		
Heliotropium sp.	0.1	15		Inadequate material.
Indigofera linifolia	0.1	30		
Operculina aequisepala	0.1	30		
Phyllanthus exilis	0.1	30	PL23A	
Polymeria longifolia	0.1	30		
Ptilotus clementii	0.1	30		
Ptilotus exaltatus	0.1	5		
Rostellularia adscendens var. *clementii*	0.1	20	KTF127-01	
Salsola australis	0.1	20		
Senna artemisioides subsp. x *artemisioides*	0.1	20	KTF127-03	
Sida fibulifera	0.1	20		
Sida spinosa	0.1	40	KTF125-06=	
Solanum diversiflorum	0.1	10		
Solanum lasiophyllum	0.1	30		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	20	KTF127-02	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	4	110		
Triodia wiseana	7	40		
Urochloa occidentalis	0.1	30		Sterile.
Vachellia farnesiana	1.5	320		

Site **KTF135**
Described by RM,AL **Date** 26/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 573266 mE, 7511467 mN
Habitat NW facing moderate slope.
Soil Not recorded
Rock Type Not recorded
Vegetation *Acacia inaequilatera, Acacia macraneura* low open woodland over *Senna glutinosa* subsp. *glutinosa, Acacia synchronicia* tall open shrubland over *Indigofera monophylla, Ptilotus rotundifolius* low open shrubland over *Triodia epactia* hummock grassland over *Themeda triandra, Paraneurachne muelleri* very open perennial grassland over *Rhynchosia minima* scattered herbs
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^Acacia inaequilatera,Acacia macraneura\Acacia\^tree\6\bc; M1 ^Senna glutinosa subsp. glutinosa, Acacia synchronicia\Senna\^shrub\4\bc; M2 ^Indigofera monophylla,Ptilotus rotundifolius\Inidgofera\^shurb\2\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Themeda triandra,Paraneurachne muelleri\Themeda\^tussock grass\2\bc; G3 ^Rhychosia minima\Rhynchosia\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
? Bothriochloa ewartiana	0.1	60	KTF135-04	
Abutilon lepidum	0.1	60	KTF135-02	Sens. Lat
Acacia inaequilatera	2	250		
Acacia macraneura	1.5	320	KTF135-08	
Acacia pruinocarpa	0.1	130		
Acacia synchronicia	0.5	360	KTF135-01	
Aristida contorta	0.1	30		
Boerhavia coccinea	0.1	30		
Chrysopogon fallax	0.1	60		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF135-17	
Cucumis variabilis	0.1	75		
Cymbopogon ambiguus	0.1	60		
Enneapogon polyphyllus	0.1	30		
Eremophila ? fraseri subsp. *fraseri*	0.1	70	KTF135-07	Sterile
Eremophila cuneifolia	0.1	60	KTF135-16	
Eriachne aristidea	0.1	30		
Eriachne mucronata	0.1	30		
Euphorbia trigonosperma	0.1	15	KTF135-13	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena cunninghamii	0.1	20		
Gomphrena kanisii	0.1	30	KTF135-12	
Goodenia cusackiana	0.1	5		
Goodenia microptera	0.1	20		
Goodenia muelleriana	0.1	30	KTF135-18	
Goodenia muelleriana	0.1	20	KTF135-06	
Gossypium australe	0.1	45		
Gossypium australe (Burrup Peninsula form)	0.1	60	KTF135-15	
Indigofera monophylla	2	60		
Iseilema dolichotrichum	0.1	20	KTF135-05	
Paraneurachne muelleri	0.5	50		
Polycarpaea corymbosa var. *corymbosa*	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Polycarpaea holtzei	0.1	4		
Polycarpaea holtzei	0.1	20	KTF135-19	
Polycarpaea longiflora	0.1	20		
Polygala glaucifolia	0.1	5	KTF136-09=	
Portulaca oleracea	0.1	5		
Ptilotus ? xerophilus	0.1	60	KTF135-03	Sterile; inadequate material
Ptilotus auriculifolius	0.1	40	KTF135-10	
Ptilotus clementii	0.1	40		
Ptilotus exaltatus	0.1	25		
Ptilotus rotundifolius	0.5	60		
Rhynchosia minima	1.5	70		
Senna glutinosa subsp. *glutinosa*	3	210		
Senna glutinosa subsp. *pruinosa*	0.1	140		
Sida echinocarpa	0.1	40	KTF135-20	
Sida echinocarpa	0.1	60	KTF135-14	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	70	KTF135-09	
Sporobolus australasicus	0.1	10		
Streptoglossa bubakii	0.1	20	KTF135-11	S
Themeda triandra	3	75		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Triodia epactia	60	80		

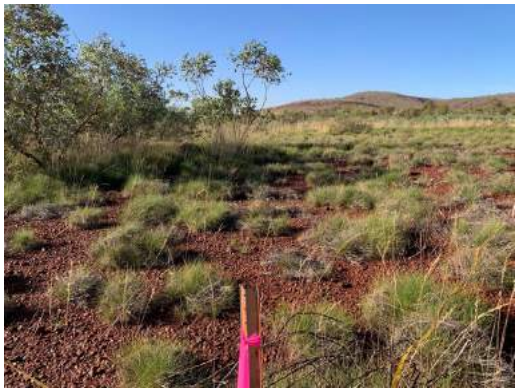
Site **KTF136**
Described by RM,AL **Date** 26/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 573531 mE, 7512185 mN
Habitat stony plain.
Soil Not recorded
Rock Type Ironstone
Vegetation *Acacia aptaneura low open woodland over Triodia epactia* very open hummock grassland over *Aristida contorta, Chrysopogon fallax* scattered tussock grassland over *Ptilotus helipteroides* scattered herbs
Veg Condition Very Good. weeds, cattle scats
Fire Age No sign of recent fire.
Notes U1 ^Acacia aptaneura*\Acacia\^tree\6\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\bc; G2 ^Aristida contorta,Chrysopogon fallax\Aristida\^tussock grass\1\bc; G3 ^Ptilotus helipteroides\Ptilotus\^forb\1\bc

Name	Cover (%)	Height	Specimen	Notes
Abutilon lepidum	0.1	70		
Abutilon lepidum	0.1	35	KTF135-02=	
Abutilon otocarpum	0.1	60		
Acacia aptaneura	4	450		
Acacia pruinocarpa	0.1	170		
Acacia tetragonophylla	0.1	90		
Areocleome oxalidea	0.1	25	KTF136-06	
Aristida contorta	0.1	30	KTF136-01	
Aristida contorta	1.5	30		
Aristida latifolia	0.1	70	KTF136-11	
Bidens bipinnata	0.1	35		
Boerhavia coccinea	0.1	25		
Bulbostylis barbata	0.1	5		
Cenchrus ciliaris	0.1	60		
Cheilanthes sieberi subsp. *sieberi*	0.1	30		
Chrysopogon fallax	0.5	60		
Corchorus tridens	0.1	15		
Cucumis picrocarpus	0.1	70		
Cynodon convergens	0.1	30		
Dactyloctenium radulans	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	30	KTF136-18	
Digitaria brownie	0.1	40		
Dysphania rhadinostachya	0.1	25		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30		
Eragrostis tenellula	0.1	30		
Eremophila ? fraseri subsp. *fraseri*	0.1	70	KTF135-07=	Sterile
Eremophila forrestii subsp. *forrestii*	0.1	70	KTF136-08	E
Eriachne pulchella	0.1	25		
Euphorbia biconvexa	0.1	25	KTF136-19	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia microptera	0.1	5	KTF136-22	
Goodenia muelleriana	0.1	25	KTF136-07	
Heliotropium heteranthum	0.1	5	KTF136-10	
Hibiscus burtonii	0.1	40		
Hibiscus sturtii var. *grandiflorus*	0.1	50	KTF136-21	
Iseilema membranaceum	0.1	10	KTF136-17	
Iseilema vaginiflorum	0.1	25	KTF136-16	Sens lat.
Lepidium phlebopetalum	0.1	5	KTF136-13	

Name	Cover (%)	Height	Specimen	Notes
Maireana planifolia x *villosa*	0.1	20	KTF136-24	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	25		
Perotis rara	0.1	15		
Polycarpaea corymbosa var. *corymbosa*	0.1	20		
Polygala glaucifolia	0.1	5	KTF136-09	
Portulaca oleracea	0.1	15		
Psydrax suaveolens	0.1	70		
Ptilotus exaltatus	0.1	30		
Ptilotus helipteroides	1	20		
Ptilotus roei	0.1	25	KTF136-02	
Rhynchosia minima	0.1	60		
Sclerolaena cornishiana	0.1	25	KTF136-03	
Senna glutinosa subsp. x *luerssenii*	0.1	50		
Senna notabilis	0.1	25		
Senna sp. Karijini (M.E. Trudgen 10392)	0.1	5	KTF136-23	
Sida fibulifera	0.1	20	KTF136-20	
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF136-14	
Solanum lasiophyllum	0.1	50		
Spermacoce brachystema	0.1	20	KTF136-05	
Sporobolus australasicus	0.1	60		
Tribulus astrocarpus	0.1	20	KTF136-15	
Triodia epactia	5	70		
Triodia melvillei	0.1	60	KTF136-12	
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF136-04	
Vincetoxicum lineare	0.1	70		

Site **KTF137**
Described by RM,AL **Date** 27/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 570046 mE, 7540178 mN
Habitat gently sloping S facing slope
Soil Not recorded
Rock Type Ironstone
Vegetation *Eucalyptus gamophylla, Acacia inaequilatera* low open woodland over *Acacia atkinsiana* scattered shrubs over *Triodia wiseana* open hummock grassland over *Fimbristylis simulans* scattered sedges
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^Eucalyptus gamophylla,Acacia inaequilatera\Eucalyptus\^tree\6\bc; M1 ^Acacia atkinsiana\Acacia\^shrub\3\bc; G1+ ^Triodia wiseana\Triodia\^hummock grass\2\i; G3 ^Fimbristylis simulans\Fimbristylis\^sedge\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia atkinsiana	1.5	120	137-06	
Acacia bivenosa	0.1	140		
Acacia inaequilatera	1.5	220		
Aristida holathera var. *holathera*	0.1	40		
Bulbostylis barbata	0.1	7		
Corymbia deserticola subsp. *deserticola*	0.1	320		
Dodonaea coriacea	0.1	100	137-05	
Duperreya commixta	0.1	170		
Dysphania rhadinostachya	0.1	30		
Eriachne ciliata	0.1	15	137-10	
Eriachne pulchella	0.1	15		
Eucalyptus gamophylla	3	320		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	320	137-01	
Fimbristylis simulans	0.5	15		
Gompholobium oreophilum	0.1	5		
Grevillea ? pyrimidalis subsp. *leucadendron*	0.1	20	137-09	juvenile; inadequate material
Hakea lorea subsp. *lorea*	0.1	210		
Paraneurachne muelleri	0.1	30		
Polycarpaea holtzei	0.1	4	KTF135-19=	
Ptilotus calostachyus	0.1	60		
Ptilotus clementii	0.1	25		
Schizachyrium fragile	0.1	15	137-08	
Senna artemisioides subsp. *oligophylla*	0.1	75	137-02	
Senna artemisioides subsp. *oligophylla x ? S. glutinosa* subsp. *glutinosa*	0.1	120	137-04	
Senna glutinosa subsp. *glutinosa*	0.1	130		
Senna glutinosa subsp. *pruinosa*	0.1	130		
Senna notabilis	0.1	15		
Seringia exastia	0.1	50	137-03	
Triodia wiseana	25	60	137-07	



Site **KTF138**
Described by RM,AL **Date** 27/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 574885 mE, 7512338 mN
Habitat Plain.
Soil Not recorded.
Rock Type Ironstone.
Vegetation *Acacia pteraneura, A pruinocarpa* low open forest over *Eremophila fraseri* subsp. *fraseri, Senna glutinosa* subsp. *glutinosa* scattered tall shrubs over *Triodia epactia* open hummock grassland over *Eriachne pulchella, Chrysopogon fallax, Enneapogon polyphyllus, Aristida contorta* very open tussock grassland
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^Acacia pteraneura,Acacia pruinocarpa\Acacia\^tree\6\c; M1 ^Eremophila fraseri subsp. fraseri,Senna glutinosa subsp. glutinosa\Eremophila\^shrub\4\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\1\i; G2 ^Eriachne pulchella,Chrysopogon fallax,Enneapogon polyphyllus,Aristida contorta\Eriachne\^other grass\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	70		
Abutilon lepidum	0.1	60	KTF138-06	Sens. Lat
Abutilon otocarpum	0.1	15	KTF138-16	
Acacia atkinsiana	0.1	160	KTF137-06=	
Acacia pruinocarpa	10	420		
Acacia pteraneura	25	400	KTF138-01	
Acacia sclerosperma subsp. *sclerosperma*	0.1	230	KTF138-03	
Areocleome oxalidea	0.1	5		
Aristida contorta	0.5	50		
Aristida contorta	0.1	25	KTF136-01=	
Aristida inaequiglumis	0.1	70	KTF138-17	
Aristida latifolia	0.1	50	KTF138-20	
Bidens bipinnata	0.1	30		
Chrysopogon fallax	1	50		
Corchorus tridens	0.1	5		
Cullen leucochaites	0.1	60	KTF138-24	
Dichanthium sericeum	0.1	30		
Digitaria brownii	0.1	60		
Duperreya commixta	0.1	210		
Dysphania rhadinostachya	0.1	15		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.5	25		
Eremophila fraseri subsp. *fraseri*	1.5	320		
Eremophila latrobei	0.1	90		
Eriachne aristidea	0.1	25		
Eriachne pulchella	1.5	15		
Euphorbia australis var. *hispidula*	0.1	5	KTF138-26	
Euphorbia australis var. *hispidula*	0.1	30	KTF138-27	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena kanisii	0.1	30	KTF138-15	
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	30	KTF138-22	
Goodenia nuda	0.1	10	KTF138-	

Name	Cover (%)	Height (cm)	Specimen	Notes
			02=	
Goodenia nuda	0.1	30	KTF138-02	
Grona muelleri	0.1	10	KTF138-19	
Hakea lorea subsp. *lorea*	0.1	450	KTF138-14	
Heliotropium heteranthum	0.1	5	KTF138-04	
Hibiscus burtonii	0.1	60		
Hibiscus sturtii var. *grandiflorus*	0.1	50	KTF138-21	
Indigofera monophylla	0.1	60		
Iseilema membranaceum	0.1	15	KTF138-30	
Iseilema vaginiflorum	0.1	30	KTF138-29	Sens. Lat.
Maireana planifolia	0.1	20	KTF138-10	
Malvastrum americanum	0.1	30	N=1	
Melhania oblongifolia	0.1	30		
Panicum decompositum	0.1	30		
Paraneurachne muelleri	0.1	30		
Paspalidium ? basicladum	0.1	30	KTF138-13	
Peripleura arida	0.1	40	KTF138-23	
Peripleura obovata	0.1	25	KTF138-28	
Peripleura virgata	0.1	30	KTF138-18	
Perotis rara	0.1	15		
Phyllanthus maderaspatensis	0.1	60		
Polygala glaucifolia	0.1	5	KTF136-09=	
Portulaca oleracea	0.1	15		
Pterocaulon serrulatum	0.1	50		
Ptilotus clementii	0.1	170		
Ptilotus exaltatus	0.1	60		
Ptilotus fusiformis	0.1	40	KTF138-09	ptilotus fusiformis
Ptilotus helipteroides	0.1	40		
Rhynchosia minima	0.1	30		
Salsola australis	0.1	40		
Sclerolaena cornishiana	0.1	15	KTF138-08	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	70	KTF138-12	
Senna glutinosa subsp. *glutinosa*	0.5	180		
Senna glutinosa subsp. x *luerssenii*	1.5	160		
Senna stricta x *S. glutinosa* subsp. *glutinosa*	0.1	130	KTF138-05	
Sida echinocarpa	0.1	50	KTF138-11	
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF136-14=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60	KTF135-09=	
Solanum horridum	0.1	30		
Solanum lasiophyllum	0.1	50		
Sporobolus australasicus	0.1	25		
Streptoglossa decurrens	0.1	25		
Tephrosia sp. Newman (A.A. Mitchell PRP 29) PN	0.1	30	KTF138-25	
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	28	40		
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF138-07	
Vincetoxicum lineare	0.1	70		

Site **KTF139**
Described by RM,AL **Date** 27/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 574948 mE, 7510131 mN
Habitat Clay plain with crabholes.
Soil Not recorded.
Rock Type Ironstone.
Vegetation *Eremophila maculata* subsp. *brevifolia, Acacia synchronicia, Enchylaena tomentosa* low shrubland over *Triodia angusta* scattered hummock grasses over *Astrebla pectinata, Cynodon convergens, Dichanthium sericeum* scattered grasses over *Flaveria trinervia, Rhynchosia minima* scattered herbs
Veg Condition Excellent, Very Good. some cattle scats
Fire Age No sign of recent fire.
Notes M1+ ^Eremophila maculata subsp. brevifolia,Acacia synchronicia,Enchylaena tomentosa\Eremophila\^shrub\2\i; G1 ^Triodia angusta\Triodia\^hummock grass\1\bc; G2 ^Astrebla pectinata,Diachanthium sericeum\Astrebla\^other grass\2\r; G3 ^Flaveria trinervia,Rhynchosia minima\Flaveria

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ? victoriae	0.1	60	KTF139-19	Inadequate material
Acacia synchronicia	1	80	KTF139-06	
Acacia xiphophylla	0.1	180		
Aristida contorta	0.1	30		
Aristida latifolia	0.1	70		
Aristida latifolia	0.1	60	KTF139-24	
Astrebla pectinate	5	60	KTF139-04	
Boerhavia paludosa	0.1	30		
Cenchrus ciliaris	0.1	30		
Corchorus tridens	0.1	15		
Crotalaria dissitiflora subsp. benthamiana	0.1	25	KTF139-10	
Cucumis picrocarpus	0.1	70		
Cynodon convergens	3	15	KTF139-26A	
Dactyloctenium radulans	0.1	15		
Dichanthium sericeum	2	30		
Dissocarpus paradoxus	0.1	40	KTF139-03	
Enchylaena tomentosa	0.5	70		
Enneapogon caerulescens	0.1	30		
Eragrostis eriopoda	0.1	15	KTF139-11	
Eragrostis xerophila	0.1	45	KTF139-26B	
Eremophila maculata subsp. brevifolia	11	70	KTF139-02	
Flaveria trinervia	15	50	KTF139-22	
Goodenia Pascua	0.1	15	KTF139-08	
Hibiscus verdcourtii	0.1	40	KTF139-14	
Iseilema vaginiflorum	0.1	30	KTF139-25	Sens. Lat
Neptunia dimorphantha	0.1	30		
Operculina aequisepala	0.1	20		
Panicum laevinode	0.1	40	KTF139-16	
Polymeria longifolia	0.1	20	KTF139-12	
Portulaca oleracea	0.1	10		
Ptilotus exaltatus	0.1	45		
Ptilotus exaltatus	0.1	30		
Rhagodia eremaea	0.1	40		
Rhynchosia minima	1	30	KTF139-05	

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	50		
Salsola australis	0.1	30		
Sclerolaena bicornis var. bicornis	0.1	30	KTF139-20	
Senna hamersleyensis	0.1	30	KTF139-17	
Senna sp. Karijini (M.E. Trudgen 10392)	0.1	60	KTF139-07	
Sida ? laevis	0.1	25	KTF139-09	Sterile; inadequate material
Sida fibulifera	0.1	25	KTF139-21	
Sida sp.	0.1	20	KTF139-15	Inadequate material
Sporobolus australasicus	0.1	20	KTF139-18	
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	25	KTF139-23	
Swainsona thompsoniana	0.1	15	KTF139-13	
Trianthema triquetrum	0.1	40		
Triodia angusta	1.5	40	KTF139-01	
Urochloa occidentalis var. occidentalis	0.1	15	KTF138-07=	

Site **KTF140**
Described by RM,AL **Date** 28/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 567734 mE, 7563361 mN
Habitat Floodplain.
Soil Dark reddish brown.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* subsp. *aprica, Grevillea pyramidalis, Acacia ancistrocarpa, A. bivenosa, Gossypium australe* tall shrubland over *Triodia epactia hummock grassland over Cenchrus ciliaris, C. setiger* very open grassland *over Ptilotus exaltatus* scattered herbs
Veg Condition Very Good. Cattle scats.
Fire Age Burnt 3-5 years ago.
Notes U1 ^Corymbia hamersleyana\Corymbia\^tree\6\bc; M1 ^Grevillea wickhamii subsp. aprica,Grevillea pyramidalis,Acacia ancistrocarpa,Acacia bivenosa,Gossypium australe\Grevillea\^shrub\3\i; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Cenchrus ciliaris,Cenchrus setiger\Cenchrus\^other grass\2\r; G3 ^Ptilotus exaltatus\Ptilotus\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40	KTF140-08	
Acacia ancistrocarpa	2.5	120		
Acacia atkinsiana	0.1	120	KTF137-06=	
Acacia bivenosa	1.5	120		
Acacia dictyophleba	0.1	190	KTF140-01	
Acacia melleodora	0.1	180	KTF140-02	
Acacia pyrifolia var. *pyrifolia*	0.5	180		
Aristida contorta	0.1	40	KTF140-04	
Aristida holathera var. *holathera*	0.1	40		
Aristida inaequiglumis	0.1	70	KTF140-30	
Arivela viscosa	0.1	60		
Boerhavia coccinea	0.1	25		
Bonamia erecta	0.1	25	KTF140-21	
Cenchrus ciliaris	4.5	60		
Cenchrus setiger	4.5	60		
Chrysopogon fallax	0.1	40		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF140-18	
Corchorus tridens	0.1	20		
Corymbia hamersleyana	1	450		
Crotalaria medicaginea var. *neglecta*	0.1	25	KTF140-10	
Cullen leucanthum	0.1	90	KTF140-28	Sens. Lat
Enneapogon caerulescens	0.1	30		
Eragrostis eriopoda	0.1	30	KTF140-06	
Eragrostis tenellula	0.1	25		
Eriachne aristidea	0.1	30		
Eriachne mucronata (typical form)	0.1	40	KTF140-05	
Euphorbia australis var. *subtomentosa*	0.1	25	KTF140-29	
Euphorbia biconvexa	0.1	15	KTF140-23	
Euphorbia tannensis subsp. *eremophila*	0.1	50	KTF140-26	
Euphorbia vaccaria var. *erucoides*	0.1	15	KTF140-15	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena cunninghamii	0.1	15	KTF140-25	
Goodenia forrestii	0.1	30	KTF140-20	Sens. lat
Goodenia microptera	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Gossypium australe	1.5	110		
Gossypium australe (Burrup Peninsula Form)	0.1	110	KTF140-22	
Gossypium robinsonii	0.1	170		
Grevillea pyramidalis	1.5	190		
Grevillea pyramidalis subsp. *Leucadendron*	0.1	190	KTF140-11	
Grevillea wickhamii subsp. aprica	7	240	KTF140-13	
Hakea lorea subsp. *lorea*	0.1	160		
Heliotropium cunninghamii	0.1	25	KTF140-17	
Heliotropium pachyphyllum	0.1	40	KTF140-27	
Hibiscus sturtii var. *platychlamys*	0.1	60	KTF140-12	
Indigofera monophylla	0.1	60		
Melhania oblongifolia	0.1	50		
Notoleptopus decaisnei	0.1	15		
Paraneurachne muelleri	0.1	30		
Phyllanthus maderaspatensis	0.1	30		
Polycarpaea corymbosa var. *corymbosa*	0.1	15		
Polymeria ambigua	0.1	30	KTF140-16	Sens. Lat
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	1	75		
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	120	KTF140-09	
Sida fibulifera	0.1	25	KTF140-24	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80	KTF140-19	Ferruginous form
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40	KTF140-03	
Trianthema pilosum	0.1	30		
Tribulus hirsutus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	90		
Triodia epactia	32	60		
Triumfetta clementii	0.1	40	KTF140-07	t
Yakirra australiensis var. *australiensis*	0.1	15	KTF140-14	

Site **KTF141**
Described by RM,AL **Date** 28/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 568416 mE, 7562772 mN
Habitat Floodplain.
Soil Dark reddish brown.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. bivenosa, A. trachycarpa, Senna artemisioides* subsp. *oligophylla, Eremophila forrestii* open heath over *Ptilotus astrolasius, Ptilotus obovatus* var. *obovatus* low open shrubland over *Triodia epactia* very open hummock grassland over *Ptilotus exaltatus* scattered herbs
Veg Condition Very Good. Cattle scats
Fire Age Burnt 3-5 years ago.
Notes U1 ^Corymbia hamersleyana\Corymbia\^tree\6\bc; M1+ ^Acacia ancistrocarpa,Acacia bivenosa,Acacia trachycarpa,Senna artemisioides subsp. oligophylla,Eremophila forrestii\Acacia\^shrub\3\c; M2 ^Ptilotus astrolasius,Ptilotus obovatus var. obovatus\Ptilotus\^shrub\1\bc; G1 ^Triodia epactia\Triodia\^hummock grass\2\bc; G2 ^Ptilotus exaltatus\Ptilotus\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	60	KTF141-07	Sens. lat.
Acacia ancistrocarpa	12	120		
Acacia bivenosa	10	140		
Acacia trachycarpa	10	130		
Aristida holathera var. holathera	0.1	40		
Aristida inaequiglumis	0.1	70	KTF140-30=	
Arivela viscosa	0.1	60		
Boerhavia coccinea	0.1	25		
Bonamia erecta	0.1	25	KTF140-21=	
Cenchrus ciliaris	0.1	60		
Cenchrus setiger	0.1	60		
Corchorus lasiocarpus subsp. parvus	0.1	60	KTF140-18=	
Corymbia hamersleyana	1	450		
Dysphania rhadinostachya	0.1	15		
Eragrostis eriopoda	0.1	30	KTF140-06=	
Eremophila forrestii	0.5	120		
Eremophila forrestii subsp. forrestii	0.1	60	KTF141-08	
Eriachne aristidea	0.1	30		
Eulalia aurea	0.1	80		
Euphorbia biconvexa	0.1	15	KTF140-23=	
Euphorbia tannensis subsp. eremophila	0.1	50	KTF140-26=	
Euphorbia vaccaria var. vaccaria	0.1	5	KTF141-09	
Goodenia forrestii	0.1	30	KTF140-20=	Sens. lat.
Goodenia microptera	0.1	30		
Gossypium australe (Burrup Peninsula Form)	0.1	110	KTF140-22=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Grevillea wickhamii subsp. aprica	0.1	5	KTF140-13=	
Hakea lorea subsp. lorea	0.1	340		
Heliotropium inexplicitum	0.1	15	KTF141-03	
Hibiscus sturtii var. grandiflorus	0.1	80	KTF141-06	
Hibiscus sturtii var. platychlamys	0.1	60	KTF140-12=	
Indigofera monophylla	0.1	70		
Paraneurachne muelleri	0.1	30		
Polymeria ambigua	0.1	30	KTF140-16=	Sens. Lat
Portulaca oleracea	0.1	30		
Ptilotus astrolasius	2	50		
Ptilotus calostachyus	0.1	70		
Ptilotus exaltatus	1	65		
Ptilotus fusiformis	0.1	15	KTF138-09=	
Ptilotus obovatus var. obovatus	0.5	40		
Scaevola spinescens	0.1	80		
Senna artemisioides subsp. oligophylla x subsp. helmsii	4	120	KTF140-09=	
Sida arsiniata	0.1	50	KTF141-02	
Sida echinocarpa	0.1	60	KTF141-05	
Sida fibulifera	0.1	25	KTF140-24=	
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40	KTF140-03=	
Trianthema pilosum	0.1	30		
Tribulus hirsutus	0.1	25		
Tribulus macrocarpus	0.1	30	KTF141-04	
Triodia epactia	4	60		
Yakirra australiensis var. australiensis	0.1	15	KTF141-01	

Site **KTF142**

Described by RM,AL **Date** 28/03/2021

Type Quadrat 50 x 50 m

MGA Zone 50 570798 mE, 7541979 mN

Habitat Crest of low hill.

Soil Dark reddish brown.

Rock Type Ironstone.

Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia atkinsiana* tall open shrubland over *Seringia exastia* low open shrubland over *Triodia wiseana* open hummock grassland over *Paraneurachne muelleri* scattered tussock grasses.

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes U1 ^Eucalyptus leucophloia subsp. leucophloia\Eucalyptus\^tree\6\bc; M1 ^Acacia atkinsiana\Acacia\^shrub\4\bc; M2 ^Seringia exastia\Seringia\^shrub\2\bc; G1+ ^Triodia wiseana\Triodia\^hummock grass\2\i; G2 ^Paraneurachne muelleri\Paraneurachne\^other grass\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia atkinsiana	4	250	KTF137-06=	
Amphipogon sericeus	0.1	30	KTF142-11	
Aristida holathera var. *holathera*	0.1	60	KTF142-06	
Aristida holathera var. *holathera*	0.1	60	KTF142-04	
Aristida inaequiglumis	0.1	60	KTF142-13	
Clerodendrum floribundum var. *angustifolium*	0.1	180	KTF142-01	
Corchorus crozophorifolius	0.1	70		
Dodonaea coriacea	0.1	60	KTF142-07	
Enneapogon polyphyllus	0.1	30	KTF142-03	
Eriachne mucronata (typical form)			KTF140-05=	
Eriachne pulchella	0.1	15		
Eucalyptus leucophloia subsp. *leucophloia*	1.5	550		
Fimbristylis simulans	0.1	15		
Gompholobium oreophilum	0.1	50		
Goodenia microptera	0.1	10		
Goodenia stobbsiana	0.1	60		
Grevillea wickhamii	0.1	90		
Hakea lorea subsp. *lorea*	0.1	60		
Hibiscus sturtii var. *campylochlamys*	0.1	20	KTF142-09	
Paraneurachne muelleri	0.5	30		
Polycarpaea holtzei	0.1	5		
Ptilotus calostachyus	0.1	80		
Ptilotus fusiformis	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	75		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna notabilis	0.1	30		
Seringia exastia	4	60	KTF142-10	
Sida arenicola	0.1	150	KTF142-02	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	25	KTF142-08	
Themeda triandra	0.1	60	KTF142-05	
Triodia wiseana	25	60		

Site **KTF143**
Described by RM,AL **Date** 29/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 571180 mE, 7560137 mN
Habitat broad braided drainage line.
Soil Not recorded.
Rock Type Ironstone.
Vegetation *Eucalyptus victrix, Atalaya hemiglauca* low woodland over *Trichodesma zeylanicum* var. *zeylanicum* open shrubland/herbland over *Triodia epactia* hummock grassland over **Cenchrus ciliaris*, **C. setiger* open grassland
Veg Condition Very Good. Buffel, signs of cattle.
Fire Age No sign of recent fire.
Notes U1 ^Eucalyptus victrix,Atalya hemiglauca\Eucalyptus\^tree\6\i; M1 ^Trichodesma zeylanicum var. zeylanicum\Trichodesma\^shrub\3\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Cenchrus ciliaris,Cenchrus setiger\Cencrhus\^other grass\2\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia dictyophleba	0.1		KTF140-01=	
Acacia pyrifolia	0.1	130		
Arivela viscosa	0.1	35		
Atalaya hemiglauca	8	420		
Boerhavia coccinea	0.1	30		
Cenchrus ciliaris	10	70		
Cenchrus setiger	10	60		
Corchorus crozophorifolius	0.1	60		
Corchorus crozophorifolius	0.1	95		
Crotalaria medicaginea var. *neglecta*	0.1	30	KTF143-07	
Cucumis variabilis	0.1	60		
Cymbopogon ambiguus	0.1	60	KTF143-13	
Cynodon convergens	0.1	30		
Eriachne mucronata	0.1	50		
Eriachne tenuiculmis	0.1	60	KTF143-01	
Eucalyptus victrix	12	650		
Euphorbia australis var. *subtomentosa*	0.1	30	KTF143-06	
Euphorbia tannensis subsp. *eremophila*	0.1	60	KTF143-12	
Euphorbia trigonosperma	0.1	50	KTF143-05	
Goodenia forrestii	0.1	25	KTF143-11	Sens. Lat
Hakea lorea subsp. *lorea*	0.1	60		
Heliotropium cunninghamii	0.1	20	KTF143-04	
Indigofera colutea	0.1	25	KTF143-02	
Indigofera monophylla	0.1	50		
Ipomoea muelleri	0.1	25	KTF143-09	
Notoleptopus decaisnei	0.1	35		
Pentalepis trichodesmoides subsp. *trichodesmoides*			ALRM01=	
Polymeria longifolia	0.1	30		
Pterocaulon sphacelatum	0.1	30	KTF143-08	
Ptilotus exaltatus	0.1	50		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	60		
Solanum diversiflorum	0.1	25		
Striga curviflora	0.1	25	KTF143-10	

Name	Cover (%)	Height (cm)	Specimen	Notes
Tephrosia densa	0.1	50		
Themeda triandra	0.1	70		
Trianthema pilosum	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	2.5	160		
Triodia epactia	45	75		
Triumfetta chaetocarpa	0.1	20	KTF143-03	

Site **KTF144**
Described by RM,AL **Date** 29/03/2021
Type Quadrat 50 x 50 m
MGA Zone 50 570440 mE, 7560916 mN
Habitat Broad braided drainage line.
Soil Not recorded.
Rock Type Ironstone.
Vegetation *Eucalyptus victrix, Atalaya hemiglauca* low woodland over *Grevillea wickhamii* open shrubland over *Corchorus crozophorifolius* low open shrubland over *Triodia epactia* open hummock grassland over *Eriachne tenuiculmis*, **Cenchrus ciliaris, *C. setiger* very open grassland
Veg Condition Very Good. Buffel, signs of cattle.
Fire Age No sign of recent fire.
Notes U1 ^Eucalyptus victrix,Atalya hemiglauca\Eucalyptus\^tree\6\i; M1 ^Grevillea wickhamii\Grevillea\^shrub\3\bc; M2 ^Corchorus crozophorifolius\Corchorus\^shurb\2\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\i; G2 ^Eriachne tenuiculmis,Cenchrus ciliaris,Cenchrus setiger\Eriachne\^other grass\1\r

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	35		
Acacia pyrifolia var. *pyrifolia*	0.1	130		
Afrohybanthus aurantiacus	0.1	60		
Arivela viscosa	0.1	35		
Atalaya hemiglauca	1	420		
Boerhavia coccinea	0.1	30		
Bonamia pilbarensis	0.1	25	KTF144-04	
Cenchrus ciliaris	0.5	70		
Cenchrus setiger	0.5	60		
Corchorus crozophorifolius	5	90		
Cucumis variabilis	0.1	60		
Cynodon convergens	0.1	30		
Enneapogon lindleyanus	0.1	80	KTF144-05	
Eriachne pulchella	0.1	15		
Eriachne tenuiculmis	6.5	40	KTF144-01	
Eucalyptus victrix	11	650		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF143-06=	
Euphorbia biconvexa	0.1	60	KTF144-02	
Euphorbia boophthona	0.1		KTF143-12=	
Euphorbia tannensis subsp. *eremophila*	0.1	60	KTF143-12=	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena cunninghamii	0.1	25	KTF144-03	
Grevillea wickhamii	2.5	190		
Hakea lorea subsp. *lorea*	0.1	120		
Indigofera monophylla	0.1	50		
Notoleptopus decaisnei	0.1	50		
Phyllanthus maderaspatensis	0.1	30		
Polycarpaea holtzei	0.1	5		
Polymeria longifolia	0.1	30		
Ptilotus exaltatus	0.1	70		
Rhynchosia minima	0.1	60		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.1	110		
Tephrosia densa	0.1	70		
Trianthema pilosum	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	0.1	160		
Triodia epactia	25	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triumfetta chaetocarpa	0.1	60	KTF143-03=	
Vachellia farnesiana	0.1	150		
Waltheria indica	0.1	60		

Site **KTF145**

Described by RM,AL **Date** 29/03/2021

Type Quadrat 50 x 50 m

MGA Zone 50 570541 mE, 7539478 mN

Habitat Plain.

Soil Dark-reddish brown.

Rock Type Ironstone.

Vegetation *Corymbia deserticola, Acacia aptaneura* low open woodland over *Acacia ancistrocarpa* (*Senna glutinosa* subsp. *glutinosa*) shrubland over *Triodia epactia, Triodia wiseana* hummock grassland

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes

U1 ^Corymbia deserticola,Acacia aptaneura\Corymbia\^tree\6\bc; M1 ^Acacia ancistrocarpa),Senna glutinosa subsp.glutinosa)\Acacia\^shrub\3\i; G1+ ^Triodia epactia,Triodia wiseana\Triodia\^hummock grass\2\c

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	60 cm		
Acacia ancistrocarpa	25	170 cm		
Acacia aptaneura	0.5	320 cm		
Acacia bivenosa	0.1	90 cm		
Acacia cowleana	0.1	120 cm	KTF145-08	
Acacia pruinocarpa	0.1	280 cm		
Acacia pyrifolia var. pyrifolia	0.1	90 cm		
Aristida holathera var. *holathera*	0.1	30 cm		
Corymbia deserticola subsp. *deserticola*	1.5	500 cm		
Cymbopogon obtectus	0.1	60 cm	KTF145-05	
Duperreya commixta	0.1	90 cm		
Eriachne pulchella	0.1	25 cm		
Eulalia aurea	0.1	60 cm		
Hakea lorea subsp. *lorea*	0.1	280 cm		
Heliotropium pachyphyllum	0.1	30 cm	KTF145-07	
Jasminum didymum subsp. *lineare*	0.1	90 cm		
Paraneurachne muelleri	0.1	30 cm		
Peripleura obovata	0.1	35 cm	KTF145-02	
Polycarpaea holtzei	0.1	5 cm		
Psydrax suaveolens	0.1	90 cm		
Ptilotus calostachyus	0.1	60 cm		
Ptilotus exaltatus	0.1	50 cm		
Scaevola parvifolia subsp. *pilbarae*	0.1	25 cm	KTF145-01	
Senna artemisioides subsp. *oligophylla* x *? S. glutinosa* subsp. *glutinosa*	0.1	70 cm	KTF145-04	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	60 cm	KTF145-06	
Senna glutinosa subsp. *glutinosa*	1	110 cm		
Senna glutinosa subsp. x *luerssenii*	0.1	110 cm		
Senna notabilis	0.1	5 cm		
Seringia ? exastia	0.1	50 cm	KTF145-09	Insufficient material
Solanum lasiophyllum	0.1	60 cm		
Triodia epactia	25	60 cm		
Triodia wiseana	7	60 cm	KTF145-03	
Vincetoxicum lineare	0.1	70 cm		

Site **KTFREL01**
Described by BRMMG **Date** 19/4/2020
Type Relevé 50 x 50 m
Central Coord 50 572063 mE, 7516886 mN
Habitat Plain.
Soil Dark reddish brown (2.5YR 2.5/4) sandy clay loam.
Rock Type Ironstone, quartz.
Vegetation *Acacia aptaneura* scattered low trees over *A. tetragonophylla* scattered tall shrubs over *Eremophila fraseri* subsp. *fraseri* scattered shrubs over *Triodia epactia* open hummock grassland over *Eragrostis pergracilis*, (*E. cumingii*) very open bunch grassland.
Veg Condition Excellent; a few **Bidens*.
Fire Age No sign of recent fire.
Notes Small patches of surrounding area burnt within last 1-2 years.
U1 ^*Acacia aptaneura*\^tree\6\bi;M1 ^Acacia *tetragonophylla*\^shrub\4\bi;M2 *Eremophila fraseri* subsp. *fraseri*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Eragrostis pergracilis,Eragrostis cumingii*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	12		
Acacia aptaneura	1	350	KTF01-04=	
Acacia tetragonophylla	0.5	300		
Aristida contorta	0.1	20		
Arivela viscosa	0.1	40		
Bidens bipinnata	0.1	30	KTF01-26=	N=10.
Blumea tenella	0.1	30	KTF01-07=	
Boerhavia coccinea	0.1	30	REL01-05	
Bulbostylis turbinata	0.1	10	REL01-12	
Calandrinia sp.	0.1	5	KTF01-09=	Sterile.
Cheilanthes sieberi subsp. *sieberi*	0.1	30	KTF01-08=	
Chloris pectinata	0.1	30	KTF01-30=	
Chrysopogon fallax	0.1	130		
Cucumis variabilis	0.1	50		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria ctenantha	0.1	35	REL01-04	
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30	KTF01-14=	
Eragrostis cumingii	2	20		
Eragrostis pergracilis	7	20		
Eremophila fraseri subsp. *fraseri*	1	160	REL01-06	
Eriachne pulchella	0.1	20		
Eulalia aurea	0.1	35		
Euphorbia ferdinandii var. *ferdinandii*	0.1	25	REL01-01	Formal ID by M. Hislop (WAH) KTP01-10=.
Euphorbia biconvexa	0.1	30	REL01-02	
Euphorbia boophthona	0.1	15	REL01-15	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena canescens subsp. *canescens*	0.1	20	REL01-07	
Gomphrena lanata	0.1	12	REL01-11	
Goodenia muelleriana	0.1	15	KTF01-06=	
Grevillea berryana	0.1	250	REL01-08	

Name	Cover (%)	Height (cm)	Specimen	Notes
Hibiscus burtonii	0.1	20		
Iseilema membranaceum	0.1	20	KTF01-34=	
Nicotiana simulans	0.1	50	KTF01-25=	Formal ID by M. Hislop (WAH) 03-29=
Panicum effusum	0.1	60	REL01-13	
Paspalidium rarum	0.5	30	REL01-03	
Perotis rara	0.1	15		
Portulaca oleracea/intraterranea	0.1	3		
Pterocaulon sphacelatum	0.1	30	KTF01-40=	
Ptilotus auriculifolius	0.1	30		
Ptilotus exaltatus	0.1	6		
Ptilotus fusiformis	0.1	45		
Ptilotus gaudichaudii	0.1	30		
Ptilotus helipteroides	0.1	15		
Ptilotus polystachyus	0.1	35		
Ptilotus roei	0.1	5	KTF01-35=	
Ptilotus schwartzii var. *schwartzii*	0.1	30	REL01-14	
Ptilotus xerophilus	0.1	20	KTF01-32=	
Roebuckiella similis	0.1	25	REL01-09	
Senna notabilis	0.1	20		
Solanum ferocissimum	0.1	20	KTF01-17=	
Spermacoce brachystema	0.1	20	KTF01-19=	
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	15	KTF01-21=	
Themeda triandra	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	20	40	KTF01-05=	

Site **KTFREL02**

Described by BRM/RM **Date** 24/5/2020

Type Relevé 72 x 35 m

Central Coord 50 568092 mE, 7538780 mN

Habitat Moderate creek with stony bed, flowing NW/SE.

Soil Dark reddish brown sandy loam.

Rock Type Ironstone.

Vegetation *Corymbia hamersleyana* low open woodland over *Clerodendrum* floribundum var. *angustifolium* scattered tall shrubs over *Acacia pyrifolia* var. *pyrifolia scattered* shrubs over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), (*Corchorus lasiocarpus* subsp. *parvus*) low open shrubland over *Triodia epactia* very open hummock grassland and *Cymbopogon ambiguus* very open tussock grassland.

Veg Condition Excellent.

Fire Age No sign of recent fire.

Notes U1+ ^*Corymbia hamersleyana*\^tree\6\r;M1 *Clerodendrum floribundum* var. *angustifolium*\shrub\4\bi;M2 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M3 ^*Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Corchorus lasiocarpus* subsp. *parvus*\^shrub\2\r;G1 ^*Cymbopogon ambiguus*\^tussock grass\3\r;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	50	REL02-09	
Acacia pyrifolia var. *pyrifolia*	1	130		
Afrohybanthus aurantiacus	0.1	25		
Alternanthera nana	0.1	20	REL02-11	
Arivela viscosa	0.1	40		
Boerhavia coccinea	0.1	30	REL02-08	
Bonamia pilbarensis	0.1	20	REL02-06	
Clerodendrum floribundum var. *angustifolium*	0.5	280	REL02-04	
Corchorus lasiocarpus subsp. *parvus*	3	90	REL02-02	
Corymbia hamersleyana	5	800		
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cymbopogon ambiguus	4	110		Procerus form.
Dodonaea lanceolata var. *lanceolata*	0.1	70	REL02-10	
Duperreya commixta	0.1	200		
Eriachne tenuiculmis	0.5	60		
Euphorbia biconvexa	0.1	30	REL02-03	
Euphorbia tannensis subsp. *eremophila*	0.1	20	REL02-05	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia stobbsiana	0.1	30		
Gossypium robinsonii	0.1	70		
Grevillea pyramidalis subsp. *leucadendron*	0.1	180		
Grevillea wickhamii subsp. *hispidula*	0.1	230		
Indigofera monophylla	0.1	40		
Jasminum didymum subsp. *lineare*	0.1	110		
Notoleptopus decaisnei	0.1	20		
Phyllanthus maderaspatensis	0.1	35		
Polycarpaea longiflora	0.1	30		

Ptilotus astrolasius	0.1	30		
Ptilotus fusiformis	0.1	30		
Santalum lanceolatum	0.1	70		
Scaevola spinescens	0.1	60		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	40	REL02-07	Closer to straight subsp. *helmsii*, but not quite right.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	7	90		
Themeda triandra	0.1	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	5	30	REL02-01	
Waltheria indica	0.1	70	REL02-12	

Site **KTFREL04**
Described by RM/SY **Date** 19/4/2020
Type Relevé 25 x 40 m
Central Coord 50 571020 mE, 7520593 mN
Habitat Plain gently sloping to W.
Soil Dark reddish brown silty clay.
Rock Type Quartz.
Vegetation *Acacia aptaneura* low open woodland over *A. tetragonophylla* scattered tall shrubs over *Eriachne benthamii* tussock grassland with **Bidens bipinnata* scattered herbs.
Veg Condition Very Good: scattered **Bidens*.
Fire Age No sign of recent fire.
Notes U1+ ^*Acacia aptaneura*\^tree\6\r;M1 ^*Acacia tetragonophylla*\^shrub\4\bi;G1 ^*Eriachne benthamii*\^tussock grass\1\c;G2 *Bidens bipinnata*\forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia aptaneura	9	800	REL04-01	
Acacia tetragonophylla	2	650	KTF05-14=	
Areocleome oxalidea	0.1	10	KTF05-01=	
Aristida obscura	0.1	60	REL04-21	
Bidens bipinnata	0.5	30		N=30.
Blumea tenella	0.1	20	REL04-17	N=20.
Bulbostylis barbata	0.1	10	REL04-02	
Bulbostylis turbinata	0.1	10	REL04-29	
Calandrinia pumila	0.1	20	REL04-25	Formal ID by M. Hislop (WAH)
Calandrinia sp.	0.1	5	REL04-03	Sterile.
Centipeda minima subsp. *macrocephala*	0.1	10	REL04-16	
Cheilanthes sieberi subsp. *sieberi*	0.1	10	REL04-09	
Convolvulus clementii	0.1	70	REL04-11	
Cucumis picrocarpus	0.1	30	REL04-24	
Cucumis variabilis	0.1	70	REL04-20	
Dysphania glomulifera subsp. *eremaea*	0.1	15	REL04-14	
Eragrostis pergracilis	0.1	20	REL04-04	
Eriachne benthamii	65	90	BS02b	
Euphorbia drummondii	0.1	15	REL04-07	
Evolvulus alsinoides	0.1	10	KTF05-21=	Sterile.
Gomphrena lanata	0.1	15	REL04-28	
Goodenia muelleriana	0.1	10	REL04-12	
Goodenia prostrata	0.1	30	KTF06-05=	
Grevillea berryana	0.5	120	KTF05-16=	
Haloragis sp.	0.1	30	REL04-18	Inadequate material.
Mnesithea formosa	0.1	60	REL04-23	
Nicotiana simulans (type 2)	0.1	60	REL04-15	Formal ID by M. Hislop (WAH).
Perotis rara	0.1	20	REL04-13	
Phyllanthus erwinii	0.1	10	REL04-10	
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus gaudichaudii	0.1	50	KTF05-08=	
Ptilotus helipteroides	0.1	10	KTF05-23=	

Ptilotus xerophilus	0.1	40	REL04-19	
Roebuckiella similis	0.1	20	REL04-06	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	20	REL04-27	Closer to straight subsp. *helmsii*, but not quite right.
Sida platycalyx	0.1	30	REL04-26	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	REL04-05	
Spermacoce brachystema	0.1	20	REL04-08	
Streptoglossa bubakii	0.1	5	REL04-22	

Site **KTFREL05**

Described by RM/SY **Date** 20/4/2020

Type Relevé 25 x 40 m

Central Coord 50 571100 mE, 7519422 mN

Habitat Plain gently sloping to west

Soil Dark reddish brown silty clay.

Vegetation *Acacia aptaneura* low woodland over *Triodia epactia* scattered hummock grasses with *Aristida obscura* scattered tussock grasses and **Bidens bipinnata* open herbland.

Veg Condition Very Good: some weeds; evidence of cattle.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia aptaneura*\^tree\6\i;G1 ^*Bidens bipinnata*\^forb\1\i;G2 *Triodia epactia,Aristida* obscura\hummock grass,tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50	REL05-07	
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266) PN	0.1	15	REL05-36	
Acacia aptaneura	15	800	REL05-01	
Acacia tetragonophylla	0.5	400	KTF05-14=	
Areocleome oxalidea	0.1	10	REL05-32	
Aristida obscura	1	60	REL05-10	
Arivela viscosa	0.1	80		
Bidens bipinnata	2	30		N=30.
Blumea tenella	0.1	20	REL04-17=	N=2.
Bulbostylis barbata	0.1	10	REL04-02=	
Calandrinia sp.	0.1	3	REL04-03=	Sterile.
Cheilanthes sieberi subsp. *sieberi*	0.1	15	REL04-09=	
Convolvulus clementii	0.1	40	REL05-37	
Cucumis melo	0.1	30	REL05-03	
Cucumis picrocarpus	0.1	40	REL04-24=	
Cucumis variabilis	0.1	70	REL04-20=	
Dichanthium sericeum subsp. *humilius*	0.1	40	REL05-25	
Dodonaea petiolaris	0.1	50	REL05-23	
Dysphania kalpari	0.1	20	REL05-34	
Enneapogon polyphyllus	0.1	30	REL05-28	
Eremophila forrestii x *latrobei*	0.1	90	REL05-12	
Eriachne benthamii	60	90	BS02b=	
Euphorbia biconvexa	0.1	40	REL05-26	
Euphorbia drummondii	0.1	20	REL05-15	
Evolvulus alsinoides	0.1	20	KTF05-21=	Sterile.
Glycine canescens	0.1	40	REL05-22	
Goodenia heterochila	0.1	40	REL05-21	
Goodenia nuda	0.1	40	REL05-16	N=6.
Goodenia prostrata	0.1	40	REL05-06	
Goodenia prostrata	0.1	40	REL05-14	MM: SPECIMEN MISSING; field det assumed correct.
Grevillea berryana	0.1	120	KTF05-16=	
Hibiscus burtonii	0.1	60	REL05-30	
Indigofera georgei	0.1	90	REL05-18	
Maireana villosa	0.1	40	REL05-33	
Nicotiana simulans (type 2)	0.1	50	REL04-15=	Formal ID by M. Hislop (WAH).

Name	Cover (%)	Height (cm)	Specimen	Notes
Panicum effusum	0.1	20	REL05-31	
Panicum effusum	0.1	20	REL05-04	
Paspalidium rarum	0.1	30	REL05-11	
Perotis rara	0.1	15	REL04-13=	
Phyllanthus erwinii	0.1	7	REL04-10=	
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus gaudichaudii	0.1	50	REL05-02	
Ptilotus helipteroides	0.1	10	KTF05-23=	
Ptilotus obovatus var. *obovatus*	0.1	60	REL05-20	
Ptilotus polystachyus	0.1	60	REL05-09	
Roebuckiella similis	0.1	25	REL04-06=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	10	REL04-05=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	REL05-27	
Solanum ferocissimum	0.1	30	REL05-08	N=50.
Solanum lasiophyllum	0.1	40	REL05-35	
Spermacoce brachystema	0.1	20	REL04-08=	
Sporobolus australasicus	0.1	20	REL05-29	
Swainsona sp.	0.1	20	REL05-13	Juvenile; inadequate material.
Themeda ? triandra	0.1	70	REL05-38	
Tribulus astrocarpus	0.1	5	KTF05-02=	
Trichodesma zeylanicum var. *zeylanicum*	0.1	60	REL05-17	Juvenile.
Triodia epactia	0.5	60	REL05-19	
Triodia melvillei	0.1	90	REL05-24	

Site **KTFREL06**
Described by RM/SY **Date** 22/4/2020
Type Relevé 20 x 70 m
Central Coord 50 546753 mE, 7601882 mN
Habitat Low-lying depression of broad plain.
Soil Dark reddish brown silty clay.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* tall open shrubland over *A. trachycarpa* scattered shrubs over *Triodia epactia*, (*T. wiseana*) open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.
Veg Condition Very Good: signs of cattle; occasional **Cenchrus setiger*.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\r;M2 *Acacia trachycarpa*\shrub\3\bi;G1 *Chrysopogon fallax*\tussock grass\2\bi;G2+ ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	30	REL06-14	
Acacia ancistrocarpa	3	300		
Acacia colei	0.1	190	REL06-09	Sterile.
Acacia inaequilatera	0.1	180		
Acacia trachycarpa	1.5	110		
Afrohybanthus aurantiacus	0.1	20		
Aristida holathera var. *holathera*	0.1	30	REL06-23	
Arivela viscosa	0.1	40		
Boerhavia burbidgeana	0.1	90		
Bonamia erecta	0.1	25	REL06-16	
Carissa lanceolata	0.1	150	KTF15-20=	
Cenchrus setiger	0.1	50		N=15.
Chrysopogon fallax	1	90		
Corymbia hamersleyana	1.5	450		
Crotalaria medicaginea var. *neglecta*	0.1	20	KTF16-05=	
Cynodon convergens	0.1	15	KTF15-02=	
Dichanthium sericeum subsp. *sericeum*	0.1	50	KTF14-02=	
Digitaria brownii	0.1	15	REL06-01	
Duperreya commixta	0.1	110		
Dysphania rhadinostachya subsp. *inflata*	0.1	5	KTF16-16=	
Eriachne aristidea	0.1	5	REL06-04	
Euphorbia australis var. *subtomentosa*	0.1	20	REL06-18	Also REL06-20.
Euphorbia biconvexa	0.1	10	REL06-05	
Euphorbia trigonosperma	0.1	40	KTF16-04=	Match to WAH ID.
Evolvulus alsinoides	0.1	20	REL06-10	Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Goodenia forrestii	0.1	30	REL06-22	
Goodenia microptera	0.1	7		
Grevillea wickhamii	0.1	3		Sterile.
Heliotropium pachyphyllum	0.1	10	REL06-07	
Indigofera monophylla	0.1	40	REL06-15	
Iseilema dolichotrichum	0.1	20	KTF16-11=	
Isotropis atropurpurea	0.1	15	REL06-17	
Notoleptopus decaisnei	0.1	20	KTF15-28=	
Paraneurachne muelleri	0.1	35		
Paspalidium clementii	0.1	30	REL06-03	
Phyllanthus maderaspatensis	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus exaltatus	0.1	5		Juvenile.
Rhynchosia minima	0.1	40		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	5	REL06-12	
Senna glutinosa subsp. *glutinosa*	0.1	200		
Senna notabilis	0.1	10		
Seringia nephrosperma	0.1	70	REL06-08	
Sida spinosa	0.1	40	REL06-11	
Solanum diversiflorum	0.1	3		
Sporobolus australasicus	0.1	15		
Themed sp. Hamersley station	0.1	50	REL06-21	Formal ID by M. Hislop (WAH).
Tribulus macrocarpus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	20	40		
Triodia wiseana	4	30	KTF15-21=	
Triumfetta chaetocarpa	0.1	15	REL06-19	
Triumfetta clementii	0.1	30	REL06-13	
Urochloa occidentalis var. *ciliata*	0.1	40	REL06-06	

Site **KTFREL07**
Described by PL/AL **Date** 19/4/2020
Type Relevé 60 x 30 m
Central Coord 50 573930 mE, 7513309 mN
Habitat Plain, with groved Mulga vegetation.
Soil Reddish brown clay loam with crab holes.
Rock Type Ironstone.
Vegetation *Acacia aptaneura* low open woodland over *Chrysopogon fallax* very open tussock grassland over *Triodia epactia* scattered hummock grasses and **Bidens bipinnata* scattered herbs.
Veg Condition Good: donkey scats; scattered weeds.
Fire Age No sign of recent fire.
Notes U1+ ^A*cacia aptaneura*\^tree\6\r;G1 ^*Chrysopogon fallax*\^tussock grass\2\r;G2 *Triodia epactia,Bidens bipinnata*\hummock grass,forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		
Abutilon otocarpum	0.1	40		
Acacia aptaneura	4	500	KTF01-04=	
Alternanthera denticulata	0.1	30		
Aristida contorta	0.1	30		
Arivela viscosa	0.1	35		
Bidens bipinnata	0.5	40		N=700.
Blumea tenella	0.1	10		
Boerhavia coccinea	0.1	40		
Bulbostylis turbinata	0.1	15		
Calandrinia sp.	0.1	8	REL07-03	Sterile.
Centipeda minima subsp. *macrocephala*	0.1	8		
Cheilanthes sieberi subsp. *sieberi*	0.1	30		
Chloris pectinata	0.1	50	REL07-06	
Chrysopogon fallax	4	160		
Convolvulus clementii	0.1	50		
Corchorus tridens	0.1	20		
Cucumis picrocarpus	0.1	70		
Cyperus iria	0.1	15		
Dactyloctenium radulans	0.1	10		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria brownii	0.1	70		
Digitaria ctenantha	0.1	30		
Duperreya commixta	0.1	120		
Echinochloa colona	0.1	45	REL07-12	
Elytrophorus spicatus	0.1	10		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	40		
Eragrostis cumingii	0.25	20		
Eragrostis tenellula	0.1	30		
Eremophila forrestii subsp. *forrestii*	0.1	160		
Eriachne benthamii	0.1	60		
Euphorbia boophthona	0.1	40		
Evolvulus alsinoides var. *decumbens*	0.1	40		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Gomphrena cunninghamii	0.1	30		
Goodenia muelleriana	0.1	40		
Goodenia nuda	0.1	40	KTF01-02=	N=5.
Goodenia prostrata	0.1	8	REL07-08b	
Iseilema macratherum	0.1	30	REL07-10	
Iseilema membranaceum	0.1	30	REL07-05a	
Maireana planifolia	0.1	50		
Malvastrum americanum	0.1	50		N=1.
Nicotiana simulans (type 1)	0.1	70	REL07-09	Formal ID by M. Hislop (WAH).
Nicotiana simulans (type 2)	0.1	40	REL07-02	Formal ID by M. Hislop (WAH)REL04-15=.
Paspalidium clementii	0.1	40		
Paspalidium rarum	0.1	25		
Peripleura arida	0.1	35	REL07-07	
Perotis rara	0.1	15		
Phyllanthus erwinii	0.25	10		
Pterocaulon sphacelatum	0.1	10		
Ptilotus exaltatus	0.1	40		
Ptilotus gaudichaudii	0.1	40		
Ptilotus helipteroides	0.1	40		
Ptilotus roei	0.1	25	KTF09-18=	
Ptilotus xerophilus	0.1	45	REL07-11	
Rhynchosia minima	0.1	30		
Roebuckiella similis	0.1	15	REL07-04	
Salsola australis	0.1	25		
Sclerolaena cornishiana	0.1	15	KTF07-12=	
Senna notabilis	0.1	30		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Sida spinosa	0.1	40	REL07-01	
Solanum ferocissimum	0.1	25		
Spermacoce brachystema	0.25	20		
Sporobolus australasicus	0.1	50		
Streptoglossa bubakii	0.1	10		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	120	REL07-05b	
Themeda triandra	0.1	100		
Tribulus astrocarpus	0.1	30		
Triodia epactia	2	50		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.25	40		
Vincetoxicum lineare	0.1	60		

Site **KTFREL08**

Described by PL/AL **Date** 24/4/2020

Type Relevé 50 x 50 m

Central Coord 50 547619 mE, 7601588 mN

Habitat Major drainage; narrow in parts, with ephemeral pools; island along S boundary.

Soil Dark reddish brown loamy sand.

Rock Type Calcrete, ironstone.

Vegetation *Eucalyptus victrix*, (*E. camaldulensis* subsp. *refulgens*) woodland over *Melaleuca glomerata*, (*Acacia colei*) tall open shrubland over *Carissa lanceolata* scattered shrubs over *Eulalia aurea, *Cenchrus setiger*, (**C. ciliaris*) very open tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Very Good: cattle disturbance (tracks, scats and grazing); scattered weeds, mainly **Cenchrus* spp.

Fire Age No sign of recent fire.

Notes Too difficult to establish a 50x50 or 40x62 given the nature of drainage. NB. Relabeled from Q39 to REL08, hence specimen numbers.
U1+ ^*Eucalyptus victrix,Eucalyptus camaldulensis* subsp. *refulgens*\^tree\7\i;M1 ^*Melaleuca glomerata,Acacia colei*\^shrub\4\r;M2 *Carissa lanceolata*\shrub\3\bi;G1 ^*Eulalia aurea*,^*Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\r;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		
Acacia ancistrocarpa	0.1	210		
Acacia arida	0.1	60	KTF37-27=	
Acacia citrinoviridis	0.1	250		
Acacia colei	2	300		Sterile.
Acacia pyrifolia var. *pyrifolia*	0.1	220		
Acacia tumida var. *pilbarensis*	0.1	100		
Aeschynomene indica	0.1	110		
Afrohybanthus aurantiacus	0.1	40		
Alternanthera angustifolia	0.1	25		
Alternanthera nana	0.1	25		
Amaranthus undulatus	0.1	25		
Ammannia baccifera	0.1	30		
Ammannia multiflora	0.1	25		
Arivela viscosa	0.1	40		
Basilicum polystachyon	0.1	50		
Bergia pedicellaris	0.1	10		
Blumea tenella	0.1	20		
Boerhavia coccinea	0.1	40		
Bothriochloa ewartiana	0.25	130	KTF37-21=	Formal ID by M. Hislop (WAH).
Carissa lanceolata	1	190		
Cenchrus ciliaris	1	80		
Cenchrus setiger	2	90		
Centipeda minima subsp. *macrocephala*	0.1	10		
Chrysopogon fallax	0.25	90		
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	50		
Cucumis picrocarpus	0.1	25		
Cucumis variabilis	0.1	80		
Cynodon convergens	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Cyperus bifax	0.1	40	KTF39-08	
Cyperus difformis	0.1	35	KTF37-11=	
Cyperus ixiocarpus	0.1	50		
Cyperus squarrosus	0.1	15		
Dactyloctenium radulans	0.1	15		
Echinochloa colona	0.1	40		
Eleocharis atropurpurea	0.25	10	KTF37-08=	
Elytrophorus spicatus	0.1	20		
Enteropogon ramosus	0.1	40		
Eragrostis cumingii	0.25	20		
Eragrostis tenellula	0.5	30		
Eragrostis xerophila	0.1	30		
Eucalyptus camaldulensis subsp. *refulgens*	4	1400		
Eucalyptus victrix	14	1300		
Eulalia aurea	2	60		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF39-02	
Euphorbia trigonosperma	0.1	35	KTF37-04=	Match to WAH ID.
Evolvulus alsinoides var. *decumbens*	0.1	25		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis littoralis	0.1	30	KTF37-10=	
Glinus oppositifolius	0.1	8	KTF39-03	
Gomphrena cunninghamii	0.1	10		
Goodenia forrestii	0.1	35		
Goodenia lamprosperma	0.1	40		
Goodenia microptera	0.1	20		
Gossypium australe	0.1	40		
Gossypium robinsonii	0.1	120		
Heteropogon contortus	0.1	70		
Indigofera linnaei	0.1	25		
Indigofera monophylla	0.1	60		
Ipomoea muelleri	0.1	40		
Ipomoea polymorpha	0.1	10		
Iseilema membranaceum	0.1	30	KTF39-07	
Jasminum didymum subsp. *lineare*	0.1	80		
Lipocarpha microcephala	0.1	15	KTF39-01	
Malvastrum americanum	0.1	40		N=1.
Marsilea hirsuta	0.1	10	KTF39-04	
Melaleuca glomerata	7	320		
Melhania oblongifolia	0.1	30		
Paspalidium rarum	0.1	30		
Phyllanthus erwinii	0.1	10		
Phyllanthus exilis	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Pluchea rubelliflora	0.1	40		
Polygala glaucifolia	0.1	8	KTF39-06	
Polymeria sp. nov. (aff. site 1365)	0.1	15	KTF39-05	Formal ID by M. Hislop (WAH).
Polymeria ambigua	0.1	25		
Portulaca oleracea	0.1	15	KTF64-05=	
Pterocaulon sphacelatum	0.1	25		
Ptilotus exaltatus	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	40		
Rostellularia adscendens var. *clementii*	0.1	10		
Rotala diandra	0.1	8		
Rotala mexicana	0.1	5	KTF37-15a=	
Schoenoplectiella laevis	0.5	25		
Scleromitrion galioides	0.1	25		
Senna artemisioides subsp. helmsii	0.1	80		
Senna notabilis	0.1	20		
Sida fibulifera	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60		
Sida spinosa	0.1	40		
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.1	30		
Streptoglossa bubakii	0.1	30		
Synaptantha tillaeacea var. *tillaeacea*	0.1	8	KTF39-09	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	110	KTF37-01=	Formal ID by M. Hislop (WAH).
Themeda triandra	0.1	90		
Tribulus macrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia epactia	1	60		
Triumfetta chaetocarpa	0.1	40	KTF67-02=	
Urochloa occidentalis var. *ciliata*	0.1	60		
Vachellia farnesiana	0.5	100		N=6.
Vigna lanceolata var. *lanceolata*	0.1	30		
Wahlenbergia tumidifructa	0.1	35		
Waltheria indica	0.1	30		

Site **KTFREL09**

Described by PL/AL **Date** 25/4/2020

Type Relevé 50 x 50 m

Central Coord 50 558659 mE, 7591403 mN

Habitat Moderate drainage with stony surface.

Soil Dark reddish brown loamy sand.

Rock Type Calcrete, ironstone.

Vegetation *Eucalyptus victrix, Acacia citrinoviridis* scattered low trees over Melaleuca *glomerata* tall open shrubland over *Triodia epactia* very open hummock grassland.

Veg Condition Very Good: scattered weeds.

Fire Age No sign of recent fire.

Notes Species poor. *Acacia* narrow floodplain bank to S (see map note MNPL19). U1 ^*Eucalyptus victrix*,^*Acacia citrinoviridis*\^tree\6\bi;M1+ ^*Melaleuca glomerata*\^shrub\4\r;G1 ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		Form 1.
Acacia aptaneura	0.1	400		
Acacia citrinoviridis	0.5	220		
Aeschynomene indica	0.1	40		
Afrohybanthus aurantiacus	0.1	40		
Alysicarpus muelleri	0.1	30	REL09-03	
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	50		
Bergia pedicellaris	0.1	8		
Bidens bipinnata	0.1	60		N=100.
Cenchrus ciliaris	0.1	40		N=2.
Cenchrus setiger	0.1	50		N=50.
Corchorus sidoides subsp. *sidoides*	0.1	25	KTF45-24=	
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	90		
Cynodon convergens	0.1	40		
Cyperus pulchellus	0.1	25	REL09-01	
Duperreya commixta	0.1	80		
Echinochloa colona	0.1	25		N=1.
Elytrophorus spicatus	0.1	25		
Enneapogon caerulescens	0.1	25		
Eragrostis cumingii	0.1	30		
Eragrostis elongata	0.1	30	REL09-02	
Eragrostis tenellula	0.1	30		
Eriachne aristidea	0.1	25		
Eriachne mucronata	0.1	35		
Eriachne pulchella	0.1	15		
Eriachne tenuiculmis	0.1	40		
Eucalyptus victrix	0.5	800		
Eulalia aurea	0.1	80		
Euphorbia trigonosperma	0.1	40		
Evolvulus alsinoides var. *decumbens*	0.1	30		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis microcarya	0.1	25		
Gomphrena cunninghamii	0.1	25		
Gonocarpus ephemerus	0.1	8	REL09-05	
Goodenia microptera	0.1	25		
Gossypium robinsonii	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ipomoea muelleri	0.1	10		
Ipomoea polymorpha	0.1	25		
Iseilema membranaceum	0.1	30	REL09-04	
Marsilea hirsuta	0.1	10		
Melaleuca glomerata	9	380		
Notoleptopus decaisnei	0.1	30		
Paspalidium rarum	0.1	40		
Phyllanthus exilis	0.1	20		
Ptilotus calostachyus	0.1	80		
Ptilotus exaltatus	0.1	30		
Ptilotus fusiformis	0.1	50		
Rostellularia adscendens var. *clementii*	0.1	20		
Schoenoplectiella laevis	0.1	25		
Scleromitrion galioides	0.1	25		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna glutinosa subsp. x *luerssenii*	0.1	16		
Sesbania cannabina	0.1	70		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		
Stemodia grossa	0.1	30		
Themeda triandra	0.1	80		
Trachymene oleracea subsp. *oleracea*	0.1	30	AL10=	
Triodia epactia	4	60		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vincetoxicum lineare	0.1	50		
Waltheria indica	0.1	30		

Site **KTFREL10**
Described by RM/SY **Date** 25/4/2020
Type Relevé 50 x 50 m
Central Coord 50 561691 mE, 7585676 mN
Habitat Minor drainage flowing E-W.
Soil Dark reddish brown silty clay loam to light clay.
Rock Type Ironstone.
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana, A. tumida* var. *pilbarensis* tall open shrubland over *Triodia epactia* very open hummock grassland and *Themeda triandra* scattered tussock grasses.
Veg Condition Excellent: very occasional **Bidens*.
Fire Age Burnt 3-5 years ago.
Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia atkinsiana*,^*Acacia tumida* var. *pilbarensis*\^shrub\4\r;G1 *Themeda triandra*\tussock grass\2\bi;G2+ ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40	REL10-10	
Acacia ancistrocarpa	0.1	180		
Acacia atkinsiana	2.5	300		
Acacia tumida var. *pilbarensis*	1	400	REL10-01	
Afrohybanthus aurantiacus	0.1	40		
Alternanthera nana	0.1	20	KTF29-18=	
Aristida contorta	0.1	30		
Arivela viscosa	0.1	30		
Bidens bipinnata	0.1	30		N=10.
Bulbostylis barbata	0.1	5		
Corchorus tectus	0.1	15	KTF29-11=	
Corchorus tridens	0.1	7		
Corymbia hamersleyana	1.5	500		
Crotalaria medicaginea var. *neglecta*	0.1	30	REL10-03	
Cucumis variabilis	0.1	90		
Cynodon convergens	0.1	10		
Digitaria brownii	0.1	30	REL06-01=	
Duperreya commixta	0.1	90		
Enneapogon polyphyllus	0.1	10		
Eragrostis cumingii	0.1	20	REL10-06	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	5		
Eriachne tenuiculmis	0.1	40	KTF29-16=	
Eulalia aurea	0.1	60		
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Fimbristylis simulans	0.1	15	REL10-02	
Gompholobium oreophilum	0.1	20		
Goodenia forrestii	0.1	20	REL10-04	
Goodenia microptera	0.1	20		
Goodenia stobbsiana	0.1	15		
Grevillea wickhamii	0.1	120		Sterile.
Hibiscus coatesii	0.1	30	REL10-08	
Hibiscus verdcourtii	0.1	30		
Indigofera monophylla	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	90		
Notoleptopus decaisnei	0.1	20		
Paspalidium clementii	0.1	30	REL06-03=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Perotis rara	0.1	20		
Phyllanthus maderaspatensis	0.1	30		
Pterocaulon sphacelatum	0.1	5	REL10-05	
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus sp.	0.1	5	KTF43-04=	Inadequate material; juvenile.
Senna notabilis	0.1	30		
Sida fibulifera	0.1	5		
Solanum diversiflorum	0.1	25		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	20	REL10-07	
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356) PN	0.1	10	REL10-11	
Themeda triandra	0.5	50		
Trachymene oleracea subsp. *oleracea*	0.1	30		
Triodia epactia	7	40		
Urochloa occidentalis var. *ciliata*	0.1	20	REL06-06=	

Site **KTFREL11**

Described by PL/SC **Date** 23/5/2020

Type Relevé 25 x 100 m

Central Coord 50 568883 mE, 7528815 mN

Habitat Creek bed.

Soil Dark reddish brown sandy clay; bit of cracking clay nearby.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix* low open woodland over **Vachellia farnesiana* scattered tall shrubs over *Eriachne benthamii* very open tussock grassland with *Dichanthium sericeum* subsp. *sericeum* very open bunch grassland.

Veg Condition Good: scattered weeds; signs of cattle.

Fire Age No sign of recent fire.

Notes U1+ ^*Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1 ^*Eriachne benthamii*\^tussock grass\1\r;*G2 Dichanthium sericeum* subsp. *sericeum*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	25		
Alternanthera nodiflora	0.1	30		
Alysicarpus muelleri	0.1	50		
Aristida latifolia	0.1	50		
Astrebla lappacea	0.1	60	REL11-04	N=2.
Blumea tenella	0.1	15		
Boerhavia paludosa	0.1	40		
Cenchrus ciliaris	0.1	50		N=10.
Cenchrus setiger	0.1	50		N=5.
Centipeda minima subsp. *macrocephala*	0.1	15		
Chloris pectinata	0.1	40		N=10.
Chrysopogon fallax	0.1	50		
Crotalaria dissitiflora subsp. *benthamiana*	0.1	40		
Cullen cinereum	0.25	30		
Cullen graveolens	0.1	25		
Cynodon convergens	0.1	15		
Cyperus bifax	0.1	20		
Dactyloctenium radulans	0.1	5		
Desmodiopsis campylocaulon	0.1	40		
Dichanthium sericeum subsp. *humilius*	0.1	50		
Dichanthium sericeum subsp. *sericeum*	4	50	REL11-01	
Enneapogon caerulescens	0.1	50		
Eragrostis leptocarpa	0.1	40	REL11-07	
Eragrostis tenellula	0.1	20		
Eragrostis xerophila	0.1	30		
Eriachne benthamii	4	60		
Eucalyptus victrix	9	1200		
Euphorbia australis var. *subtomentosa*	0.1	15		
Euphorbia biconvexa	0.1	30	REL11-05	
Glycine falcata	0.1	25	REL11-09	N=15. PL kept for study.
Hibiscus verdcourtii	0.1	30		
Ipomoea lonchophylla	0.1	40		
Ipomoea muelleri	0.1	10		
Iseilema macratherum	0.1	30	REL11-06	

Name	Cover (%)	Height (cm)	Specimen	Notes
Iseilema vaginiflorum	0.25	25	REL11-03	
Malvastrum americanum	0.1	40		N=50.
Neptunia dimorphantha	0.1	10		
Operculina aequisepala	0.1	200		
Panicum laevinode	0.1	60	REL11-02	
Polymeria longifolia	0.1	25		
Ptilotus gomphrenoides	0.1	10		
Rhynchosia minima	0.1	40		
Rostellularia adscendens var. *clementii*	0.1	15		
Sesbania cannabina	0.1	70		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sporobolus australasicus	0.1	5		
Stemodia kingii	0.1	20		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	15	REL11-08	Formal ID by M. Hislop (WAH).
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	70		N=2.
Urochloa occidentalis var. *ciliata*	0.1	30		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vachellia farnesiana	1	300		N=30.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	40		

Site **KTFREL12**
Described by PL/SC **Date** 23/5/2020
Type Relevé 50 x 50 m
Central Coord 50 568807 mE, 7539203 mN
Habitat Minor flowline.
Soil Dark reddish brown sandy clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus xerothermica*, (*Corymbia hamersleyana*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia tumida* var. *pilbarensis*, (*A. bivenosa*) tall open scrub over *Triodia epactia* open hummock grassland and *Eulalia simonii*, (*Themeda triandra*) very open
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus xerothermica,Corymbia hamersleyana*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1+ ^*Acacia tumida* var. *pilbarensis,Acacia bivenosa*\^shrub\4\c;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Eulalia simonii,Themeda triandra*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	90	REL12-01	
Acacia atkinsiana	0.1	250		
Acacia bivenosa	1	250		
Acacia dictyophleba	0.1	190		
Acacia monticola	0.1	250		
Acacia tumida var. *pilbarensis*	35	300		
Aristida holathera var. *holathera*	0.1	25		
Arivela viscosa	0.1	40		
Bonamia erecta	0.1	40		
Capparis lasiantha	0.1	60		
Capparis umbonata	0.1	100		
Cenchrus ciliaris	0.1	70		
Chrysopogon fallax	0.1	110		
Corymbia deserticola subsp. *deserticola*	0.1	600		
Corymbia hamersleyana	1	600		
Cucumis variabilis	0.1	50		
Digitaria brownii	0.1	80		
Duperreya commixta	0.1	90		
Dysphania rhadinostachya	0.1	25		Sterile.
Eucalyptus gamophylla	1	400		
Eucalyptus xerothermica	2	700		
Eulalia simonii	6	40		N=300.
Euphorbia biconvexa	0.1	25	REL12-03	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Goodenia stellata	0.1	10		
Gossypium robinsonii	0.1	260		
Hibiscus leptocladus	0.1	10	REL12-02	
Hibiscus sturtii var. *platychlamys*	0.1	80		
Indigofera monophylla	0.1	50		
Jasminum didymum subsp. *lineare*	0.1	100		
Paraneurachne muelleri	0.1	30		
Phyllanthus erwinii	0.1	10		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp.	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
oligophylla x subsp. *helmsii*				
Senna notabilis	0.1	30		
Sida echinocarpa	0.1	70		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		Ferruginous form.
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	30		
Themeda triandra	1	70		
Triodia epactia	22	60		

Site **KTFREL13**
Described by PL/AL **Date** 25/4/2020
Type Relevé 50 x 50 m
Central Coord 50 563441 mE, 7583309 mN
Habitat Floodplain adjacent to a major drainage line.
Soil Dark reddish brown silty clay loam.
Vegetation *Eucalyptus victrix* scattered low trees over *Acacia citrinoviridis* tall open scrub over *Triodia epactia* open hummock grassland.
Veg Condition Very Good: signs of cattle; occasional **Malvastrum*.
Fire Age No sign of recent fire
Notes Mapping note PLMN26 converted to a relevé.
U1 ^*Eucalyptus victrix*\^tree\6\bi;M1+ ^*Acacia citrinoviridis*\^shrub\4\c;G1 ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia citrinoviridis	40	300		
Acacia pyrifolia var. *pyrifolia*	0.1	150		
Aeschynomene indica	0.1	50		
Arivela viscosa	0.1	40		
Boerhavia coccinea	0.1	15		
Corchorus crozophorifolius	0.1	60		
Corchorus tridens	0.1	15		
Cucumis melo	0.1	50		
Cucumis picrocarpus	0.1	15		
Cucumis variabilis	0.1	50		
Cullen cinereum	0.1	10		
Cullen pogonocarpum	0.1	15		
Dichanthium sericeum subsp. *humilius*	0.1	20		
Eriachne tenuiculmis	0.1	40		
Eucalyptus victrix	1	700		
Euphorbia australis var. *glabra*	0.1	10		N=3.
Euphorbia australis var. *subtomentosa*	0.1	10		
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena affinis subsp. *pilbarensis*	0.1	20		
Goodenia nuda	0.1	20		N=1.
Gossypium australe	0.1	120		
Indigofera monophylla	0.1	40		
Ipomoea lonchophylla	0.1	30		
Ipomoea muelleri	0.1	15		
Malvastrum americanum	0.1	40		N=10.
Notoleptopus decaisnei	0.1	20		
Operculina aequisepala	0.1	50		
Phyllanthus maderaspatensis	0.1	20		
Portulaca oleracea/intraterranea	0.1	15		Small flower.
Ptilotus carinatus	0.1	25		
Ptilotus gomphrenoides	0.1	15		
Rhynchosia minima	0.1	20		
Rostellularia adscendens var. *clementii*	0.1	20		
Sesbania cannabina	0.1	60		
Sida spinosa	0.1	30		
Solanum diversiflorum	0.1	30		
Streptoglossa bubakii	0.1	30		
Trachymene oleracea subsp.	0.1	30	AL10=	

Name	Cover (%)	Height (cm)	Specimen	Notes
oleracea				
Triodia epactia	20	40		
Urochloa occidentalis var. *occidentalis*	0.1	15		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	15		

Site **KTFREL14**
Described by PL/SC **Date** 23/5/2020
Type Relevé 50 x 50 m
Central Coord 50 572596 mE, 7548391 mN
Habitat Hill crest.
Soil Dark reddish brown silty clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i;G2 *Eriachne mucronata*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia pruinocarpa	0.1	130		
Arivela viscosa	0.1	30		
Bulbostylis barbata	0.1	10		
Capparis spinosa subsp. *nummularia*	0.1	100		
Corchorus incanus subsp. *incanus*	0.1	50	REL14-01	
Corymbia ferriticola	0.1	100		
Dampiera candicans	0.1	40		
Dolichocarpa crouchiana	0.1	8	REL14-02	
Enneapogon caerulescens	0.1	25		
Eriachne mucronata	0.5	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus gamophylla	2	300		
Eucalyptus leucophloia subsp. *leucophloia*	1	400		
Ficus brachypoda	0.1	20		
Jasminum didymum subsp. *lineare*	0.1	80		
Polycarpaea longiflora	0.1	30		
Ptilotus fusiformis	0.1	35		
Streptoglossa decurrens	0.1	15		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia wiseana	28	40		

Site **KTFREL16**

Described by PL/SC **Date** 24/5/2020

Type Relevé 20 x 125 m

Central Coord 50 572325 mE, 7556275 mN

Habitat Floodplain/soak area, low lying; semi-calcareous.

Soil Reddish brown silty clay loam.

Rock Type Calcrete.

Vegetation *Eucalyptus xerothermica*, (*Hakea lorea* subsp. *lorea*, *Corymbia hamersleyana*) low open woodland over *Pluchea ferdinandi-muelleri* low open shrubland over *Triodia angusta* open hummock grassland with *Eulalia aurea*, (*Eragrostis desertorum*) very open tussock grassland.

Veg Condition Very Good: signs of cattle; 1 x **Tribulus terrestris*.

Fire Age Very long unburnt.

Notes Small narrow flow depression between creek and slightly elevated calcareous floodplain. U1 ^*Eucalyptus xerothermica,Hakea lorea* subsp. *lorea,Corymbia hamersleyana*\^tree\6\r;M1 ^*Pluchea ferdinandi-muelleri*\^shrub\1\r;G1+ ^*Triodia angusta*\^hummock grass\1\i;G2 *Eulalia aurea,Eragrostis desertorum*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Cassytha capillaris	0.1	40		
Codonocarpus cotinifolius	0.1	500		
Corchorus incanus subsp. *incanus*	0.1	40	REL14-01=	
Corchorus lasiocarpus subsp. *parvus*	0.1	40		
Corymbia hamersleyana	0.25	400		
Duperreya commixta	0.1	50		
Eragrostis desertorum	0.5	40	KTF78-01=	
Eremophila longifolia	0.1	160		
Eucalyptus xerothermica	7	800		
Eulalia aurea	3	60		
Gossypium australe	0.1	40		
Hakea lorea subsp. *lorea*	0.5	500		
Jasminum didymum subsp. *lineare*	0.1	60		
Lepidium pedicellosum	0.1	40		
Pimelea ammocharis	0.1	70		
Pluchea ferdinandi-muelleri	4	90		
Rhynchosia minima	0.1	50		
Santalum lanceolatum	0.1	140		
Scaevola amblyanthera var. *centralis*	0.1	25	KTF78-02=	
Scaevola spinescens	0.1	50		Broad leaf form.
Senna artemisioides subsp. *oligophylla*	0.1	40		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	60		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Tribulus terrestris	0.1	25		N=1.
Triodia angusta	28	50		

Site **KTFREL18**
Described by PL/SC **Date** 26/5/2020
Type Relevé 20 x 125 m
Central Coord 50 571220 mE, 7545706 mN
Habitat Moderate drainage.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Eucalyptus xerothermica*, (*Corymbia deserticola* subsp. *deserticola*, *C. hamersleyana*) low woodland over *E. gamophylla* scattered low mallees over *Acacia atkinsiana* scattered tall shrubs over *A. elachantha*, (*A. monticola, A. cowleana*) open shrubland over *Triodia epactia* very open hummock grassland and *Eulalia simonii,* (*Themeda triandra*) closed tussock grassland.
Veg Condition Excellent; some **Cenchrus* present, but only along the road.
Fire Age No sign of recent fire.
Notes U1+ ^*Eucalyptus xerothermica,Corymbia deserticola* subsp. *deserticola,Corymbia hamersleyana*\^tree\6\i;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 *Acacia atkinsiana*\shrub\4\bi;M2 ^*Acacia elachantha,Acacia monticola,Acacia cowleana*\^shrub\3\r;G1 ^*Eulalia simonii,Themeda triandra*\^tussock grass\1\d;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	70		Form 4.
Abutilon macrum	0.1	40		
Acacia adoxa var. *adoxa*	0.1	20		
Acacia atkinsiana	2	300		
Acacia bivenosa	0.1	250		
Acacia citrinoviridis	0.1	300		
Acacia cowleana	0.5	140		
Acacia dictyophleba	0.1	220	KTF100-02=	
Acacia elachantha	2	160		
Acacia inaequilatera	0.1	250		
Acacia monticola	0.5	150		
Acacia ptychophylla	0.1	120		
Acacia tenuissima	0.1	50		
Acacia tumida var. *pilbarensis*	0.1	300		
Alternanthera nana	0.1	30		
Arivela viscosa	0.1	80		
Bonamia erecta	0.1	20		
Cenchrus ciliaris	2	90		
Cenchrus setiger	2	90		
Chrysopogon fallax	0.1	50		
Corymbia deserticola subsp. *deserticola*	1	500		
Corymbia hamersleyana	1	400		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	20		
Duperreya commixta	0.1	80		
Eriachne aristidea	0.1	20		
Eucalyptus gamophylla	2	400		
Eucalyptus xerothermica	10	900		
Eulalia simonii	60	70		Not collected.
Euphorbia trigonosperma	0.1	20		
Evolvulus alsinoides var. *decumbens*	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia microptera	0.1	15		
Goodenia stellata		0.1		N=10.
Gossypium australe	0.1	60		
Grevillea wickhamii subsp. *hispidula*	0.1	200		
Hakea lorea subsp. *lorea*	0.1	200		
Hibiscus leptocladus	0.1	20		
Hibiscus sturtii var. *campylochlamys*	0.1	10		
Indigofera monophylla	0.1	40		
Isotropis atropurpurea	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	150		
Malvastrum americanum	0.1	20		N=10.
Melhania oblongifolia	0.1	20		
Phyllanthus erwinii	0.1	15		
Ptilotus exaltatus	0.1	60		
Rhynchosia minima	0.1	40		
Santalum lanceolatum	0.1	100		
Senna artemisioides subsp. *oligophylla*	0.1	50		
Senna glutinosa subsp. *glutinosa*	0.1	120		
Senna glutinosa subsp. *pruinosa*	0.1	120		
Senna notabilis	0.1	30		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		Ferruginous form.
Themeda triandra	15	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	10	70		

Site **KTFREL20**
Described by PL/SC **Date** 27/5/2020
Type Relevé 25 x 100 m
Central Coord 50 572335 mE, 7556527 mN
Habitat Moderate drainage, deeply incised, adjacent to calcareous floodplain.
Soil Dark reddish brown sandy clay loam.
Rock Type Calcrete, ironstone.
Vegetation *Eucalyptus camaldulensis* subsp. *refulgens* open woodland over *Acacia ampliceps* scattered tall shrubs over *Themeda triandra* scattered tussock grasses and *Triodia epactia* scattered hummock grasses.
Veg Condition Very Good: occasional **Cenchrus setiger*; signs of cattle.
Fire Age No sign of recent fire.
Notes GDV; no permanent water. Drainage ~10m wide at S end.
U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens*\^tree\7\r;M1 ^*Acacia ampliceps*\^shrub\4\bi;G1 ^*Themeda triandra*\^tussock grass\1\bi;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ampliceps	1	600		
Acacia bivenosa	12	250		
Acacia monticola	0.1	90		
Acacia pyrifolia var. *pyrifolia*	0.1	300		
Acacia tumida var. *pilbarensis*	0.1	300		
Adriana tomentosa var. *tomentosa*	0.1	60		
Afrohybanthus aurantiacus	0.1	50		
Arivela viscosa	0.1	40		
Capparis spinosa subsp. *nummularia*	0.1	60		
Cassytha capillaris	0.1	60		
Cenchrus setiger	0.1	60		N=15.
Crotalaria medicaginea var. *neglecta*	0.1	60		
Cymbopogon ambiguus	0.75	70	REL20-01	Procerus form.
Cyperus vaginatus	50	90		
Eriachne tenuiculmis	0.1	50		
Eucalyptus camaldulensis subsp. *refulgens*	6	1200		
Gossypium robinsonii	0.1	150		
Indigofera monophylla	0.1	60		
Isotropis atropurpurea	0.1	70		
Melaleuca argentea	40	1800		
Phyllanthus maderaspatensis	0.1	5		
Pluchea rubelliflora	0.25	40		
Rhynchosia minima	0.1	40		
Senna glutinosa subsp. *glutinosa* x	0.1	70	REL20-02	Hybrid of unknown origin.
Sesbania cannabina	0.1	300		
Stemodia grossa	0.1	40		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.5	110		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	0.5	60		
Triodia wiseana	0.1	70		
Triumfetta chaetocarpa	0.1	30	REL20-03	

Name	Cover (%)	Height (cm)	Specimen	Notes
Typha domingensis	0.1	100		

Site **KTFREL21**

Described by RMJK **Date** 22/10/2020

Type Relevé 50 x 50 m

Central Coord 50 568853 mE, 7535134 mN

Habitat Clay plain.

Soil Dark reddish brown clay loam.

Rock Type Mudstone.

Vegetation *Hakea lorea* subsp. *lorea*, (*Eucalyptus victrix*) low open woodland over **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) tussock grassland.

Veg Condition Good: impacted by cattle (grazed and trampled); scattered **Vachellia*.

Fire Age No sign of recent fire.

Notes Equal to KTF70 but very dry and grazed.
U1 ^*Hakea lorea* subsp. *lorea*,*Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\3\bi;G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia victoriae subsp. *victoriae*	0.1	150	KTF125-04=
Boerhavia burbidgeana	0.1	10	KTF125-07=
Chrysopogon fallax	4	90	
Corymbia hamersleyana	0.1	500	
Cynodon convergens	0.1	20	KTF125-09=
Dichanthium sericeum subsp. *humilius*	0.1	40	
Eremophila longifolia	0.1	90	
Eucalyptus victrix	1	800	REL21-01
Euphorbia biconvexa	0.1	20	REL21-02
Glycine falcata	0.1	20	KTF125-02=
Hakea lorea subsp. *lorea*	7	600	KTF125-01=
Indigofera linifolia	0.1	40	
Notoleptopus decaisnei	0.1	5	
Operculina aequisepala	0.1	60	
Panicum sp.	0.1	40	KTF125-05=
Polymeria longifolia	0.1	10	KTF125-03=
Sida spinosa	0.1	40	KTF125-06=
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	28	120	
Themeda triandra	0.1	50	
Trichodesma zeylanicum var. *zeylanicum*	0.1	50	
Triodia wiseana	0.1	40	
Urochloa occidentalis var. *occidentalis*	0.5	30	
Vachellia farnesiana	0.5	120	

Site **KTFREL22**

Described by PL/SC **Date** 27/5/2020

Type Relevé 25 x 100 m

Central Coord 50 572497 mE, 7556920 mN

Habitat Moderate drainage.

Soil Dark reddish brown silty clay loam.

Rock Type Calcrete, ironstone.

Vegetation *Eucalyptus camaldulensis* subsp. *refulgens*, (*Melaleuca argentea*) open forest over *Acacia ampliceps*, (A. *bivenosa, Gossypium robinsonii, A. tumida* var. *pilbarensis*) tall open scrub over *Cymbopogon ambiguus*, (**Cenchrus ciliaris*, **C. setiger*, *Themeda triandra*) open tussock grassland with *Triodia epactia* scattered hummock grasses and *Cyperus vaginatus* scattered sedges.

Veg Condition Very Good to Good: weeds present, mainly **Cenchrus* spp.; signs of cattle.

Fire Age Very long unburnt.

Notes *Melaleuca argentea* varies in density along this section. Definitely drier than REL20 to S. On banks, dense tall closed scrub of *Acacia bivenosa, A. ampliceps* and *Eucalyptus camaldulensis* open woodland; not mapped separately as it's only a tiny sliver. Very difficult to set up a quadrat in veg as banks are very dense.
U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens,Melaleuca argentea*\^tree\7\c;M1 ^*Acacia ampliceps,Acacia bivenosa,Gossypium robinsonii,Acacia tumida* var. *pilbarensis*\^shrub\4\c;G1 ^*Cymbopogon ambiguus,Cenchrus ciliaris,Cenchrus setiger,Themeda triandra*\^tussock grass\1\i;G2 *Triodia epactia,Cyperus vaginatus*\hummock grass,sedge\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ampliceps	20	600		
Acacia bivenosa	8	400		
Acacia pyrifolia var. *pyrifolia*	0.25	250		
Acacia spondylophylla	0.1	50		
Acacia tumida var. *pilbarensis*	1	350		
Afrohybanthus aurantiacus	0.1	40		
Atalaya hemiglauca	0.1	400		
Cenchrus ciliaris	3	60		
Cenchrus setiger	3	50		
Codonocarpus cotinifolius	0.1	300		
Corchorus crozophorifolius	0.1	60		
Corchorus lasiocarpus subsp. *parvus*	0.1	110		
Cymbopogon ambiguus	6	180	REL20-01=	Procerus form.
Cyperus vaginatus	1	80		
Enneapogon lindleyanus	0.1	60		
Eriachne tenuiculmis	0.25	40		
Eucalyptus camaldulensis subsp. *refulgens*	32	1900		
Eulalia aurea	0.1	60		
Euphorbia trigonosperma	0.1	40		
Gossypium robinsonii	4	300		
Grevillea wickhamii subsp. *hispidula*	0.1	300		
Indigofera monophylla	0.1	50		
Isotropis atropurpurea	0.1	70		
Melaleuca argentea	8	1800		
Notoleptopus decaisnei	0.1	40		
Phyllanthus maderaspatensis	0.1	40		
Pluchea rubelliflora	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla*	0.1	90		
Senna glutinosa subsp. *glutinosa*	0.1	220		
Stemodia grossa	0.1	40		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Themeda triandra	2	70		
Triodia epactia	1	60		
Triumfetta chaetocarpa	0.1	50	REL22-01	MM - SPECIMEN MISSING; assumed ID based on field name.
Vachellia farnesiana	0.1	100		N=1.

Site **KTFREL23**
Described by RM,AL **Date** 29/3/2021
Type Relevé 100m
MGA Zone 50 572829 mE, 7556692 mN
Habitat Broad braided drainage line.
Soil Light brown.
Rock Type Ironstone.
Vegetation *Eucalyptus camaldulensis* woodland over *Melaleuca argentea*, *Sesbania formosa* low open forest over *Gossypium robinsonii* tall open shrubland over *Cyperus vaginatus* open sedgeland
Veg Condition Very Good. Occasional weeds.
Fire Age Burnt 3-5 years ago/No sign of recent fire.
Notes U1 ^Eucalyptus camaldulensis\Eucalyptus\^tree\7\i; U2+ ^Melaleuca argentea,Sesbania formosa\Melaleuca\^tree\6\c; M1 ^Gossypium robinonsii\Gossypium\^shrub\4\bc; G1 ^Cyperus vaginatus\Cyperus\^sedge\2\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	0.1	60 cm		
Acacia pyrifolia var. *pyrifolia*	0.1	250 cm		
Atalaya hemiglauca	0.1	120 cm	REL23-01	
Capparis spinosa subsp. *nummularia*	0.1	50 cm	REL23-08	
Cenchrus ciliaris	0.1	30 cm		
Cenchrus setiger	0.1	60 cm		
Corchorus crozophorifolius	0.1	70 cm		
Corchorus tridens	0.1	30 cm	REL23-03	
Cucumis variabilis	0.1	30 cm		
Cymbopogon ambiguus	0.1	60 cm	KTF143-13=	
Cynodon dactylon	0.1	25 cm		
Cyperus vaginatus	25	60 cm		
Echinochloa colona	0.1	30 cm	REL23-10	
Enneapogon lindleyanus	0.1	50 cm	KTF144-05=	
Eragrostis falcata	0.1	30 cm	REL23-09	
Eucalyptus camaldulensis subsp. *refulgens*	21	1500 cm		
Euphorbia australis var. *subtomentosa*	0.1	60 cm	KTF143-06=	
Gomphrena canescens	0.1	25 cm		
Gossypium robinsonii	2.5	350 cm		
Indigofera monophylla	0.1	60 cm		
Melaleuca argentea	50	900 cm		
Phyllanthus maderaspatensis	0.1	50 cm		
Pluchea rubelliflora	0.1	30 cm	REL23-06	
Pluchea rubelliflora	0.1	30 cm	REL23-05	
Rhynchosia minima	0.1	40 cm	REL23-02	
Rhynchosia minima	0.1	50 cm		
Sesbania formosa	11	350 cm		
Stemodia grossa	0.1	60 cm		
Stemodia grossa	0.1	25 cm	REL23-04	
Tephrosia densa	0.1	70 cm		
Themeda triandra	0.1	60 cm		
Triodia epactia	0.1	30 cm		
Typha domingensis	0.1	90 cm		
Urochloa piligera	0.1	30 cm	REL23-07	
Vachellia farnesiana	0.1	70 cm		
Waltheria indica	0.1	25 cm		

Appendix 11

Locations of Flora of Conservation Significance

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Aristida jerichoensis var. subspinulifera	P3	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	KTF03-36	
Aristida lazaridis	P2	23-Apr-20	No site	-22.280379	117.65335	GDA94	n=1	PL41	
Astrebla lappacea	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	2%	KTF59-13	
Astrebla lappacea	P3	20-Apr-20	KTF08	-22.326451	117.668855	GDA94	60%	KTF08-1,27	
Astrebla lappacea	P3	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=1	KTF17-27	
Astrebla lappacea	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=2	REL11-04	
Astrebla lappacea	P3	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=300	KTF04-41	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-17	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	27-Apr-20	No site	-21.668784	117.396126	GDA94	n=5		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF74	-21.675647	117.413046	GDA94	n=60		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	27-Apr-20	No site	-21.667808	117.396133	GDA94	n=75		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=200	KTF73-01	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=200	KTF70-24	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275818	117.646194	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275445	117.64695	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274645	117.645966	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274553	117.646286	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274362	117.646625	GDA94	n=2	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274317	117.646741	GDA94	n=3	BB03	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275747	117.646019	GDA94	n=3	BB09	
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	KTF12-07	
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-05	
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=1	KTF19-29	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.342242	117.668855	GDA94	n=1		
Euphorbia australis var. *glabra*	P3	22-Apr-20	No site	-21.67695	117.44966	GDA94	n=1		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.316722	117.67319	GDA94	n=2	PL07=	
Euphorbia australis var. *glabra*	P3	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=3		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316706	117.672792	GDA94	n=3	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316293	117.671974	GDA94	n=5		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.303267	117.678445	GDA94	n=5		
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=6		

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316547	117.671771	GDA94	n=10	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.3161	117.672925	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.30314	117.678454	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302905	117.678599	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302303	117.677761	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=11	KTF21-20	
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=15	KTF70-31	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316234	117.673294	GDA94	n=15		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.303096	117.678318	GDA94	n=15		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316085	117.672167	GDA94	n=20		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316341	117.673508	GDA94	n=25		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.30277	117.678511	GDA94	n=25		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.321269	117.672406	GDA94	n=50	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316703	117.673384	GDA94	n=100	PL07=	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.320591	117.672587	GDA94	n=100	PL07	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.321061	117.672492	GDA94	n=150	PL07=	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302528	117.677995	GDA94	n=150		
Euphorbia inappendiculata var. *inappendiculata*	P2	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=1	KTF73-02	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.66901	117.395963	GDA94	n=5	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.673978	117.411181	GDA94	n=10	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.669137	117.395837	GDA94	n=10	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.667808	117.396133	GDA94	n=150	KTF73-02=	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=1	KTF17-26	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-13	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=1	KTF13-8,12	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF23	-21.678503	117.42866	GDA94	n=1	KTF23-1,14	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=1	KTF70-22	
Euphorbia inappendiculata var. *queenslandica*	P2	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=1	KTF34-02	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=5	KTF21-9,18	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=15	KTF70-12	
Glycine falcata	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	0.50%	KTF21-03	
Glycine falcata	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=1	KTF59-08	
Glycine falcata	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-11	
Glycine falcata	P3	21-Apr-20	KTF60	-22.330808	117.667618	GDA94	n=1	KTF59-08=	
Glycine falcata	P3	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	n=1	KTF125-02	
Glycine falcata	P3	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	n=1	KTF125-02=	
Glycine falcata	P3	30-Mar-21	No site	-22.330035	117.667224	GDA94	n=1	KTF4RM01	
Glycine falcata	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=15	REL11-09	
Goodenia berringbinensis	P4	22-Apr-20	No site	-21.677481	117.443591	GDA94	n=3	AL02=	

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Goodenia berringbinensis	P4	22-Apr-20	No site	-21.677527	117.443456	GDA94	n=50	AL02	
Goodenia nuda	P4	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	KTF56-20	
Goodenia nuda	P4	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=1	KTF58-02	
Goodenia nuda	P4	23-Apr-20	KTF32	-21.692507	117.475202	GDA94	n=1	KTF19-09=	
Goodenia nuda	P4	24-Apr-20	KTF42	-21.757142	117.538145	GDA94	n=1	KTF42-04	
Goodenia nuda	P4	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=1	KTF45-17	
Goodenia nuda	P4	25-Apr-20	KTF55	-21.922066	117.623178	GDA94	n=1	KTF45-17=	
Goodenia nuda	P4	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	KTF122-01	
Goodenia nuda	P4	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	KTF138-02	
Goodenia nuda	P4	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	KTF138-02=	
Goodenia nuda	P4	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1	KTF10-11	
Goodenia nuda	P4	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=1		
Goodenia nuda	P4	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1		
Goodenia nuda	P4	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=1		
Goodenia nuda	P4	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=1		
Goodenia nuda	P4	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1		
Goodenia nuda	P4	19-Apr-20	No site	-22.456452	117.70782	GDA94	n=1		
Goodenia nuda	P4	24-Apr-20	No site	-22.262302	117.653276	GDA94	n=1		
Goodenia nuda	P4	28-Apr-20	No site	-21.989908	117.63506	GDA94	n=1		
Goodenia nuda	P4	28-Apr-20	No site	-21.667175	117.396199	GDA94	n=1		
Goodenia nuda	P4	21-Apr-20	KTF24	-21.676542	117.42885	GDA94	n=2		
Goodenia nuda	P4	26-Apr-20	No site	-22.456961	117.706968	GDA94	n=2		
Goodenia nuda	P4	26-Apr-20	No site	-22.0733	117.689264	GDA94	n=2		
Goodenia nuda	P4	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=3	KTF101-09	
Goodenia nuda	P4	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	n=3		
Goodenia nuda	P4	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=5	KTF01-02=	
Goodenia nuda	P4	20-Apr-20	No site	-22.26279	117.653433	GDA94	n=5		
Goodenia nuda	P4	27-Apr-20	No site	-22.008591	117.635017	GDA94	n=5		
Goodenia nuda	P4	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=6		
Goodenia nuda	P4	20-Apr-20	KTFREL05	-22.429911	117.691067	GDA94	n=6	REL05-16	
Goodenia nuda	P4	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=6	KTF25-09	
Goodenia nuda	P4	20-Apr-20	KTF54	-21.929986	117.621182	GDA94	n=7	KTF54-08	
Goodenia nuda	P4	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=10		
Goodenia nuda	P4	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10		
Goodenia nuda	P4	19-Apr-20	No site	-22.373261	117.676016	GDA94	n=10		
Goodenia nuda	P4	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=13	KTF81-02	
Goodenia nuda	P4	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=15		
Goodenia nuda	P4	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=19	KTF29-20	
Goodenia nuda	P4	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=20		

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Goodenia nuda	P4	29-Mar-21	No site	-22.368807	117.673955	GDA94	n=25		
Goodenia nuda	P4	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=35		
Goodenia nuda	P4	23-Apr-20	KTF33	-21.6953	117.479342	GDA94	n=40	KTF33-04	
Goodenia nuda	P4	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=50	KTF19-09	
Goodenia nuda	P4	19-Apr-20	KTF01	-22.457321	117.7067	GDA94	n=120	KTF01-03	
Goodenia nuda	P4	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=300	KTF06-06	
Gymnanthera cunninghamii	P3	24-Apr-20	No site	-21.687582	117.460345	GDA94	n=1		
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276389	117.650361	GDA94	n=1	PL38=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.16839	117.704352	GDA94	n=1	PL33=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.276237	117.649856	GDA94	n=2	PL38=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.16849	117.704168	GDA94	n=3	PL33=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.168446	117.704003	GDA94	n=4	PL33	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276603	117.651003	GDA94	n=6	PL38	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276335	117.650235	GDA94	n=10	PL38=	
Josephinia sp. Woodstock (A.A. Mitchell PRP 989)	P1	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=1	KTF52-16	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	20-Oct-20	KTF119	-22.50306	117.724536	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF02	-22.440676	117.700202	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	No site	-22.412328	117.687767	GDA94	n=1	BS01=	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	No site	-22.490245	117.720318	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	27-Apr-20	No site	-22.404975	117.683465	GDA94	n=1	BS01	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	26-Mar-21	No site	-22.144678	117.722552	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=2		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=3		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=10	KTF06-19	
Seringia exastia	T	29-Mar-21	KTF145	-22.249097	117.684529	GDA94	n=1	KTF145-09	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	28-Mar-21	KTF142	-22.226015	117.686666	GDA94	4%	KTF142-10	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	21-Oct-20	KTF124	-22.279918	117.651239	GDA94	n=1	KTF124-01	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	27-Mar-21	KTF137	-22.242364	117.680085	GDA94	n=1	KTF137-03	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Sida sp. Hamersley Range (K. Newbey 10692)	P3	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=1		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274526	117.646227	GDA94	n=1	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274499	117.646266	GDA94	n=1	BB04=	

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Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274426	117.646499	GDA94	n=1	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276505	117.650624	GDA94	n=1		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276067	117.649603	GDA94	n=2		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275635	117.649241	GDA94	n=2		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276488	117.650536	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276354	117.65007	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276237	117.649817	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275724	117.649358	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274326	117.646556	GDA94	n=6	BB04	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274726	117.645995	GDA94	n=7	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276631	117.650857	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275959	117.649486	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275517	117.649144	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276576	117.650944	GDA94	n=20	PL37	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.27638	117.650351	GDA94	n=25		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276344	117.650235	GDA94	n=30		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	0.25%	KTF22-02	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=1	KTF07-27	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=1	KTF59-09A	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-18	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=1	KTF70-38	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=1	REL11-08	
Swainsona thompsoniana	P3	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=1	KTF73-08	
Swainsona thompsoniana	P3	21-Apr-20	KTF14	-21.668232	117.393518	GDA94	n=1	KTF14-13	
Swainsona thompsoniana	P3	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	KTF139-13	
Swainsona thompsoniana	P3	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=20	KTF34-04	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	0.50%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	1.50%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF08	-22.326451	117.668855	GDA94	2%	KTF08-02	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	23-Oct-20	KTF127	-22.288778	117.674912	GDA94	4%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	28%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	29%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	45%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	60%	KTF70-01	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	REL07-05b	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF60	-22.330808	117.667618	GDA94	n=1	KTF08-02=	

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	KTFREL06	-21.685919	117.452186	GDA94	n=1	REL06-21	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	KTF11-26	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=2		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=20		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	KTF16	-21.672592	117.402603	GDA94	n=30		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=50		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	No site	-21.673321	117.402702	GDA94	n=100		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=500		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1800		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=6000		
Triodia basitricha	P3	27-May-20	KTF111	-22.10765	117.698115	GDA94	25%	KTF111-01	
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	P1	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1	KTF10-02	

Appendix 12

Locations of Weeds

Taxon Name	Ranking	Date	Location	Latitude	Longitude	Datum	Abundance	Specimen no.
*Aerva javanica	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
*Aerva javanica	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	
*Aerva javanica	*	26-Apr-20	OPP	-21.94904	117.629687	GDA94	n=5	
*Bidens bipinnata	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=1	KTF50-01=
*Bidens bipinnata	*	19-Apr-20	OPP	-21.75831	117.539499	GDA94	n=5	
*Bidens bipinnata	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=5	
*Bidens bipinnata	*	19-Apr-20	KTFREL01	-22.452772	117.700683	GDA94	n=10	KTF01-26=
*Bidens bipinnata	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=10	
*Bidens bipinnata	*	25-Apr-20	KTFREL10	-21.831584	117.597173	GDA94	n=10	
*Bidens bipinnata	*	26-Mar-21	KTF136	-22.495063	117.714553	GDA94	n=10	
*Bidens bipinnata	*	19-Apr-20	KTF01	-22.457321	117.7067	GDA94	n=15	KTF01-27
*Bidens bipinnata	*	19-Apr-20	KTF02	-22.440676	117.700202	GDA94	n=20	KTF01-26=
*Bidens bipinnata	*	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=20	
*Bidens bipinnata	*	19-Apr-20	KTFREL04	-22.419402	117.690218	GDA94	n=30	
*Bidens bipinnata	*	20-Apr-20	KTFREL05	-22.429911	117.691067	GDA94	n=30	
*Bidens bipinnata	*	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=35	
*Bidens bipinnata	*	24-Apr-20	KTF28	-21.728801	117.502848	GDA94	n=50	
*Bidens bipinnata	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=100	
*Bidens bipinnata	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=150	
*Bidens bipinnata	*	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=300	
*Bidens bipinnata	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=300	
*Bidens bipinnata	*	20-Apr-20	OPP	-22.413648	117.685441	GDA94	n=500	
*Bidens bipinnata	*	22-Apr-20	OPP	-22.45666	117.707607	GDA94	n=500	
*Bidens bipinnata	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=700	
*Bidens bipinnata	*	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1000	
*Bidens bipinnata	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1000	
*Bidens bipinnata	*	19-Apr-20	OPP	-22.428394	117.693005	GDA94	n=1000	
*Bidens bipinnata	*	24-Apr-20	OPP	-22.369668	117.673463	GDA94	n=1000	
*Bidens bipinnata	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=2000	
*Bidens bipinnata	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=3000	KTF50-02
*Bidens bipinnata	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=5000	
*Cenchrus ciliaris	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Cenchrus ciliaris	*	23-May-20	KTFREL12	-22.251322	117.667772	GDA94	n=1	
*Cenchrus ciliaris	*	24-May-20	KTF87	-22.063487	117.674628	GDA94	n=1	
*Cenchrus ciliaris	*	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=1	
*Cenchrus ciliaris	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=1	
*Cenchrus ciliaris	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=1	
*Cenchrus ciliaris	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
*Cenchrus ciliaris	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
*Cenchrus ciliaris	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
*Cenchrus ciliaris	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=1	
*Cenchrus ciliaris	*	27-May-20	KTF109	-22.121121	117.728453	GDA94	n=1	

*Cenchrus ciliaris	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Cenchrus ciliaris	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	KTF112-03
*Cenchrus ciliaris	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
*Cenchrus ciliaris	*	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	
*Cenchrus ciliaris	*	28-Mar-21	KTF140	-22.03312	117.656693	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTF143	-22.06223	117.689558	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
*Cenchrus ciliaris	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-21.758227	117.539866	GDA94	n=1	
*Cenchrus ciliaris	*	24-May-20	KTF88	-22.242688	117.672581	GDA94	n=1	
*Cenchrus ciliaris	*	26-Mar-21	KTF136	-22.495063	117.714553	GDA94	n=1	
*Cenchrus ciliaris	*	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	
*Cenchrus ciliaris	*	28-Mar-21	KTF141	-22.038736	117.662921	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
*Cenchrus ciliaris	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=2	
*Cenchrus ciliaris	*	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=3	
*Cenchrus ciliaris	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=4	
*Cenchrus ciliaris	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=5	
*Cenchrus ciliaris	*	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=5	
*Cenchrus ciliaris	*	26-May-20	KTF102	-22.029272	117.641516	GDA94	n=5	
*Cenchrus ciliaris	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF57	-21.949206	117.629405	GDA94	n=10	
*Cenchrus ciliaris	*	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=10	
*Cenchrus ciliaris	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=10	
*Cenchrus ciliaris	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=10	
*Cenchrus ciliaris	*	25-Apr-20	KTF51	-21.877768	117.620484	GDA94	n=20	
*Cenchrus ciliaris	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=20	
*Cenchrus ciliaris	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=30	
*Cenchrus ciliaris	*	25-Apr-20	KTF55	-21.922066	117.623178	GDA94	n=30	
*Cenchrus ciliaris	*	24-Apr-20	KTF42	-21.757142	117.538145	GDA94	n=50	
*Cenchrus ciliaris	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=50	
*Cenchrus ciliaris	*	20-Apr-20	KTF69	-21.937652	117.627524	GDA94	n=60	
*Cenchrus ciliaris	*	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=100	
*Cenchrus ciliaris	*	20-Apr-20	KTF54	-21.929986	117.621182	GDA94	n=100	
*Cenchrus ciliaris	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=100	
*Cenchrus ciliaris	*	25-May-20	KTF91	-22.070938	117.684825	GDA94	n=100	
*Cenchrus ciliaris	*	20-Apr-20	KTF53	-21.908789	117.620056	GDA94	n=120	
*Cenchrus ciliaris	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=150	
*Cenchrus ciliaris	*	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=200	
*Cenchrus ciliaris	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=200	
*Cenchrus ciliaris	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=200	

*Cenchrus ciliaris	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=200	
*Cenchrus ciliaris	*	25-Apr-20	KTF63	-22.027932	117.649833	GDA94	n=200	
*Cenchrus ciliaris	*	25-Apr-20	OPP	-22.027161	117.650079	GDA94	n=200	
*Cenchrus ciliaris	*	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=230	
*Cenchrus ciliaris	*	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=300	
*Cenchrus ciliaris	*	21-Apr-20	OPP	-22.313064	117.67525	GDA94	n=300	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-21.989899	117.635205	GDA94	n=300	
*Cenchrus ciliaris	*	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=400	
*Cenchrus ciliaris	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=800	
*Cenchrus ciliaris	*	20-Apr-20	OPP	-22.321377	117.672474	GDA94	n=1000	
*Cenchrus ciliaris	*	24-Apr-20	OPP	-22.081566	117.697775	GDA94	n=1000	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-22.01097	117.631956	GDA94	n=1000	
*Cenchrus ciliaris	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=1000	
*Cenchrus ciliaris	*	26-May-20	KTF97	-22.054882	117.667456	GDA94	n=1000	
*Cenchrus ciliaris	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=1000	
*Cenchrus ciliaris	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=1500	
*Cenchrus ciliaris	*	22-Apr-20	OPP	-22.149395	117.716166	GDA94	n=2000	
*Cenchrus ciliaris	*	28-Apr-20	OPP	-21.686788	117.459763	GDA94	n=2000	
*Cenchrus ciliaris	*	24-Apr-20	OPP	-22.08394	117.70245	GDA94	n=10000	
*Cenchrus setiger	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Cenchrus setiger	*	24-May-20	KTF87	-22.063487	117.674628	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTF97	-22.054882	117.667456	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF108	-22.090254	117.704114	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF109	-22.121121	117.728453	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
*Cenchrus setiger	*	28-Mar-21	KTF140	-22.03312	117.656693	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTF143	-22.06223	117.689558	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
*Cenchrus setiger	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
*Cenchrus setiger	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=1	
*Cenchrus setiger	*	28-Mar-21	KTF141	-22.038736	117.662921	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
*Cenchrus setiger	*	24-May-20	KTF80	-22.095984	117.702676	GDA94	n=2	
*Cenchrus setiger	*	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=5	
*Cenchrus setiger	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=5	

*Cenchrus setiger	*	20-Apr-20	KTF69	-21.937652	117.627524	GDA94	n=10	
*Cenchrus setiger	*	22-Apr-20	KTF30	-21.685733	117.465738	GDA94	n=10	
*Cenchrus setiger	*	22-Apr-20	KTFREL06	-21.685919	117.452186	GDA94	n=15	
*Cenchrus setiger	*	27-May-20	KTFREL20	-22.09508	117.701022	GDA94	n=15	
*Cenchrus setiger	*	26-Apr-20	OPP	-21.684004	117.460228	GDA94	n=30	
*Cenchrus setiger	*	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=40	
*Cenchrus setiger	*	20-Apr-20	KTF57	-21.949206	117.629405	GDA94	n=40	
*Cenchrus setiger	*	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=40	
*Cenchrus setiger	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=50	
*Cenchrus setiger	*	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=50	
*Cenchrus setiger	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=50	
*Cenchrus setiger	*	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=50	
*Cenchrus setiger	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=150	
*Cenchrus setiger	*	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=200	
*Cenchrus setiger	*	21-Apr-20	OPP	-22.313073	117.67526	GDA94	n=200	
*Cenchrus setiger	*	24-Apr-20	OPP	-21.687149	117.460141	GDA94	n=200	
*Cenchrus setiger	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=200	
*Cenchrus setiger	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=300	
*Cenchrus setiger	*	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=300	
*Cenchrus setiger	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=300	
*Cenchrus setiger	*	28-Apr-20	OPP	-21.679458	117.461112	GDA94	n=300	
*Cenchrus setiger	*	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=300	
*Cenchrus setiger	*	20-Apr-20	OPP	-22.321414	117.672445	GDA94	n=500	
*Cenchrus setiger	*	22-Apr-20	OPP	-21.989899	117.635215	GDA94	n=500	
*Cenchrus setiger	*	25-Apr-20	KTF63	-22.027932	117.649833	GDA94	n=500	
*Cenchrus setiger	*	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=600	
*Cenchrus setiger	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=800	
*Cenchrus setiger	*	25-May-20	KTF91	-22.070938	117.684825	GDA94	n=1000	
*Cenchrus setiger	*	22-Apr-20	OPP	-22.149385	117.716176	GDA94	n=2000	
*Cenchrus setiger	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=3500	
*Cenchrus setiger	*	22-Apr-20	OPP	-22.081575	117.697766	GDA94	n=5000	
*Cynodon dactylon	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=1	
*Cynodon dactylon	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
*Cynodon dactylon	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
Datura leichhardtii subsp. *leichhardtii*	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=4	
Datura leichhardtii subsp. *leichhardtii*	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	KTF03-32
*Echinochloa colona	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	REL07-13
*Echinochloa colona	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Echinochloa colona	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Echinochloa colona	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=1	
*Echinochloa colona	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=1	
*Echinochloa colona	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	REL23-11

*Echinochloa colona	*	22-Apr-20	OPP	-21.683092	117.46008	GDA94	n=3	
*Echinochloa colona	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=10	
*Echinochloa colona	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=10	
*Echinochloa colona	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=20	
*Flaveria trinervia	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=1	
*Flaveria trinervia	*	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	KTF139-23
*Flaveria trinervia	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=2	KTF70-34
*Flaveria trinervia	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=2	
*Flaveria trinervia	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=2	
*Flaveria trinervia	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=2	
*Flaveria trinervia	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=5	KTF95-05
*Flaveria trinervia	*	22-Apr-20	KTF15	-21.671032	117.398607	GDA94	n=7	
*Flaveria trinervia	*	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=10	
*Flaveria trinervia	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=25	
*Malvastrum americanum	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	
*Malvastrum americanum	*	20-Apr-20	OPP	-22.351599	117.669288	GDA94	n=1	
*Malvastrum americanum	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=1	
*Malvastrum americanum	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Malvastrum americanum	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=1	
*Malvastrum americanum	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=1	
*Malvastrum americanum	*	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	
*Malvastrum americanum	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=2	
*Malvastrum americanum	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=2	
*Malvastrum americanum	*	30-Mar-21	OPP	-22.033009	117.656143	GDA94	n=2	
*Malvastrum americanum	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=3	
*Malvastrum americanum	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=5	
*Malvastrum americanum	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	
*Malvastrum americanum	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=10	
*Malvastrum americanum	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=10	
*Malvastrum americanum	*	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=10	
*Malvastrum americanum	*	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=10	
*Malvastrum americanum	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=10	
*Malvastrum americanum	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=15	
*Malvastrum americanum	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=20	
*Malvastrum americanum	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=20	
*Malvastrum americanum	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=30	
*Malvastrum americanum	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=35	
*Malvastrum americanum	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=40	
*Malvastrum americanum	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=50	
*Malvastrum americanum	*	30-Mar-21	OPP	-22.371002	117.671984	GDA94	n=50	
*Malvastrum americanum	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=80	
*Malvastrum americanum	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=100	
*Malvastrum americanum	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1000	

*Malvastrum americanum	*	25-Apr-20	OPP	-22.060188	117.672715	GDA94	n=1000	
*Portulaca pilosa	*	19-Apr-20	KTF02	-22.440676	117.700202	GDA94		KTF02-22
*Portulaca pilosa	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94		KTF64-03
*Portulaca pilosa	*	20-Apr-20	KTF68	-21.676667	117.446658	GDA94		KTF68-13
*Portulaca pilosa	*	21-Apr-20	KTF23	-21.678503	117.42866	GDA94		KTF23-18
*Portulaca pilosa	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94		KTF37-32
*Rumex vesicarius	*	23-Apr-20	OPP	-22.168363	117.704304	GDA94	n=1	
*Rumex vesicarius	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Rumex vesicarius	*	28-Mar-21	OPP	-22.205837	117.691384	GDA94	n=1	
*Rumex vesicarius	*	30-Mar-21	OPP	-22.370948	117.671974	GDA94	n=1	
*Rumex vesicarius	*	23-Apr-20	OPP	-22.168536	117.703984	GDA94	n=4	
*Rumex vesicarius	*	26-Apr-20	OPP	-22.165382	117.70649	GDA94	n=30	
*Rumex vesicarius	*	26-Apr-20	OPP	-22.165148	117.706092	GDA94	n=50	
*Rumex vesicarius	*	28-Mar-21	OPP	-22.11794	117.7261	GDA94	n=100	
*Rumex vesicarius	*	26-Apr-20	OPP	-22.165725	117.706482	GDA94	n=200	
*Rumex vesicarius	*	28-Mar-21	OPP	-22.130768	117.730171	GDA94	n=200	
*Rumex vesicarius	*	26-Apr-20	OPP	-22.165986	117.706581	GDA94	n=1000	
*Setaria verticillata	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=1	KTF50-12
*Setaria verticillata	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	
*Setaria verticillata	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
*Setaria verticillata	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	
*Setaria verticillata	*	20-Apr-20	OPP	-22.370246	117.673389	GDA94	n=3	
*Setaria verticillata	*	30-Mar-21	OPP	-22.093563	117.706142	GDA94	n=3	
*Setaria verticillata	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=10	
*Setaria verticillata	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=50	
*Sonchus oleraceus	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=10	
*Sonchus oleraceus	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=10	
*Tribulus terrestris	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	KTF11-34
*Tribulus terrestris	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=1	KTF04-25
*Tribulus terrestris	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	KTF11-33=
*Tribulus terrestris	*	24-May-20	KTFREL16	-22.096954	117.701147	GDA94	n=1	
*Tribulus terrestris	*	27-May-20	KTF108	-22.090254	117.704114	GDA94	n=1	
*Tribulus terrestris	*	24-Apr-20	OPP	-21.686708	117.459357	GDA94	n=2	
*Tribulus terrestris	*	22-Apr-20	OPP	-22.097276	117.701982	GDA94	n=10	
*Tribulus terrestris	*	24-May-20	KTF80	-22.095984	117.702676	GDA94	n=20	
*Tridax procumbens	*	30-Mar-21	OPP	-22.093563	117.706142	GDA94	n=3	ALRM06
*Vachellia farnesiana	*	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	
*Vachellia farnesiana	*	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	n=1	
*Vachellia farnesiana	*	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	n=1	
*Vachellia farnesiana	*	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	n=1	
*Vachellia farnesiana	*	23-Oct-20	KTF127	-22.288778	117.674912	GDA94	n=1	
*Vachellia farnesiana	*	20-Apr-20	OPP	-22.09446	117.701329	GDA94	n=1	
*Vachellia farnesiana	*	20-Apr-20	OPP	-22.090701	117.703627	GDA94	n=1	

Vachellia farnesiana	*	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1	
Vachellia farnesiana	*	22-Apr-20	OPP	-22.081439	117.697891	GDA94	n=1	
Vachellia farnesiana	*	22-Apr-20	OPP	-21.687417	117.457774	GDA94	n=1	
Vachellia farnesiana	*	23-Apr-20	KTF32	-21.692507	117.475202	GDA94	n=1	
Vachellia farnesiana	*	27-Apr-20	OPP	-21.675273	117.448524	GDA94	n=1	
Vachellia farnesiana	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
Vachellia farnesiana	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
Vachellia farnesiana	*	30-Mar-21	OPP	-22.371328	117.673918	GDA94	n=1	
Vachellia farnesiana	*	22-Apr-20	OPP	-22.321368	117.672474	GDA94	n=2	
Vachellia farnesiana	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=2	
Vachellia farnesiana	*	30-Mar-21	OPP	-22.327836	117.666067	GDA94	n=2	
Vachellia farnesiana	*	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=3	
Vachellia farnesiana	*	27-Apr-20	OPP	-21.674595	117.448541	GDA94	n=4	
Vachellia farnesiana	*	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=5	
Vachellia farnesiana	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=5	
Vachellia farnesiana	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=6	
Vachellia farnesiana	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=6	
Vachellia farnesiana	*	27-Apr-20	OPP	-22.320872	117.672394	GDA94	n=8	
Vachellia farnesiana	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=9	
Vachellia farnesiana	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=10	
Vachellia farnesiana	*	24-Apr-20	OPP	-21.677011	117.444005	GDA94	n=10	
Vachellia farnesiana	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=10	
Vachellia farnesiana	*	29-Mar-21	OPP	-22.062176	117.689927	GDA94	n=10	
Vachellia farnesiana	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=15	
Vachellia farnesiana	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=15	
Vachellia farnesiana	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=15	
Vachellia farnesiana	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=23	
Vachellia farnesiana	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=23	
Vachellia farnesiana	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=30	
Vachellia farnesiana	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=30	
Vachellia farnesiana	*	29-Mar-21	OPP	-22.110847	117.712026	GDA94	n=50	

Appendix 13

Potential Fauna Species List and Species Recorded During Current Survey

Amphibians

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current Survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Pelodryadidae	*Cyclorana australis*	Giant Frog										•				
Hylidae	*Cyclorana maini*	Sheep Frog	•						•	•		•	•	•	•	•
Pelodryadidae	*Cyclorana occidentalis*	Western Water-holding Frog										•				
Hylidae	*Litoria rubella*	Little Red Tree Frog	•			•				•		•		•	•	•
Limnodynastidae	*Neobatrachus sutor*	Shoemaker Frog	•													
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot										•				
Limnodynastidae	*Platyplectrum spenceri*	Centralian Burrowing Frog										•				
Myobatrachidae	*Pseudophryne douglasi*	Gorge Toadlet	•			•						•				•
Myobatrachidae	*Uperoleia saxatilis* (1)	Pilbara Toadlet				•									•	•

(1) - formerly included within *U. russelli,* some previous records listed as such

Reptiles

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Cheluidae	*Chelodina steindachneri*	Flat-shelled Turtle	•			•						•				
Carphodactylidae	*Nephrurus wheeleri*					•				•		•			•	•
Gekkonidae	*Underwoodisaurus seorsus* (1)	Pilbara Barking Gecko		P2		•		•							•	•
Diplodactylidae	*Crenadactylus pilbarensis* (2)	Pilbara Clawless Gecko				•						•				•
Diplodactylidae	*Diplodactylus bilybara* (3)	Western Fat-tailed Gecko				•			•	•		•			•	•
Diplodactylidae	*Diplodactylus galaxias*	Northern Pilbara Beak-faced Gecko				•									•	
Diplodactylidae	*Diplodactylus mitchelli*					•			•							
Diplodactylidae	*Diplodactylus pulcher*		•							•			•			
Diplodactylidae	*Diplodactylus savagei*	Southern Pilbara Beak-faced Gecko				•			•			•	•		•	•
Diplodactylidae	*Lucasium stenodactylum*		•			•			•	•		•	•		•	•
Diplodactylidae	*Lucasium wombeyi*					•			•	•		•			•	•
Diplodactylidae	*Oedura fimbria* (4)	Western Marbled Velvet Gecko	•			•			•			•			•	•
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko	•			•			•	•		•	•		•	•
Diplodactylidae	*Strophurus elderi*					•				•		•	•		•	•
Diplodactylidae	*Strophurus jeanae*									•					•	
Diplodactylidae	*Strophurus strophurus*					•										•
Diplodactylidae	*Strophurus wellingtonae*					•			•	•		•			•	•
Gekkonidae	*Gehyra crypta* (5)		•													
Gekkonidae	*Gehyra media* (6)															
Gekkonidae	*Gehyra micra* (6)															
Gekkonidae	*Gehyra pilbara*					•						•				•
Gekkonidae	*Gehyra punctata*		•			•			•			•	•	•	•	•
Gekkonidae	*Gehyra variegata*					•			•	•		•	•		•	•
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko				•			•	•		•	•	•	•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Gekkonidae	*Heteronotia spelea*	Desert Cave Gecko, Pilbara Cave Gecko				•						•				•
Pygopodidae	*Delma butleri*					•				•		•				•
Pygopodidae	*Delma elegans*					•						•			•	•
Pygopodidae	*Delma nasuta*					•			•	•		•	•	•	•	•
Pygopodidae	*Delma pax*					•				•		•			•	•
Pygopodidae	*Delma tincta*					•			•	•		•	•	•	•	•
Pygopodidae	*Lialis burtonis*					•				•		•	•	•	•	•
Pygopodidae	*Pygopus nigriceps*					•				•		•	•	•	•	•
Agamidae	*Ctenophorus caudicinctus*	Ring-tailed Dragon	•			•			•	•	•	•	•	•	•	•
Agamidae	*Ctenophorus isolepis*	Crested Dragon, Military Dragon	•			•			•	•		•	•	•	•	•
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon				•			•	•		•	•		•	
Agamidae	*Diporiphora amphiboluroides*	Mulga Dragon								•		•				•
Agamidae	*Diporiphora valens*	Southern Pilbara Tree Dragon				•			•			•	•	•	•	•
Agamidae	*Gowidon longirostris*	Long-nosed Dragon	•			•			•	•		•	•	•	•	•
Agamidae	*Pogona minor*	Dwarf Bearded Dragon				•			•	•		•	•	•	•	•
Agamidae	*Tympanocryptis diabolicus* (7)	Hamersley Pebble-mimic Dragon				•			•						•	•
Agamidae	*Tympanocryptis fortescuensis* (7)	Fortescue Pebble-mimic Dragon				•			•						•	•
Scincidae	*Carlia munda*	Shaded-litter Rainbow Skink				•			•	•		•	•	•	•	•
Scincidae	*Carlia triacantha*	Desert Rainbow Skink				•				•					•	•
Scincidae	*Cryptoblepharus buchananii* (8)					•						•			•	•
Scincidae	*Cryptoblepharus ustulatus* (8)		•			•						•				•
Scincidae	*Ctenotus atlas*											•				
Scincidae	*Ctenotus duricola*					•				•		•	•	•	•	•
Scincidae	*Ctenotus grandis*					•				•		•	•	•		•
Scincidae	*Ctenotus hanloni*					•				•			•		•	
Scincidae	*Ctenotus helenae*					•			•	•		•	•	•		•
Scincidae	*Ctenotus leonhardii*					•										•
Scincidae	*Ctenotus pantherinus*	Leopard Ctenotus	•			•			•	•		•	•	•	•	•
Scincidae	*Ctenotus robustus*					•			•			•		•	•	•
Scincidae	*Ctenotus rubicundus*					•				•		•	•			•
Scincidae	*Ctenotus rutilans*					•			•		•	•	•		•	•
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus				•			•	•	•	•	•	•		•
Scincidae	*Ctenotus schomburgkii*					•			•			•	•	•		•
Scincidae	*Ctenotus serventyi*					•										•
Scincidae	*Ctenotus severus*					•										
Scincidae	*Ctenotus uber*							•		•					•	
Scincidae	*Cyclodomorphus melanops*	Slender Blue-tongue	•			•			•	•		•	•	•	•	•
Scincidae	*Egernia cygnitos* (9)	Western Pilbara Spiny-tailed Skink				•								•	•	
Scincidae	*Egernia formosa*					•				•	•	•				•
Scincidae	*Eremiascincus richardsonii*	Broad-banded Sand Swimmer				•				•		•				•
Scincidae	*Lerista flammicauda*								•			•			•	

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Scincidae	*Lerista jacksoni*					•							•			•
Scincidae	*Lerista muelleri*					•				•		•				•
Scincidae	*Lerista timida*					•									•	
Scincidae	*Lerista zietzi*					•										•
Scincidae	*Menetia greyii*					•			•	•		•	•	•	•	•
Scincidae	*Menetia surda*					•			•	•		•				•
Scincidae	*Morethia ruficauda*		•			•			•	•		•		•	•	•
Scincidae	*Notoscincus butleri*					•		•								•
Scincidae	*Notoscincus ornatus*					•				•		•			•	
Scincidae	*Proablepharus reginae*					•				•		•	•		•	
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue				•			•	•		•		•	•	•
Scincidae	*Tiliqua occipitalis*	Western Bluetongue				•										
Varanidae	*Varanus acanthurus*	Spiny-tailed Monitor				•			•	•	•	•	•	•	•	•
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Monitor				•			•	•		•			•	•
Varanidae	*Varanus bushi*	Pilbara Mulga Monitor				•			•	•			•		•	•
Varanidae	*Varanus caudolineatus*					•				•		•			•	
Varanidae	*Varanus eremius*	Pygmy Desert Monitor				•			•	•		•			•	•
Varanidae	*Varanus giganteus*	Perentie				•										
Varanidae	*Varanus gilleni*	Pygmy Mulga Monitor				•				•			•			
Varanidae	*Varanus gouldii*	Bungarra or Sand Monitor				•				•	•		•			
Varanidae	*Varanus hamersleyensis* (10)	Pilbara Rock Monitor, Northern Pilbara Rock Goanna				•										•
Varanidae	*Varanus panoptes*	Yellow-spotted Monitor				•				•			•		•	•
Varanidae	*Varanus tristis*	Racehorse Monitor				•				•	•	•	•		•	•
Typhlopidae	*Anilios ammodytes*								•	•		•				•
Typhlopidae	*Anilios ganei*			P1				•							•	•
Typhlopidae	*Anilios grypus*								•	•		•	•		•	•
Typhlopidae	*Anilios hamatus*								•	•		•				
Typhlopidae	*Anilios pilbarensis*									•						•
Typhlopidae	*Anilios waitii*											•				
Boidae	*Antaresia perthensis*	Pygmy Python				•						•				•
Boidae	*Antaresia stimsoni*	Stimson's Python	•			•						•			•	•
Boidae	*Aspidites melanocephalus*	Black-headed Python				•						•				•
Boidae	*Liasis olivaceus barroni*	Pilbara Olive Python		VU	VU	•	•	•				•				•
Elapidae	*Acanthophis pyrrhus*	Desert Death Adder				•										
Elapidae	*Acanthophis wellsi*	Pilbara Death Adder				•				•		•			•	•
Elapidae	*Brachyurophis approximans*	North-western Shovel-nosed Snake				•				•		•			•	•
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake				•				•		•	•	•	•	•
Elapidae	*Demansia rufescens*	Rufous Whipsnake				•				•		•			•	•
Elapidae	*Furina ornata*	Moon Snake				•						•	•		•	•
Elapidae	*Parasuta monachus*					•				•		•	•	•	•	•
Elapidae	*Pseudechis australis*	Mulga Snake				•				•		•		•	•	•
Elapidae	*Pseudonaja mengdeni* (11)	Western Brown Snake				•								•	•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake				•				•		•			•	•
Elapidae	*Suta fasciata*	Rosen's Snake				•						•		•	•	•
Elapidae	*Suta punctata*	Spotted Snake				•				•			•	•	•	
Elapidae	*Vermicella snelli*					•						•				•

(1) - previously included within *U. millii*, some previous records listed as such
(2) - previously included within *C. ocellatus*, previous records listed as such
(3) - previously included within *D. conspicillatus*, previous records listed as such
(4) - previously included within *O. marmorata*, some previous records listed as such
(5) - previously included within *G. variegata*, many previous records of G. variegata likely attributable to this taxon
(6) - previously included within *G. punctata*, many previous records of G. punctata likely attributable to these taxa
(7) - previously included within *T. cephalus*, previous records of T. cephalus attributable to one or both of these taxa
(8) - previously included within *C. plagiocephalus*, previous records of C. plagiocephalus attributable to one or both of these taxa
(9) - previously included within *E. depressa*, some previous records listed as such
(10) - previously included within *V. pilbarensis*, previous records listed as such
(11) - previously included within *P. nuchalis*, some previous records listed as such
Removed *Cyclodomorphus maximus* (Kimberley plateau endemic) and *Parasuta nigriceps* (south-west species)

Ground-dwelling Mammals

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current Survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna				•				•						
Dasyuridae	*Dasykaluta rosamondae*	Little Red Kaluta				•			•	•		•	•	•	•	•
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll		EN	EN	•	•	•		•						
Dasyuridae	*Ningaui timealeyi*	Pilbara Ningaui				•				•		•	•	•	•	•
Dasyuridae	*Planigale ingrami*	Long-tailed Planigale				•				•			•			
Dasyuridae	*Planigale maculata*	Common Planigale				•									•	
Dasyuridae	*Planigale spp. (1)*	undescribed planigale spp.				•			•	•			•			
Dasyuridae	*Pseudantechinus woolleyae*	Woolley's Pseudantechinus				•			•							•
Dasyuridae	*Sminthopsis longicaudata*	Long-tailed Dunnart		P4		•		•	•							
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart				•			•	•		•	•	•	•	•
Dasyuridae	*Sminthopsis youngsoni*									•						
Thylacomyidae	*Macrotis lagotis*	Bilby		VU	VU	•	•	•								
Phalangeridae	*Trichosurus vulpecula*	Brushtail Possum				•										
Macropodidae	*Lagorchestes conspicillatus leichardti*	Spectacled Hare-wallaby		P4		•		•								
Macropodidae	*Osphranter robustus*	Euro, Biggada				•					•	•		•		•
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu				•				•		•	•	•	•	•
Macropodidae	*Petrogale rothschildi*	Rothschild's Rock-wallaby	•			•										
Muridae	*Leggadina lakedownensis*	Northern Short-tailed Mouse		P4		•		•	•						•	
Muridae	*Mus musculus**	House Mouse				•	•			•			•	•	•	•

Muridae	*Pseudomys chapmani*	Western Pebble-mound Mouse	• M	P4		•		•		•	•Mound	•	•	•		•
Muridae	*Pseudomys delicatulus*	Delicate Mouse				•									•	
Muridae	*Pseudomys desertor*	Desert Mouse				•			•	•			•	•	•	•
Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse				•			•	•		•	•	•	•	•
Muridae	*Rattus rattus**	Black Rat					•									
Muridae	*Zyzomys argurus*	Common Rock-rat				•				•	•	•			•	•
Leporidae	*Oryctolagus cuniculus**	Rabbit					•									
Pteropodidae	*Pteropus alecto*	Black Flying-fox				•									•	
Canidae	*Canis familiaris dingo*	Dingo	•							•			•	•	•	
Canidae	*Vulpes Vulpes**	Red Fox					•									
Felidae	*Felis catus**	Cat	•			•	•							•	•	•
Equidae	*Equus asinus**	Donkey					•						•			
Equidae	*Equus caballus**	Horse					•									•
Camelidae	*Camelus dromedaries**	Camel					•									
Bovidae	*Bos taurus**	European Cattle	•			•								•	•	•

(1) - Planigales in Pilbara currently considered to comprise two undescribed species, previously listed as *P. ingrami* and *P. maculata*.
* - denotes introduced species.

Bats

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species**	**Common Name**	**Current Survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Hipposideridae	*Rhinonicteris aurantia*	Pilbara Leaf-nosed Bat	•	VU	VU	•	•	•			•E					•
Megadermatidae	*Macroderma gigas*	Ghost Bat	•	VU	VU	•	•	•	•							•
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat				•			•					•	•	•
Emballonuridae	*Taphozous georgianus*	Common Sheath-tailed Bat	•			•			•				•	•	•	•
Emballonuridae	*Taphozous hilli*	Hill's Sheathtail-bat				•										•
Molossinae	*Austronomus australis*	White-striped Free-tailed Bat	•						•				•			
Molossidae	*Chaerephon jobensis*	Greater Northern Freetail-bat	•			•			•				•		•	•
Molossidae	*Ozimops lumsdenae*	Northern Free-tailed Bat	•						•							
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	•			•			•			•	•	•	•	•
Vespertilionidae	*Nyctophilus daedalus*	Pallid Long-eared Bat	•													
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat	•			•							•			•
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat	•			•			•				•	•	•	•
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave Bat	•			•			•			•	•	•	•	•

Birds

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species name**	**Common name**	**Current Survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Casuariidae	*Dromaius novaehollandiae*	Emu				•							•	•	•	•
Phasianidae	*Coturnix pectoralis*	Stubble Quail			M	•										•
Phasianidae	*Coturnix ypsilophora*	Brown Quail				•				•						•
Anatidae	*Dendrocygna eytoni*	Plumed Whistling Duck	•			•										•
Anatidae	*Chenonetta jubata*	Maned Duck	•			•										•
Anatidae	*Anas superciliosa*	Pacific Black Duck	•			•										•
Anatidae	*Anas gracilis*	Grey Teal	•			•										•
Podargidae	*Podargus strigoides*	Tawny Frogmouth				•										•
Caprimulgidae	*Eurostopodus argus*	Spotted Nightjar			M	•									•	•
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar				•				•					•	•
Apodidae	*Apus pacificus*	Pacific Swift		MI	M/MI	•	•	•								•
Otididae	*Ardeotis australis*	Australian Bustard				•				•				•	•	•
Centropodidae	*Centropus phasianinus*	Pheasant Coucal				•										•
Cuculidae	*Chrysococcyx basalis*	Horsfield's Bronze Cuckoo				•				•		•	•	•		•
Cuculidae	*Chrysococcyx osculans*	Black-eared Cuckoo			M	•			•							
Cuculidae	*Cacomantis pallidus*	Pallid Cuckoo	•		M	•			•	•		•	•	•		•
Columbidae	*Columba livia*	Rock Dove					•									
Columbidae	*Phaps chalcoptera*	Common Bronzewing	•			•			•			•	•	•	•	•
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	•			•				•		•	•	•	•	•
Columbidae	*Geophaps plumifera*	Spinifex Pigeon	•			•				•		•	•	•	•	•
Columbidae	*Geopelia cuneata*	Diamond Dove	•			•			•	•		•	•	•	•	•
Columbidae	*Geopelia placida*	Peaceful Dove	•			•						•	•	•	•	•
Rallidae	*Gallirallus philippensis*	Buff-banded Rail				•										
Rallidae	*Porzana fluminea*	Australian Crake				•										•
Rallidae	*Porzana tabuensis*	Spotless Crake			M	•										
Turnicidae	*Turnix velox*	Little Buttonquail	•			•			•	•			•		•	•
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew				•									•	•
Recurvirostridae	*Himantopus leucocephalus*	Pied Stilt			M	•										
Charadriidae	*Vanellus tricolor*	Banded Lapwing				•									•	•
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel	•													•
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant				•										
Phalacrocoracidae	*Phalacrocorax varius*	Australian Pied Cormorant				•										
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis	•		M	•						•				
Ardeidae	*Nycticorax caledonicus*	Nankeen Night Heron			M	•										
Ardeidae	*Bubulcus coromandus*	Eastern Cattle Egret			M		•									
Ardeidae	*Ardea pacifica*	White-necked Heron	•			•									•	•
Ardeidae	*Ardea alba*	Great Egret			M	•	•									
Ardeidae	*Egretta novaehollandiae*	White-faced Heron	•			•										•
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican			M	•										
Accipitridae	*Elanus axillaris*	Black-shouldered Kite				•				•		•		•	•	•

				Conservation Status		Database Searches			Previous Surveys							
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Accipitridae	*Lophoictinia isura*	Square-tailed Kite				•										
Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard	•			•				•						
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	•										•		•	
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	•			•				•		•	•	•	•	•
Accipitridae	*Accipiter fasciatus*	Brown Goshawk	•		M	•									•	•
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk				•						•			•	•
Accipitridae	*Circus assimilis*	Spotted Harrier	•			•				•			•			•
Accipitridae	*Milvus migrans*	Black Kite	•									•			•	
Accipitridae	*Haliastur sphenurus*	Whistling Kite	•		M	•				•			•	•	•	•
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea Eagle			M		•									
Strigidae	*Ninox connivens*	Barking Owl	•										•			•
Strigidae	*Ninox boobook*	Australian Boobook			M								•			
Halcyonidae	*Dacelo leachii*	Blue-winged Kookaburra	•			•				•		•	•	•	•	•
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher	•		M	•				•						•
Halcyonidae	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	•			•				•			•	•	•	•
Meropidae	*Merops ornatus*	Rainbow Bee-eater	•		M	•	•			•	•		•	•	•	•
Falconidae	*Falco cenchroides*	Nankeen Kestrel	•		M	•				•			•	•	•	•
Falconidae	*Falco longipennis*	Australian Hobby	•			•			•	•					•	
Falconidae	*Falco berigora*	Brown Falcon	•			•			•	•		•		•	•	•
Falconidae	*Falco hypoleucos*	Grey Falcon	•	VU		•										
Falconidae	*Falco peregrinus*	Peregrine Falcon		OS		•		•		•				•		•
Psittacidae	*Nymphicus hollandicus*	Cockatiel	•			•			•	•			•	•	•	•
Psittacidae	*Eolophus roseicapilla*	Galah	•			•				•		•	•	•	•	•
Psittacidae	*Cacatua sanguinea*	Little Corella	•			•				•		•	•	•	•	•
Psittacidae	*Psephotellus varius*	Mulga Parrot								•		•				
Psittacidae	*Barnardius zonarius*	Australian Ringneck	•			•				•		•	•	•	•	•
Psittacidae	*Pezoporus occidentalis*	Night Parrot		CR	EN		•									
Psittacidae	*Neopsephotus bourkii*	Bourke's Parrot				•										•
Psittacidae	*Melopsittacus undulatus*	Budgerigar	•			•			•	•			•	•	•	•
Ptilonorhynchidae	*Chlamydera guttata*	Western Bowerbird				•						•		•	•	•
Climacteridae	*Climacteris melanurus*	Black-tailed Treecreeper														•
Maluridae	*Malurus assimilis*	Purple-backed Fairywren	•			•				•		•	•	•	•	•
Maluridae	*Malurus leucopterus*	White-winged Fairywren	•			•				•		•	•	•	•	•
Maluridae	*Stipiturus ruficeps*	Rufous-crowned Emu-wren				•				•				•		•
Maluridae	*Amytornis striatus*	Striated Grasswren				•		•		•		•			•	•
Meliphagidae	*Epthianura tricolor*	Crimson Chat	•			•				•			•		•	•
Meliphagidae	*Conopophila whitei*	Grey Honeyeater				•							•	•	•	
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater				•				•					•	•
Meliphagidae	*Sugomel niger*	Black Honeyeater	•							•			•		•	•
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	•			•				•		•	•	•	•	•
Meliphagidae	*Melithreptus gularis*	Black-chinned Honeyeater				•				•		•		•	•	•
Meliphagidae	*Purnella albifrons*	White-fronted Honeyeater	•							•						

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Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	•			•			•	•		•	•	•	•	•
Meliphagidae	*Ptilotula keartlandi*	Grey-headed Honeyeater	•			•				•		•	•	•	•	•
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater	•							•			•	•	•	•
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	•			•			•	•		•	•	•	•	•
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner	•			•				•		•	•	•	•	•
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote	•			•				•		•	•	•	•	•
Pardalotidae	*Pardalotus striatus*	Striated Pardalote	•			•				•				•	•	•
Acanthizidae	*Smicrornis brevirostris*	Weebill	•			•			•	•		•	•	•	•	•
Acanthizidae	*Gerygone fusca*	Western Gerygone	•			•			•			•	•	•	•	•
Acanthizidae	*Acanthiza apicalis*	Inland Thornbill	•			•						•	•	•	•	•
Acanthizidae	*Acanthiza uropygialis*	Chestnut-rumped Thornbill	•			•				•		•	•	•	•	•
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill				•										
Acanthizidae	*Acanthiza robustirostris*	Slaty-backed Thornbill				•							•			•
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler	•			•			•	•		•	•	•	•	•
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler								•						
Artamidae	*Artamus leucorynchus*	White-breasted Woodswallow								•						
Artamidae	*Artamus personatus*	Masked Woodswallow	•			•			•	•			•		•	•
Artamidae	*Artamus superciliosus*	White-browed Woodswallow				•										
Artamidae	*Artamus cinereus*	Black-faced Woodswallow	•			•			•	•		•	•	•	•	•
Artamidae	*Artamus minor*	Little Woodswallow				•				•		•		•	•	•
Cracticidae	*Gymnorhina tibicen*	Australian Magpie				•			•			•	•	•	•	•
Cracticidae	*Cracticus torquatus*	Grey Butcherbird	•			•			•	•		•	•	•	•	•
Cracticidae	*Cracticus nigrogularis*	Pied Butcherbird	•			•				•		•	•	•	•	•
Campephagidae	*Coracina maxima*	Ground Cuckooshrike				•								•	•	•
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike	•		M	•				•		•	•	•	•	•
Campephagidae	*Lalage tricolor*	White-winged Triller	•			•				•			•	•	•	•
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella				•								•		•
Pachycephalidae	*Oreoica gutturalis*	Crested Bellbird	•			•			•	•		•	•	•	•	•
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler	•			•			•	•		•	•	•	•	•
Pachycephalidae	*Colluricincla harmonica*	Grey Shrikethrush	•			•			•	•		•	•	•	•	•
Dicruridae	*Rhipidura leucophrys*	Willie Wagtail	•			•			•	•		•	•	•	•	•
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail											•	•		
Dicruridae	*Grallina cyanoleuca*	Magpie-lark	•		M	•			•	•		•	•	•	•	•
Corvidae	*Corvus orru*	Torresian Crow	•			•				•		•	•	•	•	•
Corvidae	*Corvus bennetti*	Little Crow				•				•			•		•	•
Petroicidae	*Melanodryas cucullata*	Hooded Robin				•			•			•	•	•	•	•
Petroicidae	*Microeca fascinans*	Jacky Winter											•			
Petroicidae	*Petroica goodenovii*	Red-capped Robin				•						•	•	•		•
Alaudidae	*Mirafra javanica*	Horsfield's Bush Lark	•			•								•	•	•
Hirundinidae	*Hirundo neoxena*	Welcome Swallow			M	•										•
Hirundinidae	*Petrochelidon ariel*	Fairy Martin	•			•							•	•		•
Hirundinidae	*Petrochelidon nigricans*	Tree Martin	•		M	•									•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	**Species name**	**Common name**	**Current Survey**	**State**	**Federal**	**NatureMap**	**EPBC PMST**	**DBCA**	**PBS**	**(Biota 2012)**	**(Biota 2015)**	**(Biota 2009)**	**(Biota 2011)**	**(Biota 2008)**	**(Ecologia 2014b)**	**(Ecologia 2012)**
Sylviidae	*Acrocephalus australis*	Australian Reed Warbler				•										
Sylviidae	*Poodytes carteri*	Spinifexbird	•			•				•					•	•
Megaluridae	*Cincloramphus cruralis*	Brown Songlark	•							•			•	•		•
Megaluridae	*Cincloramphus mathewsi*	Rufous Songlark	•							•					•	•
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird				•						•	•		•	•
Estrildidae	*Emblema pictum*	Painted Finch	•			•				•		•	•	•	•	•
Estrildidae	*Neochmia ruficauda*	Star Finch	•			•			•					•		
Estrildidae	*Taeniopygia guttata*	Zebra Finch	•			•			•	•		•	•	•	•	•
Motacillidae	*Anthus australis*	Australian Pipit			M	•							•	•	•	

Appendix 14

Likelihood of Occurrence of Fauna of Conservation Significance

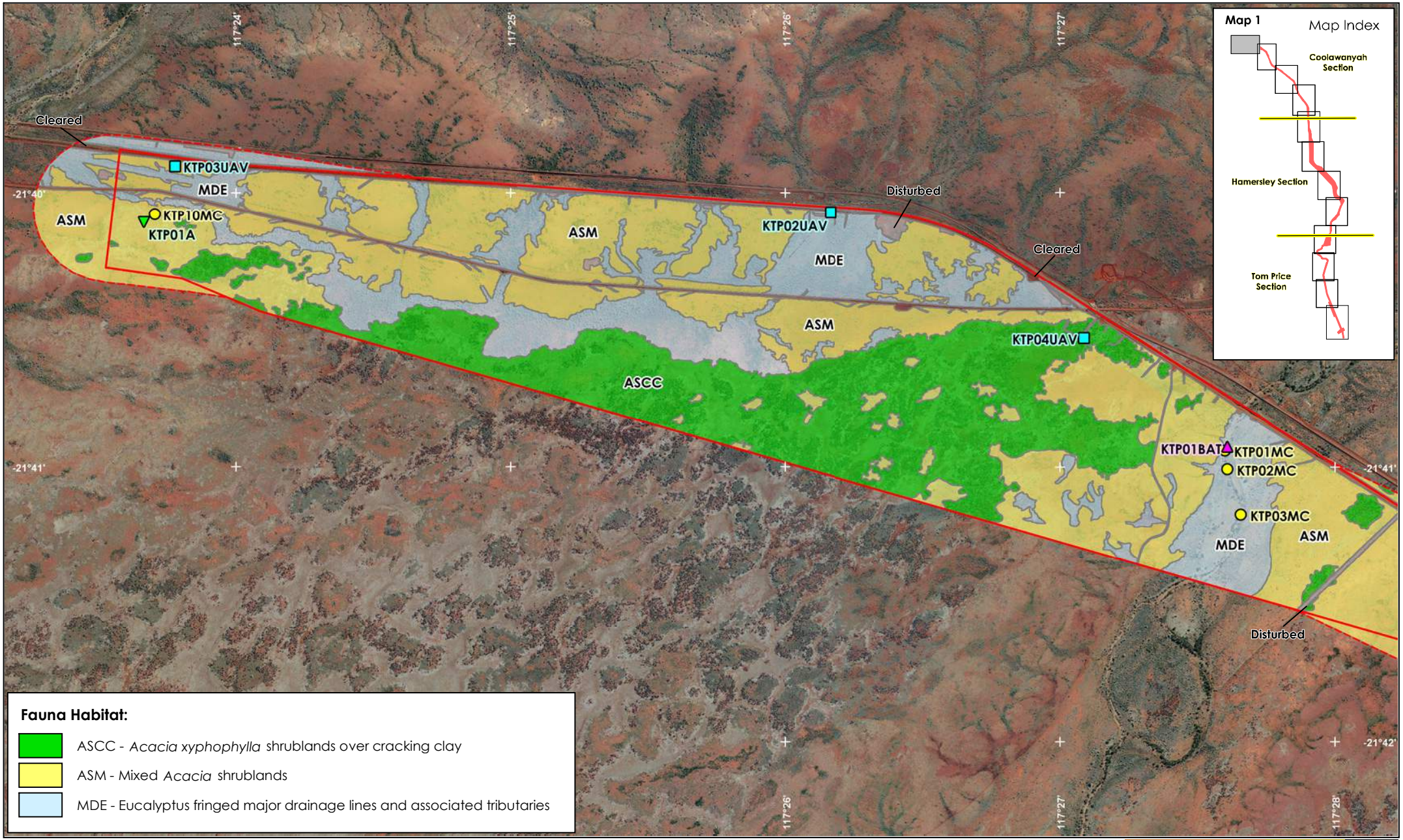
Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Dasyurus hallucatus	Northern Quoll	EN	EN	•	•		•							152 Naturemap records, the nearest being 4.8 km from the study area and the most recent record from 2018.	In the Pilbara region, primarily rocky areas and major drainage lines	Yes, habitat present in the Hamersley section of the study area in the form of rocky areas used for denning (habitat type HS) and foraging/dispersal habitat characterised by creek lines used for foraging transitioning through the landscape.	Likely to occur, suitable habitat present and reocrds of the species in close proximity to the survey area (within 10 km)
Sminthopsis longicaudata	Long-tailed Dunnart	P4		•		•								Two Naturemap records from 2011 that are 0.1 km from the survey area centre.	Arid and rugged, rocky scree areas, including scree slopes, boulder and stony plateaus and adjacent stony plains with shrubs over spinifex hummock grassland	Yes	May occur - suitable habitat present, infrequently recorded
Macrotis lagotis	Bilby	VU	VU	•	•									Two records from 1984 and 1970 respectively, both 13 km from the centre of the survey area. GPS locations from older records often inaccurate as they have been positioned generally in the inland Pilbara area. These GPS records only to 1 decimal place and therefore unreliable	Acacia shrubland, open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas	Yes, open patches ofAcacia shrubland, including A. trachycarpa known to have root dwelling larvae similar to A. monticola.	Unlikely to occur - some suitable habitat present but recorded in frequently and over 40 years ago
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby	P4		•										One record from 1966, near to Mt Sheila, 2 km from the survey area centre.	Sandy habitats with spinifex or low shrubbery	Marginal - some areas of low spinifex but usually rocky rather than sandy.	Unlikely to occur - some suitable habitat present but recorded in frequently and over 40 years ago

Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Leggadina lakedownensis	Northern Short-tailed Mouse	P4		•		•						•		Nine records from 2005, 2006 and 2014. 7 of the records were within 2.1 km from the centre of the survey area.	Spinifex and tussock grasslands, primarily on cracking clays or sandy soils	Yes, Themeda grassland with cracking clay.	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)
Pseudomys chapmani	Western Pebble-mound Mouse	P4		•			•	•Mound	•	•	•		•	Four records from 1992, one from 1995 and one from 2014. records from 9 - 15 km from the survey area centre.	Stony hillsides with hummock grasslands.	Yes	May occur - suitable habitat present including the presence of older mounds. Infrequent records but within 20 km of the survey area.
Rhinonicteris aurantia	Pilbara Leaf-nosed Bat	P4		•	•			•E					•	Nineteen records with the most recent from 2019 and the nearest 0.27 km away.	Reliant on roost sites in caves or mine adits with stable, very hot (28-32°C) and very humid (96-100%) microclimates. Forages over broad range of habitats.	Secondary - foraging	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)

Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Macroderma gigas	Ghost Bat	VU	VU	•	•	•							•	Thirteen records in Naturemap mostly recorded in the last 10 years with the most recent record from 2019. The nearest record was recorded 0.5 km from the centre of the survey area boundary.	Occurs in a broad range of habitats, with their distribution being influenced by the availability of suitable caves and mines for roost sites	Roost caves present and secondary foraging habitat	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)
Underwoodisaurus seorsus	Pilbara Barking Gecko	P2		•								•	•	One record from 2014	Occurs in rocky areas with spinifex and scattered trees.	Yes	May occur
Notoscincus butleri	Western Striped Snake-eyed Skink			•									•	One record from 2002 and five from 2011	Found in rocky areas near creek and river margins dominated by spinifex.	Yes	May occur
Apus pacificus	Pacific Swift	MI	M/ MI	•	•								•	Two records from 2011 and one from 2010, the nearest being 4 km away.	Thought to be exclusively aerial	Yes	May occur
Falco hypoleucos	Grey Falcon	VU		•										Two records from 2012.	Lightly treed inland areas, sandridges, gibber deserts, pastoral land, timbered watercourses	Yes	May occur
Falco peregrinus	Peregrine Falcon	OS		•			•				•		•	Seven naturemap records, the most recent from 2017 and the nearest 0.15 km away.	Cliffs, gorges, timbered watercourses, plains, wetlands, open woodlands, buildings	Yes	May occur
Pezoporus occidentalis	Night Parrot	CR	EN		•									No known records within 18 km of the survey area.	Old growth spinifex, often in association with samphire	Themeda grassland areas potentially suitable but the survey area was absent of old growth spinifex and samphire.	Unlikely to occur - habitat only marginal and no previous records.

Appendix 15

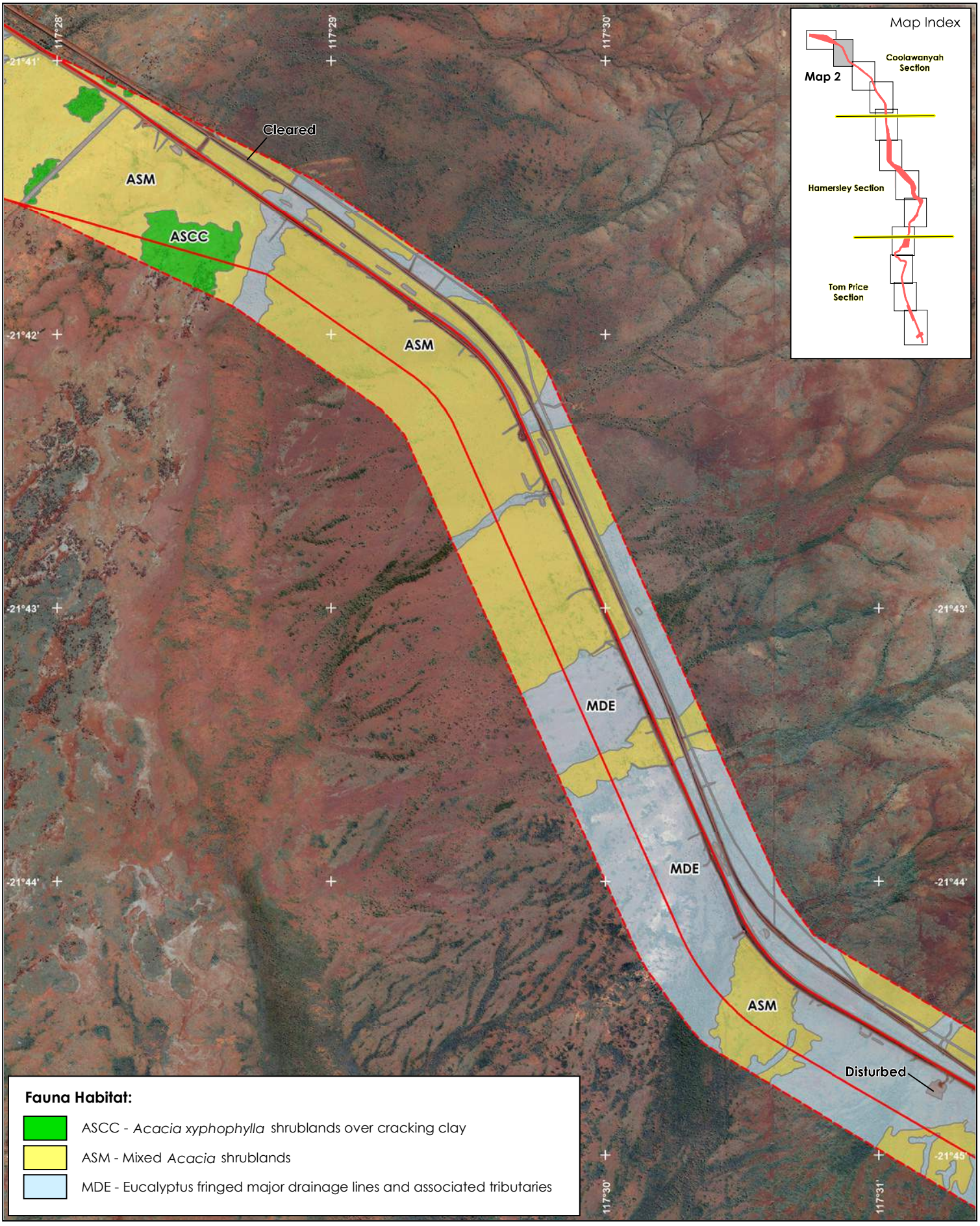
Mapping of Fauna Habitats and Conservation Significant Fauna Records



Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 1

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 07 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

N

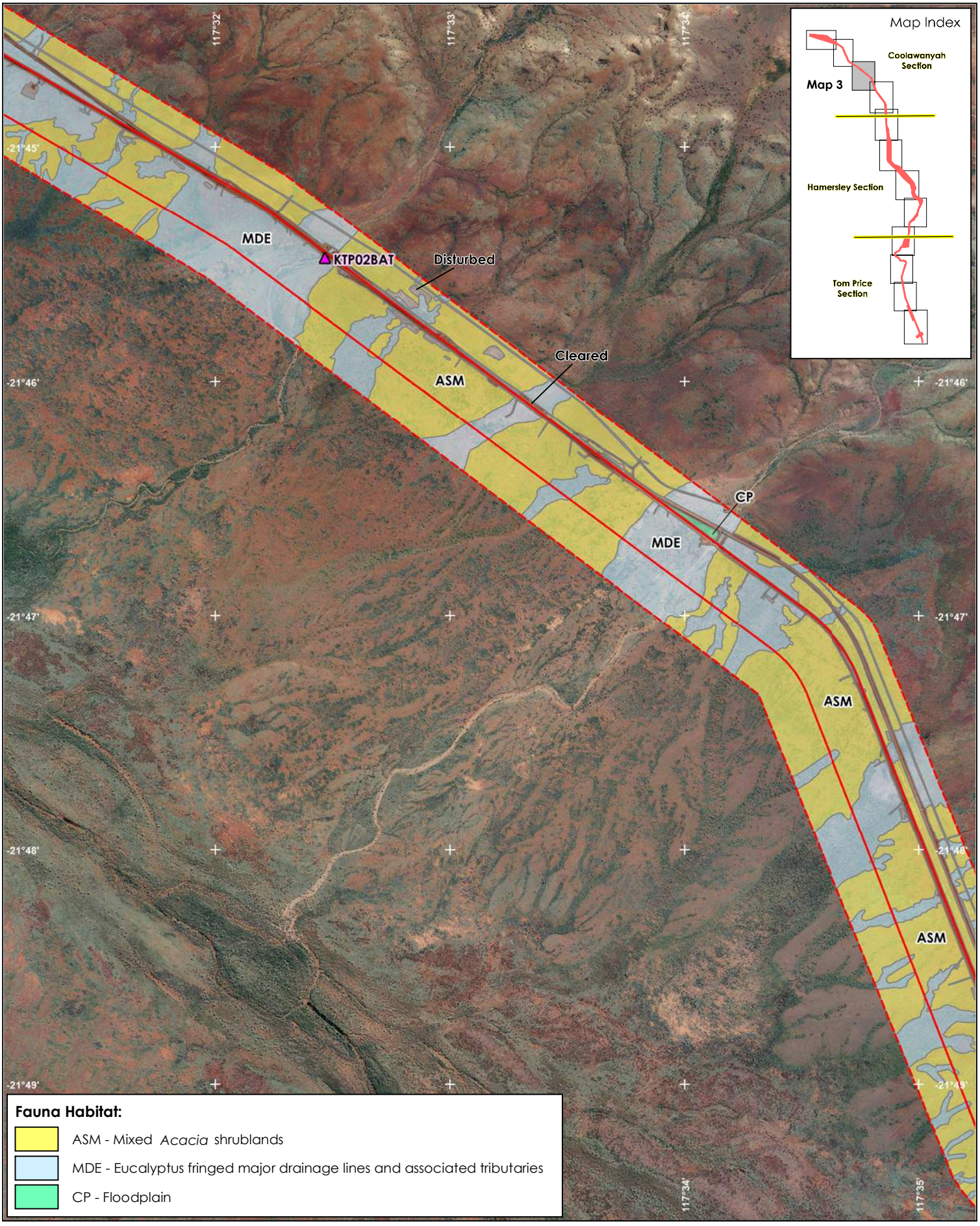
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 2

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Ultrasonic sound recorder

N

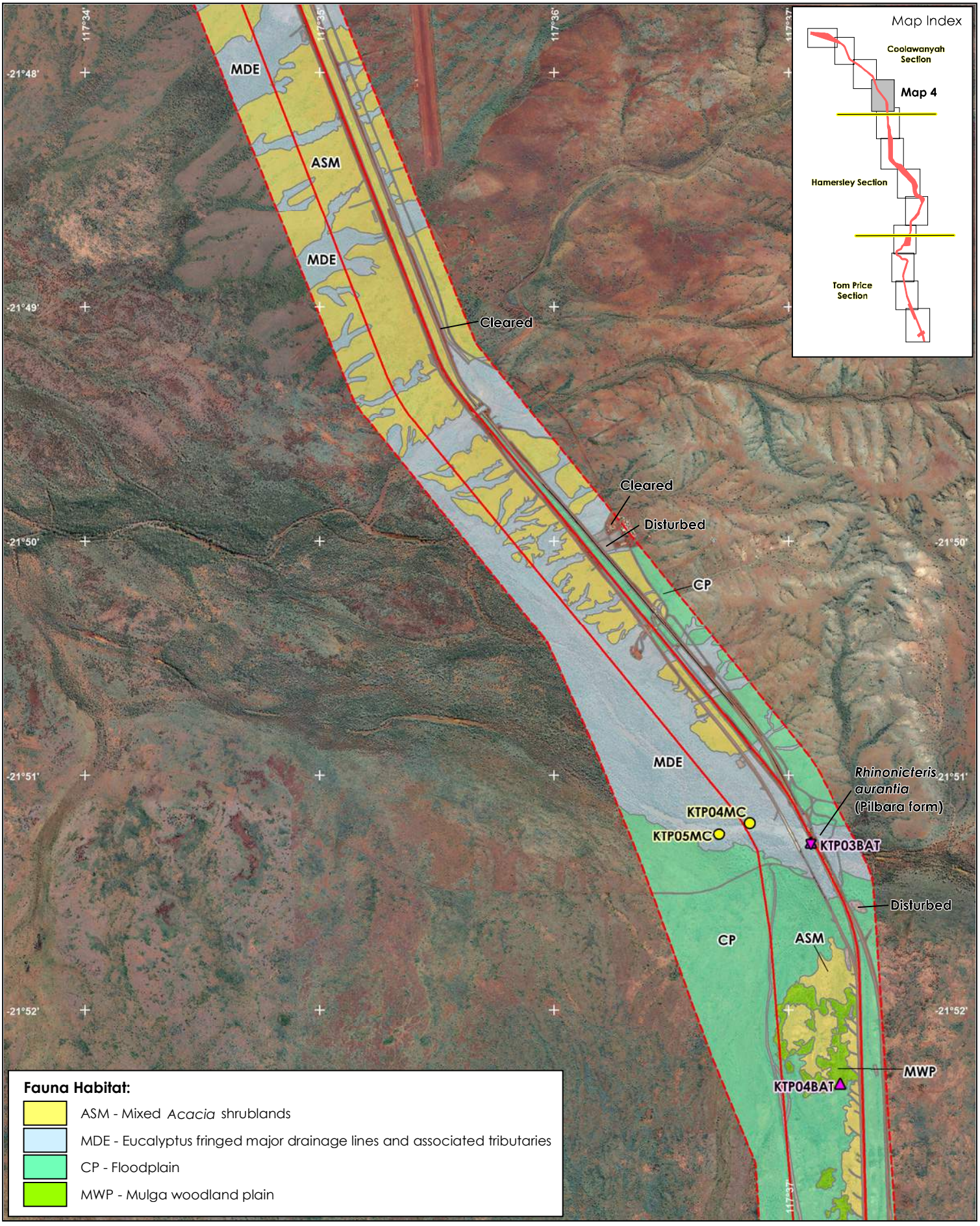
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 3

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

Fauna Species of Conservation Significance

▼ *Rhinonicteris aurantia* (Pilbara form)

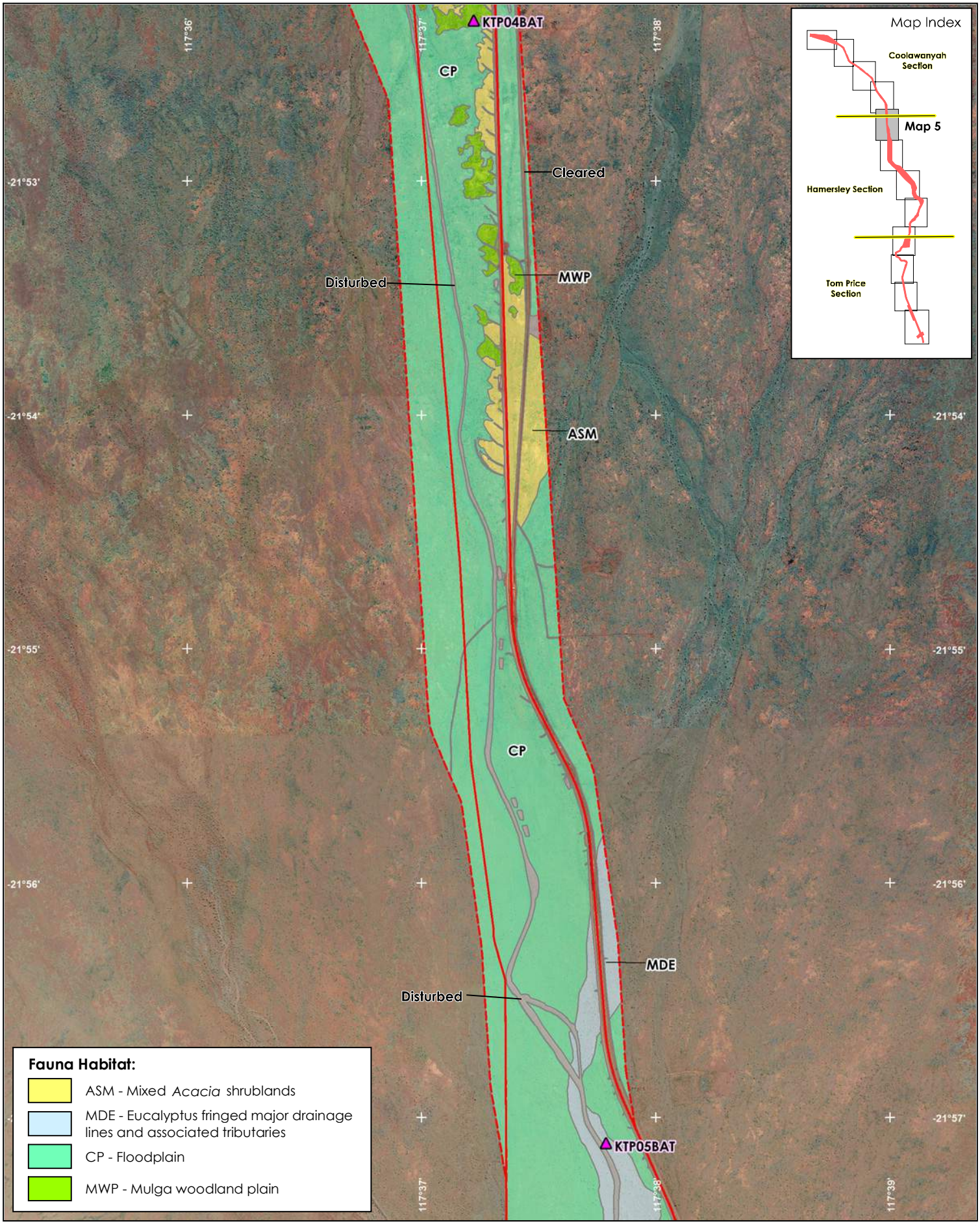
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 4

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

N

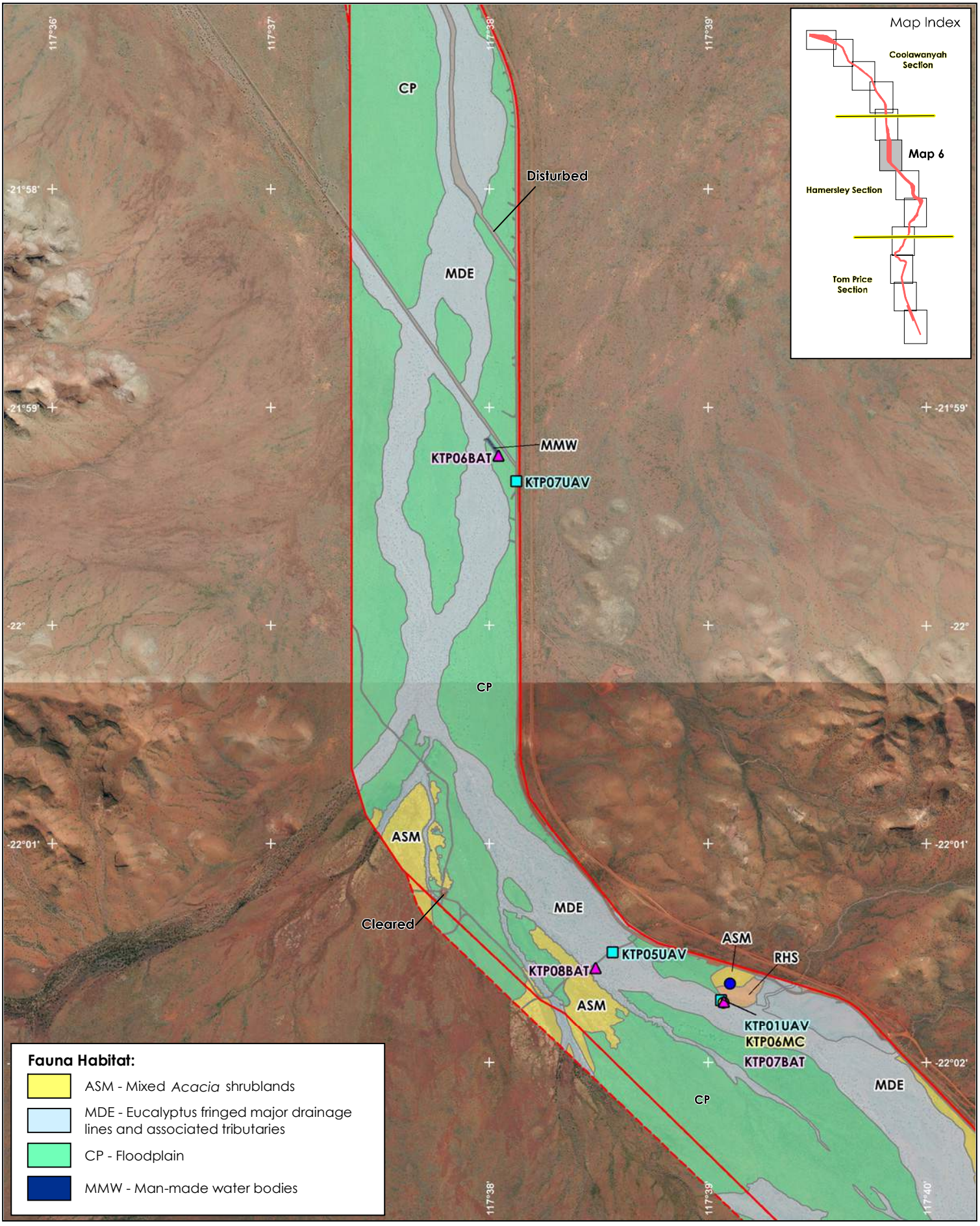
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 5

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

- *Pseudomys chapmani*

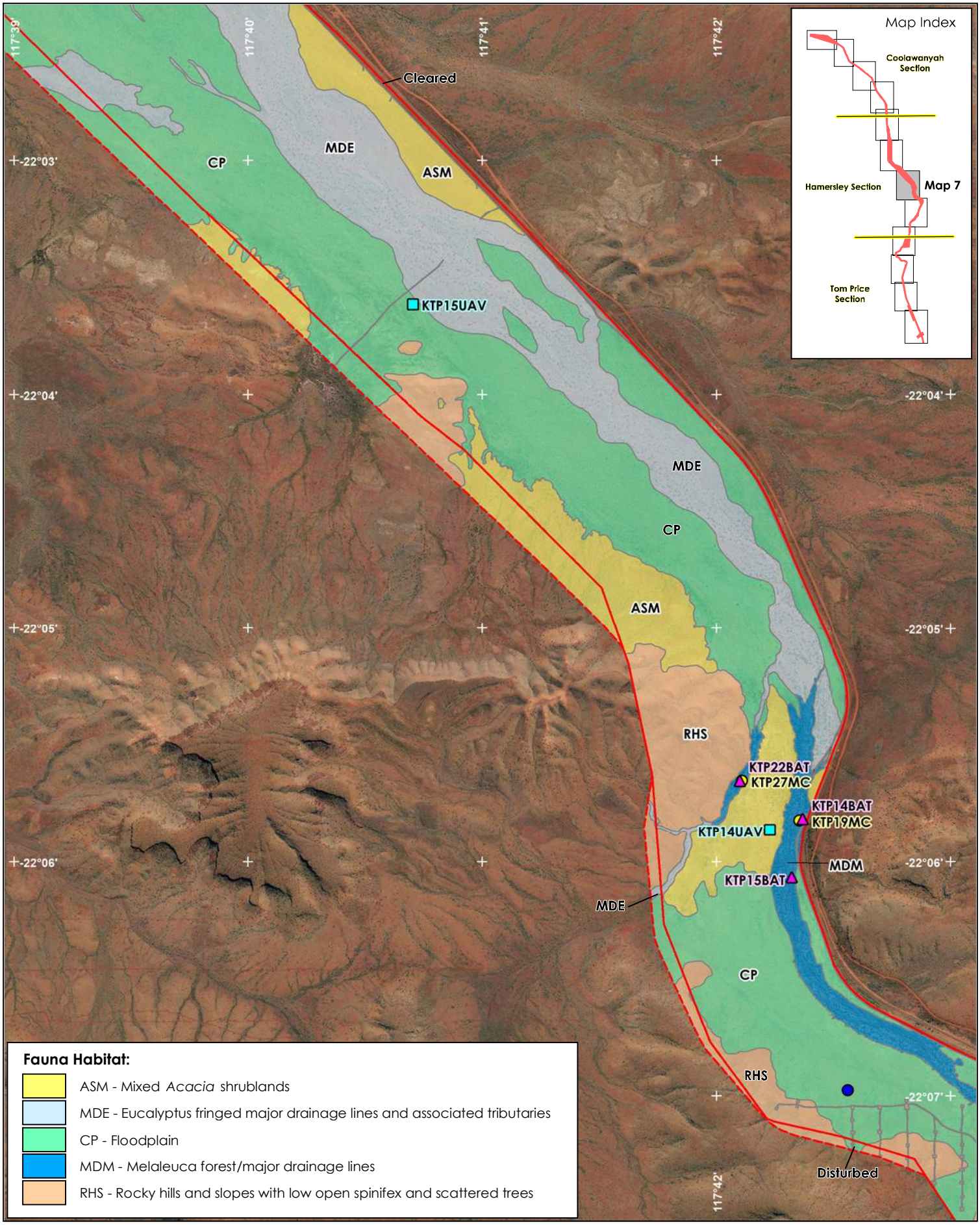
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 6

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:37,500 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

Pseudomys chapmani

0 0.5 1

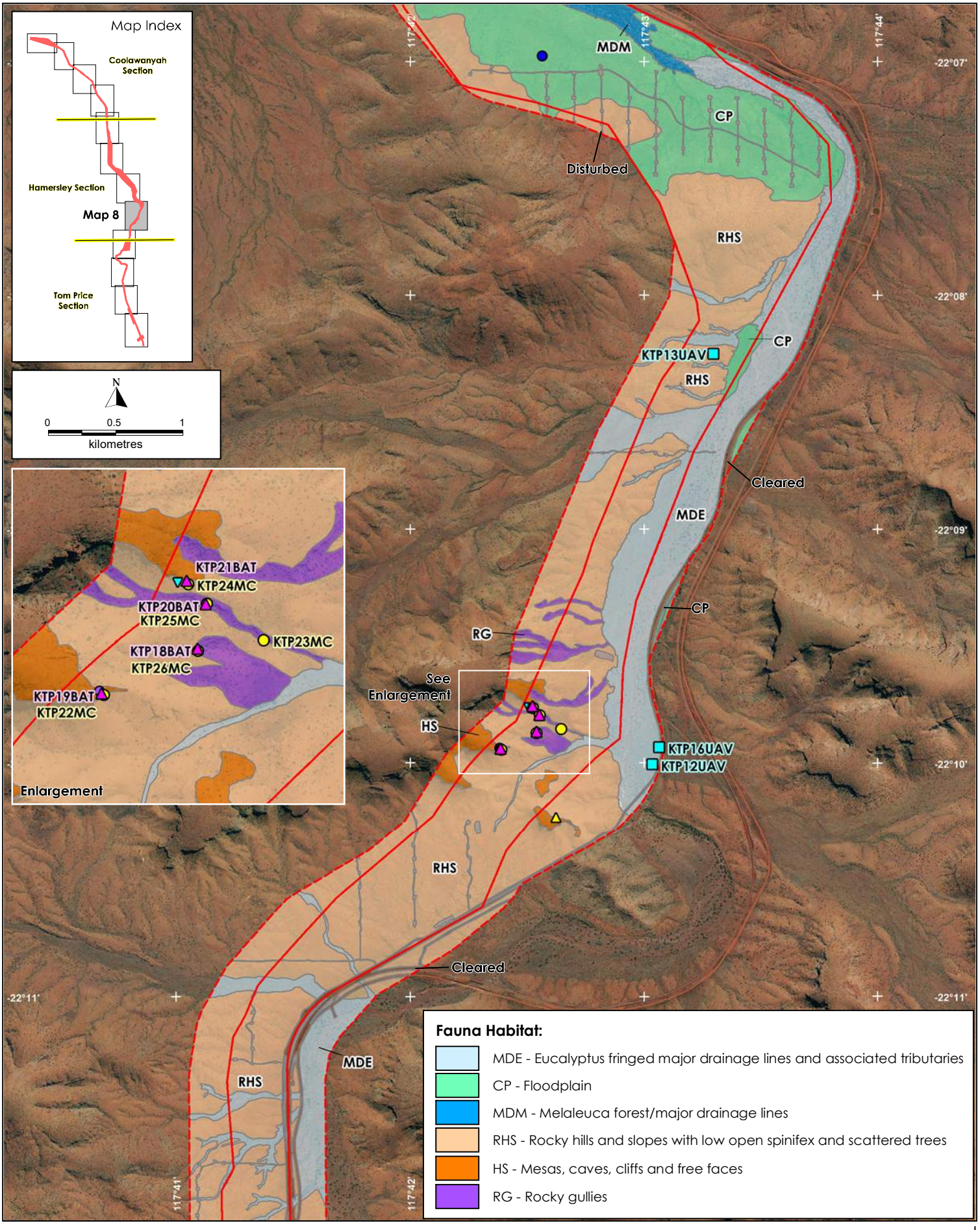
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 7

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Fauna Habitat:

- MDE - Eucalyptus fringed major drainage lines and associated tributaries
- CP - Floodplain
- MDM - Melaleuca forest/major drainage lines
- RHS - Rocky hills and slopes with low open spinifex and scattered trees
- HS - Mesas, caves, cliffs and free faces
- RG - Rocky gullies

Location Map

- Survey area
- Contextual area
- Ultrasonic sound recorder
- Motion camera
- UAV site

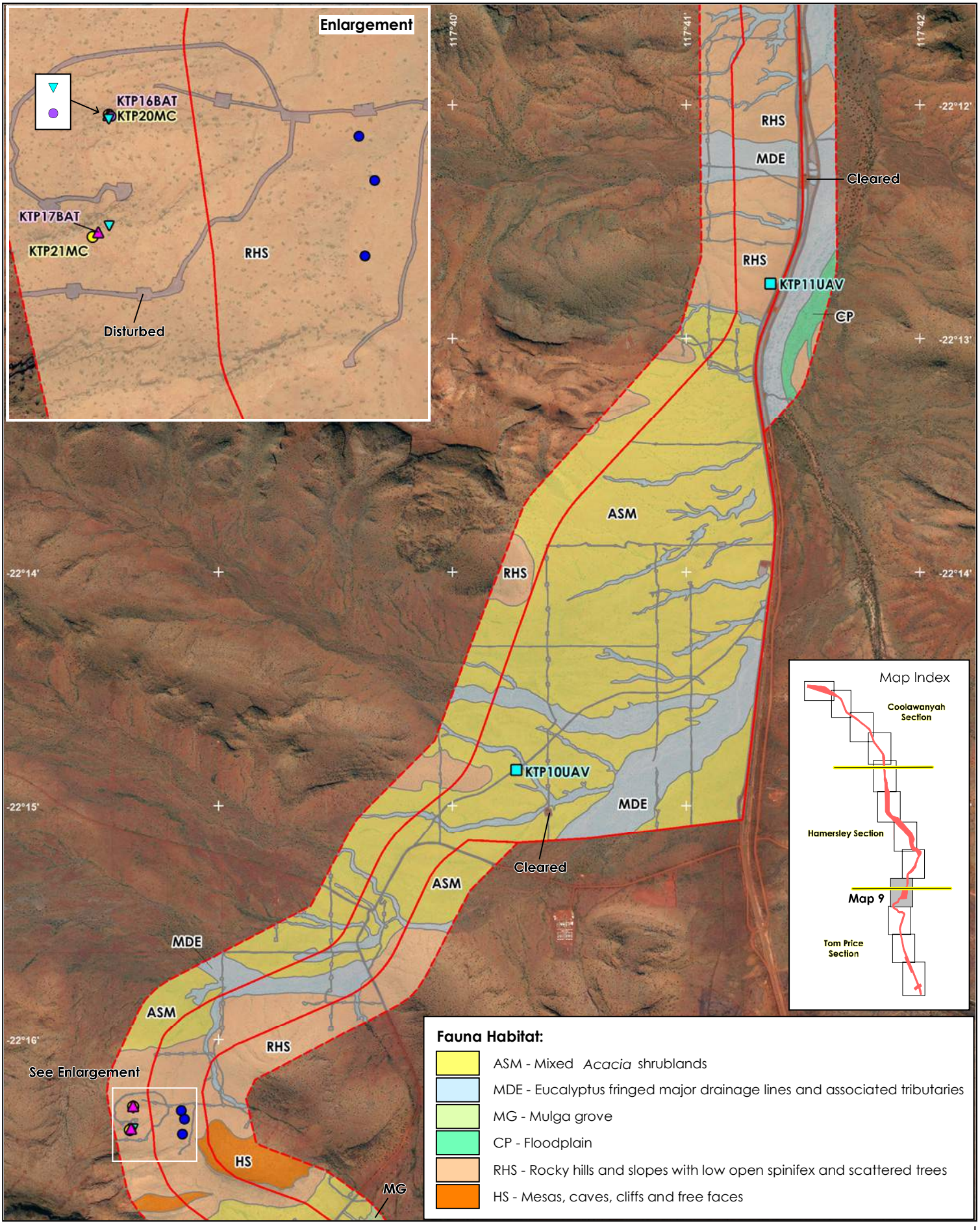
Fauna Species of Conservation Significance

- *Falco hypoleucos*
- *Leporillus conditor*
- *Pseudomys chapmani*
- *Macroderma gigas*

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 8

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

- *Leporillus conditor*
- *Pseudomys chapmani*
- *Macroderma gigas*

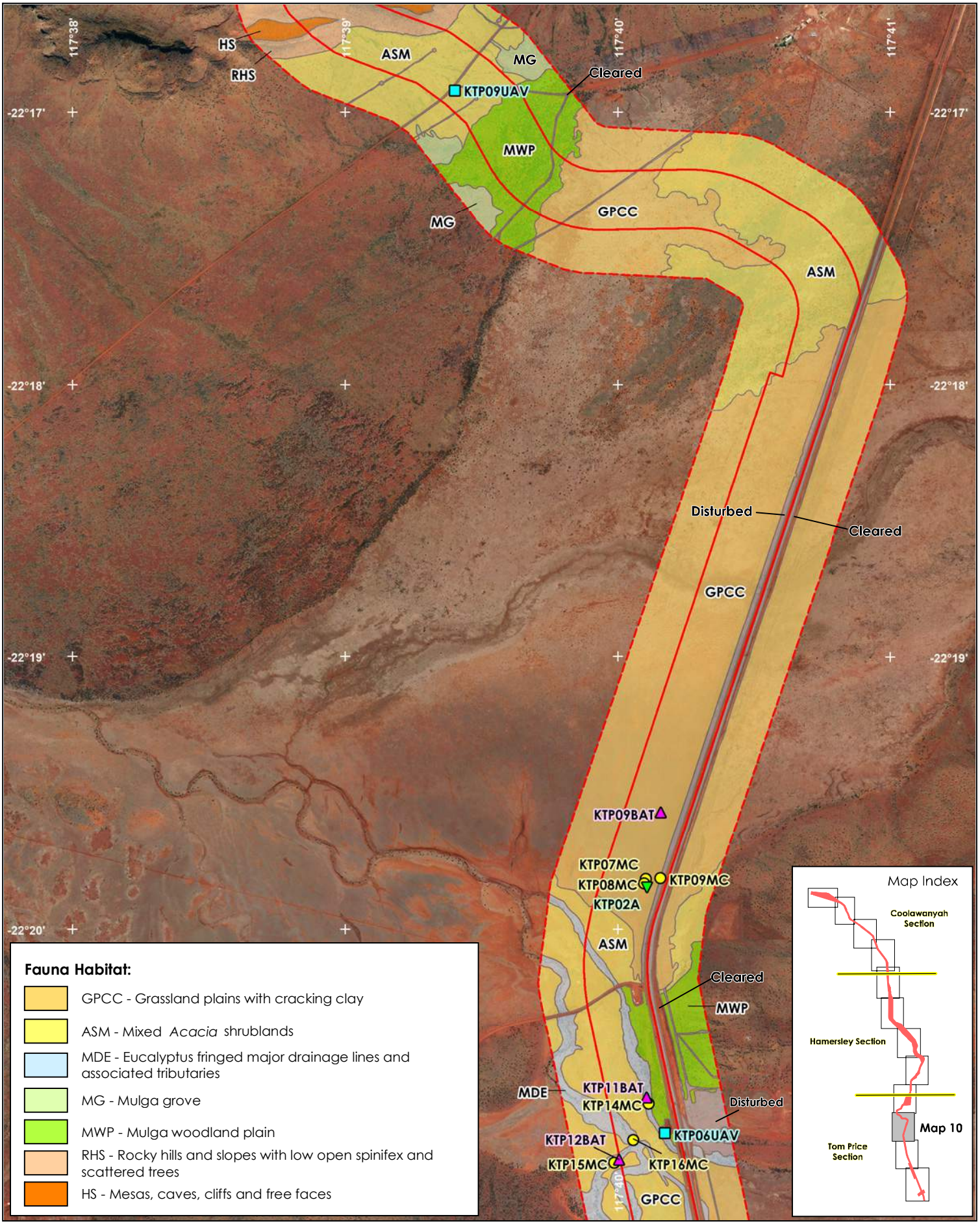
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 9

Biota Environmental Sciences

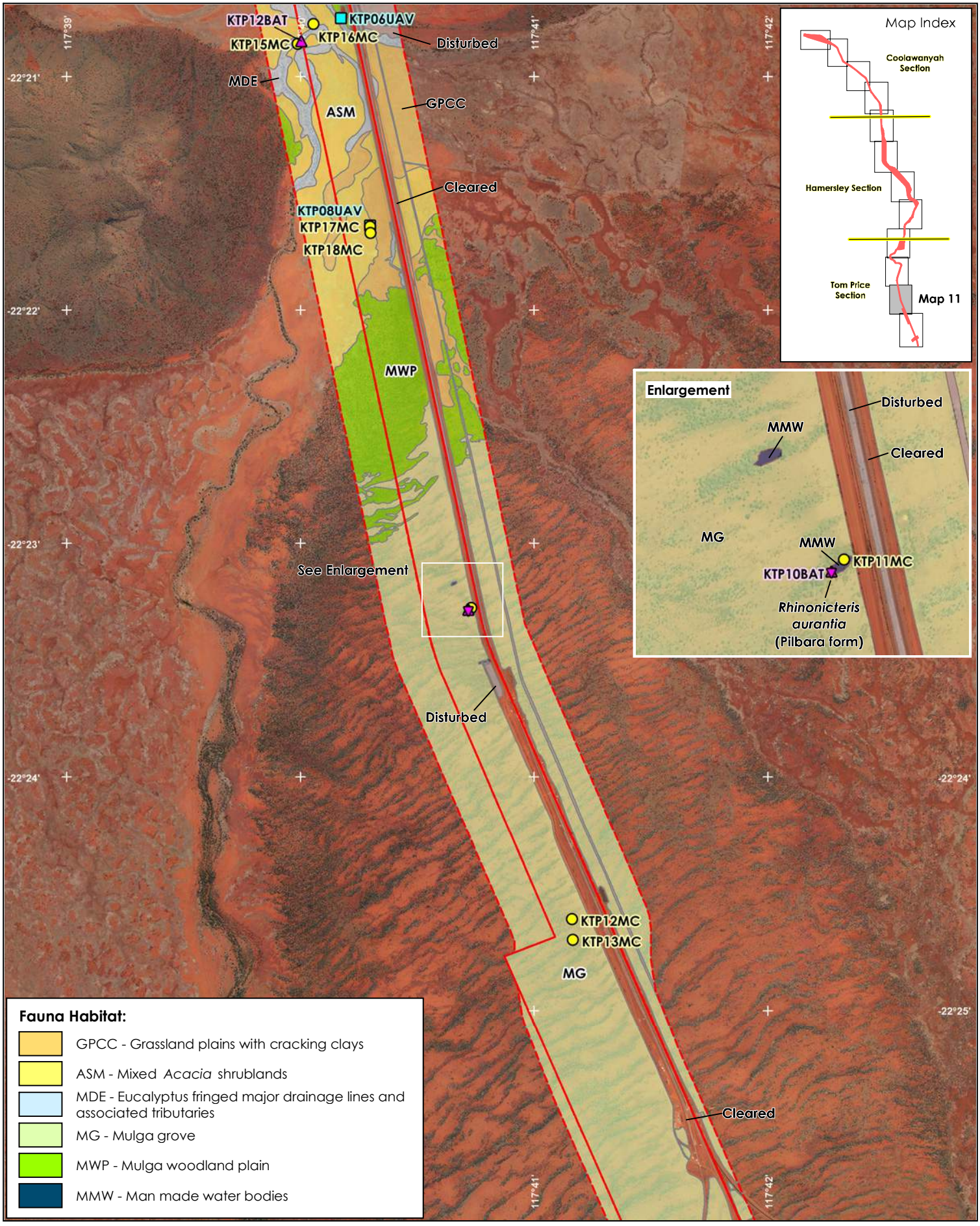
Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 10

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:30,000 @ A4



Fauna Habitat:

- GPCC - Grassland plains with cracking clays
- ASM - Mixed *Acacia* shrublands
- MDE - Eucalyptus fringed major drainage lines and associated tributaries
- MG - Mulga grove
- MWP - Mulga woodland plain
- MMW - Man made water bodies

Location Map

- Survey area
- Contextual area
- Ultrasonic sound recorder
- Motion camera
- UAV site

Fauna Species of Conservation Significance

- *Rhinonicteris aurantia* (Pilbara form)

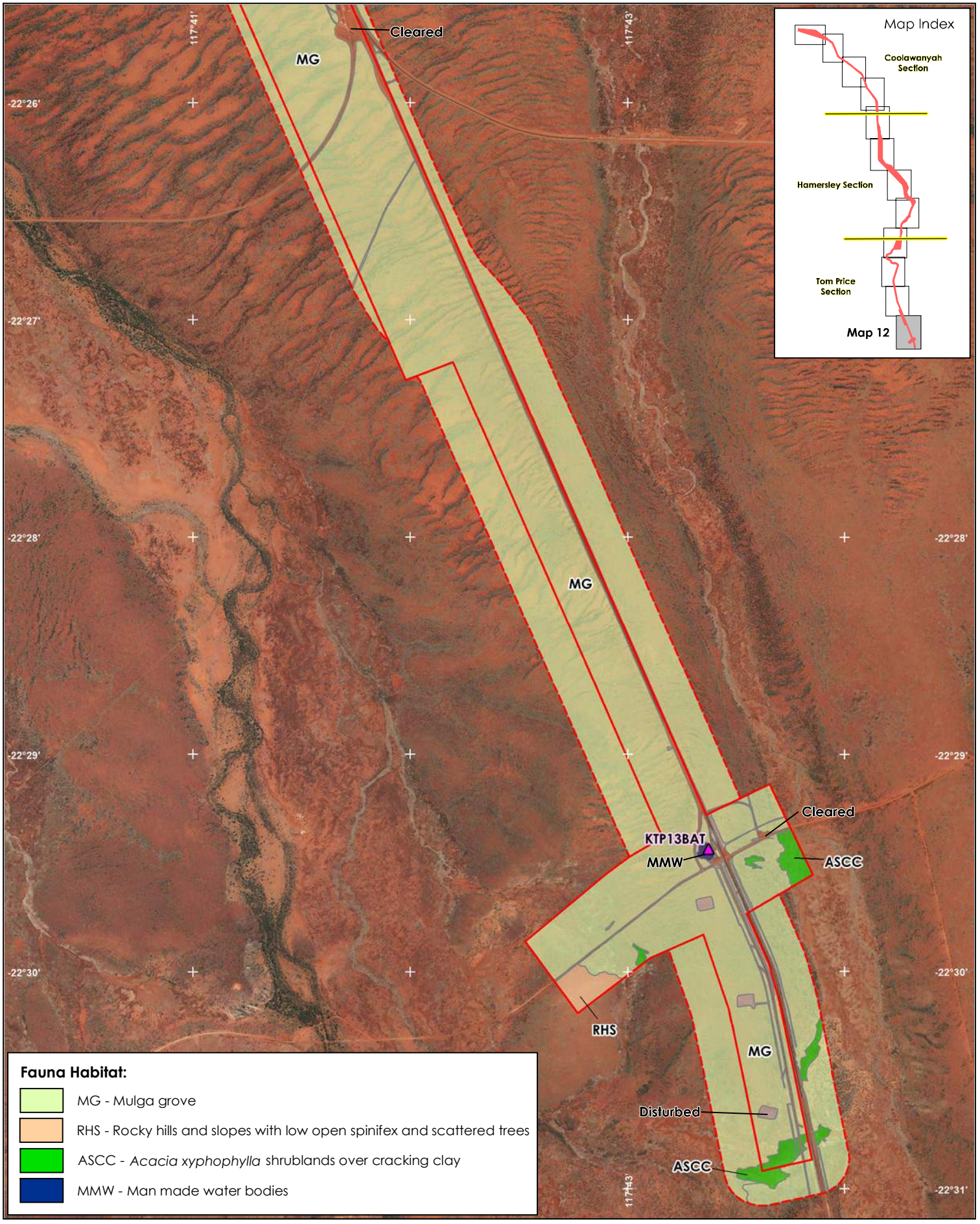
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 11

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Fauna Habitat:

- MG - Mulga grove
- RHS - Rocky hills and slopes with low open spinifex and scattered trees
- ASCC - *Acacia xyphophylla* shrublands over cracking clay
- MMW - Man made water bodies

Location Map

- Survey area
- Contextual area
- Ultrasonic sound recorder

N

0 0.5 1
kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 12

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4