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REPORT

**GREATER BROCKMAN 4 SUSTAINING TONNES
PROJECT: DETAILED FLORA AND VEGETATION
SURVEY 2019**

PREPARED FOR RIO TINTO IRON ORE

December 2019

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Executive Summary

Rio Tinto Iron Ore (Rio Tinto), on behalf of Hamersley Iron Pty Ltd, is evaluating the potential development of a number of iron ore deposits to support the Brockman Syncline Proposal. In January 2019, Stantec Australia Pty Ltd (Stantec) was commissioned to undertake a detailed flora and vegetation survey (the Survey) of the following areas:

- Brockman Syncline 1 (BS1) (3,956.16 hectares (ha));
- BS1 Extension Area (159.51 ha);
- Vivash (5,269.08 ha);
- Infrastructure corridors, including:
 - BS1 Eastern Corridor (335.10 ha);
 - BS1 Central Corridor (585.37 ha); and
 - Brockman Syncline 3 (BS3) Corridor (1,168.96 ha).

In June 2019, additional infrastructure and infill areas were added to the Survey area, accounting for another 3,980.69 ha. These areas were only subject to a single-phase detailed survey and targeted significant species survey. The final Survey area comprises a total of 15,454.87 ha.

The overarching objective of the detailed flora and vegetation survey was to understand the flora and vegetation values of the Survey area to support environmental approvals for the Brockman Syncline Proposal. These objectives were addressed by way of a desktop study and a detailed flora and vegetation survey:

- Phase 1 survey: 17 to 29 May 2019; and
- Phase 2 survey: 12 to 30 August 2019.

A summary of the key findings is presented in **Table ES0-1**.

Both phases of the Survey were conducted during the period that typically coincides with the break of season rainfall events in the Eremaean Botanical Province, however below average rainfall in the preceding months meant that the seasonal conditions were dry. A total of 349 species (including species, subspecies, varieties, forms, hybrids and affinities, native and introduced species) have been recorded from the Survey area to date, of which 314 were recorded during the Survey. A total of fourteen Priority flora species and one range extension have been recorded from the Survey area.

It is likely that the lower than expected species richness for this Survey was attributed to the below average rainfall. This also corresponds to previous surveys that were undertaken during comparable conditions and also reported lower species richness. In addition, approximately 15% of the specimens collected during this Survey could not be fully determined, as many of the specimens were lacking the diagnostic characteristics required for confident identification.

Most of the native flora taxa recorded from the Survey area are well known from the locality, with a similar suite of species previously recorded in adjacent areas. The Fabaceae, Malvaceae and Poaceae families were the most well represented families, consistent with other surveys in the vicinity of the Survey area and was also considered typical of Pilbara bioregion.

The species designated *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) appeared to be similar to the Priority 2 (P2) taxon but differed from the typical form by having smaller stellate hairs with thicker rays, smaller stipules with the epicalyx inserted on the stem 0.5 to 3 mm below the calyx. It is not clear whether these differences are sufficient to warrant formal recognition at some level (species, subspecies, variety). Within this report, this taxon is considered to have the same significance as the P2 taxon.

The majority of Priority flora species recorded from the Survey area are also well known from the locality, having been recorded during previous surveys and / or identified from the database searches. Four Priority species that were previously unknown from the Survey area were identified during the Survey; *Tetradthea butcheriana* (Priority 1 (P1)), *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1), *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) and *Goodenia nuda* (Priority 4 (P4)).

Goodenia nuda (P4) and *H. aff. sp.* Gurinbiddy Range (P2) have been frequently recorded from the PIL3 subregion and within the vicinity of the Survey area. In contrast, *T. butcheriana* (P1) and *Triodia sp.* Silvergrass (P.-L. de Kock BES 00808) (P1) have not been recorded frequently within the PIL3 subregion or Pilbara bioregion. However, records of *T. butcheriana* (P1) have been recorded in close proximity to the Survey area (within 0.5 km); ten individuals from 1 location (2019) and 165 individuals from six locations (2015), all within a 250 m radius of each other. Records of *Triodia sp.* Silvergrass (P.-L. de Kock BES 00808) have also been recently recorded within close proximity to the Survey area (within 0.05 km), comprising 2,400 individuals from four locations. No new populations of five of the Priority species previously recorded within the Survey area were identified during the Survey.

One species recorded from the Survey area; *Acacia ampliceps* × *bivenosa*, has not previously recorded from the PIL3 subregion. This record is considered an extension of the known geographic range for this species. It was recorded from two quadrats representing one vegetation type (EcMgCYPv), which occupies 18 ha of the Survey area. There are 21 known (vouchered) records on the WAH database for this species, with the closest occurrence located 72 km to the north of the Survey area.

Both putative hybrid parents; *Acacia ampliceps* and *Acacia bivenosa* are recorded frequently and widespread throughout all subregions of the Pilbara bioregion. Both records of this species from within the Survey area were growing in association with one of the putative hybrid parents (*Acacia bivenosa*). Because both putative hybrid parents are so widespread in the Pilbara bioregion, there is potential that the Western Australian Herbarium (WAH) records are not a true reflection of the frequency of this hybrid (i.e. it could be more common than current herbarium records indicate).

The post-survey likelihood of occurrence of significant flora indicated that eight taxa were still considered 'Likely' to occur, none of which represented a Priority 1 or 2 species. One of these species, *Cyanthillium gracile* (P3), is a perennial suffruticose herb, meaning that it is woody and perennial at the base but remains herbaceous above. Since it has previously been recorded within 0.05 km of the Survey area and with suitable habitat identified within the Survey area, it is possible that this species might not have been detectable following the dry seasonal conditions.

The remaining seven species are perennial shrubs or trees and were considered 'Likely' to occur post survey due to a combination of; previous records within 10 km of the Survey area; presence of suitable habitat within the Survey area; and access constraints meaning that not all suitable habitat could be searched. Increased survey effort following optimal seasonal conditions may verify the records of these Priority species within the Survey area.

Weed diversity was considered low; of the 72 weed species known from the PIL3 subregion, only 11 were recorded from within the Survey area, representing approximately 3% of the total species. None of these species represented a declared pest or Weed of National Significance (WoNS) and all are well known in the locality and were within their known distributions. Weed diversity was consistent with recent surveys conducted adjacent to the Survey area in similar dry seasonal conditions.

Consistent with previous surveys, weed densities were highest in riparian vegetation types (ChAanAmAbAcSaoTeTtEmCc, ChAcGsSsVfCcTt, ChAcieIAItrfcTeEaTtCc, EvAcGrSsAbApyTrfTeCcTt and ExEvMgAcAcpAbTaTeTtCC. Following optimal seasonal conditions, the foliar cover of **Cenchrus* spp. in the riparian vegetation types is likely to increase and dominate the understorey. Consistent with previous surveys, the hilltops and slopes vegetation types were generally free from weeds.

Due to extensive vegetation type mapping previously conducted outside the Survey area, where possible, the vegetation of the Survey area was assigned to an existing vegetation type to maintain consistency. The remaining vegetation types were assigned and mapped in the field based on *priori*, by an experienced Pilbara botanist, and the cluster analysis should be considered as explanatory only.

There were 46 vegetation types described and mapped from the Survey area, none of which were categorised as Threatened Ecological Community (TEC) or Priority Ecological Community (PEC). This was largely consistent with other surveys of comparable size conducted within 5 km of the Survey area.

The most dominant and widespread vegetation type was ElAmTw, which occurred on slopes and hills and was similar to the dominant vegetation types recorded within the locality and is also expected throughout the Hamersley subregion (PIL3 subregion).

Five vegetation types were considered of high local significance as they supported P1 flora species and / or P2 flora species. These included *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1), *Tetratheca butcheriana* (P1), *Triodia sp.* Silvergrass (P.-L. de Kock BES 00808) (P1), *Hibiscus* aff. sp. Gurinbiddy Range (P2), *Ipomoea racemigera* (P2) and *Pentalepis trichodesmoides* subsp. *hispida* (P2). Many of these vegetation types and species have also been identified during recent surveys in the vicinity of the Survey area.

Triodia sp. Silvergrass (P.-L. de Kock BES 00808) (P1) occurred as the dominant ground layer species in vegetation type Tss, which occupied 17.87 ha (0.12%) of the Survey area. Biota have recently (2019) mapped 1.6 ha of this vegetation type adjoining part of the additional infrastructure and infill areas. The vegetation types that the remaining species occupied (with the exception of Tss) were often widespread throughout the Survey area, however the Priority flora species were only recorded from isolated areas within these vegetation types. In addition, with the exception of *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1) and *Ipomoea racemigera* (P2), the aforementioned Priority species all prefer vegetation and habitat types that are typically situated high in the landscape, in steep gullies, breakaways and cliff faces. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with potential to support these species were surveyed.

Two vegetation types, EcMgCYPv and EvEcChAcEUa, were of high local significance due to the presence of the phreatophytic tree species, *Eucalyptus camaldulensis*. This vegetation type was found during the Survey in association with Caves Creek, a major watercourse of the area, and has also been recently identified by Biota during surveys that adjoin the Survey area.

Vegetation condition of the Survey area ranged from 'Completely Degraded' to 'Excellent' and was considered typical of the locality and of the broader Pilbara bioregion. Riparian vegetation types associated with drainage lines were in lesser condition than upland areas due to impacts from weed infestations and grazing by cattle.

Table ES0-1: Summary of key findings of the Survey

Desktop Assessment	Flora recorded	Vegetation recorded	Significant findings
<p>A total of 58 Priority flora species identified within 50 km of the Survey area, comprising:</p> <ul style="list-style-type: none"> • ten Priority 1 species; • eight Priority 2 species; • 33 Priority 3 species; and • seven Priority 4 species. <p>Ten Priority species have been recorded in the Survey area during previous surveys:</p> <ul style="list-style-type: none"> • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) (P1); • <i>Ipomoea racemigera</i> (P2); • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2); • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3); • <i>Gymnanthera cunninghamii</i> (P3); • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3); • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3); • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P3); • <i>Acacia bromilowiana</i> (P4); and • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4). 	<p>A total of 349 species recorded from the Survey area (314 recorded during the Survey), comprising:</p> <ul style="list-style-type: none"> • 142 genera; • 47 families; <p>The most dominant:</p> <ul style="list-style-type: none"> • families: Fabaceae (69), Poaceae (48) and Malvaceae (48). • genera: Acacia (35), Sida (14), Eremophila (13), Senna (12), Eucalyptus (10) and Hibiscus (10). 	<p>A total of 46 vegetation types were recorded from four broad landform groups:</p> <ul style="list-style-type: none"> • creek lines and floodplains; • gorges, gullies and free faces; • plains and broad valleys; and • hills. 	<p>No Threatened flora recorded from the Survey Area.</p> <p>In total, fourteen Priority flora recorded from the Survey area:</p> <ul style="list-style-type: none"> • <i>Tetratheca butcheriana</i> (P1); • <i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1); • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) (P1); • <i>Hibiscus</i> aff. Sp. Gurinbidy Range (M. E. Trudgen MET 15708) (P2); • <i>Ipomoea racemigera</i> (P2); • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2); • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3); • <i>Gymnanthera cunninghamii</i> (P3); • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3); • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3); • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692); • <i>Acacia bromilowiana</i> (P4); • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4); and • <i>Goodenia nuda</i> (P4). <p>No TECS or PECs recorded.</p>

Rio Tinto Iron Ore

Greater Brockman 4 Sustaining Tonnes Project: Detailed Flora and Vegetation Survey 2019

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Glossary

Abbreviation	Terminology
BAM Act	<i>Biodiversity and Agriculture Management Act 2007</i>
BC Act	Biodiversity Conservation Act 2016
BOM	Bureau of Meteorology
BS1	Brockman Syncline 1
BS3	Brockman Syncline 3
BS4	Brockman Syncline 4
DBCA	Department of Biodiversity Conservation and Attractions
DotEE	Department of the Energy and Environment
En	Endangered
EPA	Environmental Protection Authority of Western Australia
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
ESA	Environmentally Sensitive Areas
FMG	Fortescue Metals Group
Ha	Hectares
Hammersley	Hammersley Iron Pty Ltd
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for Conservation of Nature
LGA	Local Government Area
NVIS	Native Vegetation Information System
PEC	Priority Ecological Community
P1	Priority 1
P2	Priority 2
P3	Priority 3
P4	Priority 4
PMST	Protected Matters Search Tool
Stantec	Stantec Australia Pty Ltd
T	Threatened
TEC	Threatened Ecological Community
TPFL	Threatened (Declared Rare) and Priority Flora database
TP	Threatened and Priority Flora List
Vu	Vulnerable
WAH	Western Australian Herbarium
WC Act	Wildlife Conservation Act 1950
WoNS	Weeds of National Significance

1. Introduction

1.1 Project Background

Rio Tinto Iron Ore (Rio Tinto), on behalf of Hamersley Iron Pty Ltd, is evaluating the potential development of a number of iron ore deposits to support the Brockman Syncline Proposal. The Project is situated approximately 60 km west-north west of Tom Price, in the central Pilbara region of Western Australia (**Figure 1-1**).

In January 2019, Stantec Australia Pty Ltd (Stantec) was commissioned to undertake a detailed flora and vegetation survey (the Survey) of the following areas:

- Brockman Syncline 1 (BS1) (3,956.16 hectares (ha));
- BS1 Extension Area (159.51 ha);
- Vivash (5,269.08 ha);
- Infrastructure corridors, including:
 - BS1 Eastern Corridor (335.10 ha);
 - BS1 Central Corridor (585.37 ha); and
 - Brockman Syncline 3 (BS3) Corridor (1,168.96 ha).

In June 2019, additional infrastructure and infill areas that had not been previously surveyed were added to the Survey area, accounting for an additional 3,980.69 ha. These areas were subject to a single-phase flora and vegetation survey. The final Survey area comprises a total of 15,454.87 ha (**Figure 1-1**).

Several detailed and reconnaissance flora and vegetation surveys have been previously undertaken within and surrounding the Survey area. However, additional survey work is required to meet Environmental Protection Authority (EPA) guidance statements and the Department of the Energy and Environment (DotEE) requirements for future environmental approvals.

1.2 Report Scope and Objectives

The objective of the Survey was to understand the flora and vegetation values of the Survey area to support environmental approvals for the Project. The scope requirements to meet these objectives include the following:

- Complete a desktop assessment, including database searches, a comprehensive literature review and a likelihood of occurrence assessment for identified conservation significant flora and vegetation types.
- Conduct a phase 1 (primary season) and phase 2 (supplementary season) detailed flora and vegetation field survey to develop a list of flora species recorded as occurring in the Survey area, describe and map vegetation types and their condition and conduct targeted searches for flora of significance.
- Prepare a detailed flora and vegetation survey report to inform environmental approvals, including assessing the survey findings in a local and regional context via comparison with available data from within the bioregion.

This report documents the methods, results and key findings of the phase 1 and phase 2 detailed flora and vegetation survey of the Survey area. The scope and limitations of the Survey are summarised in **Table 1-1**.

Table 1-1: Summary of detailed flora and vegetation survey of the Survey area

Type of survey	Survey area size	Survey timing	Relevant regulatory guidance documents	Key survey limitations
<p>Detailed flora and vegetation survey, comprising:</p> <ul style="list-style-type: none"> • Phase 1 and Phase 2 survey (primary survey and supplementary survey) of 11,314.67 ha; <ul style="list-style-type: none"> ○ BS1; ○ Vivash; ○ BS1 Eastern Corridor; ○ BS1 Central Corridor; and ○ BS3 Corridor • Single-phase (supplementary survey) of 3,980.69 ha comprising the Additional Infrastructure and Infill Areas. • Desktop mapping of the BS1 Extension Area, comprising 159.51 ha. 	15,454.87 ha	<ul style="list-style-type: none"> • Phase 1 survey: 17 to 29 May 2019; and • Phase 2 survey: 12 to 30 August 2019. 	<ul style="list-style-type: none"> • EPA Factor Guideline (EPA 2016), Environmental Factor Guideline: Flora and Vegetation; and • EPA Technical Guide (EPA 2016), Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EIA). 	<ul style="list-style-type: none"> • Both phases were conducted during the time that normally coincides with the break of season rainfall events in the Eremaean Botanical Province, however the seasonal conditions for both phases of the Survey were dry, with below average rainfall in the preceding months. • More than half of the Survey area (8777.6 ha; 57%) has been recently burnt (2016 to 2019). • Steep terrain and large distances from light vehicle access tracks meant that some areas were not accessible.

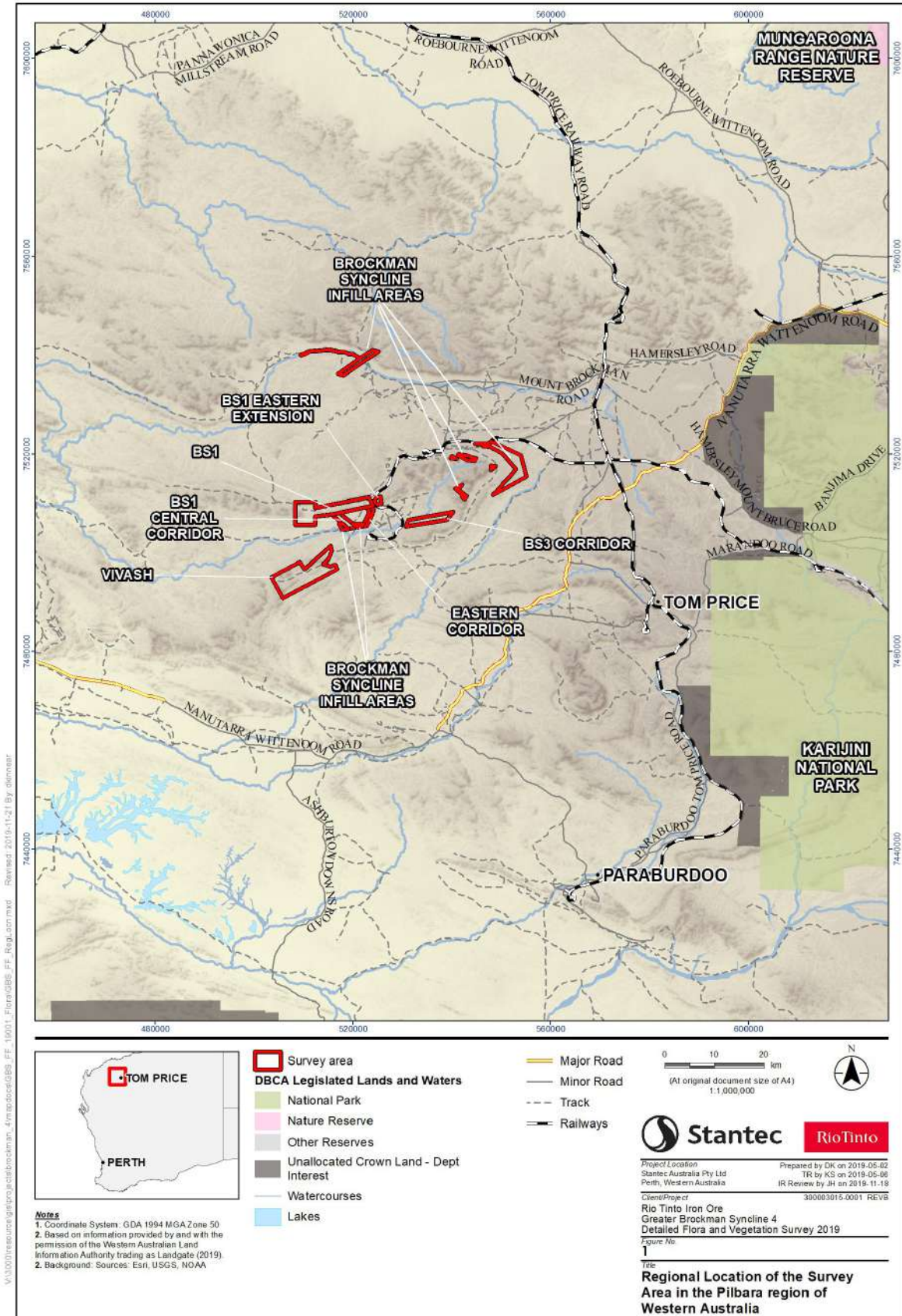


Figure 1-1: Regional location of the Survey area in the Pilbara region of Western Australia.

2. Background Information

2.1 Biophysical Environment

2.1.1 Biogeographic Location

The Interim Biogeographic Regionalisation for Australia (IBRA) is a bioregional framework that divides Australia into 89 biogeographic regions and 419 subregions on the basis of climate, geology, landforms, vegetation, and fauna (Thackway and Cresswell 1995). It was developed through collaboration between state and territory conservation agencies with coordination by the Commonwealth Department of the Environment, Water, Heritage and the Arts (now DotEE).

The Survey area occurs within the Hamersley (PIL3) subregion of the Pilbara bioregion. The Pilbara bioregion encompasses approximately 17,850,000 ha of land in northern Western Australia (McKenzie *et al.* 2009), with the PIL3 subregion comprising approximately 35% of the Pilbara bioregion (6,215,100ha) (Kendrick 2001, McKenzie *et al.* 2009). The PIL3 subregion occupies the southern section of the Pilbara Craton and consists of mountainous areas of Proterozoic sedimentary ranges and plateaux with dissecting gorges of basalt, shale and dolerite (Kendrick 2001). The subregion is characterised by mulga (*Acacia aneura* F. Muell. ex Benth. and its close relatives), low woodland over bunched grasses on fine soils found in the valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on the skeletal soils of the ranges (Kendrick 2001).

The PIL3 subregion features several rare landscapes and ecosystems. This includes the gorges of the Hamersley Range containing permanent spring-fed streams and pools, large stands of *Livistona alfredii* (Millstream fan-palm) at Palm Spring and along Duck Creek, grassland plains dominated by *Themeda* (kangaroo grass), many annual herbs and grasses (Hamersley Station grass plain), and isolated mulga stands of Red Hill Station (Kendrick 2001).

2.1.2 Land systems

Land systems are defined as an area or group of areas throughout which there is a recurring pattern of topography, soils and vegetation (Tille 2006). An understanding of land systems provides an indication of the occurrence and distribution of vegetation types and fauna habitats within and surrounding the Survey area.

A regional land survey was undertaken in the Pilbara region between 1995 and 1999, by the, then, Department of Agriculture (now the Department of Agriculture and Food) and the then Department of Land Administration (now Landgate). The objective of the survey was to develop a comprehensive description of biophysical resources and assess the vegetation composition and soil condition within the region. This information was used by van Vreeswyk *et al.* (2004) to classify and map the land systems of the Pilbara region according to landform, soil, vegetation, geology and geomorphology.

The Survey area intersects seven land systems (**Table 2-1; Figure 2-1**). The Newman and Boolgeeda land systems occupy most of the Survey area (68%), defined by plateaux, ridges and mountains progressing to stony lower slopes and plains.

Table 2-1: Description of land systems associated with the Survey area (van Vreeswyk et al. 2004)

Land System	Description	Extent in the bioregion		Extent in the Survey area	
		Ha	%	Ha	%
Newman System	Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands.	1,993,744.78	11.19	8,086.63	52.32
Boolgeeda System	Stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands	961,636.91	5.40	2,426.73	15.70
Rocklea System	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard (and occasionally soft spinifex) grasslands	2,881,898.78	16.17	1,884.63	12.19
McKay System	Hills, Ridges, plateaux remnants and breakaways of meta sedimentary rocks supporting hard spinifex grasslands.	426,144.94	2.39	1,500.38	9.71
Platform System	Dissected slopes and raised plains supporting hard spinifex grasslands.	236,335.63	1.33	1,058.95	6.85
Robe System	Low plateaus, mesas and buttes of limonites supporting soft spinifex (and occasionally hard spinifex) grasslands.	128,116.62	0.72	254.18	1.64
Table System	Low calcrete plateaus, mesas and lower plains supporting mulga and cassia shrublands and minor spinifex grasslands.	20,646.62	0.12	243.37	1.57
Total		6,646,519	37.30	15,454.87	100.00

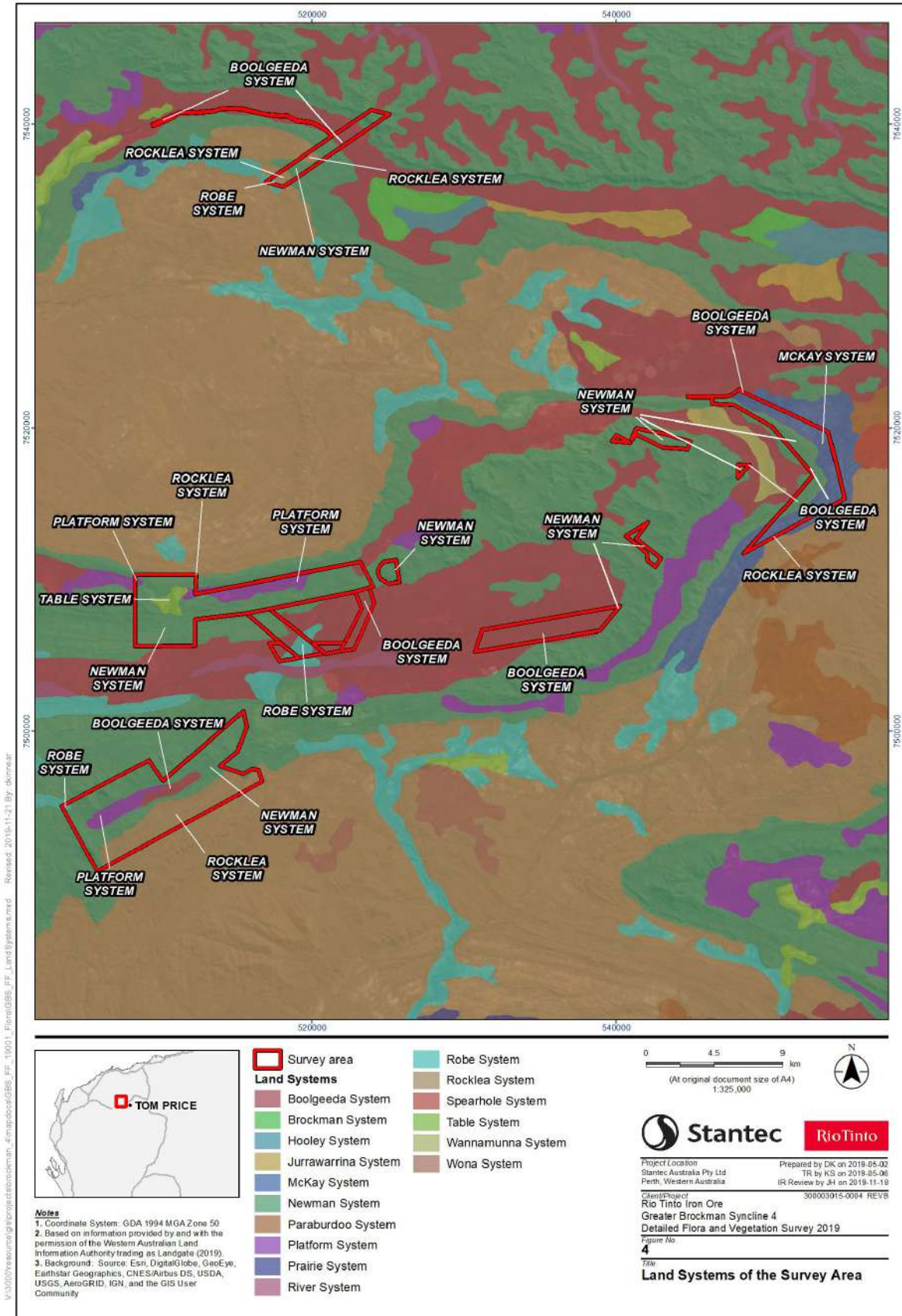


Figure 2-1: Land systems of the Survey area.

2.1.3 Flora and Vegetation

The Survey area occurs in the Fortescue Botanical District of the Eremaean Botanical Province (Beard 1990). The Fortescue Botanical Province is described as tree- and shrub-steppe communities with *Eucalyptus* trees, *Acacia* shrubs, *Triodia pungens* and *Triodia wiseana* grasslands. Mulga occurs in the valleys, while short-grass plains occur on alluvial soils.

2.1.3.1 Pre-European Vegetation

Vegetation mapping of Western Australia (WA) was completed on a broad scale (1:1,000,000 and 1:250,000) by Beard (1975), defining broad vegetation associations. These vegetation associations were re-assessed by Shepherd *et al.* (2002), to account for clearing in the intensive land use zone of WA, and to divide some of the larger vegetation units. In addition, Shepherd *et al.* (2002) also developed a series of systems to assist in the removal of mosaics, although some mosaics still occur.

The Survey area intersects six vegetation units mapped by Beard (**Figure 2-2**), comprising: Hammersley 82; Hammersley 567; Hammersley 18; Hammersley 29; Hammersley 565; and Hammersley 175 systems (**Table 2-2**). The significance of clearing a vegetation association can be determined by comparing current extents (ha) with pre-European extents. **Table 2-3** summarises the current and pre-European extent of these six vegetation associations across three scales; state, bioregion and subregion. The current extents suggest that minimal land clearing has occurred across the three scales of assessment, with close to 100% of vegetation remaining.

At a scale of 1:1,000,000 to 1:250,000, Beard's (1975) mapping only provides a broad overview of expected vegetation units within the Survey area, with a detailed description of the vegetation is presented in Section 7.2.1.

Table 2-2: Pre-European vegetation system associations and extent within the Survey area

System association	System code	Description	Extent within the Survey area	
			Hectares (ha)	Percentage (%)
Hamersley 82	82.3	Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i>	8,666.53	56.08
Hamersley 567	567.1	Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & <i>Triodia basedowii</i>	4,103.85	26.55
Hamersley 18	18.11	Low woodland; mulga (<i>Acacia aneura</i>)	2,246.31	14.53
Hamersley 29	29.7a	Sparse low woodland; mulga, discontinuous in scattered groups	223.75	1.45
Hamersley 565	565.1c	Hummock grasslands, low tree steppe; bloodwood over soft spinifex	175.02	1.13
Hamersley 175	175.4a	Short bunch grassland – savanna/grass plain (Pilbara)	39.41	0.25
Total			15,454.87	100.00

Note: *Vegetation system associations described by Shepherd *et al.* (2002) correspond with that of Beard (1975)

Table 2-3: Extent of Pre-European vegetation system associations for the Survey area remaining across four scales (state, bioregion and subregion)

System	Scale	Pre-European extent (ha)	Current extent (ha)	Proportion remaining (%)	Current extent within the IUCN ² Class I-IV Reserves (ha)	Proportion of extent protected within IUCN Class I-IV Reserves (%) ¹
Hamersley 82	state-wide	2,565,901.28	2,553,206.19	99.51	262,983.27	10.25
	bioregion	2,563,583.23	2,550,888.14	99.50	262,983.27	10.26
	subregion	2,177,573.90	2,165,224.21	99.43	262,243.93	12.04
Hamersley 567	state-wide	777,506.85	774,895.91	99.66	173,610.04	22.33
	bioregion	776,823.96	774,213.03	99.66	173,610.04	22.35
	subregion	776,823.96	774,213.03	99.66	173,610.04	22.35
Hamersley 18	state-wide	19,892,306.46	19,843,148.07	99.75	423,596.43	2.13
	bioregion	676,556.72	671,843.35	99.30	113,404.42	16.76
	subregion	581,246.08	576,541.70	99.19	113,404.42	19.51
Hamersley 29	state-wide	7,903,991.45	7,898,973.24	99.94	22,595.32	0.29
	bioregion	1,133,219.76	1,131,712.01	99.87	21,597.23	1.91
	subregion	172,082.57	170,747.58	99.22	19,293.43	11.21
Hamersley 565	state-wide	143,438.92	143,427.36	99.99	0.00	0.00
	bioregion	108,956.73	108,945.16	99.99	0.00	0.00
	subregion	108,956.73	108,945.16	99.99	0.00	0.00
Hamersley 175	state-wide	526,957.95	524,640.18	99.56	22,198.14	4.21
	bioregion	507,860.16	507,466.80	99.92	22,198.14	4.37
	subregion	93,039.76	92,751.05	99.69	0.00	0.00

Note *Area values have been rounded to the nearest whole number

¹Include existing National Parks, Nature Reserves, Conservation Parks, 5(g) Reserves (Conservation Reserves managed by the Department of Biodiversity, Conservation and Attractions (DBCA)), DBCA conservation estate.

²International Union for Conservation of Nature (IUCN).

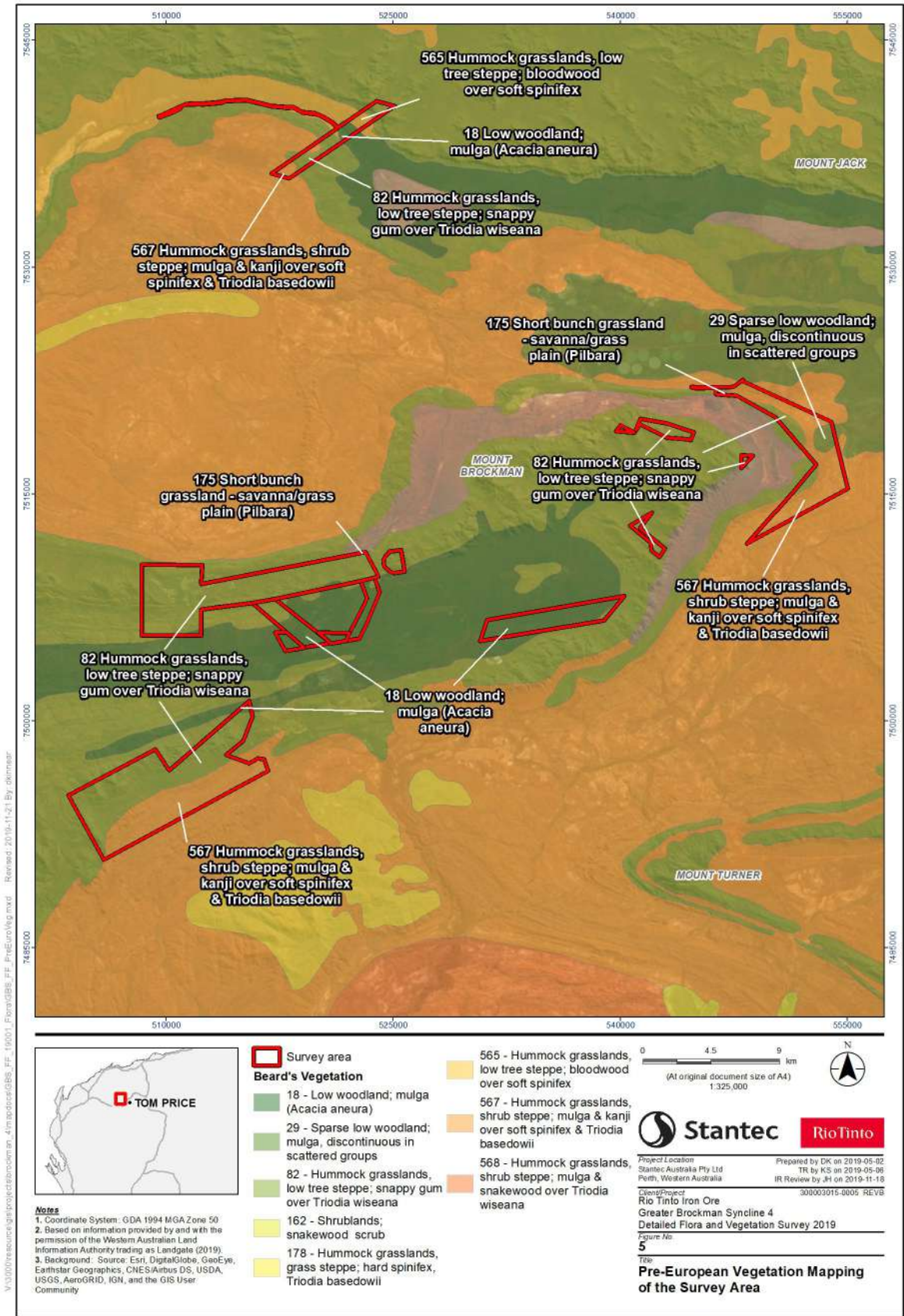


Figure 2-2: Pre-European vegetation mapping of the Survey area.

2.2 Physical Environment

2.2.1 Climate

The PIL3 subregion has a semi-desert tropical climate with an annual average rainfall of 300 mm, produced primarily during summer cyclonic and thunderstorm events. However, winter rainfall is also known to occur (Kendrick 2001).

The nearest Bureau of Meteorology (BOM) weather station to the Survey area, with relevant long-term and recent climatic data is Paraburdoo Aero Weather Station (No. 007185), approximately 80 km to the south-east. The mean annual rainfall at Paraburdoo Aero is 323 mm (1974 to 2019), with February usually the wettest month of the year receiving rainfall related to tropical cyclone activity in the Pilbara region. Mean maximum monthly temperatures typically peak above 40°C in January (Figure 2-3), with mean minimum monthly temperature close to 10°C in July (BoM 2019).

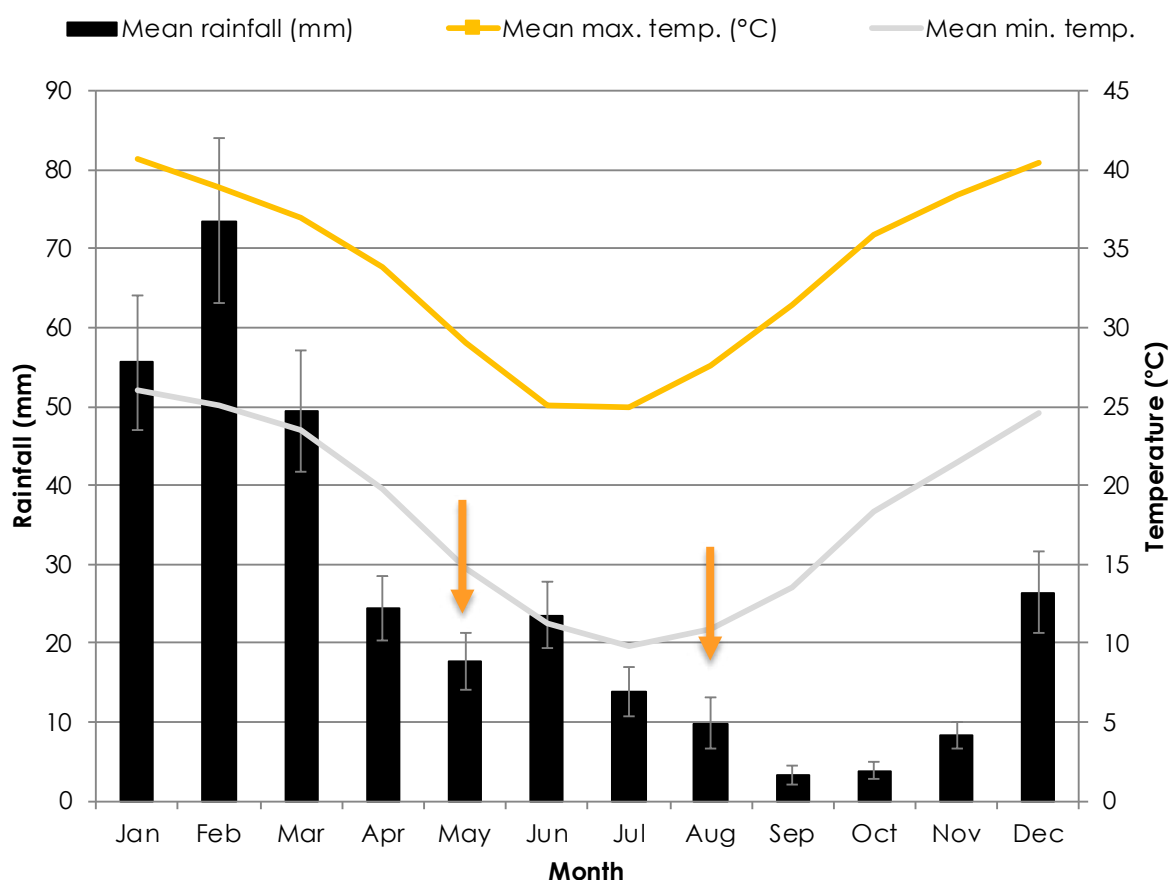


Figure 2-3: Long-term (1974 to 2019) climate data records from the Paraburdoo Aero Weather Station (No. 007185) (BoM 2019). Arrows indicate survey timing.

2.2.2 Surface Geology and Soils

The PIL3 subregion is a mountainous area of volcanic ranges, banded ironstone and plateaux with dissecting gorges of basalt, shale and dolerite (Kendrick 2001, McKenzie *et al.* 2009). The hills, ranges, ridges and plateaux of the subregion have formed isolated and continuous chains of uplands, and contain the highest topographical relief in Western Australia (McKenzie *et al.* 2009, Payne *et al.* 1988).

The surface geology of the Survey area is comprised of 11 geological units (Table 2-4; Figure 2-4), mapped at a scale of 1:1,000,000 by Geoscience Australia (2012). The dominant geological units in the Survey area

are the Colluvium, Brockman Iron and Jeerinah, which when combined account for over 78% of the Survey area.

The Survey area occurs within the Hamersley Plateaux Soil-landscape Zone of Western Australia (Tille 2006). The soil of the region is described as stony soils with red shallow loams and some red/brown non-cracking clays and red loamy earths.

Table 2-4: Geological units occurring within the Survey area

Name (code)	Geological Description	Extent within the Survey area	
		Ha	%
Colluvium 38491 (Qrc)	Colluvium and/or residual deposits, sheetwash, talus, scree; boulder, gravel, sand; may include minor alluvial or sand plain deposits, local calcrete and reworked laterite	4,860.16	31.95
Brockman Iron Formation (Lchk)	Banded iron-formation, chert, mudstone and siltstone.	3,936.45	25.88
Jeerinah Formation (Awfj)	Shale, sandstone, siltstone, mudstone, dolomite, local microbanded chert, jaspilite, conglomerate; fine-grained massive rhyolite; mafic tuff with local accretionary lapilli and agglomerate; thin basalt/dolerite and andesitic basalt flows.	3,167.45	20.83
Marra Mamba Iron Formation (Achm)	Chert, ferruginous chert, jaspilite, banded iron-formation, minor shale, siltstone, mudstone.	1,775.11	11.67
Woongarra Rhyolite (Lfhw)	Rhyolite, rhyodacite, rhyolitic volcanoclastic breccia and banded iron formation.	557.99	3.67
Weeli Wolli Formation (Lchw)	Banded iron-formation (commonly jaspilitic), mudstone, siltstone; common interlayered metadoleritic sills.	470.39	3.09
Boolgeeda Iron Formation (Lchb)	Fine-grained, finely laminated, dark grey-brown to black flaggy iron-formation, minor chert, jaspilite, shale.	158.65	1.04
Mount McRae Shale and Mount Sylvia Formation (Asmrs)	Interbedded shale, chert, banded iron-formation	116.15	0.76
Fortescue Group – Mafic intrusions (Adf)	Metadolerite, dolerite, gabbro; medium to coarse grained, massive grey-green rock, usually foliated	110.10	0.72
Bunjina Formation (Abfb)	Pillowed and massive basaltic flows; basaltic breccia; and basaltic volcanic sandstone; minor chert; amygdaloidal basalt flows occur in upper parts of formation; metamorphosed.	45.00	0.30
Robe Pisolite (Czlr)	Pisolitic, oolitic and massive limonite, minor ferruginous siliciclastic material, goethite and hematite deposits; developed along palaeodrainage lines; dissected by present day drainage.	12.29	0.08
Total		15,454.87	100.00

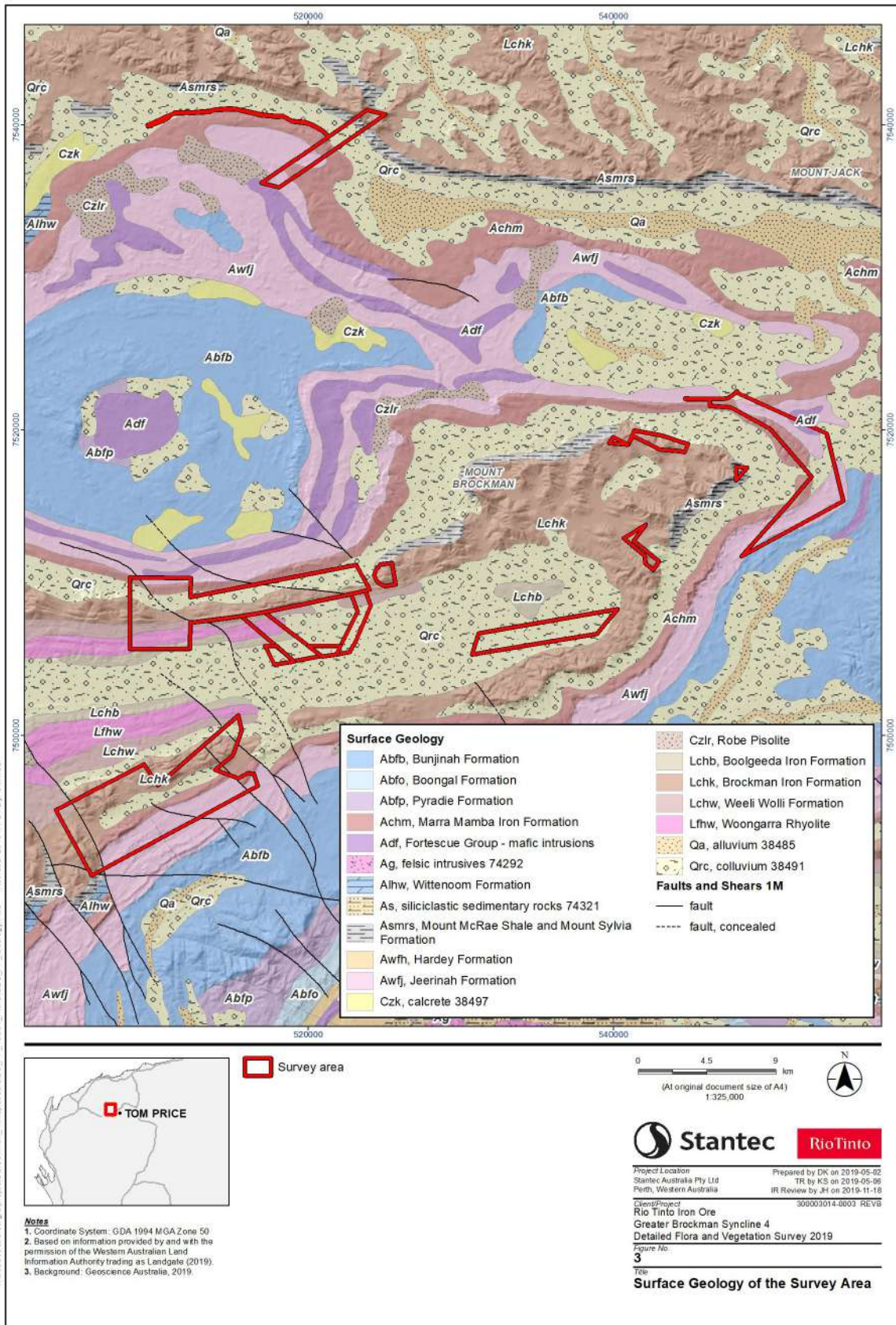


Figure 2-4: Surface geology of the Survey area

2.2.3 Surface Hydrology and Drainage

The PIL3 subregion has drainage systems directing surface water away from the Hamersley Range into the Fortescue River in the north and east, the Ashburton River in the south, and into the Robe River and Caves Creek in the west (Kendrick 2001, McKenzie *et al.* 2009). The Survey area drains to the Ashburton River, located approximately 76 km to the south of the Survey area, via numerous rivers, creeks and unnamed tributaries. The northern portion of the Survey area is intersected by Caves Creek, while Boolgeeda Creek flows through, and immediately adjacent to, the central portions of the Survey area (**Figure 2-5**). These watercourses are considered seasonal, only flowing following substantial rainfall in the wet season. Although Caves Creek is known to hold permanent water pools in places, no permanent pools were observed in the Survey area. The Beasley River and Beasley River West flow south of the Survey area. Numerous unnamed tributaries of these creeks and rivers intersect the Survey area.

No internationally (Ramsar wetlands) or nationally important wetlands occur within the Survey area (Commonwealth of Australia 2019). The Millstream Pools (WA069), located approximately 68 km north of the Survey area, are the closest nationally listed wetland site. The Fortescue Marsh is also listed as a nationally important wetland, situated approximately 73 km north-east of the Survey area (Commonwealth of Australia 2019).

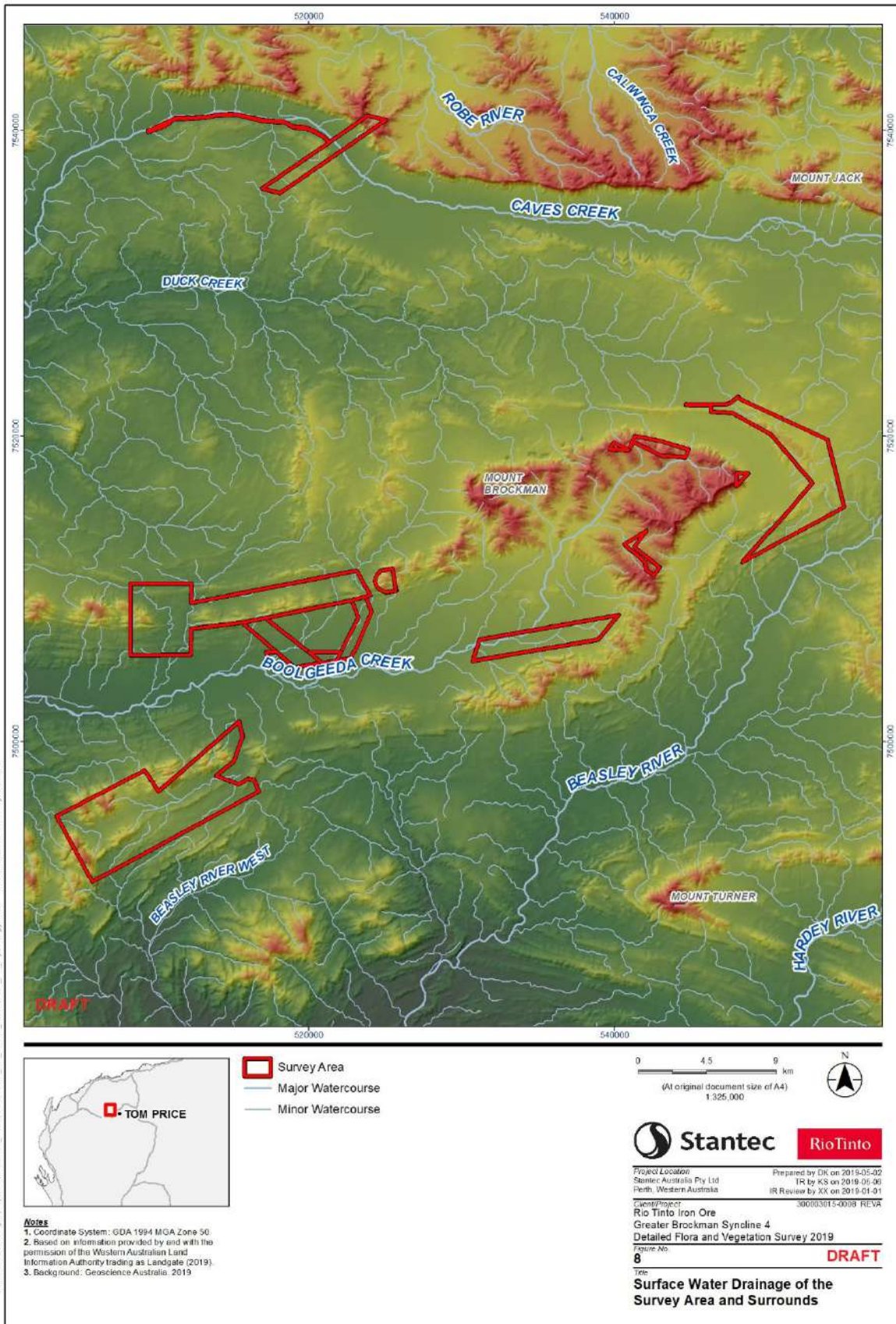


Figure 2-5: Surface water drainage of the Survey area and surrounds

2.2.4 Land Tenure and Use

The Survey area occurs within the Shire of Ashburton (previously known as the Shire of West Pilbara), which serves communities across the Pilbara. Land tenure in the Pilbara consists primarily of pastoral leases, and other crown reserves, such as Aboriginal reserves and leasehold reserves (McKenzie *et al.* 2003). Other major land use categories include national parks and reserves, and unallocated crown land (McKenzie *et al.* 2003). The Survey area lies within Rocklea, Cheela Plains, Mt Stuart and Hamersley stations (**Figure 2-6**).

The PIL3 subregion has 14.10% of its land surface under conservation tenure, including Cane River Conservation Park (130 km west of the Survey area) and the vast majority of the Karijini National Park (42 km east of the Survey area) (Kendrick 2001).

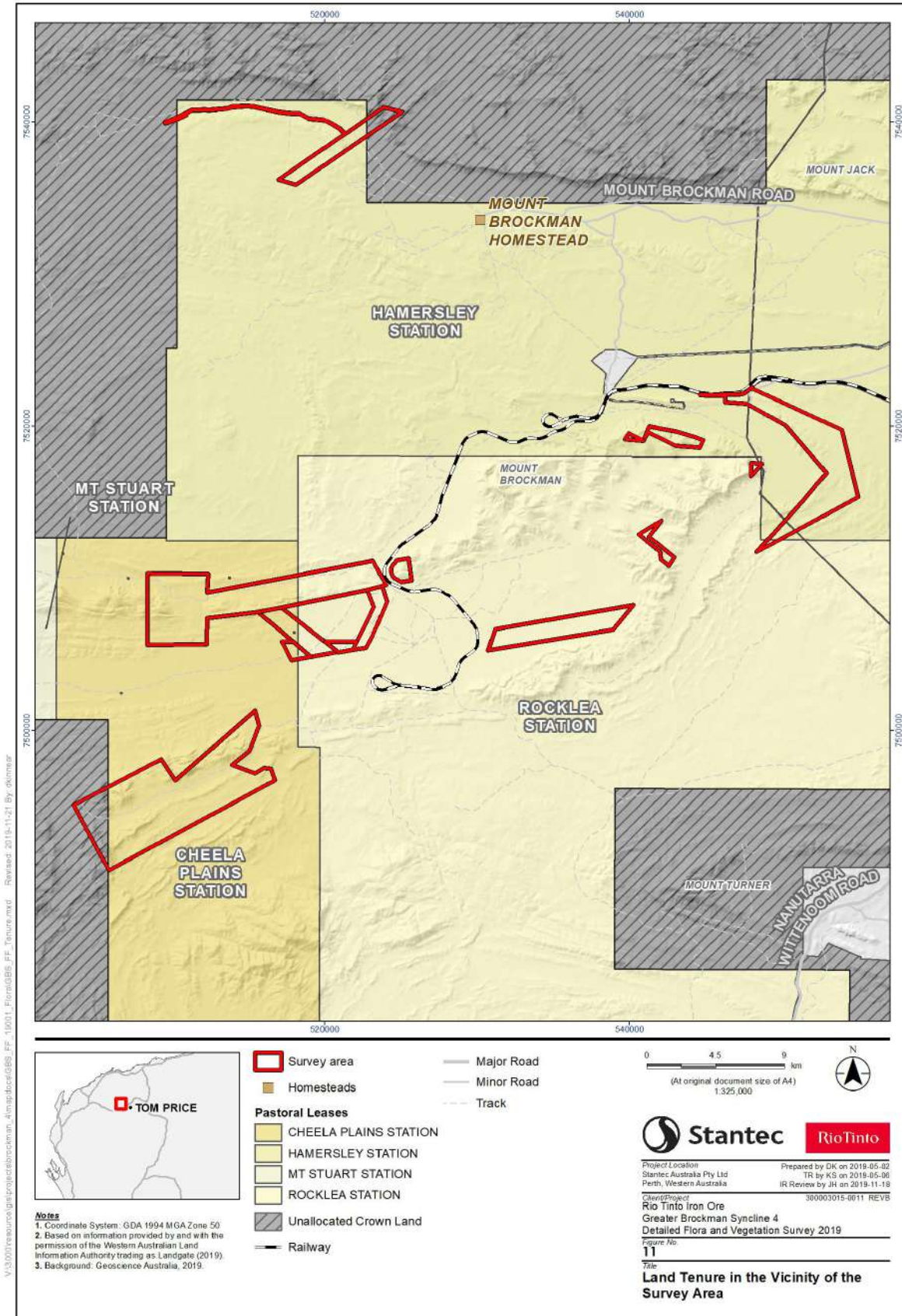
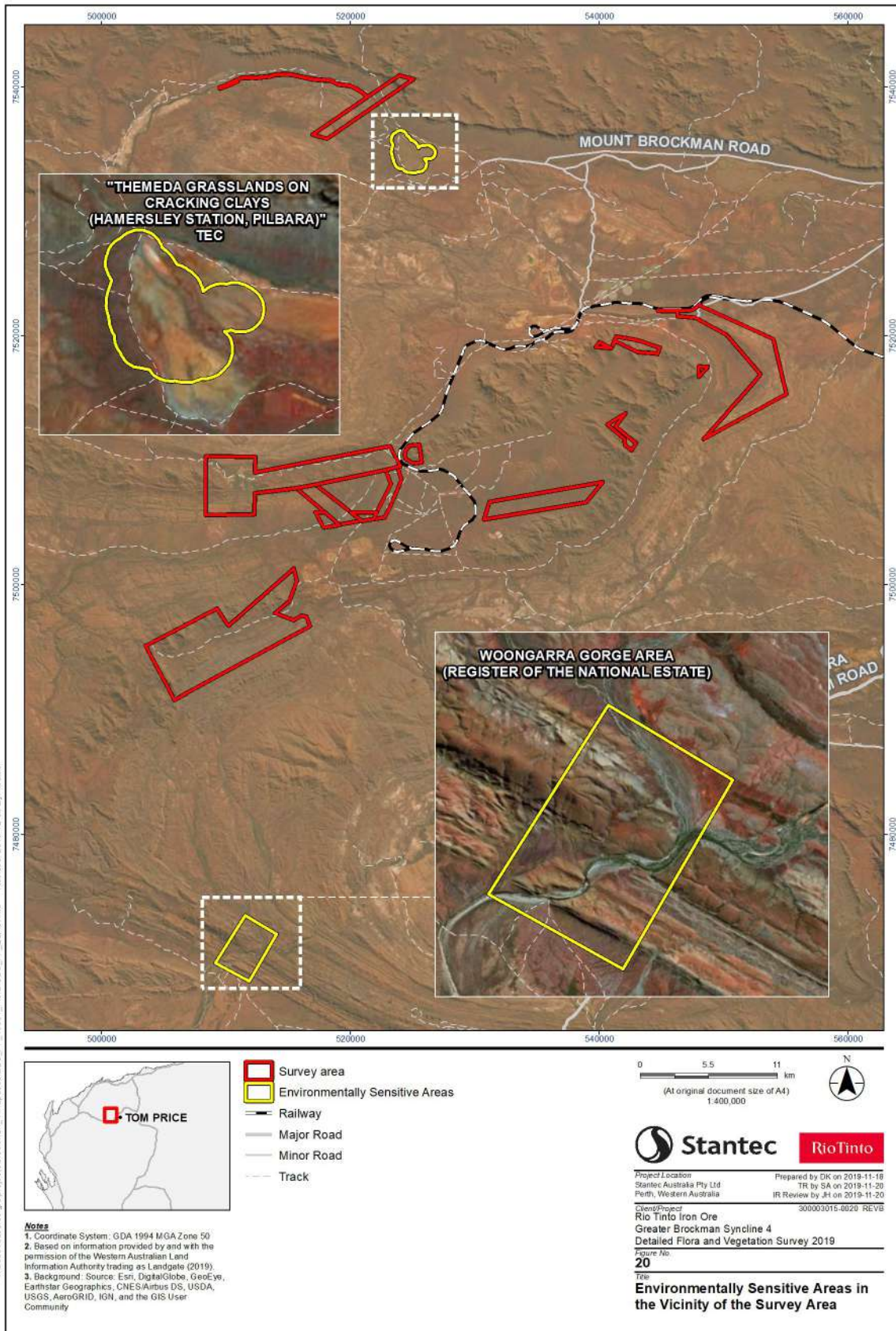


Figure 2-6: Land tenure in the vicinity of the Survey area

2.2.5 Conservation Reserves and Environmentally Sensitive Areas

Karijini National Park is the closest conservation reserve to the Survey area, located approximately 42 km to the east (**Figure 1-1**). Karijini National Park covers a north-south transverse section of the Hamersley Range, approximately 627,000 ha in size, and was listed as a national park in February 1977 (CALM 1999). It is also considered an Environmentally Sensitive Area (ESA), listed on the Register of the National Estate (Department of the Environment and Energy 2019).

The closest ESA to the Survey area lies approximately 2.8 km south-east of the northern portion of the Survey area (near Caves Creek) (**Figure 2-7**). This ESA is associated with the '*Themeda grasslands on cracking clays (Hamersley Station, Pilbara)*' TEC (DBCA 2019a, e). One other ESA, the Woongarra Gorge Area, is located approximately 20 km south of the Survey area (DBCA 2019e, DWER 2019).



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Figure 2-7: ESAs in the vicinity of the Survey area.

3. Methodology

3.1 Desktop Assessment

3.1.1 Literature Review

Background information on the Survey area and surrounds was compiled prior to conducting Phase 1 of the Survey. Historic vegetation mapping (Beard 1975, Shepherd *et al.* 2002) soil and landform mapping and characteristics (Tille 2006), geological mapping (Geoscience Australia 2012) and IBRA classification system information (Kendrick 2001, van Vreeswyk *et al.* 2004) were reviewed to provide broad contextual information.

In addition, 36 biological surveys completed in the vicinity of the Survey area were reviewed, whilst a further 28 surveys were used for supplementary data. The available information from these surveys is summarised in **Appendix A.1** and the key findings of these surveys are presented in **Appendix A.2**

3.1.2 Database searches

Database searches were completed prior to undertaking Phase 1 of the Survey, to generate a list of vascular flora and vegetation previously recorded within, and in the vicinity of, the Survey area. The focus was on species and communities of conservation significance and introduced species. Conservation framework for flora and ecological communities of significance is provided in **Appendix B**.

Seven database searches were conducted on a central coordinate within the Survey area (50K 520675 m E, 7501739 m S). Appropriate searches buffers were established according to the technical capabilities of the databases and the ecological features of the area (**Table 3-1**).

Table 3-1: Database searches conducted for the desktop assessment

Custodian	Database Name	Buffer (km)	Date of receipt	Reference
DotEE	Protected Matters Search Tool (PMST)	50	20/03/2019	(DotEE 2019)
DBCA	NatureMap	40	20/03/2019	(DBCA 2019e)
DBCA	Threatened (Declared Rare) and Priority Flora database (TPFL)	50	11/03/2019	(DBCA 2019a)
DBCA	Western Australian Herbarium Specimen database (WAHerb)			(DBCA 2019d)
DBCA	Threatened and Priority Flora List (TP List)			(DBCA 2019b)
DBCA	Threatened Ecological Community (TEC) and Priority Ecological Community (PEC)			(DBCA 2019c)
Rio Tinto	Rio Tinto Database	50	May 2019	(Rio Tinto 2019)

3.1.3 Likelihood of Occurrence of Significant Flora

Prior to undertaking field survey work, the significant species identified from the database searches and literature review were assessed for their likelihood of occurrence within the Survey area. This assessment was based on interpretation of habitat types from aerial imagery, known preferred habitat and the nearest known location of each species. Each species of significant flora was assessed and ranked for likelihood of occurrence in the Survey area according to the criteria presented in **Appendix C**.

Following the field survey, the significant flora species identified from the database searches and literature review were re-assessed to determine the post-survey likelihood of occurrence within the Survey area.

3.2 Field Survey

3.2.1 Survey Team and Licensing

Both Phase 1 and Phase 2 of the Survey were led by Alice Bott (Stantec Flora and Vegetation Technical Lead) and supported by Julia Mattner (Senior Botanist). Alice is a practised arid-zone botanist, with nine years' experience in conducting flora and vegetation surveys throughout Western Australia. Summaries of the field personnel responsible for undertaking the field surveys are provided in **Table 3-2**.

Table 3-2: Summary of field personnel undertaking the field surveys

Personnel	Qualification	Survey Role	Years of botanical Experience	Flora Licence(s)	Person days	
					Phase 1	Phase 2
Alice Bott (Phase 1 and 2)	BSc. (Environmental Biology) BSocSc. (Geography)	Technical Lead Survey lead/Team lead	9	FB62000072 (flora taking) 145A-1718 (DRF)	11	16
Julia Mattner (Phase 1 and 2)	Doctor of Philosophy (Conservation Biology) BSc. (Hons.) Rehabilitation of Eroded Rangelands	Team lead	20	FB62000060 (flora taking)	11	16
Laura True (Phase 1)	BSc. (Zoology and Conservation Biology)	Survey member	3	SL012228 (flora taking) 57-1819 (DRF)	11	-
James Tsakalos (Phase 1)	BSc. (Conservation and Wildlife Biology)	Survey member	3	SL012550 (flora taking)	11	-
Julijanna Hantzis (Phase 2)	BSc. (Environmental Biology)	Survey member	2	FB62000132 (Flora taking) TFL 21-1920 (DRF)	-	16
Scott Pansini (Phase 2)	BSc. (Conservation and Wildlife Biology and Biological Science)	Survey member	2	FB62000122 (Flora taking) TFL 22-1920 (DRF)	-	16
Total					44	64
					108	

3.2.2 Survey Timing

The EPA (2016) recommends that flora and vegetation surveys be undertaken following the season of highest rainfall, to optimise the likelihood of encountering flowering and fruiting taxa and capturing ephemeral species (a primary survey). A supplementary survey is undertaken during secondary peaks in rainfall or the flowering period for additional suites of species. The recommended timing for the Eremaean Botanical Province, within which the Survey area lies, is six to eight weeks post wet season (indicative: March to June) for the primary survey and after winter rainfall (the dry season) for the supplementary survey.

Phase 1 of the Survey was conducted from 17 to 29 May 2019, the timing of which normally coincides with post wet season in the Eremaean Botanical Province. Phase 2 was conducted over two field trips; 12 to 23 August and 26 to 31 August 2019 the timing of which normally coincides with post winter rainfall in the Eremaean Botanical Province.

Daily weather observations recorded from the Paraburdoo Aero weather station were used to understand conditions preceding the field trips (**Figure 3-1**). Rainfall in the six months prior to Phase 1 was 113 mm; 125 mm below the long-term mean. In the six months preceding Phase 2, rainfall was 159 mm below the long-term mean of 203 mm. In the six weeks prior to each field survey, rainfall did not exceed 11 mm (**Figure 3-1**).

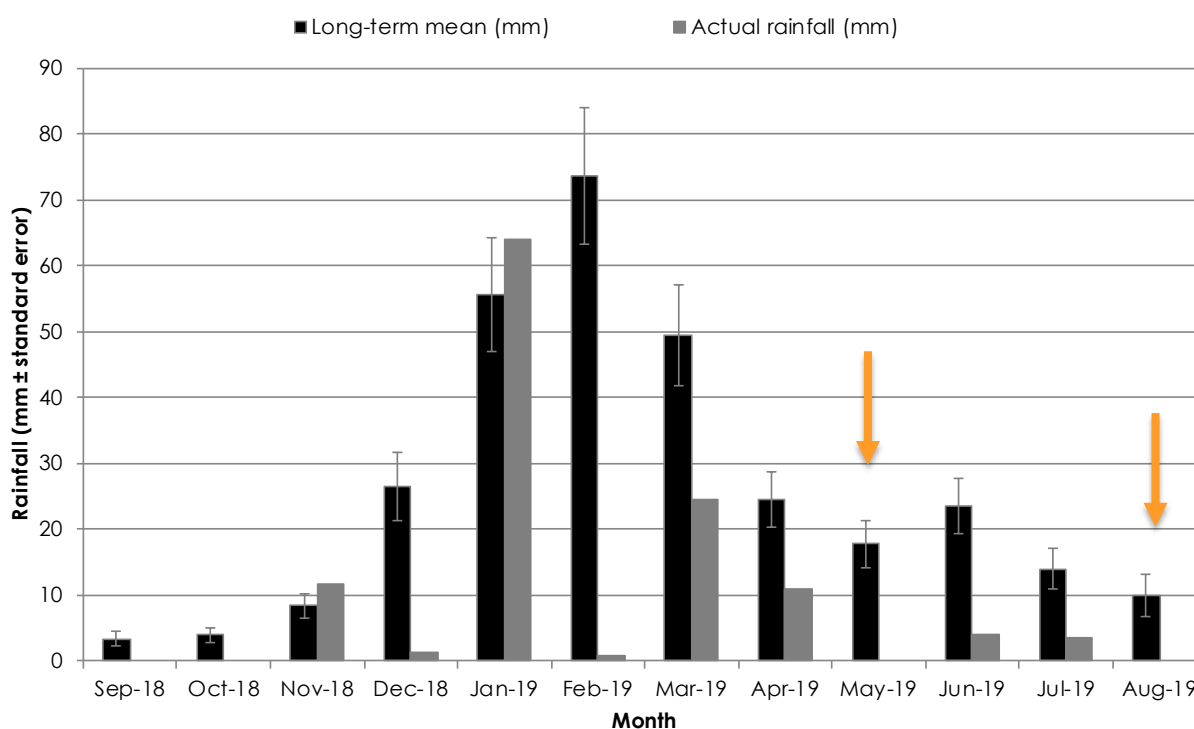


Figure 3-1. Long-term (1974 to 2019) mean monthly rainfall (mm) at Paraburdoo Aero weather station and actual monthly rainfall (mm) in the 12 months preceding the Survey(BoM 2019). Arrows indicate survey timing.

3.2.3 Sampling Techniques

3.2.3.1 Quadrats and Relevés

Prior to the field trips, broad vegetation types were preliminarily mapped on aerial imagery, based on vegetation signatures and landscape features. Proposed sampling locations were identified according to the estimated number of vegetation types within the Survey area. These habitats were assessed in the field and a detailed flora and vegetation survey, consistent with EPA (2016), was employed to sample flora and vegetation within the Survey area.

Sampling sites were established as either:

- **Quadrats:** Bounded sampling sites established by measuring a square of 50 m x 50 m permanently marked with a galvanised steel fence dropper (or with pink spray paint, where substrate was impenetrable) in the north-western corner. In some instances, to account for landforms features and drainage lines, dimensions of the quadrats were adjusted but still represented 2,500 m² (i.e. 100 m x 25 m).
- **Relevés:** Unbounded sampling sites of similar total area to quadrats (2,500 m²), not permanently marked.

One hundred and fifty two sites were sampled within the Survey area during Phases 1 and 2, comprising 113 permanent quadrats and 39 relevés, of which six quadrats and one relevé had been previously surveyed (Biota 2018) (**Table 3-3**). Forty quadrats and 30 relevés installed during Phase 2 had a single season of survey only. For sampling sites that were resampled from previously surveys, the same information was recorded as for new sites, however site overview data was only updated where required. Sampling sites established during the Survey were assigned the prefix GBS (for quadrats) or rGBS (for relevés). **Table 3-4** presents the data that was recorded at each quadrat and relevé. The locations of all quadrats and relevés are presented in **Figure 3-2** (detailed figures presented in **Appendix D**) and the data collected from each quadrat and relevé is provided in **Appendix E**.

Table 3-3: Quadrats and relevés sampled during the Survey

Survey area	Phase 1		Historical sites (Phase 2)		Phase 2			
	New Quadrat	New Relevé	Resample of historical Quadrat	Resample of Historical Relevé	Resample of Phase 1 Quadrat	Resample of Phase 1 Relevé	New Quadrat	New Relevé
BS1	25	4	6	1	24	3	8	6
Vivash	32	4	-	-	31	3	9	10
Central Corridor	3	-	-	-	3	-	1	2
Eastern Corridor	3	-	-	-	3	-	-	1
BS3 Corridor	4	-	-	-	4	-	1	-
Additional infrastructure and infill areas (single-phase survey)	-	-	-	-	-	-	21	11
Total	67	8	6	1	65	6	40	30
	75		78				70	

*Note: Historical quadrats and relevés were sampled by Stantec only once as they had already been sampled recently (2017).

Table 3-4: Summary of data collected at each quadrat and relevé during the Survey

Parameter	Description
Quadrat ID	The unique name that was assigned to the site that was sampled
Coordinates	Measured using a handheld GPS device from the north-west corner of the site. To be in GDA94 format
Quadrat dimensions	Specific dimensions of the quadrat in meters
Recorder and Date	The recorder(s) involved in sampling the site and date.
Site photograph	At least one landscape photograph taken from the north-west corner looking towards the south-west corner
Soil description	A description of the soil colour and types based on the guide in the Australian Soil and Land Survey Field Handbook (McDonald <i>et al.</i> 1998)
Geology type	A description of the outcropping geology (if present) and course fragments.
Habitat type	A description of the landform type and aspect
Vegetation Condition	Assessed according to the (Trudgen 1988) 6-point condition scale (Appendix F)
Vascular flora species	A record of each flora species present
Height	The average height of each species in meters
Percent Foliar Cover (PFC)	An estimate of the PFC for each species will be recorded
Specimen ID	A unique identifier code will be assigned to any species that cannot be identified in the field.
Vegetation structure	A description of the vegetation in accordance with Aplin (1979) adaptation of the vegetation classification system of Specht (Specht 1970) and the National Vegetation Information System (NVIS), Level 5 – Association (ESCAVI 2003) (Appendix G)
Reconciled vegetation type	Where applicable, the vegetation will be assigned to a vegetation code described by Biota (2016)
Disturbances	A list of any disturbances in the quadrat and surrounding, if present
Time since fire	An estimation of the time since the vegetation was last burnt

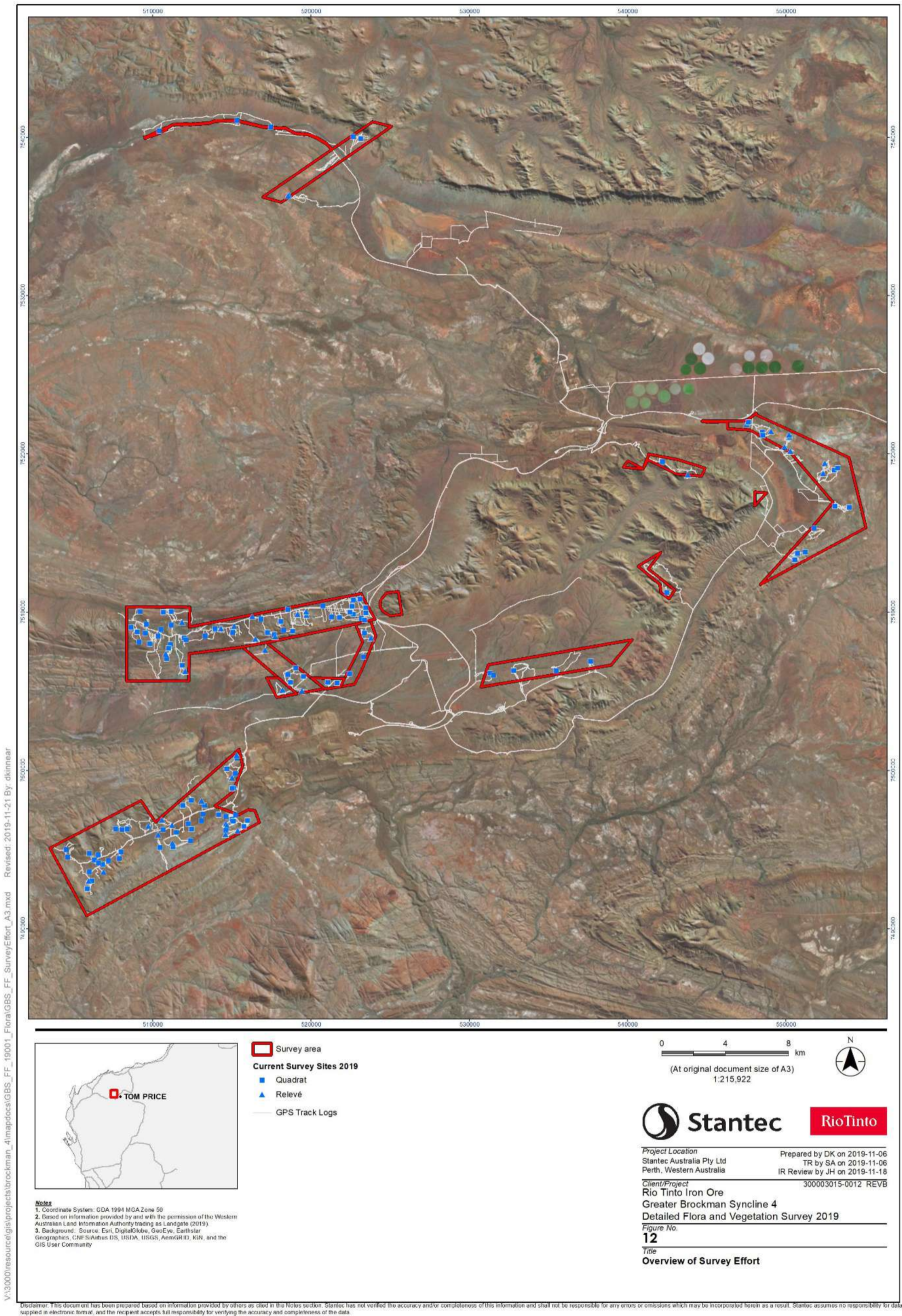


Figure 3-2: Overview of survey effort

3.2.3.2 Vegetation Type and Mapping

Approximately 27% of the Survey area had been previously described and mapped (**Table 3-5; Figure 3-3**). A large proportion (73%) of BS1 has also been previously surveyed for Fortescue Metals Group Ltd for the Eliwana Iron Ore prospect.

Table 3-5: Extent of previous vegetation type mapping of the Survey area

Block model	Area (ha)	Extent of previous mapping	
		ha	%
BS1	3,956.16	2,875.57	72.7%
Vivash	5,269.08	54.42	1.0%
BS1 Central	585.37	216.71	37.0%
BS1 Eastern	335.10	16.83	5.0%
BS3 Corridor	1,168.96	11.83	1.0%
Additional Infrastructure and Infill Area	3,980.69	853.54	21.4%
Total	15,454.87	4,188.16	27.1%

Due to extensive vegetation type mapping conducted outside the Survey area (as part of the Brockman Syncline Proposal), where possible, the vegetation of the Survey area was assigned to an existing vegetation type from (Biota 2016, Biota 2019a, b, c), to maintain consistency. The vegetation types previously described and mapped were ground-truthed in the field and adjustments to vegetation type boundaries and descriptions were made following ground-truthing, where necessary.

For previously unsurveyed areas (no existing vegetation type mapping), broad desktop vegetation type mapping was completed prior to the field trips and subsequently altered and refined in the field, where necessary. Data collected from quadrats, relevés and mapping notes were used to validate and refine the vegetation type mapping. Vegetation types were described based on their structure and species composition, consistent with NVIS Level V – Association, whereby up to three dominant species from the upper, mid and ground strata are categorised based on dominant growth form, percent foliar cover and height (**Appendix G**).

Vegetation condition was assigned based on the six categories described by Trudgen (**Appendix F**). Vegetation type and condition mapping was created using GIS software (ArcMap version 10.6.1) by GIS specialist Duncan Kinnear (Stantec).

Large sections of BS1, Vivash and the additional infrastructure and infill areas could not be easily accessed via light vehicle or on foot. For these areas, vegetation type and condition mapping were extrapolated and interpreted from high-quality aerial imagery by Alice Bott.

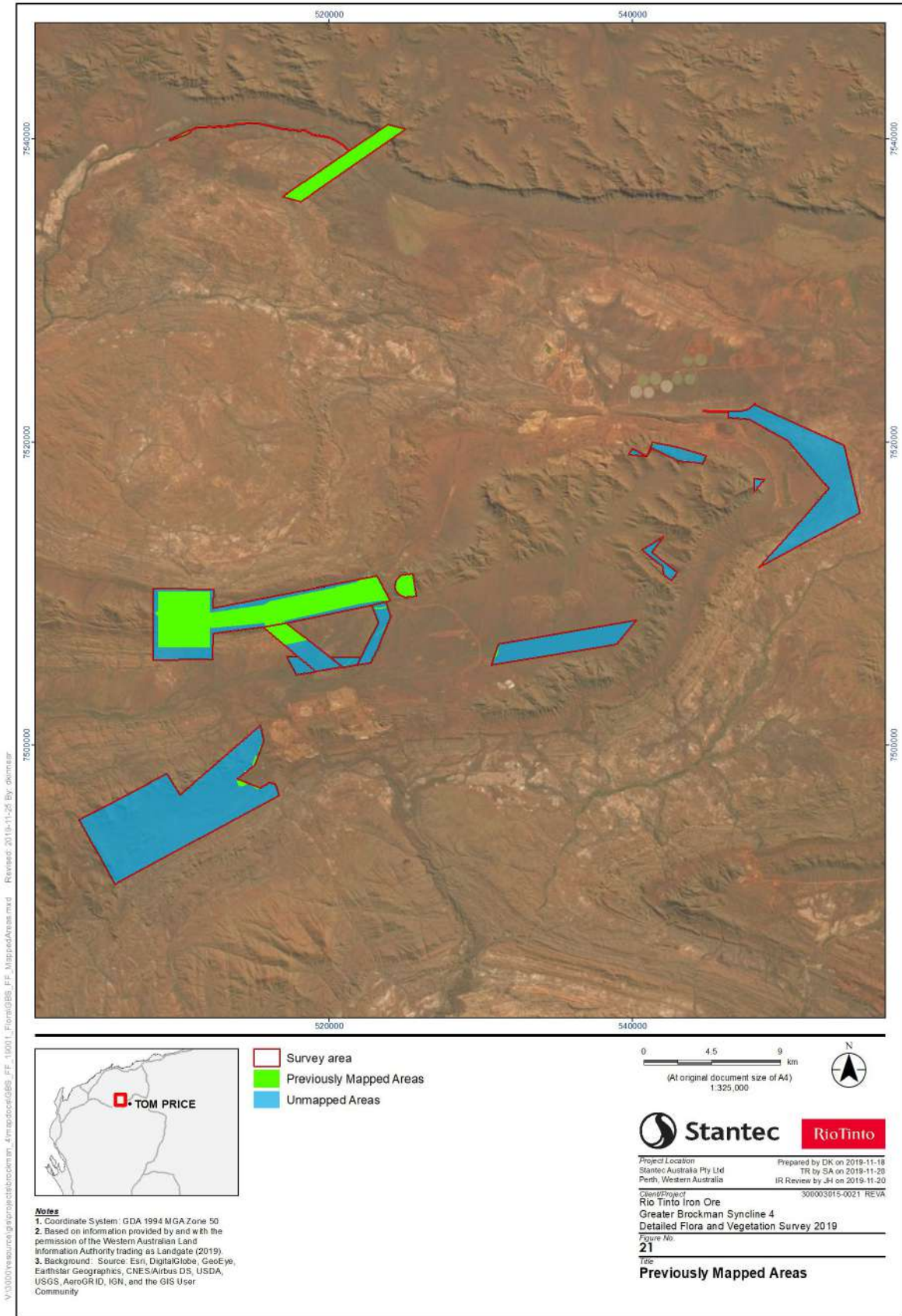


Figure 3-3: Extent of previous vegetation type mapping of the Survey area

3.2.3.3 Targeted Searches for Conservation Significant Flora and Weeds

Targeted searches were conducted for conservation significant flora identified from the desktop assessment (**Section 3.1**). Field personnel familiarised themselves with photographs and reference samples housed at the Western Australian Herbarium (WAH) prior to the survey and carried out active searches in habitat identified during the desktop assessment as having potential to support conservation significant flora. Additionally, field personnel carried out searches for conservation significant flora around quadrats and while traversing the Survey area.

A sample of each conservation significant species or population or suspected conservation significant species or population was collected for confirmation with the Rio Tinto sponsored taxonomist at the WAH. Where flora of conservation significance was identified in the field, searches were conducted within a minimum radius of 50 m from the given specimen, to document the number of individual plants or population and characteristics of the species. **Table 3-6** summarises the data that was recorded for each conservation significant species or population encountered. Survey effort is presented in **Figure 3-2** (detailed survey effort figures presented in **Appendix D**).

Occurrences of introduced flora were recorded in the same way as for conservation significant flora. Introduced flora recorded within the Survey area were compared to the declared pests listed under Section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and the Weed of National Significance (WoNS) list identified by the Commonwealth Government. Codes relevant to BAM Act and WoNS are presented in **Appendix H**.

Table 3-6: Summary of data collected for conservation significant flora

Parameter	Description
Coordinates	Measured using a handheld GPS device from the north-west corner of the site. To be in GDA94 format
Recorder and Date	The recorder(s) involved in sampling the site and date.
ID of individual or pop	The unique name that was assigned to the individual or population that was sampled
Species	Species name
Specimen ID	A unique identifier code will be assigned to any species that cannot be identified in the field.
Abundance	A count of the species in a 50 m x 50 m area
Reproductive characteristics	Whether the species is fruiting, flowering, vegetative
Photograph	A photograph of the species showing reproductive characteristics (if present) and habitat/form

Note Where collection material of conservation significant species was of adequate condition, or with fruiting and/or flowering material, voucher specimens were collected to submit to the WAH. Threatened and Priority Report Forms were completed and submitted to the DBCA for each population of conservation significant flora encountered and provided to Rio Tinto separately to this report.*

3.2.3.4 Specimen Identifications and nomenclature

The flora taxa that were not identified in the field were collected and pressed for identification by senior taxonomist Sharnya Thomson (subconsultant). Sharnya has worked extensively in WA and is familiar with the flora of the region. Collections of conservation significant species or suspected conservation significant species were sent to Steve Dillon at the WAH for confirmation.

Species nomenclature was assigned according to the current listing of scientific names recognised by the WAH. Where specimens were lacking in diagnostic characteristics or were in poor condition, they were assigned the 'sp.' epithet, indicating that identification could not be confirmed beyond either family or genus level.

4. Analyses

4.1 Sampling Adequacy

The EstimateS software package ((Colwell 2013)V9.1.0) was used to assess the adequacy of the Survey by investigating the vascular flora species richness recorded in the Survey area. The species richness was analysed using species accumulation rarefaction and extrapolation curves, and various species richness estimators using abundance data.

The species richness analysis provides a statistical evaluation of the proportion of the taxa detected during the Survey. A range in the predicted number of species recorded within the Survey area was developed using several species richness estimators (Chao1, Chao2, Bootstrap and Jackknife 1). This provides a more robust approach to the analysis (Hortal 2006).

4.2 Floristic Composition

Vegetation types were assigned and mapped in the field based on expert knowledge of the Pilbara bioregion and aerial imagery interpretation. Hierarchical classification (cluster analysis) was performed using Primer v7 to support:

- the relationship between vegetation type structure throughout the Survey area; and
- to provide broader regional context for the vegetation of the Survey.

It should be noted, however, that vegetation types were assigned and mapped based on *priori* (based on prior knowledge) and the cluster analysis is explanatory only (Clarke and Gorley 2015).

The 113 quadrats and 39 relevés sampled during the Survey were included in the analysis. A further 275 quadrats and relevés sampled outside of the Survey area, within the Brockman Syncline Proposal area were included in a separate analysis to contextualise the vegetation types at the regional scale (Biota 2005a, 2010c, 2016, Eco Logical 2013a, b, Mattiske 2011).

Prior to analysis, the species lists from all surveys were reconciled to ensure consistency in nomenclature and treatment, including:

- old nomenclature was updated;
- unconfirmed species were excluded from the analysis;
- species belonging to the Western Australian Mulga Flora Group (*Acacia aneura* F. Muell. ex Benth. and its close relatives) were all treated as a single species in the analysis (*Acacia aneura*);
- where a taxon name could potentially refer to more than one entity across different projects, the taxon was excluded from the analysis (e.g. *Aristida* sp.);
- parasitic plants were excluded from the analysis (e.g. *Lysiana*);
- singletons (species recorded from only one site) were excluded from the analysis; and
- all weeds were removed, except for **Cenchrus ciliaris*, **C. setiger* and **Vachellia farnesiana*, as these were dominant in some vegetation types.

The final dataset comprised a site-by-species matrix of floristic taxa (presence/absence data). The Bray-Curtis similarity coefficient was applied to calculate similarities between sites based on community structure and generate a resemblance matrix. The group average method cluster analysis was used to support floristic groups and generate a dendrogram output indicating the similarity between sites based on floristic composition (**Appendix I.1**).

A second analysis based on percent foliar cover data of all species for quadrats and relevés sampled during the Survey was undertaken to support floristic groups. Percent foliar cover data was square-root transformed and then the Bray-Curtis index was applied to calculate similarities between quadrats and generate a resemblance matrix. A cluster analysis was applied, using the group-average linking algorithm, the results of which were presented in the form of a dendrogram. The dendrogram indicated the percentage similarity between quadrats, according to vegetation community structure (**Appendix I.2**).

A similarity profile (SIMPROF) permutation test was not conducted on the dataset as it is not recommended for use with large resemblance matrices. This is due to the large number of permutations necessary for each nodal test and potentially large number of nodes.

A third analysis comprised a site by species matrix consisting of presence/absence data for the 113 quadrats and 39 relevés from the Survey along with 275 quadrats and relevés sampled outside of the Survey area. The Bray-Curtis similarity coefficient was applied to calculate similarities between sites based on community structure and generate a resemblance matrix. The group average method cluster analysis was used to support floristic groups and generate a dendrogram output indicating the similarity between sites at the regional scale (**Appendix I.3**).

Results were investigated through the outputs including dendrograms of site similarity and non-metric multi-Dimensional Scaling plots (nMDS).

4.3 Assessment of Vegetation Significance

Table 4-1 presents the assessment criterion used to place the vegetation types of the Survey area into locality scale context.

Table 4-1: Criterion for assessing local significance of vegetation

Heading	Heading
High local significance	Supports Threatened flora; supports Priority 1 flora; associated with listed TECs or PECs; or associated with major drainage systems supporting riparian vegetation.
Moderate local significance	Supports Priority 2 flora, or high densities of Priority 3 flora and associated habitat; associated with local drainage systems supporting riparian vegetation; or has limited local representation.
Low local Significance	Supports scattered records of Priority 3 flora, or locally common Priority 4 flora; associated with minor local drainage systems supporting riparian vegetation.
Negligible local significance	Supports Priority 4 flora that are regionally common; or associated with vegetation common across the Pilbara region.

5. Survey Limitations and Constraints

There are a number of potential limitations and constraints that can affect the adequacy of flora and vegetation surveys (EPA 2016). For the Survey, potential limitations have been summarised in **Table 5-1**.

Table 5-1: Potential limitations and constraints of the field survey

Factor	Constraint	Comments
Competency and experience of consultants	No	The field team leader, Alice Bott, has considerable experience conducting flora and vegetation surveys in the Eremaean Botanical Province. All other field personnel have appropriate qualifications and experience to undertake the relevant components of the Survey. The flora specimen identifications were undertaken by Senior Taxonomist Sharnya Thomson, who has extensive experience identifying flora from Western Australia. Confirmation of significant species or suspected significant species was undertaken by Steve Dillon, taxonomist at the WAH.
Scope	No	The scope was well-defined, and flora and vegetation of the Survey area were surveyed using standardised and well-established techniques. The desktop assessment was undertaken prior to the Survey to inform field personnel of the potential occurrence of factors of environmental significance.
Proportion of species identified	Partial	Phase 1 of the Survey was conducted in May 2019 and Phase 2 in August 2019. Seasonal conditions for both phases were dry, with below average rainfall in the months preceding the Survey. Approximately 85% of the specimens collected (over 700) could be fully determined. Two specimens could not be confidently identified beyond genus level, 92 could not be confidently identified to species level and 10 could not be identified to infraspecies level. It is considered, however, that many of these specimens were likely to represent species already included in the inventory of vascular flora collected during the Survey. Most taxonomic groups expected within the Survey area were represented and the total floristic richness was considered comparable to other surveys in the area conducted during similar seasonal conditions. Some species that would be expected to occur post-rainfall, such as Asteraceae spp. and annual grasses, may be considered under-represented.
Information sources (e.g. historic or recent)	No	Regional contextual information was obtained from historic vegetation mapping conducted by Beard (1975) and Shepherd <i>et al.</i> (2002), soil and landform mapping (Hearn <i>et al.</i> 2002), IBRA classification system (Thackway and Cresswell 1995) and numerous flora and vegetation surveys previously conducted in the vicinity of the Survey area. A total of 36 biological surveys completed in the vicinity of the Survey area were also reviewed, whilst a further 28 surveys were used for supplementary data.
Completeness and intensity	No	A total of 152 flora sampling sites, comprising 113 quadrats and 39 relevés were established and sampled across the Survey area. Of these 78 were sampled during two phases of survey, whilst 70 were sampled only once (of which 32 were from the additional infrastructure and infill areas). This was sufficient to adequately sample all vegetation types and flora within the Survey area. Targeted searches were also conducted throughout the Survey area for significant flora species. Several vegetation types were not subject to replicated sampling due to either: <ul style="list-style-type: none"> • the amount of habitat available; • they were from a part of the Survey area which was only subject to single-phase (supplementary) survey; and

Factor	Constraint	Comments
		<ul style="list-style-type: none"> they were immediately adjacent to recently surveyed sites (Biota 2018). <p>These vegetation types are well described based on the information that was recorded and the information available from the locality (Biota 2018, Biota 2019a, b, c).</p>
Timing / weather / season / cycle	Partial	The Survey took place during the period that typically coincides with the break of season rainfall events in the Eremaean Botanical Province (EPA 2016). Rainfall was, however, below the long-term average for the six months preceding both field surveys. The total floristic richness of the Survey area was consistent with previous surveys conducted during similar seasonal conditions. It is likely however, that additional species (annuals), would have been represented in more favourable seasonal conditions.
Disturbances	Partial	<p>A large portion of the Survey area (~57%) has been subject to intense and re-occurring fires between 2013 to 2019. This constrained vegetation type mapping and targeted searches. Vegetation mapping completed for recently burnt areas should be considered indicative rather than an exact representation of the climax vegetation type.</p> <p>Some recently cleared areas (for exploration drilling) were not represented by the 'disturbance layer' supplied by Rio Tinto.</p>
Resources	No	Resources were adequate to carry out the Survey and the field personnel were competent in the identification of species present. WAH specimens, taxonomic guides, DBCA database searches, the Rio Tinto Flora database and the FloraBase database were all used to prepare for the survey. Specimen identification was conducted by a Senior Taxonomist with confirmation of any significant flora species carried out by the Rio Tinto sponsored Botanist at the WAH.
Remoteness / access problems	Partial	Large areas of BS1, Vivash and the Additional Infill Areas could not be accessed via light vehicle or on foot (Figure 3-2 and Appendix D). For areas that could not be accessed, vegetation type and condition mapping was inferred and extrapolated from high-quality aerial imagery, undertaken by a highly qualified botanist.

6. Desktop Assessment

The literature review consisted of 36 surveys, which were relevant to the Survey area. **Appendix A.2** presents a summary of the literature review, including methods, size of area surveyed, proximity to the Survey area and key findings. The results of the database searches are presented in **Appendix J**.

6.1.1 Significant Flora

Database searches identified three Threatened flora species listed for the broader Pilbara bioregion; *Pityrodia* sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4) (T; En), *Thryptomene wittweri* (T; Vu) and *Aluta quadrata* (T) (DBCA 2019b, d).

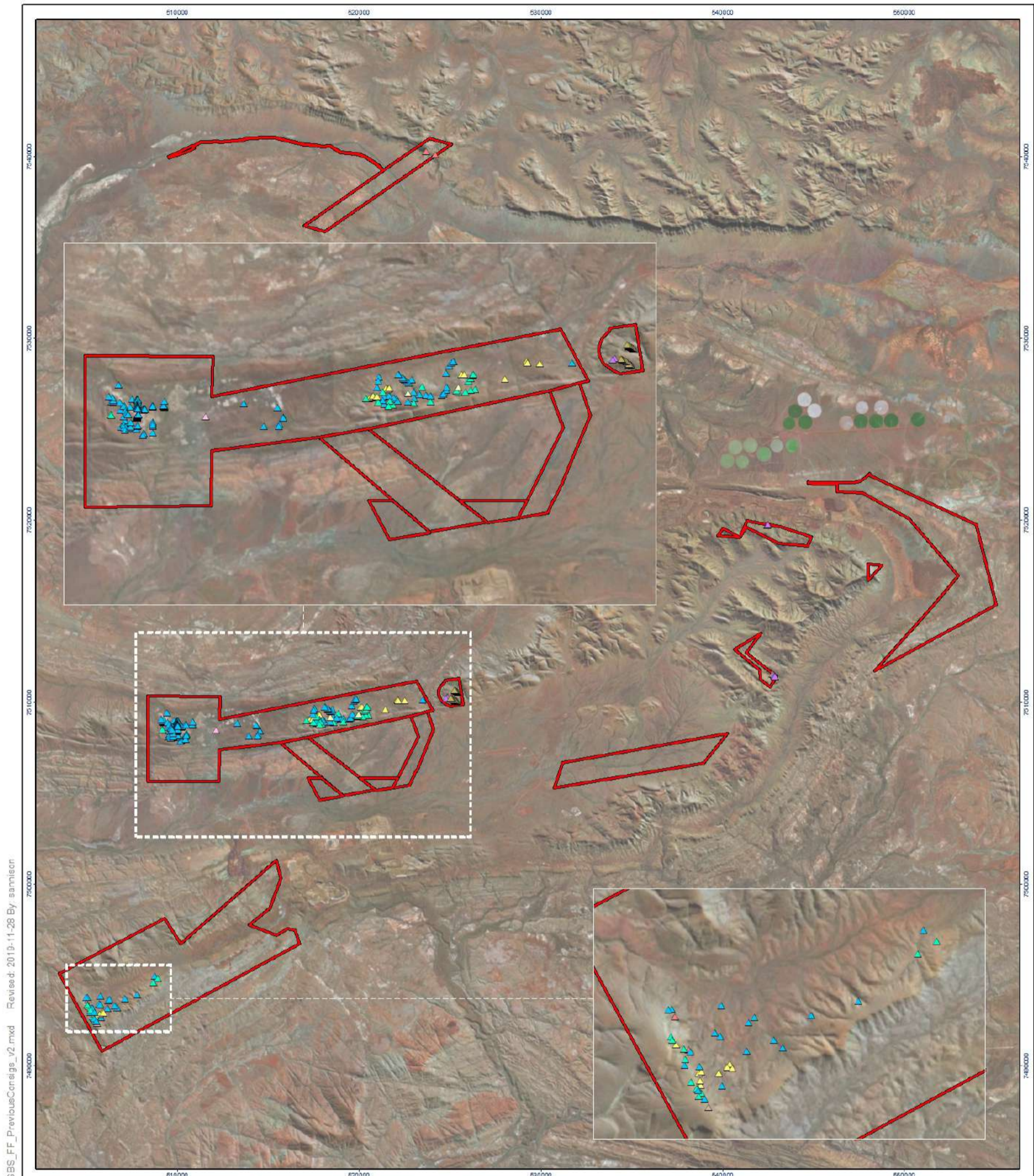
Both *A. quadrata* and *T. wittweri* have also been previously recorded within the PIL3 subregion, however, the literature review and database searches did not identify any Threatened species within 50 km of the Survey area.

The literature review and database searches identified 58 Priority flora species that have previously been recorded within the vicinity (50 km of the Survey area (DBCA 2019b, d). Of these, ten were listed as Priority 1, eight as Priority 2, 33 as Priority 3 and seven as Priority 4 species (**Appendix L**). Ten of these species have been previously recorded within the Survey area (**Figure 6-1** and **Appendix NAppendix O**), comprising:

- *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1);
- *Ipomoea racemigera* (P2);
- *Pentalepis trichodesmoides* subsp. *hispida* (P2);
- *Eremophila magnifica* subsp. *velutina* (P3);
- *Gymnanthera cunninghamii* (P3);
- *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (P3);
- *Sida* sp. Barlee Range (S. van Leeuwen 1642) (P3);
- *Sida* sp. Hamersley Range (K. Newbey 10692) (P3);
- *Acacia bromilowiana* (P4); and
- *Eremophila magnifica* subsp. *magnifica* (P4).

An overview of significant flora records previously surveyed within the Survey area is presented in **Figure 6-1**. Detailed locations of these species are presented and discussed with the results of this survey in **Section 7.1**.

The pre-survey likelihood of occurrence of the remaining 48 Priority species was assessed based on the criteria detailed in **Appendix C**. There were 29 species considered as 'likely' to occur and 19 assessed as 'possible' to occur (**Appendix L**).

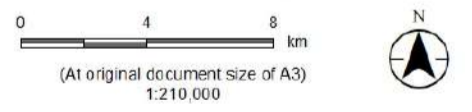


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Notes
 1. Coordinate System: ODA 1094 MDA Zone 50
 2. Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2019)
 3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Survey area**
- ▲ *Acacia bromilowiana* - P4
 - ▲ *Eremophila magnifica* subsp. *magnifica* - P4
 - ▲ *Eremophila magnifica* subsp. *velutina* - P3
 - ▲ *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) - P1
 - ▲ *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) - P3
 - ▲ *Ipomoea racemigera* - P2
 - ▲ *Pentalepis trichodesmoides* subsp. *hispida* - P2
 - ▲ *Sida* sp. Barlee Range (S. van Leeuwen 1642) - P3
 - ▲ *Sida* sp. Hamersley Range (K. Newbey 10692) - P3



Stantec **RioTinto**

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Prepared by
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 TR by SA on 2019-11-13
 IR Review by JH on 2019-11-18

Client/Project
 Rio Tinto Iron Ore
 Greater Brockman Syncline 4
 Detailed Flora and Vegetation Survey 2019

Figure No.
14

Title
Overview of Previously Surveyed Conservation Significant Flora Records Within the Survey Area

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Figure 6-1: Overview of previously surveyed conservation significant flora records within the Survey area

6.1.2 Threatened and Priority Ecological Communities

TECs are categorised at both the Commonwealth and State level, while PECs are categorised at the state level only. The definition for Commonwealth and State categories are presented in (**Appendix B**). There are no Commonwealth listed TEC's for the broader Pilbara bioregion. There is one State listed terrestrial TEC (Vu); "*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)" within the Pilbara bioregion. This was also identified from the database searches (DBCA 2019a, c), from three separate locations, the closest of which was within 4 km of the Survey area (**Table 6-1** and **Figure 6-2**).

There are 32 PECs known from the broader Pilbara bioregion, of which two (one Priority 1 and one Priority 2) have been identified (DBCA 2019a, c) from within 50 km of the Survey area (**Table 6-1** and **Figure 6-2**). The closest of these "Brockman Iron cracking clay communities of the Hamersley Range" was approximately 3.4 km from the Survey area.

Table 6-1: Known TECs and PECs within 50 km of the Survey area

Community name	Description	Category under WA criteria	Nearest recorded locality to the Survey area
<i>Themeda</i> Grasslands	<i>Themeda</i> grasslands on cracking clays (Hamersley Station, Pilbara). Grassland plains dominated by the perennial <i>Themeda</i> (kangaroo grass) and many annual herbs and grasses.	Vulnerable	4 km
Brockman Iron cracking clay communities of the Hamersley Range	Rare tussock grassland dominated by <i>Astrelba lappacea</i> (not every site has presence of <i>Astrelba</i>) 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 Angeles, Newman, Tom Price and boundary of Hamersley and Brockman Stations.	Priority 1	3.4 km
Riparian flora and plant communities of springs and river pools with high water permanence of the Pilbara Region	The community includes flora with restricted distributions or populations that are highly disjunct or are major range extensions from northern and eastern Australia. These include; <i>Imperata cylindrica</i> , <i>Cladium procerum</i> , <i>Schoenus falcatus</i> and <i>Fimbristylis sieberiana</i> (P3). In the Pilbara these taxa are almost exclusively restricted to the riparian zones of permanent wetlands with high soil moisture maintained by groundwater flows. Occurrences are disjunct with sites typically associated with groundwater discharge in gorge and valley wetlands that are often coupled with significant shading.	Priority 2	5.5 km

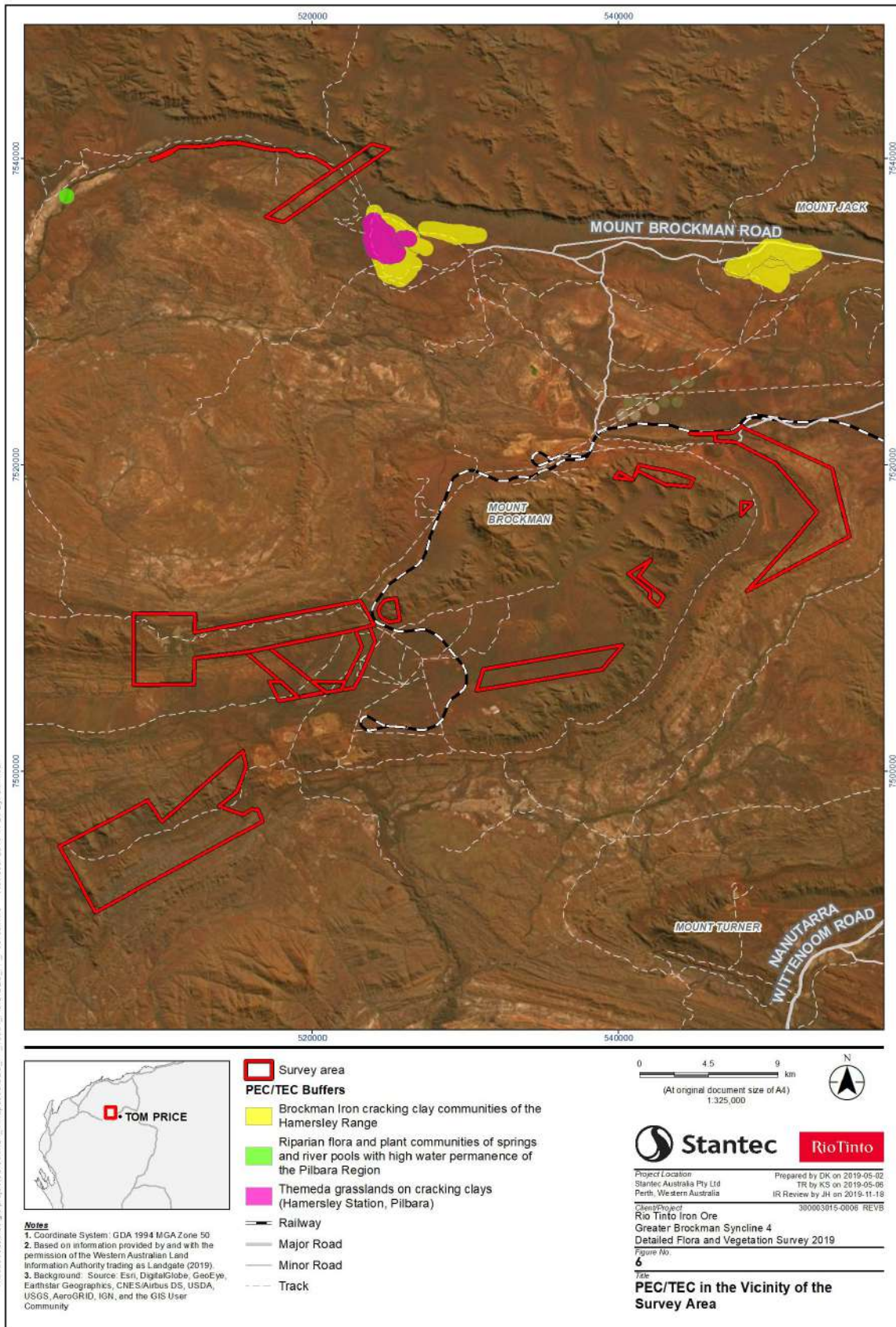


Figure 6-2: Known TECs and PECs within 50 km of the Survey area

6.1.3 Introduced Flora

The literature review identified 11 introduced flora species that have previously been recorded within the Survey area (**Table 6-2**). None of these species are declared pests under Section 22 of the BAM Act or are considered WoNS by the Commonwealth. A further 60 introduced flora species are known from the Hamersley subregion (DBCA 2019d).

Table 6-2: Introduced flora species previously recorded within the Survey area

Species	Common name
* <i>Argemone ochroleuca</i>	Mexican Poppy
* <i>Bidens bipinnata</i>	Bipinnate Beggartick
* <i>Cenchrus ciliaris</i>	Buffel Grass
* <i>Cenchrus setiger</i>	Birdwood Grass
* <i>Cynodon dactylon</i>	Couch Grass
* <i>Datura leichhardtii</i>	Native Thornapple
* <i>Flaveria trinervia</i>	Speedy Weed
* <i>Lactuca serriola</i>	Prickly Lettuce
* <i>Malvastrum americanum</i>	Spiked Malvastrum
* <i>Setaria verticillata</i>	Whorled Pigeon Grass
* <i>Vachellia farnesiana</i>	Mimosa Bush

7. Survey Results

7.1 Flora

7.1.1 Floristic Composition

A total of 349 species (including species, subspecies, varieties, forms, hybrids and affinities, native and introduced species) have been recorded from the Survey area, of which 314 were recorded during the Survey (**Appendix M**). The total species count for the Survey area comprises 142 genera and 47 families.

The most represented families from the Survey area were Fabaceae with 69 species and Malvaceae and Poaceae with 48 species each (**Table 7-1**). Together, these families contributed to more than 45% of the taxa recorded. The most well represented genera were *Acacia* (35 species), *Sida* (14 species), *Eremophila* (13 species), *Senna* (12 species), *Eucalyptus* (10) and *Hibiscus* (10), contributing to more than 25% of the species recorded (**Table 7-1**).

Table 7-1: Dominant families and general recorded from the Study area based on all surveys to date

Family	Number of native species within the Study area
Fabaceae	69
Malvaceae	48
Poaceae	48
Genus	Number of Native Species within the Study area
<i>Acacia</i>	35
<i>Sida</i>	14
<i>Eremophila</i>	13
<i>Senna</i>	12
<i>Eucalyptus</i>	10
<i>Hibiscus</i>	10

In addition to the 314 species recorded during the Survey, three specimens could not be confidently identified to genus level, 92 could not be confidently identified beyond species level and 10 could not be confidently identified to infraspecies level, due to poor collection material and/or lack of diagnostic characteristics. It is considered, however, that many of these specimens are likely to represent species already included in the inventory of vascular flora collected during the Survey.

7.1.2 Species Accumulation Curves

Species accumulation curves for the Survey area are provided in **Figure 7-1**. The actual and estimated curves had not quite reached asymptotes and the four species richness estimators (Chao1, Chao2, Bootstrap and Jack 1) predicted higher species richness for the Survey area than was recorded. The 289 species collected from the Survey area (not including opportunistic species, weed species, species unable to be identified beyond genus and parasitic species) represented an estimated 74.7% to 88.8% of the total species predicted to occur (**Table 7-2**).

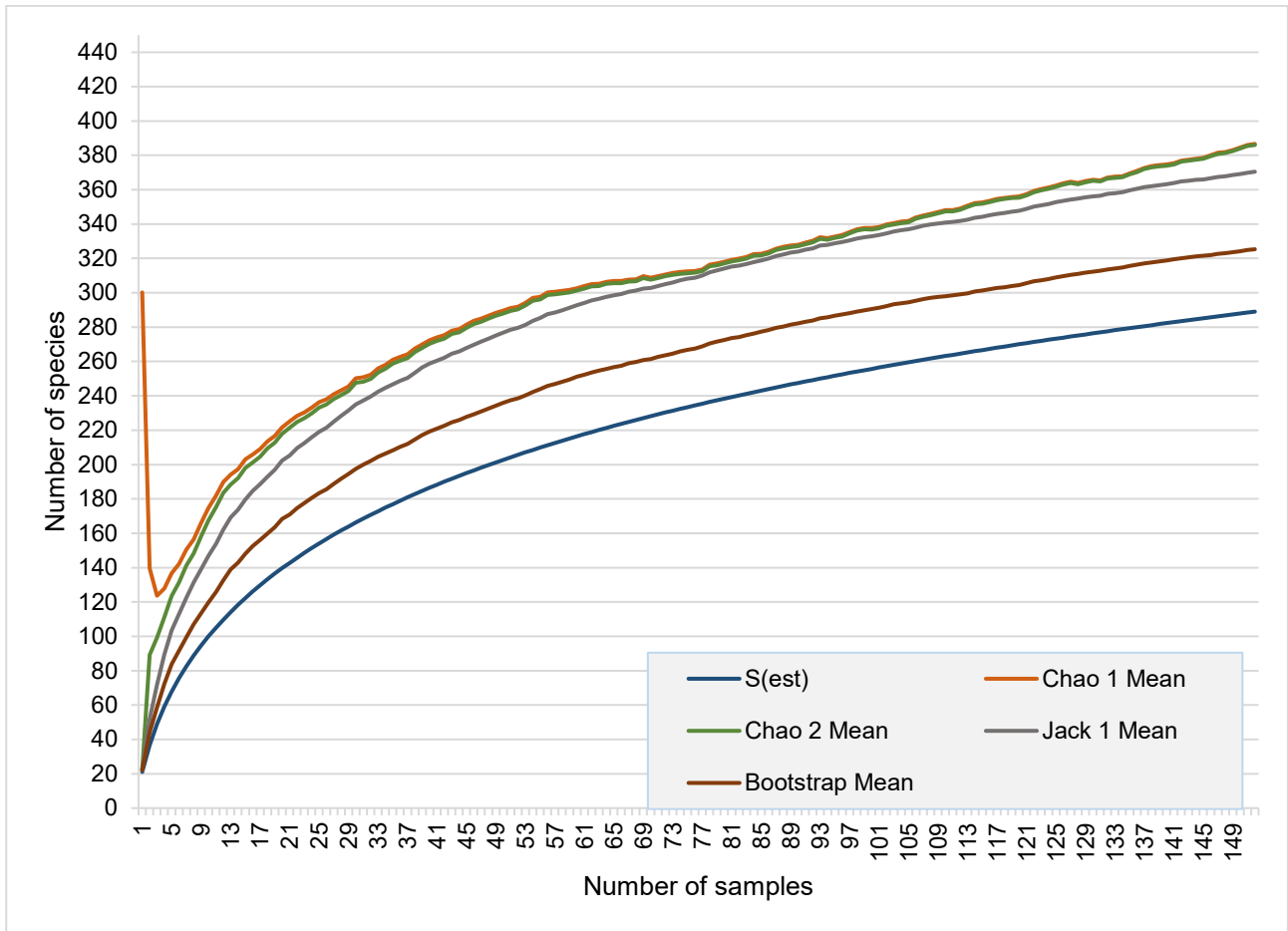


Figure 7-1: Species accumulation curve for vascular flora collected from Survey area

Table 7-2: Recorded species richness compared with predicted species richness using incidence-based and abundance based estimators (quadrat and relevé only)

All sampling sites for 2019 Survey area			
Number of species recorded (quadrats and relevés only)		289	% of estimated richness recorded
Estimated number of species	Chao 1	386.65	74.7%
	Chao 2 (386.03	74.9%
	Bootstrap	325.32	88.8%
	Jackknife 1	370.46	78%

7.1.3 Species Richness Regional Context

The number of flora taxa recorded during the Survey was compared to the number of flora taxa recorded from the six other surveys completed within the vicinity of the Survey area, to provide context on the number of native flora (Figure 7-2).

Rainfall in the 12 months preceding both phases of the Survey (calculated from August survey) was 202 mm less than the total average annual rainfall (1979-2019) (BoM 2019). Four previous surveys undertaken in the vicinity of the Survey area were associated with above average annual rainfall in the 12 months prior. Two previous surveys (Eco Logical 2013a, b) had below average annual rainfall, however,

3 months of rainfall data was not calculated from the Paraburdoo Aero (station number: 007185) for the months of February, March and April of 2013.

Of the six surveys completed in the vicinity of the Survey area, one comprised two-phases of survey (Biota 2010c) and the remaining five surveys were all single-phase. One Survey was undertaken during the Eremaean wet season (Mattiske 2011), while the other surveys were undertaken during the dry season.

Key trends support the results of the Survey, showing that lower native species numbers correspond to below average rainfall (Biota 2009d, Eco Logical 2013a, b). In contrast above average rainfall is attributed to higher species numbers (Biota 2005b, 2016).

The Survey comprised the largest Survey area, most comparable in size to Mattiske (2011). Despite the Mattiske (2011) survey being undertaken following above average rainfall, the number of species recorded was fewer than what was recorded during the Survey. In comparison to previous surveys undertaken following average to below average rainfall (Biota 2009d, Eco Logical 2013a, b), the number of species recorded during the Survey is comparable.

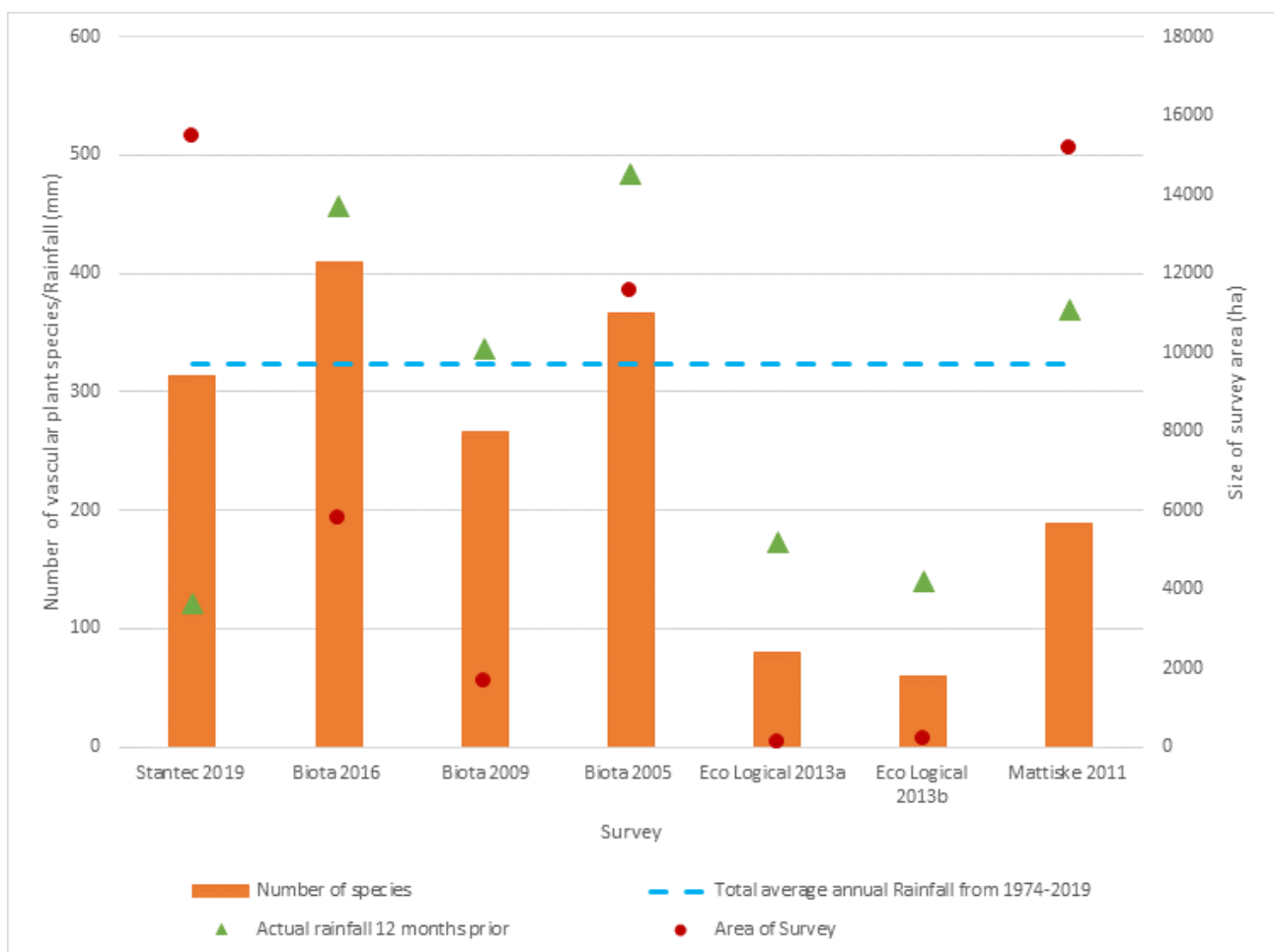


Figure 7-2: Number of native flora taxa recorded from the Survey area in comparison to previous surveys and rainfall conditions.

7.1.4 Flora of Significance

Fourteen Priority flora species have been recorded within the Survey area based on all survey work to date (**Table 7-3**). Of the ten priority flora species previously recorded from the Survey area, five were recorded again during the Survey and an additional four species (*Tetralthea butcheriana* (P1); *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1), *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2); and *Goodenia nuda* (P4)) were recorded for the first time. No new populations of the remaining five species were recorded during the Survey.

One species designated *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708), appeared to be similar to this Priority 2 taxon, although unusual characteristics were noted. Therefore, this taxon is considered to have the same significance as the Priority taxon.

The location of each significant species is presented in **Figure 7-3** with further detail provided in **Appendix N**. The population characteristics, including vegetation and habitat type, number of locations and total number of estimated individuals is also provided in **Table 7-4**. *In-situ* photographs of each species is presented in **Appendix K**.

Table 7-3: Priority flora recorded within the Survey area

Species	Recorded during the Survey	Previously recorded within the Survey area
Priority 1		
<i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354)		x
<i>Tetralthea butcheriana</i>	x	
<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808)	x	
Priority 2		
<i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	x	
<i>Ipomoea racemigera</i>		x
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	x	x
Priority 3		
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	x	x
<i>Gymnanthera cunninghamii</i>		x
<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301)	x	x
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	x	x
<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)		x
Priority 4		
<i>Acacia bromilowiana</i>		x
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	x	x
<i>Goodenia nuda</i>	x	

Table 7-4: Summary of Priority flora and their characteristics, recorded from the Survey area

Species	Description and habitat	Previous Surveys	Current Survey	Combined	Location and comment
Priority 1					
<i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354)	An erect spindly shrub to 2.5m in height. Typically found on rocky slopes, gullies, breakaways and areas below free-faces, usually on moderate to tall hills (DBCA 2019d)	196 individuals		196 individuals	This species was recorded from two locations within the BS1 Extension area and one location within one of the additional infrastructure and infill areas. The BS1 Extension area could not be accessed at the time of the Survey and had been recently and extensively (75%) burnt. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, breakaways and cliff faces. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed
		3 locations		3 locations	
<i>Tetradthea butcheriana</i>	An erect to sprawling sub-shrub to 80 cm tall with leafless stems and pink to purple pendulous flowers. This species grows on ironstone cliff faces and upper ridgelines.	-	209 individuals	209 individuals	This species was recorded from one location within one of the additional infrastructure and infill areas, in close proximity to previous records of this species outside of the Survey area; ten individuals from one location (Biota 2019a) and 165 individuals from six locations, all within a 250 m radius of each other (DBCA 2019d). This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, breakaways and cliff faces. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed
		-	1 location	1 location	
<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808)	Hummock grass with dark green, resinous foliage and densely woolly leaf bases, and large and open inflorescences to 1.6 m tall. This species occurs on shale slopes and crests.	-	1 individual	1 Individual vouchered; 35% foliar cover	This species was recorded from one quadrat comprising 35% foliar cover within one of the additional infrastructure and infill areas, in close proximity to a previous record of this species (Biota 2019b). This species makes up the dominant ground layer of the vegetation type Tss, which has also been described in an area adjoining the
		-	1 location	1 location	

Species	Description and habitat	Previous Surveys	Current Survey	Combined	Location and comment
					Survey area by Biota (2019b). This species is likely represented in similar habitat in the vicinity.
Priority 2					
<i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	An erect perennial shrub found along Creek lines and drainage lines; incised gullies high in rocky ranges on loamy skeletal soils.	-	1 individual	1 individual	This species was recorded from one location within one of the additional infrastructure and infill areas. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, breakaways and cliff faces. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed
		-	1 location	1 location	
<i>Ipomoea racemigera</i>	A creeping annual herb to climber with white flowers, growing in drainage lines and flats with silty loam soil.	1 individual	-	1 individual	This species was recorded from one location within BS1. While similar habitat was searched nearby to this known location, no new records of this species were recorded during the Survey. It is possible that this species would not have been detectable at the time of the Survey.
		1 location	-	1 location	
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	A perennial shrub growing on undulating hills and crests of stony hills.	2 individuals	11 individuals	13 individuals	This species has been recorded from six separate locations within the Survey Area. This species typically occupies vegetation types that are widespread, and it is likely that only a proportion of the habitats with the highest potential to support these species were surveyed.
		2 locations	4 locations	6 locations	
Priority 3					
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	A shrub growing on skeletal soils over ironstone, at the summit.	312 individuals	1796	2,108 individuals	This species was recorded from 31 locations within the Survey Area, with the majority of records in Vivash and BS1. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, tops of ranges and breakaways. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		19 locations	12 locations	31 locations	

Species	Description and habitat	Previous Surveys	Current Survey	Combined	Location and comment
<i>Gymnanthera cunninghamii</i>	An erect shrub to 2m in height, growing on sandy soils and within drainage lines.	9 individuals	-	9 individuals	This species was recorded from one location within one of the additional infrastructure and infill areas. While similar habitat was searched nearby to this known location, no new records of this species were recorded during the Survey. It is possible that this species would not have been detectable at the time of the Survey.
		1 location	-	1 location	
<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301)	An erect perennial shrub to 2m in height, growing in creek lines, drainage lines, gorges and gullies.	1,272 individuals	1,224 individuals	2,496 individuals	This species, recorded from 119 locations throughout the Survey area, was widespread. It was found from a range of habitats, particularly in gullies and drainage lines. Due to access and time constraints and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		66 locations	53 locations	119 location	
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	Spreading shrub found on skeletal red soil pockets on steep slopes.	64 individuals	1 individual	65 individuals	This species was recorded from 31 locations within the Survey Area, with the majority of records in the additional infrastructure and infill areas. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, tops of ranges and breakaways. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		4 locations	1 location	5 locations	
<i>Sida</i> sp. Hamersley Range	A low spreading shrub growing at the base of breakaways, crevices in ironstone, sides of ironstone breakaways and gullies.	9 Individuals	-	9 individuals	This species was recorded from 4 locations within the Survey Area, with the majority of records in the Vivash additional infrastructure and infill areas. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, tops of ranges and breakaways. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		4 locations	-	4 locations	
Priority 4					

Species	Description and habitat	Previous Surveys	Current Survey	Combined	Location and comment
<i>Acacia bromilowiana</i>	A tree or shrub to 12m in height with dark grey fibrous bark. Typically occurring on rocky hills, breakaways, scree slopes, gorges and creek beds ((DBCA 2019d))	20 individuals	-	20 individuals	This species was recorded from only one location at Vivash. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, tops of ranges and breakaways. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		1 location	-	1 location	
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	A shrub growing on skeletal soils over ironstone and rocky screes.	220 individuals	514 individuals	734 individuals	This species was recorded from 31 locations within the Survey Area, with the majority of records in Vivash and BS1. This species is known from vegetation and habitat types that are typically situated high in the landscape, in steep gullies, tops of ranges and breakaways. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the highest potential to support these species were surveyed.
		8 locations	3 locations	11 locations	
<i>Goodenia nuda</i>	An erect to ascending herb growing in drainage lines, sandy floodplains, mixed alluvial plains and along the valley floor.	-	266 individuals	266 individuals	One individual of this species was recorded from Vivash and one location, consisting of many individuals, was recorded from the BS3 Corridor, in a recently burnt drainage system. This species can occupy a range of habitats and it is possible that only a proportion of the habitats with the highest potential to support these species were surveyed.
		-	2 location	2 locations	

*Note: Number of individuals not specified for some locations (i.e. cover estimate provided or no estimate of individual number recorded); number of individuals assigned as "1" for each such record. Previous survey records include records from DBCA Threatened and Priority Flora database search and Rio Tinto Database.

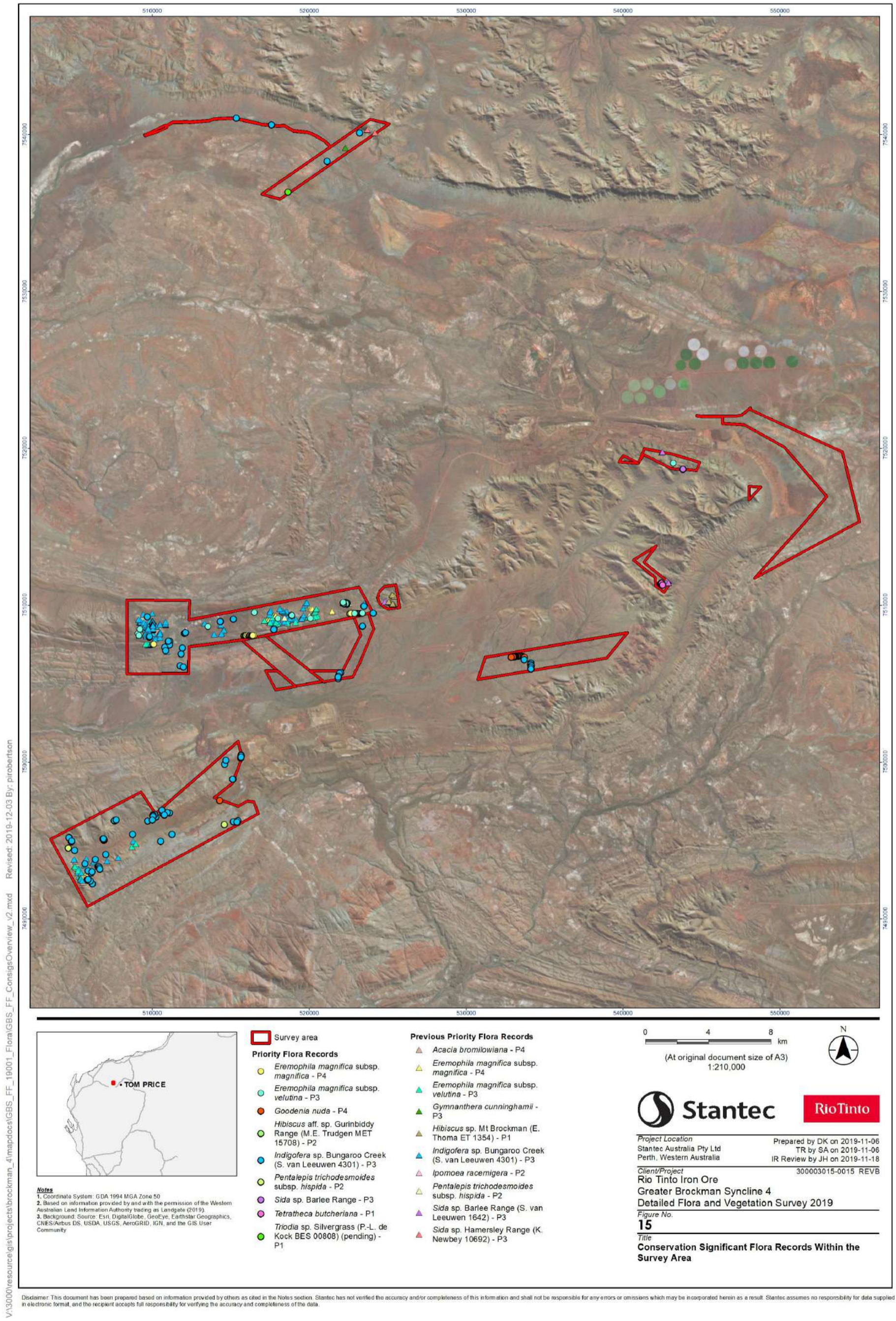


Figure 7-3: Overview of conservation significant flora records within the survey area

7.1.5 Flora of Other Significance

The EPA (EPA 2016) advises that flora species, subspecies, varieties, hybrids and ecotypes may be considered significant for reasons other than listing as a Threatened or Priority flora species, and may include the following:

- a keystone role in a habitat for Threatened species, or supporting large populations representing a significant proportion of the local regional population of a species;
- relic status;
- anomalous features that indicate a potential new discovery;
- being representative of the range of a species (particularly at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- the presence of restricted subspecies, varieties, or naturally occurring hybrids;
- local endemism/a restricted distribution; and/or
- being poorly reserved.

Based on available records (DBCA 2019d), one native flora taxon from the Survey area (*Acacia ampliceps* x *bivenosa*) represented a range extension (**Plate 7-1**). The record of this species within the PIL3 subregion is considered an extension of the known geographic range of this species. This species was recorded from two quadrats within the Survey Area, GBS118 and GBS114, and was found growing in association with one of the putative hybrid parents, *A. bivenosa* (**Table 7-5**).



Plate 7-1: Habit of *Acacia ampliceps* x *bivenosa* (photograph taken from quadrat GBS114).

One species designated as *Hibiscus* aff. sp. Mt Robinson (G. Byrne 3537), did not correspond to any of the collections at the WAH, although had affinities to *H. sp.* Mt Robinson (G. Byrne 3537), with comparable stem hairs. This species was collected from one quadrat, GBS24, occurring in a gully. The location and characteristics of this species is presented in **Table 7-5**.

Table 7-5: Location of *Acacia ampliceps* x *bivenosa* and *Hibiscus* aff. sp. Mt Robinson (G. Byrne 3537)

Species	Description and habitat	Previous surveys	Current Survey	combined
<i>Acacia ampliceps</i> x <i>bivenosa</i>	Large, bushy, spreading shrub 2 to 4 m high. Flowers between July and August and can be found growing in a range of habitats; drainage lines, clay salt flats, floodplains and sandy grey soil. -	-	7% cover of 2500m ²	7% cover of 2500m ²
		-	2 locations	
<i>Hibiscus</i> aff. sp. Mt Robinson (G. Byrne 3537)	Erect open shrub, 1 to 2.5m high with purple flowers. It prefers rocky habitats such as cliffs, gorges and seasonal rocky creek lines.	-	0.1% cover of 2500m	0.1% cover of 2500m
		-	1 location	

7.1.6 Post Survey Likelihood of Occurrence Assessment

The pre-survey and post survey likelihood of occurrence comparison is presented in **Appendix L**. The post-survey assessment was based on a greater understanding of habitat types within the Survey area and targeted searches with a focus on likely habitat(s) identified from the desktop assessment. Fourteen Priority flora species have been recorded within the Survey area. Of the remaining 44 Priority flora species identified during the literature review and database searches, post-survey, eight were assessed as 'Likely' to occur, 16 were assessed as 'Possible' to occur and the remaining 20 were assessed as 'unlikely to occur' (**Appendix L**). Species not recorded during the Survey that were assessed as 'Likely' to occur post-survey included six Priority 3 species and one Priority 4 species. The species that were still assessed as 'Likely' to occur post survey comprised:

- species previously recorded within 10 km of the Survey area;
- species with vegetation types/habitat types that could not be ground-truthed due to access constraints;
- species where suitable habitat was identified within the Survey area; and
- species that may not have been detectable at the time of the Survey.

7.1.7 Introduced Flora

Eleven introduced flora species have been recorded from the Survey area, six of which were recorded during the Survey (**Figure 7-4**). None of the introduced species represent a declared pest or WoNS (**Table 7-6**). Introduced species were ranked according to several attributes (**Table 7-6**), including ecological impact and invasiveness in the various DBCA regions in the Weed Prioritisation Process (WPP) for the Department of Parks and Wildlife (DPaW, now the DBCA). Of the species assessed for the Pilbara DBCA region, all ranked as having a 'high' ecological impact with a 'rapid' level of invasiveness.

Table 7-6: Introduced flora species identified in the Study area

Taxon	Common name	Current survey	Previous surveys	WPP weed species rankings	
				Ecological impact	Invasiveness
* <i>Argemone ochroleuca</i>	Mexican Poppy	X	X	Unknown	Rapid
* <i>Bidens bipinnata</i>	Bipinnate Beggartick		X	Unknown	Rapid
* <i>Cenchrus ciliaris</i>	Buffel Grass	X	X	High	Rapid
* <i>Cenchrus setiger</i>	Birdwood Grass	X	X	High	Rapid
* <i>Cynodon dactylon</i>	Couch Grass		X	High	Rapid
* <i>Datura leichhardtii</i>	Native Thornapple		X	Unknown	Unknown
* <i>Flaveria trinervia</i>	Speedy Weed		X	Not assessed	Not assessed
* <i>Lactuca serriola</i>	Prickly Lettuce		X	Not assessed	Not assessed
* <i>Malvastrum americanum</i>	Spiked Malvastrum	X	X	High	Rapid
* <i>Vachellia farnesiana</i>	Mimosa Bush	X	X	High	Rapid
* <i>Setaria verticillata</i>	Whorled Pigeon Grass	X	X	High	Rapid
Total		6	11	-	-

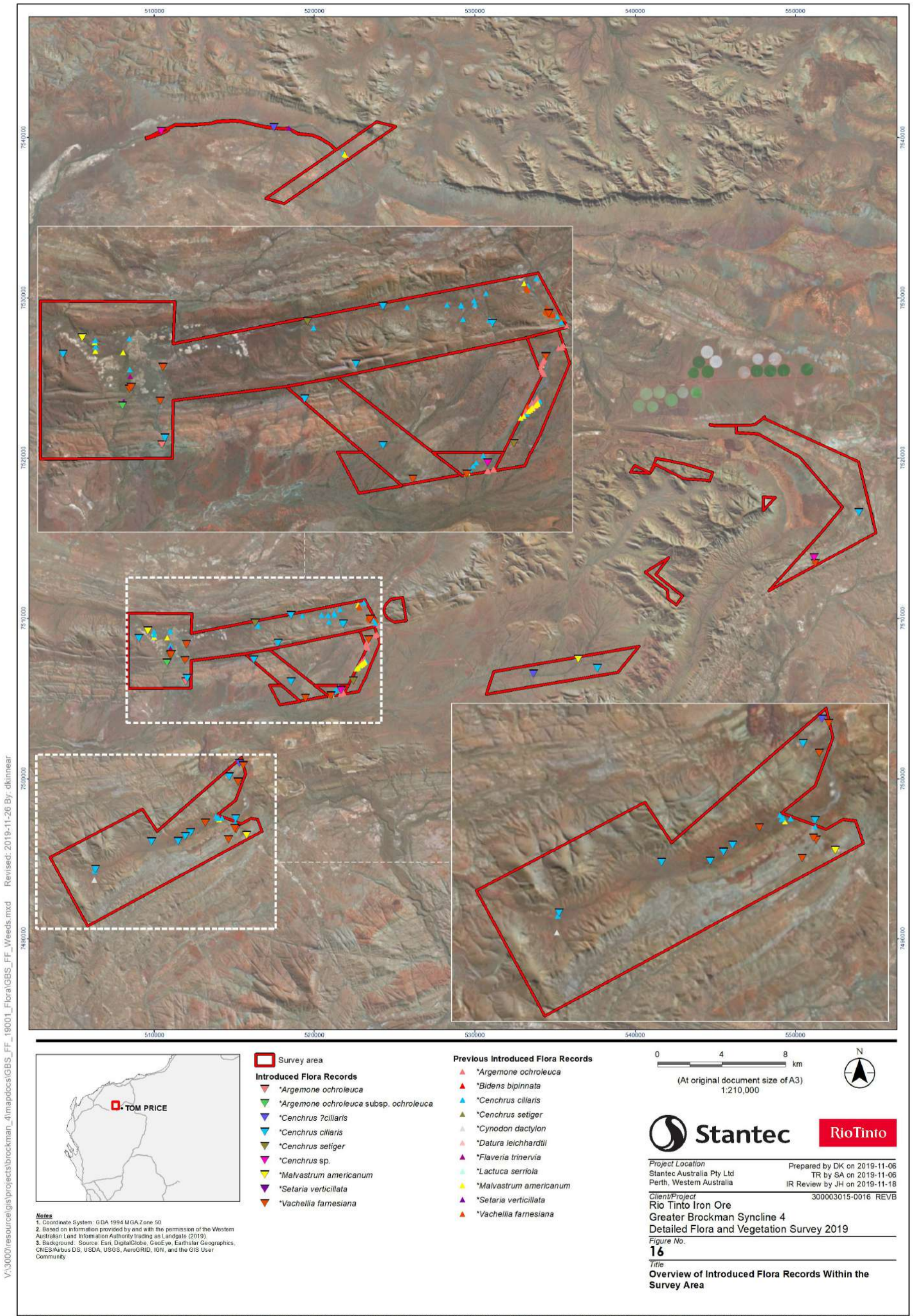


Figure 7-4: Overview of introduced flora records within the Survey area

7.2 Vegetation

7.2.1 Vegetation Types

There were 46 vegetation types described and mapped from the Survey area (**Table 7-7; Section 7.2.1.1 to Section 7.2.1.4**). Vegetation type mapping is presented in **Appendix O**, with quadrat and relevé data provided in **Appendix E**. For consistency, ten vegetation types were assigned according to Biota (2016), seven vegetation types were assigned according to Biota (2019a), six were assigned according to Biota (2019c) and one was assigned according to Biota (2019b) (**Table 7-7**).

The vegetation types aligned with the four broad landform categories described by (Biota 2016) detailed in subsequent sections (**Sections 7.2.1.1 to 7.2.1.4**) and comprising:

- creek lines and floodplains;
- gorges, gullies and free faces;
- plains and broad valleys; and
- hills.

Table 7-7 presents the vegetation types described and mapped within the Survey area by broad landform category and shows the extent within the Survey area. The most dominant and widespread vegetation type was EIAMTw, occupying approximately 23% of the total Survey area. This vegetation type occurred on slopes, hills and crest of ranges throughout the Survey area.

Where an area was mainly occupied by more than one community which justified a distinction in mapping, the area was mapped as a mosaic. Two mosaic vegetation types were described and mapped within the Survey area:

- ElAaTeTw/ElAbAaAeTePm; and
- ChAanAmAbAcSaoTeTtEmCc/Tw.

Site replication was not achieved within the Survey area for the following vegetation types:

- Three vegetation types, AapAsAbTeTbA?lcf, ChAcGsSsVfCcTt and ElApTwTe were sampled by two quadrats or relevés in the Survey area as they only occupied a small extent within the Survey area (0.53 %, 0.48% and 0.69%, respectively). Access to some was limited and they were supplemented with data collected from mapping notes. It is also considered that these vegetation types are adequately sampled in the locality by Biota (Biota 2019a, b, c).
- Nine vegetation types (AxSifSENsppTlo, ChAiAbTw, ChAsppTHtTeTw, ElAbAaAeTePm, ElAbMeTw, ElEpTsp, ElExAiTw, ExAcANITHtTe and Tss) were sampled by a single quadrat or relevé in the Survey area. They occurred in areas that were only subject to a single-phase (supplementary) survey. This vegetation was considered to have been adequately sampled in the locality by (Biota 2019a, b, c)
- One vegetation type (EcMgCYPv), was sampled by two quadrats in the Survey area as it occupied a small extent (0.12%). It was only subject to a single-phase (supplementary) survey. This vegetation type was considered to have been adequately sampled in the locality by (Biota 2019a, b, c)
- Nine vegetation types (CdEgAeAatTwTe, EcGORsSANITERHtTe, ElAmAhTw, ElChGORApyTHtTe, ElEgAatAexAbTeTw, ElTb, EvEcChAcEUa, ExAcANITHtTe and ExChAsppGAgTeTw) were sampled by mapping notes only as they occupied a small extent (<0.1% to 2.1%) within the Survey area. They were only subject to a single-phase (supplementary) survey. This vegetation was considered to have been adequately sampled in the locality by (Biota 2019a, b, c)

Table 7-7: Summary of vegetation types described and mapped within the Survey area

Vegetation type code	Vegetation type description	Extent within Survey area	
		ha	%
Creek lines and Floodplains			
ExAcSsAbEITe(Ta)	<i>Eucalyptus xerothermica</i> scattered low trees over <i>Acacia citrinoviridis</i> , <i>Stylobasium spathulatum</i> and <i>Acacia bivenosa</i> high shrubland over <i>Eremophila longifolia</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.	100.05	0.65
ChAanAmAbAcSaoTeTfEmCc (mosaic with Tw)	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia ancistrocarpa</i> , <i>A. monticola</i> , <i>A. bivenosa</i> and <i>A. citrinoviridis</i> tall open scrub over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> scattered shrubs <i>Triodia epactia</i> open hummock grassland to hummock grassland and <i>Themeda triandra</i> , <i>Eriachne mucronata</i> and <i>*Cenchrus ciliaris</i> scattered hummock grasses.	130.50	0.84
ChAcGsSsVfCcTt	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia citrinoviridis</i> high shrubland over <i>Gossypium sturtianum</i> , <i>Stylobasium spathulatum</i> and <i>*Vachellia farnesiana</i> open shrubland over <i>*Cenchrus ciliaris</i> and <i>Themeda triandra</i> open tussock grassland to tussock grassland.	74.90	0.48
EcMgCYPv (Biota 2019b)	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> woodland to open forest over <i>Melaleuca glomerata</i> (<i>Melaleuca bracteata</i>) tall shrubland to tall open scrub over <i>Cyperus vaginatus</i> scattered sedges	18.32	0.12
ChAciElAItrfcTeEaTtCc	<i>Corymbia hamersleyana</i> low open woodland to low woodland over <i>Acacia citrinoviridis</i> high open shrubland over <i>Eremophila longifolia</i> and <i>Androcalva luteiflora</i> open shrubland over <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H Brooker 2186) (<i>Acacia pyrifolia</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> and <i>Ptilotus obovatus</i> subsp. <i>obovatus</i>) low open shrubland to low shrubland over <i>Triodia epactia</i> very open hummock grassland and <i>Eulalia aurea</i> , <i>Themeda triandra</i> and <i>*Cenchrus ciliaris</i> (<i>Chrysopogon fallax</i> , <i>Cymbopogon ambiguus</i> and <i>Enneapogon robustissimus</i>) tussock grassland	516.78	3.34
EgAaAkTeTw	<i>Eucalyptus gamophylla</i> scattered mallees over <i>Acacia atkinsiana</i> and <i>A. kempeana</i> scattered high shrubs to high open shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> open hummock grassland to hummock grassland.	324.11	2.1
ElAbAaAeTePm (Mosaic with ElAaTeTw)	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia bivenosa</i> and <i>Acacia atkinsiana</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Paraneurachne muelleri</i> very open tussock grassland.	559.72	3.62
ElAciAbAmoTe	<i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia citrinoviridis</i> , <i>A. bivenosa</i> and <i>A. monticola</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Themeda triandra</i> very open tussock grassland.	26.12	0.17
EvAcGrSsAbApyTrfTeCcTt	<i>Eucalyptus victrix</i> low woodland over <i>Acacia citrinoviridis</i> and <i>Gossypium robinsonii</i> tall shrubland over <i>Stylobasium spathulatum</i> , <i>A. bivenosa</i> and <i>A. pyrifolia</i> scattered shrubs to open shrubland over <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H Brooker 2186) low open shrubland over <i>Triodia epactia</i> very open hummock grassland and <i>*Cenchrus ciliaris</i> (<i>Themeda triandra</i>) tussock grassland.	51.97	0.34


Vegetation type code	Vegetation type description	Extent within Survey area	
		ha	%
ExEvMgAcAcpAbTaTeTtCC	<i>Eucalyptus xerothermica</i> and <i>Eucalyptus victrix</i> low open woodland to low woodland over <i>Melaleuca glomerata</i> , <i>Acacia citrinoviridis</i> , <i>A. coriacea</i> subsp. <i>pendens</i> and <i>A. bivenosa</i> tall shrubland over <i>Triodia angusta</i> and <i>Triodia epactia</i> very open hummock grassland and <i>Themeda triandra</i> and * <i>Cenchrus ciliaris</i> very open tussock grassland.	85.19	0.55
EcGORsSsANITeRTHtTe (Biota 2019a)	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> (<i>E. victrix</i>) scattered trees to open woodland over <i>Gossypium robinsonii</i> (<i>Acacia citrinoviridis</i> , <i>A. coriacea</i> subsp. <i>pendens</i> and <i>Melaleuca glomerata</i>) tall shrubland over <i>Stylobasium spathulatum</i> and <i>Androcalva luteiflora</i> shrubland over <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H. Brooker 2186), (<i>Corchorus crozophorifolius</i>) low open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.	2.13	<0.1
ExAcANITHtTe (Biota 2019a)	<i>Eucalyptus xerothermica</i> scattered low trees over <i>Acacia citrinoviridis</i> tall shrubland to tall open scrub over <i>Androcalva luteiflora</i> (<i>Acacia maitlandii</i>) open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.	35.96	0.23
EiChGORApYtHTtTe (Biota 2019a)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> scattered low trees over <i>Gossypium robinsonii</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.	4.73	<0.1
ExChAsppGAgTeTw (Biota 2019c)	<i>Eucalyptus xerothermica</i> and/or <i>Corymbia hamersleyana</i> low open woodland over <i>Acacia</i> spp. and <i>Gastrolobium grandiflorum</i> open shrubland over <i>Triodia epactia</i> (<i>T. wiseana</i>) open hummock grassland.	1.95	<0.1
EvEcChAcEUa (Biota 2019c)	<i>Eucalyptus victrix</i> and <i>E. camaldulensis</i> subsp. <i>refulgens</i> woodland over <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia citrinoviridis</i> (* <i>Vachellia farnesiana</i>) tall open scrub over <i>Eulalia aurea</i> (<i>Themeda triandra</i> , <i>Enteropogon ramosus</i> , <i>Dichanthium fecundum</i> and <i>Bothriochloa ewartiana</i>) open tussock grassland.	16.37	0.11
Gorges, gullies and free faces			
EiCfAciAapGbDpTe (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> , <i>Acacia citrinoviridis</i> and <i>A. aptaneura</i> , (<i>Grevillea berryana</i>) low woodland over <i>Dodonaea pachyneura</i> tall open shrubland over <i>Triodia epactia</i> very open hummock grassland.	26.11	0.17
EiCfAprAapDpTeERIm (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> , <i>Acacia pruinocarpa</i> and <i>A. aptaneura</i> low open woodland over <i>Dodonaea pachyneura</i> scattered tall shrubs over <i>Triodia epactia</i> very open hummock grassland with <i>Eriachne mucronata</i> open tussock grassland.	858.32	5.55
Plains and broad valleys			
A'a'ApAbAeTe (Biota 2019a)	<i>Acacia 'aneura'</i> scattered low trees to low open woodland over <i>A. pruinocarpa</i> scattered tall shrubs over <i>A. bivenosa</i> and <i>A. exigua</i> open shrubland over <i>Triodia epactia</i> hummock grassland.	1,379.90	8.93


Vegetation type code	Vegetation type description	Extent within Survey area	
		ha	%
AapAsAbTeTbA?ICf	<i>Acacia aptaneura</i> , <i>Acacia synchronicia</i> and <i>Acacia bivenosa</i> high open shrubland over <i>Acacia synchronicia</i> and <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Senna glutinosa</i> subsp. <i>xlversenii</i> scattered shrubs to open shrubland over <i>Triodia epactia</i> (<i>Triodia brizoides</i>) open hummock grassland and <i>Aristida ?latifolia</i> , <i>Chrysopogon fallax</i> and <i>Eragrostis xerophila</i> very open tussock grassland.	81.32	0.53
CdExAapAaAbTeTt	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Eucalyptus xerothermica</i> scattered mallees over <i>Acacia aptaneura</i> , <i>A. atkinsiana</i> and <i>A. bivenosa</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Themeda triandra</i> very open tussock grassland.	1,112.71	7.20
AxAapTspp (Biota 2016)	<i>Acacia xiphophylla</i> (<i>A. aptaneura</i>) tall shrubland over <i>Triodia</i> spp. very open hummock grassland.	193.04	1.25
AxSfSEnspTl (Biota 2016)	<i>Acacia xiphophylla</i> high open shrubland over <i>Rhagodia eremaea</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> open shrubland over <i>Sida fibulifera</i> low open shrubland over <i>Triodia longiceps</i> very open hummock grassland.	1.87	<0.1
CdEgAeAatTwTe (Biota 2019a)	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees to low open woodland over <i>Eucalyptus gamophylla</i> low open mallee woodland over <i>Acacia exigua</i> and <i>A. atkinsiana</i> (<i>A. kempeana</i>) tall open shrubland over <i>Triodia wiseana</i> and <i>T. epactia</i> open hummock grassland.	15.76	0.1
EIEgAatAexAbTeTw (Biota 2019c)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> (<i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>C. hamersleyana</i>) scattered low trees and/or <i>E. gamophylla</i> scattered low mallees over <i>Acacia atkinsiana</i> , <i>A. exigua</i> and <i>A. bivenosa</i> shrubland over <i>Triodia epactia</i> and/or <i>T. wiseana</i> hummock grassland.	106.81	0.69
Hills			
AapAciTeTw (Biota 2016)	<i>Acacia aptaneura</i> and <i>Acacia citrinoviridis</i> tall shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> open hummock grassland.	126.73	0.82
ChAiAbTw (Biota 2019a)	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia inaequilatera</i> and <i>A. bivenosa</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.	586.67	3.8
EIAaAcApAmmTwTe	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia atkinsiana</i> , <i>A. citrinoviridis</i> and <i>A. pruinocarpa</i> open shrubland over <i>A. marramamba</i> open shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland.	627.01	4.06
EIAaAkApTbTeTw	<i>Eucalyptus leucophloia</i> (<i>Corymbia hamersleyana</i>) low open woodland over <i>Acacia atkinsiana</i> , <i>A. kempeana</i> and <i>A. pruinocarpa</i> shrubland over <i>Triodia brizoides</i> , <i>Triodia epactia</i> and <i>Triodia wiseana</i> hummock grassland.	475.97	3.08
EIAaTeTw (Mosaic with EIAbAaAeTePm)	<i>Eucalyptus leucophloia</i> scattered low tress over <i>Acacia atkinsiana</i> scattered shrubs over <i>Triodia epactia</i> open hummock grassland.	559.72	3.62


Vegetation type code	Vegetation type description	Extent within Survey area	
		ha	%
EIAbMeTw	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia bivenosa</i> scattered tall shrubs over <i>Melaleuca eleuterostachya</i> over <i>Triodia wiseana</i> hummock grassland.	36.30	0.23
EIAeTw (Biota 2019a)	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia exigua</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland.	164.54	1.06
EIAiTw (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>Leucophloia</i> scattered low trees over <i>Acacia inaequilatera</i> scattered tall shrubs over <i>Triodia wiseana</i> hummock grassland.	566.69	3.67
ChAsppTHtTeTw	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia</i> spp. tall shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> and <i>T. wiseana</i> open hummock grassland.	14.30	<0.1
EIAmTw (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia maitlandii</i> shrubland over <i>Triodia wiseana</i> open hummock grassland.	3,585.94	23.2
EIApTwTe	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia pruinocarpa</i> (<i>Acacia atkinsiana</i>) tall open shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland.	107.31	0.69
EIChApAmTwEmTsMBPm	<i>Eucalyptus leucophloia</i> subsp. <i>Leucophloia</i> and/or <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia pruinocarpa</i> high open shrubland over <i>Acacia maitlandii</i> low open shrubland over <i>Triodia wiseana</i> very open hummock grassland and <i>Eriachne mucronata</i> , <i>Themeda</i> ?sp. Mt Barricade and <i>Paraneurachne muelleri</i> very open tussock grassland to open tussock grassland.	890.28	5.76
EIEgAmTw (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>E. gamophylla</i> low open mallee woodland over <i>Acacia maitlandii</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.	121.48	0.79
EIExAiTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Eucalyptus xerothermica</i> scattered low mallees to low open mallee woodland over <i>Acacia inaequilatera</i> scattered tall shrubs over <i>Triodia wiseana</i> open hummock grassland.	19.27	0.12
EITITw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia longiceps</i> and <i>Triodia wiseana</i> (<i>Triodia epactia</i>) hummock grassland.	128.03	0.83
EITw (Biota 2016)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia wiseana</i> hummock grassland.	525.30	3.40
EsTw (Biota 2016)	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i> low open mallee woodland over <i>Triodia wiseana</i> open hummock grassland.	458.97	2.97
Tss (Biota 2019c)	<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1) hummock grassland.	17.87	0.12
Tw	<i>Triodia wiseana</i> hummock grassland.	772.46	5.00
EIAmAhTw (Biota 2019c)	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , (<i>Corymbia hamersleyana</i>) low open woodland over <i>Acacia maitlandii</i> open shrubland over <i>A. hilliana</i> low open shrubland over <i>Triodia wiseana</i> hummock grassland.	324.46	2.10

Vegetation type code	Vegetation type description	Extent within Survey area	
		ha	%
EIEpTspp (Biota 2019c)	<i>Eucalyptus leucophloia</i> subsp. <i>Leucophloia</i> low open woodland over <i>E. pilbarensis</i> low open mallee woodland over <i>Triodia longiceps</i> , <i>T. wiseana</i> and <i>T. epactia</i> open hummock grassland.	119.09	0.77
EITb	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia brizoides</i> open hummock grassland.	21.49	0.14
Disturbed	-	40.05	0.26
Total		15,454.87ha	100%


7.2.1.1 Creek lines and floodplains


Vegetation type code	ExAcSsAbElTe(Ta)
Vegetation type description	<i>Eucalyptus xerothermica</i> scattered low trees over <i>Acacia citrinoviridis</i> , <i>Stylobasium spathulatum</i> and <i>Acacia bivenosa</i> high shrubland over <i>Eremophila longifolia</i> open shrubland over <i>Triodia epactia</i> (<i>Triodia angusta</i>) hummock grassland.
Sites in the Survey area	ELW52, GBS22 and GBS91.
Proportion of the Survey area	100.05ha (0.65%)
Associated species	Shrubs: <i>Acacia inaequilatera</i> , <i>A. pyrifolia</i> , <i>Gossypium robinsonii</i> , <i>G. sturtianum</i> , <i>Hakea chordophylla</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> , <i>S. artemisioides</i> subsp. <i>helmsii</i> and <i>Jasminum didymum</i> subsp. <i>lineare</i> . Low shrubs: <i>Ptilotus obovatus</i> var. <i>obovatus</i> . Herbs: <i>Duperreya commixta</i> and <i>Rhynchosia minima</i> .
Vegetation condition	Excellent.
Representative photograph (GBS22)	


Vegetation type code	ChAanAmAbAcSaoTeTfEmCc
Vegetation type description	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia ancistrocarpa</i> , <i>A. monticola</i> , <i>A. bivenosa</i> and <i>A. citrinoviridis</i> tall open scrub over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> scattered shrubs <i>Triodia epactia</i> open hummock grassland to hummock grassland and <i>Themeda triandra</i> , <i>Eriachne mucronata</i> and * <i>Cenchrus ciliaris</i> scattered hummock grasses.
Sites in the Survey area	GBS75, GBS77 and rGBS109.
Proportion of the Survey area	130.50ha (0.84%)
Associated species	Shrubs: <i>Acacia aptaneura</i> , <i>A. citrinoviridis</i> , <i>Corchorus crozophorifolius</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301), <i>Petalostylis labicheoides</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Senna glutinosa</i> subsp. * <i>luerssenii</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Bonamia erecta</i> , <i>Corchorus</i> ? <i>lasiocarpus</i> subsp. <i>parvus</i> , <i>Gossypium australe</i> , <i>Indigofera monophylla</i> , <i>S. venusta</i> and <i>Solanum horridum</i> . Grasses: ? <i>Cenchrus ciliaris</i> , <i>Cymbopogon ambiguus</i> , <i>Enneapogon lindleyanus</i> and <i>Paraneurachne muelleri</i> . Herbs: <i>Cucumis variabilis</i> , <i>Duperreya commixta</i> and <i>Rhynchosia minima</i> .
Vegetation condition	Very Good to Excellent.
Representative photograph (GBS75)	


Vegetation type code	ChAcGsSsVfCcTt
Vegetation type description	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia citrinoviridis</i> high shrubland over <i>Gossypium sturtianum</i> , <i>Stylobasium spathulatum</i> and * <i>Vachellia farnesiana</i> open shrubland over * <i>Cenchrus ciliaris</i> and <i>Themeda triandra</i> open tussock grassland to tussock grassland.
Sites in the Survey area	GBS78 and GBS83.
Proportion of the Survey area	74.90ha (0.48%)
Associated species	Shrubs: <i>Eremophila longifolia</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> .
Vegetation condition	Good.
Representative photograph (GBS78)	


Vegetation type code	ChAcIElAlTrfcTeEaTcC
Vegetation type description	<i>Corymbia hamersleyana</i> low open woodland to low woodland over <i>Acacia citrinoviridis</i> high open shrubland over <i>Eremophila longifolia</i> and <i>Androcalva luteiflora</i> open shrubland over <i>Tephrosia rosea</i> var. Fortescue creeks (M.I.H Brooker 2186) (<i>Acacia pyrifolia</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> and <i>Ptilotus obovatus</i> subsp. <i>obovatus</i>) low open shrubland to low shrubland over <i>Triodia epactia</i> very open hummock grassland and <i>Eulalia aurea</i> , <i>Themeda triandra</i> and * <i>Cenchrus ciliaris</i> (<i>Chrysopogon fallax</i> , <i>Cymbopogon ambiguus</i> and <i>Enneapogon robustissimus</i>) tussock grassland.
Sites in the Survey area	GBS01, GBS10, GBS14, GBS50 and rGBS121.
Proportion of the Survey area	516.78ha (3.34%)
Associated species	Shrubs: <i>Acacia ancistrocarpa</i> , <i>A. bivenosa</i> , <i>A. maitlandii</i> , <i>A. monticola</i> , <i>Capparis lasiantha</i> , <i>Dodonaea lanceolata</i> var. <i>lanceolata</i> , <i>Gastrolobium grandiflorum</i> , <i>Gossypium robinsonii</i> , <i>Hakea chordophylla</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> and <i>Waltheria indica</i> . Low shrubs: <i>Abutilon lepidum</i> , <i>Cleome viscosa</i> , <i>Corchorus crozophorifolius</i> , <i>Ptilotus exaltatus</i> , <i>P. obovatus</i> var. <i>obovatus</i> , <i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90), <i>Gossypium robinsonii</i> , <i>Hybanthus aurantiacus</i> , <i>Indigofera monophylla</i> , <i>Scaevola amblyanthera</i> var. <i>centralis</i> , <i>Scaevola spinescens</i> and <i>Solanum horridum</i> . Grasses: <i>Cymbopogon ambiguus</i> , <i>Eulalia aurea</i> and <i>Paraneurachne muelleri</i> . Herbs: <i>Alternanthera nana</i> , <i>Bonamia erecta</i> , <i>Duperreya commixta</i> , <i>Enneapogon robustissimus</i> , <i>Evolvulus alsinoides</i> var. <i>villosicalyx</i> , <i>Glycine canescens</i> , <i>Goodenia cusackiana</i> , <i>Goodenia nuda</i> (P4), <i>Leiocarpa semicalva</i> , <i>Rhynchosia minima</i> and <i>Trichodesma zeylanicum</i> .
Vegetation condition	Good to Excellent.
Representative photograph (GBS10)	


Vegetation type code	EgAaAkTeTw
Vegetation type description	<i>Eucalyptus gamophylla</i> scattered mallees over <i>Acacia atkinsiana</i> and <i>A. kempeana</i> scattered high shrubs to high open shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> open hummock grassland to hummock grassland.
Sites in the Survey area	GBS03, GBS07, GBS20, GBS74, GBS76 and GBS79.
Proportion of the Survey area	324.11ha (2.10%)
Associated species	Trees: <i>Corymbia deserticola</i> and <i>Eucalyptus leucophloia</i> . Shrubs: <i>Acacia bivenosa</i> , <i>A. citrinoviridis</i> , <i>A. pruinocarpa</i> , <i>Hakea chordophylla</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>S. glutinosa</i> subsp. <i>glutinosa</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Goodenia stobbsiana</i> . Grasses: <i>Amphipogon ?sericeus</i> and <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS03)	


Vegetation type code	EIAbAaAeTePm (mosaic with EIAaTeTw)
Vegetation type description	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia bivenosa</i> and <i>Acacia atkinsiana</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Paraneurachne muelleri</i> very open tussock grassland.
Sites in the Survey area	rGBS115, mnGBS06 and mnGBS28.
Proportion of the Survey area	559.72ha (3.62%)
Associated species	Shrubs: <i>Acacia exigua</i> , <i>A. monticola</i> , <i>A. pyrifolia</i> var. <i>pyrifolia</i> , <i>Capparis lasiantha</i> , <i>Eremophila longifolia</i> , <i>Jasminium didymium</i> subsp. <i>lineare</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>S. glutinosa</i> subsp. <i>pruinosa</i> and <i>S. stricta</i> . Low shrubs: <i>Corchorus crozophorifolius</i> . Grasses: <i>Cymbopogon ambiguus</i> . Herbs: <i>Bonamia erecta</i> , <i>Duperreya commixta</i> , <i>Eriachne mucronata</i> , <i>Hybanthus aurantiacus</i> , <i>Themeda triandra</i> and <i>Triodia epactia</i> .
Vegetation condition	Excellent.
Representative photograph (rGBS115)	


Vegetation type code	ElAciAbAmoTe
Vegetation type description	<i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia citrinoviridis</i> , <i>A. bivenosa</i> and <i>A. monticola</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Themeda triandra</i> very open tussock grassland.
Sites in the Survey area	GBS15, GBS101, GBS80 and rGBS125.
Proportion of the Survey area	26.12ha (0.17%)
Associated species	Trees: <i>Corymbia hamersleyana</i> and <i>Eucalyptus xerothermica</i> . Shrubs: <i>Acacia maitlandii</i> , <i>A. pyrifolia</i> , <i>Capparis lasiantha</i> , <i>Grevillea wickhamii</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Petalostylis labicheoides</i> , <i>Santalum lanceolatum</i> , <i>Santalum ?spicatum</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Low shrubs: <i>Cleome viscosa</i> , <i>Trachymene oleracea</i> and <i>Trichodesma zeylanicum</i> . Grasses: <i>Cymbopogon ambiguus</i> , <i>Eriachne mucronata</i> and <i>Triodia wiseana</i> .
Vegetation condition	Very Good Excellent.
Representative photograph (GBS101)	 A photograph showing a landscape with a central tree and surrounding vegetation. The tree has sparse, yellowish-green leaves. The ground is covered with dry, yellowish-brown grasses and shrubs. The background shows a clear blue sky and more trees.

Vegetation type code	EvAcGrSsAbApyTrfTeCcTt
Vegetation type description	<i>Eucalyptus victrix</i> low woodland over <i>Acacia cirrinoviridis</i> and <i>Gossypium robinsonii</i> tall shrubland over <i>Stylobasium spathulatum</i> , <i>A. bivenosa</i> and <i>A. pyrifolia</i> scattered shrubs to open shrubland over <i>Tephrosia rosea</i> var. Fortescue creeks (M.I.H Brooker 2186) low open shrubland over <i>Triodia epactia</i> very open hummock grassland and * <i>Cenchrus ciliaris</i> (<i>Themeda triandra</i>) tussock grassland.
Sites in the Survey area	GBS33, GBS35, GBS36, GBS62 and ELREL09.
Proportion of the Survey area	51.97ha (0.34%)
Associated species	<p>Trees: <i>Eucalyptus xerothermica</i>, <i>Corymbia hamersleyana</i> and <i>Ficus brachypoda</i>.</p> <p>Shrubs: <i>Acacia coriacea</i> subsp. <i>pendens</i>, <i>Acacia maitlandii</i>, <i>A. monticola</i>, <i>Androcalva luteiflora</i>, <i>Capparis lasiantha</i>, <i>Gossypium sturtianum</i> var. <i>sturtianum</i>, <i>Hakea chordophylla</i>, <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), <i>Jasminum didymum</i> subsp. <i>lineare</i>, <i>Petalostylis labicheoides</i> and <i>Vachellia farnesiana</i>.</p> <p>Low shrubs: <i>Abutilon otocarpum</i>, <i>Corchorus crozophorifolius</i>, <i>Waltheria indica</i> and <i>Trachymene oleracea</i> subsp. <i>oleracea</i>.</p> <p>Grasses: <i>Cymbopogon</i> ?<i>ambiguus</i>, <i>Enneapogon lindleyanus</i>, <i>Eriachne benthamii</i>, <i>E. mucronata</i>, <i>Enteropogon ramosus</i> and <i>Eulalia aurea</i>.</p> <p>Herbs: <i>Alternanthera nana</i>, <i>Cleome viscosa</i>, <i>Cucumis variabilis</i>, <i>Dipteracanthus australasicus</i>, <i>Duperreya commixta</i>, <i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>, <i>Hybanthus aurantiacus</i> and <i>Phyllanthus maderaspatensis</i>.</p>
Vegetation condition	Good to Excellent.
Representative photograph (GBS36)	


Vegetation type code	ExEvMgAcAcpAbTaTeTtCc
Vegetation type description	<i>Eucalyptus xerothermica</i> and <i>Eucalyptus victrix</i> low open woodland to low woodland over <i>Melaleuca glomerata</i> , <i>Acacia citrinoviridis</i> , <i>A. coriacea</i> subsp. <i>pendens</i> and <i>A. bivenosa</i> tall shrubland over <i>Triodia angusta</i> and <i>Triodia epactia</i> very open hummock grassland and <i>Themeda triandra</i> and * <i>Cenchrus ciliaris</i> very open tussock grassland.
Sites in the Survey area	GBS57, rGBS117 and rGBS131.
Proportion of the Survey area	85.19ha (0.55%)
Associated species	Shrubs: <i>Acacia bivenosa</i> , <i>A. maitlandii</i> , <i>Androcalva luteiflora</i> , <i>Gossypium robinsonii</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Grasses: <i>Enneapogon lindleyanus</i> and <i>Eragrostis pergracilis</i> . Herbs: <i>Duperreya commixta</i> and <i>Pluchea rubelliflora</i> .
Vegetation condition	Good to Excellent.
Representative photograph (GBS57)	

Vegetation type code	EcGOrSsANITeTHTe
Vegetation type description	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> (<i>E. victrix</i>) scattered trees to open woodland over <i>Gossypium robinsonii</i> (<i>Acacia citrinoviridis</i> , <i>A. coriacea</i> subsp. <i>pendens</i> and <i>Melaleuca glomerata</i>) tall shrubland over <i>Stylobasium spathulatum</i> and <i>Androcalva luteiflora</i> shrubland over <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H. Brooker 2186), (<i>Corchorus crozophorifolius</i>) low open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.
Sites in the Survey area	(Biota 2019a) B2 sites: LDS10, LDS-REL04
Proportion of the Survey area	2.13 ha (<0.1%)
Associated species	Shrubs: <i>Acacia bivenosa</i> , <i>A. pyrifolia</i> , <i>Clerodendrum floribundum</i> var. <i>angustifolium</i> , <i>Dodonaea lanceolata</i> var. <i>lanceolata</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), <i>Olearia fluvialis</i> , <i>Petalostylis labicheoides</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Stemodia grossa</i> and <i>Waltheria indica</i> . Grasses: <i>Cymbopogon ambiguus</i> and <i>Paspalidium gracile</i> . Herbs: <i>Alternanthera nana</i> and <i>Rhynchosia minima</i> .
Vegetation condition	Very Good
Representative photograph (LSD10)	

Vegetation type code	ExAcANITHtTe
Vegetation type description	<i>Eucalyptus xerothermica</i> scattered low trees over <i>Acacia citrinoviridis</i> tall shrubland to tall open scrub over <i>Androcalva luteiflora</i> (<i>Acacia maitlandii</i>) open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.
Sites in the Survey area	GBS106. Biota (2019a) sites: LDS08, LDS26, LDS32, LDS-REL01 and LDS-REL03.
Proportion of the Survey area	35.96 ha (0.23%)
Associated species	Trees: <i>Eucalyptus gamophylla</i> . Shrubs: <i>Acacia bivenosa</i> , <i>A. maitlandii</i> , <i>A. pyrifolia</i> , <i>Dodonaea lanceolata</i> var. <i>lanceolata</i> , <i>Gossypium robinsonii</i> , <i>Hibiscus sturtii</i> var. <i>campylochlamys</i> , <i>Indigofera monophylla</i> and <i>Jasminum didymum</i> subsp. <i>lineare</i> . Grasses: <i>Enneapogon lindleyanus</i> , <i>E. robustissimus</i> and <i>Eulalia aurea</i> . Herbs: <i>Polycarpaea longiflora</i> .
Vegetation condition	Good to Very Good
Representative photograph (GBS112)	


Vegetation type code	EIChGOrApyTHtTe
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> scattered low trees over <i>Gossypium robinsonii</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> open shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> very open hummock grassland.
Sites in the Survey area	None; recorded from mapping notes only by Stantec and Biota (2019a), area burnt during field.
Proportion of the Survey area	4.73 ha (<0.1%)
Associated species	-
Vegetation condition	Excellent
Representative photograph (mnGBS)	


Vegetation type code	ExChAsppGAgTeTw
Vegetation type description	<i>Eucalyptus xerothermica</i> and/or <i>Corymbia hamersleyana</i> low open woodland over <i>Acacia</i> spp. and <i>Gastrolobium grandiflorum</i> open shrubland over <i>Triodia epactia</i> (<i>T. wiseana</i>) open hummock grassland.
Sites in the Survey area	mnGBS381.
Proportion of the Survey area	1.95 ha (<0.1%)
Associated species	Trees: <i>Eucalyptus gamophylla</i> . Shrubs: <i>Acacia atkinsiana</i> , <i>A. elachantha</i> , <i>A. maitlandii</i> , <i>A. monticola</i> , <i>A. pyrifolia</i> var. <i>pyrifolia</i> , <i>Bonamia erecta</i> , <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i> , <i>Gossypium robinsonii</i> , <i>Hibiscus sturtii</i> var. <i>campylochlamys</i> , <i>Scaevola parvifolia</i> and <i>Seringia nephrosperma</i> . Grasses: <i>Yhemeda triandra</i> .
Vegetation condition	Excellent
Representative photograph (mnGBS381)	

Vegetation type code	EvEcChAcEUa
Vegetation type description	<i>Eucalyptus victrix</i> and <i>E. camaldulensis</i> subsp. <i>refulgens</i> woodland over <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia citrinoviridis</i> (* <i>Vachellia farnesiana</i>) tall open scrub over <i>Eulalia aurea</i> (<i>Themeda triandra</i> , <i>Enteropogon ramosus</i> , <i>Dichanthium fecundum</i> and <i>Bothriochloa ewartiana</i>) open tussock grassland.
Sites in the Survey area	Biota (2019c) sites: SGS12, SGS13, SGS21
Proportion of the Survey area	16.37 ha (0.11%)
Associated species	Shrubs: <i>Androcalva luteiflora</i> , <i>Gossypium robinsonii</i> , <i>Santalum lanceolatum</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Low shrubs: <i>Neptunia dimorphantha</i> and <i>Tephrosia rosea</i> var. <i>Fortescue</i> creeks (M.I.H. Brooker 2186). Grasses: <i>Aristida latifolia</i> , <i>Chrysopogon fallax</i> , <i>Enneapogon robustissimus</i> , <i>Eragrostis xerophila</i> and <i>Eriachne benthamii</i> .
Vegetation condition	Good to Very Good.
Representative photograph (SGS21)	

Vegetation type code	EcMgCYPv
Vegetation type description	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> woodland to open forest over <i>Melaleuca glomerata</i> , (<i>Melaleuca bracteata</i>) tall shrubland to tall open scrub over <i>Cyperus vaginatus</i> scattered sedges.
Sites in the Survey area	GBS114 and GBS118. Biota (2019b) sites: CCS09, CCS17, CCS20
Proportion of the Survey area	18.32 ha (0.12%).
Associated species	Trees: <i>Eucalyptus camaldulensis</i> subsp. <i>?</i> <i>obtusa</i> . Shrubs: <i>Acacia ampliceps</i> x <i>bivenosa</i> , <i>A. ancistrocarpa</i> , <i>A. citrinoviridis</i> , <i>Gossypium robinsonii</i> , <i>G. sturtianum</i> var. <i>sturtianum</i> , <i>Hakea chordophylla</i> and * <i>Vachellia farnesiana</i> Grasses: <i>Eulalia aurea</i> , <i>Themeda triandra</i> and * <i>?</i> <i>Cenchrus ciliaris</i> .
Vegetation condition	Very Good.
Representative photograph (GBS118)	


7.2.1.2 Gorges, gullies and free faces


Vegetation type code	EICfAciAapGbDpTe
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferriticola</i> , <i>Acacia citrinoviridis</i> and <i>A. aptaneura</i> , (<i>Grevillea berryana</i>) low woodland over <i>Dodonaea pachyneura</i> tall open shrubland over <i>Triodia epactia</i> very open hummock grassland.
Sites in the Survey area	GBS05, GBS25, rGBS08 and rGBS145.
Proportion of the Survey area	26.11ha (0.17%)
Associated species	<p>Trees: <i>Ficus brachypoda</i> and <i>Eucalyptus victrix</i>.</p> <p>Shrubs: <i>Acacia citrinoviridis</i>, <i>A. maitlandii</i>, <i>A. pruinocarpa</i>, <i>A. pyrifolia</i>, <i>Astrotricha hamptonii</i>, <i>Clerodendrum floribundum</i>, <i>Eremophila latrobei</i> subsp. ?<i>glabra</i>, <i>Gossypium robinsonii</i>, <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), <i>Jasminum didymum</i> subsp. <i>lineare</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i>.</p> <p>Low shrubs: <i>Cleome viscosa</i>, <i>Corchorus crozophorifolius</i>, <i>Gossypium austral</i>, <i>Harnieria kempeana</i> subsp. <i>muelleri</i>, <i>Hibiscus</i> aff. sp. Gurinbidy Range (M.E. Trudgen MET 15708) (P2), <i>Sida</i> sp. Barlee Range (S. Van Leeuwen 1642) (P3), <i>Solanum horridum</i> and <i>S. lasiophyllum</i>.</p> <p>Grasses: <i>Aristida inaequiglumis</i>, *<i>Cenchrus ciliaris</i>, <i>Cymbopogon ambiguus</i>, <i>Eriachne mucronata</i>, <i>Themeda triandra</i> and <i>Triodia wiseana</i>.</p> <p>Herbs: <i>Duperreya commixta</i> and <i>Gomphrena cunninghamii</i>.</p>
Vegetation condition	Excellent.
Representative photograph (rGBS145)	


Vegetation type code	EICfAprAapDpTeERIm
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferricola</i> , <i>Acacia pruinocarpa</i> and <i>A. aptaneura</i> low open woodland over <i>Dodonaea pachyneura</i> scattered tall shrubs over <i>Triodia epactia</i> very open hummock grassland with <i>Eriachne mucronata</i> open tussock grassland.
Sites in the Survey area	GBS06, GBS37, GBS54, GBS110, rGBS10 and rGBS204.
Proportion of the Survey area	858.32ha (5.55%)
Associated species	Trees: <i>Ficus brachypoda</i> . Shrubs: <i>Acacia bivenosa</i> , <i>A. citrinoviridis</i> , <i>A. maitlandii</i> , <i>A. monticola</i> , <i>Brachychiton acuminatus</i> , <i>Capparis lasiantha</i> , <i>Gossypium robinsonii</i> , <i>Hakea ?chordophylla</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618), <i>Astrotricha hamptonii</i> , <i>Corchorus crozophorifolius</i> , <i>Harnieria kempeana</i> subsp. <i>muelleri</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), <i>Lepidium pedicellsum</i> , <i>Ptilotus obovatus</i> var. <i>obovatus</i> and <i>Sida</i> sp. Shovelanna Hill (S. van Leeuwen 3842). Grasses: <i>Cymbopogon ambiguus</i> , <i>Triodia brizoides</i> and <i>Triodia ?wiseana</i> . Herbs: <i>Cleome viscosa</i> , <i>Duperreya commixta</i> and <i>Hybanthus aurantiacus</i> .
Vegetation condition	Excellent.
Representative photograph (GBS37)	


7.2.1.3 Plains and broad valleys


Vegetation type code	A'a'ApAbAeTe
Vegetation type description	Acacia 'aneura' scattered low trees to low open woodland over A. <i>pruinocarpa</i> scattered tall shrubs over A. <i>bivenosa</i> and A. <i>exigua</i> open shrubland over <i>Triodia epactia</i> hummock grassland.
Sites in the Survey area	GBS48, GBS65, GBS72, GBS81, GBS105, GBS112, rGBS135 and rGBS143.
Proportion of the Survey area	1,379.90ha (8.93%)
Associated species	Trees: <i>Eucalyptus leucophloia</i> . Shrubs: <i>Acacia ancistrocarpa</i> , <i>A. kempeana</i> , <i>A. atkinsiana</i> , <i>A. maitlandii</i> , <i>A. ayersiana</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> and <i>Capparis umbonata</i> . Low shrubs: Grasses: <i>Amphipogon sericeus</i> , <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> Herbs: <i>Goodenia stobbsiana</i> and <i>Ptilotus calostachyus</i> .
Vegetation condition	Excellent.
Representative photograph (GBS65)	

Vegetation type code	AapAsAbTeTbA?ICf
Vegetation type description	<i>Acacia aptaneura</i> , <i>Acacia synchronicia</i> and <i>Acacia bivenosa</i> high open shrubland over <i>Acacia synchronicia</i> and <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Senna glutinosa</i> subsp. <i>xluersenii</i> scattered shrubs to open shrubland over <i>Triodia epactia</i> (<i>Triodia brizoides</i>) open hummock grassland and <i>Aristida ?latifolia</i> , <i>Chrysopogon fallax</i> and <i>Eragrostis xerophila</i> very open tussock grassland.
Sites in the Survey area	GBS87 and GBS89.
Proportion of the Survey area	81.32ha (0.53%)
Associated species	Shrubs: <i>Acacia kempeana</i> and <i>A. tetragonophylla</i> . Low shrubs: <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , and <i>Solanum lasiophyllum</i> . Grasses: <i>Eriachne mucronata</i> .
Vegetation condition	Very Good to Excellent.
Representative photograph (GBS87)	 A photograph showing a desert landscape with red soil and sparse vegetation. In the foreground, there is a wooden survey marker with a yellow cap and a pink ribbon. The background features scattered shrubs and a clear blue sky.

Vegetation type code	CdExAapAaAbTeTt
Vegetation type description	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Eucalyptus xerothermica</i> scattered mallees over <i>Acacia aptaneura</i> , <i>A. atkinsiana</i> and <i>A. bivenosa</i> high shrubland over <i>Triodia epactia</i> open hummock grassland and <i>Themeda triandra</i> very open tussock grassland.
Sites in the Survey area	GBS30, GBS 42, GBS44, GBS47, GBS51, GBS61, GBS63, GBS99, GBS70, GBS97 and rGBS133.
Proportion of the Survey area	1,112.71ha (7.20%)
Associated species	<p>Trees: <i>Eucalyptus leucophloia</i>.</p> <p>Shrubs: <i>Acacia ancistrocarpa</i>, <i>A. ayersiana</i>, <i>A. citrinoviridis</i>, <i>A. exigua</i>, <i>A. monticola</i>, <i>Capparis lasiantha</i>, <i>Hakea chordophylla</i>, <i>Jasminum didymum</i> subsp. <i>lineare</i>, <i>Senna artemisioides</i> subsp. <i>oligophylla</i>, <i>S. glutinosa</i> subsp. <i>×luerssenii</i>, <i>S. glutinosa</i> subsp. <i>glutinosa</i> and <i>Stylobasium spathulatum</i>.</p> <p>Low shrubs: <i>Ptilotus calostachyus</i> and <i>P. obovatus</i> var. <i>obovatus</i>.</p> <p>Grasses: <i>Amphipogon sericeus</i>, <i>Chrysopogon fallax</i>, <i>Themeda triandra</i> and <i>Triodia wiseana</i>.</p> <p>Herbs: <i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>, <i>Trachymene oleracea</i> and <i>Trichodesma zeylanicum</i>.</p>
Vegetation condition	Very Good to Excellent.
Representative photograph (GBS44)	


Vegetation type code	AxAapT spp
Vegetation type description	<i>Acacia xiphophylla</i> (<i>A. aptaneura</i>) tall shrubland over <i>Triodia</i> spp. very open hummock grassland.
Sites in the Survey area	ELW14, GBS46, GBS56, GBS73, GBS120 and rGBS102.
Proportion of the Survey area	193.04ha (1.25%)
Associated species	Trees: <i>Eucalyptus leucophloia</i> . Shrubs: <i>Acacia synchronicia</i> , <i>A. tetragonophylla</i> , <i>Capparis lasiantha</i> , <i>Eremophila cuneifolia</i> , <i>E. forrestii</i> subsp. ? <i>forrestii</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Ptilotus obovatus</i> var. <i>obovatus</i> , <i>Rhagodia eremaea</i> and <i>Senna glutinosa</i> subsp. <i>xluerssenii</i> and <i>S. artemisioides</i> subsp. <i>oligophylla</i> . Low shrubs: <i>P. calostachyus</i> and <i>Sclerolaena cornishiana</i> . Grasses: <i>Triodia brizoides</i> , <i>T. epactia</i> , <i>T. longiceps</i> and <i>T. wiseana</i> . Herbs: <i>Duperreya commixta</i> .
Vegetation condition	Excellent.
Representative photograph (GBS56)	


Vegetation type code	AxSfSENsppt
Vegetation type description	<i>Acacia xiphophylla</i> high open shrubland over <i>Rhagodia eremaea</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> open shrubland over <i>Sida fibulifera</i> low open shrubland over <i>Triodia longiceps</i> very open hummock grassland.
Sites in the Survey area	GBS19
Proportion of the Survey area	1.87ha (<0.1%)
Associated species	<p>Trees: <i>Eucalyptus ?leucophloia</i>.</p> <p>Shrubs: <i>Acacia synchronica</i>, <i>A. tetragonophylla</i>, <i>Jasminum didymum</i> subsp. <i>lineare</i>, <i>Rhagodia eremaea</i>, <i>Senna artemisioides</i> subsp. <i>oligophylla</i>, <i>S. glutinosa</i> subsp. <i>xluerssenii</i>, <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>S. hamersleyensis</i> x <i>artemisioides</i> subsp. <i>helmsii</i>.</p> <p>Low shrubs: <i>Enchylaena tomentosa</i>, <i>Gossypium robinsonii</i>, <i>Hibiscus coatesii</i>, *<i>Malvastrum americanum</i>, <i>Neptunia dimorphantha</i>, <i>Ptilotus obovatus</i>, <i>Salsola australis</i>, <i>Solanum horridum</i> and <i>S. lasiophyllum</i>.</p> <p>Grasses: <i>Cymbopogon ambiguus</i>, <i>Enneapogon caeruleus</i>, <i>Eragrostis setifolia</i>, <i>Sporobolus australasicus</i> and <i>Triodia longiceps</i>.</p> <p>Herbs: <i>Duperreya commixta</i>, <i>Euphorbia boophthona</i>, <i>E. coghlanii</i>, <i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>, <i>Portulaca oleracea</i>, <i>Sclerolaena cornishiana</i>, <i>Sida fibulifera</i> and <i>Streptoglossa bubakii</i>.</p>
Vegetation condition	Good.
Representative photograph (GBS19)	


Vegetation type code	CdEgAeAatTwTe
Vegetation type description	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees to low open woodland over <i>Eucalyptus gamophylla</i> low open mallee woodland over <i>Acacia exigua</i> and <i>A. atkinsiana</i> (<i>A. kempeana</i>) tall open shrubland over <i>Triodia wiseana</i> and <i>T. epactia</i> open hummock grassland.
Sites in the Survey area	mnGBS367 and mnGBS351. Biota 2019 B2 sites: LDS01, LDS06, LDS09, LDS25, LDS27, LDS29 and LDS31.
Proportion of the Survey area	15.76 ha (0.1%)
Associated species	Shrubs: <i>Acacia bivenosa</i> , <i>A. kempeana</i> , <i>Hakea chordophylla</i> , <i>Hibiscus sturtii</i> var. <i>campylochlamys</i> , <i>Psydrax suaveolens</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Low shrubs: <i>Ptilotus rotundifolius</i> and <i>Solanum lasiophyllum</i> . Grasses: <i>Amphipogon sericeus</i> and <i>Eriachne pulchella</i> . Herbs: <i>Dysphania rhadinostachya</i> .
Vegetation condition	Excellent.
Representative photograph (mnGBS367)	


Vegetation type code	EIEgAatAexAbTeTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> (<i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>C. hamersleyana</i>) scattered low trees and/or <i>E. gamophylla</i> scattered low mallees over <i>Acacia atkinsiana</i> , <i>A. exigua</i> and <i>A. bivenosa</i> shrubland over <i>Triodia epactia</i> and/or <i>T. wiseana</i> hummock grassland.
Sites in the Survey area	mnGBS375. Biota (2019c) sites: SGS02, SGS03, SGS06, SGS08, SGS09, SGS14, SGS18, SGS19, SGS20 and SGS27.
Proportion of the Survey area	106.81 ha (0.69%)
Associated species	Shrubs: <i>A. inaequilatera</i> , <i>Hakea chordophylla</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , and <i>S. glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Indigofera monophylla</i> , <i>Ptilotus obovatus</i> var. <i>obovatus</i> and <i>Tribulus suberosus</i> . Grasses: <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> . Herbs: <i>Euphorbia australis</i> var. <i>hispidula</i> and <i>Goodenia microptera</i> .
Vegetation condition	Excellent.
Representative photograph (mnGBS375)	


7.2.1.4 Hills


Vegetation type code	AapAciTeTw
Vegetation type description	<i>Acacia aptaneura</i> and <i>Acacia citrinoviridis</i> tall shrubland over <i>Triodia epactia</i> and <i>Triodia wiseana</i> open hummock grassland.
Sites in the Survey area	GBS24, GBS26 and GBS45.
Proportion of the Survey area	126.73ha (0.82%)
Associated species	<p>Shrubs: <i>Acacia pruinocarpa</i>, <i>A. kempeana</i>, <i>A. marramamba</i>, <i>A. rhodophloia</i>, <i>Dodonaea pachyneura</i>, <i>Eremophila latrobei</i> subsp. <i>latrobei</i>, <i>Eremophila tietkensis</i> and <i>Grevillea berryana</i>.</p> <p>Low shrubs: <i>Jasminum didymum</i> subsp. <i>lineare</i>, <i>Sida</i> sp. Shovelanna Hill (S. van Leeuwen 3842) and <i>Solanum lasiophyllum</i>.</p> <p>Grasses: <i>Cymbopogon ambiguus</i>, <i>Eriachne mucronata</i>, <i>Paraneurachne muelleri</i> and <i>Themeda triandra</i>.</p> <p>Herbs: <i>Duperreya commixta</i>.</p>
Vegetation condition	Excellent.
Representative photograph (GBS26)	


Vegetation type code	ChAiAbTw
Vegetation type description	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia inaequilatera</i> and <i>A. bivenosa</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS104 (Single-phase area only, replication in Biota 2018)
Proportion of the Survey area	586.67ha (3.80%)
Associated species	Shrubs: <i>Acacia monticola</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Low shrubs: <i>Corchorus lasiocarpus</i> subsp. <i>Lasiocarpus</i> , <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i> , <i>Indigofera rugosa</i> and <i>Sida echinocarpa</i> . Grasses: <i>Cymbopogon ambiguus</i> .
Vegetation condition	Excellent.
Representative photograph (GBS104)	


Vegetation type code	EIAaAcApAmmTwTe
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia atkinsiana</i> , <i>A. citrinoviridis</i> and <i>A. pruinocarpa</i> open shrubland over <i>A. marramamba</i> open shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland.
Sites in the Survey area	ELW08, GBS28, GBS41, GBS55, GBS71, rGBS103, rGBS119, rGBS123 and rGBS127.
Proportion of the Survey area	627.01ha (4.06%)
Associated species	Shrubs: <i>Acacia exigua</i> , <i>A. inaequilatera</i> , <i>A. kempeana</i> , <i>A. maitlandii</i> , <i>Codonocarpus cotinifolius</i> , <i>Eremophila exilifolia</i> , <i>Hakea chordophylla</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Petalostylis labicheoides</i> , <i>Senna artemisioides</i> subsp. <i>helmsii</i> , <i>S. glutinosa</i> subsp. <i>×luerssenii</i> , <i>S. glutinosa</i> subsp. <i>glutinosa</i> and <i>S. glutinosa</i> subsp. <i>pruinosa</i> . Low shrubs: <i>Goodenia stobbsiana</i> , <i>Ptilotus calostachyus</i> , <i>P. rotundifolius</i> , <i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925), <i>Solanum horridum</i> , <i>Tribulus suberosus</i> and <i>Triumfetta maconochieana</i> . Grasses: <i>Amphipogon sericeus</i> , <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> . Herbs: <i>Goodenia cusackiana</i> .
Vegetation condition	Excellent.
Representative photograph (rGBS119)	

Vegetation type code	EIAaAkApTbTeTw
Vegetation type description	<i>Eucalyptus leucophloia</i> (<i>Corymbia hamersleyana</i>) low open woodland over <i>Acacia atkinsiana</i> , <i>A. kempeana</i> and <i>A. pruinocarpa</i> shrubland over <i>Triodia brizoides</i> , <i>Triodia epactia</i> and <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS04, GBS08, GBS12, GBS29, GBS52, rGBS02 and rGBS04.
Proportion of the Survey area	475.97ha (3.08%)
Associated species	Shrubs: <i>Acacia citrinoviridis</i> , <i>Acacia kempeana</i> , <i>Acacia maitlandii</i> , <i>Acacia monticola</i> , <i>Hakea chordophylla</i> , <i>Jasminum didymium</i> subsp. <i>lineare</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> , <i>Senna glutinosa</i> subsp. <i>pruinosa</i> Low shrubs: <i>Ptilotus obovatus</i> var. <i>obovatus</i> Grasses: <i>Eriachne mucronata</i> , <i>Themeda triandra</i> Herbs: <i>Goodenia cusackiana</i>
Vegetation condition	Excellent.
Representative photograph (GBS08)	

Vegetation type code	EIAaTeTw (Mosaic with EIAbAaAeTePm)
Vegetation type description	<i>Eucalyptus leucophloia</i> scattered low tress over <i>Acacia atkinsiana</i> scattered shrubs over <i>Triodia epactia</i> open hummock grassland.
Sites in the Survey area	GBS09, GBS16 and rGBS01
Proportion of the Survey area	559.72ha (3.62%)
Associated species	Trees: <i>Corymbia deserticola</i> subsp. <i>deserticola</i> . Shrubs: <i>Acacia exigua</i> , <i>A. kempeana</i> , <i>Hakea chordophylla</i> , <i>Senna glutinosa</i> subsp. <i>xleursenni</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Goodenia stobbsiana</i> , <i>Ptilotus calostachyus</i> and <i>Solanum lasiophyllum</i> . Grasses: <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS09)	


Vegetation type code	ElAbMeTw
Vegetation type description	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia bivenosa</i> scattered tall shrubs over <i>Melaleuca eleuterostachya</i> over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS102 (Single-phase survey area, replication in Biota 2018)
Proportion of the Survey area	36.30ha (0.23%)
Associated species	Shrubs: <i>Hakea chordophylla</i> . Low shrubs: <i>Goodenia stobbsiana</i> , <i>Maireana georgei</i> , <i>Ptilotus calostachyus</i> , <i>P. rotundifolius</i> and <i>Sclerolaena eriacantha</i> .
Vegetation condition	Excellent.
Representative photograph (rGBS102)	


Vegetation type code	EIAeTw
Vegetation type description	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia exigua</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland.
Sites in the Survey area	GBS108, GBS122 and rGBS141.
Proportion of the Survey area	164.54ha (1.06%)
Associated species	Shrubs: <i>Acacia aptaneura</i> , <i>A. bivenosa</i> , <i>Hakea chordophylla</i> , <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> and <i>S. glutinosa</i> subsp. <i>pruinosa</i> . Low shrubs: <i>Ptilotus calostachyus</i> and <i>Solanum lasiophyllum</i> . Grasses: <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS108)	


Vegetation type code	EIAiTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia inaequilatera</i> scattered tall shrubs over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS17, GBS18, GBS38, GBS59, GBS66, GBS68 and rGBS120.
Proportion of the Survey area	566.69ha (3.67%)
Associated species	Trees: <i>Corymbia hamersleyana</i> and <i>Eucalyptus xerothermica</i> . Shrubs: <i>Acacia bivenosa</i> , <i>A. exigua</i> , <i>A. maitlandii</i> , <i>A. synchronica</i> , <i>Capparis lasiantha</i> , <i>Hakea chordophylla</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> . Grasses: <i>Eriachne mucronata</i> and <i>Paraneurachne muelleri</i> .
Vegetation condition	Excellent.
Representative photograph (GBS38)	


Vegetation type code	ChAsppTHtTeTw
Vegetation type description	<i>Corymbia hamersleyana</i> low open woodland over <i>Acacia</i> spp. tall shrubland over <i>Themeda triandra</i> very open tussock grassland over <i>Triodia epactia</i> and <i>T. wiseana</i> open hummock grassland.
Sites in the Survey area	rGBS153 (Single-phase survey area, restricted within Survey Area and replication in Biota 2018).
Proportion of the Survey area	14.30ha (<0.1%)
Associated species	Trees: <i>Eucalyptus leucophloia</i> . Shrubs: <i>Acacia</i> ? <i>aptaneura</i> , <i>A. ayersiana</i> , <i>A. bivenosa</i> , <i>A. exigua</i> , <i>A. maitlandii</i> , <i>A. monticola</i> , <i>A. pruinocarpa</i> , <i>A. pyrifolia</i> , <i>Capparis lasiantha</i> , <i>Clerodendrum floribundum</i> , <i>Dodonaea pachyneura</i> , <i>Gossypium robinsonii</i> , <i>Jasminum didymium</i> subsp. <i>lineare</i> , <i>Petalostylis labicheoides</i> , <i>Senna artemisioides</i> subsp. <i>helmsii</i> , <i>S. glutinosa</i> subsp. <i>glutinosa</i> Low shrubs: <i>Gompholobium oreophilum</i> , <i>Goodenia stobbsiana</i> , <i>Indigfera rugosa</i> and <i>Tribulus suberosus</i> . Grasses: <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS153)	


Vegetation type code	ElAmTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia maitlandii</i> shrubland over <i>Triodia wiseana</i> open hummock grassland.
Sites in the Survey area	GBS02, GBS11, GBS32, GBS39, GBS53, GBS58, GBS60, GBS95, GBS100 and rGBS202.
Proportion of the Survey area	3,585.94ha (23.2%)
Associated species	<p>Trees: <i>Corymbia deserticola</i> and <i>Eucalyptus gamophylla</i>.</p> <p>Shrubs: <i>Acacia arida</i>, <i>A. atkinsiana</i>, <i>A. exigua</i>, <i>A. hamersleyensis</i>, <i>A. kempeana</i>, <i>A. marramamba</i>, <i>A. pruinocarpa</i>, <i>A. pyrifolia</i>, <i>Hakea chordophylla</i>, <i>Jasminum didymum</i> subsp. <i>lineare</i>, <i>Petalostylis labicheoides</i>, <i>Senna artemisioides</i> subsp. <i>oligophylla</i>, <i>S. glutinosa</i> subsp. <i>xluerssenii</i>, <i>S. glutinosa</i> subsp. <i>glutinosa</i> and <i>S. glutinosa</i> subsp. <i>pruinosa</i>.</p> <p>Low shrubs: <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>, <i>Dampiera candidans</i>, <i>Goodenia stobbsiana</i>, <i>Ptilotus calostachyus</i>, <i>P. rotundifolius</i>, <i>Sida</i> sp. Shovelanna Hill (S. van Leeuwen 3842), <i>Solanum lasiophyllum</i> and <i>Tribulus suberosus</i>.</p> <p>Grasses: <i>Amphipogon sericeus</i>, <i>Cymbopogon ambiguus</i>, <i>Eriachne mucronata</i>, <i>Paraneurachne muelleri</i>, <i>Themeda triandra</i> and <i>Triodia epactia</i>.</p>
Vegetation condition	Excellent.
Representative photograph (GBS11)	


Vegetation type code	EIApTwTe
Vegetation type description	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia pruinocarpa</i> (<i>Acacia atkinsiana</i>) tall open shrubland over <i>Triodia wiseana</i> and <i>Triodia epactia</i> hummock grassland.
Sites in the Survey area	GBS13 and GBS27.
Proportion of the Survey area	107.31ha (0.69%)
Associated species	Shrubs: <i>Hakea chordophylla</i> . Low shrubs: <i>Eremophila exilifolia</i> . Herbs: <i>Duperreya commixta</i> and <i>Goodenia cusackiana</i> .
Vegetation condition	Excellent.
Representative photograph (GBS13)	

Vegetation type code	EIChApAmTwEmTsMBPm
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and/or <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia pruinocarpa</i> high open shrubland over <i>Acacia maitlandii</i> low open shrubland over <i>Triodia wiseana</i> very open hummock grassland and <i>Eriachne mucronata</i> , <i>Themeda</i> ?sp. Mt Barricade and <i>Paraneurachne muelleri</i> very open tussock grassland to open tussock grassland.
Sites in the Survey area	GBS85, rGBS101, rGBS111 and rGBS113.
Proportion of the Survey area	890.28ha (5.76%)
Associated species	Shrubs: <i>Acacia pyrifolia</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) and <i>Senna artemisioides</i> subsp. <i>Oligophylla</i> . Low shrubs: <i>Corchorus tectus</i> , <i>Gossypium australe</i> and <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2). Grasses: <i>Cymbopogon ambiguus</i> and <i>Triodia</i> ? <i>brizoides</i> . Herbs: <i>Cleome viscosa</i> .
Vegetation condition	Excellent.
Representative photograph (GBS85)	


Vegetation type code	EIEgAmTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>E. gamophylla</i> low open mallee woodland over <i>Acacia maitlandii</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS43, GBS103 and ELW17.
Proportion of the Survey area	121.48ha (0.79%)
Associated species	Shrubs: <i>Acacia pyrifolia</i> , <i>Hakea chordophylla</i> , <i>Petalostylis labicheoides</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>S. glutinosa</i> subsp. <i>pruinosa</i> . Low shrubs: <i>Corchorus parviflorus</i> , <i>Dampiera candidans</i> , <i>Goodenia stobbsiana</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> and <i>E. magnifica</i> subsp. <i>velutina</i> (P3). Grasses: <i>Amphipogon sericeus</i> , <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS43)	


Vegetation type code	EiExAiTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Eucalyptus xerothematica</i> scattered low mallees to low open mallee woodland over <i>Acacia inaequilatera</i> scattered tall shrubs over <i>Triodia wiseana</i> open hummock grassland.
Sites in the Survey area	GBS116 (Single-phase survey area, replication in Biota 2018).
Proportion of the Survey area	19.27ha (0.12%)
Associated species	Trees: <i>Corymbia hamersleyana</i> . Shrubs: <i>Acacia ancistrocarpa</i> , <i>A. bivenosa</i> , <i>A. maitlandii</i> , <i>Hakea chordophylla</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), <i>Jasminum didymium</i> subsp. <i>lineare</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> and <i>S. glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Goodenia forrestii</i> and <i>Ptilotus obovatus</i> subsp. <i>obovatus</i> . Grasses: <i>Enneapogon caerulescens</i> and <i>Themeda triandra</i> . Herbs: <i>Duperreya commixta</i> .
Vegetation condition	Excellent.
Representative photograph (GBS116)	 A photograph showing a dry, open landscape with scattered trees and shrubs. The ground is reddish-brown and rocky. A yellow marker is visible in the foreground, indicating a survey point. The vegetation consists of low trees and shrubs, typical of a mallee woodland.


Vegetation type code	EITITw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia longiceps</i> and <i>Triodia wiseana</i> (<i>Triodia epactia</i>) hummock grassland.
Sites in the Survey area	GBS67, GBS69 and GBS93.
Proportion of the Survey area	128.03ha (0.83%)
Associated species	Trees: <i>Eucalyptus pilbarensis</i> Shrubs: <i>Acacia synchronicia</i> , <i>Senna glutinosa</i> subsp. <i>xluerssenii</i> , <i>S. glutinosa</i> subsp. <i>glutinosa</i> and <i>S. glutinosa</i> subsp. <i>Pruinose</i> . Low shrubs: <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> , <i>Ptilotus calostachyus</i> , <i>Sida</i> sp. Pilbara (A.A. Mitchell PRP 1543) and <i>Solanum horridum</i> . Grasses: <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS69)	


Vegetation type code	EIEpT spp
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>E. pilbarensis</i> low open mallee woodland over <i>Triodia longiceps</i> , <i>T. wiseana</i> and <i>T. epactia</i> open hummock grassland.
Sites in the Survey area	rGBS149. Biota (2019c) sites: SGS15 and SGS-REL02.
Proportion of the Survey area	119.09 ha (0.77%)
Associated species	Trees: Shrubs: <i>Acacia maitlandii</i> , <i>Capparis lasiantha</i> Low shrubs: <i>Solanum horridum</i> . Grasses: <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (GBS69)	 A photograph showing a landscape with red soil, sparse vegetation, and a clear blue sky. The terrain is hilly and covered with low-lying shrubs and grasses. The soil is a distinct reddish-brown color. The sky is bright blue with a few small white clouds.


Vegetation type code	EITw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS107, GBS109, rGBS104, rGBS129 and rGBS139.
Proportion of the Survey area	525.30ha (3.40%)
Associated species	Shrubs: <i>Acacia dictyophleba</i> , <i>A. pruinocarpa</i> , <i>Capparis lasiantha</i> , <i>Hakea chordophylla</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>S. glutinosa</i> subsp. <i>pruinosa</i> . Low shrubs: <i>Gompholobium oreophilum</i> and <i>Ptilotus calostachyus</i> . Grasses: <i>Cymbopogon ambiguus</i> , <i>Eriachne mucronata</i> and <i>Themeda</i> ?sp. Mt Barricade (M.E. Trudgen 2471). Herbs: <i>Duperreya commixta</i> .
Vegetation condition	Excellent.
Representative photograph (rGBS129)	 A photograph showing a landscape with a hillside covered in yellowish-brown grasses and scattered trees. The ground is reddish-brown soil. The sky is clear and blue.

Vegetation type code	EsTw
Vegetation type description	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i> low open mallee woodland over <i>Triodia wiseana</i> open hummock grassland.
Sites in the Survey area	ELW10, ELW12, ELW15, rGBS06 and rGBS07.
Proportion of the Survey area	458.97ha (2.97%)
Associated species	Trees: <i>Eucalyptus xerothermica</i> . Shrubs: <i>Acacia bivenosa</i> , <i>A. citrinoviridis</i> , <i>A. exigua</i> , <i>A. synchronicia</i> , <i>Capparis lasiantha</i> , <i>C. umbonata</i> , <i>Jasminum didymum</i> subsp. <i>lineare</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Templetonia egena</i> . Grasses: <i>Triodia angusta</i> .
Vegetation condition	Excellent.
Representative photograph (ELW10)	

Vegetation type code	Tss
Vegetation type description	<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1) hummock grassland.
Sites in the Survey area	rGBS147 (Single-phase survey area, replication in Biota 2018).
Proportion of the Survey area	17.87 ha (0.12)
Associated species	Trees: <i>Eucalyptus leucophloia</i> , Shrubs: <i>Acacia atkinsiana</i> and <i>A. marramamba</i> . Low shrubs: <i>Gompholobium oreophilum</i> . Grasses: <i>Triodia wiseana</i> .
Vegetation condition	Excellent.
Representative photograph (rGBS147)	 A photograph showing a landscape with red, rocky soil and sparse, dry grasses. The terrain is a gentle slope, and the sky is clear and blue. In the background, there are low hills or mountains.

Vegetation type code	Tw
Vegetation type description	<i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	GBS19, GBS21, GBS23, GBS34, GBS40, GBS49, rGBS137 and rGBS151.
Proportion of the Survey area	772.46ha (5.00%)
Associated species	<p>Trees: <i>Eucalyptus leucophloia</i>.</p> <p>Shrubs: <i>Acacia ancistrocarpa</i>, <i>A. bivenosa</i>, <i>A. exigua</i>, <i>A. inaequilatera</i> and <i>A. synchronica</i>, <i>Hakea chordophylla</i>, <i>Senna artemisioides</i> subsp. <i>oligophylla</i>, <i>S. glutinosa</i> subsp. <i>xluerssenii</i>, <i>S. glutinosa</i> subsp. <i>glutinosa</i>, <i>S. glutinosa</i> subsp. <i>pruinosa</i> and <i>Solanum lasiophyllum</i>.</p> <p>Low shrubs: <i>Corchorus ?tectus</i>.</p> <p>Grasses: <i>Cymbopogon ambiguus</i>, <i>Eriachne mucronata</i> and <i>Paraneurachne muelleri</i>.</p> <p>Herbs: <i>Cleome viscosa</i> and <i>Trichodesma zeylanicum</i>.</p>
Vegetation condition	Excellent.
Representative photograph (GBS49)	

Vegetation type code	ElAmAhTw
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , (<i>Corymbia hamersleyana</i>) low open woodland over <i>Acacia maitlandii</i> open shrubland over <i>A. hilliana</i> low open shrubland over <i>Triodia wiseana</i> hummock grassland.
Sites in the Survey area	mnGBS377, mnGBS383 and mnGBS387. Biota (2019c) sites: SGS07, SGS16 and SGS17.
Proportion of the Survey area	324.46 ha (2.10%)
Associated species	Shrubs: <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>A. tenuissima</i> , <i>Grevillea wickhamii</i> , <i>Hakea chordophylla</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Corchorus lasiocarpus</i> subsp. <i>parvus</i> . Grasses: <i>Eriachne mucronata</i> .
Vegetation condition	Excellent.
Representative photograph (mnGBS383)	

Vegetation type code	EITb
Vegetation type description	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia brizoides</i> open hummock grassland.
Sites in the Survey area	mnGBS369 Biota (2019a): LDS16, LDS17, LDS-REL02 and LDSREL07
Proportion of the Survey area	21.49 ha (0.14%)
Associated species	Trees: <i>Corymbia ferriticola</i> . Shrubs: <i>Acacia pruinocarpa</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> . Low shrubs: <i>Hibiscus coatesii</i> . Grasses: <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i> . Herbs: <i>Streptoglossa decurrens</i> and <i>Trachymene oleracea</i> subsp. <i>oleracea</i> .
Vegetation condition	Excellent.
Representative photograph (mnGBS369)	

7.2.2 Vegetation of Significance

7.2.2.1 TECs and PECs

No vegetation types identified and described within the Survey area were considered analogous to any State or Commonwealth listed TECs or PECs. No suitable habitat or any of the species that comprise the TEC or the two PECs identified within 4 km of the Survey area were recorded within the Survey area.

7.2.2.2 Vegetation of Local of Significance

The nMDS plot indicated that the floristic groups within the Survey area were also represented in the broader locality. In addition, none of the vegetation types were restricted to the Survey area.

Based on the criteria presented in **Section 4.3**, five vegetation types were considered to be of high local significance as they supported Priority 1 species and were associated with major drainage systems and riparian vegetation (**Table 7-8**). They comprised: EIAmTw; Tss; EICfAprAapDpTeERIm; EcMgCYPv; and EvEcChAcEUa.

- Vegetation type EIAmTw was widespread throughout the Survey area (3586 ha, 23%), however only 81.60 ha (0.52% of the Survey area) was found to support *T. butcheriana*, (Priority 1), located at one of the Additional Infill Areas (**Appendix O**).
- Vegetation type Tss was recorded from one location within the Survey area occupying 17.86 ha (0.12%) (**Appendix O**). This vegetation type was of high local significance as it supports the Priority 1 species *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808), which accounted for the dominant grass layer of this vegetation type (35% foliar cover).
- Vegetation type EICfAprAapDpTeERIm was described and mapped throughout the Survey area (858 ha, 5.6%) in association with the walls of gorges, broad gullies and along the numerous rocky free faces (**Appendix O**). This vegetation type was of high local significance as it supported the Priority 1 species *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354), and high densities of the Priority 3 species *Eremophila magnifica* subsp. *velutina* and *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301). *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1) has only previously been recorded within the BS1 Extension Area and an additional infrastructure and infill area from this vegetation type, occupying approximately 31.08 ha (0.20% of the Survey area). High densities of *E. magnifica* subsp. *velutina* and *I* sp. Bungaroo Creek (S. van Leeuwen 4301) were recorded from this vegetation type in isolated patches throughout the Survey area.
- Two additional vegetation types; EcMgCYPv and EvEcChAcEUa, were of local significance due to their association with a major drainage system (Caves Creek), which supported riparian vegetation (*Eucalyptus camaldulensis*). Both of these vegetation types were dominated by *E. camaldulensis*, a phreatophytic tree species recorded from 18 ha and 16 ha, respectively, within the additional infrastructure and infill areas (**Appendix O**).

Six vegetation types were of moderate local significance as they supported Priority 2 species and high densities of Priority 3 species (**Table 7-8**). Vegetation type EICfAciAapGbDpTe was of moderate local significance as it supported the Priority 2 species *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708). This vegetation type occurred throughout the Survey area in rocky creek lines through gullies, occupying 890 ha (5.7% of the Survey area). However, *H. aff. sp. Gurinbiddy Range* (M.E. Trudgen MET 15708) was only recorded from one gully within the Additional Infrastructure and Infill Areas occupying 5.7 ha (<0.1% of the Survey area).

Vegetation types EIAciAbAmoTe, EIChApAmTwEmTsMBPm, EITw and EIAaAcApAmmTwTe were also of moderate local significance as they supported the Priority 2 species *Pentalepis trichodesmoides* subsp. *hispida*. These vegetation types occurred on a variety of landforms throughout the Survey area, collectively occupying 2069 ha (13.38% of the Survey area).

Vegetation type EvAcGrSsAbApyTrfTeCcTt was of moderate local significance as it supported the Priority 2 species *Ipomoea racemigera* and high densities of the Priority 3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301). This vegetation type occurred throughout drainage lines in the Survey area and occupied a total of 52 ha (0.33% of the Survey area). However, *Ipomoea racemigera* was only recorded from a single location in BS1, occupying 10 ha (<0.1% of the Survey area) (**0**).

Table 7-8: Vegetation types of local significance within the Survey area

Vegetation type code	Justification	Extent of Vegetation type in the Survey area		Extent occupied by known location of P1/P2 flora	
		Ha	Proportion of Survey area (%)		
Vegetation of High local significance					
EIAmTw	Supports the Priority 1 flora species <i>Tetratheca butcheriana</i> and high densities of Priority 3 flora <i>Eremophila magnifica</i> subsp. <i>velutina</i> .	3,585.94	23.2	81.60	0.52
Tss	Supports the Priority 1 flora species <i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808).	17.87	0.12	17.87	0.12
EICfAprAapDpTeERIm	Supports the Priority 1 flora species <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) and high densities of Priority 3 flora <i>Eremophila magnifica</i> subsp. <i>velutina</i> and <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301).	858.32	5.55	31.08	0.20
EcMgCYPv	Associated with major drainage system (Caves Creek) supporting riparian vegetation (<i>Eucalyptus camaldulensis</i>)	18.32	0.12		
EvEcChAcEUa	Associated with major drainage system (Caves Creek) supporting riparian vegetation (<i>Eucalyptus camaldulensis</i>)	16.37	0.11		
Vegetation of Moderate local significance					
EICfAciAapGbDpTe	Supports the Priority 2 species <i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) and Priority 3 species <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	26.11	0.17	5.71	<0.1
EIAciAbAmoTe	Supports the Priority 2 species <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	26.11	0.17	91.11	0.58
EIChApAmTwEmTsMBPm		890.27	5.80		
EITw		525.29	3.40		
EIAaAcApAmmTwTe		627.00	4.05		
EvAcGrSsAbApyTrfTeCcTt	Supports the Priority 2 species <i>Ipomoea racemigera</i> and high densities of the Priority 3 species <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301).	51.96	0.40	10.01	<0.1

7.2.3 Floristic Analysis

The dendrograms and nMDS plots generated from the floristic analysis are presented in **Appendix I** and **Section 7.2.3.1**, respectively. The initial analysis was completed using presence-absence data from all quadrats and relevés from the Survey (**Appendix P**), with an additional analysis completed using percent cover data (**Appendix Q**). The presence-absence analysis of the Survey supported some correlations between broad vegetation types and the floristic groups identified, however vegetation types were mapped in the field based on expert knowledge of the Pilbara bioregion and aerial imagery interpretation. The dendrogram and nMDS plots are explanatory only and were not used to define the vegetation types.

At a finer scale, the analysis of vegetation cover, indicated there was also some relationships between floristic groups. All sites containing *Acacia xiphophylla* clustered together, while groupings were also evident based on different dominant *Eucalypt* species (e.g. *E. gamophylla*, *E. socialis* subsp. *eucentrica*). This was also the case for various *Triodia* species, with groups comprising various representatives of this genera. Many of the vegetation types also had sites that occurred across more than one floristic group. For example, sites that had been affected by recent fire, sites which occurred on the mid to lower slopes and sites on the alluvial plains.

7.2.3.1 Contextual Analysis

The contextual analysis indicated that quadrats and relevés from the Survey were generally well interspersed with sites from the six previous surveys, with the exception of two outliers (rGBS111 and rGBS117) (**Figure 7-5**). Of these outliers, rGBS111 had been recently burnt (estimated one to three years) and rGBS117 only contained eight species. While there was evidence of some differences between surveys over time (Eco Logical 2013a, Mattiske 2011), this is likely attributed to survey methodology and seasonal conditions.

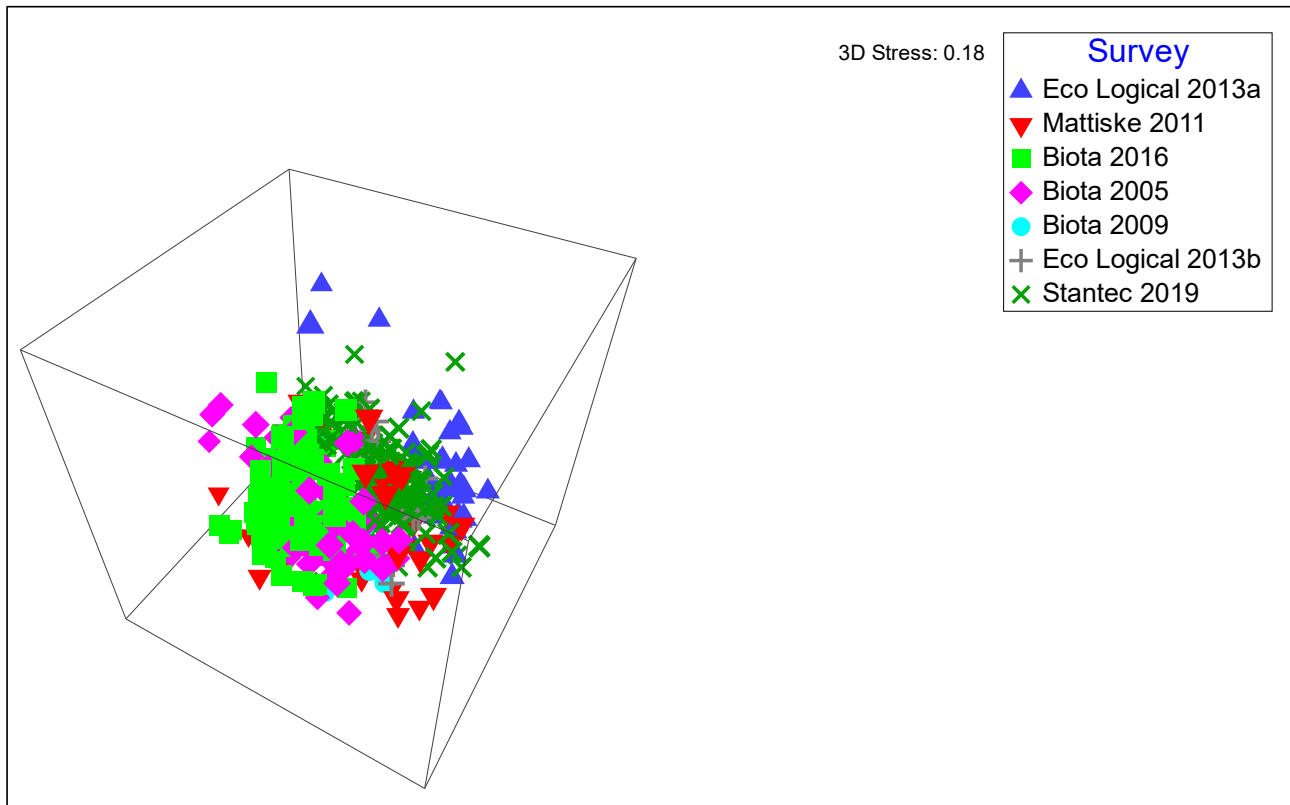


Figure 7-5: A) nMDS plot of flora species composition from all surveys (2D). B) nMDS plot of flora species composition from all surveys (3D)

7.2.4 Vegetation Condition

Vegetation condition within the Survey area ranged from 'Completely Degraded (0.1)' to 'Excellent (1)', summarised in **Table 7-9** and mapped in **Appendix R**. The majority of the survey area (14,558.63 ha; 94%) was considered to be in 'Excellent (1)' condition.

Approximately 40 ha (0.25%) of the Survey area has been cleared of vegetation for access tracks, drill pads and equipment laydown areas. These areas were classified as 'Completely Degraded (0.1)'. These areas are indicated by the most recent disturbance layer supplied by Rio Tinto (July 2019). However, this does not include some recently cleared areas, particularly towards the eastern end of BS1, and should not be considered an accurate representation.

Riparian vegetation types associated with drainage lines were also in comparatively lesser condition than other areas due to the impacts from weed infestations (*Cenchrus* spp. and *Vachellia farnesiana*) and grazing by cattle (**Table 7-9**). The foliar cover of *Cenchrus* spp. in the riparian vegetation types is also likely to increase following optimal seasonal conditions (heavy rainfall) and dominate the understorey.

Table 7-9: Vegetation condition of the Survey area

Vegetation condition	Extent in Survey area	
	Ha	%
1 – Excellent	14558.63	94.20
0.8 – Very Good	758.01	4.90
0.6 – Good	98.18	0.63
0.4 – Poor	-	-
0.2 – Degraded	-	-
0.1 – Completely Degraded	40.05	0.26



Plate 7-2: A) Recent exploration drilling at BS1. B) Riparian vegetation type within an unnamed creek system in Vivash with *Cenchrus* spp. (along bank) and *Vachellia farnesiana* (right-hand side of photograph) infestations.

7.2.4.1 Fire Scar Mapping

A large portion of the Survey area (~57%) has been subject to intense and re-occurring fires between 2013 to 2019. The fire scar mapping for the Survey area is presented in **Figure 7-6** and **Table 7-10** shows the extent of fire impacts. The fire scar mapping was obtained from North Australia and Rangelands Information (NAFI) (November 2019), which involves a semi-automated routine utilising Moderate Resolution Imaging Spectroradiometer satellite images (250 m spatial resolution) to map fire scars based on their thermal signature. Some areas (surrounding BS1 and BS1 Extension) were manually digitised by Stantec GIS specialist using Sentinel satellite data to map out at a finer scale the more recent burns (November 2018, March 2019) that weren't picked up by the NAFI data. The fire scars for each year were then clipped to the survey area boundaries to calculate the total area.

The most recent fire of note was 75% of the BS1 Extension Area in 2019 and nearly 70% of the BS3 Corridor in 2018. The extent of recently burnt areas constrained vegetation type mapping and targeted searches. Therefore, the vegetation type mapping completed in these areas should be considered indicative rather than an exact representation of the climax vegetation types.

Table 7-10: Extent of fire and areas burnt within the Survey area within the last 6 years

Block Model	Total area (ha)	Area (ha)	Extent burnt (ha)	Extent burnt (%)
BS1	3,956.16	2013	1902.5	48.09
		2018	2.0	0.05
		2019	91.9	2.32
BS1 Extension Area	159.51	2013	60.6	37.99
		2018	119.7	75.04
Vivash	5,269.08	2016	2910.9	55.24
BS1 Eastern Corridor	335.10	No fires recorded		
BS1 Central Corridor	585.37	2013	239.5	40.91
BS3 Corridor	1,168.96	2015	23.1	1.98
		2016	0.2	0.02
		2018	806.8	69.02
Additional Infrastructure and Infill Areas	3,908.69	2013	68.8	1.76
		2014	2404.9	61.53
		2018	145.4	3.72
Total Survey area	15,454.87		8776.3	56.79

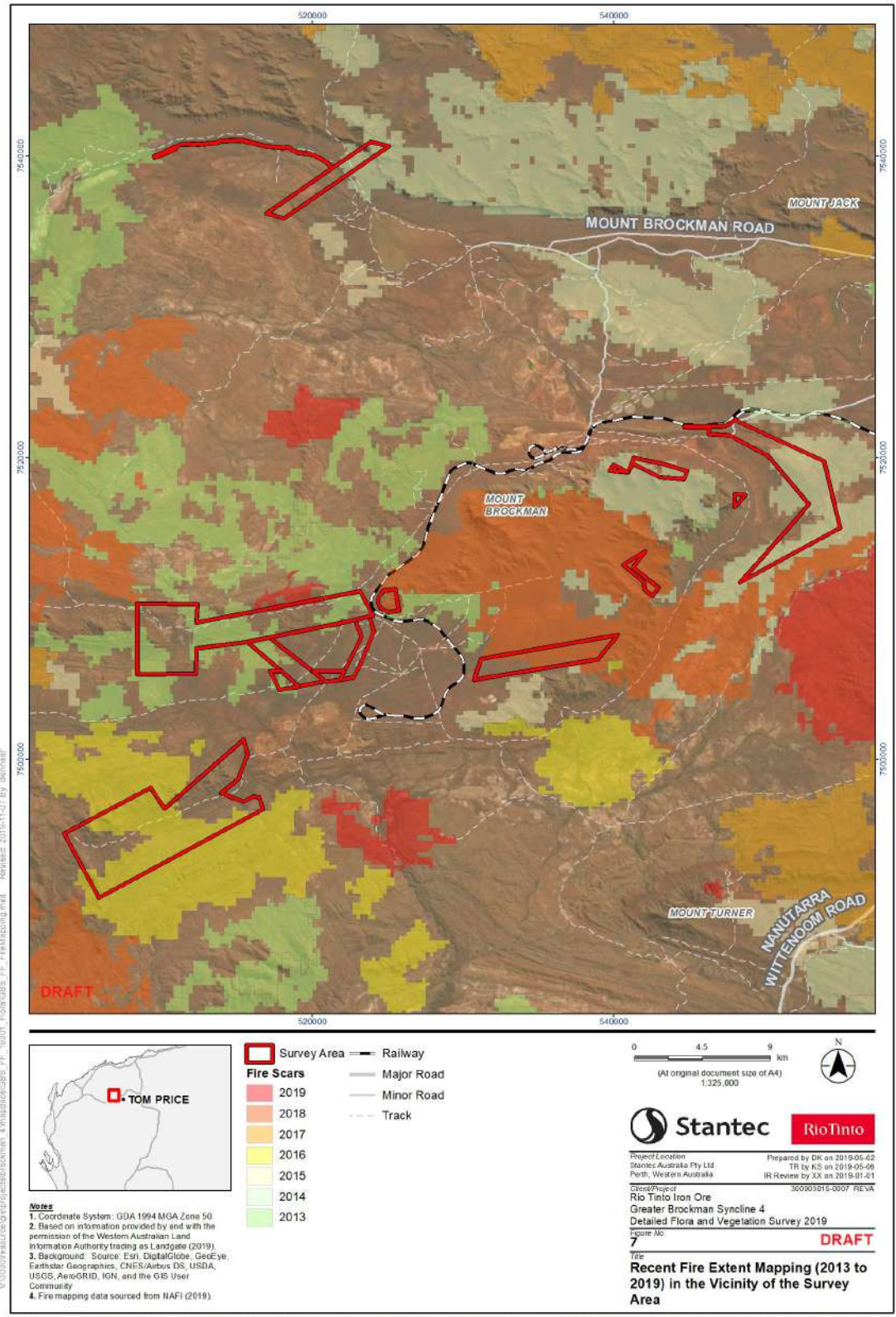


Figure 7-6: Recent fire extent mapping (2013 to 2019) in the vicinity of the Survey area

8. Discussion

Both phases of the Survey were conducted during the period that typically coincides with the break of season rainfall events in the Eremaean Botanical Province, however below average rainfall in the preceding months meant that the seasonal conditions were dry. A total of 349 species (including species, subspecies, varieties, forms, hybrids and affinities, native and introduced species) have been recorded from the Survey area to date, of which 314 were recorded during the Survey. A total of fourteen Priority flora species and one range extension have been recorded from the Survey area. Although species richness was comparable to previous surveys of similar size by Biota (2005b), Biota (2019a), HGM (1999), which identified 367, 462 and 358 taxa, respectively, the total species represented an estimated 74.7% to 88.8% of the total species predicted to occur.

It is likely that the lower than expected species richness for this Survey was attributed to the below average rainfall. This also corresponds to previous surveys that were undertaken during comparable conditions and also reported lower species richness (Astron 2014b, Biota 2005a, 2010a, b, c, 2013b, Rio Tinto 2010, 2011b). In addition, approximately 15% of the specimens collected during this Survey could not be fully determined, as many of the specimens were lacking the diagnostic characteristics required for confident identification.

Most of the native flora taxa recorded from the Survey area are well known from the locality, with a similar suite of species previously recorded in adjacent areas (Biota 2005b, 2016, Biota 2009d, Eco Logical 2013a, b). The Fabaceae, Poaceae and Malvaceae families were the most well represented families, consistent with other surveys in the vicinity of the Survey area (Biota 2005a, 2010a, 2016, Eco Logical 2013a, b), and was also considered typical of Pilbara bioregion (Kendrick 2001).

The species designated *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) appeared to be similar to this P2 taxon but differed from the typical form by having smaller stellate hairs with thicker rays, smaller stipules with the epicalyx inserted on the stem 0.5 to 3 mm below the calyx. It is not clear whether these differences are sufficient to warrant formal recognition at some level (species, subspecies, variety) (Steve Dillon pers comms. 2019). Within this report, this taxon is considered to have the same significance as the Priority taxon.

The majority of Priority flora species recorded from the Survey area are also well known from the locality, having been recorded during previous surveys and / or identified from the database searches (DotEE 2019, DBCA 2019a, b, c, d). Four Priority species that were previously unknown from the Survey area were identified during the Survey; *Tetraloche butcheriana* (P1), *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1), *Hibiscus* aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) and *Goodenia nuda* (P4) (DBCA 2019d).

Goodenia nuda (P4) and *H. aff. sp.* Gurinbiddy Range (P2) have been frequently recorded from the PIL3 subregion (DBCA 2019d) and within the vicinity of the Survey area (Biota 2007b, 2009c, 2012b, 2013a, 2016, 2018, Biota 2019a, b, Mattiske 2011). In contrast, *T. butcheriana* (P1) and *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1) have not been recorded frequently within the PIL3 subregion or Pilbara bioregion (DBCA 2019d). However, records of *T. butcheriana* (P1) have been recorded in close proximity to the Survey area (within 0.5 km); ten individuals from 1 location (Biota 2019a) and 165 individuals from six locations, all within a 250 m radius of each other (DBCA 2019d). Records of *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) have also been recently recorded within close proximity to the Survey area (within 0.05 km), comprising 2,400 individuals from four locations (Biota 2019c). No new populations of five of the Priority species previously recorded within the Survey area were identified during the Survey.

One species recorded from the Survey area; *Acacia ampliceps* × *bivenosa*, has not previously recorded from the PIL3 subregion. This record is considered an extension of the known geographic range for this species (DBCA 2019d). It was recorded from two quadrats from one vegetation type (EcMgCYPv), which occupies 18 ha of the Survey area. There are 21 known (vouchered) records on the WAH database for this species, with the closest occurrence located 72 km to the north of the Survey area (DBCA 2019d).

Both of the putative hybrid parents; *Acacia ampliceps* and *Acacia bivenosa* are recorded frequently and widespread throughout all subregions of the Pilbara bioregion. Both records of this species from within the Survey area were growing in association with one of the putative hybrid parents (*Acacia bivenosa*). Because both putative hybrid parents are so widespread in the Pilbara bioregion, there is potential that the WAH records are not a true reflection of the frequency of this hybrid (i.e. it could be more common than current herbarium records indicate) (DBCA 2019d).

The post-survey likelihood of occurrence of significant flora indicated that eight taxa were still considered 'Likely' to occur, none of which represented a Priority 1 or 2 species. One of these species, *Cyanthillium gracile* (P3), is a perennial suffruticose herb, meaning that it is woody and perennial at the base but remains herbaceous above. Since it has previously been recorded within 0.05 km of the Survey area and with suitable habitat identified within the Survey area (DBCA 2019b, d), it is possible that this species might not have been detectable following the dry seasonal conditions.

The remaining seven species are perennial shrubs or trees and were considered 'Likely' to occur post survey due to a combination of; previous records within 10 km of the Survey area; presence of suitable habitat within the Survey area; access constraints meaning that not all suitable habitat could be searched. Increased survey effort following optimal seasonal conditions may verify the records of these Priority species within the Survey area.

Weed diversity was considered low; of the 72 weed species known from the PIL3 subregion, only 11 were recorded from the Survey area, representing approximately 3% of the total species. None of these species represented a declared pest or WoNS and all are well known in the locality (Biota 2005a), Biota (2010b), (Biota 2016, Eco Logical 2013a, b) and were within their known distributions (DBCA 2019d, Payne and Mitchell 2002). Weed diversity was consistent with recent surveys conducted adjacent to the Survey area in similar dry seasonal conditions (Biota 2019a, b, c).

Consistent with previous surveys (Biota 2005a, 2010b, 2016, 2018, Biota 2019a, b, c, Eco Logical 2013a, b), weed densities were highest in riparian vegetation types (ChAanAmAbAcSaoTeTtEmCc, ChAcGsSsVfCcTt, ChAciElAItrfcTeEaTtCc, EvAcGrSsAbApyTrfTeCcTt and ExEvMgAcAcpAbTaTeTtCC. Following optimal seasonal conditions, the foliar cover of **Cenchrus* spp. in the riparian vegetation types is likely to increase and dominate the understorey. Consistent with previous surveys (Biota 2005a), Biota (2010b), (Biota 2016), Biota (2018), (Biota 2019a, b, c, Eco Logical 2013a, b), the hilltops and slopes vegetation types were generally free from weeds.

Due to extensive vegetation type mapping previously conducted outside the Survey area, where possible, the vegetation of the Survey area was assigned to an existing vegetation type from Biota (2016), Biota (2019a, 2019b, 2019c), to maintain consistency. The remaining vegetation types were assigned and mapped in the field based on *priori*, by an experienced Pilbara botanist, and the cluster analysis should be considered as explanatory only (Clarke and Gorley 2015).

There were 46 vegetation types described and mapped from the Survey area, none of which were categorised as TECs or PECs (DBCA 2019c). This was largely consistent with other surveys of comparable size conducted within 5 km of the Survey area by (Biota 2005a, Biota 2019a, HGM 1999, Mattiske 2011), which recorded 13, 53, 28 and 20 vegetation types, respectively.

The most dominant and widespread vegetation type was ElAmTw, which occurred on slopes and hills and was similar to the dominant vegetation type within the locality (Biota 2005a), Biota (2010a), (Biota 2016, Biota 2019a, b, c, Eco Logical 2013a, b), and is also expected throughout the PIL3 subregion (Kendrick 2001).

Five vegetation types were considered of high local significance as they supported Priority 1 flora species and / or Priority 2 flora species. These included *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1), *Tetraloche butcheriana* (P1), *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1), *Hibiscus* aff. sp. Gurinbiddy Range (P2), *Ipomoea racemigera* (P2) and *Pentalepis trichodesmoides* subsp. *hispida* (P2). Many of these vegetation types and species have also been identified during recent surveys in the vicinity of the Survey area (Biota 2019a, b, c).

Triodia sp. Silvergrass (P.-L. de Kock BES 00808) (P1) occurred as the dominant ground layer species in vegetation type Tss, which occupied 17.87 ha (0.12%) of the Survey area. Biota (2019b) have recently mapped 1.6 ha of this vegetation type adjoining part of the additional infrastructure and infill areas. The vegetation types that the remaining species occupied were often widespread throughout the Survey area (with the exception of Tss), however, the Priority flora species were only recorded from isolated areas within these vegetation types; *Hibiscus* sp. Mt Brockman (E. Thoma ET 1354) (P1) (31.08 ha; 0.20%), *Tetraloche butcheriana* (P1) (81.60 ha; 0.52%), *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1) (17.87 ha; 0.12%), *Hibiscus* aff. sp. Gurinbiddy Range (P2) (5.71 ha; <0.1%), *Ipomoea racemigera* (P2) (10.01 ha; <0.1%) and *Pentalepis trichodesmoides* subsp. *hispida* (P2) (91.11 ha; 0.58%).

Additionally, with the exception of *Triodia* sp. Silvergrass (P.-L. de Kock BES 00808) (P1) and *Ipomoea racemigera* (P2), the aforementioned Priority species all prefer vegetation and habitat types that are typically situated high in the landscape, in steep gullies, breakaways and cliff faces. Due to access and time constraints, recent fire in these areas and difficult terrain, only a proportion of the habitats with the potential to support these species were surveyed.

Two vegetation types, EcMgCYPv and EvEcChAcEUa were of high local significance due to the presence of the phreatophytic tree species, *Eucalyptus camaldulensis*. This vegetation type was found during the Survey in association with Caves Creek, a major watercourse of the area, and has also been recently identified by during surveys that adjoin the Survey area (Biota 2019b, c).

Vegetation condition of the Survey area ranged from 'Completely Degraded' to 'Excellent' and was considered typical of the locality (Biota 2005a), Biota (2010a), (Biota 2016, Eco Logical 2013a, b) and of the broader Pilbara bioregion (McKenzie *et al.* 2009). Riparian vegetation types associated with drainage lines were in lesser condition than upland areas due to impacts from weed infestations and grazing by cattle.

9. Conclusion

In summary, the flora species and vegetation types recorded during the Survey were comparable to previous, proximal surveys and were consistent with the broader subregion and bioregion. A total of 14 Priority flora species have been recorded from the Survey area, including four Priority 1 species recorded from three vegetation types (EICfAprAapDpTeERIm, Tss and ElAmTw). Eleven vegetation types were also assessed as having a high or moderate local significance as they support Priority 1 flora species, Priority 2 flora species and/or phreatophytic species (*Eucalyptus camaldulensis*) growing in association with Caves Creek.

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A close-up photograph of a hand reaching out towards a bright sun in a field of tall grass. The hand is in silhouette, with the fingers slightly spread. The sun is a bright, glowing orb in the background, creating a lens flare effect. The grass is dark and out of focus in the foreground and background. The overall color palette is warm, dominated by oranges, yellows, and browns.

Appendices

Appendix A Previous Biological Surveys Completed within the vicinity of the Survey Area

A.1 Available information from biological surveys previously completed in the vicinity of the study area

Legend	Description
	Utilised/included
	Not included/utilised in the study.
	Unknown, report not received
	Exists but not received
	Spatial Mapping linework, no descriptions
	Included in report appendix
	Not included in report appendix

Reference	Report title	Spatial data						Appendix data				
		Survey area Polygons	Relevé locations	Quadrat locations	Conservation significant flora	Vegetation type mapping	Vegetation condition mapping	Report	Inventory of flora species	Raw relevé/quadrat data	Dendrogram	Site by species matrix
Biota 2019	Greater Brockman 2 Nammuldi Detailed Flora and Vegetation Survey											
Biota 2019	Caves Creek Detailed Flora and Vegetation Survey Phase 1 and 2											
Biota 2019	Silvergrass West Detailed Flora and Vegetation Survey Phase 1 and 2											
Biota 2018	Eliwana Consolidated Detailed Flora and Vegetation Phase 2											
Biota 2016	Brockman Syncline 4 - Marra Mambas Project Level 2 Vegetation and Flora Survey											
Astron 2014	Brockman 2 AR-14-12192 & Silvergrass AR-13-11938: NVCP Level Biological Assessment											
Astron 2014	Ar-14-12614 Brockman 2 Pit 2/3 Biological Assessment											
Biota 2014	Brockman 4 Haul Road Native Vegetation Clearing Permit Report (NVCP)											

Reference	Report title	Spatial data						Appendix data				
		Survey area Polygons	Relevé locations	Quadrat locations	Conservation significant flora	Vegetation type mapping	Vegetation condition mapping	Report	Inventory of flora species	Raw relevé/quadrat data	Dendrogram	Site by species matrix
Rio Tinto 2014	Brockman 2: Grad Drilling to Evaluate Unclosed Mine South of BS2 Pit 11-13. Native Vegetation Clearing Permit Supporting Report											
Biota 2013	Brockman Syncline 4 Marra Mamba Vegetation and Flora Survey											
Biota 2013	Brockman 4 Riparian Vegetation Mapping											
Eco Logical 2013	Brockman Syncline Project Area Biological Surveys: Brockmans Syncline 1 East (AR-13-11068)											
Eco Logical 2013	Homestead to Silvergrass Exploration Drilling (AR-13-11003): Rare Flora Survey Report											
RioTinto 2013	Flora and Vegetation Survey for BS1W Brockman and MM Drill Program: Native Vegetation Clearing Permit Supporting Report											
Biota 2012	Nammuldi-Silvergrass Vegetation Mapping Integration											
Biota 2012	Themeda Grasslands Threatened Ecological Community - Seasonal Botanical Survey											

Reference	Report title	Spatial data						Appendix data				
		Survey area Polygons	Relevé locations	Quadrat locations	Conservation significant flora	Vegetation type mapping	Vegetation condition mapping	Report	Inventory of flora species	Raw relevé/quadrat data	Dendrogram	Site by species matrix
Rio Tinto 2012	Flora and Vegetation Survey for Vivash Resource Evaluation Drilling and Access Tracks: Native Vegetation Clearing Permit Supporting Report											
Mattiske Consulting 2011	Flora and Vegetation Survey of the Greater Nammuldi Irrigated Agriculture Survey Area											
Rio Tinto 2011	Flora and Vegetation Survey for Evaluation Drilling at Vivash East											
Biota 2010	Brockman Syncline 2 Sustaining Tonnes Project and Pit 7 Land Bridge Vegetation and Flora Survey											
Biota 2010	Nammuldi Infill Areas Vegetation and Flora Survey											
Rio Tinto 2010	Flora and Vegetation Survey for Proposed Evaluation at Vivash East											
Biota 2009	A Vegetation and Flora Survey of Expansion Areas at Nammuldi											
Biota 2009	A Vegetation and Flora Survey of Silvergrass West											
Biota 2009	Brockman Syncline 2 Pit 7 Extension - Vegetation and Flora Survey											

Reference	Report title	Spatial data						Appendix data				
		Survey area Polygons	Relevé locations	Quadrat locations	Conservation significant flora	Vegetation type mapping	Vegetation condition mapping	Report	Inventory of flora species	Raw relevé/quadrat data	Dendrogram	Site by species matrix
Biota 2009	A vegetation and Flora Survey of Beasley River											
Biota 2007	A Flora Survey of the Brockman Syncline 4 Rail and Infrastructure Corridor											
Biota 2007	A Vegetation and Flora Survey of the Approved Powerline Corridor (East of Brockman Operation) for the Brockman Syncline 4 Project											
Biota 2007	A Rare Flora Survey of the Brockman Syncline 4 Powerline Corridor and Campsite											
Biota 2007	A Vegetation and Flora Survey of the White Quartz Road Corridor near Tom Price											
Biota 2007	A Flora Survey of the Brockman Strategic Area Flora Vegetation and Fauna Habitat Assessment											
Biota 2005	A Vegetation and Flora Survey of the Brockman Syncline 4 Project Area, near Tom Price											
Biota 2005	Brockman 4 Vegetation and Flora Survey											
Halpern Glick Maunsell 1999	Nammuldi / Silvergrass Soils Vegetation and Flora Survey											

Reference	Report title	Spatial data						Appendix data				
		Survey area Polygons	Relevé locations	Quadrat locations	Conservation significant flora	Vegetation type mapping	Vegetation condition mapping	Report	Inventory of flora species	Raw relevé/quadrat data	Dendrogram	Site by species matrix
Halpern Glick Maunsell 1998	Nammuldi Trial Operation Vegetation and Flora Survey											
Mattiske Consulting 1995	Botanical Studies – Brockman Project Area. Proposed Haul Road to South West Extension, South-West Extension and Lens C Grade Pod											

A.2 Literature review

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
Eliwana Consolidated Detailed Flora and Vegetation Phase 2	Biota (2018)	Area (ha): 134,177 Study Type: Multiple-phase detailed survey Survey Date: 18th April – 23 September Seasonal Conditions: Above average for Phase 1, below average for Phase 2.	1. Timing of the Phase 2 surveys was considered to be poor for recording. 2. Additional areas of MSA and RSA areas were only surveyed once under poor conditions and may be considered a limitation	Intersecting with the Survey Area	Quadrats: 554 Relevés: 143	Vegetation types: 99 Condition: 'Good' to 'Excellent'	Taxa: 768 Genera: 223 Families: 67 Weeds: 27	Species Threatened: 0 Priority: 44 <ul style="list-style-type: none"> • <i>Calotis squamigera</i> (P1) • <i>Euphorbia inappendiculate</i> var. <i>queenslandica</i> (P1) • <i>Helichrysum oligochaetum</i> (P1) • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) (P1) • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P1) • <i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1) • <i>Vittadinia</i> sp. Coondewanna Flats (S.van Leeuwen 4684) (P1) • <i>Dicladanthera glabra</i> (P2) • <i>Euphorbia australis</i> var. <i>glabra</i> (P2) • <i>Euphorbia inappendiculate</i> var. <i>inappendiculata</i> (P2) • <i>Gompholobium karijini</i> (P2) • <i>Ipomoea racemigera</i> (P2) • <i>Isotropis parviflora</i> (P2) • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2) • <i>Aristida jerichoensis</i> var. <i>subspinulifera</i> (P3) • <i>Astrebla lappacea</i> (P3) • <i>Calotis latiuscula</i> (P3) • <i>Eragrostis surreyana</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Glycine falcata</i> (P3) • <i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) (P3) • <i>Grevillea saxicola</i> (P3) • <i>Gymnanthera Cunninghamii</i> • <i>Indigofera gilesii</i> • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Iotasperma sessilifolium</i> (P3) • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • <i>Pleurocarpaea gracilis</i> (P3) • <i>Ptilotus subspinescens</i> (P3) • <i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) (P3)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								<ul style="list-style-type: none"> • <i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3) • <i>Solanum albostellatum</i> (P3) • <i>Stackhousia clementii</i> (P3) • <i>Swainsona thompsoniana</i> (P3) • <i>Terminalia supranitifolia</i> • <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3) • <i>Triodia basitricha</i> (P3) • <i>T. pisoliticola</i> in future • <i>Whiteochloa capillipes</i> (P3) • <i>Acacia bromilowiana</i> (P4) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) • <i>Goodenia nuda</i> (P4) • <i>Ptilotus mollis</i> (P4) • <i>Rhynchosia bungarensis</i> (P4) <p>Communities Threatened: 1 (<i>Themeda</i> grasslands on cracking clays) Priority: 2 (Brockman Iron cracking clay communities of the Hamersley Range (P1), <i>Triodia</i> sp. Robe River assemblages of mesas of the West Pilbara (P3))</p>
Brockman Syncline 4 Marra Mambas Project Level 2 Vegetation and Flora Survey [Brockman Syncline 4]	Biota (2016)	Area (ha): 5,806 Study Type: Multiple-phase detailed survey Survey Date: Jul.–Aug. 2015 Seasonal Conditions: Average	1. All barring two vegetation units were sampled a twice. 2. Although a multiple-phase survey was conducted some late wet-season annual species may have been absent.	Intersecting with the Survey Area	Quadrats: 37 new & 16 historic Relevés: 38 Historic quadrats were resampled	Vegetation types: 33 Condition: 'Very Poor' to 'Excellent'	Taxa: 410 Genera: 158 Families: 50 Weeds: 11	Species Threatened: 0 Priority: 12 <ul style="list-style-type: none"> • <i>Goodenia pedicellata</i> (P1) • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) (P1) • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P3) • <i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) • <i>Oxalis</i> sp. Pilbara (M.E. Trudgen 12725) (P2) • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • <i>Ptilotus subspinescens</i> (P3) • <i>Triodia basitricha</i> (P3) • <i>Acacia bromilowiana</i> (P4)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								<ul style="list-style-type: none"> • <i>Goodenia nuda</i> (P4) Communities Threatened: 0 Priority: 0
Brockman 4 Haul Road Native Vegetation Clearing Permit Report	Biota (2014)	Area (ha): 50 Study Type: Level 1 fauna, flora and vegetation survey (for an NVCP) Date: June 2014 Seasonal Conditions: Above average	1. No systematic sampling of fauna was performed as part. 2. Fungi and non-vascular flora, were not sampled 3. Some annual flora species may have been absent at the time of the survey. 4. Flora searches could not be conducted in cleared areas such as tracks and drill pads.	Intersecting with the Survey Area	Quadrats: 0 Relevés: 13	Vegetation types: 11 Conditions: 'Very Good'	Taxa: 210 Genera: 99 Families: 37 Weeds: 8	Species Threatened: 0 Priority: 1 <ul style="list-style-type: none"> • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) Communities Threatened: 0 Priority: 0
Brockman 2: Grade Drilling to Evaluate Unclosed Mine South of BS2 Pit 11-13. [Brockman Syncline 2]	Eco Logical (2014)	Area (ha): 136 Study Type: Level 1 fauna, flora and vegetation survey Survey Date: Jun. 2013 Seasonal Conditions: Average	1. Some deeply incised gorges were inaccessible. 2. No quadrat or fauna sampling conducted.	Intersecting with the Survey Area	Quadrats: 0 Relevés: 24	Vegetation types: 16 Condition: 'Excellent'	Taxa: 205 Genera: 89 Families: 39 Weeds: 2	Species Threatened: 0 Priority: 1 <ul style="list-style-type: none"> • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3) Communities Threatened: 0 Priority: 0
Homestead to Silvergrass Exploration Drilling (AR-13-11003) [Silvergrass]	Eco Logical (2013b)	Area (ha): 182 Study Type: Level 1 flora and vegetation survey Survey Date: Nov. 2013 Seasonal Conditions: Below average	1. No quadrat sampling or fauna trapping was undertaken. 2. Further field time may have uncovered additional species 3. below average rainfall resulted in dried herbaceous species, some of which were unable to be detected.	Intersecting with the Survey Area	Quadrats: 0 Relevés: 42 Meandering transects	Vegetation types: 4 Condition: 'Good' to 'Very Good'	Taxa: 59 Genera: 28 Families: 15 Weeds: 3	Species Threatened: 0 Priority: 3 <ul style="list-style-type: none"> • <i>Eremophila</i> <i>magnifica</i> subsp. <i>velutina</i> (P3) • <i>Triodia pisoliticola</i> (P3) • <i>Eremophila</i> <i>magnifica</i> subsp. <i>magnifica</i> (P4) Communities Threatened: 0 Priority: 0
Flora and Vegetation Survey for BS1W Brockman and MM Drill Program [Brockman Syncline 1]	Eco Logical and Rio Tinto (2013)	Area (ha): 87 Study Type: NVCP-level biological assessment Survey Date: Apr., Jun. & Sep. 2013 Seasonal Conditions: Above average	1. no quadrat sampling or fauna trapping was undertaken 2. numerous disturbances throughout the study area, limiting the extent of the targeted	Intersecting with the Survey Area	Quadrats: 0 Relevés: 32	Vegetation types: 11 Condition: 'Good' to 'Excellent'	Taxa: 173 Genera: 79 Families: 36 Weeds: 3	Species Threatened: 0 Priority: 1 <ul style="list-style-type: none"> • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) Communities Threatened: 0 Priority: 0
Brockman Syncline Project Area Biological Surveys Brockman Syncline 1 East (AR-13-11068)	Eco Logical (2013a)	Area (ha): 128 Study Type: single phase Level 1 fauna, flora and vegetation survey	1. Disturbance areas (clearing, constructed drainage lines, soil stockpiles and tracks) have been reported, these have	Intersecting with the Survey Area	Quadrats: 0 Relevés: 22	Vegetation types: 7 broad vegetation communities	Taxa: 79 Genera: 41 Families: 21 Weeds: 3	Species Threatened: 0 Priority: 2

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
		Survey Date: Jul. 2013 Seasonal Conditions: Average	affected the detection of targeted flora.			Condition: 'Completely Degraded' to 'Excellent'		<ul style="list-style-type: none"> • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Eremophila</i> <i>magnifica</i> subsp. <i>magnifica</i> (P4) Communities Threatened: 0 Priority: 0
Brockman Syncline 4 Marra Mamba Vegetation Flora Survey [Brockman Syncline 4]	Biota (2013b)	Area (ha): 942 Study Type: Single-phase detailed survey Survey Date: Aug.–Sep. 2012 Seasonal Conditions: Below average	<ol style="list-style-type: none"> 1. A number of vegetation units were describe using mapping notes. 2. Underrepresented sampling effort. 3. No systematic searches were conducted for Threatened and priority or introduced flora. 4. Fungi and nonvascular flora were not specifically sampled. 	Intersecting with Survey Area	Quadrats: 31 Relevés: 0	Vegetation types: 35 Condition: 'Very Good' to 'Excellent'	Taxa: 235 Genera: 95 Families: 39 Weeds: 4	Species Threatened: 0 Priority: 2 <ul style="list-style-type: none"> • <i>Grevillea saxicola</i> (P3) • <i>Ptilotus subspinescens</i> (P3) Communities Threatened: 0 Priority: 0
Nammuldi-Silvergrass Vegetation Mapping Integration	Biota (2012a)	Area (ha): 6,0495.5 Study Type: Vegetation Mapping Consolidation Survey Date: N/A Seasonal Conditions: N/A	1. vegetation descriptions and a limited inspection of site information to determine differences between vegetation mapping in overlapping datasets	Intersecting with the Survey Area	N/A	Vegetation types: 34 Conditions: N/A	Taxa: N/A Genera: N/A Families: N/A Weeds: N/A	Species Threatened: N/A Priority: N/A Communities Threatened: N/A Priority: N/A
Flora and Vegetation Survey for Vivash Resource Evaluation Drilling and Access Tracks: Native Vegetation Clearing Permit Supporting Report	Rio Tinto (2012)	Area (ha): 822 ha Study Type: Level 1 fauna, flora and vegetation survey (for an NVCP) Survey Date: October 2011 Seasonal Conditions: N/A	<ol style="list-style-type: none"> 1. Time of study limited captured flora species. 2. The survey was conducted in a dry time of the year. 3. Fungi and non-vascular flora were not sampled 4. no systematic trapping undertaken 	Intersecting with the Survey Area	Quadrats: 0 Relevés: 0 Systematically traversed	Vegetation types: 16 Condition: 'Very Good'	Taxa: 129 Genera: 63 Families: 28 Weeds: 5	Species Threatened: 0 Priority: 4 (One delisted) <ul style="list-style-type: none"> • <i>Eremophila</i> <i>magnifica</i> subsp. <i>velutina</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Acacia bromilowiana</i> (P4) Communities Threatened: 0 Priority: 0
Flora and Vegetation Survey for Evaluation Drilling at Vivash East: Native Vegetation Clearing Permit Supporting Report	Rio Tinto (2011a)	Area (ha): 146 Study Type: Level 1 flora, fauna and vegetation survey (for an NVCP) Survey Date: November 2010 Seasonal Conditions: Below average	<ol style="list-style-type: none"> 1. Site not seasonally assessed to capture short-lived and annual species. 2. Dry conditions before survey limited ephemeral species sampled 3. Fungi and non-vascular flora (algae, mosses and liverworts) were not sampled. 	Intersecting with the Survey Area	Quadrats: 0 Relevés: 0 Systematically traversed	Vegetation types: 10 Condition: 'Very Good'	Taxa: 109 Genera: 57 Families: 27 Weeds: 1	Species Threatened: 0 Priority: 3 <ul style="list-style-type: none"> • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P1) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Eremophila</i> <i>magnifica</i> subsp. <i>magnifica</i> (P4) Communities Threatened: 0 Priority: 0
Flora and Vegetation Survey for Proposed	Rio Tinto (2010)	Area (ha): 36.02 Study Type: Level 1 A flora and vegetation survey	1. Study area surveyed once and not seasonally	Intersecting with Survey Area	Quadrats: Relevés:	Vegetation types: 6	Taxa: 86 Genera: 43 Families: 25	Species Threatened: 0 Priority: 0

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
Evaluation Drilling at Vivash East		Survey Date: April 2010 Seasonal Conditions: Below average	assessed to capture short-lived annual species. 2. Conducted during a dry time of the year, limited ephemeral species captured. 3. Fungi and non-vascular flora were not sampled.		systematically traversed	Condition: 'Good' to 'Very Good'	Weeds: 1	Communities Threatened: 0 Priority: 0
A Rare Flora Survey of the Brockman Syncline 4 Powerline Corridor and Campsite	Biota (2007c)	Area (ha): 1,452.45 Study Type: Level 1, Multi-Phase Survey Date: December 2006, January 2007 Seasonal Conditions: Below average	1. Fungi and nonvascular flora were not sampled, 2. Timing of field work not ideal for sampling. 3. Recent fire	Intersecting with the Survey Area	Quadrats: 0 Relevés: 0	Vegetation types: 6 Condition: 'Very Good' to 'Excellent'	Taxa: 226 Genera: 109 Families: 46 Weeds: 5	Species Threatened: 0 Priority: 2 (both delisted) Communities Threatened: 0 Priority: 0
A Flora Survey of the Brockman Syncline 4 Rail and Infrastructure Corridor	Biota (2007b)	Area (ha): 4,278.26 Study Type: Level 1 Multiple-phase Survey Date: 2004, May and June 2006, January 2007 Seasonal Conditions: Average	1. Fungi and nonvascular flora were not sampled. 2. Most ephemeral species would not have been present at time of study.	Intersecting with the Survey Area	Quadrats: 0 Relevés: 0	Vegetation types: 3 broad vegetation types Conditions: 'Very Good'	Taxa: 367 Genera: 149 Families: 52 Weeds: 7	Species Threatened: 0 Priority: 5 (three delisted) • <i>Ememophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Goodenia nuda</i> (P4) Communities Threatened: 0 Priority: 0
A Vegetation and Flora Survey of the Brockman Syncline 4 Project Areas, near Tom Price [Brockman Syncline 4]	Biota (2005b)	Area (ha): 11,557 Study Type: Single-phase detailed survey Survey Date: Oct. 2004 Seasonal Conditions: Average to below average	1. Ephemeral species not present. 2. Defined more vegetation types than quadrats were established 3. Used random way to define communities of conservation significance 4. Fungi and nonvascular flora were not specifically sampled 5. All sites only sampled once 6. Not all of the variation in vegetation, nor all the flora species, would have been identified.	Intersecting with the Survey Area	Quadrats: 49 Relevés: 17	Vegetation types: 53 Condition: 'Good'	Taxa: 367 Genera: 149 Families: 52 Weeds: 6	Species Threatened: 0 Priority: 2 • <i>Ptilotus subspinescens</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) Communities Threatened: 0 Priority: 0 High conservation value: 1 [Acacia <i>synchronica</i> scattered shrubs over <i>Triodia angusta</i> hummock grassland] Moderate: 18
Brockman 4 Vegetation and Flora Survey	Biota (2005a)	Area (ha): 11,796.4 Study Type: Level 2 single-phase Vegetation and Flora Survey Survey Date: February 2003 - October 2004 Seasonal Conditions: Average	1. Some areas of the study were not searched for rare flora 2. Fungi and nonvascular flora were not sampled 3. Survey sites were only sampled once	Intersecting with the Survey Area	Quadrats: 49 Relevés: 17	Vegetation types: 53 Condition: 'Good'	Taxa: 367 Genera: 149 Families: 52 Weeds: 6	Species Threatened: 0 Priority: 5 (three delisted) • <i>Ptilotus subspinescens</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) Communities Threatened: 0 Priority: 0

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
			4. The study sampled only a portion of the study area: not all the variation in vegetation or flora species would have been sampled					One vegetation type of high conservation significance – P11 (<i>Acacia synchronicia</i> scattered shrubs over <i>Triodia angusta</i> hummock grassland)
Botanical Studies – Brockmand Project Area (Proposed Haul Road to South-West Extension, South-West Extension and Lens C Grade Pod)	Mattiske Consulting (1995)	Area(ha): N/A Study Type: N/A Survey Date: N/A Seasonal Conditions: N/A	No limitations listed.	Intersecting with the Survey Area	Quadrats:0 Relevés:0 Detailed recordings taken at 23 sites within the Survey Area.	Vegetation Types: 7 Condition: N/A	Taxa: 327 Genera:150 Families: 49 Weeds:4	Species Threatened: 0 Priority: 0 Communities Threatened: 0 Communities Priority:0
Brockman 2 Deposits Detailed Flora and Vegetation Survey: Phase 1 and 2	Biota (2019a)	Area: 10,928ha Study Type: Two-phase detailed survey Survey Date: Phase 1: 9-19 October 2018 and phase 2: 15-19 March 2019 Seasonal Conditions: Below average	1. Survey conditions were not favourable for recording annual and cryptic perennial species 2. extensive disturbance from recent fires resulted in areas being unable to be sampled.	Located adjacent to the Survey area	Quadrats: 52 Relevés: 16	Vegetation Types: 10 in BS2 18 in Lens G/Diesel Condition: 'Very Good' to 'Excellent' for BS2 'Very Good' to 'Excellent' for Lens G/Diesel	Taxa: 201 (BS2), 388 (Lens G/ Diesel) Genera: 90 (BS2), 149 (Lens G/ Diesel) Families: 41 (BS2), 54 (Lens G/Diesel) Weeds: 3 (BS2), 10 (Lens G/ Diesel)	Species Threatened: 0 Priority: 20 <ul style="list-style-type: none"> • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) (P1) • <i>Tetradlea butcheriana</i> (P1) • <i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) • <i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) • <i>Oxalis</i> sp. Pilbara (M.E. Trudgen 12725) (P2) • <i>Dampiera anonyma</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Eremophila</i> sp. Hamersley Range (K. Walker KW 136) (P3) • <i>Grevillea saxicola</i> (P3) • <i>Gymnanthera cunninghamii</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 1642) (P3) • <i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) (P3) • <i>Sida</i> sp. Barlee Range (S. van. Leeuwen 1642) (P3) • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P3) • <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3) • <i>Triodia basitricha</i> (P3) • <i>Acacia bromilowiana</i> (P4) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) • <i>Goodenia nuda</i> (P4)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								<ul style="list-style-type: none"> • <i>Lepidium catapycnon</i> <p>Communities Threatened: 0 Priority: 0 14 Vegetation types currently considered to be of elevated significance</p>
Caves Creek Detailed Flora and Vegetation Survey: Phase 1 and 2	Biota (2019b)	Area: 3,974ha Study Type: Two-phase detailed survey Survey Date: Phase 1: 9-19 October 2018 and phase 2: 15-19 March 2019 Seasonal Conditions: Below average	1. Survey conditions were not favourable for recording annual and cryptic perennial species	Located adjacent to the Survey area	Quadrats: 40 Relevés: 17	Vegetation Types: 19 Condition: Poor to Excellent	Taxa: 312 Genera: 136 Families: 49 Weeds: 10 (All combined surveys for 2018/2019 for Biota)	<p>Species Threatened: 0 Priority: 17</p> <ul style="list-style-type: none"> • <i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1) • <i>Ipomoea racemigera</i> (P2) • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Fimbristylis siberiana</i> (P3) • <i>Grevillea saxicola</i> (P3) • <i>Grevillea ?saxicola</i> (P3) • <i>Gymnanthera cunninghamii</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Ptilotus subspinescens</i> (P3) • <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3) • <i>Triodia basitricha</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) • <i>Goodenia nuda</i> (P4) • <i>Livistonia alfredii</i> (P4) • <i>Ptilotus mollis</i> (P4) • <i>Rynchosia bungarensis</i> (P4) <p>Communities Threatened: 0 Priority: 1 'Riparian flora and plant communities of springs and drive pools with high water permanence of the Pilbara Region'</p>
A Flora Survey of the Brockman Strategic Area Flora Vegetation and Fauna Habitat Assessment [Brockman Syncline 4]	Biota (2007a)	Area (ha): 4,278 Study Type: Single-phase detailed survey Survey Date: May–Jun. 2006 Seasonal Conditions: Average	1. Fire impacted ca. 5% of the Survey Area. 2. Annual species not present	Located adjacent to the Project Area	Quadrats: 0 Relevés: 0 Systematically traversed	Vegetation types: Vegetation types were extended from Biota (2005b) Condition: 'Poor' to 'Good'	Taxa: 337 Genera: 129 Families: 49 Weeds: 4	<p>Species Threatened: 0 Priority: 2 (all de-listed)</p> <p>Communities Threatened: 0 Priority: 0</p>

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								High conservation value: 1 (riverine vegetation dominated by River Gums <i>Eucalyptus camaldulensis</i>)
Brockman 4 Riparian Vegetation Mapping	Biota (2013a)	Area (ha): 1,303 Study Type: Single-phase detailed survey Survey Date: August 2013 Seasonal Conditions: Above average	1. Small eastern section of the study area was not surveyed owing to presence of herds and livestock. 2. Systematic searches were not conducted through the entire area for the Threatened and Priority flora or introduced flora. 3. Only a single phase of sampling was conducted	0.2km south of the Survey area	Quadrats: 17 Relevés: 2 Mapping notes: 110	Vegetation types: 15 Condition: 'Very Good'	Taxa: 226 Genera: 116 Families: 42 Weeds: 13	Species Threatened: 0 Priority: 3 <ul style="list-style-type: none"> • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Goodenia nuda</i> (P4) Communities Threatened: 0 Priority: 0 *six ephemeral pools identified as potential conservation interest
Brockman Syncline 2 Sustaining Tonnes Project and Pit 7 Land Bridge Vegetation and Flora Survey [Brockman Syncline 2]	Biota (2010a)	Area (ha): 461 Study Type: Single-phase detailed survey Survey Date: Apr.–May 2010 Seasonal Conditions: Below average	1. Study area was not systematically searched for rare flora 2. Conditions unfavourable for collection of ephemeral flora 3. Fungi and non-vascular flora were not specifically sampled 4. no floristic analysis has been conducted using the data from the quadrats established for this study.	0.75km north west of the Survey area	Quadrats: 15 Relevés: 0	Vegetation types: 12 Condition: 'Very Good' to 'Excellent'	Taxa: 182 Genera: 77 Families: 36 Weeds: 1	Species Threatened: 0 Priority: 4 <ul style="list-style-type: none"> • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) Communities Threatened: 0 Priority: 0
A Vegetation and Flora Survey of the Approved Powerline Corridor (East of Brockman Operation) for the Brockman Syncline 4 Project [Brockman Syncline 4]	Biota (2007d)	Area (ha): 138 Study Type: Single-phase detailed survey Survey Date: May 2007 Seasonal Conditions: Above average	1. Missed late germinating annual species (e.g., annual daisies) 2. Fungi and non-vascular flora were not specifically sampled.	0.9km north west of the Survey area	Quadrats: 1 Relevés: 0	Vegetation types: 8 Condition: 'Very Good' to 'Excellent'	Taxa: 175 Genera: 92 Families: 38 Weeds: 3	Species Threatened: 0 Priority: 2 (all delisted) Communities Threatened: 0 Priority: 0
Silvergrass West Detailed Flora and Vegetation Survey: Phase 1 and 2	Biota (2019c)	Area: 4,539ha Study Type: Two-phase detailed survey Survey Date: Phase 1: 9-19 October 2018 and phase 2: 15-19 March 2019 Seasonal Conditions: Below average	1. Survey conditions were not favourable for recording annual and cryptic perennial species	0.92km west of the Survey area.	Quadrats: 37 Relevés: 9	Vegetation Types: 22 Condition: Good to Excellent	Taxa: 388* Genera: 149* Families: 52* Weeds: 12* *Numbers recorded within the survey area based on all survey work to date	Species Threatened: 0 Priority: <ul style="list-style-type: none"> • <i>Euphorbia inappendiculata</i> var. <i>queenslandica</i> (P1) • <i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1) • <i>Vittadinia</i> sp. Coondewanna Flats (S. van Leeuwen 4684) (P1) • <i>Euphorbia australia</i> var. <i>glabra</i> (P2)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								<ul style="list-style-type: none"> • <i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2) • <i>Astrebla lappacea</i> (P3) • <i>Fimbristylis sieberiana</i> (P3) • <i>Glycine falcata</i> (P3) • <i>Grevillea saxicola</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) • <i>Swainsona thompsoniana</i> (P3) • <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3) • <i>Triodia basitricha</i> (P3) • <i>Acacia bromilowiana</i> (P4) • <i>Ptilotus mollis</i> (P4) • <i>Rynchosia bungarensis</i> (P4) <p>Communities Threatened: 1 'Themeda Grassland of Hamersley Station' (Vu) Priority: 1 'Brockman Iron cracking clay communities of the Hamersley Ranges' (P1)</p>
Brockman Syncline 2 Pit 7 Extension – Vegetation and Flora Survey [Brockman Syncline 2]	Biota (2009a)	Area (ha): 4,148 Study Type: Single-phase detailed survey Survey Date: Jul. 2009 Seasonal Conditions: Average	<p>1. Access to some of the sites was not possible due to rugged terrain</p> <p>2. Entire area was not systematically searched for ephemeral and cryptic perennial flora</p> <p>3. Fungi and non-vascular flora were not specifically sampled</p> <p>4.No floristic analysis has been conducted using the data from the quadrats established for this study</p>	1.5km north east of the Survey area	Quadrats: 14 Relevés: 0 Raw data did not include the recorded percent foliage cover.	Vegetation types: 6 Conditions: 'Excellent'	Taxa: 152 Genera: 76 Families: 38 Weeds: 0	<p>Species Threatened: 0 Priority: 3</p> <ul style="list-style-type: none"> • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) (P3) • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3) • <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) <p>Communities Threatened: Priority: 0</p>
Flora and Vegetation Survey of the Greater Nammuldi Irrigated Agriculture Survey Area [Nammuldi]	Mattiske (2011)	Area (ha): 15,164 Study Type: Single-phase detailed survey Survey Date: Mar. 2011 Seasonal Conditions: Above average	1. Recent fire has affected large areas of the Survey Area .	2.3km South East of the Survey area	Quadrats: 62 Relevés: 0	Vegetation units: 13 Condition: 'Very Good' to 'Pristine'	Taxa: 189 Genera: 99 Families: 40 Weeds: 8	<p>Species Threatened: 0 Priority: 2 (one delisted)</p> <ul style="list-style-type: none"> • <i>Goodenia nuda</i> (P4) <p>Communities</p>

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								Threatened: 0 Priority: 0
Nammuldi Infill Areas Vegetation and Flora Survey [Nammuldi area]	Biota (2010b)	Area (ha): 3,983 Study Type: Single-phase detailed survey Survey Date: Oct. 2009 Seasonal Conditions: Below average	1. Not optimal for collection of annual cryptic perennial species, conditions were dry. 2. Recommended for a second phase of sampling timed for more favourable seasonal conditions 3. Fungi and nonvascular flora were not specifically sampled	2.6km north west of the Survey area	Quadrats: 32 Relevés: 0	Vegetation types: 24 Condition: 'Very Good' to 'Excellent'	Taxa: 252 Genera: 107 Families: 40 Weeds: 6	Species Threatened: 0 Priority: 1 • <i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)(P3) Communities Threatened: 0 Priority: 0
Brockman 2 AR-14-12192 & Silvergrass AR-13-11938 – NVCP Level Biological Assessment	Astron (2014a)	Area(ha): 399 (212ha Brockman 2 area, 187ha Silvergrass area) Study Type: Single phase detailed flora and fauna survey. Survey Date: 25 June to 4 July 2014 Seasonal Conditions: Average	1. Fire had burnt approximately one quarter of the Brockman 2 survey area in the last 5-10 years. 2. northern-most 100m of intact vegetation was unable to be accessed to search for priority flora or map vegetation due to the 100m buffer around operational mining areas.	3km east of the Survey area	Quadrats: 19 (10 Brockman, 9 Silvergrass) Relevés: 41 (21 Brockman, 20 Silvergrass)	Vegetation Types: 19 (8 Brockman, 11 Silvergrass) Condition: Brockman 2 ranged from 'Very Good' to 'Excellent' Silvergrass ranged from 'Very Poor' to 'Excellent'	Taxa: 344 Genera: 73 (Brockman) 86 (Silvergrass) Families: 36 (Brockman) 33 (Silvergrass) Weeds: 8	Species Threatened: 0 Priority: 12 • <i>Euphorbia inappendiculata</i> var. <i>queenslandica</i> (P1) • <i>Hibiscus</i> sp. Mt Brockman (P1) • <i>Sida</i> sp. Hamerley Range (P1) • <i>Teucrium pilbranum</i> (P1) • <i>Hibiscus</i> sp. Gurinbiddy Range (P2) • <i>Astrebla lappacea</i> (P3) • <i>Glycine falcata</i> (P3) • <i>Oldenlandia</i> sp. Hamersley Station (P3) • <i>Sida</i> sp. Barlee Range (P3) • <i>Swainsona thompsoniana</i> (P3) • <i>Themeda</i> sp. Hamersley Station (P3) • <i>Acacia bromilowiana</i> (P4) Communities Threatened: 0 Communities Priority: 0
A vegetation and flora survey of Silvergrass West [Silvergrass West]	Biota (2009c)	Area (ha): 2,114 Study Type: Single-phase detailed survey Survey Date: Apr. 2009 Seasonal Conditions: Average	1. Fungi and nonvascular flora were not specifically sampled 2. The entire survey area was not systematically searched 3. No floristic analysis has been conducted using the data from the quadrats established for this study.	4.7 km East of the Survey area	Quadrats: 15 Relevés: 0	Vegetation types: 22 Condition: 'Very Good' to 'Excellent'	Taxa: 306 Genera: 133 Families: 47 Weeds: 5	Species Threatened: 0 Priority: 6 • <i>Astrebla lappacea</i> (P3) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3) • <i>Rostellularia adscendens</i> var. <i>latifolia</i> , (P3) • <i>Swainsona thompsoniana</i> (P3) • <i>Themeda</i> sp. Hamersley Station (M.E Trudgen 11431) (P3)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
								Communities Threatened: 1 (<i>Themeda</i> Grasslands TEC on Hamersley Station (VN B)) Priority: 1 ("Brockman Iron cracking clay communities of the Hamersley Range" (P1))
A Vegetation and Flora Survey of Expansion Areas at Nammuldi [Nammuldi area]	(Biota 2009d)	Area (ha): 1,642 Study Type: Single-phase detailed survey Survey Date: Oct.–Nov. 2008 Seasonal Conditions: Below average	1. No floristic analysis was conducted using the data from the quadrats established. 2. Survey conditions were dry and optimal for collection of annual cryptic perennial species. 3. Fungi and non-vascular flora were not specifically sampled	5.2 km South-South East of the Survey area	Quadrats: 13 Relevés: 0	Vegetation types: 12 Condition: 'Very Good' to 'Excellent'	Taxa: 266 Genera: 119 Families: 42 Weeds: 8	Species Threatened: 0 Priority: 3 • <i>Calotis squamigera</i> (P1) • <i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3) • <i>Goodenia nuda</i> (P4) Communities Threatened: 0 Priority: 0
Nammuldi / Silvergrass soils, vegetation and flora survey [Nammuldi and Silvergrass]	HGM (1999)	Area (ha): 9,633 Study Type: Level 1 flora and vegetation survey Survey Date: Aug.–Sep. 1998 Seasonal Conditions: unknown	N/A	5.4km South East of the Survey area	Quadrats: 0 Relevés: 58	Vegetation units: 20 Condition: N/A	Taxa: 358 Genera: 161 Families: 56 Weeds: 5	Species Threatened: 0 Priority: 6 (five delisted) • <i>Gymnanthera cunninghamii</i> (P3) Communities Threatened: 0 Priority: 0
Nammuldi Trial Operation Vegetation and Flora Survey	HGM (1998)	Area (ha): Study Type: Single-phase detailed survey Survey Date: Jun. 1998 Seasonal Conditions: Average	1. Will not be appropriate for comparative purposes because of a mismatch between relevé and quadrat sizes (i.e., ca. 1 vs 0.25 ha, resp.)	5.4km South East of the Survey area	Quadrats: 0 Relevés: 17 – sized at ca. 1 ha (i.e., this is four times the size of normal quadrats for the area)	Vegetation units: 7 Condition: N/A	Taxa: 157 Genera: 88 Families: 42 Weeds: 2	Species Threatened: 0 Priority: 0 (2- both delisted) Communities Threatened: 0 Priority: 0
AR-14-12614 Brockman 2 Pit 2/3 Biological Assessment	Astron (2014b)	Area(ha): 379 Study Type: Single phase reconnaissance flora and fauna survey. Survey Date: 19 to 25 September 2014 Seasonal Conditions: below average	No major limitations were encountered while conducting the flora and fauna surveys.	5.6 km East of the Survey area	Quadrats: 0 Relevés: 0 One mapping note was made in each representative vegetation unit within the Survey Area.	Vegetation Types: 17 Condition: 'Good' to 'Excellent'	Taxa: 136 Genera: 74 Families: 33 Weeds: 1	Species Threatened: 0 Priority: 6 • <i>Hibiscus</i> sp. Mt Brockman (P1) • <i>Sida</i> sp. Hamersley Range (P1) • <i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3) • <i>Indigofera</i> sp. Bungaroo Creek (P3) • <i>Sida</i> sp. Barlee Range (P3) • <i>Acacia bromilowiana</i> (P4) Communities Threatened: 0 Communities Priority: 0
Themeda Grasslands Threatened Ecological Community – Seasonal Botanical	Biota (2012b)	Area (ha): 19,750 Study Type: Multiple-phase detailed survey Survey Date: May–Jun., & Aug 2011	1. Timing of the survey may have contributed to annual species typically being presented only as seedlings and thus may be under-	6.9 km north West of the Survey area	Quadrats: 50 Relevés: 0	Vegetation types: 9 Condition: 'Very Good' to 'Excellent'	Taxa: 192 Genera: 102 Families: 35 Weeds: 12 Phase 2	Species Threatened: 0 Priority: 10 (one delisted) • <i>Teucrium pilbaranum</i> (P2) • <i>Astrebla lappacea</i> (P3)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
Survey [Marandoo mine]		Seasonal Average Conditions:	represented in the data-set for phase one of the survey. 2. Fungi and non-vascular flora were not systematically sampled 3. some specimen identifications could not be resolved within the timeframe of this study 4. The analysis was limited by a lack of comparable quadrat-based data from the locality 5. Systematic foot transverses were not possible through the entire area, hence vegetation mapping was extrapolated, therefore some inaccuracy in delineation of the vegetation units could exist.				Taxa: 218 Genera: 113 Families: 41 Weeds: 12 *A combined total was not provided in the report.	<ul style="list-style-type: none"> • <i>Glycine falcata</i> (P3) • <i>Iotasperma sessilifolium</i> (P3) • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • <i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3) • <i>Stackhousia clementii</i> (P3) • <i>Swainsona thompsoniana</i> (P3) • <i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3) • <i>Goodenia nuda</i> (P4) <p>Communities Threatened: 1 (<i>Themeda</i> grasslands on cracking clays (Hamersley Station, Pilbara)) Priority: 2</p>
A Vegetation and Flora Survey of the White Quartz Road Corridor, near Tom Price	Biota (2007e)	Area (ha): 2,303 Study Type: Multiple-phase detailed survey Survey Date: May & June 2006 Seasonal Average Conditions:	<p>1. Fungi and non-vascular flora were not specifically sampled</p> <p>2. Rare flora searches were done following an extended dry period, and it is possible that some ephemeral flora would not have been present during this survey phase.</p> <p>3. Quadrats were only sampled once</p> <p>4. Vegetation units for this study were defined based on interpretation of aerial photography signatures combined with site data and field mapping, there is a level of uncertainty regarding the assessment of distribution of the vegetation types outside the study area.</p> <p>5. the PATN floristic analysis is fundamentally limited by the data currently available for the region.</p>	7 km south west of the Survey area	Quadrats: 20 Relevés: 1	Vegetation types: 39 Condition: 'Very Good'	Taxa: 364 Genera: 141 Families: 47 Weeds: 8	<p>Species Threatened: 0 Priority: 2</p> <ul style="list-style-type: none"> • <i>Ptilotus subspinescens</i> (P3) • <i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3) <p>Communities Threatened: 0 Priority: 0</p> <p>High conservation values: 1 (riverine vegetation dominated by River Gums <i>Eucalyptus camaldulensis</i>)</p>
A Vegetation and Flora Survey of Beasley River – Summary Report [Beasley River]	Biota (2009b)	Area (ha): 2,151 Study Type: Multiple-phase detailed survey Survey Date: May and Sep. 2009. Seasonal Average Conditions:	<p>1. A 319 ha section of the study area (in the northeast) was inaccessible and was not surveyed.</p> <p>2. No analysis was conducted on the established quadrat data.</p>	15 km south of the Survey area	Quadrats: 37 Relevés: 0	Vegetation types: 30 Condition: 'Very Good' to 'Excellent'	Taxa: 311 Genera: 137 Families: 46 Weeds: 10	<p>Species Threatened: 0 Priority: 4</p> <ul style="list-style-type: none"> • <i>Ptilotus trichocephalus</i> (P4) • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)

Project [Location]	Consultancy	Study Details	Limitations	Proximity to the Study Area	Survey Effort	Vegetation types & Condition	Flora Recorded	Species and communities of conservation significance
			<p>3. Fungi and nonvascular flora were not specifically sampled.</p> <p>4. The entire survey area was not systematically searched.</p>					<ul style="list-style-type: none"> • <i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479) (P3) • <i>Ptilotus subspinescens</i> (P3) <p>Communities Threatened: 0 Priority: 0</p>

Appendix B Framework for Conservation Significance Ranking for Flora species and Communities

The Environmental Factor Guideline for Flora and Vegetation (EPA 2016) states that flora and vegetation may be considered significant for a range of reasons, including, but not limited to the following:

Flora: being identified as threatened or priority species, locally endemic or associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems), new species or anomalous features that indicate a potential new species, representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range), unusual species, including restricted subspecies, varieties or naturally occurring hybrids, relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

Vegetation: being identified as threatened or priority ecological communities, restricted distribution, degree of historical impact from threatening processes, a role as a refuge, providing an important function required to maintain ecological integrity of a significant ecosystem.

Those flora and vegetation defined as threatened and priority are legislated protection under the EPBC Act and/or the BC Act, or by being listed on the DBCA Priority Species List. This Appendix presents a summary of the different rankings and listings used to describe conservation status. Some categories, such as 'extinct', 'extinct in the wild' and 'conservation dependent' (EPBC Act) are not presented here, as the table includes only the information needed to fully understand the codes presented in the preceding report. Refer to the relevant legislation for a full description of all codes in use, as well as their associated criteria.

Categories used under the EPBC Act		
Status	Code	Description
Critically Endangered	CR	Taxa considered to be facing an extremely high risk of extinction in the wild in the immediate future
Endangered	EN	Taxa considered to be facing a very high risk of extinction in the wild in the near future
Vulnerable	VU	Taxa considered to be facing a high risk of extinction in the wild in the medium-term future
Migratory	MI	Species that migrate to, over and within Australia and its external territories

Conservation Codes used under the BC Act			
Status	Code	Schedule	Description
Critically Endangered	CR	S1	Taxa rare or likely to become extinct, as critically endangered taxa
Endangered	EN	S2	Taxa rare or likely to become extinct, as endangered taxa
Vulnerable	VU	S3	Taxa rare or likely to become extinct, as vulnerable taxa
Presumed Extinct	EX	S4	Taxa presumed to be extinct
Migratory	IA	S5	Birds subject to international agreements relating to the protection of migratory birds
Conservation Dependent	CD	S6	Taxa of special conservation need, being species dependent on ongoing conservation intervention
Special Protection	OS	S7	Taxa in need of special protection

Priority Flora under the BC Act		
Status	Code	Description
Priority 1: Poorly-known Species	P1	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

Priority Flora under the BC Act		
Status	Code	Description
		degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2: Poorly-known Species	P2	Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3: Poorly-known Species	P3	Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4: Rare, Near Threatened and other species in need of monitoring	P4	(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.

Definitions and Criteria for Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable Ecological Communities	
Presumed Totally Destroyed (PD)	<p>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.</p> <p>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):</p> <ul style="list-style-type: none"> 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)	<p>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.</p> <p>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):</p> <ul style="list-style-type: none"> 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): <ul style="list-style-type: none"> 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, iii) <ul style="list-style-type: none"> 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 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)	<p>An ecological community that has been adequately surveyed and found to have been subject to a major contraction in an 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</p> <p>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</p>

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

	<p>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):</p> <ul style="list-style-type: none"> A) 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): <ul style="list-style-type: none"> 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, iii) <ul style="list-style-type: none"> 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).
<p>Vulnerable (VU)</p>	<p>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.</p> <p>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 (within approximately 50 years) 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):</p> <ul style="list-style-type: none"> 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.

Definitions and Criteria for Priority Ecological Communities

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. 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 1 Poorly-known ecological communities	Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2 Poorly-known ecological communities	Communities that are known from few occurrences with a restricted distribution (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) 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 3 Poorly-known ecological communities	<p>i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat or habitat destruction or degradation</p> <p>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;</p> <p>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</p> <p>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</p>
Priority 4 Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring	<p>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.</p> <p>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.</p> <p>c) Ecological communities that have been removed from the list of threatened communities during the past five years</p>
Priority 5 Conservation Dependent ecological communities	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years

Appendix C Criteria for assessing the likelihood of occurrence of significant flora in the Study area

Likelihood: Recorded

The species has been recorded unambiguously (i.e. during recent surveys of the Survey area, from reliable records obtained via database searches or from current vouchered specimen at WA Herbarium) in the Survey area.

Likelihood: Likely

There is a medium to high likelihood that the species occurs in the Survey area as the Survey area occurs within the known distribution of the species, contains suitable habitat and the species has been recorded recently nearby.

Likelihood: Possible

There is a potential for the species to occur in the Survey areas, as:

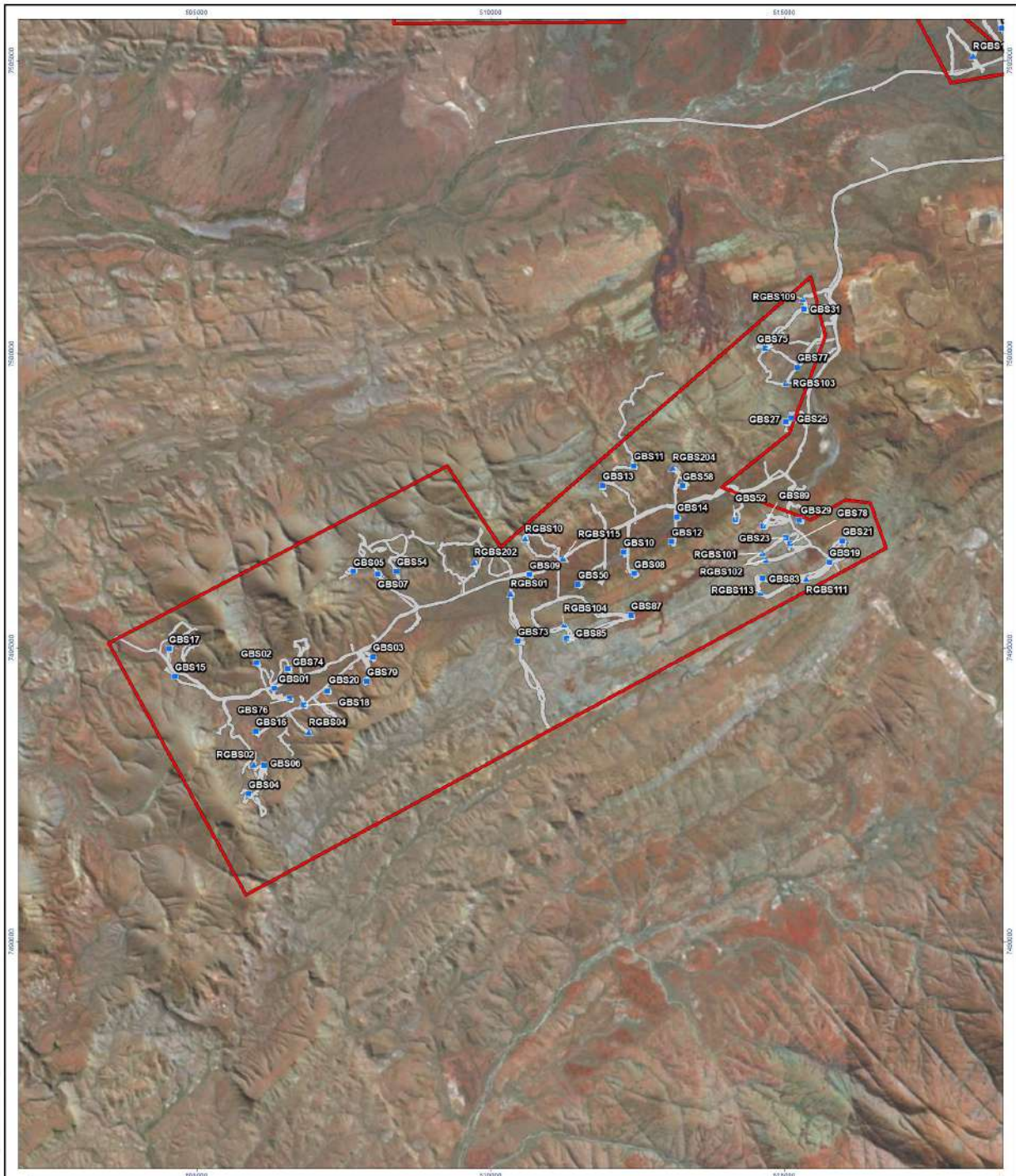
- The species has not been recorded recently nearby, however:
 - The species may not have been detectable during current or previous surveys (e.g. rare, patchily distributed, non-optimal survey timing).
 - The species is known to be cryptic and may not have been detectable despite extensive surveys.
- The species has been recorded recently nearby and species presence cannot be ruled out due to factors such as species ecology or distribution, however:
 - doubt remains over taxonomic identification;
 - the majority of habitat does not appear suitable; and
 - coordinates are doubtful.

Likelihood: Unlikely

The species is unlikely to occur in the Survey area as:

- the species has been recorded locally through DBCA database searches;
- the Survey area lacks potential habitat, having at best marginally suitable habitat, and/or being severely degraded;
- only recorded from a few historic record/s and no other collections in the Survey area;
- the species has not been recorded in the Survey area despite adequate survey efforts, such as a standardised methodology or targeted searching within potentially suitable habitat.

Appendix D Locations of Sampling Sites from the Current Survey



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- ▭ Survey area
- Current Survey Sites 2019
- ▲ Quadrat
- ▲ Reliè
- GPS Track Logs



Project Location: Stantec Australia Pty Ltd, Perth, Western Australia
Prepared by: DK on 2019-11-06
Reviewed by: TR by SA on 2019-11-06
 IR Review by: JH on 2019-11-18
Client/Project: Rio Tinto Iron Ore, 300003015-0017 REVB
Greater Brockman Syncline 4 Detailed Flora and Vegetation Survey 2019

Figure No.: 17 - 1
Title: Survey Effort Detail - Vivash

Notes
 1. Coordinate System: GDA 1994 MGA Zone 53
 2. Source: as information provided by and with the permission of the Western Australian Land Information Authority Trading as Landgate (2019)
 3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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 Revised: 2019-11-21 By: dkmear



- ▭ Survey area
- Current Survey Sites 2019
- Quadrat
- ▲ Relevé
- GPS Track Logs

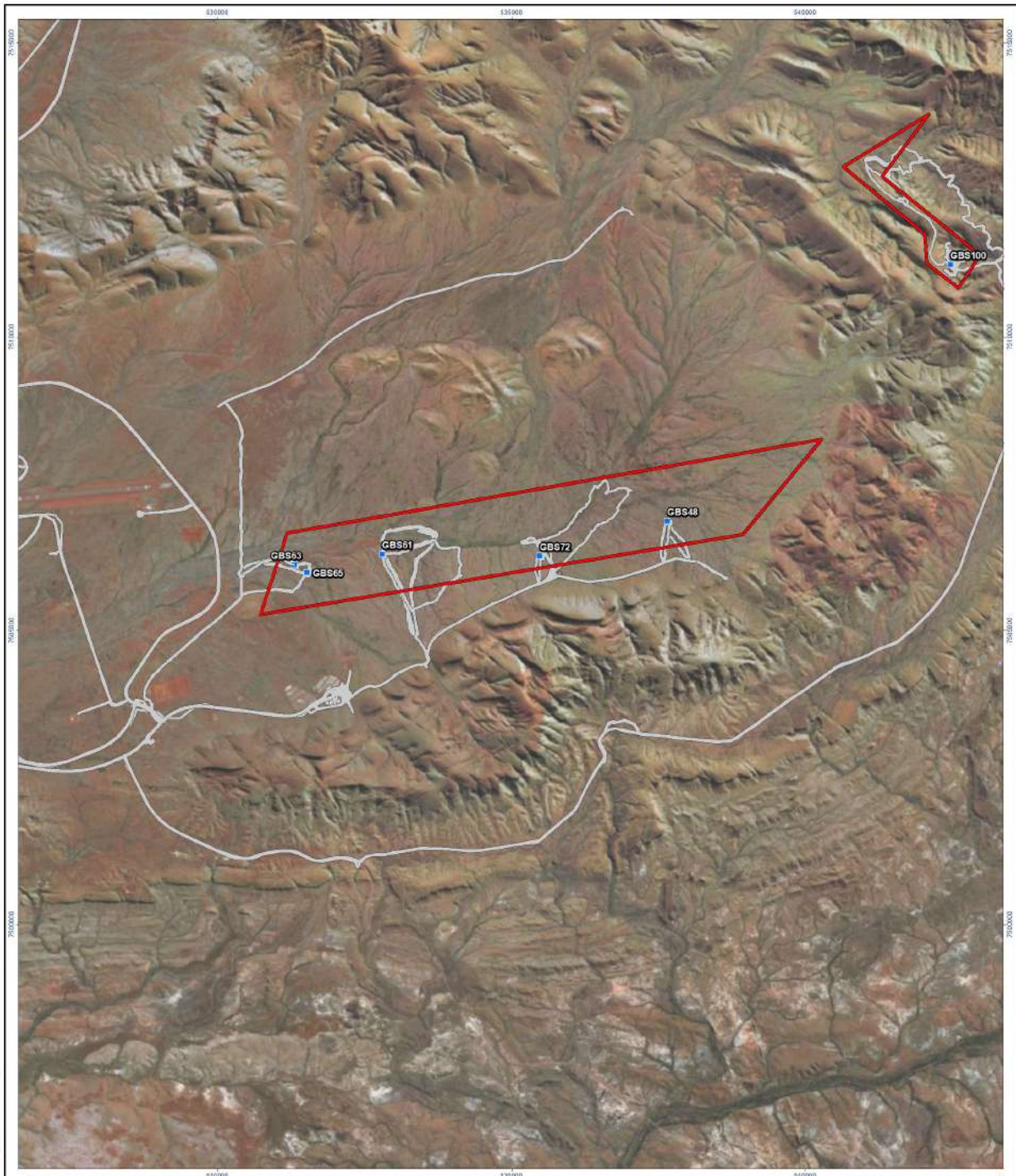


Project Location: Stantec Australia Pty Ltd, Perth, Western Australia
Prepared by: DK on 2019-11-06
Reviewed by: TR by SA on 2019-11-06
IR Review by: JH on 2019-11-18
Client/Project: Rio Tinto Iron Ore, 300003015-0017 REV B

Figure No.: 17 - 2
Title: Survey Effort Detail - BS1

Notes:
 1. Coordinate System: GDA 1994 MGA Zone 53
 2. Source: as information provided by and with the permission of the Western Australian Land Information Authority Trading as Landgate (2019)
 3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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- ▭ Survey area
- Current Survey Sites 2019
- Quadrat
- GPS Track Logs

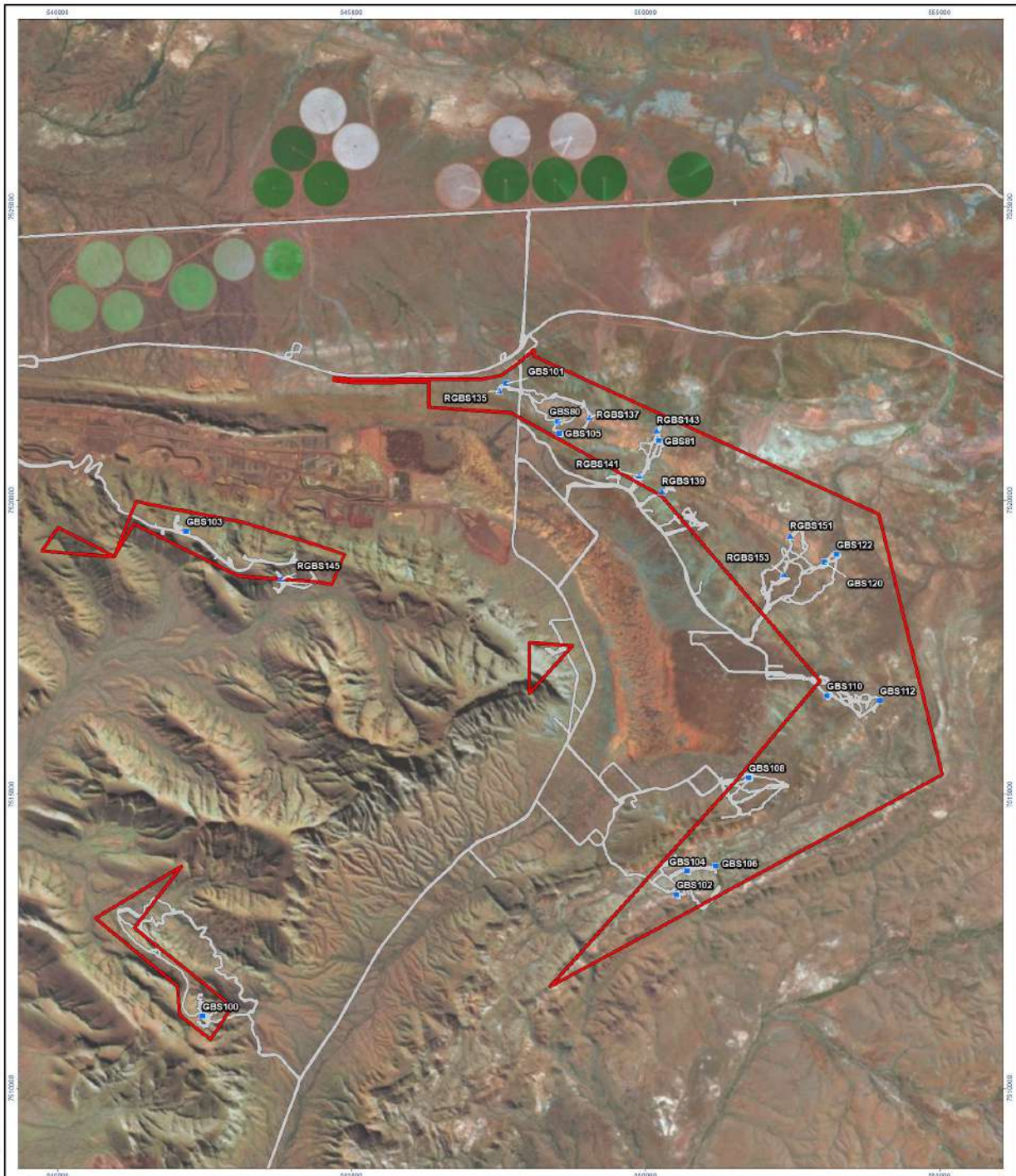


Project Location: Stantec Australia Pty Ltd, Perth, Western Australia
Prepared by: DK on 2019-11-06
Reviewed by: TR by SA on 2019-11-06
IR Review by: JH on 2019-11-18
Client/Project: Rio Tinto Iron Ore, 300003015-0017 REV B

Figure No.: 17 - 3
Title: Survey Effort Detail - BS3

Notes
 1. Coordinate System: GDA 1994 MGA Zone 53
 2. Source information provided by and with the permission of the Western Australian Land Information Authority Trading as Landgate (2019)
 3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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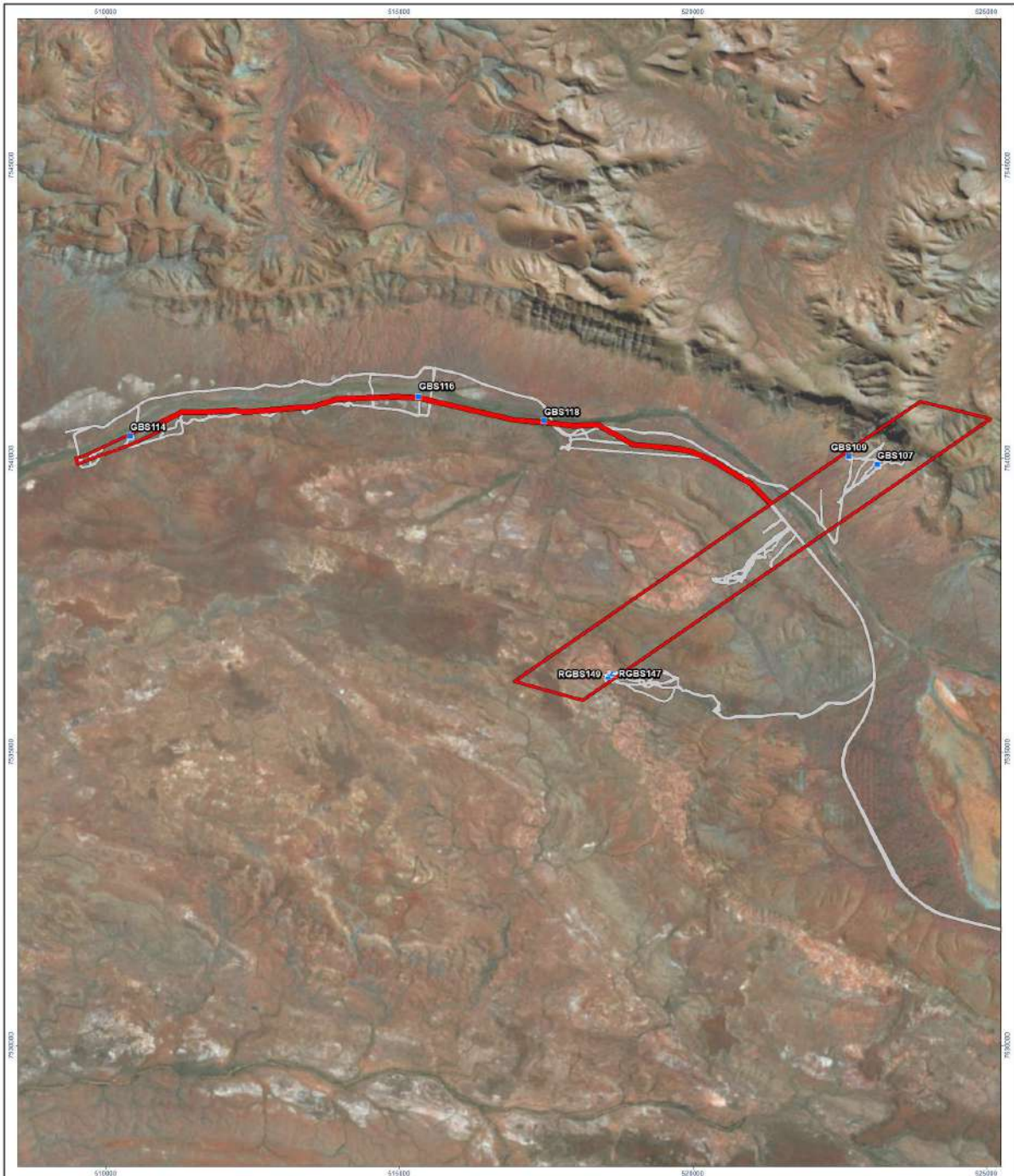
- Survey area
- Current Survey Sites 2019
- Quadrat
- ▲ Relievé
- GPS Track Logs



Project Location: Stantec Australia Pty Ltd, Perth, Western Australia
Client/Project: Rio Tinto Iron Ore, Greater Brockman Syncline 4
Prepared by: DK on 2019-11-06
Reviewed by: TR by SA on 2019-11-06, IR Review by JH on 2019-11-18
Reference: 300003015-0017 REV B

Figure No.: 17 - 4
Title: Survey Effort Detail - Eastern Infill Areas

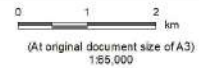
Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



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- ▭ Survey area
- Current Survey Sites 2019
- Quadrat
- ▲ Relevé
- GPS Track Logs



Notes
 1. Coordinate System: GDA1994 MGA Zone 50
 2. Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (L215)
 3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Project Location
 Stantec Australia Pty Ltd
 Perth, Western Australia

Prepared by DK on 2019-11-06
 TR by SA on 2019-11-06
 IR Review by JH on 2019-11-16

Client/Project
 Rio Tinto Iron Ore
 Greater Brockman Syncline 4
 Detailed Flora and Vegetation Survey 2019

Figure No.
 17 - 5

Title
 Survey Effort Detail - Northern Infill Area

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Appendix E Raw Quadrat and Relevé Data

Appendix F Vegetation Condition Scale

Rating	Description
1 - Excellent	Pristine or nearly so; no obvious signs of damage caused by the activities of European man.
0.8 - Very Good	Some relatively slight signs of damage caused by the activities of European man. 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.
0.6 - Very Good	More obvious signs of damage caused by the activities of European man, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or by selective logging. Weeds as above, possibly plus some more aggressive ones such as <i>Cenchrus</i> spp.
0.4 - Poor	Still retains basic vegetation structure or ability to regenerate to it after very obvious impacts of activities of European man, such as grazing, partial clearing (chaining) or frequent fires. Weeds as above, probably plus some more aggressive ones such as <i>Cenchrus</i> spp.
0.2 - Degraded	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species including very aggressive species.
0.1 - Completely Degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Based on Trudgen M.E. (1988).

Appendix G Vegetation Structure Classes

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

Based on Muir (1977), and Aplin's (1979) modification of the vegetation classification system of Specht (1970); Aplin T.E.H. (1979). The Flora. Chapter 3 In O'Brien, B.J. (ed.) (1979). Environment and Science. University of Western Australia Press; Muir B.G. (1977). Biological Survey of the Western Australian Wheatbelt. Part II: Vegetation and habitat of Bending Reserve. Records of the Western Australian Museum, Suppl. No. 3; Specht R.L. (1970). Vegetation. In: The Australian Environment. 4th edn (Ed. G.W. Leeper). Melbourne.

Appendix H Categories of Declared Pests and Weeds of National Significance

Category	Description
C1 - Exclusion	if in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented;
C2 - Eradication	if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible;
C3 - Management	if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to — <ul style="list-style-type: none"> (i) alleviate the harmful impact of the declared pest in the area; or (ii) reduce the number or distribution of the declared pest in the area; or (iii) prevent or contain the spread of the declared pest in the area.

Declared pest control categories. West Australian Biosecurity and Agriculture Management Regulations 2013 in accordance with section 22 of the Biosecurity and Agriculture Management Act 2007.

Weeds of National Significance (WoNS)
<i>Alternanthera philoxeroides</i>
<i>Andropogon gayanus</i>
<i>Annona glabra</i>
<i>Anredera cordifolia</i>
<i>Asparagus aethiopicus</i>
<i>Asparagus africanus</i>
<i>Asparagus asparagoides</i>
<i>Asparagus declinatus</i>
<i>Asparagus plumosus</i>
<i>Asparagus scandens</i>
<i>Austrocylindropuntia</i> spp.
<i>Cabomba caroliniana</i>
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>
<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>
<i>Cryptostegia grandiflora</i>
<i>Cylindropuntia</i> spp.
<i>Cytisus scoparius</i>
<i>Dolichandra unguis-cati</i>
<i>Eichhornia crassipes</i>
<i>Genista linifolia</i>
<i>Genista monspessulana</i>
<i>Hymenachne amplexicaulis</i>
<i>Jatropha gossypifolia</i>
<i>Lantana camara</i>
<i>Lycium ferocissimum</i>
<i>Mimosa pigra</i>
<i>Nassella neesiana</i>
<i>Nassella trichotoma</i>
<i>Opuntia</i> spp.
<i>Parkinsonia aculeata</i>
<i>Parthenium hysterophorus</i>
<i>Prosopis</i> spp.
<i>Rubus fruticosus</i> aggregate
<i>Sagittaria platyphylla</i>
<i>Salix</i> spp. except <i>S. babylonica</i> , <i>S.x calodendron</i> & <i>S.x reichardtii</i>
<i>Salvinia molesta</i>
<i>Senecio madagascariensis</i>
<i>Solanum elaeagnifolium</i>
<i>Tamarix aphylla</i>
<i>Ulex europaeus</i>
<i>Vachellia nilotica</i>

Commonwealth Government weeds of national significance (WoNS)

Appendix I Floristic Analysis

I.1 Dendrogram: This Survey Species Presence / Absence

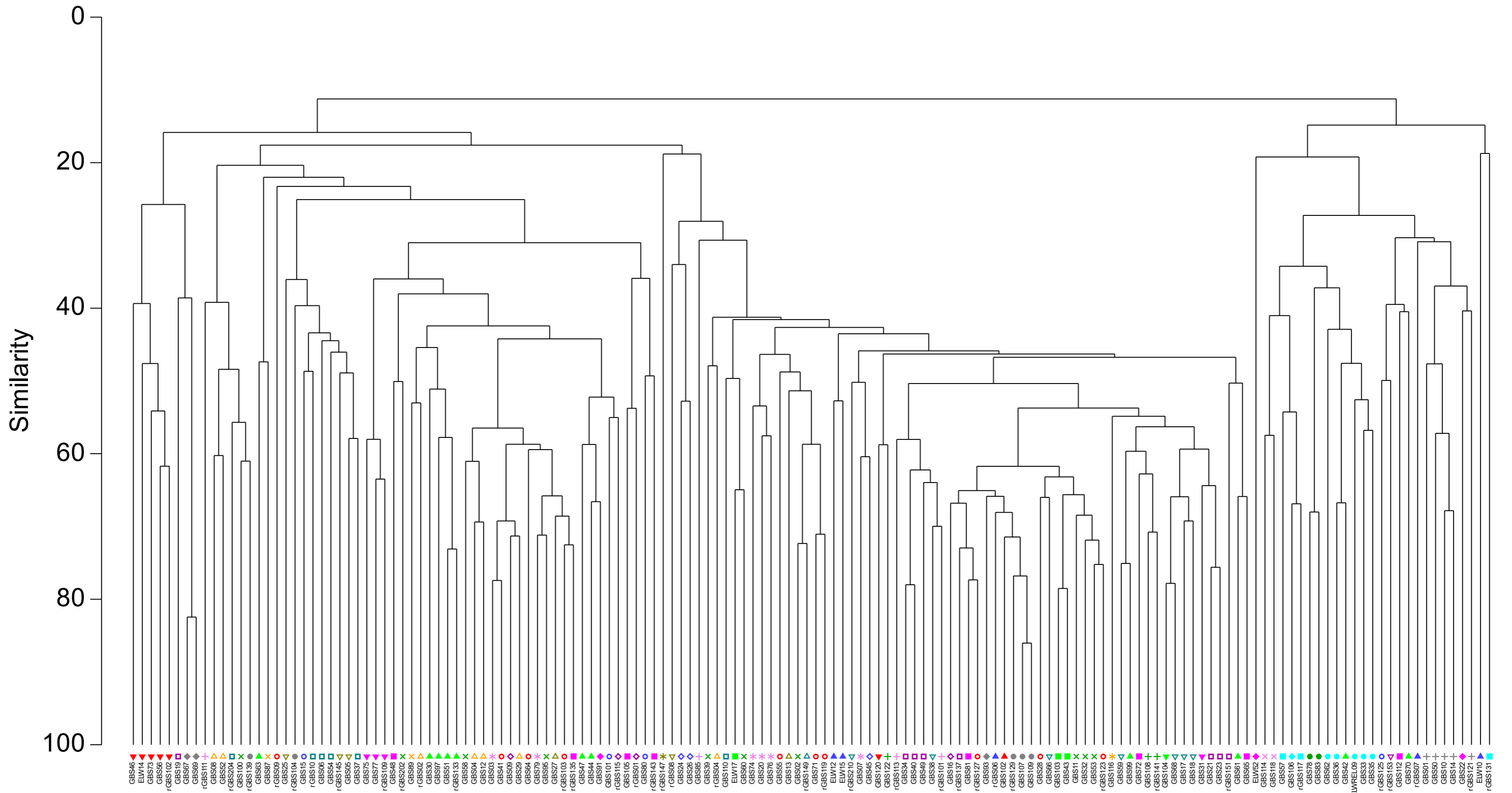
Vegetation code

▲ EsTw	+ EIaETw
▼ AxApTsp	× EcMgCYPv
■ IEgAmTw	* EIExAiTw
◆ ExAcSsAbEITe(ta)	△ EIApTwTe
● EvAcGrSsAbApyTrfTe*CcTt	▽ EIAiTw
+ ChAcIEIAITrfcTeEaTt*Cc	□ Tw
× EIAmTw	◇ AapAciTeTw
* EgAaAkTeTw	○ EIAaAcApAmmTwTe
△ EIAaAkApTbTeTw	▲ CdExAapAaAbTeTt
▽ EICfAciAapGbDpTe	▼ ChAanAmAbAcSaoTeTtEm*Cc-Tw
■ EICfAprAapDpTeERIm	■ ExEvMgAcAcpAbTaTeTt*Cc
◇ EIAaTeTw-EIAbAaAeTePm	◆ EITITw
○ EIAciAbAmoTe	● ChAcGsSs*Vf*CcTt
▲ EIAbMeTw	+ EIChApAmTwEmTsMBPm
▼ ChAiAbTw	× AapAsAbTeTbA?ICf
■ A'a'ApAbAeTe	* Tss
◆ ExAcANITHtTe	△ EIEpTsp
● EITw	▽ ChAsppTHtTeTw

I.2 Dendrogram: This Survey Species Cover

Vegetation Type

▲ EsTw	+ EIAeTw
▼ AxAapTspp	× EcMgCYPv
■ EIEgAmTw	* EIExAiT
◆ ExAcSsAbEITe(ta)	△ EIApTwTe
● EvAcGrSsAbApyTrfTe*CcTt	▽ EIAiT
+ ChAciEIAITrfcTeEaTt*Cc	□ Tw
× EIAmTw	◇ AapAciTeTw
* EgAaAkTeTw	○ EIAaAcApAmmTwTe
△ EIAaAkApTbTeTw	▲ CdExAapAaAbTeTt
▽ EICfAciAapGbDpTe	▼ ChAanAmAbAcSaoTeTtEm*Cc-Tw
■ EICfAprAapDpTeERIm	■ ExEvMgAcAcpAbTaTeTt*Cc
◇ EIAaTeTw-EIAbAaAeTePm	◆ EITITw
○ EIAciAbAmoTe	● ChAcGsSs*Vf*CcTt
▲ EIAbMeTw	+ EIChApAmTwEmTsMBPm
▼ ChAiAbTw	× AapAsAbTeTbA?ICf
■ A'a'ApAbAeTe	* Tss
◆ ExAcANITHtTe	△ EIEpTspp
● EITw	▽ ChAsppTHtTeTw

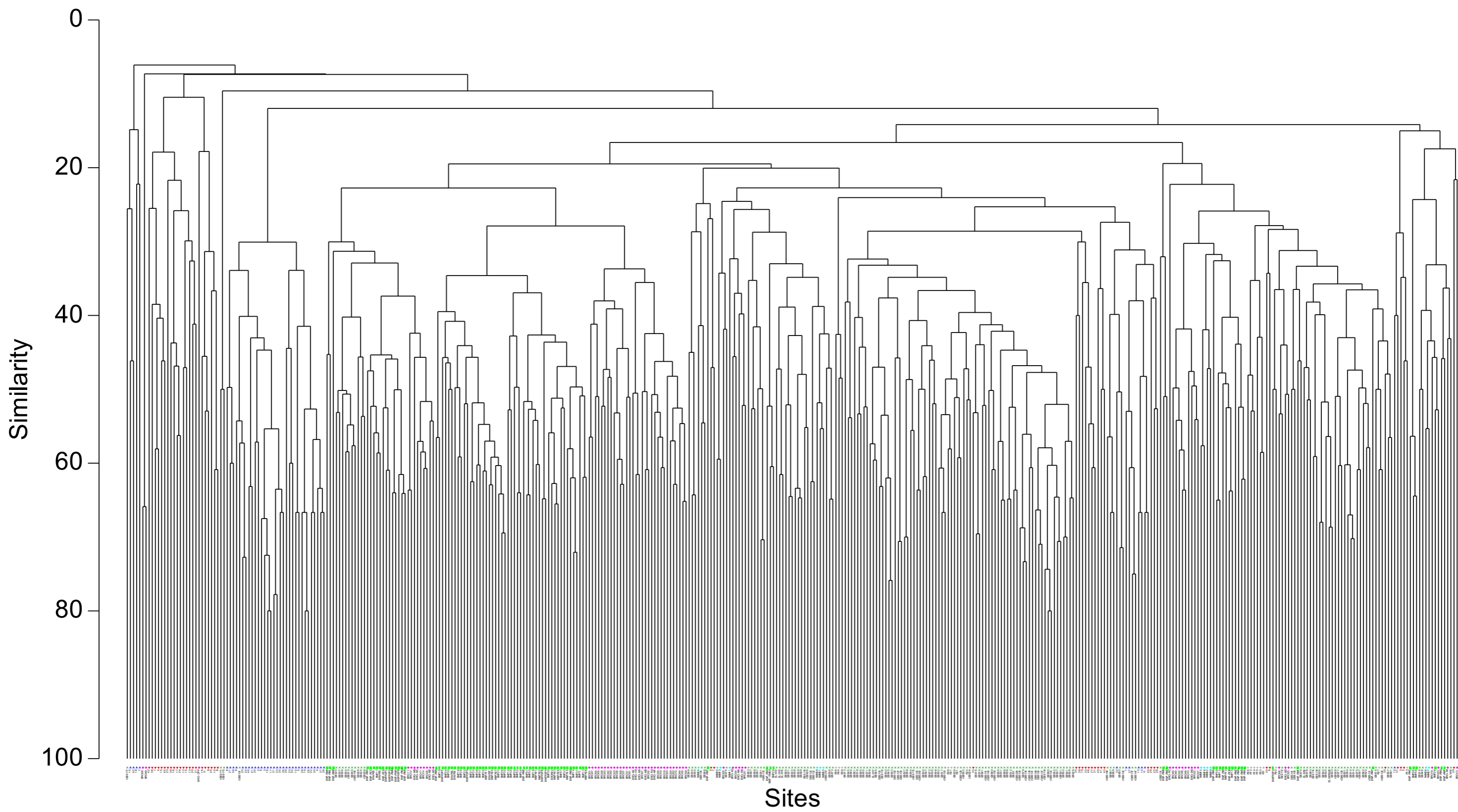


Sites

I.3 Dendrogram: This Survey and Relevant Regional Sites Species Presence / Absence

Survey

- ▲ Eco Logical 2013a
- ▼ Mattiske 2011
- Biota 2016
- ◆ Biota 2005
- Biota 2009
- + Eco Logical 2013b
- × Stantec 2019



Appendix J Database Searches

TEC and PEC database search

OCC_U NIQUE	COM_ID	COM_NAME	STATE_ CATG	S_ID_C OUNT	FIRST_S_ID	LAST_S_ID	BUF FER	BDY _ID
1913	Themeda grasslands	Themeda grasslands on cracking clays (Hamersley Station, Pilbara)	Vulner able	1	HAMERSL 07		500	1
4709	Themeda grasslands	Themeda grasslands on cracking clays (Hamersley Station, Pilbara)	Vulner able	1	HAMERSL 08		500	261 3
4710	Themeda grasslands	Themeda grasslands on cracking clays (Hamersley Station, Pilbara)	Vulner able	1	HAMERSL 09		500	261 4
4793	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	2	BROCKM AN02a	BROCKM AN02b	500	269 2
4798	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN03		500	269 3
4799	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN04		500	269 4
4800	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN05		500	269 5
4802	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN07		500	269 7
4801	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN06		500	269 6
4803	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN08		500	269 8
4804	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN09		500	269 9
4805	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN10		500	270 0
4806	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN11		500	270 1
4807	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN12		500	270 2
4808	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN13		500	270 3
4809	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN14		500	270 4
4810	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN15		500	270 5
4811	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN16		500	270 6
4812	Brockman Iron cracking clay communities	Brockman Iron cracking clay communities of the Hamersley Range	Priority 1	1	BROCKM AN17		500	270 7
124867	Riparian communities of springs and Pools Pilbara	Riparian flora and plant communities of springs and river pools with high water permanence of the Pilbara Region	Priority 2	1	PSW009A		500	0

TPFL database search

FD	PopId	NameId	Taxon	Cons Status	Pop Number	Gda94Lat	Gda94Long	Location	District	Vesting	Purpose1	Purpose2	Date	Method	MatureCoun	SeedlingCo	LiveTotal	InFlower
2573	84426	228	<i>Astrebla lappacea</i>	'3	2	-22.306944	117.478056	About 21 km west from Hamersley Homestead on (former) boundary between Mount Brockman and Hamersley Stations. [About 3.1 km south-west of Mount Jackson, off Mount Brockman Road], Crown Lease 3114-1277.	KARRATHA	PLB	PAS		13-05-96 0:00		0		0	N
7758	92857	14894	<i>Eremophila magnifica</i> subsp. <i>velutina</i>	'3	6	-22.519278	117.238	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701533 Pending, FMG Pilbara), Brockman 4 Syncline rail corridor, eastern boundary, [2.5 km SE Boolgeeda].	KARRATHA	PLB	PAS		15-06-06 0:00		0		122	N
7759	92858	14894	<i>Eremophila magnifica</i> subsp. <i>velutina</i>	'3	7	-22.283139	117.195639	Hamersley Station (Crown Lease 3114-1277; Mining Lease 7000272, Hamersley Iron), Silvergrass West, 74 km NW Tom Price, [10.2 km WNW Mount Brockman Homestead].	KARRATHA	PLB	PAS	MIN	03-08-07 0:00		0		50	Y
7760	92859	14894	<i>Eremophila magnifica</i> subsp. <i>velutina</i>	'3	8	-22.309083	117.343778	Hamersley Station (Crown Lease 3114-1277; Mining Lease 7000004, Hamersley Iron), Silvergrass East, 64 km NW Tom Price, [5 km east of Mount Brockman Homestead].	KARRATHA	PLB	PAS	MIN	04-09-07 0:00		0		350	Y
9591	86862	3940	<i>Glycine falcata</i>	'3	5	-22.274667	117.231694	UCL (Mining Lease 272), ca 20 km NW of Brockman Mine Site, [ca 8 km NW of Silvergrass Mine, alongside Caves Creek], 70 km NE of Tom Price.	KARRATHA	NON	MIN	UCL	12-05-08 0:00	ACT_IND	1		1	Y
9895	95647	29381	<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	'3	6	-22.679694	117.597333	UCL (Expl. Lic. 4701411, 2 holders), western Turner [Syncline] exploration area and infrastructure corridor, [SE of Nanutarra Wittenoom Road], 20 km [W]NW of Tom Price.	KARRATHA	NON	UCL	EXL	11-05-08 0:00		0		220	Y
1109 6	90516	12832	<i>Gymnanthera cunninghamii</i>	'3	4	-22.253056	117.216389	Hamersley Station (Crown Lease 3114 1277; Mineral Lease 7000272, Hamersley Iron).Caves Creek, [9.8 km NW of] Silvergrass project area, Brockman Iron Ore Mine, [10.6 km NW of Mount Brockman Homestead], ca 70 km NW of Tom Price.	KARRATHA	PLB	PAS	MIN	06-09-98 0:00		0		5	N
1254 7	86173	3022	<i>Lepidium catapycnon</i>	'4	26	-22.5195	117.434611	Pastoral Lease (3114-1166), Lot 77. Mining Tenement AML70/4. Brockman 3 Mine, Marra Mamba. 40km NW of Tom Price. [Ca. 14.6km SE of Mt Brockman].	KARRATHA	PLB	PAS	MIN	09-06-08 0:00		37		37	N
1254 8	86174	3022	<i>Lepidium catapycnon</i>	'4	27	-22.525194	117.431222	Pastoral Lease (3114-1166), Lot 77. Mining Tenement E47/31 . Brockman 3 Mine, Marra Mamba. 40km NW of Tom Price. [Ca. 14.6km SE of Mt Brockman]. [Ca. 750m SSW of Pop 26].	KARRATHA	PLB	PAS	EXL	09-06-08 0:00		5	3	5	N
1475 5	95873	31596	<i>Ptilotus subspinescens</i>	'3	1	-22.605944	117.222611	Rocklea Station (Crown Lease 3114-1166; Mineral Lease 7000004, Hamersley Iron). Brockman 4 Marra Mamba, 59 km WNW of Tom Price, [extending 1.8 km west along track to Brockman No. 4 Mine.	KARRATHA	PLB	PAS	MIN	24-05-07 0:00	ESTMT	0	200	200	Y
1475 6	95883	31596	<i>Ptilotus subspinescens</i>	'3	2	-22.575833	117.162389	Cheela Plains Station (Crown Lease 398-782; Mineral Lease 7000004, Hamersley Iron), Brockman 4 Hydrology, [9.5 km SW Boolgeeda].	KARRATHA	PLB	PAS	MIN	30-09-06 0:00		0		10	N
1475 7	10466 9	31596	<i>Ptilotus subspinescens</i>	'3	3	-22.644667	117.414611	UCL, Lot 134, Gregory (Expl. Lease 4701703 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` Access, [extending 3.4 km west along track, ca 7.2 km NNW Mount Turner].	KARRATHA	NON	UCL		30-09-06 0:00		0		2400	N
1475 8	10467 0	31596	<i>Ptilotus subspinescens</i>	'3	3	-22.642972	117.376667	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` access, [8.4 km NW Mount Turner].	KARRATHA	PLB	PAS		30-09-06 0:00		0		100	N
1475 9	95893	31596	<i>Ptilotus subspinescens</i>	'3	4	-22.63575	117.354056	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` access, [extending 4.7 km NW along track, 10-14 km NW Mount Turner].	KARRATHA	PLB	PAS		25-10-06 0:00		0		181	N
1476 0	95894	31596	<i>Ptilotus subspinescens</i>	'3	5	-22.634306	117.436472	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` access, [extending 1.1 km to the east and west along track, 7.6 km north of Mount Turner].	KARRATHA	PLB	PAS		30-09-06 0:00		0		240	N
1476 1	95895	31596	<i>Ptilotus subspinescens</i>	'3	6	-22.625417	117.516194	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` access, [extending 6.1 km WSW along track, 8-13 km NW Mount Turner].	KARRATHA	PLB	PAS		30-09-06 0:00		0		1700	N
1476 2	95896	31596	<i>Ptilotus subspinescens</i>	'3	7	-22.360667	117.344944	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701915 Pending, DigiRock). Brockman, [7.3 km NW Nammuldi Ridge, 7 km NNW Brockman, 8.1 km SE Mount Brockman Homestead, on track to Silvergrass Mine].	KARRATHA	PLB	PAS		14-02-05 0:00		0		30	N
1476 3	95897	31596	<i>Ptilotus subspinescens</i>	'3	8	-22.615833	117.190361	Rocklea Station (Crown Lease 3114-1166; Mineral License 7000004, Hamersley Iron). S[E of] Brockman No. 4, south of Marra Mamba Ridge, 59 km WNW of Tom Price. Beasley River, [12.5 km SSW Boolgeeda].	KARRATHA	PLB	PAS	MIN	14-10-06 0:00		0		800	Y
1476 4	95898	31596	<i>Ptilotus subspinescens</i>	'3	9	-22.408528	117.284833	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701373, FMG Pilbara), N of `Nammuldi A`, [9-11 km NNW Nammuldi Ridge, 4.3 km NW of] Brockman [extending 1.3-1.7 km to east and ENE], ca 60 km NW of Tom Price.	KARRATHA	PLB	PAS	EXL	12-07-07 0:00		0		1500	Y
1476 5	95874	31596	<i>Ptilotus subspinescens</i>	'3	10	-22.628361	117.594972	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701485, AusQuest). Brockman 4 `White Quartz Road` access, [3.3 km WNW Mount Lionel].	KARRATHA	PLB	PAS	EXL	25-10-06 0:00		0		500	N
1476 6	10466 3	31596	<i>Ptilotus subspinescens</i>	'3	11	-22.625361	117.614389	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701485, AusQuest), Brockman 4 `White Quartz Road` access [at intersection with Nanutarra Wittenoom Road, extending 1.2 km to NE, ca 1.6 km NW Mount Lionel].	KARRATHA	PLB	PAS		25-10-06 0:00		0		200	N
1476 7	10466 4	31596	<i>Ptilotus subspinescens</i>	'3	11	-22.633222	117.622861	Road Reserve, (Expl. Lease 4701687 Pending, FMG Pilbara). Brockman 4 `White Quartz Road` access [at intersection with Nanutarra Wittenoom Road, ca 1.6 km NW Mount Lionel].	KARRATHA	RDL	OTH		30-09-06 0:00		0		17	N
1476 8	95875	31596	<i>Ptilotus subspinescens</i>	'3	12	-22.385417	117.268028	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701373, FMG Pilbara), [extending 1.3 km SE, 7-8 km NW Brockman].	KARRATHA	PLB	PAS	EXL	24-10-06 0:00		0		410	Y
1476 9	95876	31596	<i>Ptilotus subspinescens</i>	'3	13	-22.35425	117.170944	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701499 Pending, Consolidated Iron), Brockman area [14 km SW Mount Brockman Homestead].	KARRATHA	PLB	PAS		24-10-07 0:00		0		250	Y
1477 0	95877	31596	<i>Ptilotus subspinescens</i>	'3	14	-22.343222	117.152556	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701499 Pending, Consolidated Iron), [extending ca 1 km WNW, along southern embankment of Duck Creek, 15.8 km SW Mount Brockman Homestead].	KARRATHA	PLB	PAS		24-10-06 0:00		0		1000	Y
1477 1	95878	31596	<i>Ptilotus subspinescens</i>	'3	15	-22.342194	117.116917	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701499 Pending, Consolidated Iron), [extending ca 1 km east, along southern embankment of Duck Creek, ca 18 km WSW Mount Brockman Homestead].	KARRATHA	PLB	PAS		24-10-06 0:00		0		300	N
1477 2	95879	31596	<i>Ptilotus subspinescens</i>	'3	16	-22.335167	117.093861	UCL (Expl. Lease 4701521 Pending, Consolidated Iron), [extending up to 700 m N-S-E-W, on northern embankment of Duck Creek].	KARRATHA	NON	UCL		24-10-06 0:00		0		1100	N
1477 3	95880	31596	<i>Ptilotus subspinescens</i>	'3	17	-22.684278	117.589139	UCL (Expl. Licence 4701411, 2 holders), [Nanutarra Wittenoom Road, 7.9 km SW Mount Samson, Hardey River tributary].	KARRATHA	NON	UCL	EXL	25-10-06 0:00		0		7	N
1477 4	95881	31596	<i>Ptilotus subspinescens</i>	'3	18	-22.65625	117.514972	UCL, Lot 134 Gregory (Expl. Lease 4701375 Pending, FMG Pilbara), [10.5 km NE Mount Turner].	KARRATHA	NON	UCL		25-10-06 0:00		0		200	N
1477 5	95882	31596	<i>Ptilotus subspinescens</i>	'3	19	-22.660556	117.448528	UCL, Lot 134 Gregory (Expl. Lease 4701703 Pending, FMG Pilbara), [5.3 km NNW Mount Turner].	KARRATHA	NON	UCL		25-10-06 0:00		0		50	N
1477 6	95884	31596	<i>Ptilotus subspinescens</i>	'3	20	-22.65625	117.375444	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending, FMG Pilbara), [7.3 km NW Mount Turner].	KARRATHA	PLB	PAS		25-10-06 0:00		0		100	N
1477 7	95885	31596	<i>Ptilotus subspinescens</i>	'3	21	-22.329833	117.040361	UCL (Expl. Lease 4701357 Pending, FMG Pilbara), [26.4 km WSW Mount Brockman Homestead, Duck Creek region].	KARRATHA	NON	UCL		25-10-06 0:00		0		1000	N
1477 8	95886	31596	<i>Ptilotus subspinescens</i>	'3	22	-22.486306	117.153	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701499 Pending, Consolidated Iron), [7.1 km WNW Boolgeeda].	KARRATHA	PLB	PAS		25-10-06 0:00		0		1000	N
1477 9	10466 6	31596	<i>Ptilotus subspinescens</i>	'3	23	-22.576861	117.455083	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701686 Pending; FMG Pilbara), [extending ca 3 km NNW along Beasley River, 14-17 km NNW Mount Turner].	KARRATHA	PLB	PAS		26-10-06 0:00		0		1800	N
1478 0	10466 7	31596	<i>Ptilotus subspinescens</i>	'3	23	-22.585472	117.4495	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701703 Pending; FMG Pilbara), Brockman area [Beasley River, ca 14 km NNW Mount Turner].	KARRATHA	PLB	PAS		26-10-06 0:00		0		200	Y

TPFL database search

FD	PopId	NameId	Taxon	Cons Status	Pop Number	Gda94Lat	Gda94Long	Location	District	Vesting	Purpose1	Purpose2	Date	Method	MatureCoun	SeedlingCo	LiveTotal	inFlower
1478 1	95887	31596	<i>Ptilotus subspinescens</i>	'3	24	-22.37575	117.212444	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701499 Pending, Consolidated Iron), [Duck Creek area, 11.5 km SW Mount Brockman Homestead].	KARRATHA	PLB	PAS		28-10-06 0:00		0		20	N
1478 2	95888	31596	<i>Ptilotus subspinescens</i>	'3	25	-22.645	117.439833	UCL, Lot 134, Gregory (Expl. Lease 4701703 Pending, FMG Pilbara), 'B1 to white quartz road', 33 km WNW of Tom Price, [6.5 km NNW Mount Turner].	KARRATHA	NON	UCL		03-07-07 0:00		0		200	N
1478 3	95889	31596	<i>Ptilotus subspinescens</i>	'3	26	-22.343361	117.326306	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701915 Pending, DigiRock), track from Brockman No. 2 to Silvergrass Mine, 61 km NW of Tom Price, [5.4 km SE Mount Brockman Homestead].	KARRATHA	PLB	PAS		10-09-07 0:00		0		50	Y
1478 4	95890	31596	<i>Ptilotus subspinescens</i>	'3	27	-22.410639	117.272083	Hamersley Station (Crown Lease 3114-1277; Expl. Lease 4701703 Pending, FMG Pilbara), north of Nammuldi A, 61 km NW of Tom Price, [12.6 km west of Nammuldi Ridge, 6.5 km WNW Brockman].	KARRATHA	PLB	PAS		12-09-07 0:00		0		200	Y
1478 5	95891	31596	<i>Ptilotus subspinescens</i>	'3	28	-22.629389	117.255833	Rocklea Station (Crown Lease 3114-1166; Mineral Lease 700004, Hamersley Iron), Beasley River, 55 km NNW of Tom Price, [14 km SSE Boolgeeda].	KARRATHA	PLB	PAS	MIN	12-09-07 0:00		0		200	Y
1478 6	95892	31596	<i>Ptilotus subspinescens</i>	'3	29	-22.752167	117.326611	Rocklea Station (Crown Lease 3114-1166; Expl. Lease 4701153, Joytell Pty Ltd), Beasley River south, along track, 45 km WSW of Tom Price, [11.5 km SW Mount Turner].	KARRATHA	PLB	PAS	EXL	11-10-07 0:00		0		100	Y
1479 4	89889	12239	<i>Ptilotus trichocephalus</i>	'4	5	-22.807667	117.480056	About 45 km south-west of Tom Price. Gregory Part Location 77 (L 3114 1166).	KARRATHA	PLB	PAS		05-06-06 0:00	ESTMT	0		30	Y
1526 7	96557	33697	<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	'3	2	-22.271944	117.458333	UCL. About 22 km west from Hamersley Homestead just north of road, in gap in range.	KARRATHA	NON	UCL		13-05-96 0:00		0		0	N
1526 9	96559	33697	<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	'3	4	-22.765639	116.801361	UCL. Mount Wall, 102 km west of Tom Price, 67.5 km west-north-west of Rocklea Station Homestead, 84 km east of Mount Stuart Station Homestead, southern Hamersley Range.	KARRATHA	NON	UCL		11-09-96 0:00		0		0	Y
1527 2	10521 6	33697	<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	'3	7	-22.44475	117.371833	Pastoral Lease (3114-1166), Lot 77, Rocklea Station. Mining tenement AML70/4. Brockman 2 Mine, Pit 7. 50km NW of Tom Price. [4.5 km SSW of Nammuldi Ridge, 7 km ENE of Mount Brockman]. [Pop extends over ca. 800m by 800m]	KARRATHA	PLB	PAS	MIN	21-07-09 0:00		0		0	N
1527 3	10521 7	33697	<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	'3	7	-22.439556	117.375944	Pastoral Lease (3114-1277), Lot 99, Hamersley Station. Mining Tenement AML70/4. Brockman 2 Mine, Pit 7. [3.8 km SSW of Nammuldi Ridge, 7.6 km ENE of Mount Brockman]. 50km NW of Tom Price. Pop extends ca. 2km by 1km.	KARRATHA	PLB	PAS	MIN	20-07-09 0:00		0		0	N

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
257	42861	<i>Euphorbia inappendiculata</i> var. <i>queenslandica</i>	P1
285	25792	<i>Goodenia pedicellata</i>	P1
319	48312	<i>Hibiscus campanulatus</i>	P1
325	40620	<i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354)	P1
515	33697	<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	P1
571	46773	<i>Tetraloche butcheriana</i> (Butcher's Tetraloche)	P1
251	42843	<i>Euphorbia australis</i> var. <i>glabra</i>	P2
256	42860	<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	P2
391	30374	<i>Oxalis</i> sp. Pilbara (M.E. Trudgen 12725)	P2
397	42006	<i>Pentstemon trichodesmoides</i> subsp. <i>hispida</i>	P2
573	19366	<i>Teucrium pilbaranum</i>	P2
71	17918	<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3
150	49015	<i>Cyanthillium gracile</i>	P3
163	20381	<i>Dampiera anonyma</i>	P3
224	14894	<i>Eremophila magnifica</i> subsp. <i>velutina</i>	P3
271	3940	<i>Glycine falcata</i>	P3
287	29381	<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) (O'Meara's <i>Goodenia</i>)	P3
297	44441	<i>Grevillea saxicola</i>	P3
300	12832	<i>Gymnanthera cunninghamii</i>	P3
336	20317	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301)	P3
337	19594	<i>Ictospiza sessilifolia</i>	P3
386	6980	<i>Nicotiana umbratica</i>	P3
446	31596	<i>Ptilopus subspinescens</i>	P3
449	20168	<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	P3
461	11556	<i>Rostellularia adscendens</i> var. <i>latifolia</i>	P3
514	16616	<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	P3
558	42142	<i>Swainsona thompsoniana</i>	P3
574	17820	<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3
21	29571	<i>Acacia bromilowiana</i>	P4
223	14893	<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	P4
283	7530	<i>Goodenia nuda</i>	P4
349	3022	<i>Lepidium catapycnon</i> (Hamersley <i>Lepidium</i>)	P4
440	2744	<i>Ptilopus mollis</i>	P4
447	12239	<i>Ptilopus trichocephalus</i>	P4
108	7919	<i>Centropogon minima</i> (Spreading Sneezewood)	Inteng-inteng
1	4886	<i>Abutilon amplum</i>	
2	4891	<i>Abutilon fraseri</i> (Lantern Bush)	
3	18120	<i>Abutilon fraseri</i> subsp. <i>fraseri</i>	
4	4895	<i>Abutilon lepidum</i>	
5	4898	<i>Abutilon macrum</i>	
6	4899	<i>Abutilon malvifolium</i> (Bastard Marshmallow)	
7	4901	<i>Abutilon otocarpum</i> (Desert Chinese Lantern)	
8	43020	<i>Abutilon oxycarpum</i> subsp. <i>prostratum</i> (A.A. Mitchell PRP 1266)	
9	42920	<i>Abutilon</i> sp. Dioicum (A.A. Mitchell PRP 1618)	
10	14113	<i>Abutilon</i> sp. Pilbara (W.R. Barker 2025)	
11	11215	<i>Acacia adoxa</i> var. <i>adoxoidea</i>	
12	3205	<i>Acacia adsurgens</i>	
13	3209	<i>Acacia ampliceps</i>	
14	3214	<i>Acacia ancistrocarpa</i> (Fitzroy Wattle)	
15	3217	<i>Acacia aneura</i> (Mulga)	
16	37260	<i>Acacia aptaneura</i>	
17	3223	<i>Acacia arida</i>	
18	3228	<i>Acacia atkinsiana</i>	
19	3232	<i>Acacia ayersiana</i>	
20	3241	<i>Acacia bivenosa</i>	
22	3260	<i>Acacia citrinoviridis</i>	
23	17013	<i>Acacia colei</i> var. <i>colei</i>	
24	13500	<i>Acacia coriacea</i> subsp. <i>coriacea</i>	
25	3272	<i>Acacia cowleana</i> (Halls Creek Wattle)	
26	15280	<i>Acacia cuthbertsonii</i> subsp. <i>cuthbertsonii</i>	
27	16174	<i>Acacia elachantha</i>	

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
28	45337	<i>Acacia exigua</i>	
29	3360	<i>Acacia hamersleyensis</i>	
30	36418	<i>Acacia incurvaneura</i>	
31	3399	<i>Acacia kempeana</i> (Witchetty Bush)	
32	3434	<i>Acacia maitlandii</i> (Maitland's Wattle)	
33	3435	<i>Acacia marramamba</i>	
34	3447	<i>Acacia monticola</i> (Gawar)	
35	3500	<i>Acacia pruinocarpa</i> (Gidgee)	
36	36800	<i>Acacia pteraneura</i>	
37	29015	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	
38	3519	<i>Acacia rhodophloia</i>	
39	13078	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>	
40	8949	<i>Acacia sibirica</i> (Bastard Mulga)	
41		<i>Acacia</i> sp.	
42	3553	<i>Acacia spondylophylla</i>	
43	13070	<i>Acacia synchronicia</i>	
44	3577	<i>Acacia tetragonophylla</i> (Kurara)	
45	23521	<i>Acacia trudgeniana</i>	
46	20319	<i>Acacia tumida</i> var. <i>pilbarensis</i>	
47	3598	<i>Acacia wanyu</i>	
48	3606	<i>Acacia xiphophylla</i>	
49	172	<i>Acrachne racemosa</i>	
50	4583	<i>Adriana tomentosa</i>	
51	11487	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	
52	2648	<i>Alternanthera denticulata</i> (Lesser Joyweed)	
53	2651	<i>Alternanthera nana</i> (Hairy Joyweed)	
54	2652	<i>Alternanthera nodiflora</i> (Common Joyweed)	
55	4907	<i>Alyogyne pinoniana</i> (Sand Hibiscus)	
56	2660	<i>Amaranthus cuspidifolius</i>	
57	2666	<i>Amaranthus mitchellii</i> (Boggabri Weed)	
58	20018	<i>Amaranthus undulatus</i>	
59	5277	<i>Ammannia baccifera</i>	
60	5278	<i>Ammannia multiflora</i>	
61	19835	<i>Amphipogon sericeus</i>	
62	2372	<i>Amyema fitzgeraldii</i> (Pincushion Mistletoe)	
63	2380	<i>Amyema miquelii</i> (Stalked Mistletoe)	
64	14307	<i>Amyema</i> sp. Fortescue (M.E. Trudgen 5358)	
65	40917	<i>Androcalva loxophylla</i>	
66	40910	<i>Androcalva luteiflora</i> (Yellow-flowered Rulingia)	
67	17797	<i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	
68	204	<i>Aristida burbidgeae</i>	
69	207	<i>Aristida contorta</i> (Bunched Kerosene Grass)	
70	210	<i>Aristida holathera</i>	
72	215	<i>Aristida latifolia</i> (Feathertop Wiregrass)	
73	227	<i>Astrelba elymoides</i> (Weeping Mitchell Grass)	
74	228	<i>Astrelba lappacea</i> (Curly Mitchell Grass)	
75	33030	<i>Austrobryonia pilbarensis</i>	
76	743	<i>Baumea juncea</i> (Bare Twigrush)	
77	5183	<i>Bergia ammannioides</i>	
78	5184	<i>Bergia pedicellaris</i>	
79	7854	<i>Bidens bipinnata</i> (Bipinnate Beggartick)	
80	46338	<i>Bidens subalternans</i> var. <i>simulans</i>	
81	7866	<i>Blumea tenella</i>	
82	2770	<i>Boerhavia coccinea</i> (Tar Vine)	
83	2774	<i>Boerhavia repleta</i>	
84	2775	<i>Boerhavia schomburgkiana</i>	
85	11167	<i>Bonamia erecta</i>	
86	240	<i>Bothriochloa ewartiana</i> (Desert Bluegrass)	
87	12716	<i>Brachychiton acuminatus</i>	
88	4999	<i>Brachychiton gregorii</i> (Desert Kurrajong)	
89	7869	<i>Brachyscome blackii</i>	

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
90	14312	<i>Bulbine pendula</i>	
91	750	<i>Bulbostylis barbata</i>	
92	752	<i>Bulbostylis turbinata</i>	
93	2864	<i>Calandrinia ptychosperma</i>	
94	2870	<i>Calandrinia stagnensis</i>	
95	14090	<i>Calocephalus beardii</i>	
96	7893	<i>Calocephalus knappii</i>	
97	48223	<i>Calocephalus pilbarensis</i>	
98	7903	<i>Calotis hispidula</i> (Bindy Eye)	
99	7905	<i>Calotis multicaulis</i> (Many-stemmed Burr-daisy)	
100	7906	<i>Calotis plumulifera</i>	
101	5446	<i>Calytrix carinata</i>	
102	2976	<i>Capparis lasiantha</i> (Split Jack)	
103		<i>Capparis</i> sp.	
104	2982	<i>Capparis umbonata</i> (Wild Orange)	
105	6567	<i>Carissa lanceolata</i> (Conkerberry)	
106	2949	<i>Cassytha capillaris</i>	
107	258	<i>Cenchrus ciliaris</i> (Buffel Grass)	
109	19762	<i>Centipeda minima</i> subsp. <i>macrocephala</i>	
110	31	<i>Cheilanthes austrotenuifolia</i>	
111	33	<i>Cheilanthes contigua</i>	
112	37	<i>Cheilanthes lasiophylla</i> (Woolly Cloak Fern)	
113	12818	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	
114	267	<i>Chloris gayana</i> (Rhodes Grass)	
115	269	<i>Chloris pectinata</i> (Comb Chloris)	
116	270	<i>Chloris pumilio</i>	
117	33516	<i>Chrysocephalum gilesii</i>	
118	273	<i>Chrysopogon fallax</i> (Golden Beard Grass)	
119	2985	<i>Cleome oxalidea</i>	
120	2988	<i>Cleome viscosa</i> (Tickweed)	
121	13692	<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>	
122	13689	<i>Clerodendrum tomentosum</i> var. <i>lanceolatum</i>	
123	2778	<i>Codonocarpus cotinifolius</i> (Native Poplar)	
124	6612	<i>Convolvulus clementii</i>	
125	13560	<i>Corchorus crozophorifolius</i>	
126	17405	<i>Corchorus lasiocarpus</i>	
127	18409	<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	
128	18408	<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	
129	4862	<i>Corchorus parviflorus</i>	
130	4864	<i>Corchorus sidoides</i> (Flannel Weed)	
131		<i>Corchorus</i> sp.	
132	17661	<i>Corchorus tectus</i>	
133	4865	<i>Corchorus tridens</i>	
134	17083	<i>Corymbia deserticola</i> subsp. <i>deserticola</i>	
135	17077	<i>Corymbia ferriticola</i>	
136	17093	<i>Corymbia hamersleyana</i>	
137	17092	<i>Corymbia opaca</i>	
138	3774	<i>Crotalaria cunninghamii</i> (Green Birdflower)	
139	19378	<i>Crotalaria dissitiflora</i> subsp. <i>benthamiana</i>	
140	20179	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	
141	3785	<i>Crotalaria novae-hollandiae</i> (New Holland Rattlepod)	
142	16189	<i>Cryptandra monticola</i>	
143	41721	<i>Cucumis variabilis</i>	
144	17117	<i>Cullen cinereum</i>	
145	17436	<i>Cullen graveolens</i>	
146	17439	<i>Cullen lachnostachys</i>	
147	17118	<i>Cullen leucanthum</i>	
148	17119	<i>Cullen leucochaites</i>	
149	17120	<i>Cullen pogonocarpum</i>	
151	281	<i>Cymbopogon obtectus</i> (Silkyheads)	
152	6584	<i>Cynanchum floribundum</i> (Dumara Bush)	

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
153	46558	<i>Cynodon convergens</i>	
154	46555	<i>Cynodon prostratus</i>	
155	786	<i>Cyperus cunninghamii</i>	
156	12811	<i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>	
157	788	<i>Cyperus dactyloides</i>	
158	789	<i>Cyperus difformis</i> (Rice Sedge)	
159	798	<i>Cyperus iria</i>	
160	814	<i>Cyperus squarrosus</i>	
161	818	<i>Cyperus vaginatus</i> (Stiffleaf Sedge)	
162	290	<i>Dactyloctenium radulans</i> (Button Grass)	
164	7424	<i>Dampiera candidans</i>	
165	7433	<i>Dampiera dentata</i>	
166	47241	<i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>	
167	6218	<i>Daucus glochidiatus</i> (Australian Carrot)	
168	303	<i>Dichanthium fecundum</i> (Curly Bluegrass)	
169	13741	<i>Dichanthium sericeum</i> subsp. <i>humilius</i>	
170	11964	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>	
171	7164	<i>Dicladanthera forrestii</i>	
172	308	<i>Digitaria ammophila</i> (Silky Umbrella Grass)	
173	310	<i>Digitaria brownii</i> (Cotton Panic Grass)	
174	2395	<i>Diplatia grandibractea</i>	
175	4745	<i>Diplopeltis eriocarpa</i> (Hairy Pepperflower)	
176	12023	<i>Diplopeltis stuartii</i> var. <i>stuartii</i> (Desert Pepperflower)	
177	7169	<i>Dipteracanthus australasicus</i>	
178	11320	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	
179	4759	<i>Dodonaea coriacea</i>	
180	11406	<i>Dodonaea lanceolata</i> var. <i>lanceolata</i>	
181	4772	<i>Dodonaea pachyneura</i>	
182	4773	<i>Dodonaea petiolaris</i>	
183	31274	<i>Duperreya commixta</i>	
184	11632	<i>Dysphania glomulifera</i> subsp. <i>eremaea</i>	
185	2502	<i>Dysphania kalpari</i> (Rat's Tail)	
186	33479	<i>Dysphania melanocarpa</i> (Black Crumbweed)	
187	11653	<i>Dysphania rhadinostachya</i> subsp. <i>inflata</i>	
188	11890	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	
189	2508	<i>Dysphania sphaerosperma</i>	
190	328	<i>Echinochloa colona</i> (Awnless Barnyard Grass)	
191	823	<i>Eleocharis atropurpurea</i>	
192	828	<i>Eleocharis pallens</i> (Pale Spikerush)	
193	832	<i>Eleocharis spiralis</i>	
194	355	<i>Elytrophorus spicatus</i> (Spikegrass)	
195	12064	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)	
196	356	<i>Enneapogon avenaceus</i> (Bottle Washers)	
197	357	<i>Enneapogon caeruleus</i> (Limestone Grass)	
198	360	<i>Enneapogon lindleyanus</i> (Wiry Nineawn)	
199	365	<i>Enneapogon polyphyllus</i> (Leafy Nineawn)	
200	20377	<i>Enneapogon robustissimus</i>	
201	368	<i>Enteropogon ramosus</i> (Windmill Grass)	
202	375	<i>Eragrostis cumingii</i> (Cuming's Love Grass)	
203	378	<i>Eragrostis dielsii</i> (Mallee Lovegrass)	
204	380	<i>Eragrostis eriopoda</i> (Woollybutt Grass)	
205	16731	<i>Eragrostis exigua</i>	
206	392	<i>Eragrostis pergracilis</i>	
207	393	<i>Eragrostis setifolia</i> (Neverfail Grass)	
208	398	<i>Eragrostis tenellula</i> (Delicate Lovegrass)	
209	399	<i>Eragrostis xerophila</i> (Knotty-butt Neverfail)	
210	18053	<i>Eremophila cryptothrix</i>	
211	7192	<i>Eremophila cuneifolia</i> (Pinyuru)	
212	7205	<i>Eremophila exilifolia</i>	
213	16301	<i>Eremophila flaccida</i>	
214	7208	<i>Eremophila forrestii</i> (Wilcox Bush)	

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
215	15052	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	
216	16696	<i>Eremophila fraseri</i> subsp. <i>fraseri</i>	
217	16940	<i>Eremophila lanceolata</i>	
218	17597	<i>Eremophila latrobei</i> subsp. <i>filiformis</i>	
219	17169	<i>Eremophila latrobei</i> subsp. <i>glabra</i>	
220	17576	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
221	7234	<i>Eremophila longifolia</i> (Berrigan)	
222	16363	<i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)	
225	17283	<i>Eremophila phyllopoda</i> subsp. <i>obliqua</i>	
226	23997	<i>Eremophila tietkensis</i>	
227	400	<i>Eriachne aristidea</i>	
228	403	<i>Eriachne benthamii</i> (Swamp Wanderrie)	
229	404	<i>Eriachne ciliata</i> (Slender Wandarrie Grass)	
230	408	<i>Eriachne flaccida</i> (Claypan Grass)	
231	413	<i>Eriachne mucronata</i> (Mountain Wanderrie Grass)	
232	417	<i>Eriachne pulchella</i> (Pretty Wanderrie)	
233	16486	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	
234	421	<i>Eriachne tenuiculmis</i>	
235	4334	<i>Erodium crinitum</i> (Corkscrew)	
236	35345	<i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> (Blunt-budded River Red Gum)	
237	35343	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>	
238	5655	<i>Eucalyptus gamophylla</i> (Twin-leaf Mallee)	
239	5684	<i>Eucalyptus kingsmillii</i> (Kingsmill's Mallee)	
240	5698	<i>Eucalyptus leucophloia</i> (Snappy Gum)	
241	18088	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	
242	5703	<i>Eucalyptus lucasii</i> (Barlee Box)	
243	5744	<i>Eucalyptus pilbarensis</i>	
244	18058	<i>Eucalyptus repullulans</i>	
245	5773	<i>Eucalyptus socialis</i> (Red Mallee)	
246	19576	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i>	
247	29733	<i>Eucalyptus trivalva</i> (Victoria Spring Mallee)	
248	11011	<i>Eulalia aurea</i>	
249	4617	<i>Euphorbia australis</i> (Namana)	
250	35307	<i>Euphorbia australis</i> var. <i>australis</i>	
252	35303	<i>Euphorbia australis</i> var. <i>subtomentosa</i>	
253	4619	<i>Euphorbia biconvexa</i>	
254	4620	<i>Euphorbia boophthona</i> (Gascoyne Spurge)	
255	9048	<i>Euphorbia careyi</i>	
258	12097	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i> (Desert Spurge)	
259	42879	<i>Euphorbia trigonosperma</i>	
260	42877	<i>Euphorbia vaccaria</i> var. <i>erucoides</i>	
261	19648	<i>Ficus brachypoda</i>	
262	851	<i>Fimbristylis dichotoma</i> (Eight Day Grass)	
263	855	<i>Fimbristylis ferruginea</i>	
264	862	<i>Fimbristylis microcarya</i>	
265	12159	<i>Fimbristylis simulans</i>	
266	35558	<i>Flaveria trinervia</i> (Speedy Weed)	
267	5203	<i>Frankenia hispidula</i>	
268	3903	<i>Gastrolobium grandiflorum</i> (Wallflower Poison)	
269	2835	<i>Glinus lotoides</i> (Hairy Carpet Weed)	
270	3938	<i>Glycine canescens</i> (Silky Glycine)	
272	7988	<i>Gnephosis arachnoidea</i> (Cobwebby-headed Gnephosis)	
273	41245	<i>Gompholobium oreophilum</i>	
274	2676	<i>Gomphrena canescens</i> (Batchelors Buttons)	
275	18363	<i>Gomphrena canescens</i> subsp. <i>canescens</i>	
276	2680	<i>Gomphrena cunninghamii</i>	
277	18367	<i>Gomphrena kanisii</i>	
278	7509	<i>Goodenia forrestii</i>	
279	7515	<i>Goodenia heterochila</i>	
280	7521	<i>Goodenia lamprosperma</i>	
281	7526	<i>Goodenia microptera</i>	

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Entry ID	Name ID	Species Name	Conservation Code
282	12552	<i>Goodenia muelleriana</i>	
284	12571	<i>Goodenia pascua</i>	
286	12574	<i>Goodenia prostrata</i>	
288	7550	<i>Goodenia stellata</i>	
289	10982	<i>Goodenia stobbsiana</i>	
290	7556	<i>Goodenia tenuiloba</i>	
291	4910	<i>Gossypium australe</i> (Native Cotton)	
292	4918	<i>Gossypium robinsonii</i> (Wild Cotton)	
293	11559	<i>Gossypium sturtianum</i> var. <i>sturtianum</i>	
294	1963	<i>Grevillea berryana</i>	
295	2079	<i>Grevillea pyramidalis</i> (Caustic Bush)	
296	19570	<i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i>	
298	2099	<i>Grevillea striata</i> (Beefwood)	
299	19478	<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>	
301	2138	<i>Hakea chordophylla</i>	
302	6174	<i>Haloragis gossei</i>	
303	23465	<i>Haloragis gossei</i> var. <i>gossei</i>	
304	23464	<i>Haloragis gossei</i> var. <i>inflata</i>	
305	20669	<i>Haloragis maierae</i>	
306	6176	<i>Haloragis odontocarpa</i> (Mulga Nettle)	
307	16371	<i>Haloragis odontocarpa</i> forma <i>pterocarpa</i>	
308	17325	<i>Harnieria kempeana</i> subsp. <i>muelleri</i>	
309	17301	<i>Heliotropium chrysocarpum</i>	
310	6704	<i>Heliotropium conocarpum</i>	
311	6705	<i>Heliotropium crispatum</i>	
312	6706	<i>Heliotropium cunninghamii</i>	
313	6712	<i>Heliotropium heteranthum</i>	
314	17307	<i>Heliotropium inexplicitum</i>	
315	6713	<i>Heliotropium ovalifolium</i>	
316	6718	<i>Heliotropium tenuifolium</i> (Mamukata)	
317	5128	<i>Hibbertia glaberrima</i>	
318	4924	<i>Hibiscus burtonii</i>	
320	4925	<i>Hibiscus coatesii</i>	
321	4930	<i>Hibiscus goldsworthii</i>	
322	4931	<i>Hibiscus haynaldii</i>	
323	4933	<i>Hibiscus leptocladus</i>	
324	43022	<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)	
326	40640	<i>Hibiscus</i> sp. <i>Mt Robinson</i> (G. Byrne 3537)	
327	4942	<i>Hibiscus sturtii</i> (Sturt's Hibiscus)	
328	11651	<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	
329	11893	<i>Hibiscus sturtii</i> var. <i>truncatus</i>	
330	43081	<i>Hibiscus verdcourtii</i>	
331	5215	<i>Hybanthus aurantiacus</i>	
332	3973	<i>Indigofera colutea</i> (Sticky Indigo)	
333	3981	<i>Indigofera linnaei</i> (Birdsville Indigo)	
334	3982	<i>Indigofera monophylla</i>	
335	3985	<i>Indigofera rugosa</i>	
338	6623	<i>Ipomoea coptica</i>	
339	6633	<i>Ipomoea muelleri</i> (Poison Morning Glory)	
340	458	<i>Iseilema dolichotrichum</i>	
341	461	<i>Iseilema fragile</i>	
342	463	<i>Iseilema macratherum</i> (Bull Flinders Grass)	
343	464	<i>Iseilema membranaceum</i> (Small Flinders Grass)	
344	465	<i>Iseilema vaginiflorum</i> (Red Flinders Grass)	
345	3989	<i>Isotropis atropurpurea</i> (Poison Sage)	
346	12059	<i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)	
347	4043	<i>Kennedia prorepens</i>	
348	4953	<i>Lawrencia densiflora</i>	
350	3025	<i>Lepidium echinatum</i>	
351	3032	<i>Lepidium muelleri-ferdinandii</i>	
352	3033	<i>Lepidium oxytrichum</i>	

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Entry ID	Name ID	Species Name	Conservation Code
353	3035	<i>Lepidium pedicellosum</i>	
354	3037	<i>Lepidium phlebopetalum</i> (Veined Peppercross)	
355	3038	<i>Lepidium pholidogynum</i>	
356	952	<i>Lipocarpa microcephala</i>	
357	37480	<i>Lobelia arnhemiaca</i>	
358	7403	<i>Lobelia heterophylla</i> (Wing-seeded Lobelia)	
359	36880	<i>Lobelia heterophylla</i> subsp. <i>pilbarensis</i>	
360	4061	<i>Lotus cruentus</i> (Redflower Lotus)	
361	2396	<i>Lysiana casuarinae</i>	
362	2538	<i>Maireana carnosae</i> (Cottony Bluebush)	
363	2543	<i>Maireana eriosphaera</i>	
364	2544	<i>Maireana georgei</i> (Satiny Bluebush)	
365	2551	<i>Maireana melanocoma</i> (Pussy Bluebush)	
366	2556	<i>Maireana planifolia</i> (Low Bluebush)	
367	2557	<i>Maireana platycarpa</i> (Shy Bluebush)	
368	2565	<i>Maireana suaedifolia</i>	
369	2568	<i>Maireana trichoptera</i> (Downy Bluebush)	
370	2569	<i>Maireana triptera</i> (Threewinged Bluebush)	
371	2571	<i>Maireana villosa</i>	
372	4962	<i>Malvastrum americanum</i> (Spiked Malvastrum)	
373	76	<i>Marsilea hirsuta</i> (Nardoo)	
374	5879	<i>Melaleuca bracteata</i> (River Teatree)	
375	5908	<i>Melaleuca eleuterostachya</i>	
376	5915	<i>Melaleuca glomerata</i>	
377	5053	<i>Melochia pyramidata</i>	
378	7082	<i>Mimulus gracilis</i>	
379	4105	<i>Mirbelia viminalis</i>	
380	139	<i>Najas tenuifolia</i> (Water Nymph)	
381	3614	<i>Neptunia dimorphantha</i> (Sensitive Plant)	
382	6971	<i>Nicotiana benthamiana</i> (Tjuntiwari)	
383	6976	<i>Nicotiana occidentalis</i> (Native Tobacco)	
384	6977	<i>Nicotiana rosulata</i> (Rosetted Tobacco)	
385	11734	<i>Nicotiana rosulata</i> subsp. <i>rosulata</i>	
387	38423	<i>Notoleptopus decaisnei</i> var. <i>orbicularis</i> (A.B. Craig 428)	
388	7338	<i>Oldenlandia crouchiana</i>	
389	8153	<i>Olearia xerophila</i>	
390	6651	<i>Operculina aequisejala</i>	
392	43	<i>Paraceterach reynoldsii</i>	
393	515	<i>Paraneurachne muelleri</i> (Northern Mulga Grass)	
394	518	<i>Paspalidium clementii</i> (Clements Paspalidium)	
395	519	<i>Paspalidium constrictum</i> (Knottybutt Grass)	
396	523	<i>Paspalidium rarum</i> (Rare Paspalidium)	
398	42160	<i>Pentalepis trichodesmoides</i> subsp. <i>trichodesmoides</i>	
399	7092	<i>Peplidium muelleri</i>	
400	18462	<i>Peplidium</i> sp. E Evol. Fl. Fauna Arid Aust. (A.S. Weston 12768)	
401	34997	<i>Peripleura arida</i>	
402	34998	<i>Peripleura obovata</i>	
403	35001	<i>Peripleura virgata</i>	
404	546	<i>Perotis rara</i> (Comet Grass)	
405	17626	<i>Phyllanthus erwinii</i>	
406	5230	<i>Pimelea ammocharis</i>	
407	5250	<i>Pimelea holroydii</i>	
408	34760	<i>Plantago cunninghamii</i>	
409	8167	<i>Pluchea dentex</i>	
410	17817	<i>Pluchea dunlopia</i>	
411	8168	<i>Pluchea rubelliflora</i>	
412	6491	<i>Plumbago zeylanica</i> (Native Plumbago)	
413	2901	<i>Polycarpaea holtzei</i>	
414	2902	<i>Polycarpaea involucreta</i>	
415	41365	<i>Polygala glaucifolia</i>	
416	6653	<i>Polymeria ambigua</i> (Morning Glory)	

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417	13966	<i>Polymeria longifolia</i>	
418		<i>Polymeria</i> sp.	
419	2884	<i>Portulaca oleracea</i> (Purslane)	
420	12707	<i>Prostanthera albiflora</i>	
421	8189	<i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)	
422	590	<i>Pseudoraphis spinescens</i> (Spiny Mudgrass)	
423	18210	<i>Psyrax rigidula</i>	
424	8192	<i>Pterocaulon sphacelatum</i> (Apple Bush)	
425	27205	<i>Ptilonia australasica</i>	
426	2690	<i>Ptilotus aevroides</i>	
427	2696	<i>Ptilotus astrolasius</i>	
428	2698	<i>Ptilotus auriculifolius</i>	
429	2699	<i>Ptilotus axillaris</i> (Mat Mulla Mulla)	
430	2704	<i>Ptilotus calostachyus</i> (Weeping Mulla Mulla)	
431	2706	<i>Ptilotus carinatus</i>	
432	2708	<i>Ptilotus chamaecladus</i>	
433	2711	<i>Ptilotus clementii</i> (Tassel Top)	
434	2725	<i>Ptilotus fusiformis</i>	
435	2727	<i>Ptilotus gaudichaudii</i>	
436	2728	<i>Ptilotus gomphrenoides</i>	
437	2731	<i>Ptilotus helipteroides</i> (Hairy Mulla Mulla)	
438	2734	<i>Ptilotus incanus</i>	
439	2741	<i>Ptilotus macrocephalus</i> (Featherheads)	
441	2746	<i>Ptilotus nobilis</i> (Tall Mulla Mulla)	
442	2747	<i>Ptilotus obovatus</i> (Cotton Bush)	
443	2751	<i>Ptilotus polystachyus</i> (Prince of Wales Feather)	
444	2755	<i>Ptilotus rotundifolius</i> (Royal Mulla Mulla)	
445	2757	<i>Ptilotus schwartzii</i>	
448	2582	<i>Rhagodia eremaea</i> (Thorny Saltbush)	
450	13301	<i>Rhodanthe floribunda</i>	
451	13246	<i>Rhodanthe humboldtiana</i>	
452	13310	<i>Rhodanthe margarethae</i>	
453	13299	<i>Rhodanthe tietkensis</i>	
454	4190	<i>Rhynchosia australis</i> (Rhynchosia)	
455	4191	<i>Rhynchosia minima</i> (Rhynchosia)	
456		<i>Riccia crinita</i>	
457	45178	<i>Roebuckiella similis</i>	
458	48889	<i>Roepera eichleri</i>	
459	7174	<i>Rostellularia adscendens</i>	
460	12088	<i>Rostellularia adscendens</i> var. <i>clementii</i>	
462	5286	<i>Rotala mexicana</i>	
463	5287	<i>Rotala occultiflora</i>	
464	30434	<i>Salsola australis</i>	
465	14027	<i>Samolus</i> sp. Millstream (M.I.H. Brooker 2076)	
466	2357	<i>Santalum lanceolatum</i> (Northern Sandalwood)	
467	2359	<i>Santalum spicatum</i> (Sandalwood)	
468	4706	<i>Sauropus crassifolius</i>	
469	13178	<i>Scaevola amblyanthera</i> var. <i>centralis</i>	
470	13172	<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>	
471	7644	<i>Scaevola spinescens</i> (Currant Bush)	
472	13285	<i>Schoenia ayersii</i>	
473	48355	<i>Schoenoplectiella dissachantha</i>	
474	48362	<i>Schoenoplectiella laevis</i>	
475	16257	<i>Schoenoplectus subulatus</i>	
476	2602	<i>Sclerolaena convexula</i>	
477	2603	<i>Sclerolaena cornishiana</i> (Cartwheel Burr)	
478	2604	<i>Sclerolaena costata</i>	
479	2606	<i>Sclerolaena cuneata</i> (Yellow Bindii)	
480	2607	<i>Sclerolaena densiflora</i>	
481	2611	<i>Sclerolaena eriacantha</i> (Tall Bindii)	
482	2619	<i>Sclerolaena lanicuspis</i> (Spinach Burr)	

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483	2623	<i>Sclerolaena minuta</i>	
484	12276	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	
485	12279	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	
486	12280	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	
487	12283	<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	
488	18443	<i>Senna ferraria</i>	
489	18346	<i>Senna glutinosa</i>	
490	12305	<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	
491	12307	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	
492	12309	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	
493	12308	<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>	
494	18451	<i>Senna hamersleyensis</i>	
495	12312	<i>Senna notabilis</i>	
496	12315	<i>Senna pleurocarpa</i> var. <i>angustifolia</i>	
497	18445	<i>Senna stricta</i>	
498	18450	<i>Senna symonii</i>	
499	12319	<i>Senna venusta</i>	
500	46816	<i>Seringia elliptica</i> (Showy fire-bush)	
501	46821	<i>Seringia nephrosperma</i> (Free carpel fire-bush)	
502	4196	<i>Sesbania cannabina</i> (Sesbania Pea)	
503	606	<i>Setaria dielsii</i> (Diels' Pigeon Grass)	
504	613	<i>Setaria verticillata</i> (Whorled Pigeon Grass)	
505	4966	<i>Sida arenicola</i>	
506	31758	<i>Sida arsiniata</i>	
507	4969	<i>Sida brownii</i>	
508	4971	<i>Sida cardiophylla</i>	
509	4976	<i>Sida echinocarpa</i>	
510	4977	<i>Sida fibulifera</i> (Silver Sida)	
511	15110	<i>Sida laevis</i>	
512	4988	<i>Sida rohlenae</i>	
513	31859	<i>Sida</i> sp. Articulation below (A.A. Mitchell PRP 1605)	
516	48867	<i>Sida</i> sp. L (A.M. Ashby 4202)	
517	33698	<i>Sida</i> sp. Pilbara (A.A. Mitchell PRP 1543)	
518	45274	<i>Sida</i> sp. Pindan (B.G. Thomson 3398)	
519	20253	<i>Sida</i> sp. Shovelanna Hill (S. van Leeuwen 3842)	
520	31852	<i>Sida</i> sp. Supplejack Station (T.S. Henshall 2345)	
521	16617	<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	
522	4989	<i>Sida spinosa</i> (Spiny Sida)	
523	16923	<i>Sida trichopoda</i>	
524	8223	<i>Sigesbeckia orientalis</i> (Indian Weed)	
525	6989	<i>Solanum ashbyae</i>	
526	6999	<i>Solanum coactiliferum</i> (Western Nightshade)	
527	7002	<i>Solanum diversiflorum</i>	
528	42544	<i>Solanum elatius</i>	
529	7008	<i>Solanum ferocissimum</i>	
530	7014	<i>Solanum horridum</i>	
531	7018	<i>Solanum lasiophyllum</i> (Flannel Bush)	
532	7021	<i>Solanum lucani</i>	
533	7029	<i>Solanum phlomoides</i>	
534	8231	<i>Sonchus oleraceus</i> (Common Sowthistle)	
535	619	<i>Sorghum plumosum</i> (Plume Canegrass)	
536	13575	<i>Spermacoce brachystema</i>	
537	628	<i>Sporobolus actinocladius</i> (Ray Grass)	
538	629	<i>Sporobolus australasicus</i> (Fairy Grass)	
539	4734	<i>Stackhousia muricata</i>	
540	18405	<i>Stackhousia</i> sp. swollen gynophore (W.R. Barker 2041)	
541	7098	<i>Stemodia grossa</i> (Marsh Stemodia)	
542	7099	<i>Stemodia kingii</i>	
543	3074	<i>Stenopetalum anfractum</i>	
544	3078	<i>Stenopetalum nutans</i>	
545	8234	<i>Streptoglossa adscendens</i>	

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546	8235	<i>Streptoglossa bubakii</i>	
547	8237	<i>Streptoglossa decurrens</i>	
548	8238	<i>Streptoglossa liatroides</i>	
549	7729	<i>Stylidium fluminense</i>	
550	3182	<i>Stylobasium spathulatum</i> (Pebble Bush)	
551	13596	<i>Swainsona complanata</i>	
552	12356	<i>Swainsona formosa</i>	
553	4231	<i>Swainsona kingii</i>	
554	4233	<i>Swainsona leeana</i>	
555	4234	<i>Swainsona maccullochiana</i> (Ashburton Pea)	
556	4235	<i>Swainsona microphylla</i> (Small-leaf Swainsona)	
557	4244	<i>Swainsona stenodonta</i>	
559	7363	<i>Synaptantha tillaeacea</i>	
560	31492	<i>Tecticornia disarticulata</i>	
561	4252	<i>Templetonia egena</i> (Round Templetonia)	
562	49016	<i>Tephrosia densa</i>	
563	41986	<i>Tephrosia oxalidea</i>	
564	41825	<i>Tephrosia rosea</i> var. Fortescue creeks (M.I.H. Brooker 2186)	
565	19531	<i>Tephrosia rosea</i> var. <i>clementii</i>	
566	17768	<i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601)	
567	42442	<i>Tephrosia</i> sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)	
568	40060	<i>Tephrosia</i> sp. clay soils (S. van Leeuwen et al. PBS 0273)	
569	4283	<i>Tephrosia stipuligera</i>	
570	4285	<i>Tephrosia supina</i>	
572	48313	<i>Teucrium disjunctum</i>	
575	17819	<i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471)	
576	673	<i>Themeda triandra</i>	
577	2942	<i>Tinospora smilacina</i> (Snakevine)	
578	6278	<i>Trachymene oleracea</i>	
579	19043	<i>Trachymene oleracea</i> subsp. <i>oleracea</i>	
580	19053	<i>Trachymene pilbarensis</i>	
581	44240	<i>Trianthema cusackianum</i>	
582	44241	<i>Trianthema glossostigmum</i>	
583	44261	<i>Trianthema oxycalyptum</i> var. <i>oxycalyptum</i>	
584	44362	<i>Trianthema triquetrum</i>	
585	4374	<i>Tribulus astrocarpus</i>	
586	4377	<i>Tribulus hirsutus</i>	
587	4379	<i>Tribulus macrocarpus</i>	
588	4381	<i>Tribulus platypterus</i> (Cork Hopbush)	
589	18072	<i>Tribulus suberosus</i>	
590	11750	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	
591	29483	<i>Tricoryne</i> sp. Hamersley Range (S. van Leeuwen 915)	
592	48201	<i>Trigastrotheca molluginea</i>	
593	679	<i>Triodia angusta</i>	
594	681	<i>Triodia brizoides</i>	
595	13131	<i>Triodia epactia</i>	
596	690	<i>Triodia longiceps</i> (Giant Grey Spinifex)	
597	696	<i>Triodia pungens</i> (Soft Spinifex)	
598	704	<i>Triodia wiseana</i> (Limestone Spinifex)	
599	48319	<i>Tripogonella loliiformis</i>	
600	706	<i>Triraphis mollis</i> (Needle Grass)	
601	4873	<i>Triumfetta appendiculata</i>	
602	4875	<i>Triumfetta chaetocarpa</i> (Urchins)	
603	14694	<i>Triumfetta clementii</i>	
604	4879	<i>Triumfetta leptacantha</i>	
605	14942	<i>Triumfetta maconochieana</i>	
606	29270	<i>Urochloa occidentalis</i> var. <i>ciliata</i>	
607	30716	<i>Vachellia farnesiana</i> (Mimosa Bush)	
608	7654	<i>Velleia connata</i> (Cup Velleia)	
609	11576	<i>Vigna lanceolata</i> var. <i>lanceolata</i>	
610	31391	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)	

NatureMap			
Entry ID	Name ID	Species Name	Conservation Code
611	48986	<i>Vincetoxicum lineare</i>	
612	8265	<i>Vittadinia eremaea</i>	
613		<i>Wahlenbergia</i> sp.	
614	7393	<i>Wahlenbergia tumidifructa</i>	
615	5106	<i>Waltheria indica</i>	
616	5107	<i>Waltheria virgata</i>	
617	29095	<i>Zaleya galericulata</i> subsp. <i>galericulata</i>	

Naturemap (families)	
Family	Species Name
Acanthaceae	<i>Dicladantha forrestii</i>
	<i>Dipteracanthus australasicus</i>
	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>
	<i>Harnieria kempeana</i> subsp. <i>muelleri</i>
	<i>Rostellularia adscendens</i>
	<i>Rostellularia adscendens</i> var. <i>clementii</i>
	<i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3)
Aizoaceae	<i>Trianthema cusackianum</i>
	<i>Trianthema glossostigmum</i>
	<i>Trianthema oxycalyptum</i> var. <i>oxycalyptum</i>
	<i>Trianthema triquetrum</i>
	<i>Zaleya galericulata</i> subsp. <i>galericulata</i>
Amaranthaceae	<i>Alternanthera denticulata</i> (Lesser Joyweed)
	<i>Alternanthera nana</i> (Hairy Joyweed)
	<i>Alternanthera nodiflora</i> (Common Joyweed)
	<i>Amaranthus cuspidifolius</i>
	<i>Amaranthus mitchellii</i> (Boggabri Weed)
	<i>Amaranthus undulatus</i>
	<i>Gomphrena canescens</i> (Batchelors Buttons)
	<i>Gomphrena canescens</i> subsp. <i>canescens</i>
	<i>Gomphrena cunninghamii</i>
	<i>Gomphrena kanisii</i>
	<i>Ptilotus aevoides</i>
	<i>Ptilotus astrolasius</i>
	<i>Ptilotus auriculifolius</i>
	<i>Ptilotus axillaris</i> (Mat Mulla Mulla)
	<i>Ptilotus calostachyus</i> (Weeping Mulla Mulla)
	<i>Ptilotus carinatus</i>
	<i>Ptilotus chamaecladus</i>
	<i>Ptilotus clementii</i> (Tassel Top)
	<i>Ptilotus fusiformis</i>
	<i>Ptilotus gaudichaudii</i>
	<i>Ptilotus gomphrenoides</i>
	<i>Ptilotus helipteroides</i> (Hairy Mulla Mulla)
	<i>Ptilotus incanus</i>
	<i>Ptilotus macrocephalus</i> (Featherheads)
	<i>Ptilotus mollis</i> (P4)
	<i>Ptilotus nobilis</i> (Tall Mulla Mulla)
	<i>Ptilotus obovatus</i> (Cotton Bush)
	<i>Ptilotus polystachyus</i> (Prince of Wales Feather)
	<i>Ptilotus rotundifolius</i> (Royal Mulla Mulla)
	<i>Ptilotus schwartzii</i>
<i>Ptilotus subspinescens</i> (P3)	
<i>Ptilotus trichocephalus</i> (P4)	
Apiaceae	<i>Daucus glochidiatus</i> (Australian Carrot)
	<i>Trachymene oleracea</i>
	<i>Trachymene oleracea</i> subsp. <i>oleracea</i>
	<i>Trachymene pilbarensis</i>
Apocynaceae	<i>Carissa lanceolata</i>
	<i>Cynanchum floribundum</i>
	<i>Gymnanthera cunninghamii</i> (P3)
	<i>Vincetoxicum lineare</i> (ex. <i>Rhyncharrhena linearis</i>)
Asphodelaceae	<i>Bulbine pendula</i>
Asteraceae	* <i>Bidens bipinnata</i> (Bipinnate Beggartick)
	* <i>Bidens subalternans</i> var. <i>simulans</i>
	* <i>Flaveria trinervia</i> (Speedy Weed)
	* <i>Sigesbeckia orientalis</i> (Indian Weed)
	* <i>Sonchus oleraceus</i> (Common Sowthistle)
	<i>Blumea tenella</i>
	<i>Brachyscome blackii</i>
	<i>Calocephalus beardii</i>
	<i>Calocephalus knappii</i>

Naturemap (families)	
Family	Species Name
	<i>Calocephalus pilbarensis</i>
	<i>Calotis hispidula</i> (Bindy Eye)
	<i>Calotis multicaulis</i> (Many-stemmed Burr-daisy)
	<i>Calotis plumulifera</i>
	<i>Centipeda minima</i>
	<i>Centipeda minima</i> subsp. <i>macrocephala</i>
	<i>Chrysocephalum gilesii</i>
	<i>Cyanthillium gracile</i> (P3)
	<i>Gnephosis arachnoidea</i> (Cobwebby-headed Gnephosis)
	<i>Iotasperma sessilifolium</i> (P3)
	<i>Olearia xerophila</i>
	<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2)
	<i>Pentalepis trichodesmoides</i> subsp. <i>trichodesmoides</i>
	<i>Peripleura arida</i>
	<i>Peripleura obovata</i>
	<i>Peripleura virgata</i>
	<i>Pluchea dentex</i>
	<i>Pluchea dunlopil</i>
	<i>Pluchea rubelliflora</i>
	<i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)
	<i>Pterocaulon sphacelatum</i>
	<i>Rhodanthe floribunda</i>
	<i>Rhodanthe humboldtiana</i>
	<i>Rhodanthe margarethae</i>
	<i>Rhodanthe tietkensii</i>
	<i>Roebuckiella similis</i>
	<i>Schoenia ayersii</i>
	<i>Streptoglossa adscendens</i>
	<i>Streptoglossa bubakii</i>
	<i>Streptoglossa decurrens</i>
	<i>Streptoglossa liatroides</i>
	<i>Vittadinia eremaea</i>
Boraginaceae	<i>Heliotropium chrysocarpum</i>
	<i>Heliotropium conocarpum</i>
	<i>Heliotropium crispatum</i>
	<i>Heliotropium cunninghamii</i>
	<i>Heliotropium heteranthum</i>
	<i>Heliotropium inexplicitum</i>
	<i>Heliotropium ovalifolium</i>
	<i>Heliotropium tenuifolium</i> (Mamukata)
	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>
Brassicaceae	<i>Lepidium catapycnon</i> (Hamersley Lepidium) (P4)
	<i>Lepidium echinatum</i>
	<i>Lepidium muelleri-ferdinandii</i>
	<i>Lepidium oxytrichum</i>
	<i>Lepidium pedicellosum</i>
	<i>Lepidium phlebopetalum</i> (Veined Peppercross)
	<i>Lepidium pholidogynum</i>
	<i>Stenopetalum anfractum</i>
	<i>Stenopetalum nutans</i>
Campanulaceae	<i>Lobelia arnhemiaca</i>
	<i>Lobelia heterophylla</i> (Wing-seeded Lobelia)
	<i>Lobelia heterophylla</i> subsp. <i>pilbarensis</i>
	<i>Wahlenbergia tumidifructa</i>
Capparaceae	<i>Capparis lasiantha</i>
	<i>Capparis</i> sp.
	<i>Capparis umbonata</i>
Caryophyllaceae	<i>Polycarpaea holtzei</i>
	<i>Polycarpaea involucrata</i>
Celastraceae	<i>Stackhousia muricata</i>
	<i>Stackhousia</i> sp. swollen gynophore (W.R. Barker 2041)
Chenopodiaceae	<i>Dysphania glomulifera</i> subsp. <i>eremaea</i>

Naturemap (families)	
Family	Species Name
	<i>Dysphania kalpari</i>
	<i>Dysphania melanocarpa</i> (Black Crumbweed)
	<i>Dysphania rhadinostachya</i> subsp. <i>inflata</i>
	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>
	<i>Dysphania sphaerosperma</i>
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Barrier Saltbush)
	<i>Maireana carnosae</i> (Cottony Bluebush)
	<i>Maireana eriosphaera</i>
	<i>Maireana georgei</i> (Satiny Bluebush)
	<i>Maireana melanocoma</i> (Pussy Bluebush)
	<i>Maireana planifolia</i> (Low Bluebush)
	<i>Maireana platycarpa</i> (Shy Bluebush)
	<i>Maireana suaedifolia</i>
	<i>Maireana trichoptera</i> (Downy Bluebush)
	<i>Maireana triptera</i> (Threewinged Bluebush)
	<i>Maireana villosa</i>
	<i>Rhagodia eremaea</i> (Thorny Saltbush)
	<i>Rhagodia</i> sp. <i>Hamersley</i> (M. Trudgen 17794) (P3)
	<i>Salsola australis</i>
	<i>Sclerolaena convexula</i>
	<i>Sclerolaena cornishiana</i> (Cartwheel Burr)
	<i>Sclerolaena costata</i>
	<i>Sclerolaena cuneata</i> (Yellow Bindii)
	<i>Sclerolaena densiflora</i>
	<i>Sclerolaena eriacantha</i> (Tall Bindii)
	<i>Sclerolaena lanicuspis</i> (Spinach Burr)
	<i>Sclerolaena minuta</i>
	<i>Tecticornia disarticulata</i>
Cleomaceae	<i>Cleome oxalidea</i>
	<i>Cleome viscosa</i>
Convolvulaceae	<i>Bonamia erecta</i>
	<i>Convolvulus clementii</i>
	<i>Duperreya commixta</i>
	<i>Ipomoea coptica</i>
	<i>Ipomoea muelleri</i>
	<i>Operculina aequisepala</i>
	<i>Polymeria ambigua</i> (Morning Glory)
	<i>Polymeria longifolia</i>
	<i>Polymeria</i> sp.
Cucurbitaceae	<i>Austrobryonia pilbarensis</i>
	<i>Cucumis variabilis</i>
Cyperaceae	<i>Baumea juncea</i> (Bare Twigrush)
	<i>Bulbostylis barbata</i>
	<i>Bulbostylis turbinata</i>
	<i>Cyperus cunninghamii</i>
	<i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>
	<i>Cyperus dactylotes</i>
	<i>Cyperus difformis</i> (Rice Sedge)
	<i>Cyperus iria</i>
	<i>Cyperus squarrosus</i>
	<i>Cyperus vaginatus</i> (Stiffleaf Sedge)
	<i>Eleocharis atropurpurea</i>
	<i>Eleocharis pallens</i> (Pale Spikerush)
	<i>Eleocharis spiralis</i>
	<i>Lipocarpha microcephala</i>
	<i>Schoenoplectiella dissachantha</i>
	<i>Schoenoplectiella laevis</i>
	<i>Schoenoplectus subulatus</i>
Dilleniaceae	<i>Hibbertia glaberrima</i>
Elaeocarpaceae	<i>Tetradlea butcheriana</i> (Butcher's Tetradlea) (P1)
Elatinaceae	<i>Bergia ammannioides</i>
	<i>Bergia pedicellaris</i>

Naturemap (families)	
Family	Species Name
Euphorbiaceae	<i>Adriana tomentosa</i>
	<i>Euphorbia australis</i> (Namana)
	<i>Euphorbia australis</i> var. <i>australis</i>
	<i>Euphorbia australis</i> var. <i>glabra</i> (P2)
	<i>Euphorbia australis</i> var. <i>subtomentosa</i>
	<i>Euphorbia biconvexa</i>
	<i>Euphorbia boophthona</i> (Gascoyne Spurge)
	<i>Euphorbia careyi</i>
	<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i> (P2)
	<i>Euphorbia inappendiculata</i> var. <i>queenslandica</i> (P1)
	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i> (Desert Spurge)
	<i>Euphorbia trigonosperma</i>
	<i>Euphorbia vaccaria</i> var. <i>erucoides</i>
Fabaceae	* <i>Vachellia farnesiana</i> (Mimosa Bush)
	<i>Acacia adoxa</i> var. <i>adoxo</i>
	<i>Acacia adsurgens</i>
	<i>Acacia ampliceps</i>
	<i>Acacia ancistrocarpa</i> (Fitzroy Wattle)
	<i>Acacia aneura</i>
	<i>Acacia aptaneura</i>
	<i>Acacia arida</i>
	<i>Acacia atkinsiana</i>
	<i>Acacia ayersiana</i>
	<i>Acacia bivenosa</i>
	<i>Acacia bromilowiana</i> (P4)
	<i>Acacia citrinoviridis</i>
	<i>Acacia colei</i> var. <i>colei</i>
	<i>Acacia coriacea</i> subsp. <i>coriacea</i>
	<i>Acacia cowleana</i> (Halls Creek Wattle)
	<i>Acacia cuthbertsonii</i> subsp. <i>cuthbertsonii</i>
	<i>Acacia elachantha</i>
	<i>Acacia exigua</i>
	<i>Acacia hamersleyensis</i>
	<i>Acacia incurvaneura</i>
	<i>Acacia kempeana</i>
	<i>Acacia maitlandii</i> (Maitland's Wattle)
	<i>Acacia marramamba</i>
	<i>Acacia monticola</i>
	<i>Acacia pruinocarpa</i> (Gidgee)
	<i>Acacia pteraneura</i>
	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>
	<i>Acacia rhodophloia</i>
	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>
	<i>Acacia sibirica</i> (Bastard Mulga)
	<i>Acacia</i> sp.
	<i>Acacia spondylophylla</i>
	<i>Acacia synchronicia</i>
	<i>Acacia tetragonophylla</i>
	<i>Acacia trudgeniana</i>
	<i>Acacia tumida</i> var. <i>pilbarensis</i>
	<i>Acacia wanyu</i>
	<i>Acacia xiphophylla</i>
	<i>Crotalaria cunninghamii</i>
	<i>Crotalaria dissitiflora</i> subsp. <i>benthamiana</i>
	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>
	<i>Crotalaria novae-hollandiae</i> (New Holland Rattlepod)
	<i>Cullen cinereum</i>
	<i>Cullen graveolens</i>
	<i>Cullen lachnostachys</i>
	<i>Cullen leucanthum</i>
<i>Cullen leucochaïtes</i>	
<i>Cullen pogonocarpum</i>	

Naturemap (families)	
Family	Species Name
	<i>Gastrolobium grandiflorum</i> (Wallflower Poison)
	<i>Glycine canescens</i> (Silky Glycine)
	<i>Glycine falcata</i> (P3)
	<i>Gompholobium oreophilum</i>
	<i>Hybanthus aurantiacus</i>
	<i>Indigofera colutea</i> (Sticky Indigo)
	<i>Indigofera linnaei</i> (Birdsville Indigo)
	<i>Indigofera monophylla</i>
	<i>Indigofera rugosa</i>
	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)
	<i>Isotropis atropurpurea</i> (Poison Sage)
	<i>Kennedia prorepens</i>
	<i>Lotus cruentus</i> (Redflower Lotus)
	<i>Mirbelia viminalis</i>
	<i>Neptunia dimorphantha</i> (Sensitive Plant)
	<i>Rhynchosia australis</i> (Rhynchosia)
	<i>Rhynchosia minima</i> (Rhynchosia)
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>
	<i>Senna artemisioides</i> subsp. <i>helmsii</i>
	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>
	<i>Senna artemisioides</i> subsp. <i>x sturtii</i>
	<i>Senna ferraria</i>
	<i>Senna glutinosa</i>
	<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>
	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>
	<i>Senna glutinosa</i> subsp. <i>x luerssenii</i>
	<i>Senna hamersleyensis</i>
	<i>Senna notabilis</i>
	<i>Senna pleurocarpa</i> var. <i>angustifolia</i>
	<i>Senna stricta</i>
	<i>Senna symonii</i>
	<i>Senna venusta</i>
	<i>Sesbania cannabina</i> (Sesbania Pea)
	<i>Swainsona complanata</i>
	<i>Swainsona formosa</i>
	<i>Swainsona kingii</i>
	<i>Swainsona leeana</i>
	<i>Swainsona maccullochiana</i> (Ashburton Pea)
	<i>Swainsona microphylla</i> (Small-leaf Swainsona)
	<i>Swainsona stenodonta</i>
	<i>Swainsona thompsoniana</i> (P3)
	<i>Templetonia egena</i> (Round Templetonia)
	<i>Tephrosia densa</i>
	<i>Tephrosia oxalidea</i>
	<i>Tephrosia rosea</i> var. <i>clementii</i>
	<i>Tephrosia rosea</i> var. Fortescue creeks (M.I.H. Brooker 2186)
	<i>Tephrosia</i> sp. Bungaroo Creek (M.E. Trudgen 11601)
	<i>Tephrosia</i> sp. clay soils (S. van Leeuwen et al. PBS 0273)
	<i>Tephrosia</i> sp. NW Eremaean (S. van Leeuwen et al. PBS 0356)
	<i>Tephrosia stipuligera</i>
	<i>Tephrosia supina</i>
	<i>Vigna lanceolata</i> var. <i>lanceolata</i>
	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)
Frankeniaceae	<i>Frankenia hispidula</i>
Geraniaceae	<i>Erodium crinitum</i> (Corkscrew)
Goodeniaceae	<i>Dampiera anonyma</i> (P3)
	<i>Dampiera candicans</i>
	<i>Dampiera dentata</i>
	<i>Goodenia forrestii</i>
	<i>Goodenia heterochila</i>
	<i>Goodenia lamprosperma</i>

Naturemap (families)	
Family	Species Name
	<i>Goodenia microptera</i>
	<i>Goodenia muelleriana</i>
	<i>Goodenia nuda</i> (P4)
	<i>Goodenia pascua</i>
	<i>Goodenia pedicellata</i> (P1)
	<i>Goodenia prostrata</i>
	<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) (P3)
	<i>Goodenia stellata</i>
	<i>Goodenia stobbsiana</i>
	<i>Goodenia tenuiloba</i>
	<i>Scaevola amblyanthera</i> var. <i>centralis</i>
	<i>Scaevola parvifolia</i> subsp. <i>pilbarae</i>
	<i>Scaevola spinescens</i>
	<i>Velleia connata</i> (Cup Velleia)
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>
Haloragaceae	<i>Haloragis gossei</i>
	<i>Haloragis gossei</i> var. <i>gossei</i>
	<i>Haloragis gossei</i> var. <i>inflata</i>
	<i>Haloragis maierae</i>
	<i>Haloragis odontocarpa</i> (Mulga Nettle)
	<i>Haloragis odontocarpa</i> forma <i>pterocarpa</i>
Hemerocallidaceae	<i>Tricoryne</i> sp. Hamersley Range (S. van Leeuwen 915)
Lamiaceae	<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>
	<i>Clerodendrum tomentosum</i> var. <i>lanceolatum</i>
	<i>Prostanthera albiflora</i>
	<i>Teucrium disjunctum</i>
	<i>Teucrium pilbaranum</i> (P2)
Lauraceae	<i>Cassytha capillaris</i>
Loranthaceae	<i>Amyema fitzgeraldii</i> (Pincushion Mistletoe)
	<i>Amyema miquelii</i> (Stalked Mistletoe)
	<i>Amyema</i> sp. Fortescue (M.E. Trudgen 5358)
	<i>Diplatia grandibractea</i>
	<i>Lysiana casuarinae</i>
Lythraceae	<i>Ammannia baccifera</i>
	<i>Ammannia multiflora</i>
Malvaceae	* <i>Malvastrum americanum</i> (Spiked Malvastrum)
	* <i>Melochia pyramidata</i>
	<i>Abutilon amplum</i>
	<i>Abutilon fraseri</i> (Lantern Bush)
	<i>Abutilon fraseri</i> subsp. <i>fraseri</i>
	<i>Abutilon lepidum</i>
	<i>Abutilon macrum</i>
	<i>Abutilon malvifolium</i> (Bastard Marshmallow)
	<i>Abutilon otocarpum</i> (Desert Chinese Lantern)
	<i>Abutilon oxycarpum</i> subsp. <i>Prostrate</i> (A.A. Mitchell PRP 1266)
	<i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618)
	<i>Abutilon</i> sp. <i>Pilbara</i> (W.R. Barker 2025)
	<i>Alyogyne pinoniana</i> (Sand Hibiscus)
	<i>Androcalva loxophylla</i>
	<i>Androcalva luteiflora</i> (Yellow-flowered Rulingia)
	<i>Brachychiton acuminatus</i>
	<i>Brachychiton gregorii</i>
	<i>Corchorus crozophorifolius</i>
	<i>Corchorus lasiocarpus</i>
	<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>
	<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>
	<i>Corchorus parviflorus</i>
	<i>Corchorus sidoides</i> (Flannel Weed)
	<i>Corchorus</i> sp.
	<i>Corchorus tectus</i>
	<i>Corchorus tridens</i>
	<i>Gossypium australe</i> (Native Cotton)

Naturemap (families)	
Family	Species Name
	<i>Gossypium robinsonii</i> (Wild Cotton)
	<i>Gossypium sturtianum</i> var. <i>sturtianum</i>
	<i>Hibiscus burtonii</i>
	<i>Hibiscus campanulatus</i> (P1)
	<i>Hibiscus coatesii</i>
	<i>Hibiscus goldsworthii</i>
	<i>Hibiscus haynaldii</i>
	<i>Hibiscus leptocladus</i>
	<i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435)
	<i>Hibiscus</i> sp. <i>Mt Brockman</i> (E. Thoma ET 1354) (P1)
	<i>Hibiscus</i> sp. <i>Mt Robinson</i> (G. Byrne 3537)
	<i>Hibiscus sturtii</i> (Sturt's Hibiscus)
	<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>
	<i>Hibiscus sturtii</i> var. <i>truncatus</i>
	<i>Hibiscus verdcourtii</i>
	<i>Lawrenzia densiflora</i>
	<i>Seringia elliptica</i> (Showy fire-bush)
	<i>Seringia nephrosperma</i> (Free carpel fire-bush)
	<i>Sida arenicola</i>
	<i>Sida arsiniata</i>
	<i>Sida brownii</i>
	<i>Sida cardiophylla</i>
	<i>Sida echinocarpa</i>
	<i>Sida fibulifera</i> (Silver Sida)
	<i>Sida laevis</i>
	<i>Sida rohlenae</i>
	<i>Sida</i> sp. <i>Articulation below</i> (A.A. Mitchell PRP 1605)
	<i>Sida</i> sp. <i>Barlee Range</i> (S. van Leeuwen 1642) (P3)
	<i>Sida</i> sp. <i>Hammersley Range</i> (K. Newbey 10692) (P1)
	<i>Sida</i> sp. <i>L</i> (A.M. Ashby 4202)
	<i>Sida</i> sp. <i>Pilbara</i> (A.A. Mitchell PRP 1543)
	<i>Sida</i> sp. <i>Pindan</i> (B.G. Thomson 3398)
	<i>Sida</i> sp. <i>Shovelanna Hill</i> (S. van Leeuwen 3842)
	<i>Sida</i> sp. <i>spiciform panicles</i> (E. Leyland s.n. 14/8/90)
	<i>Sida</i> sp. <i>Supplejack Station</i> (T.S. Henshall 2345)
	<i>Sida spinosa</i> (Spiny Sida)
	<i>Sida trichopoda</i>
	<i>Triumfetta appendiculata</i>
	<i>Triumfetta chaetocarpa</i> (Urchins)
	<i>Triumfetta clementii</i>
	<i>Triumfetta leptacantha</i>
	<i>Triumfetta maconochieana</i>
	<i>Waltheria indica</i>
	<i>Waltheria virgata</i>
Marsileaceae	<i>Marsilea hirsuta</i> (Nardoo)
Menispermaceae	<i>Tinospora smilacina</i>
Molluginaceae	<i>Glinus lotoides</i> (Hairy Carpet Weed)
	<i>Trigastrotheca molluginea</i>
Montiaceae	<i>Calandrinia ptychosperma</i>
	<i>Calandrinia stagnensis</i>
Moraceae	<i>Ficus brachypoda</i>
Myrtaceae	<i>Calytrix carinata</i>
	<i>Corymbia deserticola</i> subsp. <i>deserticola</i>
	<i>Corymbia ferriticola</i>
	<i>Corymbia hamersleyana</i>
	<i>Corymbia opaca</i>
	<i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> (Blunt-budded River Red Gum)
	<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>
	<i>Eucalyptus gamophylla</i>
	<i>Eucalyptus kingsmillii</i> (Kingsmill's Mallee)
	<i>Eucalyptus leucophloia</i>
	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>

Naturemap (families)	
Family	Species Name
	<i>Eucalyptus lucasii</i> (Barlee Box)
	<i>Eucalyptus pilbarensis</i>
	<i>Eucalyptus repullulans</i>
	<i>Eucalyptus socialis</i>
	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i>
	<i>Eucalyptus trivalva</i> (Victoria Spring Mallee)
	<i>Melaleuca bracteata</i> (River Teatree)
	<i>Melaleuca eleuterostachya</i>
	<i>Melaleuca glomerata</i>
Nyctaginaceae	<i>Boerhavia coccinea</i>
	<i>Boerhavia repleta</i>
	<i>Boerhavia schomburgkiana</i>
	<i>Nicotiana benthamiana</i> (Tjuntiwari)
	<i>Nicotiana occidentalis</i> (Native Tobacco)
	<i>Nicotiana rosulata</i> (Rosetted Tobacco)
	<i>Nicotiana rosulata</i> subsp. <i>rosulata</i>
	<i>Nicotiana umbratica</i> (P3)
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i> (Desert Jasmine)
Oxalidaceae	<i>Oxalis</i> sp. <i>Pilbara</i> (M.E. Trudgen 12725) (P2)
Papaveraceae	* <i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>
Phrymaceae	<i>Mimulus gracilis</i>
	<i>Peplidium muelleri</i>
	<i>Peplidium</i> sp. E Evol. Fl. Fauna Arid Aust. (A.S. Weston 12768)
Phyllanthaceae	<i>Notoleptopus decaisnei</i> var. <i>orbicularis</i> (A.B. Craig 428)
	<i>Phyllanthus erwinii</i>
	<i>Sauropus crassifolius</i>
Plantaginaceae	<i>Plantago cunninghamii</i>
	<i>Stemodia grossa</i>
	<i>Stemodia kingii</i>
Plumbaginaceae	<i>Plumbago zeylanica</i> (Native Plumbago)
Poaceae	* <i>Cenchrus ciliaris</i> (Buffel Grass)
	* <i>Chloris gayana</i> (Rhodes Grass)
	* <i>Echinochloa colona</i> (Awnless Barnyard Grass)
	* <i>Setaria verticillata</i> (Whorled Pigeon Grass)
	<i>Acrachne racemosa</i>
	<i>Amphipogon sericeus</i>
	<i>Aristida burbridgeae</i>
	<i>Aristida contorta</i> (Bunched Kerosene Grass)
	<i>Aristida holathera</i>
	<i>Aristida jerichoensis</i> var. <i>subspinulifera</i> (P3)
	<i>Aristida latifolia</i> (Feathertop Wiregrass)
	<i>Astrebla elymoides</i> (Weeping Mitchell Grass)
	<i>Astrebla lappacea</i> (P3)
	<i>Bothriochloa ewartiana</i> (Desert Bluegrass)
	<i>Chloris pectinata</i> (Comb Chloris)
	<i>Chloris pumilio</i>
	<i>Chrysopogon fallax</i> (Golden Beard Grass)
	<i>Cymbopogon obtectus</i> (Silkyheads)
	<i>Cynodon convergens</i>
	<i>Cynodon prostratus</i>
	<i>Dactyloctenium radulans</i> (Button Grass)
	<i>Dichanthium fecundum</i> (Curly Bluegrass)
	<i>Dichanthium sericeum</i> subsp. <i>humilius</i>
	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>
	<i>Digitaria ammophila</i> (Silky Umbrella Grass)
	<i>Digitaria brownii</i> (Cotton Panic Grass)
	<i>Elytrophorus spicatus</i> (Spikegrass)
	<i>Enneapogon avenaceus</i> (Bottle Washers)
	<i>Enneapogon caerulescens</i> (Limestone Grass)
	<i>Enneapogon lindleyanus</i>
	<i>Enneapogon polyphyllus</i> (Leafy Nineawn)
	<i>Enneapogon robustissimus</i>

Naturemap (families)	
Family	Species Name
	<i>Enteropogon ramosus</i>
	<i>Eragrostis cumingii</i> (Cuming's Love Grass)
	<i>Eragrostis dielsii</i> (Mallee Lovegrass)
	<i>Eragrostis eriopoda</i>
	<i>Eragrostis exigua</i>
	<i>Eragrostis pergracilis</i>
	<i>Eragrostis setifolia</i> (Neverfail Grass)
	<i>Eragrostis tenellula</i> (Delicate Lovegrass)
	<i>Eragrostis xerophila</i> (Knotty-butt Neverfail)
	<i>Eriachne aristidea</i>
	<i>Eriachne benthamii</i> (Swamp Wanderrie)
	<i>Eriachne ciliata</i> (Slender Wandarrie Grass)
	<i>Eriachne flaccida</i> (Claypan Grass)
	<i>Eriachne mucronata</i> (Mountain Wanderrie Grass)
	<i>Eriachne pulchella</i> (Pretty Wanderrie)
	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>
	<i>Eriachne tenuiculmis</i>
	<i>Eulalia aurea</i>
	<i>Fimbristylis dichotoma</i> (Eight Day Grass)
	<i>Fimbristylis ferruginea</i>
	<i>Fimbristylis microcarya</i>
	<i>Fimbristylis simulans</i>
	<i>Iseilema dolichotrichum</i>
	<i>Iseilema fragile</i>
	<i>Iseilema macratherum</i> (Bull Flinders Grass)
	<i>Iseilema membranaceum</i> (Small Flinders Grass)
	<i>Iseilema vaginiflorum</i> (Red Flinders Grass)
	<i>Paraneurachne muelleri</i> (Northern Mulga Grass)
	<i>Paspalidium clementii</i> (Clements Paspalidium)
	<i>Paspalidium constrictum</i> (Knottybutt Grass)
	<i>Paspalidium rarum</i> (Rare Paspalidium)
	<i>Perotis rara</i> (Comet Grass)
	<i>Pseudoraphis spinescens</i> (Spiny Mudgrass)
	<i>Setaria dielsii</i> (Diels' Pigeon Grass)
	<i>Sorghum plumosum</i> (Plume Canegrass)
	<i>Sporobolus actinocladus</i>
	<i>Sporobolus australasicus</i> (Fairy Grass)
	<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431) (P3)
	<i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471)
	<i>Themeda triandra</i>
	<i>Triodia angusta</i>
	<i>Triodia brizoides</i>
	<i>Triodia epactia</i>
	<i>Triodia longiceps</i> (Giant Grey Spinifex)
	<i>Triodia pungens</i> (Soft Spinifex)
	<i>Triodia wiseana</i> (Limestone Spinifex)
	<i>Tripogonella loliiformis</i>
	<i>Triraphis mollis</i> (Needle Grass)
	<i>Urochloa occidentalis</i> var. <i>ciliata</i>
Polygalaceae	<i>Polygala glaucifolia</i>
Portulacaceae	<i>Portulaca oleracea</i>
Primulaceae	<i>Samolus</i> sp. Millstream (M.I.H. Brooker 2076)
Proteaceae	<i>Grevillea berryana</i>
	<i>Grevillea pyramidalis</i>
	<i>Grevillea pyramidalis</i> subsp. <i>leucadendron</i>
	<i>Grevillea saxicola</i> (P3)
	<i>Grevillea striata</i> (Beefwood)
	<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>
	<i>Hakea chordophylla</i>
Pteridaceae	<i>Cheilanthes austrotenuifolia</i>
	<i>Cheilanthes configua</i>
	<i>Cheilanthes lasiophylla</i> (Woolly Cloak Fern)

Naturemap (families)	
Family	Species Name
	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>
Rhamnaceae	<i>Cryptandra monticola</i>
Rubiaceae	<i>Oldenlandia crouchiana</i>
	<i>Psydrax rigidula</i>
	<i>Spermacoce brachystema</i>
	<i>Synaptantha tillaeacea</i>
Santalaceae	<i>Santalum spicatum</i>
Sapindaceae	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>
	<i>Diplopeltis eriocarpa</i> (Hairy Pepperflower)
	<i>Diplopeltis stuartii</i> var. <i>stuartii</i> (Desert Pepperflower)
	<i>Dodonia coriacea</i>
	<i>Dodonia lanceolata</i> var. <i>lanceolata</i>
	<i>Dodonia pachyneura</i>
	<i>Dodonia petiolaris</i>
	<i>Santalum lanceolatum</i>
Schrophulariaceae	<i>Eremophila cryptothrix</i>
	<i>Eremophila cuneifolia</i>
	<i>Eremophila exilifolia</i>
	<i>Eremophila flaccida</i>
	<i>Eremophila forrestii</i> (Wilcox Bush)
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>
	<i>Eremophila fraseri</i> subsp. <i>fraseri</i>
	<i>Eremophila lanceolata</i>
	<i>Eremophila latrobei</i> subsp. <i>filiformis</i>
	<i>Eremophila latrobei</i> subsp. <i>glabra</i>
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>
	<i>Eremophila longifolia</i>
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i> (Native Fuchsia)
	<i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4)
	<i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3)
	<i>Eremophila phyllopoda</i> subsp. <i>obliqua</i>
	<i>Eremophila tietkensii</i>
Solanaceae	* <i>Datura leichhardtii</i> subsp. <i>leichhardtii</i>
	<i>Solanum ashbyae</i>
	<i>Solanum coactiliferum</i> (Western Nightshade)
	<i>Solanum diversiflorum</i>
	<i>Solanum elatius</i>
	<i>Solanum ferocissimum</i>
	<i>Solanum horridum</i>
	<i>Solanum lasiophyllum</i>
	<i>Solanum lucani</i>
<i>Solanum phlomoides</i>	
Stylidiaceae	<i>Stylidium fluminense</i>
Surianaceae	<i>Stylobasium spathulatum</i> (Pebble Bush)
Thymelaeaceae	<i>Pimelea ammocharis</i>
	<i>Pimelea holroydii</i>
Zygophyllaceae	<i>Roepera eichleri</i> (ex. <i>Zygophyllum eichleri</i>)
	<i>Tribulus astrocarpus</i>
	<i>Tribulus hirsutus</i>
	<i>Tribulus macrocarpus</i>
	<i>Tribulus platypterus</i> (Cork Hopbush)
	<i>Tribulus suberosus</i>

EPBC Act Protected Matters Report	
Matters of National Environmental Importance	
World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Park	None
Listed Threatened Ecological Communities	None
Listed Threatened Species	8
Listed Migratory Species	9
Other Matters Protected by th EPBC Act	
Commonwealth Land	None
Commonwealth Heritage Places	None
Listed Marine Species	15
Whales and Other Cetaceans	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks	None
Extra Information	
State and territory Reserves	None
Regional Forest Agreements	None
Invasive Species	10
Nationally Important Wetlands	None
Key Ecological Features (Marine)	None

Listed Threatened Species			
Name		Status	Type of Presence
Scientific	Common		
Birds			
<i>Calidris ferruginea</i>	Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<i>Pezoporus occidentalis</i>	Night Parrot [59350]	Endangered	Species or species habitat may occur within area
<i>Rostratula australis</i>	Australian Painted-snipe, Australian Painted Snipe	Endangered	Species or species habitat may occur within area
Mammals			
<i>Dasyurus hallucatus</i>	Northern Quoll, Digul [Gogo-Yimidir], Wijjingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
<i>Macroderma gigas</i>	Ghost Bat [174]	Vulnerable	Breeding known to occur within area
<i>Macrotis lagotis</i>	Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
<i>Rhinonictis aurantia</i> (Pilbara form)	Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area
Reptiles			
<i>Liasis olivaceus barroni</i>	Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species

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

Name		Threatened	Type of Presence
Scientific	Common		
Migratory Marine Birds			
<i>Apus pacificus</i>	Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species			
<i>Hirundo rustica</i>	Barn Swallow [662]		Species or species habitat likely to occur within area
<i>Motacilla cinerea</i>	Grey Wagtail [642]		Species or species habitat likely to occur within area
<i>Motacilla flava</i>	Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species			
<i>Actitis hypoleucos</i>	Common Sandpiper [59309]		Species or species habitat may occur within area
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<i>Calidris ferruginea</i>	Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<i>Calidris melanotos</i>	Pectoral Sandpiper [858]		Species or species habitat may occur within area
<i>Charadrius veredus</i>	Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Listed Marine Species

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



Name		Threatened	Type of Presence
Scientific	Common		
Birds			
<i>Actitis hypoleucos</i>	Common Sandpiper [59309]		Species or species habitat likely to occur within area
<i>Apus pacificus</i>	Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<i>Ardea alba</i>	Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
<i>Ardea ibis</i>	Cattle Egret [59542]		Species or species habitat likely to occur within area
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
<i>Calidris ferruginea</i>	Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
<i>Calidris melanotos</i>	Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<i>Charadrius veredus</i>	Oriental Plover, Oriental Dotterel [882]		Species or species habitat likely to occur within area
<i>Chrysococcyx osculans</i>	Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
<i>Hirundo rustica</i>	Barn Swallow [662]		Species or species habitat may occur within area
<i>Merops ornatus</i>	Rainbow Bee-eater [670]		Species or species habitat may occur within area
<i>Motacilla cinerea</i>	Grey Wagtail [642]		Species or species habitat may occur within area
<i>Motacilla flava</i>	Yellow Wagtail [644]		Species or species habitat may occur within area
<i>Rostratula benghalensis (sensu lato)</i>	Painted Snipe [889]	Endangered*	Species or species habitat may occur within area


Invasive Species

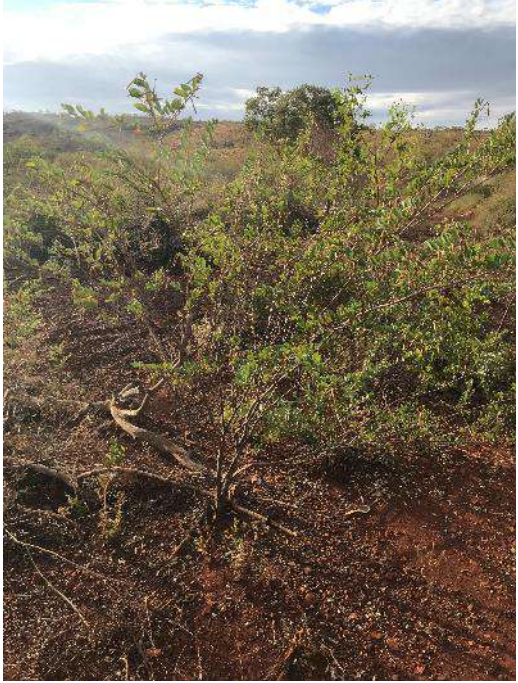
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo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

Name		Status	Type of Presence
Scientific	Common		
Birds			
<i>Columba livia</i>	Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Mammals			
<i>Canis lupus familiaris</i>	Domestic Dog [82654]		Species or species habitat likely to occur within area
<i>Capra hircus</i>	Goat [2]		Species or species habitat likely to occur within area
<i>Equus asinus</i>	Donkey, Ass [4]		Species or species habitat likely to occur within area
<i>Equus caballus</i>	Horse [5]		Species or species habitat likely to occur within area
<i>Felis catus</i>	Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
<i>Mus musculus</i>	House Mouse [120]		Species or species habitat likely to occur within area
<i>Oryctolagus cuniculus</i>	Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
<i>Vulpes vulpes</i>	Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants			
<i>Cenchrus ciliaris</i>	Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area

Appendix K Priority Flora Locations and Photos from the Current Survey


Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Priority 1							
Elaeocarpaceae	<i>Tetratheca butcheriana</i>	30–40	542485	7511326	Opp	P1	
		10–15	542435	7511279	No site	P1	
		15–20	542383	7511359	No site	P1	
		50–100	542510	7511295	No site	P1	
		15–20	542425	7511416	No site	P1	
		15–20	542445	7511382	No site	P1	
		30–40	542510	7511292	No site	P1	
Poaceae	<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808)	30%	518624	7536339	rGBS147	P1	
Priority 2							
Asteraceae	<i>Pentalepis trichodesmoides</i> subsp. <i>Hispida</i>	1	514568.0	7496012.0	No site	P2	
		2	515305.0	7496182.0	No site	P2	
		1	515219.0	7496206.0	No site	P2	

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
		6	511250.8	7495395.4	rGBS104	P2	
		1	504629.0	7494508.0	No site	P2	
Malvaceae	<i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708)	1	543802.6	7518666.6	rGBS145	P2	
Priority 3							
Fabaceae	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301)	1	505872	7492470	No site	P3	
		40–50	506074	7492906	No site	P3	
		1	505887	7493051	No site	P3	
		1	506365	7493795	No site	P3	
		10	509681	7496240	No site	P3	
		2	505030	7494351	No site	P3	
		10–15	515642	7500432	No site	P3	
		9	515437	7496256	No site	P3	
		1	511908	7507270	No site	P3	
		3	523192	7540123	No site	P3	
		10–15	521121	7538304	No site	P3	
		10–15	534119	7505919	No site	P3	
		2	515649	7500370	No site	P3	
		15–20	515647	7500403	No site	P3	

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Fabaceae (cont)	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (cont)	15–20	515607	7500245	No site	P3	
		2	515620	7500269	No site	P3	
		5	515636	7500312	No site	P3	
		3	509785	7507956	No site	P3	
		2	517743	7508504	No site	P3	
		10–15	521860	7505538	No site	P3	
		8	504698	7495186	No site	P3	
		9	504670	7495169	No site	P3	
		10	507015	7494109	No site	P3	
		5	515145	7496194	No site	P3	
		5	514597	7499848	No site	P3	
		2	511754	7506140	No site	P3	
		1	511972	7506055	No site	P3	
		5	511823	7506893	No site	P3	
		10–15	509669	7509264	No site	P3	
		1	524061	7509483	No site	P3	
		3	521993	7505692	No site	P3	
		2	521903	7505653	No site	P3	
		30–40	521855	7505482	No site	P3	
		15–20	521834	7505307	No site	P3	
		10–15	521825	7505407	No site	P3	
		30–40	534108	7506316	No site	P3	
		50–100	534106	7506217	No site	P3	
		30–40	534144	7506130	No site	P3	
		30–40	534117	7506035	No site	P3	
		100–200	534119	7505937	No site	P3	
		30–40	517576	7540621	No site	P3	
0.20%	515336	7541049	GBS116	P3			
0.10%	509816	7507988	GBS60	P3			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Fabaceae (cont)	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (cont)	0.10%	515376	7496176	rGBS111	P3	
		0.10%	511251	7495395	rGBS104	P3	
		12	514331	7508962	No site	P3	
		6	512034	7508216	No site	P3	
		1	511047	7507468	No site	P3	
		3	510955	7507410	No site	P3	
		5	506170	7492235	No site	P3	
		9	506037	7492419	No site	P3	
		5	510526	7494931	No site	P3	
		11	511102	7507692	No site	P3	
		3	511072	7507472	No site	P3	
		1	510777	7507312	No site	P3	
		2	510843	7507108	No site	P3	
		2	506550	7493311	No site	P3	
		1	506583	7493271	No site	P3	
		8	533689	7506530	No site	P3	
		15-20	505841	7492485	No site	P3	
		5	506523	7493346	No site	P3	
		10-15	506559	7493345	No site	P3	
		1	507575	7496246	No site	P3	
		1	507546	7496260	No site	P3	
		2	506612	7493242	No site	P3	
		1	506622	7493164	No site	P3	
		4	504823	7494908	No site	P3	
		7	504839	7494931	No site	P3	
		8	504840	7494959	No site	P3	
1	515131	7498899	No site	P3			
3	510221	7496493	No site	P3			
1	510212	7496501	No site	P3			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Fabaceae (cont)	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (cont)	1	510207	7496506	No site	P3	
		20	510133	7496634	No site	P3	
		15	510136	7496649	No site	P3	
		20	510015	7496617	No site	P3	
		5	510022	7496588	No site	P3	
		5	510028	7496524	No site	P3	
		5	509975	7496302	No site	P3	
		30	508730	7495390	No site	P3	
		3	506890	7495001	No site	P3	
		5	506904	7495029	No site	P3	
		40	506914	7495032	No site	P3	
		40	506876	7495089	No site	P3	
		45	506851	7495104	No site	P3	
		1	511072	7496747	No site	P3	
		20	510916	7496773	No site	P3	
		2	510664	7496697	No site	P3	
		15	506857	7495055	No site	P3	
		20	506859	7495111	No site	P3	
		10	510946	7496772	No site	P3	
		10	510597	7496922	No site	P3	
		12	510758	7496613	No site	P3	
		15	506857	7495055	No site	P3	
		20	506859	7495111	No site	P3	
		10	510946	7496772	No site	P3	
		10	510597	7496922	No site	P3	
		12	510758	7496613	No site	P3	
10	505695	7493503	No site	P3			
0.10%	505887	7492512	GBS04	P3			
5	507669	7496292	GBS05	P3			


Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
		1	506152	7492995	GBS06	P3	
		12	515114	7498903	GBS25	P3	
		2	511001	7507701	GBS33	P3	
		0.10%	523469	7509946	GBS36	P3	
		0.10%	512102	7508254	GBS37	P3	
		0.50%	523375	7508665	GBS42	P3	
		2%	514677	7500094	GBS75	P3	
		1.50%	514324	7508957	rGBS07	P3	
		10	517739	7508442	rGBS08	P3	
		0.10%	515157	7509109	rGBS09	P3	
Malvaceae	<i>Sida</i> sp. Barlee Range	1	543802.6	7518666.6	rGBS145	P3	
Scrophulariaceae	<i>Eremophila magnifica</i> subsp. <i>Velutina</i>	3	520048	7509155	No site	P3	
		15–20	543192	7519046	No site	P3	
		15–20	509784	7507960	No site	P3	
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>Velutina</i> (cont)	2	517992	7509145	No site	P3	
		6	516007	7508063	No site	P3	
		50–100	516076	7508058	No site	P3	
		30–40	516112	7508069	No site	P3	
		50–100	516107	7508056	No site	P3	
		15–20	516131	7508063	No site	P3	
		3	516126	7508055	No site	P3	
		2	516197	7508060	No site	P3	
		4	522618	7509463	No site	P3	
		2	522685	7509461	No site	P3	
		6	522752	7509468	No site	P3	
		8	522767	7509460	No site	P3	
		7	522796	7509474	No site	P3	
		30–40	522790	7509468	No site	P3	
		10–15	522818	7509475	No site	P3	


Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>Velutina</i> (cont)	40-50	522814	7509470	No site	P3	
		40-50	522837	7509467	No site	P3	
		100-200	516218	7508063	No site	P3	
		15-20	522855	7509466	No site	P3	
		10-15	526548	7532987	No site	P3	
		10-15	522889	7509462	No site	P3	
		10	522908	7509473	No site	P3	
		50-100	522908	7509463	No site	P3	
		10-15	522928	7509465	No site	P3	
		10-15	522962	7509478	No site	P3	
		9	522956	7509473	No site	P3	
		10-15	522975	7509472	No site	P3	
		3	522983	7509481	No site	P3	
		10-15	522995	7509467	No site	P3	
		1	523133	7509487	No site	P3	
		7	523357	7509476	No site	P3	
		10	523348	7509476	No site	P3	
		2	523254	7509483	No site	P3	
		3	523245	7509483	No site	P3	
		2	523239	7509480	No site	P3	
		1	523218	7509475	No site	P3	
		4	523202	7509474	No site	P3	
		9	523200	7509467	No site	P3	
		2	523155	7509476	No site	P3	
		40-50	523155	7509459	No site	P3	
		1	523145	7509470	No site	P3	
		3	523121	7509472	No site	P3	
2	523112	7509476	No site	P3			
10	523105	7509477	No site	P3			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>Velutina</i> (cont)	27	523093	7509476	No site	P3	
		11	523072	7509476	No site	P3	
		6	523058	7509473	No site	P3	
		3	523036	7509482	No site	P3	
		2	523039	7509481	No site	P3	
		1	523047	7509478	No site	P3	
		4	523057	7509480	No site	P3	
		11	523069	7509482	No site	P3	
		19	523081	7509484	No site	P3	
		4	523096	7509481	No site	P3	
		6	523100	7509481	No site	P3	
		8	523113	7509485	No site	P3	
		14	523119	7509486	No site	P3	
		10	523130	7509487	No site	P3	
		3	522425	7510151	No site	P3	
		9	522396	7510128	No site	P3	
		6	522389	7510124	No site	P3	
		6	522393	7510053	No site	P3	
		6	522377	7510057	No site	P3	
		1	522377	7510104	No site	P3	
		11	522367	7510110	No site	P3	
		12	522355	7510099	No site	P3	
		6	522343	7510108	No site	P3	
		3	522336	7510146	No site	P3	
		1	522290	7510187	No site	P3	
		6	522243	7510151	No site	P3	
		12	522233	7510166	No site	P3	
2	522157	7510094	No site	P3			
4	522138	7510132	No site	P3			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>Velutina</i> (cont)	5	522135	7510144	No site	P3	
		8	522139	7510150	No site	P3	
		3	522129	7510150	No site	P3	
		15-20	513532	7508633	No site	P3	
		4	523145	7509488	No site	P3	
		6	523158	7509492	No site	P3	
		1	523170	7509492	No site	P3	
		1	523188	7509492	No site	P3	
		1	523198	7509490	No site	P3	
		20	523218	7509491	No site	P3	
		17	523236	7509492	No site	P3	
		4	523289	7509492	No site	P3	
		2	523301	7509494	No site	P3	
		7	523341	7509499	No site	P3	
		11	523358	7509496	No site	P3	
		4	522375	7510149	No site	P3	
		1	523392	7509496	No site	P3	
		4	522372	7510153	No site	P3	
		5	522337	7510172	No site	P3	
		1	522351	7510143	No site	P3	
		2	522358	7510124	No site	P3	
		6	522361	7510118	No site	P3	
		3	522368	7510119	No site	P3	
		1	522383	7510113	No site	P3	
		1	522352	7510095	No site	P3	
		5	522344	7510097	No site	P3	
		1	522345	7510089	No site	P3	
1	522340	7510093	No site	P3			
1	522212	7510060	No site	P3			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>Velutina</i> (cont)	7	522197	7510093	No site	P3	
		7	522188	7510085	No site	P3	
		2	522168	7510145	No site	P3	
		3	522163	7510164	No site	P3	
		3	522154	7510172	No site	P3	
		2	516490	7509529	No site	P3	
		7	523371	7509484	No site	P3	
		3	523360	7509483	No site	P3	
		3	523394	7509482	No site	P3	
		2	509055	7508180	No site	P3	
		2	518843	7509383	No site	P3	
		4	518873	7509362	No site	P3	
		2	518880	7509328	No site	P3	
		2	518862	7509351	No site	P3	
		1	518874	7509337	No site	P3	
		15-20	509185	7508472	No site	P3	
1	509139	7508068	No site	P3			
Priority 4							
Goodeniaceae	<i>Goodenia nuda</i>	6	514282	7497538	No site	P4	
		5	533575	7506735	No site	P4	
		3	533472	7506765	No site	P4	
		8	533393	7506778	No site	P4	
		2	533216	7506755	No site	P4	
		2	533172	7506754	No site	P4	
		3	533095	7506742	No site	P4	
		4	533086	7506739	No site	P4	
		2	533066	7506736	No site	P4	

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Goodeniaceae (cont)	<i>Goodenia nuda</i> (cont)	6	533038	7506729	No site	P4	
		3	532967	7506714	No site	P4	
		2	532902	7506702	No site	P4	
		12	532894	7506704	No site	P4	
		2	532877	7506696	No site	P4	
		4	532869	7506694	No site	P4	
		3	533648	7506680	No site	P4	
		11	533363	7506752	No site	P4	
		4	533312	7506747	No site	P4	
		6	533280	7506745	No site	P4	
		2	533271	7506745	No site	P4	
		1	533253	7506743	No site	P4	
		3	533154	7506730	No site	P4	
		2	533132	7506725	No site	P4	
		6	533106	7506715	No site	P4	
		4	533092	7506713	No site	P4	
		11	533068	7506704	No site	P4	
		2	533024	7506698	No site	P4	
		1	532996	7506692	No site	P4	
		13	532867	7506674	No site	P4	
30	532864	7506673	No site	P4			
40-50	533702	7506675	No site	P4			
Scrophulariaceae	<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	3	516462	7508062	No site	P4	
		2	515806	7508046	No site	P4	
		1	515820	7508051	No site	P4	
		2	515827	7508058	No site	P4	
		1	515881	7508061	No site	P4	
		40-50	515915	7508074	No site	P4	
		15-20	515937	7508074	No site	P4	

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
Scrophulariaceae (cont)	<i>Eremophila magnifica</i> subsp. <i>magnifica</i> (cont)	2	515938	7508070	No site	P4	
		3	515939	7508055	No site	P4	
		15–20	515959	7508070	No site	P4	
		50–100	516063	7508073	No site	P4	
		10–15	516140	7508059	No site	P4	
		3	516181	7508064	No site	P4	
		3	516174	7508058	No site	P4	
		3	516218	7508063	No site	P4	
		15–20	516244	7508067	No site	P4	
		8	516221	7508055	No site	P4	
		8	516273	7508065	No site	P4	
		10–15	516280	7508049	No site	P4	
		4	516304	7508067	No site	P4	
		6	516309	7508061	No site	P4	
		6	516318	7508068	No site	P4	
		1	516322	7508053	No site	P4	
		5	516337	7508067	No site	P4	
		6	516351	7508070	No site	P4	
		2	516346	7508047	No site	P4	
		2	516377	7508061	No site	P4	
		30–40	522845	7509484	No site	P4	
		5	522560	7509450	No site	P4	
		2	522583	7509458	No site	P4	
		1	522642	7509470	No site	P4	
		7	523009	7509473	No site	P4	
		6	523021	7509459	No site	P4	
		10–15	523031	7509479	No site	P4	
		10	523031	7509465	No site	P4	
105	510010	7507507	No site	P4			

Family	Genus	Population size or % cover	Easting	Northing	Site ID	Conservation Status	Photo
		65	510062	7507509	No site	P4	

**Appendix L Records of Significant Flora Recorded within
50km of the Study Area and their Likelihood of
Occurrence**

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source					Likelihood of occurrence within the Survey area			
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey	
<i>Bothriochloa decipiens</i> var. <i>cloncurrensis</i>	P1		Perennial grass	Small, seasonally damp depression (would have water for a short time after rain) on a small plain between a large river and low hills. Soil: Red-brown loam.	May	9.5 km					x		Possible: The species has been recorded in close proximity to the Survey area and may contain suitable habitat, although it has been recorded infrequently in the area.	Unlikely: Although the Survey area is within the range of this species and contains marginally suitable habitat, it has been recorded infrequently in the area and it is likely that if present in the Survey area, this perennial species would have been detectable at the time of the survey.	
<i>Calotis squamigera</i>	P1		Procumbent annual, herb	Very gently undulating plain. Red-brown loam with a mantle of gravel and small rock.	Jul.	3.7 km						x	<ul style="list-style-type: none"> • Biota (2009c) • Biota (2018) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains suitable habitat. It is possible that this annual herb would not have been detectable at the time of the survey.
<i>Euphorbia inappendiculata</i> var. <i>queenslandica</i>	P1		Annual, Prostrate herb	Cracking clays, Co-occurs with tussock grasslands	Jul.	1.2 km	x			x	x		<ul style="list-style-type: none"> • Astron (2014a) • Biota (2018) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat. It is possible that if present in the Survey area, this annual herb would not have been detectable at the time of the survey.
<i>Goodenia pedicellata</i> (L.W.Sage & K.W.Dixon)	P1		Single-stemmed perennial, herb	Rocky clayey soils. Rocky slopes and crests of small hills	Apr-May	8.0 km	x			x	x		• Biota (2016)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains suitable habitat. It is possible that the survey timing missed the optimal flowering period for this species.
<i>Helichrysum oligochaetum</i>	P1		Erect annual, herb	Red clay. Alluvial plains	Aug-Nov	12.4km				x	x		• Biota (2018)	Possible: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains suitable habitat. It is possible that this annual herb would not have been detectable at the time of the survey.
<i>Hibiscus campanulatus</i>	P1		Erect shrub	Drainage lines, gullies, gorges, base of rocky cliffs. Skeletal soils over massive ironstone rocks/outcropping. Red clay/loam over ironstone.	Aug	12.6 km	x			x				Possible: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Unlikely: Although the Survey area is within the range of this species and contains marginally suitable habitat, it has been recorded infrequently in the area and it is likely that if present in the Survey area, this perennial species would have been detectable at the time of the survey.
<i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354)	P1		Erect perennial shrub	Steep deeply incised drainage gullies, base of breakaways or slate like rock outcrops fringing steep incised gullies.	Mar, May, Jul, Aug & Nov	Previously recorded within the Survey area	x			x	x		<ul style="list-style-type: none"> • Astron (2014a, 2014b) • Biota (2019a, 2016, 2018) 	Previously recorded within the Survey area.	Previously recorded within the Survey area.
<i>Tetratheca butcheriana</i>	P1		Small sub-shrub	NE Cliff faces and breakaways	Jul	0.1km	x			x	x		• Biota (2019a)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Recorded

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source						Likelihood of occurrence within the Survey area		
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey	
<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808)	P1		Perennial hummock grass	Low hill	Unknown	0.05km							• Biota (2019 b, c, 2018)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Recorded
<i>Vittadinia</i> sp. Coondewanna Flats (S. van Leeuwen 4684)	P1		Erect annual herb	Major drainage/ floodplain in valley between ranges. Flat/plain to very broad open drainage depression, sandy clay	May & Jul	0.8km				x	x		• Biota (2019c, 2018)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains suitable habitat. It is possible that this annual herb would not have been detectable at the time of the survey.
<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	P2		Prostrate annual herb	Flat/Plain, Cracking clay floodplain. Clay soils.	Aug	6.6km	x			x			• Biota (2018)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: Although the Survey area is within the range of this species it does not contain only suitable habitat.
<i>Dicladantha glabra</i>	P2		Spreading perennial, herb or shrub	Alluvium. Along watercourses, near rock pools	Unknown	38.2km					x		• Biota (2018)	Possible: Although the Survey area may contain suitable habitat, it has been recorded greater than 20 km from the Survey area.	Unlikely: This species has previously been recorded greater than 20 km from the Survey area and it is likely that if present in the Survey area, it would have been detectable at the time of the survey.
<i>Gompholobium karjini</i>	P2		Shrub	Plateau, flat to gently undulating. Hillslope. Undulating ridges between ranges.	Aug-Sep	20.1 km				x	x		• Biota (2018)	Possible: Although the Survey area may contain suitable habitat, it has been recorded greater than 20 km from the Survey area.	Unlikely: This species has previously been recorded greater than 20 km from the Survey area and it is likely that if present in the Survey area, it would have been detectable at the time of the survey.
<i>Hibiscus</i> sp. Gurinbidy Range (M.E. Trudgen MET 15708)	P2		Erect perennial shrub	Creeklines/drainage lines, incised gully high in rocky range, Loamy skeletal soils.	Mar-Aug	0.8 km					x		• Astron (2014a) • Biota (2019a, c, 2016)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Recorded
<i>Ipomoea racemigera</i>	P2		Creeping annual, herb to climber	Drainage line, flats with silty loam soil.	Apr & Jun	Previously recorded within the Survey area					x		• Biota (2019b, 2018)	Previously recorded within the Survey area.	Previously recorded within the Survey area.
<i>Oxalis</i> sp. Pilbara (M.E. Trudgen 12725)	P2		Annual herb	Rocky hillslope, major creekline, steep gully, stony plain.	May-Jul	2.0 km	x			x	x		• Biota (2019a, 2016)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains suitable habitat. It is possible that this annual herb would not have been detectable at the time of the survey.
<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i>	P2		Perennial shrub	Undulating hills and crests, stony hills	Apr, Jul-Oct	Previously recorded within the Survey area	x			x	x		• Biota (2019b, 2018, 2016, 2013a)	Previously recorded within the Survey area	Recorded
<i>Teucrium pilbaranum</i>	P2		Upright shrub	Crab hole plain in a river floodplain, margin of calcrete table	May or Sept	5.9 km	x			x	x		• Astron (2014a) • Biota (2012b)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat. It is likely that if present in the Survey area, this shrub would have been detectable at the time of the survey.

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source						Likelihood of occurrence within the Survey area			
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey		
<i>Abutilon</i> sp. <i>Pritzelianum</i> (S. van Leeuwen 5095)	P3		Shrub/Herb (Undefined)	Sandy plain with red/brown sand	Apr, Jun-Sep & Nov	1.5 km						x		Possible: The species has been recorded in close proximity to the Survey area and may contain suitable habitat, although it has been recorded infrequently in the area.	Unlikely: The historical location of this species is likely an error (H. Ajduk pers. comms. 2019) and the Survey area does not contain suitable habitat.	
<i>Amaranthus centralis</i>	P3		Herb/Shrub (undefined)	Plain/Alluvial flat, Granite outcrop. Silty sand amongst granite boulders.	May	10.7 km							x	Possible: The species has been recorded in close proximity to the Survey area and may contain suitable habitat, although it has been recorded infrequently in the area	Possible: The species has been recorded infrequently in close proximity to the Survey area and does contain suitable habitat.	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3		Compactly tufted perennial, grass-like or herb (Undefined)	Flat to open depressions, hardpan plains	Mar-May, Jul & Sep	0.9 km	x				x	x		• Biota (2018)	Possible: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The species has been recorded in very close proximity to the Survey area and does contain suitable habitat. It is likely that if present in the Survey area, this perennial grass would have been detectable at the time of the survey.
<i>Astrebla lappacea</i>	P3		Tufted perennial, grass-like or herb (undefined)	Alluvial plain with dark red cracking clay over ironstone. Clay, loam.	Jun-Jul	4.1 km	x			x	x	x		• Astron (2014a) • Biota (2019c, 2018, 2012b, 2009d)	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat. It is likely that if present in the Survey area, this perennial grass would have been detectable at the time of the survey.
<i>Cyanthillium gracile</i>	P3		Perennial, suffruticosa herb.	Rocky gully/slope, ironstone outcropping. High in landscape, summit of rounded hill, skeletal red gritty soil over massive Brockman Iron Formation rock.	Apr-Jul & Oct	0.05 km	x				x				Possible: The species has been recorded very in close proximity to the Survey area and may contain suitable habitat, although it has been recorded infrequently in the area.	Likely: The species has been recorded in very close proximity to the Survey area and does contain suitable habitat. It is possible that the survey timing missed the optimal flowering period for this species.
<i>Dampiera anonyma</i>	P3		Multistemmed perennial, herb	Skeletal red-brown to brown gravelly soil over banded ironstone, basalt, shale and jaspilite. Hill summits, upper slopes (above 1000m).	Jun-Sep	9.8 km	x				x	x		• Biota (2019a)	Possible: The species has been recorded in proximity to the Survey area and may contain suitable habitat.	Likely: The Survey area is within the range of this species and contains suitable habitat which, due to lack of access, could not all be traversed on foot. If present in the Survey area, this perennial shrub would have been detectable at the time of the survey.
<i>Eragrostis surreyana</i>	P3		Tufted annual grass/herb (undefined)	Broad drainage-soak with patchy surface water. Red brown loamy sand. Soak with standing water. Major creek with permanently damp soil.	Unknown	2.3 km							x	• Biota (2018)	Possible: The species has been recorded in proximity to the Survey area and may contain suitable habitat.	Possible: The species has been recorded in very close proximity to the Survey area and contains marginally suitable habitat. It is possible that if present in the Survey area, this annual grass would not have been detectable at the time of the survey.

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source					Likelihood of occurrence within the Survey area			
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey	
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	P3		Shrub	Skeletal soils over ironstone. Summits.	Aug-Sep	Previously recorded within the Survey area	x		x	x	x	<ul style="list-style-type: none"> Astron (2014b) Biota (2019b, 2018, 2016, 2009d) Eco Logical (2013b) RTIO (2012) 	Previously recorded within the Survey area	Recorded	
<i>Eremophila</i> sp. Hamersley Range (K. Walker KW 136)	P3		Erect Shrub	Summit of hill, high in landscape, steep rock slopes and scree, skeletal brown-red soil over massive banded ironstone of the Brockman Iron Formation. Rocky hill slopes, hill crests and upper hill slopes.	Jun, Aug & Sep	5.4 km					x	<ul style="list-style-type: none"> Biota (2019a) 	Likely: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and does contain suitable habitat. It is likely that if present in the Survey area, this shrub would have been detectable at the time of the survey.	
<i>Euphorbia australis</i> var. <i>glabra</i>	P3		Annual prostrate herb	Moderate drainage, Broad flat/slightly undulating plain, cracking clay, Silt and clay	Apr & Sep	0.4 km	x			x	x	<ul style="list-style-type: none"> Biota (2019c) 	Likely: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and does not contain suitable habitat. It is likely that if present in the Survey area, this annual herb may not have been detectable at the time of the survey.	
<i>Fimbristylis sieberiana</i>	P3		Shortly rhizomatous, tufted perennial, grass-like or herb (sedge)	Mud, skeletal soil pockets. Pool edges, sandstone cliffs	May to Jun	1.8 km						<ul style="list-style-type: none"> Biota (2019b, c, 2018) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat. It is likely that if present in the Survey area, this perennial species would have been detectable at the time of the survey.	
<i>Geijera salicifolia</i>	P3		Tree	Skeletal soils, stony soils. Massive rock scree, gorges	Sep	26.2 km					x		<ul style="list-style-type: none"> Biota (2019c) 	Possible: Although the Survey area may contain suitable habitat, it has been recorded infrequently and greater than 20 km from the Survey area.	Unlikely: This species has previously been recorded infrequently and greater than 20 km from the Survey area. It is likely that if present in the Survey area, it would have been detectable at the time of the survey.
<i>Glycine falcata</i>	P3		Mat-forming perennial, herb	Black clayey sand. Along drainage depressions in crabhole plains on river floodplains.	May or Jul	2.5 km	x		x	x	x	<ul style="list-style-type: none"> Astron (2014a, 2012b) Biota (2019c, 2018) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Possible: The Survey area is within the range of this species and contains marginally suitable habitat. It is likely that if present in the Survey area, this annual herb would have been detectable at the time of the survey.	
<i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727)	P3		Open, erect annual or biennial, herb	Red-brown clay soil, calcrete pebbles. Low undulating plain, swampy plains.	Feb-May & Aug-Oct	12.7 km	x		x	x	x	<ul style="list-style-type: none"> Biota (2018) 	Possible: The species has been recorded in proximity to the Survey area and may contain suitable habitat.	Unlikely: Although the Survey area is within the range of this species it does not contain suitable habitat.	

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source						Likelihood of occurrence within the Survey area		
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey	
<i>Grevillea saxicola</i>	P3		Erect shrub or Tree (Undefined)	Rocky hillside/ hillcrest, Drainage line, incised gully in rocky valley, plain, steep scree slope	Feb-Apr & Jun	0.7 km	x				x	x	<ul style="list-style-type: none"> Biota (2019a, b, c, 2018, 2013b) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The Survey area is within the range of this species and contains suitable habitat. It is likely that if present in the Survey area, this tree would have been detectable at the time of the survey.
<i>Gymnanthera cunninghamii</i>	P3		Erect shrub	Sandy soils	Jan-Dec	Previously recorded within the Survey area	x		x	x	x		<ul style="list-style-type: none"> Biota (2019a, b, 2018) HGM (1999) 	Previously recorded within the Survey area	Previously recorded within the Survey area
<i>Indigofera gilesii</i>	P3		Shrub	Pebbly loam. Amongst boulders & outcrops, hills	May or Aug	0.3km					x		<ul style="list-style-type: none"> Biota (2018) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The Survey area is within the range of this species and contains suitable habitat. It is likely that if present in the Survey area, this shrub would have been detectable at the time of the survey.
<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301)	P3		Erect perennial shrub	Creepline, drainage line, Gorge/gully.	May-Oct	Previously recorded within the Survey area	x			x	x		<ul style="list-style-type: none"> Astron (2014b) Biota (2019a, b, c, 2018, 2014, 2013a, 2010a, 2009d, 2009b) Eco Logical & RTIO (2013) Eco Logical (2013a) RTIO (2012, 2011) 	Previously recorded within the Survey area	Recorded
<i>Iotasperma sessilifolium</i>	P3		Erect herb	Cracking clay, black loam. Edges of waterholes, plains	Jul-Sep	3.5 km	x			x	x		<ul style="list-style-type: none"> Biota (2018, 2012b) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat.
<i>Nicotiana umbratica</i>	P3		Erect short-lived annual or perennial herb	Shallow soils. Rocky outcrops.	Apr-Jun	4.0 km	x			x	x			<p>Unlikely: Although the Rio Tinto database and WAH database list this species as occurring within 4 km of the Survey area, recent taxonomic work on this species has determined that plants collected to the west of the Great Northern Highway, that have in the past been identified as <i>Nicotiana umbratica</i>, are now described as <i>Nicotiana Karijini</i> (Chase and Christenhusz 2018). The nearest location of <i>Nicotiana umbratica</i> is approximately 270 km to the north east of the Survey area and unlikely to be present.</p>	<p>Unlikely: Although the Rio Tinto database and WAH database list this species as occurring within 4 km of the Survey area, recent taxonomic work on this species has determined that plants collected to the west of the Great Northern Highway, that have in the past been identified as <i>Nicotiana umbratica</i>, are now described as <i>Nicotiana Karijini</i> (Chase and Christenhusz 2018). The nearest location of <i>Nicotiana umbratica</i> is approximately 270 km to the north east of the Survey area and unlikely to be present.</p>

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source					Likelihood of occurrence within the Survey area		
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey
<i>Oldenlandia</i> sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3		Spreading annual herb	Cracking clay, basalt. Gently undulating plain with large surface rocks, flat crabholed plain.	Mar	4.3 km				x	x	<ul style="list-style-type: none"> Astron (2014a) Biota (2019c, 2018, 2016, 2012b, 2009b) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Unlikely: The Survey area is within the range of this species but does not contain suitable habitat.
<i>Ptilotus subspinescens</i>	P3		Compact shrub	Gentle rocky slopes, screes and the bases of screes.	Jun-Nov	1.2km	x		x	x	x	<ul style="list-style-type: none"> Biota (2019b, 2018, 2016, 2013b, 2009b, 2007e, 2005b, 2005) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The species has been recorded in very close proximity to the Survey area and contains suitable habitat. It is likely that if present in the Survey area, this perennial shrub would have been detectable at the time of the survey.
<i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794)	P3		Perennial Shrub	Plain/Undulating plain of red / brown sandy clay soil over ironstone, floodplain, Alluvial plain, Minor drainage	Mar, May, Sep & Nov	0.2 km	x			x	x	<ul style="list-style-type: none"> Biota (2019a, 2018, 2010c) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The species has been recorded in very close proximity to the Survey area and contains suitable habitat. It is likely that if present in the Survey area, this perennial shrub would have been detectable at the time of the survey.
<i>Rostellularia adscendens</i> var. <i>latifolia</i>	P3		Herb or shrub (Undefined)	Ironstone soils. Near creeks, rocky hills.	Apr-May	0.4 km	x			x	x	<ul style="list-style-type: none"> Biota (2018, 2012b, 2009d, 2009c, 2007e) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The species has been recorded in very close proximity to the Survey area and does contain suitable habitat. It is possible that if present in the Survey area, this herb may not have been detectable at the time of the survey.
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	P3		Spreading shrub	Skeletal red soils pockets. Steep slope.	Aug	Previously recorded within the Survey area	x			x	x	<ul style="list-style-type: none"> Astron (2014a, 2014b) Biota (2019a, 2010a, 2009a) Eco Logical (2014a) 	Previously recorded within the Survey area	Recorded
<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	P3		Low spreading shrub	Base of breakaway, crevices in ironstone. Sides of ironstone breakaways. Gullies.	May & Aug-Oct	Previously recorded within the Survey area	x		x	x	x	<ul style="list-style-type: none"> Astron (2014b) Biota (2019a, c, 2018, 2016, 2009a) RTIO (2011) 	Previously recorded within the Survey area	Previously recorded within the Survey area
<i>Solanum kentrocaule</i>	P3		Perennial shrub	Valley/Gully. Stony steep slope, skeletal soil. Rocky creekbed. Summit of hill and on adjacent steep slopes.	May & Jul-Oct	23.6 km					x		Possible: Although the Survey area may contain suitable habitat, it has been recorded greater than 20 km from the Survey area.	Unlikely: This species has previously been recorded greater than 20 km from the Survey area. It is likely that if present in the Survey area, this perennial shrub would have been detectable at the time of the survey.

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source						Likelihood of occurrence within the Survey area		
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey	
<i>Stackhousia clementii</i>	P3		Dense broom-like perennial	Skeletal soils. Sandstone hills	Unknown	24.8 km							<ul style="list-style-type: none"> • Biota (2017) 	<p>Possible: Although the Survey area may contain suitable habitat, it has been recorded greater than 20 km from the Survey area.</p>	<p>Unlikely: This species has previously been recorded greater than 20 km from the Survey area and contains suitable habitat, however it is likely that if present in the Survey area, it would have been detectable at the time of the survey.</p>
<i>Swainsona thompsoniana</i>	P3		Prostrate annual herb.	Bank slope, Broad flat clay pan drain, Flat open plain, Red-brown cracking clay.	Mar, Apr Jun, Aug & Sep	0.4 km	x				x	x	<ul style="list-style-type: none"> • Astron (2014a, 2012b, 2009d) • Biota (2019c, 2018) 	<p>Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.</p>	<p>Possible: The species has been recorded in very close proximity to the Survey area but does not contain suitable habitat. It is possible that if present in the Survey area, this annual herb may not have been detectable at the time of the survey.</p>
<i>Terminalia supranitifolia</i>	P3		Spreading, tangled shrub or tree	Sand. Among basalt rocks	May or Jul or Dec	39 KM							<ul style="list-style-type: none"> • Biota (2018) 	<p>Possible: Although the Survey area may contain suitable habitat, it has been recorded greater than 20 km from the Survey area.</p>	<p>Unlikely: This species has previously been recorded greater than 20 km from the Survey area. The Survey area does not contain suitable habitat and it is likely that if present in the Survey area, it would have been detectable at the time of the survey.</p>
<i>Themeda</i> sp. Hamersley Station (M.E. Trudgen 11431)	P3		Tussocky perennial, grass-like or herb (undefined)	Red Clay. Clay pan, grass plain.	Aug	1.2 km	x				x	x	<ul style="list-style-type: none"> • Astron (2014a) • Biota (2019a, b, c, 2018, 2012b, 2009d) 	<p>Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.</p>	<p>Possible: The species has been recorded in very close proximity to the Survey area and contains suitable habitat. It is possible that areas of this habitat were not accessed. If present in the Survey area, this perennial grass would have been detectable at the time of the survey.</p>
<i>Triodia basitricha</i>	P3		Hummock forming grass	Brown clay-loam over ironstone. Stony plain, rocky rise/flat/hill, Low rise	Feb, Mar, Jun & Jul	1.9 km					x	x	<ul style="list-style-type: none"> • Biota (2019a, b, c, 2018, 2016) 	<p>Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.</p>	<p>Possible: The species has been recorded in very close proximity to the Survey area and contains suitable habitat. It is possible that areas of this habitat were not accessed. If present in the Survey area, this perennial grass would have been detectable at the time of the survey.</p>
<i>Triodia pisolitica</i>	P3		Perennial hummock grass	Flat hillcrest, rocky creekline in gully. Breakaway. Drainage depression, Major creekline. Rangeland. Brown/red ironstone gravel.	Feb, Mar, Jun, Jul & Sep	30 km					x			<p>Possible: Although the Survey area may contain suitable habitat, it has been recorded infrequently and greater than 20 km from the Survey area.</p>	<p>Unlikely: This species has previously been recorded infrequently and greater than 20 km from the Survey area. It is likely that if present in the Survey area, this perennial grass would have been detectable at the time of the survey.</p>
<i>Acacia bromilowiana</i>	P4		Tree or shrub	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaways, scree slopes, gorges, creek beds.	Jul-Aug	Previously recorded within the Survey area	x				x	x	<ul style="list-style-type: none"> • Astron (2014a, 2014b) • Biota (2019a, c, 2018, 2016) • RTIO (2012) 	<p>Previously recorded within the Survey area</p>	<p>Previously recorded within the Survey area</p>

Species name	Conservation status		Habit	Broad habitat	Flowering period	Nearest known locality	Source					Likelihood of occurrence within the Survey area		
	WC Act	EPBC					NatureMap	PMST	TPFL	WA Herb	Rio Tinto Database	Previous survey(s)	Pre-survey	Post-survey
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	P4		Shrub	Skeletal soils over ironstone. Rocky screes.	Aug-Nov	Previously recorded within the Survey area	x			x	x	<ul style="list-style-type: none"> • Biota (2019a, b, 2018, 2009a, 2005b, 2005) • Eco Logical (2013b, 2013a) • RTIO (2011) 	Previously recorded within the Survey area	Recorded
<i>Goodenia nuda</i>	P4		Erect to ascending herb	Drainage line, sandy floodplain, Mixed alluvial plain. Valley floor.	Apr-Aug	0.4 km	x			x	x	<ul style="list-style-type: none"> • Biota (2019a, b, 2018, 2016, 2013a, 2012b, 2009c, 2007b) • Mattiske (2011) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Recorded
<i>Lepidium catapycnon</i>	P4		Woody perennial, herb or shrub	Skeletal soils. Hillsides.	Oct	2.4 km	x		x		x	<ul style="list-style-type: none"> • Biota (2019a) 	Likely: The species has been recorded in very close proximity to the Survey area and may contain suitable habitat.	Likely: The species has been recorded in very close proximity to the Survey area and contains suitable habitat. It is likely that if present in the Survey area, this shrub would not have been detectable at the time of the survey.
<i>Livistona alfredii</i>	P4		Tree-like monocot (palm)	Edges of permanent pools	Jul to Sep	6.3 km				x	x	<ul style="list-style-type: none"> • Biota (2019b) 	Possible: The species has been recorded in close proximity to the Survey area but is unlikely to contain suitable habitat.	Unlikely: The species has been recorded in close proximity and does not contain suitable habitat. It is likely that if present in the Survey area, this perennial tree would have been detectable at the time of the survey.
<i>Ptilotus mollis</i>	P4		Compact, perennial shrub	Stony hills and screes.	May or Sep	9.8 km	x			x	x	<ul style="list-style-type: none"> • Biota (2019b, c, 2018) 	Likely: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Possible: The species has been recorded in close proximity to the Survey area and contains suitable habitat however it is possible that areas of this habitat were not accessed. If present in the Survey area, this perennial shrub would have been detectable at the time of the survey.
<i>Rhynchosia bungarensis</i>	P4		Compact, prostrate shrub	Pebbly, shingly coarse sand amongst boulders. Banks of flow line in the mouth of a gully in a valley wall	Apr-Nov	5.6 km	x			x	x	<ul style="list-style-type: none"> • Biota (2019b, c, 2018) 	Likely: The species has been recorded in close proximity to the Survey area and may contain suitable habitat.	Possible: The species has been recorded in close proximity to the Survey area and contains suitable habitat, however it is possible that areas of this habitat were not accessed. If present in the Survey area, this perennial shrub would have been detectable at the time of the survey.

Appendix M Vascular Flora Recorded from the Current Survey

Family	Stantec_Taxon	Current survey	Historical Surveys
Acanthaceae	<i>Dicladanthera forrestii</i>	x	x
	<i>Dipteracanthus australasicus</i> subsp. <i>australasicus</i>	x	x
	<i>Harnieria kempeana</i> subsp. <i>muelleri</i>	x	x
Amaranthaceae	<i>Alternanthera nana</i>	x	
	<i>Alternanthera nodiflora</i>	x	
	<i>Amaranthus</i> ? <i>undulatus</i>	x	
	<i>Gomphrena canescens</i> subsp. <i>canescens</i>	x	x
	<i>Gomphrena cunninghamii</i>	x	
	<i>Ptilotus astrolasius</i>	x	x
	<i>Ptilotus calostachyus</i>	x	x
	<i>Ptilotus exaltatus</i>	x	x
	<i>Ptilotus fusiformis</i>	x	x
	<i>Ptilotus obovatus</i> var. <i>obovatus</i>	x	x
	<i>Ptilotus polystachyus</i>	x	x
	<i>Ptilotus rotundifolius</i>	x	x
Apocynaceae	? <i>Carissa lanceolata</i>	x	
	<i>Cynanchum floribundum</i>	x	
	<i>Cynanchum viminale</i> subsp. <i>australe</i>	x	x
	<i>Vincetoxicum flexuosum</i>	x	
	<i>Vincetoxicum lineare</i>	x	x
Araliaceae	<i>Astrotricha hamptonii</i>	x	
	<i>Trachymene oleracea</i> subsp. <i>oleracea</i>	x	x
	<i>Trachymene pilbarensis</i>	x	
Asteraceae	* <i>Bidens bipinnata</i>	x	x
	<i>Chrysocephalum apiculatum</i> subsp. <i>pilbarensis</i>	x	
	<i>Leiocarpa semicalva</i>	x	
	<i>Olearia xerophila</i>	x	
	<i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> (P2)	x	x
	<i>Pentalepis trichodesmoides</i> subsp. <i>trichodesmoides</i>	x	
	<i>Pluchea dentex</i>	x	
	<i>Pluchea rubelliflora</i>	x	
	<i>Pterocaulon</i> ? <i>serrulatum</i>	x	
	<i>Pterocaulon sphacelatum</i>	x	x
	<i>Streptoglossa bubakii</i>	x	x
<i>Streptoglossa decurrens</i>	x		
Boraginaceae	<i>Heliotropium chrysocarpum</i>	x	x
	<i>Heliotropium cunninghamii</i>	x	
	<i>Heliotropium tenuifolium</i>	x	
	<i>Trichodesma zeylanicum</i>	x	x
	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>	x	x
Brassicaceae	<i>Lepidium pedicellosum</i>	x	x
Capparaceae	<i>Capparis lasiantha</i>	x	x
	<i>Capparis spinosa</i> subsp. <i>nummularia</i>	x	x
	<i>Capparis umbonata</i>	x	x
Caryophyllaceae	<i>Polycarpaea corymbosa</i> var. <i>corymbosa</i>	x	x
	<i>Polycarpaea holtzei</i>	x	x

Family	Stantec_Taxon	Current survey	Historical Surveys
	<i>Polycarpaea longiflora</i>	x	x
Chenopodiaceae	<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	x	x
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	x	x
	<i>Maireana georgei</i>	x	x
	<i>Maireana melanocoma</i>	x	x
	<i>Maireana planifolia</i>	x	x
	<i>Maireana tomentosa</i> subsp. <i>tomentosa</i>	x	
	<i>Maireana triptera</i>	x	x
	<i>Rhagodia eremaea</i>	x	x
	<i>Salsola australis</i>	x	x
	<i>Sclerolaena cornishiana</i>	x	
	<i>Sclerolaena eriacantha</i>	x	x
	Cleomaceae	<i>Cleome viscosa</i>	x
Convolvulaceae	<i>Bonamia erecta</i>	x	x
	<i>Convolvulus clementii</i>	x	x
	<i>Duperreya commixta</i>	x	x
	<i>Evolvulus alsinoides</i> var. <i>decumbens</i>	x	x
	<i>Evolvulus alsinoides</i> var. <i>villosicalyx</i>	x	x
	<i>Polymeria ambigua</i>	x	
	<i>Polymeria longifolia</i>	x	
Cucurbitaceae	<i>Cucumis variabilis</i>	x	x
Cyperaceae	<i>Bulbostylis barbata</i>	x	x
	<i>Cyperus cunninghamii</i> subsp. <i>cunninghamii</i>	x	x
	<i>Cyperus hesperius</i>	x	x
	<i>Cyperus vaginatus</i>	x	
Elaeocarpaceae	<i>Tetralthea butcheriana</i> (P1)	x	
Euphorbiaceae	<i>Adriana tomentosa</i> var. <i>tomentosa</i>	x	
	<i>Euphorbia australis</i>	x	
	<i>Euphorbia australis</i> var. <i>hispidula</i>	x	
	<i>Euphorbia biconvexa</i>	x	
	<i>Euphorbia boophthona</i>	x	
	<i>Euphorbia careyi</i>	x	
	<i>Euphorbia coghlanii</i>	x	
	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	x	x
	<i>Euphorbia trigonosperma</i>	x	
Fabaceae	<i>Tephrosia rosea</i> var. <i>Fortescue creeks</i> (M.I.H. Brooker 2186)	x	x
	<i>Tephrosia</i> sp. <i>Bungaroo Creek</i> (M.E. Trudgen 11601) (P3)	x	x
	* <i>Vachellia farnesiana</i>	x	x
	<i>Acacia ?rhodophloia</i>	x	
	<i>Acacia ampliceps</i> x <i>bivenosa</i>	x	
	<i>Acacia ancistrocarpa</i>	x	x
	<i>Acacia aneura</i>	x	x
	<i>Acacia aptaneura</i>	x	x
	<i>Acacia arida</i>	x	
	<i>Acacia atkinsiana</i>	x	x
	<i>Acacia ayersiana</i>	x	

Family	Stantec_Taxon	Current survey	Historical Surveys
	<i>Acacia bivenosa</i>	x	x
	<i>Acacia citrinoviridis</i>	x	x
	<i>Acacia colei</i> var. <i>colei</i>	x	
	<i>Acacia coriacea</i> subsp. <i>pendens</i>	x	x
	<i>Acacia cowleana</i>	x	
	<i>Acacia dictyophleba</i>	x	
	<i>Acacia exigua</i>	x	x
	<i>Acacia hamersleyensis</i>	x	
	<i>Acacia inaequilatera</i>	x	x
	<i>Acacia kempeana</i>	x	x
	<i>Acacia maitlandii</i>	x	x
	<i>Acacia marramamba</i>	x	x
	<i>Acacia monticola</i>	x	x
	<i>Acacia pachyacra</i>	x	
	<i>Acacia pruinocarpa</i>	x	x
	<i>Acacia pyrifolia</i>	x	x
	<i>Acacia pyrifolia</i> var. <i>pyrifolia</i>	x	x
	<i>Acacia sibirica</i>	x	x
	<i>Acacia spondylophylla</i>	x	
	<i>Acacia synchronicia</i>	x	x
	<i>Acacia tetragonophylla</i>	x	x
	<i>Acacia trudgeniana</i>	x	
	<i>Acacia tumida</i> var. <i>pilbarensis</i>	x	x
	<i>Acacia xiphophylla</i>	x	x
	<i>Acacia rhodophloia</i>	x	
	<i>Crotalaria medicaginea</i> var. <i>neglecta</i>	x	
	<i>Cullen leucochaites</i>	x	x
	<i>Gastrolobium grandiflorum</i>	x	
	<i>Glycine canescens</i>	x	x
	<i>Gompholobium oreophilum</i>	x	
	<i>Indigofera fractiflexa</i> subsp. <i>fractiflexa</i>	x	x
	<i>Indigofera monophylla</i>	x	x
	<i>Indigofera rugosa</i>	x	
	<i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)	x	x
	<i>Isotropis atropurpurea</i>	x	
	<i>Neptunia dimorphantha</i>	x	
	<i>Petalostylis labicheoides</i>	x	x
	<i>Rhynchosia minima</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	x	
	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>pruinosa</i>	x	
	<i>Senna ferraria</i>	x	x
	<i>Senna glutinosa</i> subsp. <i>xluerssenii</i>	x	x
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>	x	x
	<i>Senna glutinosa</i> subsp. <i>pruinosa</i>	x	x

Family	Stantec_Taxon	Current survey	Historical Surveys
	<i>Senna hamersleyensis</i>	x	
	<i>Senna stricta</i>	x	x
	<i>Senna venusta</i>	x	
	<i>Templetonia egena</i>	x	x
	<i>Tephrosia rosea</i> var. <i>clementii</i>	x	
	<i>Vigna lanceolata</i>	x	
	<i>Vigna</i> sp. Hamersley Clay (A.A. Mitchell PRP 113)	x	
Frankeniaceae	<i>Frankenia hispidula</i>	x	
Goodeniaceae	<i>Dampiera candicans</i>	x	x
	<i>Dampiera dentata</i>	x	
	<i>Goodenia cusackiana</i>	x	
	<i>Goodenia forrestii</i>	x	x
	<i>Goodenia lamprosperma</i>	x	
	<i>Goodenia microptera</i>	x	
	<i>Goodenia muelleriana</i>	x	
	<i>Goodenia nuda</i> (P4)	x	
	<i>Goodenia stobbsiana</i>	x	x
	<i>Scaevola amblyanthera</i> var. <i>centralis</i>	x	
	<i>Scaevola parvifolia</i>	x	
	<i>Scaevola spinescens</i>	x	x
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	x	x
Lamiaceae	<i>Clerodendrum floribundum</i>	x	x
	<i>Clerodendrum floribundum</i> var. <i>angustifolium</i>	x	
	<i>Clerodendrum tomentosum</i>	x	
Lauraceae	<i>Cassytha capillaris</i>	x	
Loranthaceae	<i>Amyema</i> sp. <i>Fortescue</i> (M.E. Trudgen 5358)	x	x
	<i>Lysiana casuarinae</i>	x	
Malvaceae	* <i>Malvastrum americanum</i>	x	x
	<i>Abutilon amplum</i>	x	x
	<i>Abutilon fraseri</i>	x	
	<i>Abutilon lepidum</i>	x	x
	<i>Abutilon otocarpum</i>	x	x
	<i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618)	x	
	<i>Androcalva luteiflora</i>	x	x
	<i>Brachychiton acuminatus</i>	x	x
	<i>Corchorus</i> ? <i>lasiocarpus</i>	x	
	<i>Corchorus crozophorifolius</i>	x	x
	<i>Corchorus lasiocarpus</i> subsp. <i>lasiocarpus</i>	x	
	<i>Corchorus lasiocarpus</i> subsp. <i>parvus</i>	x	x
	<i>Corchorus parviflorus</i>	x	x
	<i>Corchorus tectus</i>	x	
	<i>Gossypium australe</i>	x	x
	<i>Gossypium robinsonii</i>	x	x
	<i>Gossypium sturtianum</i> var. <i>sturtianum</i>	x	x
	<i>Hibiscus</i> aff. sp. Gurinbiddy Range (M.E. Trudgen MET 15708) (P2)	x	

Family	Stantec_Taxon	Current survey	Historical Surveys
	<i>Hibiscus</i> aff. sp. Mt Robinson (G. Byrne 3537)	x	
	<i>Hibiscus brachychlaenus</i>	x	
	<i>Hibiscus burtonii</i>	x	x
	<i>Hibiscus coatesii</i>	x	x
	<i>Hibiscus sturtii</i>	x	
	<i>Hibiscus sturtii</i> var. <i>campylochlamys</i>	x	
	<i>Hibiscus sturtii</i> var. <i>platychlamys</i>	x	x
	<i>Melhania oblongifolia</i>	x	x
	<i>Seringia elliptica</i>	x	
	<i>Sida echinocarpa</i>	x	x
	<i>Sida ectogama</i>	x	
	<i>Sida fibulifera</i>	x	x
	<i>Sida</i> sp. Barlee Range (S. Van Leeuwen 1642) (P3)	x	x
	<i>Sida</i> sp. Excedentifolia (J.L. Egan 1925)	x	x
	<i>Sida</i> sp. L (A.M. Ashyby 4202)	x	
	<i>Sida</i> sp. Pilbara (A.A. Mitchell PRP 1543)	x	x
	<i>Sida</i> sp. Shovelanna Hill (S. van leeuwen 3842)	x	x
	<i>Sida</i> sp. spiciform panicles (E. Leyland s.n. 14/8/90)	x	x
	<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260)	x	
	<i>Triumfetta maconochieana</i>	x	x
	<i>Waltheria indica</i>	x	x
Marsileaceae	<i>Marsilea hirsuta</i>	x	
Menispermaceae	<i>Tinospora smilacina</i>	x	
Moraceae	<i>Ficus brachypoda</i>	x	x
Myrtaceae	<i>Calytrix carinata</i>	x	
	<i>Corymbia deserticola</i> subsp. <i>deserticola</i>	x	x
	<i>Corymbia ferriticola</i>	x	x
	<i>Corymbia hamersleyana</i>	x	x
	<i>Eucalyptus</i> ? <i>trivalva</i>	x	
	<i>Eucalyptus camaldulensis</i>	x	
	<i>Eucalyptus camaldulensis</i> subsp. ? <i>obtusa</i>	x	
	<i>Eucalyptus gamophylla</i>	x	x
	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i>	x	x
	<i>Eucalyptus pilbarensis</i>	x	
	<i>Eucalyptus socialis</i> subsp. <i>eucentrica</i>	x	x
	<i>Eucalyptus victrix</i>	x	x
	<i>Eucalyptus xerothermica</i>	x	x
	<i>Melaleuca bracteata</i>	x	
	<i>Melaleuca eleuterostachya</i>	x	
	<i>Melaleuca glomerata</i>	x	
Nyctaginaceae	<i>Boerhavia burbidgeana</i>	x	
	<i>Boerhavia coccinea</i>	x	x
	<i>Jasminum didymum</i> subsp. <i>lineare</i>	x	x
Papaveraceae	* <i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	x	x
Phyllanthaceae	<i>Flueggea virosa</i> subsp. <i>melanthesoides</i>	x	
	<i>Phyllanthus maderaspatensis</i>	x	x

Family	Stantec_Taxon	Current survey	Historical Surveys
Plantaginaceae	<i>Stemodia grossa</i>	x	x
Poaceae	* <i>Cenchrus ciliaris</i>	x	x
	* <i>Cenchrus setiger</i>	x	x
	* <i>Setaria verticillata</i>	x	x
	<i>Amphipogon sericeus</i>	x	x
	<i>Aristida contorta</i>	x	x
	<i>Aristida holathera</i> var. <i>holathera</i>	x	x
	<i>Aristida inaequiglumis</i>	x	
	<i>Aristida latifolia</i>	x	
	<i>Bothriochloa ewartiana</i>	x	x
	<i>Chrysopogon fallax</i>	x	x
	<i>Cymbopogon ambiguus</i>	x	x
	<i>Cymbopogon obtectus</i>	x	
	<i>Cynodon convergens</i>	x	x
	<i>Enneapogon caeruleus</i>	x	x
	<i>Enneapogon lindleyanus</i>	x	x
	<i>Enneapogon polyphyllus</i>	x	x
	<i>Enneapogon robustissimus</i>	x	
	<i>Enteropogon ramosus</i>	x	x
	<i>Eragrostis cumingii</i>	x	
	<i>Eragrostis pergracilis</i>	x	
	<i>Eragrostis setifolia</i>	x	
	<i>Eragrostis xerophila</i>	x	
	<i>Eragrostis eriopoda</i>	x	
	<i>Eriachne aristidea</i>	x	x
	<i>Eriachne benthamii</i>	x	
	<i>Eriachne mucronata</i>	x	x
	<i>Eriachne pulchella</i>	x	x
	<i>Eriachne tenuiculmis</i>	x	x
	<i>Eulalia aurea</i>	x	x
	<i>Paraneurachne muelleri</i>	x	x
	<i>Paspalidium clementii</i>	x	x
	<i>Perotis rara</i>	x	
	<i>Schizachyrium fragile</i>	x	x
	<i>Sorghum ?plumosum</i>	x	
	<i>Sporobolus australasicus</i>	x	x
	<i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471)	x	x
	<i>Themeda triandra</i>	x	x
	<i>Triodia angusta</i>	x	x
	<i>Triodia brizoides</i>	x	x
	<i>Triodia epactia</i>	x	x
	<i>Triodia longiceps</i>	x	x
<i>Triodia</i> sp. Silvergrass (P.-L. de Kock BES 00808) (P1)	x		
<i>Triodia wiseana</i>	x	x	
Portulacaceae	<i>Portulaca oleracea</i>	x	
Proteaceae	<i>Grevillea berryana</i>	x	x

Family	Stantec_Taxon	Current survey	Historical Surveys
	<i>Grevillea wickhamii</i>	x	x
	<i>Hakea chordophylla</i>	x	x
	<i>Hakea lorea</i> subsp. <i>lorea</i>	x	x
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	x	
	<i>Pomax rupestris</i>	x	
Rubiaceae	<i>Psydrax latifolia</i>	x	x
	<i>Psydrax suaveolens</i>	x	x
	<i>Anthobolus leptomerioides</i>	x	
	<i>Exocarpos sparteus</i>	x	
Santalaceae	<i>Santalum lanceolatum</i>	x	x
	<i>Santalum spicatum</i>	x	
	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	x	
	<i>Dodonaea coriacea</i>	x	x
Sapindaceae	<i>Dodonaea lanceolata</i> var. <i>lanceolata</i>	x	
	<i>Dodonaea pachyneura</i>	x	x
	<i>Dodonaea petiolaris</i>	x	
	<i>Eremophila cuneifolia</i>	x	
	<i>Eremophila exilifolia</i>	x	x
	<i>Eremophila forrestii</i>	x	
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	x	x
	<i>Eremophila fraseri</i> subsp. <i>fraseri</i>	x	
	<i>Eremophila latrobei</i>	x	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>filiformis</i>	x	x
	<i>Eremophila latrobei</i> subsp. <i>glabra</i>	x	x
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	x	x
	<i>Eremophila longifolia</i>	x	x
	<i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4)	x	x
	<i>Eremophila magnifica</i> subsp. <i>velutina</i> (P3)	x	x
	<i>Eremophila tietkensis</i>	x	
	<i>Solanum diversiflorum</i>	x	x
	<i>Solanum elatius</i>	x	
Solanaceae	<i>Solanum horridum</i>	x	x
	<i>Solanum lasiophyllum</i>	x	x
	<i>Solanum phlomoides</i>	x	
Surianaceae	<i>Stylobasium spathulatum</i>	x	x
Violaceae	<i>Hybanthus aurantiacus</i>	x	x
	<i>Tribulus hirsutus</i>	x	x
Zygophyllaceae	<i>Tribulus macrocarpus</i>	x	
	<i>Tribulus suberosus</i>	x	x

**Appendix N Records of Priority Flora from the Survey Area
(this Survey and previous surveys)**

**Appendix O Vegetation Mapping for the Survey Area
Including Priority Flora Locations from this survey**

Appendix P Site x Species Presence Matrix

Appendix Q Site x Species Cover Matrix

Appendix R Vegetation Condition Mapping of the Survey Area Including Weed Locations