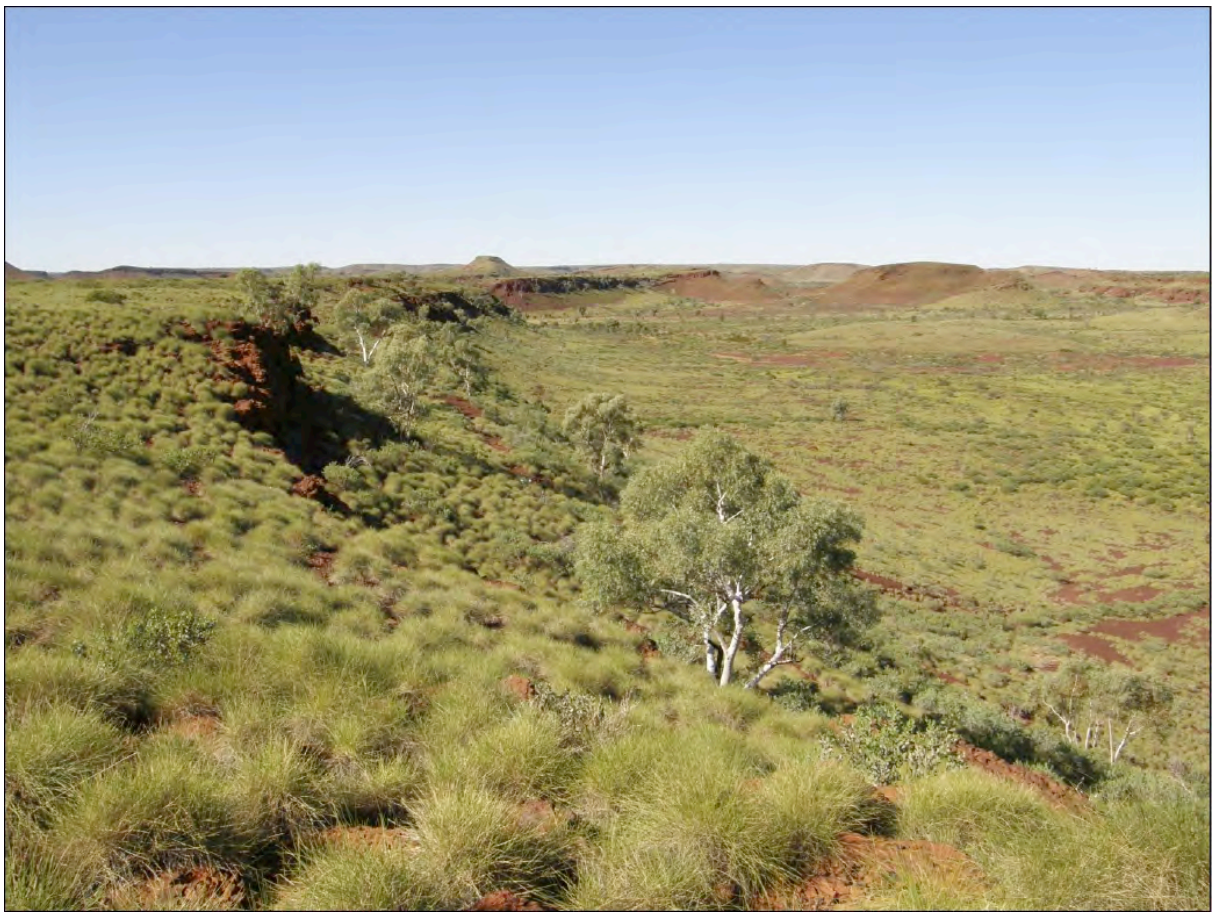
Flora and Vegetation of the Proposed Mine & Associated Infrastructure Areas West Pilbara Iron Ore Project

2007 - 2009



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Executive Summary

API Management Pty Ltd (API) proposes to develop the West Pilbara Iron Ore Project (WPIOP) located on Red Hill and Mt Stuart Stations, approximately 50 km south-west of Pannawonica. The project comprises goethite-hematite channel iron deposits (CIDs) located on the western edge of the Hamersley Ranges. Proposed mine areas for this project extend over 55 kilometres on the Red Hill and Mt Stuart Pastoral Stations and unallocated Crown Land (UCL).

The mine area comprises eight resource areas (or deposits) located on mesa landforms, and associated infrastructure located on undulating to flat landforms. An internal railway (transport corridor) will be constructed between the deposits as well as roads to enable access between the deposits and associated infrastructure including an airstrip and gas pipeline. A railway line (207 km) is also proposed from the mine site to a proposed port at Dixon Island.

As part of the environmental assessment process, Western Botanical was commissioned to undertake flora and vegetation surveys and assessments of the WPIOP, including the Mine and Associated Infrastructure areas, the first 100 km of the proposed rail to Dixon Island (from the northern-most mesa resource at Cochrane) and 70 of the Borrow pits proposed within the mine area and along the rail to Dixon Island. The survey of the 100 km of rail and 70 Borrow pits have been reported by Western Botanical in separate reports (Western Botanical, 2009; Western Botanical, 2010).

This report presents the findings of flora and vegetation surveys conducted by Western Botanical within the Mine and Associated Infrastructure areas and is referred to as the study area. A total of 767 person-days were spent on field surveys during the two-year period May 2007- July 2009. The principal survey periods were May – November 2007; June – October 2008; and April - July 2009.

The survey involved:

- Establishment of 217 pegged 50 m x 50 m quadrats, 342 relevés (unpegged quadrats equivalent in description to a quadrat), and 285 vegetation site descriptions;
- Vegetation mapping of approximately 17,478 ha; and
- Systematic searches for Rare and Priority flora on the eight proposed resource areas.

To gain a regional perspective of vegetation communities, the data from the 471 quadrats and relevés within the WPIOP study area was compared to a regional floristic data set held by Malcolm Trudgen consisting of 2,412 sites from 35 different projects in the Pilbara Bioregion. A statistical analysis (Griffin & Trudgen, 2009) of floristic composition using PATN was conducted on the combined data set of 2,883 sites and was considered sufficient basis to enable a regional investigation of the floristic variation present in the WPIOP study area.

Vegetation

A total of 154 vegetation types were recognised and mapped within the study area. These occurred across five major landforms; Stony Plains; Stony Hills and Breakaways; Minor Creeklines; Major Creeklines and Clayey Plains. The majority of the study area, 55.3%, comprised Stony Hills and Breakaways. Nearly one third of the study area (28%) consisted of Stony Plains, and the remaining 17% comprised Clayey Plains, numerous Minor Creeklines and a few Major Creeklines.

None of these communities support any known declared rare flora (DRF) species and were not currently listed by the Department of Environment and Conservation (DEC) as either Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs).

The vegetation types identified within the WPIOP study area were predominantly composed of species that are common and widespread in the Pilbara Biogeographic Region of Western Australia. A significant exception to this was the hummocking perennial grass *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) which was co-dominant to dominant in many of the vegetation types recognised on the mesa landforms and associated debris slopes. This species has recently (30th March 2010) been listed as a Priority 3 species (Melanie Smith DEC pers. comm.). A further three Priority 3 species occur within the WPIOP study area, including *Owenia acidula, Rhynchosia bungarensis*[1] and *Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301). All four significant flora are discussed in more detail in the latter half of this summary.

A number of vegetation types described appear to be restricted to only one or two mesas within the study area. This is supported by the Griffin & Trudgen (2009) floristic analysis, which shows some floristic groups to be widespread across the mesas (resource areas), while others are restricted to a particular mesa.

Results of the regional numerical floristic analysis of 2,883 Pilbara sites

A numerical floristic analysis was conducted by Griffen and Trudgen (2006) to investigate the conservation value of the WPIOP study area within the context of the Pilbara Bioregion. The combined data set comprised a total of 2,883 sites, including 471 sites (quadrats and relevés) from the WPIOP study presented in this report.

The floristic units within the WPIOP study area were found to be strongly correlated to geology. This pattern was also consistent with that in the broader Pilbara Bioregion. In the study area, some floristic units at the 600-group level were found on up to seven geological types. However, more than two thirds tended to be predominantly on just one geological unit (Griffin & Trudgen, 2009).

The analysis suggested that, in a broad sense, the sites from the study area had the greatest similarity with sites from projects in the western and central parts of the Pilbara Bioregion, rather than the project areas in Eastern Pilbara. However, the classification undertaken suggested that the vegetation on the Robe Pisolites in the study area was distinct even from that at Rio Tinto's Mesa A area, which is located nearby to the north, in the Robe River Valley (Griffin & Trudgen, 2009). The analysis indicated that many of the communities on the Robe Pisolites are restricted. Griffin & Trudgen (2009) concluded that "*the vegetation on the Robe Pisolite is strongly confined to that geological type".*

Within the WPIOP study area, Griffin and Trudgen's (2009) analysis identified 42 floristic units as being restricted or uncommon in distribution and / or under sampled. Of these, 19 were considered to be restricted. Western Botanical made a more detailed assessment of the status of these 42 floristic units based on their flora and vegetation surveys conducted for the WPIOP. Following are details of this assessment where the status for each of the floristic units is presented as either restricted, uncommon, locally common or common (within the region unless stated otherwise) followed by a qualification:

- Eight floristic units were considered to be **restricted** in distribution (one of which was under sampled).
- Two floristic units were considered to be **uncommon** and restricted to small areas.

[1] On 30th March 2010 the DEC Priority Flora list was updated and *Rhynchosia bungarensis* was listed as a Priority 4 species (previously listed as a Priority 3).

- Three floristic units were considered to be **uncommon**.
- Four floristic units were considered to be **uncommon** and under sampled.
- Four floristic units were considered to be **locally common in the study area,** *but restricted to the region of the study area* (mostly occurring on Robe Pisolites).
- Eleven floristic units were considered **restricted to small areas within the study area**, but may be widespread across the region (two were under sampled).
- Three floristic units were considered to be **uncommon in the study area**, but could be widespread in the region.
- Five floristic units were considered to be **locally common**, but under sampled,
- Two floristic units were considered **common** and widespread but under sampled.

In summary, among the 42 floristic units that appear to be restricted, uncommon or under sampled within the WPIOP study area, a total of 12 floristic units were considered to be restricted in distribution either regionally (eight floristic units) or to the study area (four floristic units). Nine floristic units were considered to be uncommon in distribution locally and regionally. The remaining 21 floristic units were assessed as either; likely to be widespread, although based on current data, they appeared to be restricted or uncommon within the study area, or locally common to common, although under sampled.

Vegetation Communities of Interest

Within the study area there are two vegetation types that are recognised as having high conservation value in the Pilbara. These are Snakewood (*Acacia xiphophylla*) communities (Biota 2006) and more recently *Acacia citrinoviridis* communities on mesa landforms (S. van Leeuwen pers. comm.). Four vegetation types within the study area are Snakewood communities and 15 vegetation types on the mesa landforms include *Acacia citrinoviridis.* These are described and listed below.

An additional group of Communities of Interest, that may be considered, are the *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation types (or communities). Thirty three vegetation types within the WPIOP were described and could be considered as *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) communities.

Proposed Impacts on vegetation types within the WPIOP study area

A total of 5,578.60 ha are proposed to be impacted within the WPIOP study area. Of this area 1,618.36 ha will be within the resource areas, 1,360.77 ha for waste dumps, 1,635.95 ha for the internal Transport Corridor and 963.55 ha for other infrastructure.

Of the 154 vegetation units described for the study area, 134 will be impacted under the current WPIOP proposal, the remainder being outside development footprints. Mapped extents of 27 vegetation types occurring on the mesas (resource areas) will be impacted by more than 50%. Eighteen of these will be impacted by over 75% and one vegetation type will be completely taken by the proposed resource area development. In other parts of the study area, a further 22 vegetation types are impacted by over 50% and nine of these are impacted by over 75% of their mapped extents.

Of the 154 vegetation types mapped within the WPIOP study area, 99 were identified as of some Conservation Interest, based on the following factors; presence of Priority species (*Owenia acidula* (P3), *Indigofera* sp. Bungaroo Creek (P3), or *Rhynchosia bungarensis* (P3)), presence of Species of Interest *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), presence of other Species of Interest (*Acacia aneura, Aristida holathera* var. *latifolia*), Communities of Interest (*Acacia xiphophylla* or *Acacia citrinoviridis* and also *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) to be considered), presence of Restricted Floristic Units, and lastly, being impacted by the WPIOP proposal. Thirteen vegetation units were

included within the 99 that had none of the above factors except that proposed impacts on them were >50%. A further 12 vegetation units will not be impacted by the WPIOP proposal.

Of the 99 vegetation types identified as of some conservation interest, 32 vegetation types were receiving high impacts (>50%) and had high conservation value. These 32 vegetation types were divided into four ranking categories for impacts (Very High, High, Moderate-High and Moderate). These have been listed in Table A. The percentage cover values shown for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) for each vegetation type in Table A were determined from quadrat data and are shown for interest only. These percentage covers were not used to determine ranking.

Table A: Ranking of Vegetation Types that were Considered of Interest and which have >50% Impact Proposed within the Study Area (Mine and Associated Infrastructure) of the WPIOP

Vegetation Code	Total in WPIOP study area (ha)	% Proposed impact pink ≥75% buff<75%	Priority species present	*Triodia* sp. Robe River (2-10%, 10-30%, 30-70% cover)	Presence of other **Species** or community of Interest	Presence of restricted or uncommon floristic unit	**Suggested Ranking**
S10g	5.98	100		10-30%	*Acacia citrinoviridis*	Locally common, under sampled	Very High
S4g	0.83	99	*Indigofera* sp Bungaroo Creek (P3)	10-30%	*Acacia citrinoviridis*	Restricted unit	Very High
S5I	2.14	83		2-10%	*Acacia citrinoviridis*	Restricted units	Very High
S5e	22.78	83		30-70%	*Acacia citrinoviridis*	Restricted units	Very High
S10a	5.37	78		10-30%	***Acacia aneura,*** *Acacia citrinoviridis*	Restricted unit	Very High
S5d	192.51	64		10-30%	***Aristida holathera* var. latifolia**	Uncommon units	Very High
S5h	32.7	98		30-70%		Restricted units	High
S4i	17.69	98		2-10%		Restricted units	High
S5k	32.38	97		10-30%		Restricted units	High
S5g	39.98	97		10-30%		Restricted units	High
S5f	183.12	96		10-30%		Restricted units	High
S12c	47.2	96		2-10%			High
S3b	13.53	94		-		Uncommon unit	High
P2c	1.28	90		2-10%			High
S4l	30.32	82		2-10%		Restricted units	High
S10m	8.37	82		10-30%		Restricted units	High

Vegetation Code	Total in WPIOP study area (ha)	% Proposed impact pink ≥75% buff<75%	Priority species present	*Triodia* sp. Robe River (2-10%, 10-30%, 30-70% cover)	Presence of other **Species** or community of Interest	Presence of restricted or uncommon floristic unit	**Suggested Ranking**
S10i	44.37	78		10-30%		Restricted units	High
S10k	32.06	74		10-30%		Restricted units poss. widespread	High
S5j	50.97	70		30-70%		Restricted units	High
S10f	16.74	69		2-10%	*Acacia citrinoviridis*		High
S10h	6.2	65		10-30%		Restricted units	High
S5b	114.11	57		10-30%		Uncommon, restricted to small areas units	High
I5n	5.93	54		30-70%		Restricted units	High
S12b	3.47	53		10-30%		Locally common – restricted to study area units	High
S2b	8.01	74		-	*Acacia citrinoviridis*	Restricted unit	Moderate-High
S11f	60.27	63		-	*Acacia citrinoviridis*	Restricted units	Moderate-High
S7k*	0.6	100		-		Uncommon – under sampled unit 60	Moderate
S3d*	7.25	100		-			Moderate
S3e	28.25	95		-		Restricted units	Moderate
S1c*	17.85	91		-			Moderate
S14b*	167.84	79		-		Restricted unit	Moderate
S4m*	5.65	75		-		Restricted units	Moderate

* comments: S7K only surveyed on Upper Cane Waste Dump;
S3d, S1c and S14b unusual assemblage of specie s;
S4m, only surveyed on Trinity and considered unlikely to occur elsewhere.

Six of the 32 vegetation types with high impacts were ranked as having **Very High** impacts. Each of these vegetation units had *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) present plus Priority species, other Species of Interest and / or was a Community of Interest.

Among the 18 vegetation types ranked as **High**, all except one (S3b) had *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) present plus Restricted or uncommon floristic units, one also having *Acacia citrinoviridis* Community of Interest (S10f).

Two vegetation types were ranked as **Moderate-High** and these were both *Acacia citrinoviridis* Communities of Interest as well as having Restricted Floristic Units.

Six vegetation units were ranked as **Moderate** for impacts and these were, in most cases, considered to have unusual assemblage of species with a very restricted known distribution (such as only known from one mesa and often within small areas), as well as having Restricted Floristic Units.

Impacts on Communities of Interest
Communities of Interest included *Acacia xiphophylla* communities

Four vegetation types considered to be *Acacia xiphophylla* Communities of Interest will be impacted by the WPIOP proposal and these were all ranked as having Very Low impact (percentage impact ranged from 36-10%).

Of the ten vegetation types that were *Acacia citrinoviridis* Communities of Interest, eight were ranked as high (>50% impact) where five were in the Very High category, one High and two Moderate-High. The remaining two included one with Very Low ranking of impact and one with no impact.

Of 33 vegetation types with *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), 23 are considered to have high impacts (six Very High and 17 High). Of the remaining 10 vegetation types, six were considered to have Low impacts, one Very Low and three have no impacts.

Flora

A total of 442 taxa of vascular flora (species, subspecies and varieties) representing 52 families and 140 genera were recorded from the study area. This included 7 introduced flora species. None of these introduced taxa are listed declared plants under the *Agriculture and Related Resources Protection Act, 1976* (Department of Agriculture and Food Western Australia 2007).

Rare and Priority Flora

No flora gazetted as Declared Rare Flora (DRF) under the *Wildlife Conservation Act 1950*, were recorded in the study area. Three Priority 3 (P3)[2] listed flora species were recorded in the study area. These were; *Owenia acidula* (P3), *Rhynchosia bungarensis* (P3)[3] and *Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301) (P3).

***Owenia acidula* (P3)**
Owenia acidula has a wide, disjunct distribution across northern Australia. This species is known from 9 records in the Western Australian Herbarium (WA Herbarium), representing five populations in Western Australia (W.A.). The population within the WPIOP study area is therefore the sixth population of this species in W.A. and is a new population record for this species in the West Pilbara. Combined with the relatively large population size within the

[2] On 30th March 2010, the DEC Priority Flora list was updated and *Triodia* sp. Robe River (M.E. Trudgen *et al*. MET 12,367), considered as a species of interest in this report, was listed as a Priority 3.
[3] On 30th March 2010, the DEC Priority Flora list was updated and *Rhynchosia bungarensis* was listed as a Priority 4 (previously listed as a Priority 3).

WPIOP study area, this is regarded as a very significant population for the conservation of this species in W.A.

As this species has a widespread but disjunct distribution across northern Australia, closer taxonomic work may reveal that there is more than one entity currently classified as the one taxon. Therefore, this population, and others nearby in the western Pilbara Bioregion, may represent a new taxon with high conservation significance.

Impacts on this large, healthy population should be minimised. The population occurs along a drainage line where there are proposed impacts from the administration facilities further to the east. Direct and indirect hydrological impacts should be investigated and minimised to ensure the future survival of this population.

***Rhynchosia bungarensis* (P3)**
Rhynchosia bungarensis is a compact prostrate shrub, 0.5 m with small, round, resinous leaves (Plate 3). This species is known to grow in pebbly coarse sand amongst boulders and in the flow lines of gullies on Robe Pisolite or Brockman Formation geologies (DEC, 2009). This species is restricted to Western Australia with 24 known locations in the Pilbara, two in the Kimberley, one in the Gascoyne and one in the Carnarvon Bioregions.

Rhynchosia bungarensis was recorded at four locations within the WPIOP study area on banks of rivers, creek lines or drainage lines. None were located on mesa landforms, although three were located on river beds and creeks adjacent to mesas (two near Kens Bore and one near Trinity). The presence of *Rhynchosia bungarensis* within the WPIOP study area is within the known range for this species.

No population counts were conducted, and cover was recorded as only a presence within the associated vegetation descriptions at each of the four locations.

On 30th March 2010, the DEC Priority Flora list was updated and *Rhynchosia bungarensis* is now listed as a Priority 4 species. This editorial change has not been reflected throughout this document, however, footnotes or comments have been included in reference to this change.

***Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)**
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) is an upright spreading perennial shrub to 2.3 m. It is known from five populations (six specimens at WA Herbarium) and is restricted to the Pilbara Bioregion with all records in close proximity to the WPIOP study area. It is known to occur in low landscapes on slopes with skeletal red, gritty, soil and near creek banks.

Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) was recorded at nine locations across three resource areas (Catho Well, Trinity and Upper Cane) and once within the proposed airstrip access track. These could be regarded as four new populations of this species.

The records of *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) within the WPIOP study area are on the western edge of the known range for this species. However, only five populations are known outside the WPIOP study area compared to the four populations within the study area (44% of populations).

Change in Conservation Status for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
At a late stage in finalizing this report, Western Botanical was advised by the Department of Environment and Conservation that *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) had been listed as a Priority 3 species on 30th March 2010 (Melanie Smith pers. comm.). This

editorial change has not been reflected throughout this document. Although *Triodia* sp. Robe River (M.E.. Trudgen *et al.* MET 12,367) has been discussed as a species of interest in this document, this species has had considerable focus during field surveys and in assessment of impacts.

Species of Interest at the Time of the Survey

Species of Interest within the WPIOP study area were *Acacia aneura* (Mulga) varieties (limited occurrence in the west Pilbara and varieties currently being described), *Aristida holathera* var. *latifolia* (range extension) and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (new undescribed *Triodia* species with a limited distribution)[4].

Acacia aneura
Acacia aneura currently occurs as seven varieties in the Pilbara Bioregion. The species *Acacia aneura* is under taxonomic review with around 12 varieties being described by Bruce Maslin (B. Maslin pers. comm.).

Three varieties of *Acacia aneura* were recorded within the WPIOP study area. These records occur at the north-western extremity of the range of this species. Most of the records of *A. aneura* were small patches of trees on mesas where they were found to occur as dominant species in a number of vegetation types on Upper Cane, Cardo East and Trinity.

Aristida holathera* var. *latifolia
Aristida holathera var. *latifolia* is an annual grass. There are five records of this species at the WA Herbarium, representing five widely disjunct populations ranging from near Broome in the Kimberley to a site 53 km NW of Newman in the south-eastern Pilbara.

Aristida holathera var. *latifolia* was collected at six locations in the study area, including locations on Cochrane, Farnum and Kens Bore resource areas, and on the internal Transport Corridor. This species was recorded in drainage lines of *Corymbia hamersleyana* and *Corymbia candida* ssp. *candida* over *Acacia* spp. shrublands over *Triodia wiseana* and/or *Triodia epactia* hummock grasslands.

The occurrence of *Aristida holathera* var. *latifolia* in six populations within the WPIOP study area represents a significant proportion of known populations of this species (54%) and a significant range extension of more than 400 km. However, being an annual species, it's regional assessment may be deficient due to the difficulties in collection and verification of the species which requires collection at an appropriate time after significant rainfall.

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a soft hummocking Spinifex occurring on rocky slopes and mesa faces. This species was first recognised as a distinct taxon in 1991 by Malcolm Trudgen. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) has only recently been lodged at the WA Herbarium and formerly recognised as a separate entity. This species occurs on the slopes of most mesas in the Robe Valley. The collections made by Western Botanical from the WPIOP study area were confirmed as *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) by Malcolm Trudgen, and extended the known distribution 50 km south.

[4] On 30th March 2010 the DEC Priority Flora list was updated and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is now listed as a Priority 3 species.

Although *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is known from a significant number of populations (110, including the WPIOP known populations) it has a geographic range of less than 150 km (north-south) by 25 km (east-west), as determined from a regional survey conducted by Western Botanical.

Distribution within the WPIOP study area
Within the WPIOP, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was recorded on all of the resource areas, except Catho Well. The mesa deposits Cochrane, Jewell, Cardo Bore North, Upper Cane and Cardo Bore East each support one population of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Kens Bore mesa supports an estimated six populations, while Trinity mesa supports nine populations. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is dominant to co-dominant in the majority of sites where it is recorded within the study area.

Regional Survey for Triodia sp. Robe River (M.E. Trudgen *et al*. MET 12,367)
Regional surveys focussing on the Robe Pisolite Mesa Formations along paleochannels were targeted for this species. This species was recorded within a narrow geographic range of less than 150 km north-south by approximately 25 km east-west. The Robe Pisolite mesas of the WPIOP comprised the central portion of the known range of this species. The current level of knowledge of the distribution of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) indicates that this distinctive species is geographically restricted and strongly associated with the Robe Pisolite geological landform. This was supported by a statistical floristic analysis including data from the Robe Valley and the WPIOP (Griffin & Trudgen, 2009) which indicated that there was a strong relationship between *Triodia* sp. Robe River (M.E .Trudgen MET 12,367) the Robe Pisolite geology and the mesa landform. That is, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) mainly occurs on Robe Pisolite on mesas, although it does not occur on all mesas with Robe Pisolite (Griffin & Trudgen, 2009).

Impacts on Significant Flora (Priority Flora and Species of Interest)

***Owenia acidula* (P3)**
Within the WPIOP study area, no *Owenia acidula* (P3) will be directly impacted.

There were nine locations of *Owenia acidula* recorded during the vegetation surveys located west of Cardo Bore just north (eight locations) and south (one location) of the access road to the proposed airstrip (Appendix 2, sheet 5). Approximately 2,000 plants of *Owenia acidula* were recorded from these locations. Eight of the nine locations occur on a creekline that has its headwaters located within infrastructure areas (Appendix 2, sheet 6). Possible indirect impacts from activities within infrastructure areas on this creekline and the *Owenia acidula* population need to be minimised.

***Rhynchosia bungarensis* (P3)[5]**
Within the WPIOP study area, the four known locations of individual *Rhynchosia bungarensis* (P3) plants will not be directly impacted. As counts and distribution data was not collected for this species the direct impacts from the WPIOP is not fully known.

Of the four known locations of *Rhynchosia bungarensis* (P3) one is near the boundary of Kens Bore Waste Dump, one south of Kens Bore Pit and two on a river bed well distant from the internal Transport Corridor. Counts were not conducted at these four locations for *Rhynchosia bungarensis*. To determine the direct impacts to this species surveys may need to be

[5] On 30th March 2010, the DEC Priority Flora list was updated and *Rhynchosia bungarensis* was listed as a Priority 4 (previously listed as a Priority 3).

conducted within the proposed impact areas prior to disturbance as a proportion of each of the vegetation types this species occurred within will be impacted.

***Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301) (P3)**
Within the WPIOP study area, three of six known locations of *Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301) (P3) plants will be directly impacted.

Of the six known locations of *Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301), one is located near the access road to the airstrip west of Cardo Bore, two on Upper Cane Pit (impacted), one near a river bed and the internal Transport Corridor and two on Catho Well (one impacted by Catho Well Pit).

***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)**
Impacts on the geographically restricted (and now Priority 3 species) *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) are discussed in detail below.

Impacts on Area of Occupancy
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant species in 33 vegetation units (Table B). These units cover 1,452.8 ha (8.7%) of the WPIOP study area. Kens Bore mesa supports the largest area of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation to be impacted, closely followed by Cardo East mesa. In total, the WPIOP proposes to impact upon 809 ha of vegetation in the study area of which *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is either a dominant or co-dominant component. This equates to disturbance of 55.69%. A further 3 ha will be impacted within the Cape Preston rail corridor. This equates to a combined impact of 55.71% of the total mapped area of occupancy for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation types within the WPIOP.

The areas of occupancy of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) in the region, outside the WPIOP area mapped by Western Botanical, has not been mapped and records in these regional areas are only points indicating presence of the species.

Impacts on Numbers of Populations
We estimate there to be 110 known populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) in the region (Table B). Within the WPIOP study area 16 of 33 known populations will be impacted (14.54%). For the WPIOP (including the study area with 33 populations and Cape Preston rail corridor with four populations), 17 of 37 populations will be impacted (16.36%).

Thirty eight populations (31.82%) have already been impacted, or are in proposed impact areas on tenements held by Rio Tinto. The security of the remaining 35 populations (31.82%) is unknown but are assumed to be non-impact at present.

Impacts on Numbers of Individuals
We estimate that the minimum size of the extant *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) population to be 188,363 individual hummocks in the region (Table B). This is considered an underestimate. Of this total, the populations on the WPIOP impact areas account for around 55.9% of the known remaining individuals.

Table B: Known Regional Populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) with Estimates for Area of Occupancy, Number of Individual Hummocks Counted, Impacts to Date and Proposed Impacts

* Within the WPIOP estimated number of hummocks were calculated based on percentage covers estimated within quadrats and extrapolation to total area of vegetation community mapped.

***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)**	Area of Occupancy Area & % of proposed impact (ha)	No. of Populations	No. & % of Populations impacted or proposed to be impacted (bold)	Estimated Numbers of Individual hummocks*	Total no. & % of individual hummocks impacted or proposed to be impacted (bold)
Total of Known	n/a	110	53 (48.18%)	188,363	139,842 (74.24%)
Total in Rio Tinto tenements	n/a	38	35 (31.82%)	34,572 (5 popn.)	34,572 (18.35%)
Total in WPIOP (CP Rail, Mine and Associated Infrastructure)	1,455.8 811 55.71%	37	**17 (16.36%)**	128,398 (37 popn.)	**105,268 (55.89%)**
Total in study area of WPIOP (Mine and Associated Infrastructure only)	1,452.8 809 55.69%	33	**16 (14.54%)**	122,891 (33 popn.)	**100,167 (53.18%)**
Other (from WB regional survey and Astron Hardy Rail survey)	n/a	35	n/a	n/a	n/a

Assessment of Impacts on Significant Flora

- Impacts on *Owenia acidula* should be avoided as the population within the WPIOP study area is considered highly significant.
- Impacts on *Rhynchosia bungarensis* within the project area are not considered significant for the conservation of the species on a broader scale. However, further surveys for this species within the WPIOP study area should be conducted to quantify and map extents of populations and determine proportional impacts.
- Impacts on *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) are considered moderate in a regional sense and high in a local sense as 44% of the total of nine populations are known within the WPIOP study area. Further surveys for this species within the WPIOP area and in the west Pilbara region could be conducted to quantify populations and determine proportional impacts.
- Impacts on *Acacia aneura* should be avoided where possible as populations within the WPIOP study area represent the north-western limit of its range for this complex group of species.
- In the absence of further regional data on *Aristida holathera* var. *latifolia* and given the challenges associated with assessing this, impacts on *Aristida holathera* var. *latifolia* are difficult to assess. However, at this stage are considered minor.

1 Introduction

1.1 Background

API Management Pty Ltd (API) proposes to develop the West Pilbara Iron Ore Project (WPIOP) located on Red Hill and Mt Stuart Stations, approximately 50 km south-west of Pannawonica. The project comprises goethite-hematite channel iron deposits (CIDs), which are detrital iron-rich material transported into Tertiary river systems and preserved in paleodrainage channels. A series of mesa landforms (CIDs) are situated on the western edge of the Hamersley Ranges which are the resource areas being proposed to be mined by the WPIOP.

The proposed mine area extends over 55 km on the Red Hill and Mt Stuart Pastoral Stations and unallocated Crown Land (Figure 1). The mine area comprises eight resource areas composed of nine named mesas or deposits. An internal transport corridor (railway) will be constructed between the deposits. Roads will enable access between the mine sites and associated infrastructure. A railway line (207 km) and port at Dixon Island is also proposed as part of this project.

As part of the environmental assessment process, Western Botanical was commissioned to undertake flora and vegetation surveys and assessments of the WPIOP resource and associated infrastructure areas. One hundred kilometres of the rail alignment from the northern end of the mine area (north of the Cochrane deposit) to near Cape Preston, was also surveyed by Western Botanical which has been presented in a separate report (Western Botanical, 2009).

This report presents the findings of vegetation mapping and flora surveys conducted by Western Botanical (from May 2007 to November 2009), within the WPIOP mine area, including eight resource areas, waste dumps, an internal rail transport corridor, access roads and other infrastructure.

1.2 Study Area

The Study Area includes the WPIOP Mine and Infrastructure areas. The mine area includes eight resource areas located on nine named mesas or deposits. The nine named mesas include a total of 17 distinct mesa landforms (Table 1). Associated with each of the eight resource areas are one to two proposed waste areas, giving a total of 16 waste areas for the WPIOP.

The width of internal transport corridors and rail loops (86.4 km) assessed was approximately 100 m and for road corridors (114 km) approximately 50 m. A proposed camp and administration area is connected by road to a proposed airstrip. The airstrip is located to the west of the study area, 3 km in length by 200 m wide, and includes an area of associated infrastructure.

Seventy borrow pits and access roads associated with the WPIOP form part of a separate report (Western Botanical 2010).

Figure 1 Location of the West Pilbara Mine & Associated Infrastructure Study Area

Author: D. True ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Oct 2009 ~ A3 ~ Rev: A ~ CAD Ref g1505_WB_Rpt0910_00.dgn

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API

N

0 10km

Scale 1:600,000
MGA94 (Zone 50)

Dampier
Karratha
Cape Preston
Highway
Millstream
Coastal
Route
Rail
Fortescue Road House
Link
Fortescue
River
Proposed
Robe
West
Dampier - Bunbury Natural Gas Pipeline
River
Road
Millstream
Pannawonica
Yalleen Camp
Peedamulla
North
Cochrane
Jewel
Red Hill Station
Kens Bore
Cane
River
Cardo Bore North
Cardo Bore East
Upper Cane
CARDO OUTCAMP
Trinity Bore
Catho Well
Paraburdoo
Road
Mt Stuart Station
Nanutarra

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION OVERVIEW
Author: D. True Date: October 2009

Table 1: Number of Mesas and Waste Areas at each Resource Area

Resource Area	Number of Mesas	Number of Waste Areas
Cochrane & Farnum	2 (plus 3 associated low hills)	1
Jewell	1	2
Kens Bore	4	2
Upper Cane	2	2
Cardo East	1	2
Cardo North	1	2
Trinity	3	2
Catho Well	3 (plus 5 associated low hills)	3
TOTAL	**17**	**16**

The total study area mapped by Western Botanical encompassed 17,478 ha. As of February 2010, the proposed areas of direct impact for development of orebodies and associated infrastructure totals 5,578.6 ha within the study area (Table 2, Figure 2).

Some of the proposed impact areas to the flora and vegetation have not been included in this report, as changes to footprints and re-alignments of infrastructure corridors occurred after the field surveys by Western Botanical were completed in November 2009. Areas omitted from this report were the western-most mesa of Cardo East (158 ha), the gas pipeline (10.58 ha), parts of Catho Well and the airstrip road.

Of the total footprint being reported here, the transport corridor comprises almost one third of the clearing proposed, representing 29.3% (1,635.95 ha). The resource areas comprise a further third, 29.0% (1,618.36 ha), while the waste dumps comprise 24.4% (1,360.77 ha) and the various other infrastructure (gas pipeline, mine quarry, road access, ground water target areas and other project infrastructure) 17.3% (963.55 ha) of the clearing proposed.

1.3 Scope and Objectives of the Study

This report documents the flora and vegetation surveys of the study area (mine area and associated infrastructure), for the WPIOP, conducted by Western Botanical during September 2007 to July 2009.

Prior to commencing the study, consultation was undertaken with the Department of Environment and Conservation (DEC) and other botanists experienced in flora and vegetation survey in the Pilbara. This consultation was to ensure that the level of survey and methodology carried out for the WPIOP by Western Botanical would be comparable with other studies' datasets sourced from the Pilbara Bioregion.

Table 2: Extent of Proposed Impacts Within the WPIOP Study Area against the limit of vegetation mapping by Western Botanical

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Infrastructure	Area (ha)	Subtotals for mesas(ha)	Subtotals (ha)
Transport Corridor	1,635.95		**1,635.95**
Gas Pipeline	10.57		
Other Infrastructure	952.98		
Total for Other Infrastructure			**963.55**
Cardo East Mine Pit	174.95		
Cardo North Mine Pit	37.81		
Catho Well North Mine Pit	80.33		
Catho Well Mine Pit	368.74	449.07	
Cochrane & Farnum Mine Pit	150.07		
Jewell Mine Pit	65.26		
Kens Bore Mine Pit	494.53		
Trinity Mine Pit	127.06		
Upper Cane Mine Pit	119.61		
Total for Resource Areas			**1618.36**
Waste Dump Cardo East	209.53		
Waste Dump Cardo North	54.57		
North Waste Dump Catho Well	282.42		
Waste Dump Catho Well	43.55	325.97	
Waste Dump Cochrane	139.94		
Waste Dump Jewell	53.36		
Waste Dump Kens Bore	462.88		
Waste Dump Trinity	54.59		
Waste Dump Upper Cane	59.93		
Total for Waste Dumps			**1,360.77**
TOTAL	**5,578.60**		

Figure 2 Areas of Proposed Impact within the Study Area

Author: D. True ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ Feb 2010 ~ A3 ~ Rev: A ~ CAD Ref g1505_WB_Rpt0910_20.dgn

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API

N

0 4km

Scale 1:200,000
MGA94 (Zone 50)

LEGEND

- Pit Outline
- Waste Dump / Topsoil
- Borrow Area
- Groundwater Target
- Process Plants / Common Facilities
- Rail Line
- Access Road

Cochrane

Jewel

Red Hill Station

Kens Bore

Cardo Bore North

Lateral Gas

Cardo Bore East

Upper Cane

Cane River

CARDO OUTCAMP

Trinity Bore

Catho Well

Nanutarra Paraburdoo Road

Mt Stuart Station

WEST PILBARA IRON ORE PROJECT

Figure 2
Areas of Impact within the Study Area

Author: D. True Date: February 2010

The level of survey appropriate for this project was determined at Level 2, as defined by the Environmental Protection Authority (2004). A detailed Level 2 survey requires "one or more visits in the main flowering season and visits in other seasons; and replication of plots in vegetation units, and great coverage and displacement of plots over the target area" (EPA 2004). The purpose of a comprehensive survey according to the EPA (2004) is "to enhance the level of knowledge at the locality scale and the context at the local scale". The work was structured as a longer-term study incorporating multiple visits.

The aims of the study were to:

- Provide detailed baseline information on the vegetation and flora of the proposed WPIOP Mine and Infrastructure areas (the study area);
- Develop an inventory of flora of the study area;
- Survey for Rare and Priority flora (when seasonally appropriate) within the study area;
- Describe the vegetation of the study area;
- Assess the information collected on flora and vegetation within a regional context;
- Identify plant communities with Conservation Interest; and
- Identify habitat areas (vegetation types) supporting Rare or Priority flora.

The purpose of this report is to provide baseline information of flora and vegetation for the environmental impact assessment of the proposal by the Environmental Protection Authority (EPA) at a level of Public Environmental Review (PER) under the *Environmental Protection Act 1986.*

A Priority status change was brought to Western Botanical's attention in the week commencing 29 March 2010, late in the report preparation process. Although these changes have not been propagated throughout the document, reference has been made to this change either as a footnote or comment within the text.

1.4 Physiography

Beard (1975) described eight physiographic units or natural regions for the Fortescue Botanical District (Pilbara Region). The WPIOP study area occurs in two of these, predominately in the Stuart Hills unit:

- Stuart Hills (95% of the study area) - Principally plains, gently undulating from breakaways and residuals capped by Robe Pisolite, also stony hills and steeply dissected pediments on fine-grained sandstone, shale and dolomite.
- Hamersley Plateau (5% of the study area) – A compact unit bounded to the west, north and east by a well-marked abrupt escarpment. Comprised predominantly of jaspilite and dolomite with some shale, siltstone and volcanic rock.

1.5 Land Systems

Land system mapping is a natural classification of land, based predominantly on biophysical features (van Vreeswyck *et al.* 2004). The rangeland land system mapping provides a level of assessment over the Pilbara Bioregion encompassing, flora, vegetation, geomorphology, soils, site type ecology and resource condition. The study area intersects seven land systems (Table 3, Figure 3).

The proportion of the land systems occurring in the study area comprise between 0.01 and 6.73% of the total area of each land system in the Pilbara (Table 4). The Rocklea and Newman are two of the most extensive land systems throughout the region and the study area occurs on the western margins of their distribution. Three land systems within the study area; Robe, Stuart and Urandy, are considered to have a limited distribution.

Table 3: Land Systems that occur within the Study Area

(Descriptions from Department of Agriculture 2002)

Land System	Description
Boolgeeda	Stony lower slopes and plains below hill systems supporting hard and soft Spinifex grasslands and Mulga shrublands.
Capricorn	Hills and ridges of sandstone and dolomite supporting shrubby hard and soft Spinifex grasslands.
Newman	Rugged jaspilite plateaux, ridges and mountains supporting hard Spinifex grasslands.
Robe	Low limonite mesas and buttes supporting soft Spinifex and occasionally hard Spinifex grasslands.
Stuart	Gently undulating stony plains supporting hard and soft Spinifex grasslands and Snakewood shrublands.
Rocklea	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard Spinifex (and occasionally soft Spinifex) grasslands.
Urandy	Stony plains, alluvial plains and drainage lines supporting shrubby soft Spinifex grasslands.

Table 4: Distribution of Land Systems within the Study Area

Land System	Distribution	Total Area (Ha) Pilbara Bioregion	Amount of Land system within the Study Area	
			Ha	% of total in Pilbara Bioregion
Boolgeeda	Extensive throughout the Pilbara	774,800	2139.37	0.28
Capricorn	Widespread in the Hamersley and Chichester subregions	529,600	2954.64	0.56
Newman	Extensive throughout the Hamersley Range	1,458,000	213.75	0.01
Robe	Sparse distribution throughout the Pilbara, a higher proportion in the western Pilbara	86,500	5818.49	6.73
Rocklea	Extensive throughout the Pilbara	2,299,300	2829.97	0.12
Stuart	Restricted to the extreme western Pilbara	179,400	164.45	0.09
Urandy	Scattered distribution throughout the western and central Pilbara	131,100	96.64	0.07

1.6 Botanical Context and Existing Data

1.6.1 Bioregional Setting

Thackway and Cresswell (1995) developed the Interim Biogeographic Regionalisation of Australia (IBRA) comprising 85 biogeographic regions. The regions were derived by compiling climate, lithology/geology, landform, vegetation, flora and fauna, land use, and other attributes as needed. The best data and information available at the time for each State and Territory was used including, field knowledge, published resource and environmental reports, continental data sets, and existing biogeographic regionalisations (Commonwealth of Australia 1999). The IBRA was designed principally as a framework for examining deficiencies in the National Reserve System and subsequent allocations of federal funding to the states. In Western Australia the bioregions were based on the work of Beard (1990), a compilation of the project "Vegetation Survey of Western Australia", comprising survey work undertaken between 1964 and 1981.

It is commonly understood that the level of differentiation of biodiversity in Western Australia is significantly finer than is accounted for by the IBRA. An audit of the knowledge and gaps in available data was more recently undertaken by the Department of Conservation and Land Management (now Department of Environment and Conservation, DEC) (McKenzie *et al.*, 2003). Outcomes of the audit included summaries of the significant components of biodiversity in each subregion and bioregion.

The Pilbara Bioregion comprises four subregions; the study area is located within the Hamersley Subregion (Kendrick & Stanley, 2003; Figure 4). This subregion comprises 6,215,092 ha and is typified by sedimentary ranges and plateaux dissected by gorges of basalt, shale and dolerite. The vegetation is broadly described as Mulga (*Acacia aneura*) low woodland over bunch grasses on fine textured soils in valley floors, snappy gum (*Eucalyptus leucophloia*) over Spinifex (*Triodia brizoides*) on skeletal soils of ranges (Kendrick, 2003).

1.6.2 Regional Vegetation Mapping and Conservation Estate

The study area lies within the Fortescue Botanical District of the Eremaean Botanical Province (Beard 1975). Mapped by Beard (1975) at 1:1,000,000, the Pilbara region was described as generally characterised by tree and shrub steppe communities dominated by *Eucalyptus* trees, *Acacia* shrubs, *Triodia pungens* and *T. wiseana* grasses, with some Mulga occurring in valleys and short-grass plains on alluvia (Beard, 1990). The Hamersley escarpment is dominated by Spinifex vegetation, Mulga is known to occur in valleys and on basaltic rocks, while grass savannah occur on valley plains (Beard 1990).

The mapping (Beard 1975) as interpreted by Shepherd *et al.* (2002) describes four vegetation associations for the study area (Figure 5, Table 5). The majority of the WPIOP study area occurs on the Stuart Hills Unit 103, Hummock grasslands, shrub steppe; Snakewood over Soft Spinifex & *T. wiseana*. Beard (1975) describes the vegetation of the southern portion of Stuart Hills as a catenary sequence of two communities: stony country mapped as shrub steppe with Snakewood. The stony hills are covered with Hard Spinifex, *Triodia wiseana* with scattered *Acacia xiphophylla, A. pyrifolia* and *A. victoriae* (or *A. synchronicia*) and a few Mulga, *A. aneura.* Iron-capped mesas of Robe Pisolite interrupt this pattern with a sparse cover of *Triodia wiseana* with scattered *Ficus platypoda* and *Corchorus walcottii* (Beard, 1975).

The Pilbara, and particularly the Hamersley Subregion, is lacking in any recent systematic planning or review for the nomination of areas or ecosystems for conservation. In 1993 a review was undertaken of the 1975 recommendations from the Conservation Through Reserves Committee (Kendrick, 2003).

The biodiversity of the Pilbara is considered to be rich but poorly understood. The Department of Environment and Conservation undertook a Pilbara Bioregional study during 2002-2007 yet to be published. It will hopefully provide a more recent, detailed regional perspective on the flora and vegetation of the Pilbara.

In 2002, Van Leeuwen and Bromilow published the findings of a Botanical Survey of Hamersley Range Uplands, the survey focussed on summit habitats. Amongst the recommendations in the report was the creation of a conservation park on the western Hamersley Range. This proposed Conservation Park includes parts of the resource areas of Kens Bore, Cardo Bore North, Cardo East and Upper Cane.

At the Beard classification level, three of the four vegetation associations that occur in the study area are considered to be a Low priority for conservation (Table 5). The hummock grasslands, shrub steppe; Snakewood over Soft Spinifex (Vegetation Association 620), are of Medium reservation priority (Kendrick, 2003).

Figure 3 Land Systems of the Study Area

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API

N

0 10km

Scale 1:600,000
MGA94 (Zone 50)

Dampier
Karratha
Cape Preston
Highway
Millstream
Coastal
Route
Rail
Fortescue Road House
Fortescue
River
Robe
Proposed
West
Dampier - Bunbury Natural Gas Pipeline
River
Pannawonica
Millstream
Link
Road
Peedamulla
North
Red Hill Station
Cane
River
CARDO OUTCAMP
Paraburdoo
Road
Nanutarra
Mt Stuart Station

SYSTEM	DESCRIPTION
RGEBGD	Stony lower slopes and plains below hill systems; not degraded or eroded.
RGECHE	Sandy coastal plains and saline scalds; some extensive parts are severely degraded and eroded.
RGECPN	Rugged hills and ridges on sedimentary rocks; poorly accessible, not degraded or eroded.
RGEHOF	Weakly gilgaied alluvial plains; some parts severely degraded and eroded.
RGELIT	Bare coastal muflats with minor samphire flats and mangrove fringes.
RGEMAL	Sandy surfaced alluvial plains; some parts are severely degraded and eroded.
RGENEW	Rugged ironstone ridges, plateaux and mountains; hard spinifex pastures in good to excellent condition; no erosion.
RGENNT	Low mesas and hills of sedimentary rocks supporting soft and hard spinifex grasslands.
RGEPAR	Stony drainage floors and gilgai plains developed from basalt; snakewood with stony chenopod pastures in poor to fair condition; moderate erosion on drainage floors.
RGEPED	Gravelly plains supporting hard spinifex grasslands and minor snakewood shrublands
RGERIV	Flood plains and terraces flanking major rivers and creeks; little pasture degradation or erosion.
RGEROB	Low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands.
RGEROC	Rugged basalt hills and dissected plateaux; poorly accessible, not degraded or eroded.
RGERUT	Hills and ridges on volcanic and sedimentary rocks; generally not degraded or eroded.
RGESRK	Stony alluvial plains supporting snakewood shrublands with patchy tussock grasses and spinifex grasslands.
RGESTT	Gently undulating stony plains supporting hard and soft spinifex grasslands and snakewood shrublands
RGEURY	Stony plains, alluvial plains and drainage lines supporting shrubby soft spinifex grasslands.

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
DoAF LAND SYSTEMS

Author: D. True Date: October 2009

Figure 4 Bioregions of the Study Area

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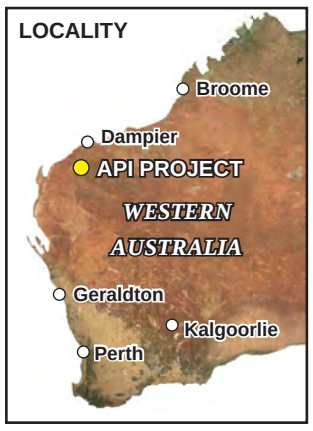
API

LOCALITY



N

0 10km

Scale 1:600,000
MGA94 (Zone 50)

Dampier
Karratha
Cape Preston
Highway
Millstream
PIL4
PIL1
PIL2
PIL3
Coastal
Fortescue Road House
Fortescue
River
Robe
River
Dampier - Bunbury Natural Gas Pipeline
West
Link
Road
Millstream
Pannawonica
Yalleen Camp
Peedamulla
River
North
Cochrane
Jewel
Red Hill Station
Kens Bore
Cardo Bore North
Cane
River
Cardo Bore East
Upper Cane
CARDO OUTCAMP
Trinity Bore
Catho Well
Paraburdoo
Road
Mt Stuart Station
Nanutarra

PIL Pilbara
There are four major components to the Pilbara Craton.
(1) Chichester. Archaean granite and basalt plains supporting shrub steppe characterised by *Acacia pyrifolia* over *Triodia pungens* hummock grasses. Snappy Gum tree steppes occur on ranges.
(2) The Fortescue Plains. Alluvial plains and river frontages. Salt marsh, mulga-bunch grass, and short grass communities on alluvial plains. River Gum woodlands fringe the drainage lines. This is the northern limit of Mulga (*Acacia aneura*).
(3) Hamersley. Mountainous area of Proterozoic sedimentary ranges and plateaux with Mulga low woodland over bunch grasses on fine textured soils and Snappy Gum over *Triodia brizoides* on skeletal sandy soils of the ranges.
(4) Roebourne. Quaternary alluvial plains with a grass savanna of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia translucens* over *Triodia pungens* . Samphire, *Sporobolus* and Mangal occur on marine alluvial flats. Arid tropical with summer rain.

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA

INTERIM BIOGEOGRAPHIC REGIONALISATION FOR AUST (IBRA)

Author: D. True Date: October 2009

Figure 5 Beard (1975) Vegetation Associations of the Study Area

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STUART HILLS 29
STUART HILLS 620
STUART HILLS 157
HAMERSLEY 609
STUART HILLS 583
STUART HILLS 157
Cochrane
Jewel
STUART HILLS 157
Red Hill Station
STUART HILLS 18
HAMERSLEY 82
Kens Bore
Cardo Bore North
Cane River
Cardo Bore East
Upper Cane
CARDO OUTCAMP
STUART HILLS 103
STUART HILLS 157
STUART HILLS 157
STUART HILLS 157
STUART HILLS 157
Trinity Bore
Catho Well
STUART HILLS 82
STUART HILLS 157
Nanutarra Paraburdoo Road
Mt Stuart Station

N
0 4km
Scale 1:200,000
MGA94 (Zone 50)

WEST PILBARA IRON ORE PROJECT
Mine Project Area
Pre-European Vegetation
Author: D. True Date: October 2009

Table 5: Beard (1975) Vegetation types in the Study Area

Vegetation Association No. (Shepherd *et al.*)	**Vegetation Description**	**Reservation Priorities** (Kendrick, 2003)
82	Hummock grasslands, low tree steppe; Snappy Gum over Soft Spinifex	L
103	Hummock grasslands, shrub steppe; Snakewood over soft Spinifex & *T. wiseana*	L
157	Hummock grasslands, grass steppe; Hard Spinifex *Triodia wiseana*	L
620	Hummock grasslands, shrub steppe; Snakewood over Soft Spinifex	M

1.6.3 Detailed Botanical Surveys

There have been numerous studies undertaken in many parts of the Pilbara over the past twenty years. These studies have predominantly focussed on areas of high mineralisation particularly for iron ore. However, there is still no environmental, geological or regolith mapping at a scale of more than 1:250,000, and no quantitative (quadrat-based) regional flora or fauna data. Also, there is little data on the ecological requirements of many components including hummock grasses, particularly the effects of fire, or studies on the spread and impact of weed species such as buffel grass and kapok.

Many localised studies have been undertaken for mining development projects. Historically the eastern Pilbara has dominated these studies south to Tom Price and east to Marble Bar. Recently, a number of iron ore prospects along the coastal plain near Cape Preston have been surveyed and exploited (Halpern Glick Maunsell *et al.* 2001). Few studies have occurred in the western part of the Pilbara, other than in the mesas of the Robe River valley, near Pannawonica, for Rio Tinto (formerly Robe River Iron Pty Ltd). A number of these surveys are particularly pertinent to this current study, for example, the Mesa A and Warramboo studies (Biota 2006; 2005a; 2005b). Floristically, the area is considered to be poorly collected and extensive detailed surveys of the western Pilbara have not been undertaken.

2 Methods

2.1 Desktop Survey

Prior to commencement of field survey, a database search of known Declared Rare Flora (DRF), Priority-listed flora and Threatened Ecological Communities (TEC) was obtained from the Department of Environment and Conservation (DEC). Using the list provided, a field herbarium was compiled at the WA Herbarium to assist field identification.

2.2 Study Team and Survey Timing

2.2.1 Reconnaissance Surveys

Three reconnaissance surveys were undertaken:

- Denise True completed a reconnaissance of the rail and mining areas for two days on the 27th and 28th February 2007 (2 person days). The initial two-day survey included a biologist from Biota (undertaking terrestrial fauna surveys), Dan Kamien, accompanied by three engineers from Calibre Engineering. The purpose of the reconnaissance was to drive the proposed rail alignment (Version 4) to Cape Preston and provide a site visit to the study area and accommodation facilities.

- Denise True, Geoff Cockerton and Shapelle McNee completed a reconnaissance for three days from the 20th – 22nd March 2007 (9 person days). The survey provided an overview of the study area from the northern end of the proposed rail line at Cape Preston, and included the majority of the resource areas of Cochrane, Jewell, Kens Bore and Upper Cane. Photographs and locations of flora collected and vegetation descriptions were recorded using a handheld Garmin 76 GPS and a digital camera.

- Denise True and Shapelle McNee completed a reconnaissance for three days from the 2nd – 4th April 2007 (6 person days). The survey included two biologists from Biota (Roy Teale and Garth Humphreys). A helicopter was utilised to survey along the finalised Cape Preston rail corridor, and each of the resource areas. Photographs and locations of flora collected and vegetation descriptions were recorded using a handheld Garmin 76 GPS and a digital camera. The aerial view of the mesas assisted in providing a regional perspective of the vegetation landscapes.

2.2.2 Field Survey

The study area was surveyed over a two-year period, May 2007- July 2009 (Table 6). The principal survey periods were May – November 2007; June – October 2008; and April - July 2009. A total of 767 field person days were undertaken during the period.

Table 6: Field Surveys of the Study Area

Dates of Survey	Personnel	No. Person Days
16 - 25/5/07	Denise True, Shapelle McNee, Ben Eckermann, Kellie McMaster, Hayley Hughes, Susan Regan (10 days)	60
12 - 21/6/07	Denise True, Shapelle McNee, Kellie McMaster, Steve Kern, Cassie Adam, Hayley Hughes (10 days)	60
2 - 10/8/07	Denise True, Shapelle McNee, Kellie McMaster, Cassie Adam, Hayley Hughes, Daniel Brassington (9 days)	54
18 – 27/9/07	Denise True, Shapelle McNee, Cassie Adam, Daniel Brassington, Amy Douglas (10 days); Kellie McMaster (8 days)	58
17 – 25/10/07	Denise True, Shapelle McNee, Kellie McMaster, Cassie Adam, Daniel Brassington (9 days); Amy Douglas (7 days)	52
21 - 30/11/07	Denise True, Shapelle McNee, Kellie McMaster, Cassie Adam, Hayley Hughes, Amy Douglas, Daniel Brassington (10 days)	70
13 – 17/6/08	Hayley Hughes, Amy Douglas, Bridget Watkins (4 days)	12
17 - 23/6/08	Denise True, Kellie McMaster, Rebecca Graham, Cassie Adam, Amy Douglas, Andrew Taylor, Bridget Watkins, Gemma Lindschau (6 days); Hayley Hughes (5 days)	53
1 - 9/7/08	Denise True, Hayley Hughes, Bridget Watkins (9 days); Andrew Taylor, (7 days)	34
15 - 22/7/08	Rebecca Graham, Cassie Adam, Amy Douglas and Gemma Lindschau (8 days)	32
4 - 10/8/08	Denise True, Kellie McMaster, Rebecca Graham, Hayley Hughes, Amy Douglas, Andrew Taylor, Bridget Watkins (7 days)	49
26/8 - 3/9/08	Kellie McMaster, Hayley Hughes, Andrew Taylor, Gemma Lindschau (9 days)	36
22 - 26/09/08	Rebecca Graham, Cassie Adam, Amy Douglas, Bridget Watkins (5 days); Denise True, Kellie McMaster (4.5 days)	29
27 -28/10/08	Denise True, Kellie McMaster (2 days)	4
1 - 8/4/09	Hayley Hughes, Andrew Taylor, Gemma Lindschau, Fiona Mayberry (8 days)	32
20 - 29/4/09	Hayley Hughes, Andrew Taylor, Fiona Mayberry, Helen Barwick (10 days); Cassie Adam (2 days)	42
3 - 11/6/09	Kellie McMaster, Hayley Hughes, Andrew Taylor, Gemma Lindschau (9 days)	36
13 - 22/7/09	Kellie McMaster, Cassie Adam, Andrew Taylor, Gemma Lindschau, Fiona Mayberry (10 days); Denise True (4 days)	54
Total No. Field Days		**767**

2.2.3 Seasonal Conditions during the Survey Period

The climate of the Pilbara region is typically described as arid tropical, with summer rainfall averaging between 250-300 mm per annum (Beard, 1990). The records of two Bureau of Meteorology recording stations across the study area were examined (Figure 6). Red Hill is located toward the northern end of the study area and Mt Stuart is located to the south.

The 2007 surveys were conducted during a prolonged dry period (Figure 6). As an arid tropical climate, the highest rainfalls are usually recorded during the 'cyclone' season December to March. Historically, during this time, the mean monthly rainfall recorded at Red Hill Station since 1898 was 185 mm to 437 mm. The total precipitation recorded in 2007 at Red Hill was 194 mm. The majority of this was recorded in February and March with a small amount in July. The 2008 and 2009 rainfalls were significantly higher; Red Hill recorded

442.8 mm in 2008, and 549.6 mm for the first the six months of 2009. Similarly Mt Stuart recorded a higher rainfall in 2008, but has incomplete records for 2007 and 2009.

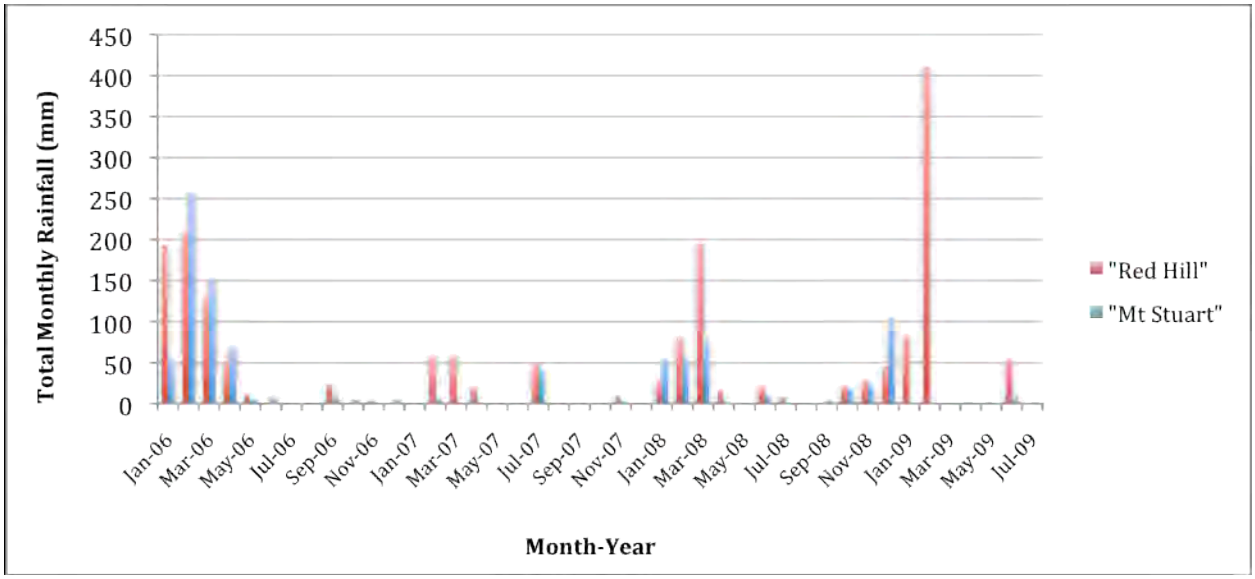

Figure 6 Monthly rainfall from nearby recording stations Jan 07 – July 09 (Bureau of Meteorology, 2009)

Note: Data was unavailable for the following months: Red Hill Jul 09; Mt Stuart Jan 07, Mar 07, Apr 07, Jan 09, Feb 09, Mar 09, Apr 09, May 09.

2.3 Specimen Collection and Identification

An inventory of vascular flora was compiled for each vegetation unit encountered. Any taxa not readily identified in the field were collected, pressed and verified at the WA Herbarium. For each population of significant flora encountered, the likely impact of the proposed clearing was estimated.

Voucher specimens were collected from all populations of significant flora. Specimens of significant species and other good quality collections will be lodged at the WA Herbarium. A number of specimens were of insufficient quality, lacking flowering material due to the poor season, and specialist expertise was called upon to assist in the determinations.

2.4 Floristic Assessment

A total of 217 permanent quadrats were established in the study area (Table 7). The locations of the quadrats were chosen to represent the major vegetation types occurring within the study area.

In addition to the quadrats, a total of 627 detailed site recordings were also undertaken within the resource areas (Table 7). These included 342 relevés, which are unpegged quadrats equivalent in description to a quadrat, and 285 vegetation site descriptions. The relevés were mostly used to describe vegetation types in places where permanent quadrats were difficult to establish or to access, such as the free face of a mesa. Similarly the vegetation site descriptions were usually associated with opportunistic collections of flora in habitats such as gorges or creeklines.

As with the quadrats, each relevé and vegetation description location was recorded with a hand held GPS and representative photographs were taken. The vegetation was mapped onto 1:10,000 aerial photography base maps.

The quadrat size of 50 m by 50 m is accepted as the standard area required to adequately sample the flora of the Pilbara. In narrow vegetation types such as creeks and gorges, a transect was utilised. A transect was the width of the creek vegetation by a length of up to 120 m.

Each quadrat was permanently pegged with four aluminium droppers to physically mark each corner. Quadrats were generally established by teams of two to three botanists. Use of an optical square and compass ensured that the quadrats were correctly positioned and can be accurately re-instated if loss of some markers occurs. Two photographs of each site were taken using a 6 mega-pixel digital camera.

Table 7: Distribution of Recording Sites in the Study Area

Project Component	Quadrat	Relevé	Vegetation Description	Individual Specimen	Total
Cochrane	8	0	0	71	**79**
Farnum	4	0	0	17	**21**
Jewell	9	0	0	47	**56**
Red Hill North waste (areas adjacent to Cochrane, Farnum and Jewell mesas)	15	7	2	28	**52**
Kens Bore	22	5	16	166	**209**
Kens Bore waste	7	6	2	0	**15**
Cardo North	7	3	0	0	**10**
Cardo North waste	5	1	0	0	**6**
Cardo East	13	9	7	5	**34**
Cardo East waste	3	3	0	0	**6**
Upper Cane	10	2	19	30	**61**
Upper Cane waste	4	10	2	3	**19**
Trinity	29	10	51	58	**148**
Trinity waste	2	3	2	1	**8**
Catho Well	28	39	17	17	**101**
Catho Well waste	4	6	5	1	**16**
Infrastructure areas including Administration, Airstrip and Camp areas	13	59	47	5	**124**
Internal Transport Corridor, Cochrane to Trinity	25	179	115	21	**340**
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)targeted survey within the project area	9	0	0	0	**9**
TOTAL	**217**	**342**	**285**	**470**	**1,314**

The details recorded for each quadrat included:

- Location recorded at each permanent stake using a hand-held GPS Garmin 76 (accurate to approximately 5 m). Coordinates were recorded in WGS 84 datum, Zone 50.
- Vegetation description based on structural table of Specht (1970) as modified by Aplin (1979) using height and cover of dominant species.
- The condition of the vegetation as affected by seasonal conditions such as recent rains or extended dry season, evidence of fire and any signs of ground disturbance such as grazing or exploration activities were recorded and quantified.
- Percent Foliage Cover was estimated for each species. If less than 1% PFC, presence only was recorded.
- Landform and substrate were recorded in detail using a modified version of the DEC Banded Ironstone Formation (BIF) data recording protocol.

2.5 Vegetation Mapping

Vegetation was described using the vegetation structural table of Specht as modified by Aplin (1979). This version included a hummock grassland stratum and recorded cover less than 2 percent (Appendix 1).

Vegetation boundaries were drafted on to 1:10,000 laminated aerial photograph base maps in the field. Vegetation descriptions for each unit were based on the collation of relevé and vegetation descriptions from foot traverses and the detailed floristic data provided by quadrats. Following finalisation of the regional PATN floristic analysis, the vegetation mapping units were revisited and adjustments made to combine or separate units as informed by the PATN dendrogram.

The designation and classification of vegetation units was based upon dominant species, form, cover and height for each strata. According to the National Vegetation Information System (NVIS), taking into account the range in structure and floristic variation in each vegetation type, the vegetation mapping we have provided is classified to association or sub-association level. These are the minimum levels of classification recommended for data compilation and the preferred level for input into NVIS (Department of the Environment and Heritage, 2003).

The vegetation codes used to designate each vegetation unit were developed to closely follow that of Biota (2006) to provide some consistency and enable comparison with nearby studies. The vegetation codes are based on abbreviations of the dominant species in each vegetation type, arranged by stratum. The codes are formulated using the first capital letter of the genus, and the first lower case letter of the species name e.g. *Acacia ancistrocarpa* = Aa. Where there are numerous species with the same species first letter, the second or third letter is also used e.g. *Acacia atkinsiana* = Aatk.

2.6 Rare and Priority Flora Searches

A search of the Department of Environment and Conservation's WA Herbarium (WAHERB) and Threatened Flora (TF) databases for Declared Rare Flora (DRF) and Priority Flora was obtained to highlight species with known conservation significance likely to be found within the project area. Field herbaria and photographic identification booklets were compiled to aid in identifying known significant flora in the field.

Searches for conservation-significant species were conducted on foot using parallel transects at 50 metre intervals following easting lines within the defined survey areas. The areas incorporated proposed resource (mesas) and waste dump areas within the project area. On the mesa resource areas, further priority searches were targeted on free face areas as these were considered likely habitats to support uncommon flora species.

Searches for rare and priority flora were conducted over a total of 74 person days (Table 6) during 1st to 8th of April, 2009 and the 20th to 29th of April 2009. The resource areas of Cochrane, Jewell, Farnum, Kens Bore, Upper Cane, Trinity and Catho Well and the Jewell Waste area were surveyed (Figure 7, Figure 8, Figure 9, Figure 10, Figure 11).

The location of priority species was recorded using a GPS with an accuracy of 5 m. Photographs of the specimen were taken using a 7 mega-pixel digital camera. Specimen samples were collected for identification at the Western Australian Herbarium and the numbers of individuals of the species were recorded from the surrounding area. The vegetation community and habitat was recorded. When a previously collected specimen was encountered repeatedly the location was recorded using GPS to quantify the population without further collection.

Figure 7 Priority Flora Searches of Cochrane, Jewell and Farnum Resource Areas

Figure 8 Priority Flora Searches of Kens Bore Resource Area

Figure 9 Priority Flora Searches of Upper Cane Resource Area

Figure 10 Priority Flora Searches of Trinity Resource Area

Figure 11 Priority Flora Searches of Catho Well Resource Area

409000mE
410000mE
411000mE
412000mE
413000mE
414000mE
7577000mN
7576000mN
7575000mN
7574000mN

N

0 300m

Scale 1:15 000
MGA94 (Zone 50)

API

LEGEND

API Access Track

Western Botanical Survey Track

WEST PILBARA PROJECT
COCHRANE & JEWEL
SURVEY TRACKS
Figure 1

Author: D. True Date: May 2009

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WEST PILBARA PROJECT
KENS BORE
SURVEY TRACKS
Figure 1

Author: D. True Date: May 2009

414000mE
416000mE
418000mE
420000mE
422000mE
7562000mN
7560000mN
7558000mN

N

0 500m

Scale 1:25 000
MGA94 (Zone 50)

LEGEND

- API Access Track
- Western Botanical Survey Track

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API

LEGEND

- API Access Track
- Western Botanical Survey Track

420000mE
422000mE
424000mE
426000mE
7548000mN
7546000mN
7544000mN

N
0 400m
Scale 1:20 000
MGA94 (Zone 50)

WEST PILBARA PROJECT
UPPER CANE & CARDO BORE EAST
SURVEY TRACKS
Figure 1
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428000mE

430000mE

432000mE

7526000mN

7524000mN

7522000mN

7520000mN

LEGEND

API Access Track

Western Botanical Survey Track

N

0 400m

Scale 1:20 000
MGA94 (Zone 50)

WEST PILBARA PROJECT
TRINITY BORE
SURVEY TRACKS

Figure 1

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422000mE
424000mE
426000mE
428000mE
7524000mN
7522000mN
7520000mN
7518000mN

N
0 500m
Scale 1:25 000
MGA94 (Zone 50)

LEGEND

API Access Track

Western Botanical Survey Track

WEST PILBARA PROJECT
CATHO WELL
SURVEY TRACKS

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2.7 *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) Surveys

Forty three hours were spent surveying by helicopter for the soft Spinifex *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (Table 8). During 2008 the area from west of the Kens Bore resource area to the North West Highway, north to Mesa A, and along the Robe River Valley to Mesa K then south back to Cochrane Resource area was searched.

A geological map of Robe Pisolite in the Pilbara Bioregion was used as an indicator for potential habitat of additional populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). A western subset of the Robe Pisolite, within an area defined by 600000mN, 400000mE and 750500 mN, 600000mE, was searched (Figure 12). During the July 13-18/09 surveys, a total of 21 mesas and intervening country were surveyed specifically for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (Table 9).

Table 8: Regional Helicopter Surveys of the West Pilbara for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)

Dates of Survey	Personnel	No. Person hours
7/07/08	Denise True, Bridget Watkins	3
9/08/08	Denise True, Rebecca Graham	4
13/07/09	Denise True, Andrew Taylor	16
15/07/09	Denise True, Andrew Taylor	2
16/07/09	Denise True, Gemma Lindschau	8
17/07/09	Denise True, Fiona Mayberry	8
18/07/09	Denise True, Owen Maitland	2
Total No. Field Days		**43**

Table 9: Robe Pisolite *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) Survey Sites Distribution of Land Systems within the Study Area

Robe Pisolite Site No.	Name
27-30	Robe River
23, 12-18, 20	Boolgeeda Creek
1-2	Cane River
6	South of Cardo East
3	West of Kens Bore
4	West of Cochrane
7-9	West of Catho Well

The number of individual *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummocks per recording site were estimated. Numbers of plants for each site within a given population were added together to give minimal estimated numbers per population. These estimates of population size are considered conservative.

Calculations to estimate the number of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummocks were based on a 50 x 50 m quadrat or relevé area. The average size of a hummock was estimated to be 0.25 m^2. Within 1 m^2 we estimate there to be four hummocks. Therefore, in a 50 x 50 m quadrat, 1% cover would equal 25 m^2 and we would estimate this area to contain 100 individual hummocks. Using recorded percentage covers of *Triodia* sp.

Robe River (M.E. Trudgen *et al.* MET 12,367) from each site, it was possible to estimate the number of hummocks.

If no record of percentage cover was noted for a site, or *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was recorded as a presence only, it was assumed that at a minimum there would be at least one hummock present at that site.

Records of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) separated by 500 metres or more were regarded as separate populations. Where records were found within the boundaries of mapped vegetation, the continuous vegetation unit within which the record falls was considered to represent a continuous population within its boundaries, regardless of the distance between individual records.

All records of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) recorded by Western Botanical, Biota and Astron Environmental in the western Pilbara were incorporated in an analysis to determine the number and size of populations in the region.

2.8 Taxonomy and Nomenclature

The nomenclature and conservation status for plant species in this report was verified using the most recent listing by the WA Herbarium. Reference to the collections held by Malcolm Trudgen was also used.

Acacia trudgeniana and *A. inaequilatera* are related similar species that apparently occur throughout the study area. Both have characteristics such as thick corky bark, spiny stipules and the spine tipped phyllodes being markedly asymmetrical, which cause difficulties in field distinction of the two taxa. The two species are not known to be sympatric (B.R Maslin and S. van Leeuwen 2008), *A. trudgeniana* occurs on flat, low undulating plains, and *A. inaequilatera* higher in the landscape. However, this was not always reflected in the data collected in the current study.

At the time of survey, there were no collections of *A. trudgeniana* from the study area in the WA Herbarium (DEC, 2009). Specimens collected throughout the study have been variously identified as both species by a specialist. This has led to confusion with regard to accurate identification and differentiation of these taxa. As such, all specimens recorded in this study have been treated as *A. inaequilatera*. All material collected from the study area will be submitted to the WA Herbarium for vouchering.

Figure 12 Regional Surveys of *Triodia* sp. Robe River (M.E. Trudgen *et al*. MET 12,367)

WEST PILBARA IRON ORE PROJECT
Triodia sp Robe River
Regional Mesa Locations

Author: A. Taylor Date: July 2009

LEGEND
- API Project Area
- Channel Iron Deposit
- API Tenement - Live
- API Tenement - Pending

400000mE 450000mE 500000mE

7600000mN 7550000mN 7500000mN

ROBE HIGHWAY ROBE RIVER COASTAL WEST NORTH CANE RIVER NANUTARRA CREEK DUCK CREEK WITTENOOM ASHBURTON RIVER ROAD KUMINA CREEK ROBE RIVER FORTESCUE RIVER CREEK CAVES BOOLGEEDA CREEK

Cochrane Jewell Kens Bore Cardo Bore North Cardo Bore East Upper Cane Trinity Bore Catho Well

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

0 5 10km
Scale 1:500,000
MGA94 (Zone 50)

Triodia sp. Robe River
- Recorded by Western Botanical - API
- Recorded by Western Botanical - RTX
- Recorded by Biota

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Author: A. Taylor ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Date July 2009 ~ A3 ~ CAD Ref g1505_WB_Triodia_sp_Robe_River_05_Sites.dgn

2.9 Data Management and Regional Floristic Analysis

Species composition, community structure and landform information recorded at individual quadrats, relevés and detailed site descriptions from the study area were entered into an MS Access database developed by Malcolm Trudgen and Ted Griffin.

To investigate the regional conservation value of the vegetation of the study area, a statistical analysis of the floristic composition was undertaken by Malcolm Trudgen and Ted Griffin (Griffin & Trudgen, 2009). The floristic data from 471 quadrats and relevés with more than 10 taxa from the current study was combined with data from other projects to provide a regional perspective. The regional data set comprised 2,412 sites (combined data set of 2,883 sites) and provides a sufficient basis to enable an investigation of the floristic variation present in the vegetation sampled in the study area in relation to the vegetation of the Pilbara Bioregion that is adequate for environmental impact purposes (Griffin & Trudgen, 2009).

Reconciliation of flora species names was undertaken prior to running the PATN analyses. This involved reducing some infra-specific names to the relevant species names; combining some taxa where confusion was likely to have occurred in field observations and identifications; and omitting some records that were considered ambiguous (Griffin & Trudgen, 2009). The PATN modules used were ASO (calculation of similarity matrix), FUSE (classification), DEND (representation of classification) and SSH (a form of ordination) to display relationship of sites to the whole data set.

Variations occur in seasonal conditions at the time of survey, differences in the quality of field observation, and variation in the standard of variation. However, for most of this larger data set, the majority of identifications or confirmation of species was performed by M.E. Trudgen. Furthermore, M.E. Trudgen was either present during many of those surveys or liaised closely on survey design.

2.10 Limitations of the Study

A substantial level of detailed survey has been conducted during this study. However, in assessing the results of this survey the following aspects of the study need to be considered.

Limited Detailed Regional Context of Vegetation Associations
A regional representation and assessment of the conservation significance of the vegetation is problematic as few other detailed vegetation surveys have been undertaken at a similar level of detail or scale in this part of the Pilbara. To help address the issue of a lack of regional data in the public forum, consultation with other botanists working in this region was undertaken to ensure that data collection, management and synthesis was consistent. To this end, the utilisation of a database developed by botanist Malcolm Trudgen and Ted Griffin was engaged to integrate the data from the current study with this broader data set.

Dry Seasonal Conditions
Consultation undertaken with the Department of Environment and Conservation (DEC) confirmed that to adequately represent the floristics of the region, environmental impact assessments in the Pilbara region are typically conducted over at least two seasons. However, the commencement of the study in 2007 was a particularly dry year with less than 200 mm recorded. The second year of survey, 2008 was not considered to represent a 'seasonal survey' (S. van Leeuwen pers. comm.) due to the low levels of rainfall in inland western Pilbara, though this was higher than 2007. Red Hill recorded a high rainfall event during

February 2009 but little else all year. The southern part of the study area on Mt Stuart had incomplete rainfall records but was observed to be drier than Red Hill during 2008 and 2009 surveys.

The majority of resource areas were surveyed including establishment of quadrats and relevés during 2007 and/or 2008. All of these sites were re-scored in 2008 or 2009. Site establishment timing is detailed in Table 10. However, the difference in survey effort and timing has been reflected in the statistical analysis with the inclusion of relevés only recorded in a single season and not rescored. Essentially a large proportion of the flora was not present (annuals and ephemerals) in data collected only in 2007 or late in 2008 and 2009.

Fire History

Much of the study area has been burnt in the past ten years. A compilation of satellite data provided by Department of Land Information (DLI) shows that few parts of the study area remain unburnt in the last decade (Figure 13). Areas that had been recently burnt (December 2006-January 2007) were not surveyed in detail and vegetation boundaries could not be determined accurately within the vicinity of these burnt areas.

Taxonomic Limitations

Some taxonomic limitations are also known. For example, *Triodia epactia* and *T. wiseana* may, in due course and with the benefit of further taxonomic revision, each be separated into several distinct taxa. Some of these taxa may be widespread, however, some of the entities within each respective group may be regarded as regionally restricted in distribution (M. Trudgen pers. comm.). However, this level of analysis is not able to be conducted at this stage.

The record of the *Owenia acidula* population within the project area is a new record for this species in the western Pilbara. As this species has a widespread but disjunct distribution across northern Australia, closer taxonomic work may reveal that there is more than one entity currently classified as the one taxon.

Table 10: Establishment and Re-scoring Schedule of Sites Within the Study Area

Project Component	Quadrats Established	Quadrats Rescored	Relevés Recorded
Cochrane Mesa	2007	2008	
Farnum Mesa	2007, 2008	2008	
Jewell Mesa	2007	2008	
Cochrane Jewell and Farnum Waste	2007, 2008	2008	2008, 2009
Kens Bore Mesa and Waste Areas	2007, 2008, 2009	2008, 2009	2007, 2008, 2009
Cardo North Mesa and Waste Areas	2008	2009	2008, 2009
Cardo East Mesa and Waste Areas	2008	2009	2008, 2009
Upper Cane Mesa and Waste Areas	2007, 2008	2008, 2009	2008, 2009
Trinity Mesa and Waste Areas	2007, 2008, 2009	2008	2008, 2009
Catho Well Mesa	2007, 2008	2008	2007, 2008
Transport Corridor	2007, 2008, 2009	2008	2007, 2008, 2009
Other Infrastructure	2008, 2009		2007, 2008, 2009
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)	2008, 2009	2009	

Figure 13 Distribution of Fire Patterns of the Study Area

Author: D. True ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ March 2010 ~ A3 ~ Rev: A ~ CAD Ref g1505_WB_Rpt0910_21.dgn

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API

Cochrane

Jewel

Kens Bore

Cardo Bore North

Cardo Bore East

Upper Cane

Cane River

Lateral Gas

N

0 2km

Scale 1:100,000
MGA94 (Zone 50)

LEGEND

- Fire Burnt Area 2006/07
- Pit Outline
- Waste Dump / Topsoil
- Borrow Area
- Groundwater Target
- Process Plants / Common Facilities
- Rail Line
- Access Road

WEST PILBARA IRON ORE PROJECT

Figure 13
Fire Burnt Areas
2006 to 2007

Author: D. True Date: March 2010

3 Results and Discussion

The results of the vegetation surveys conducted by Western Botanical within the WPIOP study area is presented first followed by an overview of the regional floristic analysis by Griffin and Trudgen (2009), and lastly the impacts on vegetation types and Communities of Interest.

Restricted Floristic Units (restricted or uncommon, some of which were under sampled) within the WPIOP study area were identified from the numerical floristic analysis (of quadrat and relevé sites) by Griffin and Trudgen (2009) and further assessed in more detail by Western Botanical. Reference is made to the Restricted Floristic Units throughout the text although they are not listed and described until section 3.1.6.

3.1 Vegetation of the Study Area

One hundred and fifty four vegetation types were identified for the WPIOP study area (Appendix 3). These occurred across 6 major landforms; Stony Plains (P), Stony Hills and Breakaways (S), Minor Creeklines (I), Major Creeklines (A) and Clayey Plains (C). The vegetation types were grouped into 21 broad vegetation categories and their occurrence on the six major landforms are listed below:

Vegetation found only on Stony Hills and Breakaways (S)

1. *Acacia bivenosa* Open Heath over *Triodia wiseana*
2. *Acacia pruinocarpa* Shrublands
3. *Acacia* Shrublands over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Triodia wiseana* Hummock Grasslands
4. Low Shrublands
5. Low Mulga Woodlands
6. Snappy Gums and Acacia Shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
7. Snappy Gums over Acacia Shrubs
8. *Terminalia* Woodlands
9. *Triodia epactia* and *Triodia wiseana* Hummock Grasslands

Vegetation found only on Minor (I) and/or Major Creeklines (A)

10. *Acacia ancistrocarpa, A. bivenosa* Shrublands (I)
11. *Acacia pyrifolia* High Shrublands (I and A)
12. *Corymbia* Woodlands (I and A)
13. *Eucalyptus* Woodlands (I and A)

Vegetation found only on Clayey Plains (C)

14. *Acacia synchronicia, A. bivenosa* Shrublands
15. Herbland

Vegetation found on two or more major landforms (P, S, I, and/or C)

16. *Acacia atkinsiana*, *A. bivenosa* Shrublands (S and C)
17. *Acacia* Shrublands (P, S, I and C)
18. *Acacia synchronicia* Shrublands (P, S and C)
19. Snakewood Shrublands (P and C)
20. Soft Spinifex Hummock Grasslands (S and C)

21. Hard Spinifex Hummock Grasslands (P and S)

The study area is dominated by Stony Hills and Breakaways (54.6%), which include mesas (flat-topped hills with breakaway slopes) and stony hills of basalt and calcrete or dolomite. Nearly one third of the study area consisted of Stony Plains (28%), and the remaining 17.3% comprised Clayey Plains, numerous Minor Creeklines (on mesas, stony hills and plains) and a few Major Creeklines (or drainage lines often located between mesas) (Table 11).

Table 11: Area of Vegetation Landform Elements within the Study Area

Landform	Proportion of the Study Area (%)
Stony Plains	28
Stony Hills and Breakaways	54.6
Creeklines Major	3
Creeklines Minor	8
Clayey Plains	6.3

Representative photographs for many of the vegetation types are provided in Appendix 4. The raw data and locations of quadrats and relevés are provided in Appendix 5 and Appendix 6. A matrix of species recorded in each vegetation type is provided in Appendix 7. A matrix of species recorded within the different components of the study area is provided in Appendix 8. The vegetation types are described below, detailing the associated species, land systems and landform.

While there are a number of distinct floristic communities (or vegetation types) within the study area, it is apparent that the vegetation is influenced both spatially and temporally, as has been found by other authors in the vicinity of the Hamersley Ranges (van Etten & Fox, 2004). The vegetation and floristic communities are vertically stratified and as such are influenced by both landform and geology. Within the study area there were also temporal aspects to the vegetation as the result of a severe fire regime, particularly over those areas on Red Hill Station.

In recently burnt areas, some vegetation units that were adjacent and structurally different were amalgamated following the use of the floristic analysis. It may be with time that the number of floristic units and degrees of difference for some areas could be reduced, following an absence of fire and further re-scoring of quadrats. Cardo East for example, exhibited vegetation types not known to occur elsewhere which could have been a reflection of the flora or an artefact of the regeneration of the vegetation post-fire, being only two years old at the time of survey. Kens Bore had large areas of recent fires (2007) and although few quadrats were established in these areas, a similar disparity influencing the floristics and vegetation could be apparent.

3.1.1 Comparison of Landform and Vegetation Types Present on the Eight Mesas (Resource Areas) within the Study Area

A total of 77 vegetation types were mapped on the eight mesa formations (resource areas) (Table 12). The vegetation types presented in Table 12 include those closely associated with the mesa landform (mesa top, gullies, breakaways and debris slopes including the pediment).

The analysis of floristic groups by Griffin and Trudgen (2009) indicated that floristic groups on mesas or Robe Pisolites tended to be restricted to the mesas. An exception possibly being the vegetation of the drainage lines.

Trinity and Kens Bore had the highest number of vegetation types mapped with 28 and 22 vegetation types respectively. Catho Well and Upper Cane had 18 and 15 vegetation types. The remaining four mesas had 6 to 10 vegetation types. These differences reflect the length and complexity of landform within the mesa formations at Kens Bore and Catho Well resource areas.

Vegetation types more common across the mesas (present in three to five of the eight mesas) included one Snakewood Shrubland vegetation type (AxTw on five mesas), an *Acacia pruinocarpa* shrubland with *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Triodia wiseana* (ApTsprrTw on three mesas), two *Acacia bivenosa* shrublands (AbSsspTw and AbTw on four and five mesas respectively), one Hard Spinifex Hummock Grassland where *Triodia wiseana* dominates (Tw on four mesas), and five *Eucalyptus leucophloia* ssp. *leucophloia* vegetation types (Snappy Gums with Acacia Shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and/or *Triodia wiseana* (ElApTsprrTw, ElApTwTsprrERIm, ElTsprrTw, ElAbAsTw, ElAbTw on three to four mesas) (Table 12).

Among the 77 vegetation types associated with the mesa formations, 58 only occurred on one of the eight mesas (Table 12). Of these, 18 only occurred on Trinity, 13 only on Ken's Bore, nine only on Catho Well, eight only on Upper Cane, five only on Cardo East, two only on Cochrane/Farnum, two only on Cardo North and one only on Jewell (Table 12).

In most cases the broad differences between vegetation types was due to differences in the dominant plant species present and their density. Two exceptions, where two vegetation types had the same dominant species, were; (a) vegetation types S10c and S10d where although the dominant species combination was the same (*Eucalyptus leucophloia* ssp. *leucophloia, Acacia bivenosa, Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)), the density of the eucalypts and hummock grasses were significantly different and (b) vegetation types S12b and S12c where the former was unburnt (open hummock grassland) and the latter recently burnt (very open hummock grassland) of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367).

These observations were supported by the statistical floristic analysis, showing some groups being widespread across the mesas (resource areas), and others restricted to particular mesas (Griffin and Trudgen 2009). Griffin & Trudgen (2009) also suggested that the differences between the mesas may be related to the changes that occur in the geological strata underlying the mesas within their NNW to SSE orientation (from Catho Well to Cochrane). There were also differences observed in vegetation types within an E to W direction on some mesas.

Table 12: Vegetation Types Present on the Eight Mesa Landforms Supporting the WPIOP Resource Areas

Landform	Vegetation Category	Veg Code	Vegetation type	Total Study Area (Ha)	Resource Area (Mesa)								Number of mesas Veg type is found in
					Cochrane & Farnum	Jewell	Kens Bore	Cardo North	Cardo East	Upper Cane	Trinity	Catho Well	
Clayey Plain	*Acacia* Shrublands	C2c	AiAaTe	**44.04**								1	1
	Soft Spinifex Hummock Grasslands	C7a	AiTe	**485.69**					1				1
Minor Creekline	*Corymbia* Woodlands	I5j	ChAtAcAaTe	**127.92**								1	1
Stony Plain	*Acacia synchronicia Shrublands*	P3c	AsAbTwTe	**28.82**			1						1
	Hard Spinifex Hummock Grasslands	P4b	ChAaTw	**88.48**					1				1
	Snakewood Shrublands	P5d	AxTw	**654.32**	1		1		1		1	1	5
	Soft Spinifex Hummock Grasslands	P6a	AiAbTe	**244.34**				1					1
		P6d	ChAbAaTe	**135.96**			1						1
		P6e	ChAiAbTe	**1694.44**			1						1
Stony Hills and Breakaways	*Acacia atkinsiana*, *A. bivenosa* Shrublands	S1c	GwAbAatkTw	**17.85**							1		1
	Acacia bivenosa Open Heath over *Triodia wiseana*	S2b	AcAbTeTw	**8.01**			1						1
	Acacia pruinocarpa Shrublands	S3a	AiApTw	**100.60**							1		1
		S3b	ApAarTw	**13.53**								1	1
		S3c	ApAbTw	**102.26**							1		1
		S3d	ApAiERfTw	**7.25**		1							1
		S3e	ApGwAarTw	**28.25**							1		1
		S3f	ApTw	**88.27**			1				1		2
	Acacia Shrublands	S4b	AarTw	**788.55**							1	1	2
		S4c	AbAaPlTw	**81.14**							1		1
		S4d	AbAaTe	**96.96**								1	1
		S4e	AcAbGOrTw	**21.11**							1		1
		S4f	AcApTw	**14.34**							1		1
		S4g	AcSTYsTsprrTe	**0.83**						1			1
		S4h	AcTwTe	**6.32**							1		1
		S4i	AiApTwTsprr/h	**17.69**						1			1
		S4k	AtGwTw	**3.43**								1	1
		S4l	AtPlTwTsprr	**30.32**			1						1
		S4m	GwAbTw	**5.65**							1		1
		S4n	GwPlAbTsprrTw	**9.94**							1		1
	Acacia Shrublands over *Triodia* sp. Robe River (M.E. Trudgen MET 12,367) and *Triodia wiseana* Hummock Grasslands	S5b	AatkAbTwTsprr	**114.11**					1				1
		S5c	AbDAcTsprrTw	**1.99**	1								1
		S5d	AbTwTsprr	**192.51**	1			1					2
		S5e	AcApAiTwTsprr	**22.78**						1			1
		S5f	AiAbTwTsprr	**183.12**			1						1
		S5g	AiAcTwTsprr	**39.98**						1			1
		S5h	AiPlTsprrTw	**32.70**			1						1
		S5i	ApAbTwTsprr	**28.58**				1					1
		S5j	ApTsprrTw	**50.97**		1		1			1		3
		S5k	ApERfTwTsprr	**32.38**					1	1			2
		S5l	CfAcERlaTsprr	**2.14**						1			1
	Hard Spinifex Hummock Grasslands	S7c	AbSsspTw	**881.91**	1		1	1		1		1	5
		S7d	AbTw	**373.90**	1	1	1					1	4
		S7e	AiAbTw	**48.47**			1						1
		S7f	AiAmAbTw	**14.86**							1		1
		S7i	AiTw	**1962.23**						1		1	2
		S7n	Tw	**827.21**			1		1	1		1	4
	Low Mulga Woodlands	S8c	AaneGwAatkTe	**2.01**							1		1
	Low Shrublands	S9a	AaDAcTw	**71.29**								1	1
	Snappy Gums and *Acacia* shrubs over *Triodia* sp. Robe River (M.E. Trudgen MET 12,367)	S10a	ElAaneAcGbTsprrTw	**5.37**						1			1
		S10c	ElAbTsprrTw	**59.18**							1		1
		S10d	ElAbTwTsprr	**35.10**	1								1
		S10e	ElAcAiTwTsprr	**37.92**						1			1
		S10f	ElAcTsprr	**16.74**			1			1			2
		S10g	ElAcTwTsprr	**5.98**			1						1
		S10h	ElAmTwTsprr	**6.20**						1			1
		S10i	ElApTsprrTw	**44.37**	1	1					1		3
		S10j	ElApTwTsprrERIm	**70.74**	1	1	1				1		4
		S10k	ElAtTsprr	**32.06**					1				1
		S10l	ElPlAaTsprrTw	**22.02**							1		1
		S10m	ElPlTsprrTw	**8.37**	1	1							2
		S10n	ElTsprrTw	**82.96**		1	1	1		1			4
	Snappy Gums over *Acacia* Shrubs	S11a	ElAaAbTw	**64.85**								1	1
		S11b	ElAaneApTw	**36.25**					1		1		2
		S11c	ElAarAbTw	**50.64**								1	1
		S11d	ElAbAsTw	**91.77**	1	1					1		3
		S11e	ElAbTw	**588.32**			1			1	1	1	4
		S11f	ElAcTw	**60.27**							1	1	2
		S11h	ElApTw	**281.40**							1		1
		S11i	ElAtAarTw	**12.74**								1	1
		S11j	ElAtTw	**30.68**							1		1
		S11l	ElGwApTwERIt	**5.30**							1		1
		S11m	ElTw	**10.23**			1						1
	Soft Spinifex Hummock Grasslands	S12a	AbTe	**25.95**			1						1
		S12b	Tsprr	**3.47**			1						1
		S12c	Tsprr (burnt)	**47.20**					1				1
	Triodia epactia and *Triodia wiseana* Hummock Grasslands	S14a	AbTeTw	**38.65**							1		1
		S14b	AiAbTwTe	**167.84**			1						1
	Total Number of vegetation types	**77**			**10**	**8**	**22**	**6**	**9**	**15**	**28**	**17**	
	Total number of vegetation types unique to each mesa				**2**	**1**	**13**	**2**	**5**	**8**	**18**	**9**	

A summary of the differences between each of the eight mesas (resource areas) is given below. Maps showing the distribution of the vegetation types on each of the mesas are presented within Appendix 2. There is also a legend for the vegetation type code (eg. A5f) and for abbreviated species given in vegetation name (eg. EvMlMgTe/h) in Appendix 2.

Cochrane and Farnum

The Cochrane and Farnum mesas occur adjacent to each other. They were steep sided tall mesas with a flat to slightly rounded and undulating top. The vegetation was reasonably uniform and was dominated by hummock grasslands rather than shrublands. The most widespread vegetation type on the mesa top was *Acacia bivenosa* open shrubland over *Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (S5d). The vegetation type S5d was recorded on only one other mesa, Cardo North. A vegetation type distinctive to Cochrane and Farnum is *Acacia bivenosa* and *Dampiera candicans* shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Triodia wiseana* (S5c).

Jewell

The Jewell mesa was one of the tallest of the eight resource areas and lies in an east to west direction. This mesa had very steep sides and a flat top. The vegetation changed in an east to west direction across the mesa. A vegetation type distinctive to Jewell was *Eremophila fraseri* with *Acacia pruinocarpa* and *Acacia inaequilatera* over *Triodia wiseana* (S3d). *Acacia pruinocarpa* was also noted for its prominence, being present within four of the eight vegetation types mapped on this mesa (vegetation type codes; S3d, S5j, S10i and S10j) (Table 12 and Appendix 2).

Kens Bore

The Kens Bore mesa occurred over some considerable distance, approximately 9 km long and the landform varied considerably in height, width and shape. The mesa was relatively low with gently sloping sides and debris slopes. The mesa top was undulating and included some very narrow and very wide sections. The vegetation was varied, reflecting the variability of the land form with a total of 22 vegetation types mapped, the second highest number of the eight resource areas (Table 12). There were river and water dependent vegetation types in places on the flats surrounding the mesa.

The unburnt *Acacia citrinoviridis* vegetation types included some very tall *Acacia citrinoviridis* plants such that they were referred to as trees (2-3 m high) located at the northern end of the south half of the mesa. There were a number of soft Spinifex (*Triodia epactia* and *Triodia* sp Robe River (M.E. Trudgen *et al.* MET 12,367)) vegetation types that were distinctive on Kens Bore including *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland (Tsprr, also occurs as burnt on Cardo East), *Acacia bivenosa* over *Triodia epactia* (AbTe), *Acacia* shrublands over *Triodia wiseana* and *Triodia epactia* (AcAbTeTw, AsAbTwTe, AiAbTwTe), *Corymbia hamersleyana,* and *Acacia* species over *Triodia epactia* (ChAbAaTe and ChAiAbTe) as well as vegetation types with a combination of *Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Stands of *Corymbia hamersleyana* occurred on the mesa, particularly within the gullies (P6e, ChAiAbTe) and on the mesa sides (P6d, ChAbAaTe).

Another two vegetation types distinctive to Kens Bore had *Petalostylis labicheoides* forming a high shrubland with *Acacia tumida* var. *pilbarensis* or *Acacia inaequilatera* (AtPlTwTsprr and AiPlTsprrTw).

Cardo North

The Cardo North mesa was relatively small in length, however, was very tall and narrow with steep breakaways and debris slopes on both sides. The mesa top was flat with relatively uniform vegetation dominated by *acacia pruinocarpa* over *Triodia wiseana* and *Triodia* sp.

Robe River (M.E. Trudgen *et al.* MET 12,367). Cardo North had the lowest number of vegetation types (6) mapped of the eight mesas.

Cardo East
The Cardo East mesa was burnt over most of its area three years ago (in 2006/2007). The mesa is moderately high with an undulating top and a mixture of steep and gentle debris slopes. The wide areas of the mesa tended to be low with gentle debris slopes while the narrow parts of the mesa had steeper sides and debris slopes. The recently burnt vegetation had high amounts of herb and annual species. There was one area of *Acacia aneura* at the southern end and large areas dominated by *Ptilotus* and *Corchorus.*

Upper Cane
The Upper Cane mesa was the tallest of all the eight resource areas. The top was predominantly flat with just a few undulating areas. Around the edges of the mesa the sides were very steep including breakaways and debris slopes. The vegetation changed in an east to west direction as well as with aspect, particularly on the slopes and in the gullies. *Acacia citrinoviridis* is dominant on the flat top of the Upper Cane mesa, growing over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). which is considered unusual in the Pilbara Bioregion. *Acacia aneura* was common on the edges of the gorge separating the two halves of this mesa. Upper Cane had the fourth highest number of vegetation types mapped (15) of the eight mesas.

Trinity
The Trinity mesa was one of the tallest resource areas together with Jewell (Upper Cane being the tallest). The area being targeted for the resource includes some of the tallest, narrowest and steepest sided areas of this mesa towards its centre. The vegetation within the resource area was uniform except around the gullies situated on the steep sides and some changes evident in an east to west direction across the narrow neck.

Areas south of the target resource area were undulating and complex. The vegetation changed with slope and aspect as well as along a north to south gradient. Areas to the north were very high with an undulating top and steep sides. The vegetation was fairly uniform on the top, however, changes occurred in vegetation with aspect and drainage.

Vegetation distinctive to this mesa was the *Triodia epactia* dominant vegetation types (AcTwTe) not found present on the other seven mesas. There were also patches of *Acacia aneura,* a dominance of *Grevillea wickhamii* in a few communities across the top of the mesa (GwAbAatkTw, GwAbTw, GwPlAbTsprrTw, ApGwAarTw),and *Petalostylis labicheoides* in the low lying basin within the body of the mesa (AbAaPlTw). A high number of vegetation types (11) were dominated by *Eucalyptus leucophloia* ssp. *leucophloia* trees, either as an open woodland or as scattered trees. Trinity had the highest number of vegetation types mapped (28) of the eight mesas (Table 12).

Catho Well
The Catho Well mesa was a complex including low hills as well as flat-topped mesas. The mesa tops were undulating with many drainage lines and some gullies. Vegetation changes observed across the mesa were mainly associated with the occurrence of drainage lines, gullies and benches. The vegetation otherwise being relatively uniform. Changes in the density of shrubs were observed across the mesa, presumably due to different fire ages.

The vegetation distinctive to the Catho Well mesa included a dominance of *Acacia arida* over *Triodia wiseana* and some very mature stands of *Acacia pruinocarpa* (5-8m high). *Tephrosia uniovulata* had a high occurrence across the mesa. As with all the mesas there were scattered *Eucalyptus leucophloia* ssp. *leucophloia* (Snappy Gums). *Triodia* sp. Robe River (M.E. Trudgen

et al. MET 12,367) was not located on Catho Well. Catho Well had the third highest number of vegetation types mapped (17) of the eight mesas (Table 12).

3.1.2 Communities of Interest and Established High Conservation Value

Within the study area there are two vegetation types that are recognised as having high conservation value in the Pilbara. These are Snakewood (*Acacia xiphophylla*) communities (Biota 2006) and more recently *Acacia citrinoviridis* communities on mesa landforms (S. van Leeuwen pers. comm.). Four vegetation types within the study area are Snakewood communities and 15 vegetation types on the mesa landforms included *Acacia citrinoviridis.* These are described and listed below.

An additional group of Communities of Interest that may be considered are the *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation types (or communities). Thirty three vegetation types within the WPIOP may be considered as *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) communities. These have been presented under section 3.1.4 'Habitat for Species of Interest'. The flora and vegetation surveys conducted for the WPIOP, including regional surveys by Western Botanical, indicate that *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occurs as a dominant or co-dominant within a group of vegetation types, occurring predominantly on Robe Pisolites. These vegetation types (or communities) are usually in association with *Triodia wiseana*, under *Acacia* species and/or *Eucalyptus leucophloia* ssp. *leucophloia*, and occur over a limited area (150 km N-S and 25 km E-W).

Snakewood (*Acacia xiphophylla*) communities
Vegetation types dominated by *Acacia xiphophylla* are of conservation interest as they often occur on clay soils which support a large amount of ephemeral flora species immediately following rain. They are also fire sensitive, although they do not often carry fire having a very sparse understorey. Snakewood shrublands (AxTw and AxTe) were identified by Biota (2006) as supporting Priority flora and other restricted flora species and listed these vegetation types as having high conservation significance. While these communities are not particularly rare within the study area, they should be targeted for Priority flora searches immediately following rainfall, to ensure impacts upon any ephemeral Priority species or Species of Interest can be properly documented, quantified and avoided if necessary.

- **P5d** AxTw – this vegetation type occurred throughout the study area across 681.60 ha, of which 35% is proposed to be impacted. Some of this vegetation occurs in the restricted Stuart land system. This vegetation type also contains floristic unit 266 which is considered to be uncommon and likely to be under sampled.

- **P5e** AxTwTe – this vegetation type occurred throughout the study area across 405.12 ha, of which 21% is proposed to be impacted. Some of this vegetation occurs in the restricted Stuart land system.

- **C6a** AsAxTe – this vegetation type is scattered throughout the study area across 98.23 ha, of which 10% is proposed to be impacted.

- **S14d** AxAbTwTe – this vegetation type is common throughout the study area, covering 478.72 ha, of which 15% is proposed to be impacted. This vegetation type also contains the floristic unit 549 which is considered to be locally common and under sampled.

Note: Ax = *Acacia xiphophylla*, As = *Acacia synchronicia,* Ab = *Acacia bivenosa,* Tw = *Triodia wiseana,* Te = *Triodia epactia*

Acacia citrinoviridis communities on mesa landforms

Vegetation types that contain *Acacia citrinoviridis* as a dominant species and are located on a mesa landform are of conservation interest as they are considered to be rare and unique in the region (S. van Leeuwen pers. comm.). Positions on the top of a mesa are particularly unusual for this species, which more frequently occurs in creek and river beds (S. van Leeuwen pers. comm.). Table 13 below indicates the vegetation types which contain *Acacia citrinoviridis* on mesa landforms, along with detailing the mesa's on which it has been recorded and the proposed percentage impact on each of these vegetation types

Table 13: Location, Size and Proposed Impacts upon Vegetation Types which Support *Acacia citrinoviridis* as a Dominant Species on Mesa Landforms

*Legend for Vegetation type, giving vegetation description, is provided in Appendix 2

Vegetation type*	Location in study area	Total area surveyed (Ha)	Percentage proposed to be impacted (%)
S2b	Kens Bore, Transport Corridor	8.01	73.6
S4e	Kens Bore, Transport Corridor	21.11	10.7
S4f	Trinity	14.34	0.0
S4g	Upper Cane	0.83	98.6
S4h	Trinity	6.32	0.0
S4i	Upper Cane	17.69	97.9
S5c	Cochrane	1.99	26.2
S5e	Upper Cane, and some on other infrastructure	22.78	82.9
S5g	Upper Cane	39.98	97.2
S10a	Upper Cane and some other infrastructure	5.37	77.6
S10e	Upper Cane	37.92	8.4
S10f	Kens Bore and Upper Cane mesas and some other infrastructure	16.74	69.1
S10g	Kens Bore and some other infrastructure	5.98	100
S11f	Catho Well and Trinity mesas, and some other infrastructure	60.27	62.6
S13a	Proposed Airstrip	0.92	0.0

In addition to being Communities of Interest due to the dominance of *Acacia citrinoviridis* on a mesa landform, vegetation types S4i, S5c, S5e, S5g, S10a, S10e, S10f, S10g, also contain species of interest *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), and vegetation type S10a contains *Acacia aneura*. Vegetation types S4h and S4g also contain the Priority 3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301). Furthermore, vegetation types S2b, S4i, S4g, S4h, S5c, S5e, S5g, S10a, S10e, S10g and S11f contain Restricted Floristic Units, and are considered unlikely to occur elsewhere.

3.1.3 Habitat for Priority Species

Within the study area, three Priority flora were located[6]. These were *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) (P3), *Rhynchosia bungarensis* (P3) and *Owenia acidula*(P3).

There is a legend for vegetation type code (eg. A5f) and vegetation name (eg. EvMlMgTe/h) in Appendix 2. In some cases species names for abbreviations have been listed in the text.

***Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301), Priority 3**
Eleven vegetation types supported the Priority 3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) within the study area:

- **A5f** EvMlMgTe/h – occurs in the major drainage line at Urandy Creek between Upper Cane and Trinity mesas covering an area of 37.67 ha with 8% proposed to be impacted by transport corridors and roads. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species. This vegetation type also includes the floristic units 116 and 159. Floristic unit 116 is considered to be restricted in area but possibly widespread, while 159 is considered to be uncommon but widespread.

- **S3b** ApAarTw **–** this vegetation type is restricted to Catho Well mesa, covering an area of 13.53 ha with 94% proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type. Therefore, it is of conservation value as a habitat supporting a Priority species. Furthermore, this vegetation type contains *Acacia pruinocarpa* as a dominant species and is located on a mesa landform, which is an unusual landscape location for this species (S. van Leeuwen pers. comm.). Therefore, this vegetation type is also of value as supporting a community of established conservation interest. This vegetation type also includes floristic unit 267, which is considered to be uncommon.

- **S4g** AcSTYsTsprrTe – this vegetation type occurs as a very small area (0.83 ha) on the valley floor near Upper Cane mesa, 99% of which is proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type. Therefore, it is of conservation value as a habitat supporting a Priority species. It is also of interest as *Acacia aneura* occurs as a presence and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant in this vegetation type. Furthermore, this vegetation type contains *Acacia citrinoviridis* as a dominant species and is located on a mesa landform, which is an unusual landscape position for this species (S. van Leeuwen pers. comm.). Therefore, this vegetation type is also of value as supporting a community of established conservation interest. This vegetation type also includes the floristic unit 304, which is considered to be restricted.

- **S4h** AcTwTe – this vegetation type is restricted to Trinity mesa covering an area of 6.32 ha and is not currently proposed to be impacted. Two records of the P3 species

[6]As of 30th March 2010, a total of four Priority species were located within the study area. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), noted as a Species of Interest within this report, was listed as a Priority 3 species.

Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species. Furthermore, this vegetation type contains *Acacia citrinoviridis* as a dominant species and is located on a mesa landform, which is an unusual location for this species (S. van Leeuwen pers. comm.). Therefore, this vegetation type is also of value as supporting a community of established conservation interest. This vegetation type also includes the floristic unit 301, which is considered to be uncommon, but widespread.

- **S7c** AbSsspTw – this vegetation type occurs throughout the study area in 17 different impact areas covering a total of 881.91 ha, of which 17% is proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred on the lower foot slope of one of the Catho Well mesas. Other than the presence of this P3 species, this vegetation type is not considered of conservation significance. This vegetation type also includes the floristic units 266, 267 and 269. Floristic unit 266 is considered to be uncommon but under sampled, 267 to be uncommon and 269 to be locally common but under sampled**.**

- **S10c** ElAbTsprrTw – this vegetation type is known only from Trinity mesa, covering 59.18 ha and is not currently proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type. It is also of interest as *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occurs in this vegetation type as a dominant species. This vegetation type also includes the floristic unit 259, which is considered to be locally common and restricted to the region of the study area.

- **S11e** ElAbTw – this vegetation type occurs throughout the study area covering 588.32 ha, of which 20% is proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred on the airstrip access track. Some of this vegetation type occurs on the restricted Newman land system. This vegetation type also includes the floristic units 253 and 254. Floristic unit 253 is considered to be restricted, whilst 254 is locally common and restricted to the region of the study area.

- **S11j** ElAtTw - this vegetation type is restricted to Trinity mesa, covering 30.68 ha and is not currently proposed to be impacted. One record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species. This vegetation type also includes the floristic groups 246, 257 and 303. Floristic unit 246 is considered to be locally common and under sampled whilst 257 and 303 are restricted.

- **P1a** AatkAbAaTw – this stony plain vegetation type occurs across 300.74 ha of the study area, with 17% of this area proposed to be impacted. Although no record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) was made in the Mine Area study area, records were made of this species in this vegetation type in the Cape Preston Rail study area. Therefore, it is of conservation value as a habitat supporting a priority species.

- **S13b** TERcTw – this vegetation type occurs across 63.93 ha of the study area, with 20% of this area proposed to be impacted. Although no record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) was made in the Mine Area study area, records were made of this species in this vegetation type in the Cape Preston Rail study area. Therefore, it is of conservation value as a habitat supporting a priority species. This vegetation type also contains floristic units 17 and 306. Floristic

unit 17 is considered to be restricted vegetation in area but possibly widespread. Similarly, floristic unit 306 is considered to be restricted vegetation in area but maybe widespread and under sampled.

- **I5e** ChAatkAbTw – this vegetation type occurs across a very small area (1.76 ha) of the study area and is not currently proposed to be impacted. Although no record of the P3 species *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) was made in the Mine Area study area, records were made of this species in this vegetation type in the Cape Preston Rail study area. Therefore, it is of conservation value as a habitat supporting a Priority species.

***Rhynchosia bungarensis*, Priority 3**

Four vegetation types supported the Priority 3 species *Rhynchosia bungarensis* within the study area:

- **A5c** EcEvSTg – this major drainage line vegetation type occurs across 23.4 ha of the study area, of which 13% is proposed to be impacted. One record of the P3 species *Rhynchosia bungarensis* occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species. This vegetation type also contains floristic unit 159, which is considered to be uncommon but widespread.

- **A3d** ChAbAcApyTeTw – this major drainage line vegetation type occurs across 70.61 ha of the study area, of which 8% is proposed to be impacted. One record of the P3 species *Rhynchosia bungarensis* occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species.

- **A5f** EvMlMgTe/h – this vegetation type occurs in the major drainage line at Urandy Creek between Upper Cane and Trinity mesas covering an area of 37.67 ha with 8% proposed to be impacted by transport corridors and roads. One record of the P3 species *Rhynchosia bungarensis* occurred within this vegetation type therefore, it is of conservation value as a habitat supporting a Priority species. This vegetation type also contains floristic units 116 and 159. Floristic unit 116 is considered to be restricted vegetation in area but maybe widespread, whilst 159 is considered to be uncommon but widespread.

- **I5f** ChAcolAbGOrTe – this minor drainage line vegetation type occurs across 21.04 ha with 33% proposed to be impacted. One record of the P3 species *Rhynchosia bungarensis* occurred within this vegetation type, therefore it is of conservation value as a habitat supporting a priority species.

Note: Ec=*Eucalyptus camaldulensis* var. *obtusa,* Ev=*Eucalyptus victrix,* Ch=*Corymbia hamersleyana*; Ab=*Acacia bivenosa, Ac=Acacia citrinoviridis*, Apy=*Acacia pyrifolia* ssp. *pyrifolia,* Acol=*Acacia colei* ssp. *colei,* GOr=*Gossypium robinsonii,* Ml=*Melaleuca linophylla,* Mg=*Melaleuca glomerata;* STg= *Stemodia grossa*; Te=*Triodia epactia,* Tw=*Triodia wiseana*; h=herbs

***Owenia acidula*, Priority 3**

One vegetation type supported the Priority 3 species *Owenia acidula* within the study area:

- **A5d** EvAbGOrOaTeTw* – this major drainage line vegetation type occurs across 13.48 ha, with 1% proposed to be impacted. A large population of approximately 1.853 plants were recorded near the airstrip access road. This species is only known from five locations in Western Australia and it is possible it requires further taxonomic differentiation. This vegetation type also contains the floristic units 240 and 271. Floristic unit 240 is considered to be uncommon whilst 271 is locally common but under sampled.

*Ev=*Eucalyptus victrix,* Ab=*Acacia bivenosa,* GOr=*Gossypium robinsonii,* Oa=*Owenia acidula*, Te=*Triodia epactia,* Tw=*Triodia wiseana*

3.1.4 Habitat for Species of Interest

Three Species of Interest were identified within the study area, *Aristida holathera* var. *latifolia*, *Acacia aneura* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). These three species occurred within a number of different vegetation types, each of which are listed below.

Aristida holathera* var. *latifolia
Habitat[7] of *Aristida holathera* var. *latifolia*, uncommon in the Pilbara:

- **S5d** AbTwTsprr – this vegetation type occurs across 192.51 ha of the study area, of which 64% is proposed to be impacted. There were two records of *Aristida holathera* var. *latifolia* from within this vegetation type. This vegetation type is also of conservation interest as having *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) as a dominant in the vegetation structure. This vegetation type also contains floristic units 259 and 260. Floristic unit 259 is considered to be locally common and restricted to the region of the study area, whilst 260 is uncommon and restricted to small areas.

- **I5d** ChAaAbTeTw – this vegetation type occurs across 97.42 ha of the study area, of which 34% is proposed to be impacted. *Aristida holathera* var. *latifolia* is present in this minor drainage line vegetation type. This vegetation type also contains the floristic unit 270, which is considered to be restricted vegetation in area but maybe widespread.

- **P3c** AsAbTwTe – this vegetation type occurs across 28.82 ha of the study area, of which 12.93% is proposed to be impacted. *Aristida holathera* var. *latifolia* is present in this stony plains vegetation type.

- **P6e** ChAiAbTe – this vegetation type was widespread throughout the study area covering 1694.44 ha (just over 9% of the study area), of which 23% is proposed to be impacted. One record of *Aristida holathera* var. *latifolia* occurred in this vegetation type on Ken's Bore mesa and some of this vegetation occurs on the restricted Stuart and Newman land systems. This vegetation type also contains floristic unit 269 which is considered to be locally common and under sampled.

- **P6f** ChApyGpTe – this vegetation type occurs across 325.21 ha of the study area, of which 31% is proposed to be impacted. *Aristida holathera* var. *latifolia* is present in this stony plains vegetation type.

- **I5h** ChAtAatkAaTw – this vegetation type occurs across 72.55 ha of the study area, of which 23% is proposed to be impacted. *Aristida holathera* var. *latifolia* was recorded as present within this vegetation type in the Cape Preston Rail study area so therefore it is also of conservation significance in the Mine Area study area.

Note: Ch=*Corymbia hamersleyana*; Aa=*Acacia ancistrocarpa*, Aat=*Acacia atkinsiana*, Ab=*Acacia bivenosa*, At=*Acacia tumida* var. *pilbarensis,* Apy=*Acacia pyrifolia* var. *pyrifolia*, Gp=*Grevillea pyramidalis* ssp. *leucodendron*; Te=*Triodia epactia*, Tw=*Triodia wiseana*, Tsprr=*Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367).

[7] There is a legend for vegetation type code (eg. A5f) and vegetation name (eg. EvMlMgTe/h) in Appendix 2

***Acacia aneura* (Mulga)**
Acacia aneura vegetation types (Mulga) at the north-western limit of its distribution:

- **S8a** AaneDOcTw – this Mulga Woodland vegetation type occurs across 2.03 ha of the study area, of which 2% is proposed to be impacted. This vegetation type also contains floristic unit 307 which is considered to be restricted and under sampled.

- **S8b** AaneERlalTw – this Mulga woodland vegetation type occurs across 3.63 ha of the study area and is not currently proposed to be impacted. This vegetation type also contains floristic unit 267 which is considered to be uncommon.

- **S8c** AaneGwAatkTe – this Mulga woodland vegetation type occurs across 2.01 ha of the study area and is not currently proposed to be impacted. This vegetation type also contains floristic unit 267 which is considered to be uncommon.

- **S10a** ElAaneAcGbTsprrTw – this Eucalypt and Mulga woodland vegetation type occurs across 5.37 ha of the study area, almost exclusively on Upper Cane mesa, and 78% of it is proposed to be impacted. It is also of interest as *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occurs as a dominant species in the vegetation structure. Furthermore, this vegetation type contains *Acacia citrinoviridis* as a dominant species and is located on a mesa landform, which is an unusual location for this species (S. van Leeuwen pers. comm.). Therefore, this vegetation type is also of value as supporting a community of established conservation interest. This vegetation type also contains floristic unit 304, which is considered to be restricted.

- **S11b** ElAaneApTw – this Eucalypt and Mulga woodland vegetation type occurs across 36.25 ha of the study area, of which 35% is proposed to be impacted. This vegetation type also contains floristic units 256 and 266. Floristic unit 256 is considered to be restricted, whilst 266 is considered to be uncommon and likely to be under sampled.

Note: El=*Eucalyptus leucophloia* ssp. *leucophloia*, Aane=*Acacia aneura*, Aatk=Acacia *atkinsiana*, Ap=*Acacia pruinocarpa*, DOc=*Dodonaea coriacea*, ERlal=*Eremophila latrobei* ssp. *latrobei*, Gb=*Grevillea berryana*, Gw=*Grevillea wickhamii* ssp *hispidula*, Tsprr=*Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), Tw=*Triodia wiseana*.

***Triodia* sp. Robe River (M.E. Trudgen MET *et al.* 12,367)**
Habitat for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367):

Thirty three vegetation types in the study area contain the poorly known, and possibly restricted species, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) as a dominant or co-dominant species in the vegetation structure. The area (ha) that these vegetation types occupy within the study area and proposed impacts to these are listed in (Table 14).

In addition to being vegetation types which support *Triodia* sp. Robe River (M.E. Trudgen MET *et al.* 12,367) as a dominant species, vegetation types S4g, S4i, S5e, S5g, S10a, S10e, S10f and S10g, all contain *Acacia citrinoviridis* as a dominant species and are located on a mesa landform, which is an unusual location for this species (S. van Leeuwen pers. comm.).

Additionally, many of these vegetation types also contain Restricted Floristic Units. Vegetation types I5n, S5c, S5e, S5i, S5j, S10e, S4g, S5f, S5g, S5k, S5l, S10a, S10d, S10i, S10m, S10n, S4i, S10j and S10h contain floristic units that are considered to be restricted. Vegetation types S5h, S12b, S10c and S10l contain floristic units that are considered to be locally common, but

restricted to the region of the study area. Vegetation types S5b, S5d and S10k contain floristic units that are considered to be uncommon and restricted to small areas. Vegetation type S4n contains a floristic unit that is considered to be restricted within the study area, but widespread in the region. Vegetation types S5b, S10g, S10k contain floristic units that are considered to be locally common, but under sampled. Vegetation types S10k and S4l contain floristic units that are considered to be restricted in area but may be widespread. Vegetation type S10b contains a floristic unit that is considered to be uncommon and under sampled.

Therefore, most of the vegetation types which contain the potentially restricted species *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), are also floristically poorly represented within the region. This may indicate that these species assemblages are unlikely to be found elsewhere.

Table 14: Proposed Impact on Vegetation Communities Which Support *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) as a Dominant Species

Vegetation type		Percentage cover of *Triodia* sp. Robe River (%)	Total area surveyed in study area (ha)	Percentage proposed to be impacted (%)
I5n	ElAaAbTwTsprr	30-70	8.18	54
S5c	AbDAcTsprrTw	30-70	1.99	26
S5e	AcApAiTwTsprr	30-70	22.78	83
S5h	AiPlTsprrTw	30-70	32.70	98
S5i	ApAbTwTsprr	30-70	22.58	32
S5j	ApTsprrTw	30-70	50.97	70
S10e	ElAcAiTwTsprr	30-70	37.92	8
S4g	AcSTYsTsprrTe	10-30	0.83	99
S4n	GwPlAbTsprrTw	10-30	9.94	0
S5b	AatkAbTwTsprr	10-30	114.11	57
S5d	AbTwTsprr	10-30	192.51	64
S5f	AiAbTwTsprr	10-30	183.12	96
S5g	AiAcTwTsprr	10-30	39.98	97
S5k	ApERfTwTsprr	10-30	32.38	97
S10a	ElAaneAcGbTsprrTw	10-30	5.37	78
S10d	ElAbTwTsprr	10-30	35.10	42
S10g	ElAcTwTsprr	10-30	5.98	100
S10h	ElAmTwTsprr	10-30	6.20	65
S10i	ElApTsprrTw	10-30	44.37	78
S10k	ElAtTsprr	10-30	32.06	74
S10m	ElPlTsprrTw	10-30	8.37	82
S10n	ElTsprrTw	10-30	82.96	32
S12b	Tsprr	10-30	3.47	53
P2c	AmAaTwTsprr	2-10	1.28	90
S4i	AiApTwTsprr/h	2-10	17.69	98
S4l	AtPlTwTsprr	2-10	30.32	82
S5l	CfAcERlaTsprr	2-10	2.14	83
S10b	ElAatkAbTsprrTw	2-10	211.62	8
S10c	ElAbTsprrTw	2-10	59.18	0
S10f	ElAcTsprr	2-10	16.74	69
S10j	ElApTwTsprrERIm	2-10	70.74	37
S10l	ElPlAaTsprrTw	2-10	22.02	0
S12c	Tsprr (burnt)	2-10	47.20	96
	TOTAL		1,452.8	

3.1.5 Vegetation Types Supporting Restricted Floristic Units

A total of 42 floristic units were identified by Griffin and Trudgen (2009) as having a restricted distribution or under sampled within the WPIOP study area. This was determined from their floristic analysis of 2,883 sites (quadrats and relevés) across the Pilbara Bioregion. A Restricted Floristic Unit was defined as being restricted, uncommon or under sampled within the Pilbara Bioregion. Below is a list of 22 vegetation types that are not of interest for any reason other than that they support a Restricted Floristic Unit. This factor alone may indicate that these particular species assemblages are unlikely to be represented in other parts of the region based on the floristic analysis.

Many of the vegetation types that have been listed above as supporting Priority species and Species of Interest include Restricted Floristic Units. These vegetation types have not been listed here. However, they have been identified within Table 17.

There is a legend for vegetation type code (eg. A5f) and vegetation name (eg. EvMlMgTe/h) in Appendix 2.

Vegetation types that support Restricted Floristic Units, yet support no Priority species or Species of Interest

- **A3a** CcChAcolAaTe - floristic unit 146, which is considered restricted by Griffin and Trudgen (2009), occurs within this vegetation type. Western Botanical also considers floristic unit 146 as restricted and an uncommon combination of dominants. The supporting vegetation type A3a occurs across 56.19 ha of the study area, of which 6.10% is proposed to be impacted throughout the infrastructure area.

- **A5e** EvApyTe - This vegetation type contains floristic units 116 and 150 which are both considered to be restricted in area but maybe widespread. This supporting vegetation type occurs across 153.66 ha of the study area, of which 34% is proposed to be impacted.

- **C3a** AsTe - This vegetation type contains floristic unit 550 which is considered to be uncommon and under sampled. This supporting vegetation type occurs across 56.66 ha of the study area, of which 71% is proposed to be impacted.

- **I2a** ApyAbTe - This vegetation type contains floristic unit 149, which is considered to be restricted in area but maybe widespread. This supporting vegetation type occurs across 5.04 ha of the study area, of which 91% is proposed to be impacted.

- **I2f** EvChApyGOrTe/g - This vegetation type contains floristic units 144, 148 and 150. Floristic unit 144 is considered to be locally common and restricted to the region of the study area. Floristic unit 148 and 150 are considered to be restricted in area but maybe widespread. This supporting vegetation type occurs across 31.57 ha of the study area, of which 38% is proposed to be impacted.

- **I5a** CcAadAcAaAbTp - This vegetation type contains floristic unit 188 which is considered to be uncommon. This supporting vegetation type occurs across 29.58 ha of the study area, of which 19% is proposed to be impacted.

- **I6c** EcGOrTEspbCEc - This vegetation type contains floristic unit 115 which is considered to be uncommon but may be widespread and under sampled. This supporting vegetation type occurs across 1.65 ha of the study area, of which 41% is proposed to be impacted.

- **I6d** ElChAtTw - This vegetation type contains floristic unit 239 which is considered to be restricted in area, may be widespread and under sampled. This supporting vegetation type occurs across 6.42 ha of the study area, which is currently not proposed to be impacted.

- **P6d** ChAbAaTe - This vegetation type contains floristic unit 270 which is considered to be restricted in area but maybe widespread. This supporting vegetation type occurs across 135.96 ha of the study area, of which 64% is proposed to be impacted.

- **P6i** Te - This vegetation type contains floristic units 549 and 550. Floristic unit 549 is considered to be locally common and under sampled, whilst 550 is considered to be uncommon and under sampled. This supporting vegetation type occurs across 93 ha of the study area, of which 44% is proposed to be impacted.

- **S11d** ElAbAsTw - This vegetation type contains floristic unit 256 which is considered to be restricted. This supporting vegetation type occurs across 91.77 ha of the study area, of which 16% is proposed to be impacted.

- **S11h** ElApTw - This vegetation type contains floristic units 253, 254, 259 and 267. Floristic unit 253 is considered to be restricted, 254 and 259 to be locally common and restricted to the region of the study area and 267 to be uncommon. This supporting vegetation type occurs across 281.4 ha of the study area, of which 14% is proposed to be impacted.

- **S11l** ElGwApTwERIt - This vegetation type contains floristic unit 303 which is considered to be restricted. This supporting vegetation type occurs across 5.3 ha of the study area, of which 47% is proposed to be impacted.

- **S11m** ElTw - This vegetation type contains floristic unit 268, which is considered to be restricted. This supporting vegetation type occurs across 10.23 ha of the study area, of which 68% is proposed to be impacted.

- **S14a** AbTeTw - This vegetation type contains floristic unit 259, which is considered to be locally common and restricted to the region of the study area. This supporting vegetation type occurs across 38.65 ha of the study area, which is not currently proposed to be impacted.

- **S14b** AiAbTwTe - This vegetation type contains floristic units 269 and 270. Floristic unit 269 is considered to be locally common and under sampled, whereas 270 is considered to be restricted in area but maybe widespread. This supporting vegetation type occurs across 167.84 ha of the study area, of which 79% is proposed to be impacted.

- **S3e** ApGwAarTw - This vegetation type contains floristic unit 250 which is considered to be uncommon and restricted to small areas. This vegetation type occurs across 28.25 ha of the study area, of which 95% is proposed to be impacted.

- **S4b** AarTw - This vegetation type contains floristic units 20, 21, 247, 266 and 267. Floristic units 20 and 21 are considered to be common, but likely to be under sampled. Floristic unit 247 is considered to be restricted within the study area but widespread in the region, 266 is uncommon but likely to be under sampled whilst 267 is said to be uncommon. The supporting vegetation type S4b occurs across 788.55 ha of the study area, of which 59% is proposed to be impacted.

- **S4k** AtGwTw - This vegetation type contains floristic units 247 and 267. Floristic unit 247 is considered to be restricted within the study area but widespread in the region whilst 267 is said to be uncommon. This supporting vegetation type occurs across 3.43 ha of the study area, of which 43% is proposed to be impacted.

- **S4m** GwAbTw - This vegetation type contains floristic unit 267, which is considered to be uncommon. This supporting vegetation type occurs across 5.65 ha of the study area, of which 75% is proposed to be impacted.

- **S7k** ChAmTw - This vegetation type contains floristic unit 60, which is considered to be uncommon and under sampled. This supporting vegetation type occurs across 0.6 ha of the study area, of which 100% is proposed to be impacted.

- **S7n** Tw - This vegetation type contains floristic units 254 and 266. Floristic unit 254 is considered to be locally common but restricted to the region of the study area, whereas, floristic unit 266 is uncommon but likely to be under sampled. This supporting vegetation type occurs across 827.21 ha of the study area, of which 19% is proposed to be impacted.

3.1.6 Regional Floristic Patterns

The floristic analysis provided by Griffin and Trudgen (2009) compares a total of 2,883 sites across the Pilbara (including 471 sites from the WPIOP) to provide a regional perspective on the distribution and status of the floristic units found in the WPIOP area. The 600 group level (the level at which the 2,883 sites were sorted into 600 floristic groups or units) was deemed appropriate for analysis of the regional representation of floristic units (Griffin and Trudgen, 2009).

Floristic units are not intended to be an equivalent or alternative to the mapping of vegetation types, but simply provide an additional, quantitative evaluation of how similar or unique sites may be in relation to each other. It should also be noted that floristic units are only based on the presence and absence of taxa, and unlike vegetation mapping, they do not account for the structure or dominance of the species at a given site.

At the 600 group level, Griffin and Trudgen (2009) identified 42 floristic units found within the WPIOP Mine Area and Associated Infrastructure (study area) that had restricted or uncommon distributions and / or were under sampled (poorly sampled) throughout the Pilbara Bioregion. Within this report, these 42 floristic units have been referred to as Restricted Floristic Units (Table 15).

Of the 42 Restricted Floristic Units Griffin and Trudgen (2009) considered 19 to be restricted. The likelihood of any of the 42 Restricted Floristic Units being truly restricted was assessed by Western Botanical in more detail by examining the species defining the floristic unit, the representation of sites, the extent of the vegetation types they occurred within, and the experience gained of the area from three years survey work in the western Pilbara.

Some units that were considered to be floristically restricted by Griffin and Trudgen (2009), were in reality quite common, but simply under sampled within the region. The floristic units that were consequently regarded as restricted or uncommon are discussed below. The units that were considered to be under sampled could be targeted for botanical survey work to better determine their distribution in the west Pilbara region.

Of the 42 Restricted Floristic Units, eight were confirmed as restricted in distribution (in a local and regional context) based on our current knowledge, although one was under sampled (Table 15, Table 16). A further 11 Restricted Floristic Units were listed as restricted (based on current sampling and vegetation mapping), yet may be widespread. Nine floristic units were identified as uncommon, two of which were restricted to small areas and four under sampled. An additional three floristic units were listed as uncommon yet thought to be possibly widespread. Four floristic units were assessed as locally common in the study area yet restricted to the study area (mostly occurring on Robe Pisolites), and could therefore be considered as restricted in a regional context (Table 16).

In summary, a total of 12 Restricted Floristic Units were considered to be restricted in distribution, either regionally (eight floristic units) or to the study area (four floristic units). Nine floristic units were considered to be uncommon in distribution locally and/or regionally. The remaining 21 floristic units were assessed as either; likely to be widespread (although based on current data, they appeared to be restricted or uncommon within the study area) or locally common to common (although under sampled) (Table 16).

Table 15: Summary of the Status and Qualification of the 42 Restricted Floristic Units Identified within the Study Area, as presented in Table 16

Qualification	Classification of Restricted floristic unit			
	Restricted	**Uncommon**	**Locally Common**	**Common**
Uncommon		3		
Restricted to region of study area	7		4	
Restricted to small area within study area		2		
May be widespread	9			
widespread		2		
May be widespread and under sampled	2	1		
Under sampled	1	4	5	2
TOTAL	**19**	**12**	**9**	**2**
Total (less those assessed as widespread)	**8**	**9**	**-**	**-**

Table 16: Restricted Floristic Units Identified by Griffin & Trudgen (2009) to Occur Within the WPIOP Mine and Infrastructure Area

Key: Fourth column

pink	Restricted or Restricted and under sampled
buff	Uncommon and restricted to small areas
pale yellow	Uncommon or Uncommon and under sampled
olive green	Locally common, but restricted to the study area
gold	Restricted to study area, but may be widespread (and under sampled for some units)
pale green	Uncommon, but may be widespread
turquoise	Locally common, but under sampled
pale blue	Common, likely to be under sampled

Key: Fifth column

pale yellow	Floristic units restricted to mesa landforms

600 Group Floristic Unit	Griffin and Trudgen, (2009) Assessment of Regional Distribution	Species Defining Floristic Unit	WB Assessment of Regional Distribution	Locations of where floristic unit was sampled in the WPIOP study area (those sampled on Robe Pisolite highlighted in yellow)
253	West Pilbara, restricted	*Senna glutinosa* ssp. *luerssenii, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *Triodia wiseana*	Restricted to the WPIOP area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Kens Bore, Upper Cane and Trinity mesas. Also occurs on off footprint Robe River Pisolite.
255	West Pilbara, restricted	*Acacia bivenosa, Acacia pruinocarpa, Triodia wiseana, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)	Restricted to the WPIOP area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Jewell, Kens Bore, Cardo North and Upper Cane mesas
256	West Pilbara, restricted	*Eucalyptus leucophloia* ssp. *leucophloia, Triodia wiseana, Acacia pruinocarpa, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)	Restricted to the WPIOP area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Jewell, Cardo North and Trinity mesas
257	West Pilbara, restricted	*Triodia wiseana, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) *and Eucalyptus leucophloia* ssp. *leucophloia.*	Restricted to the WPIOP area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Cochrane, Jewell, Farnum, Cardo North and Trinity mesas. One site is from off footprint Robe River Pisolite.
268	West Pilbara, uncommon	*Eremophila fraseri* ssp. *fraseri, Triodia wiseana, Ptilotus astrolasius* var. *astrolasius*	Restricted to the WPIOP area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Kens Bore, Cardo East and Upper Cane mesas
304	West Pilbara, restricted	*Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *Polycarpaea longiflora, Triodia wiseana, Acacia citrinoviridis, Eucalyptus leucophloia* ssp. *leucophloia, Eremophila latrobei* ssp. *latrobei*	Restricted	Floristic unit restricted to Upper Cane Mesa

600 Group Floristic Unit	**Griffin and Trudgen, (2009) Assessment of Regional Distribution**	**Species Defining Floristic Unit**	**WB Assessment of Regional Distribution**	**Locations of where floristic unit was sampled in the WPIOP study area** (those sampled on Robe Pisolite highlighted in yellow)
303	West Pilbara, restricted	*Eucalyptus leucophloia* ssp. *leucophloia, Grevillea wickhamii, Acacia bivenosa, Triodia wiseana, Cymbopogon ambiguus*	Restricted	Floristic unit restricted to Trinity mesa
307	West Pilbara, uncommon	*Acacia aneura, Senna glutinosa* ssp. *glutinosa, Senna glutinosa* ssp. *pruinosa, Dodonaea coriacea, Triodia wiseana, Themeda triandra*	Restricted and under sampled	Floristic unit only sampled in Catho Well waste area
250	West Pilbara, restricted	*Acacia bivenosa, Acacia ancistrocarpa, Triodia wiseana*	Uncommon and restricted to small areas	Occurs only on Robe Pisolite in WPIOP study area., on Cochrane, Cardo East, Trinity and Catho Well mesas
260	West Pilbara, uncommon	*Triodia wiseana, Ptilotus astrolasius* var. *astrolasius, Trichodesma zeylanicum* var. *zeylanicum, Corchorus lasiocarpus* ssp. *parvus*	Uncommon and restricted to small areas	Floristic unit restricted to Cardo East and Farnum mesas
267	West Pilbara, restricted	*Triodia wiseana, Trichodesma zeylanicum* var. *zeylanicum, Ptilotus astrolasius* var. *astrolasius, Acacia bivenosa, Solanum lasiophyllum*	Uncommon	Floristic unit restricted to Trinity and Catho Well mesas
188	Uncommon sub-group	*Acacia bivenosa, Triodia pungens* and *Eucalyptus leucophloia* ssp. *leucophloia*	Uncommon	Floristic unit sampled from proposed Transport Corridor
240	Widespread but uncommon	*Rhynchosia minima* var. *australis, Acacia bivenosa, Acacia ancistrocarpa* and *Triodia wiseana*	Uncommon	Floristic unit sampled from proposed Administration area
60	West to Central Pilbara, under sampled	*Solanum lasiophyllum, Solanum horridum* and *Triodia wiseana*	Uncommon and under sampled	Floristic unit sampled from Upper Cane waste area
205	Uncommon sub-group	*Eucalyptus leucophloia* ssp. *leucophloia, Eriachne pulchella, Triodia wiseana, Ptilotus calostachyus* var. *calostachyus* and *Acacia bivenosa*	Uncommon and under sampled	Floristic unit sampled from the proposed Transport Corridor and Trinity waste area
266	West Pilbara, restricted	*Triodia wiseana, Tribulus suberosus, Acacia bivenosa, Senna glutinosa* ssp. *pruinosa, Senna artemisioides* ssp. *oligophylla, Senna glutinosa* ssp. *glutinosa*	Uncommon and under sampled	Floristic unit sampled from proposed Transport Corridor, Upper Cane waste area, Catho Well, Kens Bore and Trinity mesas
550	Uncommon, under sampled	*Triodia epactia, Eremophila cuneifolia, Acacia synchronicia, Solanum lasiophyllum, Sclerolaena densiflora*	Uncommon and under sampled	Floristic unit sampled from proposed Transport Corridor
144	West Pilbara	*Acacia bivenosa, Trichodesma zeylanicum* var. *zeylanicum, Dysphania rhadinostachya* ssp. *rhadinostachya* and *Alternanthera nana*	Locally common, restricted to region of study area	Floristic unit predominately on Catho Well mesa, also occurring on the proposed Transport Corridor, Catho Well waste area, and Upper Cane waste area

600 Group Floristic Unit	**Griffin and Trudgen, (2009) Assessment of Regional Distribution**	**Species Defining Floristic Unit**	**WB Assessment of Regional Distribution**	**Locations of where floristic unit was sampled in the WPIOP study area** (those sampled on Robe Pisolite highlighted in yellow)
195	Uncommon sub-group	*Ptilotus calostachyus* var. *calostachyus, Senna glutinosa* ssp. *pruinosa* and *Triodia wiseana*	Locally common, restricted to region of study area	Floristic unit only occurs on Cardo North mesa
254	Uncommon	*Triodia wiseana, Acacia bivenosa, Senna glutinosa* ssp. *glutinosa*	Locally common, restricted to region of study area	Floristic unit predominately on Trinity mesa, also occurring on the proposed Airstrip access road and Cardo North waste areas
259	West Pilbara, restricted	*Acacia bivenosa, Triodia wiseana, Ptilotus astrolasius* var. *astrolasius*	Locally common, restricted to region of study area	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Cochrane, Farnum, Kens Bore, Trinity and Catho Well mesas
247	Restricted	*Acacia arida, Tephrosia uniovulata, Triodia wiseana, Petalostylis labicheoides* and *Acacia bivenosa*	Restricted unit in area but may be widespread	Floristic unit restricted to Trinity and Catho Well mesas
270	West Pilbara, restricted	*Trichodesma zeylanicum* var. *zeylanicum, Acacia tumida* var. *pilbarensis, Acacia bivenosa, Cleome viscosa, Gossypium australe* (Burrup Peninsula form), *Dysphania rhadinostachya* ssp. *rhadinostachya, Senna glutinosa* ssp. *glutinosa, Triodia wiseana*	Restricted unit in area but may be widespread	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Cochrane, Kens Bore and Cardo East mesas
17	Uncommon, under sampled	*Indigofera rugosa, Trichodesma zeylanicum* var. *zeylanicum, Cleome viscosa, Ptilotus incanus* var. *incanus, Tribulus platypterus* and *Triodia wiseana*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
116	West Pilbara, under sampled	*Eucalyptus camaldulensis* var. *obtusa, Melaleuca glomerata, Acacia pyrifolia* var. *pyrifolia* and *Cyperus vaginatus*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
146	West Pilbara, restricted	*Corymbia candida, Senna artemisioides* ssp. *oligophylla, Cucumis maderaspatana* and *Triodia epactia*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
148	West Pilbara, restricted	*Corymbia hamersleyana, Acacia citrinoviridis, Gossypium robinsonii, G. australe* (Burrup Peninsula form) and *Triodia epactia*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
149	West Pilbara, restricted	*Acacia ancistrocarpa, Acacia bivenosa, Stylobasium spathulatum, Gossypium robinsonii, Solanum diversiflorum, Pterocaulon sphaeranthoides* and *Triodia epactia*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor

600 Group Floristic Unit	**Griffin and Trudgen, (2009) Assessment of Regional Distribution**	**Species Defining Floristic Unit**	**WB Assessment of Regional Distribution**	**Locations of where floristic unit was sampled in the WPIOP study area** (those sampled on Robe Pisolite highlighted in yellow)
150	West Pilbara, restricted	*Acacia pyrifolia* var. *pyrifolia, Grevillea pyramidalis* ssp. *leucadendron, Tephrosia rosea* var. *glabrior, Pterocaulon sphaeranthoides* and *Triodia epactia*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
152	Restricted	*Rhynchosia minima* var. *australis, Euphorbia australis, Trichodesma zeylanicum* var. *zeylanicum, Acacia ancistrocarpa, Gossypium australe* (Burrup Peninsula form), *Corchorus incanus* ssp. *incanus, Euphorbia boophthona* (Large seed form) and *Triodia epactia*	Restricted unit in area but may be widespread	Floristic unit sampled from proposed Transport Corridor
239	Widespread but uncommon	*Themeda triandra, Acacia xiphophylla, Acacia bivenosa, Corymbia hamersleyana, Cymbopogon ambiguus* and *Rhynchosia minima* var. *australis*	Restricted unit in area, may be widespread, and under sampled	Floristic unit sampled from proposed Airstrip Access Road
306	Uncommon, under sampled, sub groups	*Cymbopogon ambiguus, Eucalyptus leucophloia* ssp. *leucophloia, Polycarpaea longiflora, Ptilotus obovatus, Abutilon dioicum, Triodia wiseana, Senna glutinosa* ssp. *glutinosa*	Restricted unit in area, may be widespread, and under sampled	Floristic unit sampled from Trinity mesa
301	Widespread, uncommon	*Acacia citrinoviridis, Jasminum didymum* spp. *lineare, Acacia bivenosa*	Uncommon, but widespread	Floristic unit restricted to Robe Pisolite in the WPIOP study area. Occurs on Trinity and Catho Well mesas
115	Under sampled	*Eucalyptus camaldulensis* var. *obtusa, Vachellia farnesiana, Eremophila longifolia, Gossypium robinsonii,* Tephrosia sp. B Kimberley Flora (C.A, Gardner 7300), *Jasminum didymum* ssp. *lineare, Corchorus parviflorus, Waltheria indica, Cenchrus ciliaris, Bulbostylis barbata* and *Euphorbia coghlanii*	Uncommon but may be widespread and under sampled	Floristic unit sampled from proposed Transport Corridor
159	West Pilbara, uncommon	*Stemodia grossa, Triodia epactia, Eucalyptus victrix, Acacia pyrifolia* var. *pyrifolia, Cleome viscosa* and *Ipomoea muelleri*	Uncommon, but widespread	Floristic unit sampled from proposed Transport Corridor and Kens Bore mesa
246	Uncommon but widespread	*Acacia tumida* var. *pilbarensis, Eucalyptus leucophloia* ssp. *leucophloia, Triodia wiseana, Acacia arida* and *Acacia bivenosa*	Locally common, under sampled	Floristic unit occurs only on Trinity and Catho Well mesas
269	West Pilbara, restricted	*Dysphania rhadinostachya* ssp. *rhadinostachya, Acacia bivenosa, Ptilotus astrolasius* var. *astrolasius, Trichodesma zeylanicum* var. *zeylanicum, Solanum diversiflorum*	Locally common, under sampled	Floristic unit restricted to Robe Pisolite in WPIOP study area. Occurs on Cochrane, Jewell, Kens Bore and Cardo East mesas

600 Group Floristic Unit	Griffin and Trudgen, (2009) Assessment of Regional Distribution	Species Defining Floristic Unit	WB Assessment of Regional Distribution	Locations of where floristic unit was sampled in the WPIOP study area (those sampled on Robe Pisolite highlighted in yellow)
252	West Pilbara, restricted	*Ptilotus astrolasius* var. *astrolasius, Acacia ancistrocarpa, Indigofera monophylla, Triodia wiseana, Senna glutinosa* ssp. *glutinosa*	Locally common, under sampled	Floristic unit sampled from Catho Well mesa and proposed Transport Corridor
271	West Pilbara, uncommon or under sampled	*Acacia bivenosa, Triodia epactia, Acacia ancistrocarpa, Senna artemisioides* ssp. *oligophylla, Acacia synchronicia, Jasminum didymum* ssp. *lineare*	Locally common, under sampled	Floristic unit sampled from proposed Administration area and Airstrip
549	Uncommon, under sampled	*Acacia inaequilatera, Solanum lasiophyllum, Senna glutinosa* ssp. *luerssenii, Triodia epactia*	Locally common, under sampled	Floristic unit sampled from proposed Transport Corridor
20	West Pilbara, under sampled	*Triodia wiseana, Cleome viscosa, Gomphrena cunninghamii, Polycarpaea longiflora, P. holtzei, Trichodesma zeylanicum* var. *zeylanicum* and *Oldenlandia crouchiana*	Common, but likely to be under sampled	Floristic unit sampled from proposed Transport Corridor
21	West to Central Pilbara, under sampled	*Acacia ancistrocarpa, Triodia wiseana, Triumfetta clementii, Senna glutinosa* ssp. *pruinosa* and *Euphorbia australis*	Common, but likely to be under sampled	Floristic unit sampled from proposed Transport Corridor

3.1.7 Regional Floristic and Geology Analysis

The WPIOP resources are located on Robe Pisolite, which is commonly referred to in recent geological literature as Channel Iron Deposits (CIDs). A total of 471 quadrats and relevés from the study area were included in a larger data set of 2,883 sites to provide a bioregional assessment of representativeness of floristic community types. Data from projects within a west to east spread of 580 km and a north to south spread of 350 km were included. This provided for examination of the geologies of the study area, particularly the target geology Robe Pisolite, which also occurs to the east of the study area.

As Robe Pisolite is the target resource of the mine proposal, a high proportion of sites (40%) were established in vegetation on this geological unit, mostly within the resource areas. The distribution of Robe Pisolite is variable through the valleys of river systems and paleodrainage channels in the Pilbara, it occurs as the upper layer of mesas in valleys such as the Robe Valley, and grading into the sides of smaller valleys such as at Bungaroo Creek (Griffin & Trudgen, 2009).

Sixteen other geologies were sampled in the study area and an additional seven on the proposed rail and borrow pits were included in the statistical analysis, but are not addressed in this report. The floristic units were found to be strongly correlated to geology in the Pilbara Bioregion. In the study area, some floristic units at the 600-group level had sites from up to seven geological types. However, more than two thirds tended to be predominantly on just one geological unit (Griffin & Trudgen, 2009).

When comparing the WPIOP with other projects it was found to have the greatest similarity to projects in the western and central parts of the Pilbara Bioregion rather than those further east. This degree of similarity was considered to be the result of similarities in climate rather than surface geology. Projects close to the WPIOP shared significant proportions of floristic groups with the WPIOP. An exception was the Cape Preston Project, which is located in close proximity to the coast (Griffin & Trudgen, 2009).

Griffin and Trudgen (2009) also analysed a subset of 320 sites occurring on Robe Pisolite (Appendix 9). The results indicated that the Robe Pisolites in the WPIOP study area are distinct even from that in the Mesa A area, located nearby to the north in the Robe River Valley and closer to the coast (Griffin & Trudgen, 2009).

It would appear that the distribution of the floristic groups defined are related to geography (where the sites are located) rather than to surface geology.

The analysis also indicated that many of the communities on the Robe Pisolites are restricted. Griffin & Trudgen (2009) concluded *"that the vegetation on the Robe Pisolite is strongly confined to that geological type".*

3.1.8 *Regional Floristic analysis of Triodia* sp. Robe River (M.E. Trudgen et al. MET 12,367)

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was afforded a high level of focus during the studies as it is geographically restricted and mostly geologically constrained to the target geology of Robe Pisolite. Until this study, it was known to occur only in the vicinity of the Robe River Valley and limited mainly to the free face of mesas. In the WPIOP study area it was found to occur as a dominant or co-dominant Spinifex species in numerous vegetation types and occurred on the plateaux of the mesas as well as the free faces.

A separate floristic analysis of the occurrence of *Triodia* sp. Robe River (M.E .Trudgen *et al.* MET 12,367) was undertaken to examine its relationship to geology and compare with the data from the Robe Valley mesas. The analysis showed that while this species occurs on other geologies and not on all Robe Pisolite, there is a strong relationship between *Triodia* sp. Robe River (M.E .Trudgen *et al.* MET 12,367) and the Robe Pisolite geology and the mesa landform. That is, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occurs mainly on Robe Pisolite on mesas (Griffin & Trudgen, 2009).

3.1.9 Proposed Impacts on Vegetation Types within the WPIOP Study Area

Of the total area proposed to be impacted (5,578.60 ha), the amount of proposed impact (area to be cleared as a percentage of the area mapped) for each vegetation type was assessed using five levels, indicated by colours as indicated below and presented in Appendix 10;

1-9% = low impact (no colour)
10-25% = mid-low impact (yellow)
26-50% = medium impact (orange)
51-75% = high impact (pink)
76-100% = very high impact (red)

Of the 154 vegetation units described for the study area, 134 of these will be impacted. Known occurrences of 27 vegetation types on the mesas (resource areas) will be impacted by more than 50%. Eighteen of these will be impacted by over 75% and one vegetation type will be completely impacted by the proposed development of the resource areas. In other parts of the study area, a further 22 vegetation types are impacted by over 50% and nine of these are impacted by over 75%. This gives a total of 49 vegetation types to be impacted by over 50%.

The level of impact is considered from a conservation perspective in section 3.1.10 where the presence of significant flora (eg. Priority flora, Species of Interest), or Restricted Floristic Units within the vegetation type are considered as well as whether the vegetation type is currently recognised as having conservation value in the Pilbara Bioregion.

3.1.10 Vegetation Types of Interest and Projected Impacts

In assessing the vegetation types that were of conservation interest within the study area, the following parameters were considered:

- Proportional impact within the WPIOP study area;
- Vegetation known to support Priority species (section 3.1.3);
- Vegetation known to support plant species of interest (section 3.1.4);
- Location of species at the limit of their range;
- Vegetation Communities of Interest(section 3.1.2);
- Presence of uncommon floristic units (section 3.1.5); and
- Likelihood of occurring outside the WPIOP study area.

Eighty six vegetation types across the study area were identified as potentially of conservation interest. Vegetation types were considered of interest where they supported Priority flora, flora Species of (taxonomic) Interest and/or Restricted Floristic Units, or occurred in major drainages such as Urandy Creek, or had known conservation priorities. The impacts of the WPIOP on the 86 vegetation types of interest are presented in Table 17. The impacts of a further 13 vegetation types have also been included in Table 17 where the projected impacts were over 50% of their known area. Thus, impacts on a total of 99 vegetation types of interest were considered.

Of the 99 vegetation types of interest, 12 had no projected impacts. The remaining 87 vegetation types were given a suggested ranking where; 28 vegetation types were determined to have Very Low impacts, 27 to have Low impacts and 32 to have Very High to Moderate impacts.

The 32 vegetation types considered to have Very High to Moderate impacts will be impacted by >50% as well as being vegetation types unlikely to occur elsewhere and having Priority, Species of Interest, Communities of Interest and/or Uncommon floristic units. For this reason these 32 vegetation types have been grouped together as 'high' impacts within Table 17. As some of these vegetation units appeared to have higher value than others they were divided in to four categories (Very High, High, Moderate-High and Moderate), based on the presence or absence of Priority flora, Species of Interest and Communities of Interest.

In this way an assessment of the conservation value of vegetation types can be made in an informed manner.

Table 17: Evaluation of Impacts to Vegetation Types of Interest in the Study Area

Key:

pink shading	Impact >50%;
orange shading	Impact > 50% yet likely to be elsewhere or <50% yet has a limited distribution
green shading	Impact < 50% and likely to occur elsewhere
no shading	Impact 0%

Priority Species (indicated in bold within table):
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) (P3)
Owenia acidula (P3)
Rhynchosia bungarensis (P3)
Species of Interest (indicated in bold within table):
Acacia aneura
Aristida holathera var. *latifolia*
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (a P3 as of April 2010)
Communities of Interest (underlined within table):
Snakewood (*Acacia xiphophylla*) communities
Acacia citrinoviridis communities on mesa landforms

Vegetation Code	Reasons for Interest	Total in Study Area (Ha)	Proposed Impact (%)	Notes on Distribution	Suggested Level of impact
S10g	**Species of Interest**, Restricted Floristic Units, Community of Interest	5.98	100%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be locally common but under sampled. *Acacia citrinoviridis* occurs on a mesa as a dominant, which is uncommon. This assemblage is unlikely to occur elsewhere.	**Very High**
S4g	**Priority flora**, **Species of Interest**, Community of Interest, Restricted Floristic Units	0.83	99%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** is recorded in this community. *Acacia aneura* as a presence and ***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** as a dominant. *Acacia citrinoviridis* occurs on a mesa as a dominant, which is uncommon. Floristic unit considered restricted. This assemblage is unlikely to occur elsewhere.	**Very High**
S5l	**Species of Interest,** Restricted Floristic Units, Community of Interest	2.14	83%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. *Acacia citrinoviridis* occurs in this community as a dominant, which is uncommon on a mesa. This assemblage is unlikely to occur elsewhere.	**Very High**

S5e	**Species of Interest,** Restricted Floristic Units, Community of Interest	22.78	83%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. *Acacia citrinoviridis* occurs in this community as a dominant, which is uncommon on a mesa. This assemblage is unlikely to occur elsewhere.	**Very High**
S10a	**Species of Interest,** Restricted Floristic Units, Community of Interest	5.37	78%	***Acacia aneura*** and ***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occur as dominants in this community. Floristic unit considered restricted. *Acacia citrinoviridis* occurs as a dominant in this community, which is uncommon on a mesa. This assemblage is unlikely to occur elsewhere.	**Very High**
S5d	**Species of Interest**, Restricted Floristic Units	192.51	64%	***Aristida holathera* var. *latifolia*** occurs in this community. ***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** is a dominant in this community. Uncommon floristic units. This assemblage is unlikely to occur elsewhere.	**Very High**
S5h	**Species of Interest**, Restricted Floristic Units	32.7	98%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S4i	**Species of Interest,** Restricted Floristic Units	17.69	98%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S5k	**Species of Interest**, Restricted Floristic Units	32.38	97%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S5g	**Species of Interest**, Restricted Floristic Units	39.98	97%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**

S5f	**Species of Interest,** Restricted Floristic Units	183.12	97%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S12c	**Species of Interest**	47.2	96%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. This assemblage is unlikely to occur elsewhere.	**High**
S3b	**Priority flora**, Restricted Floristic Units	13.53	94%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** is recorded in this community. Floristic unit considered uncommon. This assemblage is unlikely to occur elsewhere.	**High**
P2c	**Species of Interest**	1.28	90%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. This is unlikely to occur in this assemblage elsewhere.	**High**
S4l	**Species of Interest**, Restricted Floristic Units	30.32	82%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted but may be widespread. This assemblage is unlikely to occur elsewhere.	**High**
S10m	**Species of Interest,** Restricted Floristic Units	8.37	80%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S10i	**Species of Interest,** Restricted Floristic Units	44.37	78%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S10k	**Species of Interest,** Restricted Floristic Units	32.06	74%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted but may be widespread. This assemblage is unlikely to occur elsewhere.	**High**

I5n	**Species of Interest,** Restricted Floristic Units	5.93	74%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S5j	**Species of Interest**, Restricted Floristic Units	50.97	72%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**High**
S10f	**Species of Interest**, Community of Interest	16.74	69%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. *Acacia citrinoviridis* occurs in this community as a dominant, which is uncommon on a mesa. This assemblage is unlikely to occur elsewhere.	**High**
S10h	**Species of Interest**, Restricted Floristic Units	6.2	65%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This species assemblage is unlikely to occur elsewhere.	**High**
S5b	**Species of Interest,** Restricted Floristic Units	114.11	57%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be uncommon and restricted to small areas. This assemblage is unlikely to occur elsewhere.	**High**
S12b	**Species of Interest,** Restricted Floristic Units	3.47	53%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be locally common and restricted to the region of the study area. This assemblage is unlikely to occur elsewhere.	**High**
S2b	Community of Interest, Restricted Floristic Units	8.01	74%	*Acacia citrinoviridis*, combined with Restricted Floristic Unit, indicates this assemblage is unlikely to be found elsewhere.	**Moderate - High**

S11f	Community of Interest, Restricted Floristic Units	60.27	63%	*Acacia citrinoviridis*, combined with Restricted Floristic Units, indicates this assemblage is unlikely to be found elsewhere.	**Moderate - High**
S7k	Uncommon and under sampled floristic unit 60	0.6	100%	Only surveyed in a small part of the Upper Cane waste area. May be under sampled. However, no evidence to say it may be found elsewhere.	**Moderate**
S3d	High impact area	7.25	100%	Dominant species common to mesas, but not often found together, and unlikely to be found in this assemblage elsewhere.	**Moderate**
S3e	Restricted Floristic Units	28.25	95%	Restricted floristic groups indicate this assemblage is unlikely to be found elsewhere.	**Moderate**
S1c	High impact area	17.85	91%	Interesting group of dominants. Unlikely to be found on mesa formations elsewhere.	**Moderate**
S14b	Restricted Floristic Units	167.84	79%	Odd assemblage on a mesa landform, combined with restricted floristic group indicates this assemblage is unlikely to be found elsewhere.	**Moderate**
S4m	Restricted Floristic Units	5.65	75%	Surveyed only on Trinity mesa. According to floristics, unlikely to occur elsewhere.	**Moderate**
S7j	High impact area	0.46	100%	Common vegetation type. Likely to be found elsewhere.	**Low**
C4a	High impact area	43.25	98%	Common vegetation type. Likely to be found elsewhere. Likely to be under sampled.	**Low**
C2c	High impact area	44.04	94%	Common vegetation type. Likely to be found elsewhere.	**Low**

I2a	Restricted Floristic Units	5.04	91%	Small community, likely to be under sampled.	**Low**
P6b	High impact area	189.61	90%	Odd group of dominants, but likely to be found in other sites outside the study area. Likely to be under sampled.	**Low**
I3a	High impact area	77.96	79%	Common drainage line community. Likely to be found further up/downstream of impacts.	**Low**
S7e	High impact area	26.09	74%	Common vegetation type. Likely to be found elsewhere.	**Low**
C3a	Restricted Floristic Units	56.66	71%	Likely to be under sampled.	**Low**
S11m	Restricted Floristic Units	10.06	69%	Likely to occur elsewhere.	**Low**
I1c	High impact area	18.21	67%	Common drainage line community. Likely to be found further up/downstream of impacts.	**Low**
S12a	High impact area	25.95	67%	Odd dominance of *Triodia epactia* on a mesa, but known to be dominant further to the south, so may occur elsewhere.	**Low**
C7a	High impact area	485.69	64%	Common vegetation type. Likely to be found elsewhere.	**Low**
P6d	Restricted Floristic Units	135.96	64%	Common species, likely to occur outside of impacts.	**Low**

I5p	High impact area	51.54	60%	Common vegetation type. Likely to be found elsewhere.	**Low**
S4b	Restricted Floristic Units	788.55	59%	Only surveyed on Catho Well, but known to occur outside the project area.	**Low**
S7g	High impact area	51.42	52%	Common vegetation type. Likely to be found elsewhere.	**Low**
S10d	**Species of Interest,** Restricted Floristic Units	35.1	42%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**Low**
S11l	Restricted Floristic Unit 303	5.3	40%	Restricted floristic group indicates this assemblage is unlikely to be found elsewhere.	**Low**
S10j	**Species of Interest,** Restricted Floristic Units	70.74	37%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**Low**
S5i	**Species of Interest,** Restricted Floristic Units	28.58	32%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**Low**
S10n	**Species of Interest,** Restricted Floristic Units	95.14	28%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. This assemblage is unlikely to occur elsewhere.	**Low**
S5c	**Species of Interest,** Restricted Floristic Units	1.99	26%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Odd dominance of *Dampiera*. Contains floristic units considered to be restricted. Unlikely to occur elsewhere.	**Low**

S11b	**Species of Interest,** Restricted Floristic Units	36.25	35%	***Acacia aneura*** occurs as a dominant in this community. Floristic units considered restricted or uncommon and under sampled. This assemblage is unlikely to occur elsewhere.	**Low**
S11h	Restricted Floristic Units	215.76	18%	Restricted floristic groups indicate this assemblage is unlikely to be found elsewhere.	**Low**
S11d	Restricted Floristic Units	91.77	16%	Common species, odd assemblage, unlikely to occur elsewhere based on floristics.	**Low**
S4e	Community of Interest	21.11	11%	Unlikely to be found elsewhere.	**Low**
S10e	**Species of Interest**, Restricted Floristic Units, Community of Interest	37.92	8%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered to be restricted. *Acacia citrinoviridis* occurs in this community as a dominant, which is uncommon on a mesa. This species assemblage is unlikely to be found elsewhere.	**Low**
P6i	Restricted Floristic Units	91.45	44%	Likely to occur elsewhere.	**Very Low**
S4k	Restricted Floristic Units	3.43	43%	Only surveyed on Catho Well. Unknown outside, but common species and likely to occur elsewhere.	**Very Low**
P3c	**Species of Interest**	9.77	38%	***Aristida holathera* var. *latifolia*** occurs in this community. Assemblage likely to occur elsewhere.	**Very Low**
I6c	Restricted Floristic Units	1.81	37%	Odd to have *Tephrosia* sp. B Kimberley Flora (C.A. Gardener 7300) as a dominant species. Assemblage likely to occur elsewhere up/downstream.	**Very Low**

P5d	Community of Interest, Restricted Floristic Units, restricted land system	654.32	36%	*Acacia xiphophylla* community. Floristic unit considered uncommon and likely under sampled. Some of this vegetation occurs on the restricted Stuart land system. This assemblage likely to occur elsewhere.	**Very Low**
A3a	Restricted Floristic Units	56.19	35%	Occurs in areas upstream and downstream of impacts. Impacts on large rivers should be minimised in any case.	**Very Low**
A5e	Restricted Floristic Units	153.66	35%	Occurs in areas upstream and downstream of impacts. Impacts on large rivers should be minimised in any case.	**Very Low**
I2f	Restricted Floristic Units	31.57	35%	Likely to occur in areas upstream and downstream of impacts.	**Very Low**
I5d	**Species of Interest,** Restricted Floristic Units	97.42	34%	***Aristida holathera* var. *latifolia*** occurs in this community. Floristic unit considered restricted but may be widespread. Assemblage likely to occur elsewhere.	**Very Low**
I5f	**Priority flora**	21.04	33%	**P3 *Rhynchosia bungarensis*** recorded in this community. Assemblage likely to occur elsewhere.	**Very Low**
I5h	**Species of Interest**	51.52	32%	***Aristida holathera* var. *latifolia*** occurs in this community in the Cape Preston Rail study area. Assemblage likely to occur elsewhere.	**Very Low**
P6f	**Species of Interest**	318.72	32%	***Aristida holathera* var. *latifolia*** occurs in this community. Assemblage likely to occur elsewhere.	**Very Low**
P1a	**Priority flora**	163.22	31%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this vegetation type in the Cape Preston Rail study area. Assemblage likely to occur elsewhere.	**Very Low**

P6e	**Species of Interest**, Restricted Floristic Units, restricted land systems	1532.2	26%	***Aristida holathera* var. *latifolia*** occurs in this community. Floristic unit considered locally common but under sampled. Some of this vegetation occurs on the restricted Stuart and Newman land systems. Assemblage likely to occur elsewhere.	**Very Low**
P5e	Community of Interest, restricted land system	362.88	24%	*Acacia xiphophylla* community. Some of this vegetation occurs in the restricted Stuart land system. Assemblage likely to occur elsewhere.	**Very Low**
S7n	Restricted Floristic Units	744.54	22%	Common vegetation type. Likely to be found elsewhere.	**Very Low**
S13b	**Priority flora**, Restricted Floristic Units	63.93	20%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this vegetation type in the Cape Preston Rail study area. Floristic units considered restricted but may be wide spread. Assemblage likely to occur elsewhere.	**Very Low**
S11e	**Priority flora**, Restricted Floristic Units, restricted land system	620.05	19%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this community. Floristic unit considered restricted or locally common but restricted to the region of the study area. Some of this vegetation occurs on the restricted Newman land system. Assemblage likely to occur elsewhere.	**Very Low**
I5a	Restricted Floristic Units	29.58	19%	Common species, odd species assemblage, may occur elsewhere up/downstream.	**Very Low**
S7c	**Priority flora**, Restricted Floristic Units	875.4	18%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this community. Floristic units considered to be uncommon and under sampled. Assemblage likely to occur elsewhere.	**Very Low**
S14d	Community of Interest, Restricted Floristic Units	478.72	15%	*Acacia xiphophylla* community. Floristic unit considered locally common and under sampled. Assemblage likely to occur elsewhere.	**Very Low**

A5c	**Priority flora**, major drainage line, Restricted Floristic Units	23.4	13%	**P3 *Rhynchosia bungarensis*** recorded in this community. Floristic unit considered uncommon but widespread. Assemblage likely to occur elsewhere.	**Very Low**
C6a	Community of Interest	98.23	10%	*Acacia xiphophylla* community. Assemblage likely to occur elsewhere.	**Very Low**
A3d	**Priority flora**, major drainage line	70.61	8%	**P3 *Rhynchosia bungarensis*** recorded in this community. Transport corridor crosses major drainage line of Urandy Creek. Assemblage likely to occur elsewhere up/downstream of impacts.	**Very Low**
A5f	**Priority flora**, major drainage line, Restricted Floristic Units	37.67	8%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** and **P3 *Rhynchosia bungarensis*** recorded in this community. Occurs in Urandy Creek. Floristic unit considered restricted but may be widespread. Assemblage likely to occur elsewhere up/downstream of impacts.	**Very Low**
S10b	**Species of Interest**, Restricted Floristic Units	211.62	8%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains a floristic unit considered uncommon and under sampled. Assemblage likely to occur elsewhere.	**Very Low**
S8a	**Species of Interest**, Restricted Floristic Units	2.03	2%	***Acacia aneura*** occurs as a dominant in this community. Floristic unit considered restricted and under sampled. Assemblage likely to occur elsewhere.	**Very Low**
A5d	**Priority flora**, major drainage line, Restricted Floristic Units	13.48	1%	**P3 *Owenia acidula*** recorded in this community. Transport corridor crosses this major drainage line near the airstrip. Floristic units considered uncommon or considered locally common but under sampled. Unlikely to occur elsewhere.	**Very Low**
I5e	**Priority flora**	1.76	0%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this vegetation type in the Cape Preston Rail study area. Assemblage likely to occur elsewhere.	**None**

I6d	Restricted Floristic Units	6.42	0%	Common species, likely to occur elsewhere up/downstream.	**None**
S10c	**Priority flora, Species of Interest,** Restricted Floristic Units	59.18	0%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this community. ***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant. Floristic unit considered locally common but restricted to the region of the study area. Assemblage unlikely to occur elsewhere.	**None**
S10l	**Species of Interest,** Restricted Floristic Units	22.02	0%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains floristic units considered locally common and restricted to the region of the survey. Assemblage unlikely to occur elsewhere.	**None**
S11j	**Priority flora**, Restricted Floristic Units	25.63	0%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this community. Floristic unit considered locally common but under sampled, or restricted. Assemblage unlikely to occur elsewhere.	**None**
S13a	Communities of established high conservation value	0.92	0%	Species assemblage unlikely to occur elsewhere, but not currently impacted.	**None**
S14a	Restricted Floristic Units	38.65	0%	Likely to occur elsewhere.	**None**
S4f	Communities of established high conservation value	14.34	0%	Unlikely to be found elsewhere.	**None**
S4h	**Priority flora,** Community of Interest, Restricted Floristic Units	6.32	0%	**P3 *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)** recorded in this community. *Acacia citrinoviridis* occurs as a dominant on a mesa, which is known to be uncommon. Floristic unit considered uncommon but widespread. Assemblage unlikely to occur elsewhere.	**None**

S4n	**Species of Interest**, Restricted Floristic Units	9.94	0%	***Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)** occurs as a dominant in this community. Contains a floristic unit considered to be restricted within the study area but widespread in the region. Assemblage unlikely to occur elsewhere.	**None**
S8b	**Species of Interest**, Restricted Floristic Units	3.63	0%	***Acacia aneura*** occurs as a dominant in this community. Floristic unit considered uncommon. Assemblage unlikely to occur elsewhere.	**None**
S8c	**Species of Interest,** Restricted Floristic Units	2.01	0%	***Acacia aneura*** occurs as a dominant in this community. Floristic unit considered uncommon. Assemblage unlikely to occur elsewhere.	**None**

The percentage covers for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) as determined from quadrat data were not used to determine ranking, as percentage covers from quadrats may not reflect the actual percentage cover for the vegetation cover (being restricted to a 50 x 50 m^2 area) and percentage covers of 2-10%, 10-30% and 30-70% were all considered significant from a vegetation community perspective.

3.1.11 Impacts on Communities of Interest

Four vegetation types considered to be *Acacia xiphophylla* Communities of Interest will be impacted by the WPIOP proposal and these were all ranked as having Very Low impact (percentage impact ranged from 36-10%).

Of the ten vegetation types that were *Acacia citrinoviridis* Communities of Interest, eight were ranked as high (>50% impact) where five were in the Very High category, one High and two Moderate-High. The remaining two included one with Very Low ranking of impact and one with no impact.

Of 33 vegetation types with *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), 23 were considered to have high impacts (six Very High and 17 High). Of the remaining 10 vegetation types, six were considered to have Low impacts, one Very Low and three will have no impacts.

3.2 Flora within the Study Area

A total of 442 taxa of vascular flora (species, subspecies and varieties) representing 52 families and 140 genera were recorded from the study area (Appendix 11). This included 335 native endemic species and seven introduced flora species. Forty-one flora collections (9.4% of the total native flora species encountered) could not be determined to species level with confidence due to the unavailability of good flowering material. These collections do not match any known taxa of conservation significance.

The families and genera recorded with the greatest number of taxa are presented in Table 18 and Table 19. The representation of Poaceae, Malvaceae, Mimosaceae, Papilionaceae and Amaranthaceae is typical of the flora of the Pilbara. Twenty-two families and 84 genera were represented by only one taxon.

Table 18: Vascular Flora Families with the Highest Number of Taxa Recorded

Family	Number of Taxa
Malvaceae	56
Poaceae	50
Mimosaceae	37
Papilionaceae	32
Amaranthaceae	27
Tiliaceae	21
Asteraceae	19
Chenopodiaceae	18
Euphorbiaceae	18
Caesalpiniaceae	17
Convolvulaceae	12
Solanaceae	10

Table 19: Vascular Flora Genera with the Highest Number of Taxa Recorded

Genus	Number of Taxa
Acacia	36
Sida	25
Hibiscus	19
Ptilotus	17
Senna	16
Euphorbia	13
Triumfetta	11
Corchorus	10
Tephrosia	10
Eriachne	8
Solanum	8
Abutilon	8
Eremophila	8
Indigofera	7

The most frequently recorded species were *Triodia wiseana*, *Acacia bivenosa*, *A. ancistrocarpa, A. inaequilatera*, *Corymbia hamersleyana, Acacia synchronicia, A. pyrifolia* var. *pyrifolia, A. atkinsiana*, *A. xiphophylla, Senna glutinosa* ssp. *glutinosa, A. tumida* var. *pilbarensis, S. artemisioides* ssp. *oligophylla,* and *Triodia epactia* (Table 20). One hundred species were recorded from only a single collection. This is considered to reflect the ephemeral nature of the flora of the Pilbara.

Table 20: The Most Frequently Recorded Taxa in the Study Area

	No. Records (Total No. sites)				
Species	**Quadrat (217)**	**Relevé (342)**	**Vegetation description (285)**	**Individual specimen collection (470)**	**TOTAL (1,314)**
Triodia wiseana	176	226	182	60	**644**
Acacia bivenosa	183	229	116	21	**549**
Acacia inaequilatera	95	140	107	55	**397**
Acacia ancistrocarpa	119	179	82	5	**385**
Triodia epactia	76	163	84	8	**331**
Ptilotus astrolasius var. *astrolasius*	134	104	19	10	**267**
Corymbia hamersleyana	55	117	69	9	**250**
Acacia synchronicia	80	116	28	23	**247**
Eucalyptus leucophloia ssp. *leucophloia*	79	73	76	11	**239**
Senna glutinosa ssp. *glutinosa*	112	96	14	3	**225**
Gossypium australe (Burrup Peninsula form)	103	98	13	4	**218**
Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)	84	28	43	32	**187**
Ptilotus calostachyus var. *calostachyus*	101	54	8	1	**164**
Senna artemisioides ssp. *oligophylla*	73	78	10	2	**163**
Acacia atkinsiana	47	68	23	3	**141**
Senna glutinosa ssp. pruinosa	64	63	13	1	**141**
Trichodesma zeylanicum var. *zeylanicum*	92	34	7	2	**135**
Acacia tumida var. *pilbarensis*	44	54	25	9	**132**
Hakea lorea ssp. *lorea*	36	71	20	4	**131**
Acacia pruinocarpa	61	22	38	9	**130**
Tephrosia uniovulata	64	48	10	6	**128**
Cleome viscosa	72	28	9	3	**112**
Indigofera monophylla	31	62	12		**105**
Acacia citrinoviridis	38	29	33	3	**103**
Senna notabilis	60	30	7	6	**103**
Petalostylis labicheoides	49	20	19	12	**100**
Gossypium robinsonii	39	45	14	1	**99**
Jasminum didymum ssp. *lineare*	60	30	5	3	**98**
Dysphania rhadinostachya ssp. *rhadinostachya*	80	15	2		**97**
Solanum diversiflorum	56	32	5	1	**94**

3.3 Species of Interest – undergoing revision or new taxonomy

A search of the DEC Threatened (Declared Rare Flora) database, Priority Species List and the Western Australian Herbarium Specimen database (DEC 2008a, DEC 2008b, DEC 2008c) for the study area, indicated 20 priority species known to occur near the study area (Table 21).

Table 21: Flora of Conservation Significance Known to Occur within or near the Study Area

Priority Flora	Conservation Status
Abutilon uncinatum	P1
Acacia glaucocaesia	P3
Atriplex lindleyi ssp. *conduplicata*	P3
Eragrostis lanicaulis	P3
Eremophila forrestii ssp. *viridis*	P3
Flaveria australasica ssp. *gilgai*	P3
Goodenia hartiana	P2
Goodenia pallida	P1
Gunniopsis sp. Fortescue (M.E. Trudgen 11019)	P1
Helichrysum oligochaetum	P1
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	P3
Owenia acidula	P3
Rhynchosia bungarensis	P3 [8]
Sida sp. Hamersley Range (K. Newbey 10692)	P1
Tephrosia bidwillii	P3
Terminalia supranitifolia	P3
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3
Triumfetta echinata	P3
Vigna sp. silver leaf (T.E.H. Aplin 6300)	P3
Genus sp. Hamersley Range hilltops (S. van Leeuwen 4345)	P1

3.3.1 Rare and Priority Flora Recorded

No flora gazetted as Declared Rare Flora (DRF) under the *Wildlife Conservation Act 1950*, were recorded in the study area. Three Priority 3 flora were recorded in the study area, *Owenia acidula, Rhynchosia bungarensis* and *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301), (Table 22). *Owenia acidula,* was recorded in one location, *Rhynchosia bungarensis* was recorded at four locations and *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) was recorded in nine locations.

At a late stage in finalizing this report, Western Botanical was advised by the Department of Environment and Conservation that *Triodia* sp. Robe River (M.E. Trudgen *et al*. 12,367) had been listed as a Priority 3 species in the week commencing 29th March 2010 (Melanie Smith

[8] *Rhynchosia bungarensis* is now listed as P4 as of 30th March 2010.

DEC, pers. comm.). Although this editorial change has not been reflected throughout this document, reference to it has been made as footnotes or as comments in the text.

Table 22: Locations of Priority Flora within the Study Area (Zone 50K) WGS84

Species	Site ID	Habitat	No. Plants	Easting mE	Northing mN
Owenia acidula	AD004	Bank of drainage line	1,853	416420	7551794
Rhynchosia bungarensis	HR010	Drainage line, site on edge of river	+	426016	7535981
Rhynchosia bungarensis	KB021	Large river bed	+	421471	7557075
Rhynchosia bungarensis	KBW007	Creek line on plain	+	415408	7561386
Rhynchosia bungarensis	TC008	River bed	+	427245	7535609
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	ASA001	Low rolling hills	+	416755	7551828
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	CW026	Flat slope of a mesa crest	+	424765	7522029
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	CW028	Lower foot slope	+	423933	7522869
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	TR021	Rocky gully	+	430449	7522109
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	TR023	Mesa top	+	429618	7522924
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	TR106		+	430482	7522051
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	TR107	Gully	+	430691	7522544
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	UC006	Valley floor	+	424416	7545539
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	WPIOP-UC	Mesa edge	+	425532	7545808

3.3.2 Owenia acidula, Priority 3

Owenia acidula is a tree to 8 m, with white, brown, cream small flowers purplish-red fruit 2-4 cm with a large stone like seed, paripinnate leaflets (Plates 1 and 2), occurs on clay soils and is known from five locations in Western Australia, within the western Pilbara and the Carnarvon Biogeographic regions. It is more commonly known from the eastern portion of the Northern Territory, Queensland, New South Wales and Victoria (Figure 14).

The distribution of this species shows a large disjunction of approximately 1,700 km between the known locations of *O. acidula* in the eastern states and Western Australia (Australia's Virtual Herbarium, 2010). This disjunction spans from the Pilbara and Carnarvon Bioregions through the central desert of Western Australia the Tanami desert of the Northern Territory and the Simpson Strzelecki Dunefields, Channel Country and Gawler Bioregions in South Australia (DEC 2009).

Such a disjunction often suggests an inadequate taxonomic differentiation of specimens. Therefore, *O. acidula* should be treated as a complex with entities that are likely to be further differentiated.

O. acidula is known to produce basal shoots and it is likely the population found in the study area arises from the one adventitious root system (Malcolm Trudgen pers. comm.). Approximately 1,853 plants were counted in the population in two strata, the majority of records being less than 2 m tall (Table 23).

O. acidula was found at one location (416420 mE, 7551794 mN), adjacent to the proposed administration site within the study area, on the banks of a drainage line. The vegetation supporting the *O. acidula* population was described as *Eucalyptus victrix* low woodland over *Acacia bivenosa, Gossypium robinsonii, Owenia acidula* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland.

The occurrence of *O. acidula* within the WPIOP area should be regarded as highly significant.

Plate 1: Habit of *Owenia acidula*

Plate 2: Foliage of *Owenia acidula*

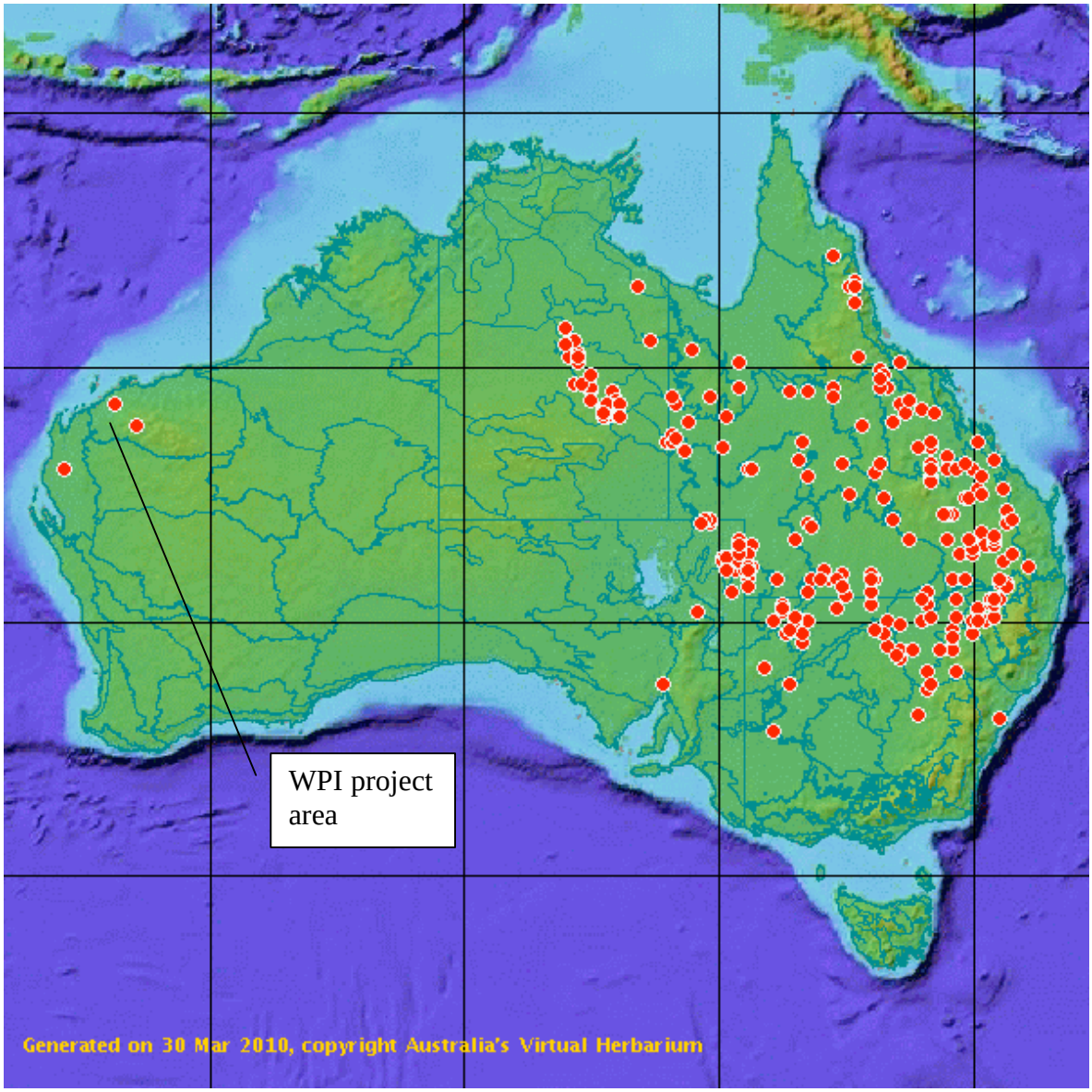

Figure 14 Distribution of *Owenia acidula* (Australian Virtual Herbarium, 2010)

Table 23: Recorded Habitats of *Owenia acidula*

Site	Habitat	Vegetation
AD004	Bank of drainage line	*Eucalyptus victrix* low woodland over *Acacia bivenosa, Gossypium robinsonii, Owenia acidula* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland

3.3.3 Rhynchosia bungarensis, Priority 3 [9]

Rhynchosia bungarensis is a compact prostrate shrub, 0.5 m with small, round, resinous leaves (Plate 3). It is known to grow in pebble coarse sand in amongst boulders and in the flow lines of gullies on Pisolite or Brockman Formation geologies (DEC, 2009).

This species is restricted to Western Australia with 24 known locations in the Pilbara, two in the Kimberley, one in the Gascoyne and one in the Carnarvon Bioregions (Figure 15).

Rhynchosia bungarensis was recorded at four locations within the study area. All four locations were associated with the banks of rivers, creek lines or drainage lines and had cover recorded as only a presence within the associated vegetation description (Table 24).

Plate 3: *Rhynchosia bungarensis*

The presence of *Rhynchosia bungarensis* within the WPIOP area is within the known range for this species.

Populations of this taxon were not counted during field surveys.

[9] *Rhynchosia bungarensis* is now listed as P4 as of 30th March 2010.

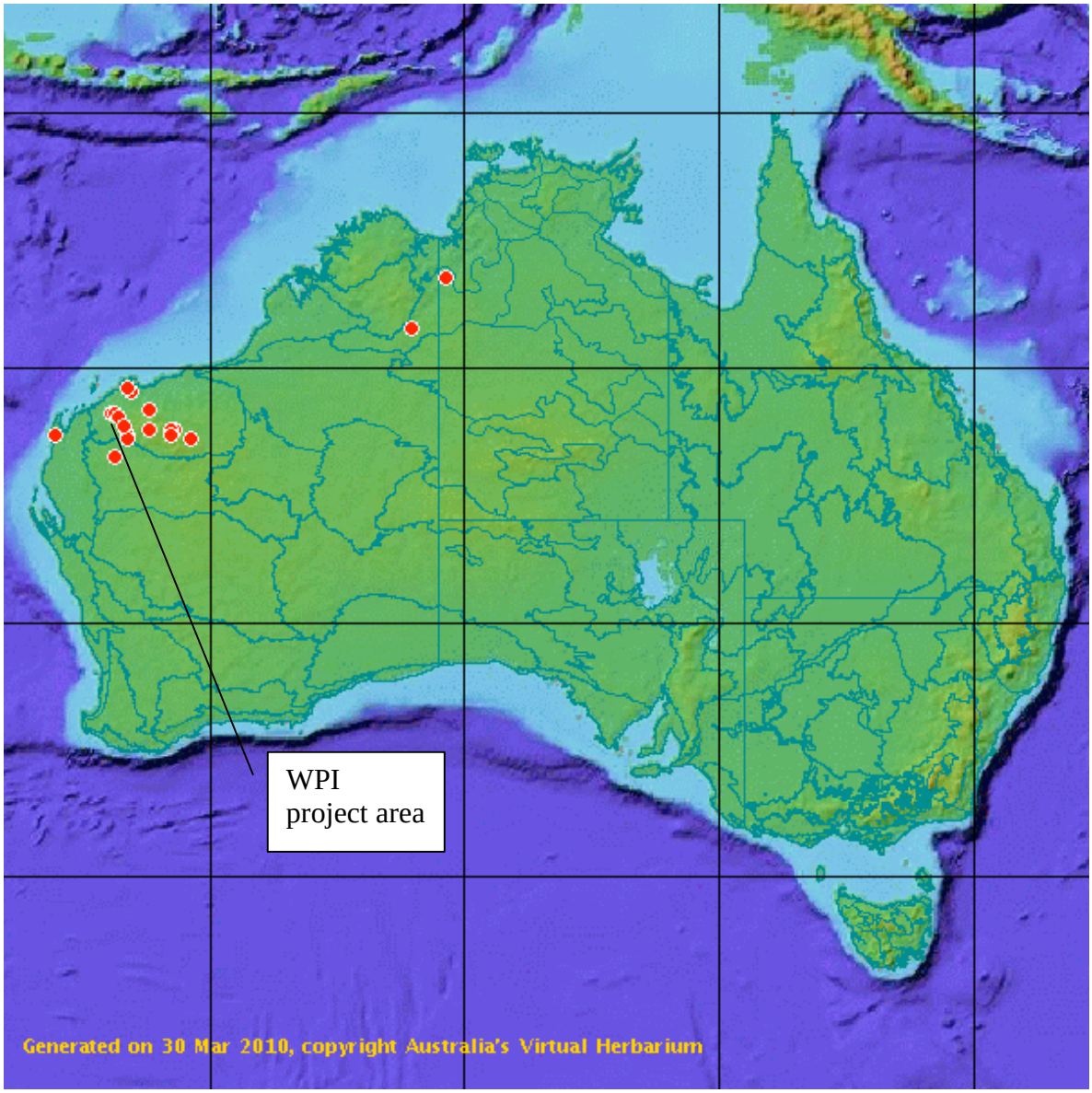

Figure 15 Distribution of *Rhynchosia bungarensis*

Table 24: Recorded Habitats of *Rhynchosia bungarensis*

Site	Habitat	Vegetation
HR010	Drainage line, site on edge of river	*Acacia citrinoviridis* and *Acacia pyrifolia* var. *morrisonii* high shrubland, over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* very open hummock grassland
TC008	River bed	*Corymbia hamersleyana* low open woodland over *Acacia colei* var. *colei* high open shrubland over *Triodia epactia* very open hummock grassland
KB021	Large river bed (and its banks)	*Eucalyptus camaldulensis* var. *obtusa* and *E. victrix* open forest over *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei* scattered tall shrubs over mixed very open herbland
KBW007	Creek line on plain	*Corymbia hamersleyana* low open woodland over *Acacia colei* var. *colei* high open shrubland over *Triodia epactia* very open hummock grassland

3.3.4 Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301), Priority 3

Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) is an upright spreading perennial shrub to 2.3 m (Plate 4), known to occur from only six records from the WA Herbarium. It is known to occur in low landscapes on slopes with skeletal red, gritty, soil and near creek banks.

Very little is known about *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301). It is known from five populations (6 specimens at WA Herb) and is restricted to the Pilbara region with all records in close proximity to the study area (Figure 16).

Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) was recorded at nine locations across three resource area mesas (Catho Well, Trinity and Upper Cane) and once within the proposed airstrip access track (Table 25). These can be regarded as four new populations of this species.

Plate 4: *Indigofera s*p. Bungaroo Creek (S. van Leeuwen 4301)

The presence of *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) within the WPIOP area is on the western edge of the known range for this species. However, only 5 populations are known outside the WPIOP area while 4 populations are known within the project area.

Populations of this taxon were not counted during field surveys as it's significance was not known at the time of field works being conducted.

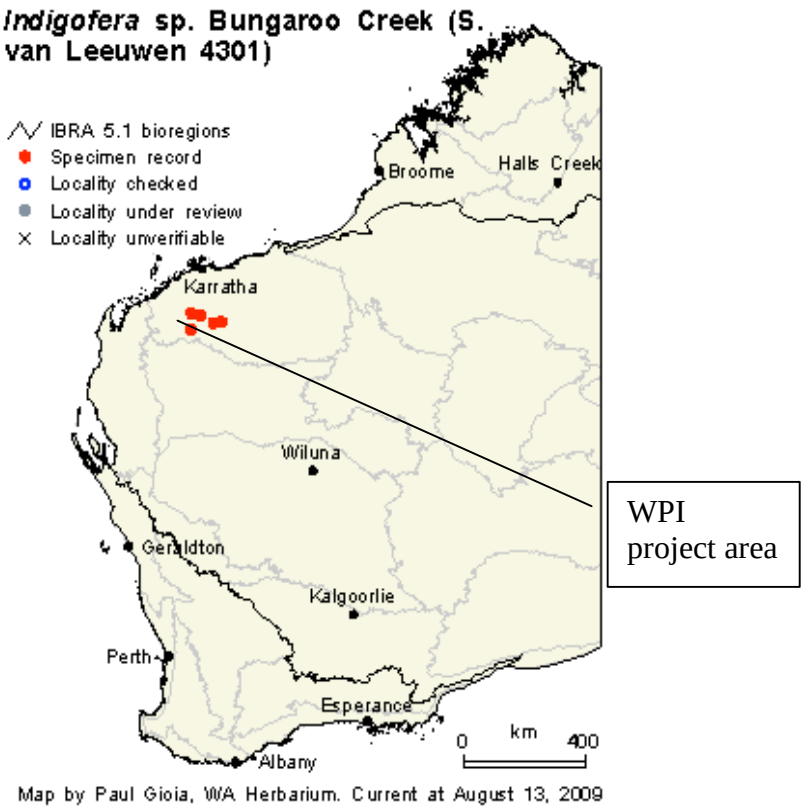

Figure 16 Distribution of *Indigofera s*p. Bungaroo Creek (S. van Leeuwen 4301)

Table 25: Recorded Habitats of *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301)

Site	Habitat	Vegetation
ASA001	Low rolling hills	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
CW026	Flat top of mesa crest	*Acacia pruinocarpa, A. bivenosa* and *A. arida* high shrubland over *Triodia wiseana* hummock grassland
CW028	Lower pediment	*Acacia arida* scattered shrubs over *Triodia wiseana* open hummock grassland
TR021	Rocky gully	*Acacia citrinoviridis* low open forest over *Indigofera monophylla, Gossypium robinsonii* and *Senna glutinosa* ssp. *glutinosa* open shrubland over *Triodia* wiseana very open hummock grassland and mixed very open herbs
TR023	Mesa top	*Acacia atkinsiana* and *Petalostylis labicheoides* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *T. wiseana* open hummock grassland
TR106	Unknown	*Triodia epactia* and *Triodia wiseana* hummock grassland
TR107	Gully	*Eucalyptus leucophloia* ssp. *leucophloia* open woodland over *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* high open shrubland over *Triodia wiseana* open hummock grassland
UC006	Valley floor	*Acacia citrinoviridis* and *Stylobasium spathulatum* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *T. epactia* open hummock grassland
UC-PFS	Mesa edge	*Eucalyptus* sp. scattered trees over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

3.4 Flora of Taxonomic Interest

3.4.1 Acacia aneura (Mulga)

Acacia aneura is regarded as a complex of several varieties which occur over much of inland Australia (Figure 17). This group is undergoing thorough review by Dr Bruce Maslin, WA Herbarium and will result in around 12 new species being described (B. Maslin pers. comm.). Seven varieties are known to occur in the Pilbara Bioregion. Three varieties were recorded within the study area (Appendix 12). Some of these records occur at the north-western extremity of the distribution of *Acacia aneura*.

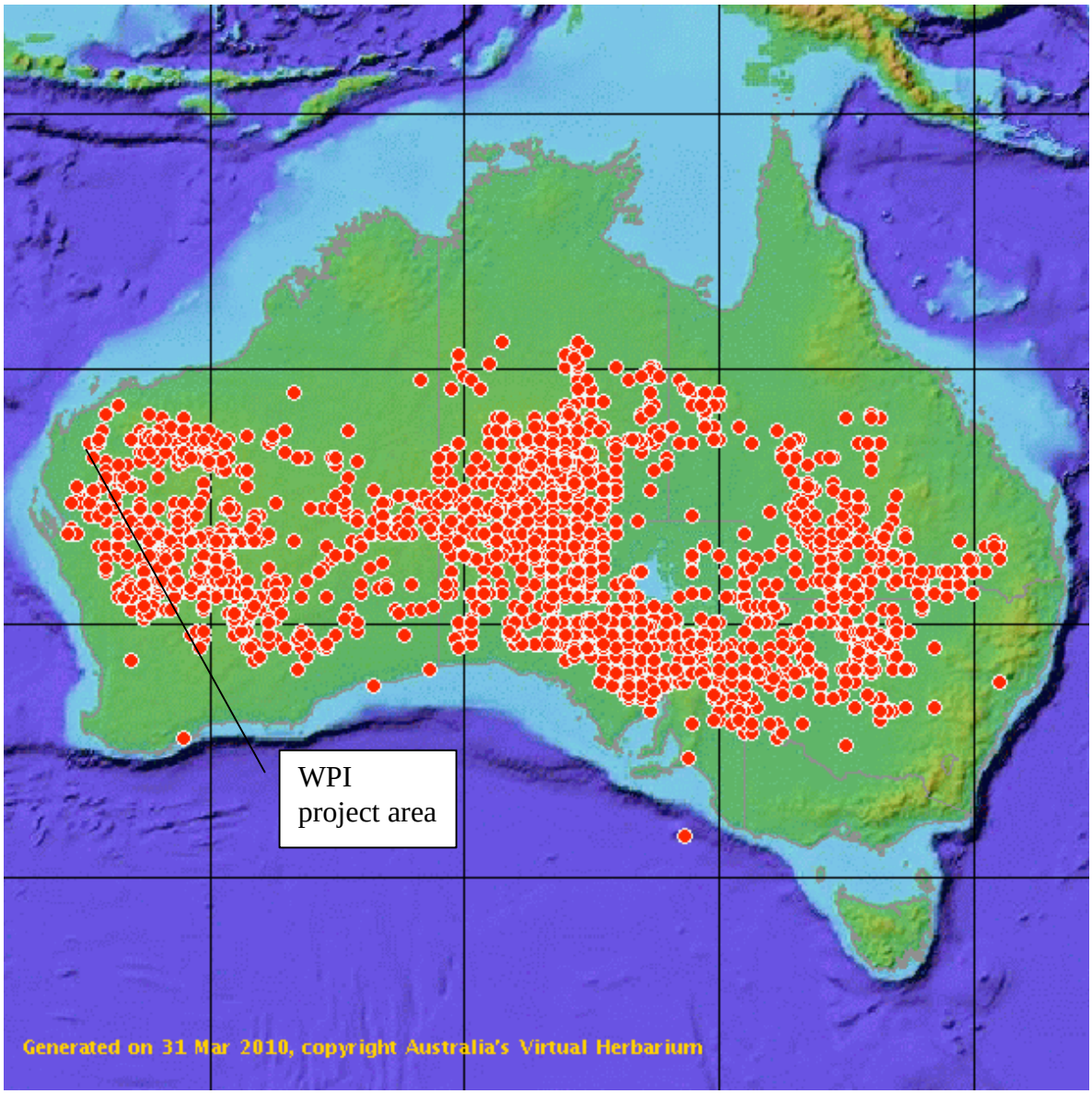

Figure 17 Distribution of *Acacia aneura* across Australia. Note some errors within the dataset of over 5000 records (off South Australian coast).

Most of the records of Mulga were small collections of trees on mesas. However, they do occur as the dominant species in the upper stratum in a number of vegetation types such as on Upper Cane and Trinity mesas.

Acacia aneura is a fire sensitive species. It is killed by fire and relies on soil stored seed for regeneration. Repeated, frequent fire and heavy grazing will eliminate Mulga from the landscape.

3.4.2 Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)[10]

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) (Plate 5) is a hummocking Spinifex common on rocky slopes and mesa free faces. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was first recognised as a distinct taxon in 1991 by Malcolm Trudgen carrying out work for the Robe River Iron Mesa J project. It occurs on the slopes of most mesas in the Robe Valley. At the time, one or two collections in the herbarium suggested a wider occurrence of what was thought to be the same entity in the Red Hill area, but it was not collected (M. Trudgen pers. comm.).

The collections made by Western Botanical within the study area (Appendix 13) were confirmed by Malcolm Trudgen as the same entity, extending the known distribution of the species some 50 km south. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is not very widespread, with a geographic range of less than 100 km, and may be geographically restricted. It is known from a significant number of populations (M. Trudgen pers. comm.).

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) has recently been vouchered at the WA Herbarium and has been accepted as a new species. As such, previous records are not yet available through Florabase. Records of locations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) were sourced from Malcolm Trudgen, Biota, Astron and other Western Botanical surveys. A small number of records were made by Owen Maitland, a helicopter pilot with many hours experience searching for this species with Western Botanical botanists, during a geological survey. No material was collected by Mr Maitland and as such these records are considered unverified but likely to occur.

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was recorded on all of the resource areas, except on Catho Well. It was also recorded on a few other Robe Pisolite locations throughout the study area.

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) was recorded within a narrow geographic range of less than 150 km north-south by approximately 25 km wide (Figure 18). It was recorded in a few isolated areas, north of Pannawonica and south of the Fortescue River on the proposed Cape Preston Rail Corridor (Western Botanical 2009); each of these records was small in occurrence.

[10] On 30th March 2010 DEC updated its Priority Flora list and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is now listed as a Priority 3 species.

Plate 5: *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)

In 2009, regional surveys focussing on the Robe Pisolite mesa formations along paleochannels were targeted for this species. It was not recorded from all Robe Pisolite locations and it was recorded to a much lesser extent on other geologies such as the Boolgeeda Iron Formation and the Brockman Iron Formation. The most north-eastern record south of Yalleen Camp comprised one individual. Similarly, the most south-eastern record comprised one large, individual hummock.

The majority of the known populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occur on areas targeted for development of iron ore mines. A large number of records (provided by Biota) have subsequently been impacted by mining at Mesa H, J, K, and N.

Figure 18 Distribution of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)

Author: D. True ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ March 2010 ~ A3 ~ Rev: A ~ CAD Ref g1505_WB_Rpt0910_16.dgn

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API

Fortescue Road House
Hwy
Dampier - Bunbury Natural Gas Pipeline
Coastal
West
Fortescue
River
Robe
North
River
Pannawonica
Yalleen Camp
Cochrane
Jewel
Red Hill Station
Kens Bore
Cardo Bore North
Cane
River
Cardo Bore East
Upper Cane
CARDO OUTCAMP
Trinity Bore
Catho Well
Nanutarra
Paraburdoo
Mt Stuart Station
Road

N
0 8km
Scale 1:400,000
MGA94 (Zone 50)

Legend

Triodia sp. Robe River

- Western Botanical - API
  Site recorded on API proposed footprint
- Biota
  on area that has been mined
- Western Botanical - API
- Western Botanical - RTX
- Unverified Records
- Biota
- Astron Environmental

WEST PILBARA IRON ORE PROJECT

Figure 17

Distribution of Triodia sp. Robe River (M.E. Trudgen MET 12,367)

Author: D. True Date: October 2009

The current level of knowledge of the distribution of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) indicates that this distinctive species is geographically and geologically restricted. The Robe Pisolite mesas of the WPIOP comprise the central core of the known range of this species.

We estimate there to be 110 known populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) in the region. Eighteen (15%) of these populations occur on areas proposed to be impacted by the WPIOP while fifteen (13%) are within the West Pilbara Iron Tenements, but occur within non-impact areas (Table 26).

Thirty eight (38) populations (33%) have already been impacted, or are in proposed impact areas on tenements held by Rio Tinto. The security of the remaining 39 populations (35%) is unknown but is assumed to be non-impact at present.

Table 26: Distribution of Known Populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) from Regional Survey

Assigned Population Number	Project area	On WPIOP area		On Lease held by Rio Tinto		Not on known lease holds
		To Be Impacted	Off Footprint	Already Impacted	Yet to be Impacted	
1	CP Rail	1				
2	CP Rail					1
3	CP Rail					1
4	CP Rail					1
5	Mesa F			1		
6	South of Mesa G					1
7	South of Yalleen					1
8	Mesa F			1		
9	Mesa G			1		
10	Mesa G			1		
11	Mesa G			1		
12	Mesa G			1		
13	Mesa G			1		
14	Mesa G			1		
15	North of Mesa G			1		
16	North of Mesa H			1		
17	North of Mesa H			1		
18	North of Mesa H			1		
19	North of Mesa H			1		
20	North of Mesa H			1		
21	Mesa K			1		
22	Mesa N			1		
23	Mesa H			1		
24	Mesa H			1		
25	Mesa J			1		
26	Mesa H			1		
27	South of Mesa J			1		
28	Mesa J			1		
29	South of Mesa J			1		
30	South of Mesa J			1		
31	South east of Mesa J			1		

Assigned Population Number	Project area	On WPIOP area		On Lease held by Rio Tinto		Not on known lease holds
		To Be Impacted	Off Footprint	Already Impacted	Yet to be Impacted	
32	South east of Mesa J			1		
33	South east of Mesa J			1		
34	South east of Mesa J			1		
35	Bungaroo creek			1		
36	Bungaroo creek			1		
37	Bungaroo creek			1		
38	Bungaroo creek			1		
39	Bungaroo creek			1		
40	Bungaroo creek			1		
41	Bungaroo creek			1		
43	Cochrane	1				
46	Swearengen					1
47	Jewell	1				
49	East of Jewell		1			
52	Pisolite 4 west of Cochrane					1
56	Pisolite 4 west of Cochrane					1
58	Kens Bore	1				
59	Kens Bore	1				
60	Kens Bore	1				
61	Kens Bore	1				
62	Kens Bore	1				
63	Kens Bore	1				
65	South east of Kens Bore					1
66	South east of Kens Bore					1
67	South east of Kens Bore					1
68	South east of Kens B					1
70	South east of Kens Bore					1
72	Airstrip	1				
73	Admin area	1				
74	Cardo Bore north	1				
77	Pisolite 6		1			
78	Pisolite 6		1			
79	Pisolite 6		1			
80	North of Upper Cane		1			
81	Upper Cane	1				
83	Cardo Bore east	1				
85	South of Cardo Bore east		1			
86	Trinity		1			
87	Trinity	1				
88	Trinity		1			
89	Trinity		1			
91	Trinity		1			
92	Trinity		1			
93	Trinity		1			
95	Trinity		1			
96	Trinity		1			

Assigned Population Number	Project area	On WPIOP area		On Lease held by Rio Tinto		Not on known lease holds
		To Be Impacted	Off Footprint	Already Impacted	Yet to be Impacted	
97	Pisolite 14					1
98	Pisolite 14					1
99	Pisolite 14					1
100	Pisolite 14					1
101	South of Pisolite 14				1	
104	Pisolite 15					1
106	Pisolite 13					1
107	Pisolite 13					1
108	Pisolite 12					1
109	Pisolite 12					1
111	South of Pisolite 12				1	
112	South of Pisolite 12				1	
114	Pisolite 16					1
115	Pisolite 17					1
116	Pisolite 20					1
117	Pisolite 18					1
118	Hamersley ranges					1
119	Hamersley ranges					1
120	Hamersley ranges					1
121	Hamersley ranges					1
122	Hamersley ranges					1
123	Hamersley ranges					1
124	Hamersley ranges					1
125	Hamersley ranges					1
126	Hamersley ranges					1
127	Hamersley ranges					1
128	Hardy Rail					1
129	Hardy Rail	1(?)				
130	Hardy Rail					1
131	Hardy Rail					1
132	Duck Creek Loop	1				
133	South of Kens Bore	1				
134	Sirens Pool		1			
Total		**17 known**	**15**	**35**	**3**	**39**

Of the mesas designated as resource areas by the WPIOP, Cochrane, Jewell, Cardo Bore North, Upper Cane and Cardo Bore East each support one population of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Kens Bore mesa supports an estimated six populations, while Trinity mesa supports nine populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367).

Minimum population sizes were estimated for each population except for those surveyed by Biota and already impacted by Rio Tinto (Table 27). We estimate that the minimum size of the remaining *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) populations total 188,363 individual hummock grasses. Of this total, the populations on the WPIOP impact areas account for at least 55% of the known remaining individuals.

Table 27: Minimum Estimated Population sizes for *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) from Regional Survey

Assigned Population Number	Project Area	Populations to be Impacted		Populations Non-Impacted	
		Estimated Minimum Individuals	% of Known Individuals	Estimated Minimum Individuals	% of Known Individuals
1	CP Rail	5101	2.7		
2	CP Rail			404	0.21
3	CP Rail			1	0.0005
4	CP Rail			1	0.0005
5	Mesa F			2	0.0011
6	South of Robe River			1	0.0005
7	Pisolite 30			1	0.0005
8	Mesa F			1	0.0005
43	Cochrane mesa	32109	17.0		
46	Swearengen mesa			4600	2.4
47	Jewell mesa	8804	4.7		
49	East of Jewell mesa			701	0.37
52	Pisolite 4, West of Cochrane			9	0.0048
56	Pisolite 4, West of Cochrane			1	0.0005
58	Kens Bore mesa	12004	6.4		
59	Kens Bore mesa	2901	1.5		
60	Kens Bore mesa	601	0.32		
61	Kens Bore mesa	1	0.0005		
62	Kens Bore mesa	1705	0.91		
63	Kens Bore mesa	1200	0.64		
65	Hamersley Ranges			2	0.0011
66	Hamersley Ranges			5	0.0027
67	Hamersley Ranges			101	0.0536
68	South East of Kens Bore mesa			4202	2.2
70	South East of Kens Bore mesa			1502	0.80
72	Airstrip	3601	1.9		
73	Admin area	1901	1.0		
74	Cardo north mesa	15701	8.3		
78	Pisolite 6			1901	1.0
79	Pisolite 6			1532	0.81
80	North of Upper Cane mesa			6204	3.3
81	Upper Cane mesa	7422	3.9		
83	Cardo Bore east mesa	10110	5.4		
85	South of Cardo East mesa			1	0.0005
86	Trinity mesa			1302	0.69
87	Trinity mesa	906	0.48		
88	Trinity mesa			1204	0.64
89	Trinity mesa			700	0.37
91	Trinity mesa			2	0.0011
92	Trinity mesa			1501	0.80
93	Trinity mesa			1	0.0005
95	Trinity mesa			3402	1.8
96	Trinity mesa			2	0.0011
97	Pisolite 14, Wyloo region			5	0.0027
98	Pisolite 14, Wyloo region			801	0.43
99	Pisolite 14, Wyloo region			3	0.0016
100	Pisolite 14, Wyloo region			1	0.0005
101	Bourne Highway			19367	10.3
104	Pisolite 15			3404	1.8
106	Pisolite 13			302	0.16
107	Pisolite 13			2200	1.2
108	Pisolite 14, Wyloo region			7000	3.7

Assigned Population Number	Project Area	Populations to be Impacted		Populations Non-Impacted	
		Estimated Minimum Individuals	% of Known Individuals	Estimated Minimum Individuals	% of Known Individuals
109	Pisolite 12			2	0.0011
111	Duck Creek			7001	3.7
112	Duck Creek			8201	4.4
114	Pisolite 16			2001	1.1
115	Pisolite 17			1502	0.80
116	Pisolite 20			1	0.0005
117	Pisolite 18			1	0.0005
118	Hamersley Ranges			1	0.0005
119	Hamersley Ranges			2	0.0011
120	Hamersley Ranges			1	0.0005
121	Hamersley Ranges			1	0.0005
122	Hamersley Ranges			2	0.0011
123	Hamersley Ranges			1	0.0005
124	Hamersley Ranges			1	0.0005
125	Hamersley Ranges			1	0.0005
126	Hamersley Ranges			1	0.0005
127	Hamersley Ranges			1	0.0005
128	Hardy rail			1	0.0005
129	Hardy rail	2	0.0011		
130	Hardy rail			1	0.0005
131	Hardy rail			1	0.0005
132	Duck Creek Loop	1200	0.64		
133	South of Kens Bore	1	0.0005		
134	Sirens Pool			2000	1.1
Total	188,363 = 100% known individuals	**105,270**	**55.9%**	**83,093**	**44.1%**

It is to be noted that these estimates only include the minimum number of plants in each site observation within a population and do not account for all individuals across the entirety of the population's expanse. In most cases these absolute numbers are gross underestimates of any given population. However, this under-estimation is consistent across the regional survey so that the percentage values give a good indication of the relative size of each population in comparison to the total species distribution.

An analysis of the areas of occupancy and vegetation units within which *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant species gives another indication of the relative distribution of the species across the study area. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant species in 33 vegetation units. In total these units cover 1468.72 Ha of the study area. Table 28 shows the cumulative areas of these vegetation units to be impacted within each component of the project. This analysis indicates Kens Bore supports the largest area of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation to be impacted, closely followed by Cardo East mesa. In total, the WPIOP proposes to impact upon 809 Ha of vegetation of which *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant component. This amounts to 55% of the total mapped area of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation types within the study area.

Table 28: Areas of Vegetation Supporting *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) as a Dominant Species to be Impacted Across the Study Area

		Area (ha) of *Triodia* sp. Robe River vegetation to be impacted	% of Total *Triodia* sp. Robe River vegetation to be impacted
Resource Area (Mesa)	Kens Bore	268	18.3
	Cardo East	145	9.9
	Cochrane & Farnum	130	8.9
	Upper Cane	117	8.0
	Jewell	48	3.3
	Cardo North	36	2.4
	Trinity	6.3	0.4
Waste Areas	Kens Bore	10	0.7
	Cochrane	3.8	0.3
	Upper Cane	2.6	0.2
	Cardo East	0.20	0.014
	Jewell	0.16	0.011
	Trinity	0.0094	0.0006
	Kens Bore	10	0.7
Infrastructure	Transport Corridor	23	1.5
	Other	13	0.9
Total Impacted Across Resource Areas		751 Ha	51.2%
Total Impacted Across Study Area		809 Ha	55.0%
Total Area (Ha) of *Triodia* sp. Robe River vegetation surveyed-			1,452.8 ha

3.5 Species of Interest, Range Extension

3.5.1 Aristida holathera var. latifolia

Aristida holathera var. *latifolia* is an annual grass that is poorly known. It was collected at six locations in the study area, on Cochrane, Farnum and Kens Bore resource areas, and on the Transport Corridor (Table 29). It was recorded in the study area in drainage lines of *Corymbia hamersleyana* and *Corymbia candida* ssp. *candida* over *Acacia* spp. shrublands over *Triodia wiseana* and/or *Triodia epactia* hummock grasslands.

There are five records of this species at the WA Herbarium, representing 5 widely disjunct populations ranging from near Broome in the Kimberley to a site 53 km NW of Newman in the south-eastern Pilbara. It is also known from western Northern Territory (Figure 19).

Table 29: Locations of *Aristida holathera* var. *latifolia* in the Study Area

Site	Zone	Easting	Northing	Vegetation
CR001	50	410012	7576496	*Acacia bivenosa* shrubland over *Triodia wiseana* open hummock grassland
CR002	50	410506	7575245	*Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* and *Gossypium robinsonii* high shrubland over *G. australe* and *Scaevola spinescens* open shrubland over *Triodia epactia* and *T. wiseana* very open hummock grassland
CR007r	50	410965	7575153	*Acacia synchronicia* high open shrubland over *A. bivenosa* and *Senna glutinosa* ssp. *pruinosa* open shrubland over *Triodia epactia* very open hummock grassland
FM001	50	410030	7575466	*Acacia bivenosa* and *Petalostylis labicheoides* low scattered shrubs over *Triodia wiseana* hummock grassland
KB002	50	416775	7561128	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland
TC002	50	411365	7578501	*Acacia pyrifolia* var. *pyrifolia* open shrubland over *Cleome viscosa* low open heath

The occurrence of *Aristida holathera* var. *latifolia* in six populations within the WPIOP area represents a significant proportion of known populations of this species (54%) and a significant range extension of more than 400 km.

However, being an annual species, it's regional assessment may be deficient due to the difficulties in collection and verification of the species which requires collection at an appropriate time, after significant rainfall.

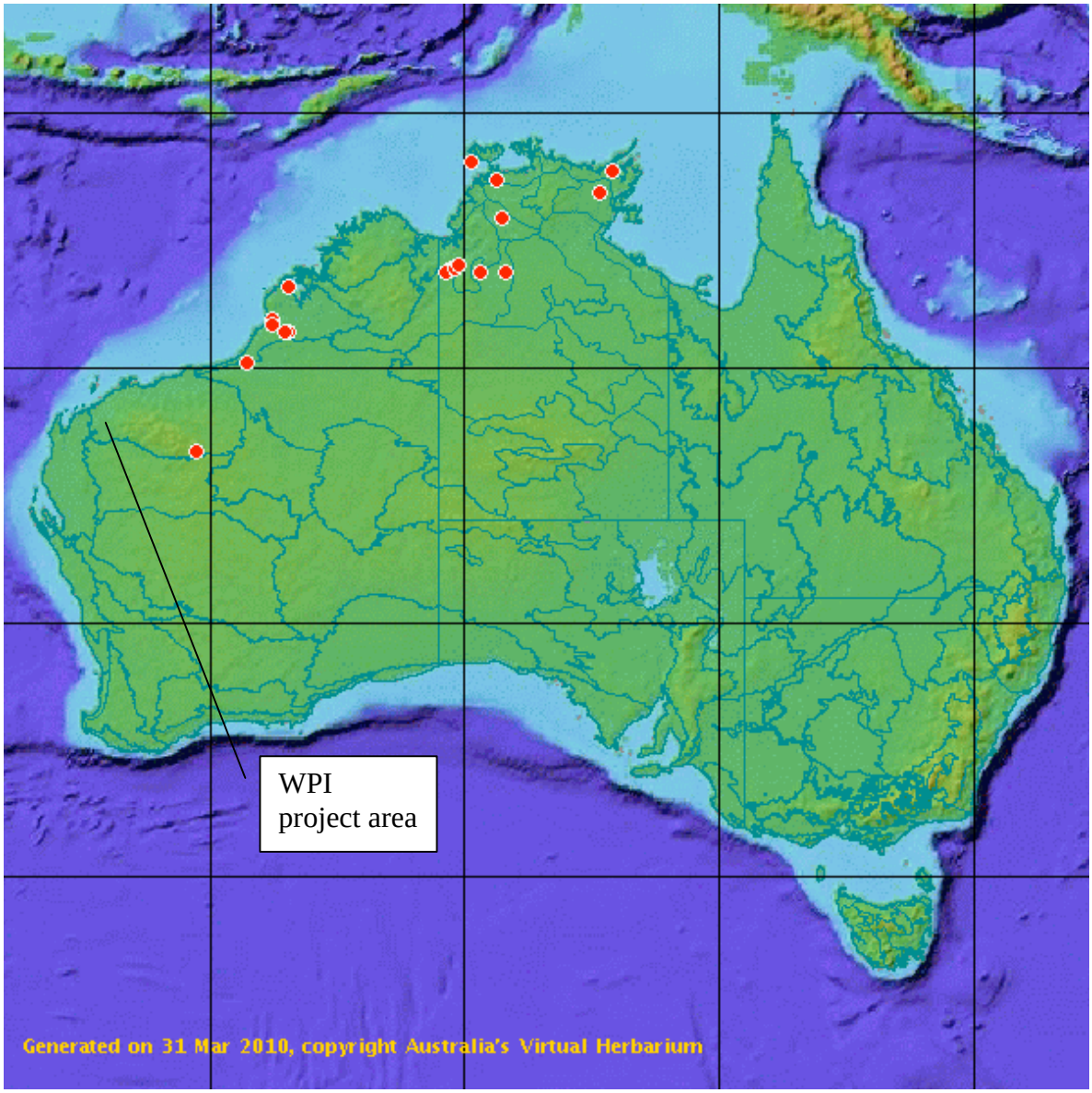

Figure 19 Distribution of *Aristida holathera* ssp. *latifolia*.

3.6 Introduced Species

Seven introduced species were identified during the vegetation survey (Table 30; Appendix 14, Figure 20). None of these taxa are listed declared plants under the *Agriculture and Related Resources Protection Act, 1976* (Department of Agriculture and Food Western Australia 2007).

Table 30: Records of Introduced Species and Habitats within the Study Area

Adapted from DEC 2009; Hussey *et al.* 2007

Family	Species	No. Records	Broad description of preferred habitat
Cucurbitaceae	**Cucumis melo ssp. agrestis*	5	Riverbeds, drainage lines and floodplains
Malvaceae	**Malvastrum americanum*	32	River and creek margins
Mimosaceae	**Vachellia farnesiana*	21	Disturbed areas, creek and river banks, road and rail verges
Papaveraceae	**Argemone ochroleuca* ssp. *ochroleuca*	7	Coarse river banks and gravel river beds
Poaceae	**Cenchrus ciliaris*	31	Disturbed soils particularly cleared pastoral land, creek and river banks and flood plains
Poaceae	**Cenchrus setiger*	7	Along watercourses
Poaceae	**Setaria verticillata*	6	Disturbed areas, river edges and shrublands

**Argemone ochroleuca ssp. ochroleuca* (Mexican poppy) is a prickly annual herb 0.3-1 m (Plate 6). Flowers are white, cream or yellow, from February to March and July to November. It occurs in red/white/grey sand and red-brown clay loam on creek edges, riverbanks and roadsides (DEC 2009). Initially a garden species, it is now found throughout the Pilbara, Gascoyne and Carnarvon areas. In particular it prefers the coarse seed banks and gravel beds of the main rivers that dominate these regions (Hussey *et al.* 2007). This species was recorded in two locations in the study area.

**Cenchrus ciliaris* (Buffel Grass) is a tufted, or sometimes stoloniferous, perennial grass 0.2-1.5 m. Flowers are purple, from February to October. It occurs in white, red or brown sand, stony red loams or cracking black clays (DEC 2009). Buffel grass has become a particularly serious weed from Geraldton to the Pilbara, Kimberley and adjoining desert and has spread through nearly all vegetation types. It was sowed widely across pastoral areas as stock pasture and is now prominent throughout creek lines, river edges and roadsides. As well as out-competing native vegetation for habitat and resources, it severely alters fire regimes by producing large quantities of highly flammable fuel that is prone to more regular fires (Hussey *et al.* 2007). This species was recorded in 87 locations in the study area.

**Cenchrus setiger* (Birdwood Grass) is an erect, tussocky, stoloniferous, perennial grass 0.5 m. Flowers are cream to purple, from April to May. It occurs in brown sands, red loam and pindan soils on sand dunes, plains, rangelands, stony hillsides and floodplains (DEC 2009). Birdwood grass, like its relative *C. ciliaris*, was introduced as a pasture source and has since become a widespread weed along watercourses from the Kimberley to Geraldton (Hussey *et al.* 2007). This species was recorded in four locations in the study area.

Plate 6: *Argemone ochroleuca* ssp. *ochroleuca*

**Cucumis melo ssp. agrestis* (Ulcardo Melon) is a trailing annual herb or climber. Flowers are yellow, from February to June and September to October (DEC 2009). This species was recorded in eleven locations in the study area.

**Malvastrum americanum* (Spiked Malvastrum) is an erect perennial herb or shrub 0.5-1.3 m. Flowers are yellow to orange, from April to July. It is found in orange/red/yellow sands, gritty alluvial sand, black/brown clay, alluvial cracking clays, limestone and calcrete situated on stony ridges, hillsides, floodplains and along drainage lines (DEC 2009). Spiked Malvastrum is widely distributed across the Kimberley and Pilbara regions from river and creek margins to wastelands and numerous arid zone vegetation types. It is inedible to herbivores, which allows it to spread further and more successfully (Hussey *et al.* 2007). This species was recorded in nine locations in the study area.

**Setaria verticillata* (Whorled Pigeon Grass) is a loosely tufted annual grass 0.1-1.3 m. Flowers from December to June and is found in sands, clays and loams (DEC 2009). Whorled pigeon grass has become a regular and widespread weed from the Kimberley to the Pilbara in disturbed areas, river edges and shrublands (Hussey *et al.* 2007). This species was recorded in one location in the study area.

**Vachellia farnesiana* (Mimosa Bush) is an erect, spreading, thicket-forming, thorny tree or shrub to 4 m (Plate 7). Flowers are yellow, from June to August. It occurs in gravel and stony sandy, clay or loam soils situated in low-lying areas, on river and creek banks and in disturbed areas (DEC 2009). Mimosa bush is distributed widely from the Kimberley to Carnarvon and Wiluna and occasionally as far south as Muchea. It is found throughout creek lines, rivers, roadsides and disturbed floodplains across the pastoral districts. It appears to spread rapidly along the disturbed verges of transport corridors, which have contributed to the development of its vast coverage (Hussey *et al.* 2007). This species was recorded in nineteen locations in the study area.

Figure 20 Location of Introduced Species within the Study Area

Author: D. True ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Oct 2009 ~ A3 ~ Rev: A ~ CAD Ref g1505_WB_Rpt0910_13.dgn

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Fax: 08 6278 4988, Email: info@landcareservices.com.au

API

N

0 4km

Scale 1:200,000
MGA94 (Zone 50)

*Cenchrus ciliaris
*Malvastrum americanum
*Cenchrus ciliaris
*Vachellia farnesiana
*Malvastrum americanum
*Vachellia farnesiana
*Malvastrum americanum
*Cenchrus setiger
*Argemone ochroleuca subsp. ochroleuca
*Cenchrus ciliaris
*Cenchrus setiger
*Setaria verticillata
*Malvastrum americanum
*Vachellia farnesiana
*Malvastrum americanum
*Cucumis melo subsp. agrestis

Jewel

*Cenchrus ciliaris
*Vachellia farnesiana

Red Hill Station

*Vachellia farnesiana
*Malvastrum americanum
*Vachellia farnesiana
*Cenchrus ciliaris
*Malvastrum americanum

Kens Bore

*Vachellia farnesiana
*Cenchrus ciliaris
*Vachellia farnesiana
*Malvastrum americanum
*Cucumis melo subsp. agrestis
*Cucumis melo subsp. agrestis
*Setaria verticillata
*Argemone ochroleuca subsp. ochroleuca
*Argemone ochroleuca subsp. ochroleuca
*Malvastrum americanum
*Vachellia farnesiana
*Cenchrus ciliaris
*Vachellia farnesiana
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*Vachellia farnesiana
*Malvastrum americanum
*Malvastrum americanum
*Vachellia farnesiana
*Vachellia farnesiana
*Vachellia farnesiana
*Malvastrum americanum
*Setaria verticillata

Cardo Bore North

*Vachellia farnesiana
*Vachellia farnesiana
*Argemone ochroleuca subsp. ochroleuca
*Malvastrum americanum
*Vachellia farnesiana

Cardo Bore East

*Vachellia farnesiana
*Malvastrum americanum

Upper Cane

Cane River

CARDO OUTCAMP

*Cenchrus ciliaris
*Vachellia farnesiana
*Argemone ochroleuca subsp. ochroleuca
*Cenchrus ciliaris
*Cenchrus ciliaris
*Argemone ochroleuca subsp. ochroleuca

*Cucumis melo subsp. agrestis
*Vachellia farnesiana
*Malvastrum americanum
*Setaria verticillata
*Cenchrus ciliaris
*Cenchrus ciliaris
*Vachellia farnesiana
*Malvastrum americanum
*Cucumis melo subsp. agrestis
*Malvastrum americanum
*Malvastrum americanum
*Cenchrus ciliaris
*Malvastrum americanum

Trinity Bore

Catho Well

Nanutarra Paraburdoo Road

Mt Stuart Station

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA LOCATIONS OF WEED SPECIES
Author: D. True Date: October 2009

Plate 7: *Vachellia farnesiana* in flower

4 Environmental Impacts and Recommendations

4.1 Vegetation

4.1.1 Significance of Floristics Units within the WPIOP Study Area

The floristic analysis provided by Griffin and Trudgen (2009), comparing the sites from this study (471 sites) to a total of 2,412 other sites across the Pilbara, provided a regional perspective on the significance of floristic units found in the WPIOP study area.

Griffin and Trudgen (2009) identified 42 floristic units that appeared to be restricted, uncommon or under sampled within the WPIOP study area. Western Botanical was able to look at these 42 floristic units in more detail and determined that a total of 12 floristic units were restricted in distribution either regionally (eight floristic units) or to the study area (four floristic units). A further nine floristic units were considered to be uncommon in distribution locally and regionally.

4.1.2 Significance of the Robe Pisolite Vegetation Communities and Floristics

Findings, in regard to floristics associated with Robe Pisolites and distribution of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), by Griffin & Trudgen, (2009) at the 600-group level were:

- Fifteen of the 27 groups with any sites on Robe Pisolite were predominantly found on Robe Pisolite. Over 80% of the sites on Robe Pisolite were in these 15 groups
- The floristic units on the Robe Pisolite are strongly confined to that geological type
- Twenty of the 27 groups with sites from the Robe Pisolite were only represented by sites from the study area, that is, 20 of the 27 groups with sites from the Robe Pisolite are regionally restricted
- There is a strong relationship between *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), the Robe Pisolite geological unit and landform. That is, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is mainly found on Robe Pisolite on mesas
- *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) has a moderately geographically restricted distribution, with a large part of its known distribution on Robe Pisolite in the Stuart Hills area

The Griffin and Trudgen (2009) analysis (Appendix 9) provides the following assessment of the conservation value of the vegetation of the Robe Pisolite in the study area:

"With 27 groups at the 600-group level occurring on it in the regional analysis (but not all restricted to it), it is clear that the Robe Pisolite has varied vegetation. With fifteen of these groups occurring entirely or mainly on this geological unit, it is clear that much of the value for vegetation that this geological unit has is restricted to it. With twenty of these groups only recorded from the API survey area (of forty-six only from the API survey area at the 600-group level) and geographical location (physiographic area) having a large correlation with the distribution of the variation in the vegetation of the Robe Pisolite it is clear that the Robe Pisolite in the API survey area has vegetation types not found elsewhere and, therefore, has conservation value not found elsewhere. In addition, it has a Triodia species dominant in some of the vegetation types found on it that is geographically and edaphically restricted.

Given the relatively small extent of the Robe Pisolite, it is clear from these points that the Robe Pisolite in the API survey area has vegetation with significant conservation value and that if a significant proportion of this geological unit in the API survey area was mined that this would have a significant impact on those values. Given this, it is important to look at the implications for conservation value of the distribution of vegetation types on the Robe Pisolite in the API survey area. This includes the distribution of vegetation types with Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367) occurring in them or dominating them, but is not restricted to vegetation with that species."

"…the mesas do not all have the same conservation value for vegetation. This is highlighted by the fact that only the southern-most mesas (Trinity and Catho Well) have 600-group level groups 301, 302 and 304, which are from a different group at the 50-group level to the 600-group levels groups on the mesas. Of particular interest is that six of the twenty groups from the 600-group level were only recorded from one mesa each, while five were only recorded from two mesas each and three were only recorded from three mesas each. It is therefore clear, that the distribution of vegetation types and, therefore, conservation value for vegetation is unevenly distributed on the mesas in the API survey area. Further, it is strongly indicated that some of the variation in

the vegetation at the 600-group level is very uncommon and areas of the vegetation of these groups therefore have higher conservation value."

The rarity of floristic units and the subsequent conclusion that they are not likely to be represented in other parts of the region is accounted for in our assessment of vegetation types, their conservation interest and proposed impacts.

4.1.3 Summary of Proposed Impacts to Vegetation Types Considered Significant

Eighty seven of the 99 vegetation types across the WPIOP study area that were identified as having conservation interest will be impacted. Of the 87 vegetation types of interest that will be impacted, 32 were considered to have high conservation value and high impacts (>50%). A suggested ranking was applied to these 32 vegetation types where six were ranked as Very High impacts, 18 as High, two as Moderate to High and six as Moderate. This assessment was developed to enable an informed final assessment of impact levels and conservation value for the vegetation types occurring within the study area.

4.2 Flora

A total of 442 taxa of vascular flora (species, subspecies and varieties) representing 52 families and 140 genera were recorded from the study area. One hundred species were recorded from only a single collection. This reflects the ephemeral nature of the flora of the Pilbara.

No flora gazetted as Declared Rare Flora (DRF) under the *Wildlife Conservation Act 1950*, were recorded in the study area. Three Priority 3 flora were recorded in the WPIOP study area, *Owenia acidula, Rhynchosia bungarensis*[11] and *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301).

4.2.1 Owenia acidula

Owenia acidula is known from 9 records in Western Australia at the WA Herbarium, however, these represent only five populations in WA. The population within the WPIOP area therefore represents the 6th population of this species in WA.

It has been suggested that the Priority Three species *O. acidula* population of nearly 2,000 plants may be linked as part of a single adventitious root system. This large population is a new record for this uncommon species in the west Pilbara. Combined with the relatively large population size here, this is regarded as a very significant population for the conservation of this species in WA.

As this species has a widespread but disjunct distribution across northern Australia, closer taxonomic work may reveal that there is more than one entity currently classified as the one taxon. Therefore, this population, and others nearby in the western Pilbara region, may represent a new taxon with high conservation status.

[11] On 30th March 2010 DEC updated the Priority Flora list and *Rhynchosia bungarensis* is now listed as a Priority 4 species.

The WPIOP does not propose to directly impact this large, healthy population. However, possible indirect impacts should be minimised. The *Owenia acidula* population occurs along a drainage line where there are proposed impacts from the administration facilities further to the east. Direct and indirect hydrological impacts should be investigated and minimised to ensure the future survival of this population.

4.2.2 Rhynchosia bungarensis

Rhynchosia bungarensis (P3) occurs on drainage lines. Within the WPIOP study area, the four known locations of individual *Rhynchosia bungarensis* (P3) plants will not be directly impacted. However, counts and distribution data were not collected for this species. To determine the direct impacts to this species surveys may need to be conducted within the proposed impact areas prior to disturbance, as a proportion of each of the vegetation types this species occurred within will be impacted.

4.2.3 Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301).

Within the WPIOP study area, three of the six known locations of *Indigofera* sp. Bungaroo Creek (S. van Leeuwin 4301) (P3) plants will be directly impacted.

4.2.4 Acacia aneura

Three varieties of *Acacia aneura* were recorded within the study area at the north-western extremity of the distribution of the species.

4.2.5 Aristida holathera var. latifolia

Aristida holathera var. *latifolia* was collected at six locations in the study area and represents a significant range extension of more than 400 km from a record north west of Newman. Other records for *Aristida holathera* var. *latifolia* are located more than 900 km from the study area, near Broome. Impacts upon these Species of Interest, and the vegetation types that support them should be minimised where possible.

4.2.6 Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)[12] is geographically and geologically restricted mainly to Robe Pisolites on mesa landforms. The majority of the known populations of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) occur on areas targeted for iron ore development. The study area, particularly the mesas, holds the highest known populations and numbers within the range of the species.

Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367) is a dominant species in more than 20% of the vegetation communities within the study area. The WPIOP proposes to impact upon 55.69% of the total mapped area of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) vegetation types within the study area.

Clearing of all of the seven resource areas comprising *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) would have a significant impact on the number of known populations and individuals. A full census of this species and its associated vegetation types is suggested to adequately assess the conservation value and the impacts of the WPIOP in the study area as

[12] On 30th March 2010 DEC updated the Priority Flora list and *Triodia* sp. Robe River is listed as a Priority 3 species.

well as other proposals on Robe Pisolites with *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367).

4.3 Recommendations

Impacts to *Acacia aneura* and *Aristida holathera* var. *latifolia* locations and vegetation types should be minimised or avoided.

Any impacts to the P3 *Owenia acidula* population should be avoided. Further investigation into the hydrological impacts upon this significant population should be undertaken. The area upstream of the major creekline in which this population occurs is currently proposed to be impacted, which will likely impact the hydrology of the population. These hydrological impacts should be assessed, minimised and monitored to ensure the future security of this population.

Further vegetation mapping and quadrat-based studies of mesas with *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) recorded during the regional surveys should be undertaken to determine whether the restricted vegetation types and floristic units occur outside the proposed impact area of the WPIOP. The mesas to the south-east of Catho Well would be recommended as the main area of focus.

In addition, further quantitative survey investigation of the other restricted vegetation types and floristic units (other than those dominated by *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)), should be undertaken to determine the conservation status of these communities.

5 Acknowledgements

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- Mr. Malcolm Trudgen provided extensive knowledge and specialist expertise in the identification of various flora groups.

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- Dr. Stephen van Leeuwen and other DEC staff provided assistance and input into the development of the methodology for the survey of this study and advice in designing the scope for the regional survey of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367).

- Mr. Malcolm Trudgen, Biota Environmental Sciences and Astron Environmental Services provided records of *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) for the compilation of the regional analysis of the species.

- Mr. Bruce Maslin assisted in the identification of some *Acacia* specimens, in particular with distinguishing *Acacia inaequilatera* from *Acacia trudgeniana*.

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Appendix 1 Vegetation Structural Table of Specht as modified by Aplin (1979)

Life form and height of tallest stratum	Projective foliage cover of tallest stratum as %	Description
Trees over 30 metres	70-100	High closed forest
	30-70	High open forest
	10-30	High woodland
	2-10	High open woodland
	under 2	Scattered tall trees
Trees 10-30 metres	70-100	Closed forest
	30-70	Open forest
	10-30	Woodland
	2-10	Open woodland
	under 2	Scattered trees
Trees under 10 metres	70-100	Low closed forest
	30-70	Low open forest
	10-30	Low woodland
	2-10	Low open woodland
	under 2	Scattered low trees
Shrubs over 2 metres	70-100	Closed scrub
	30-70	Open scrub
	10-30	High shrubland
	2-10	High open shrubland
	under 2	Scattered tall shrubs
Shrubs 1-2 metres	70-100	Closed heath
	30-70	Open heath
	10-30	Shrubland
	2-10	Open shrubland
	under 2	Scattered shrubs
Shrubs under 1 metre	70-100	Low closed heath
	30-70	Low open heath
	10-30	Low shrubland
	2-10	Low open shrubland
	under 2	Scattered low shrubs
Herbs/Sedges/Grasses	70-100	Closed herb, sedge, grassland
	30-70	Herb, sedge, grassland
	10-30	Open herb, sedge, grassland
	2-10	Very open herb, sedge, grassland
	under 2	Scattered herbs, sedges, grasses

Grasses then divided into:
Tussock grasslands (perennial tussock species, e.g. *Eragrostis* species);
Hummock grasslands (*Triodia* and *Plectrachne* species that form hummocks)
Curly Spinifex grassland (Plectrachne pungens, which does not form hummocks)
Annual tussock grassland (e.g. annual *Sorghum* species)
The "curly Spinifex grassland" division follows J.S Beard.

Appendix 2 Vegetation Maps of the Study Area showing vegetation types, outline of proposed impact areas and location of Priority species

Key for Priority species

▲ Location of Priority species record:

Owenia acidula (P3) – nine quadrat records on sheet 5

Rhynchosia bungarensis (P3)
- one location on sheet 2
- one location on sheet 3
- two locations on sheet 8

Indigofera sp. Bungaroo Creek (S. van Leeuwin 4301) (P3)
- one location on sheet 5
- two locations on sheet 7
- one location on sheet 8
- two locations on sheet 11

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API

Stony Plain (P)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

P1a	AatkAbAaTw	*Acacia atkinsiana* , *A. bivenosa* and *A. ancistrocarpa* high shrubland to open shrubland over *Triodia wiseana* open hummock grassland
P1b	AatkAbAwTw	*Acacia atkinsiana, A. bivenosa, A. wanyu* shrubland over *Triodia wiseana* open hummock grassland
P1c	ChAatkAbTwTe	*Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open to closed hummock grassland

2. Acacia Shrublands

P2b	AaTeTw	*Acacia ancistrocarpa* high shrubland over *Triodia epactia, Triodia wiseana* open hummock grassland
P2c	AmAaTwTsprr	*Acacia maitlandii* high open shrubland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland
P2d	ChAaTwTe	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland
P2f	ChAiAbTw	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
P2g	ChAsAaTwTe	*Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland

3. *Acacia synchronicia* Shrublands

P3a	AsERcTw	*Acacia synchronicia, Eremophila cuneifolia* open shrubland over *Triodia wiseana* open hummock grassland
P3c	AsAbTwTe	*Acacia synchronicia, Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open hummock grassland

4. Hard Spinifex Hummock Grasslands

P4a	AiAaTw	*Acacia inaequilatera* scattered tall shrubs over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland
P4b	ChAaTw	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* scattered shrubs over *Triodia wiseana* hummock grassland

5. Snakewood Shrublands

P5d	AxTw	*Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* very open hummock grassland
P5e	AxTwTe	*Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* and occasionally *T. epactia* very open hummock grassland

6. Soft Spinifex Hummock Grasslands

P6a	AiAbTe	*Acacia inaequilatera* scattered tall shrubs over *A. bivenos* a open shrubland over *Triodia epactia* hummock grassland
P6b	AiAtTe	*Acacia inaequilatera, Acacia tumida* var. *pilbarensis* scattered shrubs over *Triodia epactia* hummock grassland
P6c	ChAaAiTe	*Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa and A. inaequilatera* shrubland over *Triodia epactia* hummock grassland
P6d	ChAbAaTe	*Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* and *A. ancistrocarpa* high shrubland over *Triodia epactia* hummock grassland
P6e	ChAiAbTe	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scatttered shrubs over *Triodia epactia* open hummock grassland
P6f	ChApyGpTe	*Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia, Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Triodia epactia* open hummock grassland
P6g	ChAwTe	*Corymbia hamersleyana* scattered low trees over *Acacia wanyu* low open shrubland over *Triodia epactia* open hummock grassland
P6h	ChTe/h (burnt)	*Corymbia hamersleyana* scattered low trees over *Triodia epactia* very open hummock grassland over herbs; post-fire
P6i	Te	*Triodia epactia* open hummock grassland

Stony Hills and Breakaways (S)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

S1a	AbAatkTw	*Acacia bivenosa* and *A. atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland
S1b	AbAatkTwTe	*Acacia bivenosa* and *A. atkinsiana* scattered low shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland
S1c	GwAbAatkTw	*Grevillea wickhamii* ssp. *hispidula* scattered tall shrubs over *Acacia bivenosa, A. atkinsiana* shrubland over *Triodia wiseana* open hummock grassland

2. *Acacia bivenosa* Open Heath over *Triodia wiseana*

S2b	AcAbTeTw	*Acacia citrinoviridis* scattered tall shrubs over *A. bivenosa* open heath over *Triodia epactia, T. wiseana* open hummock grassland

3. *Acacia pruinocarpa* Shrublands

S3a	AiApTw	*Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana* open hummock grassland
S3b	ApAarTw	*Acacia pruinocarpa, A. arida* high shrubland over *Triodia wiseana* open hummock grassland
S3c	ApAbTw	*Acacia pruinocarpa* high open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland
S3d	ApAiERfTw	*Acacia pruinocarpa* and *A. inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* low open shrubland over *Triodia wiseana* open hummock grassland
S3e	ApGwAarTw	*Acacia pruinocarpa, Grevillea wickhamii* ssp. *hispidula* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland
S3f	ApTw	*Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland

4. Acacia Shrublands

S4b	AarTw	*Acacia arida* shrubland over *Triodia wiseana* open hummock grassland
S4c	AbAaPlTw	*Acacia bivenosa, A. ancistrocarpa, Petalostylis labicheoides* open shrubland over *Triodia wiseana* very open hummock grassland
S4d	AbAaTe	*Acacia bivenosa* and *A. ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland
S4e	AcAbGOrTw	*Acacia citrinoviridis* high open shrubland over *A. bivenosa, Gossypium robinsonii* open shrubland over *Triodia wiseana* very open hummock grassland
S4f	AcApTw	*Acacia citrinoviridis, A. pruinocarpa* high shrubland over *Triodia wiseana* very open hummock grassland
S4g	AcSTYsTsprrTe	*Acacia citrinoviridis,Stylobasium spathulatum* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. epactia* open hummock grassland
S4h	AcTwTe	*Acacia citrinoviridis* high shrubland over *Triodia wiseana, T. epactia* open hummock grassland
S4i	AiApTwTsprr/h	*Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland
S4k	AtGwTw	*Acacia tumida* var. *pilbarensis, Grevillea wickhami* i ssp. *hispidula* high shrubland over *Triodia wiseana* very open hummock grassland
S4l	AtPlTwTsprr	*Acacia tumida* var. *pilbarensis, Petalostylis labicheoides* high shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland
S4m	GwAbTw	*Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland
S4n	GwPlAbTsprrTw	*Grevillea wickhamii* ssp. *hispidula, Petalostylis labicheoides* scattered tall shrubs over *Acacia bivenos* a shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* open hummock grassland

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA

VEGETATION LEGEND

Sheet 1 of 4

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API

5. Acacia Shrubland over *Triodia* sp. Robe River and *Triodia wiseana* Hummock Grassland

S5b	AatkAbTwTsprr	*Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S5c	AbDAcTsprrTw	*Acacia bivenosa* open shrubland over *Dampiera candicans* low shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* hummock grassland
S5d	AbTwTsprr	*Acacia bivenosa* open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S5e	AcApAiTwTsprr	*Acacia citrinoviridis, A. pruinocarpa, A. inaequilatera* high open shrubland over *Triodia wiseana, T*. sp Robe River (M.E. Trudgen MET 12,369) hummock grassland
S5f	AiAbTwTsprr	*Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana, T.* sp. Robe River open hummock grassland
S5g	AiAcTwTsprr	*Acacia inaequilatera, A. citrinoviridis* high open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S5h	AiPlTsprrTw	*Acacia inaequilatera, Petalostylis labicheoides* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* hummock grassland
S5i	ApAbTwTsprr	*Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen MET 12,369) hummock grassland
S5j	ApTsprrTw	*Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* hummock grassland
S5k	ApERfTwTsprr	*Acacia pruinocarpa* scattered tall shrubs over *Eremophila fraser* i ssp. *fraseri* open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S5l	CfAcERlaTsprr	*Corymbia ferriticola* ssp. *ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland

6. *Acacia synchronicia* Shrublands

S6a	AsTw	*Acacia synchronicia* open shrubland over *Triodia wiseana* very open hummock grassland

7. Hard Spinifex Hummock Grasslands

S7c	AbSsspTw	*Acacia bivenosa, Senna* spp. open shrubland over *Triodia wiseana* open hummock grassland
S7d	AbTw	*Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
S7e	AiAbTw	*Acacia inaequilatera* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland
S7f	AiAmAbTw	*Acacia inaequilatera* scattered tall shrubs over *A. bivenosa, A. maitlandii* open shrubland over *Triodia wiseana* open hummock grassland
S7g	AiAsTw	*Acacia inaequilatera* and *A. synchronicia* scattered shrubs over *Triodia wiseana* open hummock grassland
S7h	AiTEspbTw	*Acacia inaequilatera* scattered tall shrubs over *Tephrosia* sp. B Kimberley Flora (C.A. Gardner 7300) open shrubland over *Triodia wiseana* very open hummock grassland
S7i	AiTw	*Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland
S7j	ChAbTw	*Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
S7k	ChAmTw	*Corymbia hamersleyana* scattered low trees over *Acacia maitlandii* scattered shrubs over *Triodia wiseana* open hummock grassland
S7l	ChGwAiAbTw	*Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* ssp. *hispidula, Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* low scattered shrubs over *Triodia wiseana* open hummock grassland
S7n	Tw	*Triodia wiseana* open hummock grassland

8. Low Mulga Woodlands

S8a	AaneDOcTw	*Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Dodonaea coriacea* open shrubland over *Triodia wiseana* hummock grassland
S8b	AaneERlalTw	*Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Eremophila latrobei* ssp. *latrobei* scattered shrubs over Triodia wiseana open hummock grassland
S8c	AaneGwAatkTe	*Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Grevillea wickhamii* ssp. *hispidula, Acacia atkinsiana* high shrubland over *Triodia epactia* open hummock grassland

9. Low Shrublands

S9a	AaDAcTw	*Acacia ancistrocarpa* open shrubland over *Dampiera candicans* low shrubland over *Triodia wiseana* open hummock grassland

10. Snappy Gums and Acacia shrubs over *Triodia* sp. Robe River

S10a	ElAaneAcGbTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia, Acacia aneura (narrow, fine veined, Site 1259)* low open woodland over *A. citrinoviridis, Grevillea berryana* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* open hummock grassla
S10b	ElAatkAbTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* very open hummock grassland
S10c	ElAbTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* very open hummock grasslan
S10d	ElAbTwTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S10e	ElAcAiTwTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis, A. inaequilatera* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen MET 12,369) hummock grassland
S10f	ElAcTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland
S10g	ElAcTwTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S10h	ElAmTwTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia maitlandii* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S10i	ElApTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* open hummock grassland
S10j	ElApTwTsprrERIm	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Triodia wiseana, T*. sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland over *Eriachne mucronata* very open tussock grassland
S10k	ElAtTsprr	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S10l	ElPlAaTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over Petalostylis labicheoides high open shrubland over *Acacia ancistrocarpa* scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369) , *T. wiseana* very open hummock grassland
S10m	ElPlTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Petalostylis labicheoides* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* open hummock grassland
S10n	ElTsprrTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia* sp. Robe River (M.E. Trudgen MET 12,369), *T. wiseana* open hummock grassland

11. Snappy Gums over Acacia shrubs

S11a	ElAaAbTw	*Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistro* carpa, *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
S11b	ElAaneApTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia aneura* (narrow, fine veined, Site 1259) low open woodland over *A. pruinocarpa* scattered shrubs over *Triodia wiseana* open hummock grassland
S11c	ElAarAbTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia arida, A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland
S11d	ElAbAsTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland to low woodland over *Acacia bivenosa* and *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION LEGEND

Sheet 2 of 4

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S11e	ElAbTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
S11f	ElAcTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high shrubland over *Triodia wiseana* open hummock grassland
S11g	ElAptTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia ptychophylla* low open shrubland over *Triodia wiseana* hummock grassland
S11h	ElApTw	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland
S11i	ElAtAarTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Acacia arida* scattered shrubs over *Triodia wiseana* open hummock grassland
S11j	ElAtTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* open hummock grassland
S11k	ElChAbTw	*Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
S11l	ElGwApTwERIt	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland *Grevillea wickhamii* ssp. *hispidula, Acacia pruicocarpa* high shrubland over *Triodia wiseana* very open hummock grassland over *Eriachne tenuiculmis* very open tussock grassland
S11m	ElTw	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* hummock grassland

12. Soft Spinifex Hummock Grasslands

S12a	AbTe	*Acacia bivenosa* shrubland over *Triodia epactia* hummock grassland
S12b	Tsprr	*Triodia* sp. Robe River (M.E. Trudgen MET 12,369) open hummock grassland
S12c	Tsprr (burnt)	*Triodia* sp. Robe River (M.E. Trudgen MET 12,369) very open hummock grassland, recently burnt

13. Terminalia Woodlands

S13a	TERcAcTw	*Terminalia canescens, Acacia citrinoviridis* low woodland over *Triodia wiseana* very open hummock grassland
S13b	TERcTw	*Terminalia canescens* low open woodland over *Triodia wiseana* scattered hummock grasses

14. *Triodia epactia* and *Triodia wiseana* Hummock Grasslands

S14a	AbTeTw	*Acacia bivenosa* scattered shrubs over *Triodia epactia, T. wiseana* open hummock grassland
S14b	AiAbTwTe	*Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* hummock grassland
S14c	AiERfTwTe	*Acacia inaequilatera* scattered tall shrubs over *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland
S14d	AxAbTwTe	*Acacia xiphophylla* scattered tall shrubs over *Acacia bivenosa* scattered shrubs over *Triodia wiseana, T. epactia* open hummock grassland

Minor Creekline (I)

1. *Acacia ancistrocarpa, A. bivenosa* Shrublands

I1e	ElAbAaTe	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa, A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland
I1f	GOrAaAbTeTw	*Gossypium robinsonii* scattered tall shrubs over *Acacia ancistrocarpa, A. bivenosa* shrubland over *Triodia epactia, T. wiseana* open hummock grassland

2. *Acacia pyrifolia* High Shrublands

I2a	ApyAbTe	*Acacia pyrifolia* var. *pyrifolia* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland
I2c	ApyAcGOrTe	*Acacia pyrifolia* var. *pyrifolia, A. citrinoviridis, Gossypium robinsonii* high shrubland over *Triodia epactia* very open hummock grassland
I2e	ChApyTe	*Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* hummock grassland
I2f	EvChApyGOrTe/g	*Eucalyptus victrix, Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia, Gossypium robinsonii* high open shrubland over *Triodia epactia* scattered hummocks over mixed open grassland

3. Acacia Shrublands

I3a	AcAbERlSTYsTe	*Acacia citrinoviridis* high open shrubland over *A. bivenosa, Eremophila longifolia, Stylobasium spathulatum* open shrubland over *Triodia epactia* open hummock grassland
I3c	ChAaTe	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia epactia* open hummock grassland
I3f	ElChAtTeTw	*Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland

5. Corymbia Woodlands

I5a	CcAadAcAaAbTp	*Corymbia candida* ssp. *candida* low open woodland over *Acacia adsurgens, A. citrinoviridis* high shrubland over *Acacia ancistrocarpa, Acacia bivenosa* open heath over *Triodia pungens* hummock grassland
I5d	ChAaAbTeTw	*Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* closed hummock grassland
I5e	ChAatkAbTw	*Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland
I5f	ChAcolAbGOrTe	*Corymbia hamersleyana* low open woodland over *Acacia cole*i var. *colei, A. bivenosa, Gossypium robinsonii* high open shrubland over *Triodia epactia* very open hummock grassland
I5g	ChAiAaTe	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* high open shrubland over *A. ancistrocarpa* scattered shrubs over *Triodia epactia* open hummock grassland
I5h	ChAtAatkAaTw	*Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis, A. atkinsiana* and *A. ancistrocarpa* shrubland over *Triodia wiseana* open hummock grassland
I5j	ChAtAcAaTe	*Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis, A. citrinoviridis* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland
I5k	ChAtGOrTwTe	*Corymbia hamersleyana* scattered low trees over Acacia tumida var. *pilbarensis, Gossypium robinsoinii* open scrub over *Triodia wiseana, T. epactia* very open hummock grassland
I5l	ChGOrAbTw	*Corymbia hamersleyana* low open woodland over *Gossypium robinsonii* high shrubland over *Acacia bivenosa* shrubland over *Triodia wiseana* very open hummock grassland
I5m	ChSTYsERIm	*Corymbia hamersleyana* scattered low trees over *Stylobasium spathulatum* open shrubland over *Eriachne mucronata* scattered tussock grasses
I5n	ElAaAbTwTsprr	*Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen MET 12,369) hummock grassland
I5o	ElChAaAatkTeTw	*Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. atkinsiana* open shrubland over *Triodia epactia* and *T. wiseana* open hummock grassland
I5p	ElChAbTwTe	*Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland

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PROPOSED MINE & INFRASTRUCTURE AREA

VEGETATION LEGEND

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6. Eucalyptus Woodlands

I6c	EcGOrTEspbCEc	*Eucalyptus camaldulensis* var. *obtusa* low open woodland over *Gossypium robinsonii* high open shrubland over Tephrosia sp. B Kimberley flora (C.A. Gardner 7300) scattered low shrubs over *Cenchrus ciliaris* very open tussock grassland
I6d	ElChAtTw	*Eucalyptus leucophloia ssp. leucophloia, Corymbia hamersleyana* low open woodland over *Acacia tumida* high open shrubland over *Triodia wiseana* very open hummock grassland
I6e	EvChAatkAtAwAbGOaTe	*Eucalyptus victrix, Corymbia hamersleyana* low open woodland over *Acacia atkinsiana, A. tumida* var. *pilbarensis, A. wanyu* high shrubland over *Acacia bivenosa, Gossypium australe* open shrubland over *Triodia epactia* open hummock grassland

Major Creekline (A)

1. *Acacia pyrifolia* High Shrublands

A1a	AtrApyTeCEc	*Acacia trachycarpa* high shrubland over *A. pyrifolia* var. *pyrifolia* scattered shrubs over *Triodia epactia* very open hummock grassland over *Cenchrus ciliaris* very open tussock grassland

3. Corymbia Woodlands

A3a	CcChAcolAaTe	*Corymbia candida* ssp. *candida* and *C. hamersleyana* low open woodland over *Acacia colei var. colei* and *A. ancistrocarpa* high open shrubland over *Triodia epactia* very open hummock grassland
A3b	ChAaAbAsTe	*Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa, A. bivenosa* and *A. synchronicia* shrubland over *Triodia epactia* hummock grassland
A3c	ChAaAtrTe/g	*Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland over *Aristida holothera* var. *latifolia, Eragrostis* aff. *eriopoda* (WAS site 963) and *Cenchrus ciliaris* very open grassland
A3d	ChAbAcApyTeTw	*Corymbia hamersleyana* low open woodland over *Acacia bivenosa, A. citrinoviridis, A. pyrifolia* var. *pyrifolia* high shrubland over *Triodia epactia, Triodia wiseana* open hummock grassland

5. Eucalyptus Woodlands

A5c	EcEvSTg	*Eucalyptus camalulensis* var. *obutsa, E. victrix* woodland over *Stemodia grossa* very open herbland
A5d	EvAbGOrOaTeTw	*Eucalyptus victrix* low woodland over *Acacia bivenosa, Gossypium robinsonii, Owenia acidula* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland
A5e	EvApyTe	*Eucalyptus victrix* open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* open hummock grassland
A5f	EvMlMgTe/h	*Eucalyptus victrix* woodland over *Melaleuca linophylla* , *Melaleuca glomerata* high shrubland over *Triodia epactia* very open hummock grassland over mixed scattered herbs

Clayey Plain (C)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

C1a	AatkAbTeTw	*Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* open hummock grassland

2. Acacia shrublands

C2b	AiAaPTaTe	*Acacia inaequilatera* scattered shrubs over *A. ancistrocarpa* and *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia epactia* very open hummock grassland
C2c	AiAaTe	*Acacia inaequilatera* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland

3. *Acacia synchronicia* Shrublands

C3a	AsTe	*Acacia synchronicia* open shrubland over *Triodia epactia* open hummock grassland
C3b	ChAsTe	*Corymbia hamersleyana* scattered low trees over *Acacia synchronicia* and *A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland

4. *Acacia synchronicia, A. bivenosa* Shrublands

C4a	AsAbTe	*Acacia synchronicia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland

6. Snakewood Shrublands

C6a	AsAxTe	*Acacia synchronicia, A. xiphophylla* high shrubland over *Triodia epactia* open hummock grassland
C6c	ChAsAaAxTe	*Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* and *A. xiphophylla* high open shrubland to open shrubland over *Triodia epactia* hummock grassland

7. Soft Spinifex Hummock Grasslands

C7a	AiTe	*Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland
C7b	ApyGpTe	*Acacia pyrifolia* var. *pyrifolia* scattered tall shrubs over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* hummock grassland

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PROPOSED MINE & INFRASTRUCTURE AREA

VEGETATION LEGEND

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Jewel & Cochrane Rail Loop
Mine Office
Cochrane Pit
Cochrane Waste Dump
Farnum Pit
Jewel Waste Dump
Jewel Pit
Jewel Waste Dump

A1a A5c P6f I5g P5e I2d S10d S7c P5d S10j S5d I5d S10m S5c S7n S11k I5k S11d I5h P6a C7a I6c S7i P1a I5o P5d S10i S10n P6e P3c S7d I5p

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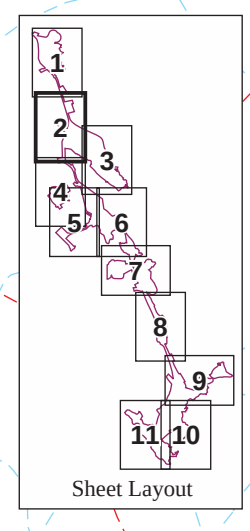

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Scale 1:25,000
MGA94 (Zone 50)

Rhynchosia bungarensis

Kens Bore Pit

Kens Bore Waste Dump

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
VEGETATION
Sheet 2 of 11

Author: D. True Date: October 2009

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API

416000mE
418000mE
420000mE
422000mE
7564000mN
7562000mN
7560000mN
7558000mN
7556000mN

Kens Bore Waste Dump
Kens Bore Pit
Mine Office
Kens Bore Rail Loop
Kens Bore Waste Dump
Kens Bore Pit

N
0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout
1 2 3 4 5 6 7 8 9 10 11

Rhynchosia bungarensis

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
VEGETATION
Sheet 3 of 11
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410000mE
412000mE
414000mE
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7558000mN
7556000mN
7554000mN
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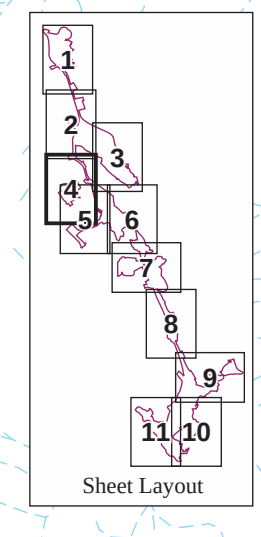

Sheet Layout

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Scale 1:25,000
MGA94 (Zone 50)

P6e I3c C3b P5e S7g I5h P5e S7n S11e P2d P5e S7i I5h S7i I5h P2d S7i S11e S11e I5h P2d S7n S7n S7n P2d P2d S11e S7c S6a P5d I5n S11e P5d I5n I5n P5d P5e S7n S7c I3c S7i S7i S7i P2b I3c S7i P5e S6a S7i P5d P5d S10i S10i S7n I3f S7c S11e S10i S10i S7c S6a I3f P5d S11e S11e P1a P1a S7d S7c P5d

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
VEGETATION
Sheet 4 of 11
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412000mE
414000mE
416000mE
7556000mN
7554000mN
7552000mN
7550000mN
7548000mN

0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout

Owenia acidula
Owenia acidula
Owenia acidula
Owenia acidula
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
VEGETATION
Sheet 5 of 11

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API

418000mE
420000mE
422000mE
424000mE
7556000mN
7554000mN
7552000mN
7550000mN
7548000mN

N
0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout
1 2 3 4 5 6 7 8 9 10 11

A3a P5e S7i C6a S14c P5e S7i P5e A3a S14c I3c P5e
A3a C1a P5e S7i S7n I3c P5d S11e P5d S7c S12b S10n S7c I5p S7d S5d I5p S10n S7c S7d
I1f S7i I1f I1f S7i P5e S7n P5d S5j S10n S7n C1a P5e P5e Cardo Bore North Waste Dump S10n S5j S5i P5e C1a Cardo Bore North Pit S10n P6a P6e Cardo Bore North Pit Cardo Bore North Waste Dump S7n P5d S7n S10n S7c S7c S5d P5d P5d P6e P5e S7n I3c P5d I3c P6d I3c S7i I3c I3c S7i I2c P6i I3c S7n S10n S7n S11e I3c S7n S10n I2e I2e A5e

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA
VEGETATION
Sheet 6 of 11
Author: D. True Date: October 2009

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API

420000mE
422000mE
424000mE
428000mE
7548000mN
7546000mN
7544000mN
7542000mN

Cardo Bore East Waste Dump
Cardo Bore East Pit
Cardo Bore East Waste Dump
Explosives Magazine
Upper Cane Waste Dump
Upper Cane
Upper Cane Pit
Upper Cane Waste Dump
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
Mine Office
Chemical Storage

0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout
1 2 3 4 5 6 7 8 9 10 11

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION
Sheet 7 of 11
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API

424000mE
426000mE
428000mE
7540000mN
7538000mN
7536000mN
7534000mN

I3c
A5e
S7i
P5d
I3c
S7i
S7n
I3c
I3c
P2g
P6g
C6a
P6a
S7i
C6a
C6a
P6g
P5e
C6a
P5d
S7i
A5f
C6a
A5f
P5d
P5d
S7i
S7i
P2g
A3d
S7i
C6a
Rhynchosia bungarensis
A3d
P5d
A5f
S13b
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
Rhynchosia bungarensis
S7n
P5d
A3d
I5a
S4d
I5d
P1c
I3f
P1c

N
0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

1 2 3 4 5 6 7 8 9 10 11
Sheet Layout

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA

VEGETATION

Sheet 8 of 11

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430000mE
432000mE
434000mE
436000mE
7532000mN
7530000mN
7528000mN

Trinity Bore Waste Dump
Mine Office
Trinity Bore Pit
Trinity Bore Waste Dump

N
0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout
1 2 3 4 5 6 7 8 9 10 11

WEST PILBARA IRON ORE PROJECT
PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION
Sheet 9 of 11

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API

428000mE

432000mE

7526000mN

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7520000mN

7518000mN

430000mE

N

0 250 500m

Scale 1:25,000
MGA94 (Zone 50)

Sheet Layout

Catho Well Rail Loop

Mine Office

Catho Well Waste Dump

Catho Well Pit

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION

Sheet 10 of 11

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422000mE
424000mE
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7524000mN
7522000mN
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7518000mN

Catho Well North Pit
Catho Well North Waste Dump
Catho Well North Pit
Catho Well North Pit
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
Catho Well Waste Dump
Catho Well Rail Loop
Catho Well Pit
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
Mine Office
Catho Well Pit
Catho Well Waste Dump
Catho Well Pit
Catho Well Pit

Sheet Layout

0 250 500m
Scale 1:25,000
MGA94 (Zone 50)

WEST PILBARA IRON ORE PROJECT

PROPOSED MINE & INFRASTRUCTURE AREA VEGETATION

Sheet 11 of 11

Author: D. True Date: November 2009

Appendix 3 Descriptions of the Vegetation Types of the Study Area

Abbreviations used for site name and numbers (eg. CR110 is a Cochrane site):

Resource Area:	
Cochrane	CR
Farnum	FM (sometimes FN)
Jewell	JW
Kens Bore	KB
Upper Cane	UC
Cardo East	CE
Cardo North	CN
Trinity	TR
Catho Well	CW
Other Areas:	
Admin Areas	AD
Airstrip Access track July 2009	ASA
Airstrip ASN Version November 2008	ASN
Borrow Pits	BOR
Cardo East Waste Dump Area	CEW
Camp September 2009	CMP08
Cape Preston	CP
Cape Preston Northern sites	CPN
Catho Well Waste Dump Area	CWW
Red Hill Waste Dump Area	RHW (incudes some JW, CR and FM sites)
Haul roads	HR
Infrastructure Areas	IN
Office Area	OF
Transport Corridor	TC (includes HR and some CP/CPN sites)
Trinity Waste Dump Area	TRW
West Pilbara Opportunistic Collections	WPIOP

Stony Plains (P)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

P1a AatkAbAaTw *Acacia atkinsiana*, *A. bivenosa*, *A. ancistrocarpa* high shrubland to open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda and Capricorn Land Systems with a proportion on the Urandy, Stuart and Newman Land Systems. Associated species include: *Acacia inaequilatera, A. synchronicia, Corchorus sidoides* ssp. *sidoides, Corymbia hamersleyana, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia australis, Haloragis gossei* var. *gossei, Keraudrenia velutina* ssp. *elliptica, Ptilotus astrolasius* var. *astrolasius, P. axillaris, P. calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus, Senna glutinosa* ssp. *pruinosa, S. notabilis, Solanum diversiflorum* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CMP006, TC047, TC048, CP102, CP106, CP110, CP122, CP126, CP237, CP241, WPI-751.

P1b AatkAbAaTw *Acacia atkinsiana*, *A. bivenosa*, *A. ancistrocarpa* high shrubland to open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a proportion on the Robe Land System. Associated species include: *Acacia synchronicia, Acacia wanyu, Brachyachne prostrata, Corymbia hamersleyana, Eucalyptus leucophloia* ssp. *leucophloia, Grevillea wickhamii ssp. hispidula, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Sclerolaena eriacantha, Senna glutinosa* ssp. *glutinosa, Senna glutinosa* ssp. *pruinosa, Sida pilbarensis* (ferruginous form), *Solanum lasiophyllum* and *Tephrosia uniovulata.* Sites ASA005, ASA006, ASA012, ASA013, ASA014, ASA016, ASN001, ASN005, ASN006, ASN022.

P1c ChAatkAbTwTe *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open to closed hummock grassland

This vegetation type occurred predominantly on the Boolgeeda Land System with a proportion on the Capricorn Land System. Associated species include: *Acacia ancistrocarpa*, *A. aneura, A. synchronicia, Bonamia rosea, Eremophila cuneifolia, Eriachne pulchella* ssp. *pulchella, Eucalyptus leucophloia* ssp. *leucophloia, Goodenia microptera, Grevillea wickhamii* ssp. *hispidula, Hakea lorea* ssp. *lorea, Hibiscus sturtii* var. aff. *grandiflorus, Paraneurachne muelleri, Ptilotus astrolasius* var. *astrolasius, Senna glutinosa* ssp. *glutinosa, Solanum diversiflorum* and *S. lasiophyllum.* Sites BOR239, BOR241, HR008, HR055, HR058, TC146, TC147.

2. *Acacia* Shrublands

P2b AaTeTw *Acacia ancistrocarpa* high shrubland over *Triodia epactia, Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a very small proportion on the Boolgeeda and Robe Land Systems. Associated species: *Acacia bivenosa, A. inaequilatera, A. synchronicia, Bonamia rosea, Dysphania rhadinostachya* ssp. *rhadinostachya, Gomphrena cunninghamii, Goodenia microptera, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Indigofera boviperda* ssp. *boviperda, Polycarpaea corymbosa* var. *corymbosa, Ptilotus astrolasius* var. *astrolasius, P. exaltatus* var. *exaltatus, P. fusiformis* var. *fusiformis, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, S. glutinosa* ssp. *pruinosa, Sida clementii, Solanum diversiflorum, S. horridum* and *Swainsona formosa.* Sites KBW003, CMP015.

P2c AmAaTwTsprr *Acacia maitlandii* high open shrubland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

This vegetation type occurred only on the Capricorn Land System and was recorded in the Upper Cane Waste Area within the study area. Associated species: *Acacia bivenosa, A. citrinoviridis, A. inaequilatera, Corchorus sidoides* ssp. *sidoides, Corymbia hamersleyana, Eragrostis* aff. *eriopoda* (WAS site 963), *Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Hibiscus sturtii* var. *campylochlamys, Ptilotus astrolasius* var. *astrolasius, Solanum* aff. *phlomoides* and *S. lasiophyllum.* Site UCW008.

P2d ChAaTwTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a proportion on the Rocklea and Urandy Land Systems. Associated species: *Acacia bivenosa, A. inaequilatera, A. maitlandii, Hakea lorea* ssp. *lorea, Indigofera monophylla, Ptilotus astrolasius* var. *astrolasius* and *P. calostachyus* var. *calostachyus.* Sites CP173, CP191, CP201.

P2f ChAiAbTw *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Urandy and Rocklea Land Systems with a proportion on Robe Land System. Associated species: *A. ancistrocarpa, A. atkinsiana, A. tumida* var. *pilbarensis, Bonamia rosea, Codonocarpus cotinifolius, Corchorus parviflorus, Grevillea wickhamii* ssp. *hispidula, Senna glutinosa* ssp. *glutinosa, Scaevola spinescens* (broad form), *Eremophila forrestii* ssp. *forrestii, Ptilotus exaltatus* var. *exaltatus, P. astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Tephrosia uniovulata* and *Solanum diversiflorum.* Site CP323, HR023, TC122.

P2g ChAsAaTwTe *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly on Rocklea Land System with a proportion on Boolgeeda Land System. Associated species: *Acacia atkinsiana, A. inaequilatera, A. wanyu, Eremophila cuneifolia, Hakea lorea* ssp. *lorea* and *Senna artemisioides* ssp. *oligophylla*. Sites: HR013, HR034, HR041.

3. *Acacia synchronicia* Shrublands

P3a AsERcTw *Acacia synchronicia, Eremophila cuneifolia* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on Capricorn Land System with a proportion on Boolgeeda Land System. Associated species: *Acacia atkinsiana, Goodenia forrestii, Maireana trichoptera, Senna glutinosa* ssp. *luerssenii* and *Triodia epactia*. Site HR061.

P3c AsAbTwTe *Acacia synchronicia, Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open hummock grassland

This vegetation type occurred on the Robe, Boolgeeda and Capricorn Land Systems. It was mainly recorded on Cochrane Mesa within the study area. Associated species: *Boerhavia coccinea, Cleome viscosa, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia boophthona, Gossypium australe* (Burrup Peninsula form), *Portulaca oleracea, Ptilotus astrolasius* var. *astrolasius, P. roei, Senna artemisioides* ssp. *oligophylla, Senna glutinosa ssp. glutinosa, Senna notabilis, Sporobolus australasicus, Streptoglossa bubakii* and *Tribulus astrocarpus*. Sites CR007r, CR022, CR027, CR028.

4. Hard Spinifex Hummock Grasslands

P4a AiAaTw *Acacia inaequilatera* scattered tall shrubs over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland
This vegetation type occurred predominantly on the Rocklea Land System with a proportion on the Capricorn Land System. Associated species: *Acacia atkinsiana, A. bivenosa, A. maitlandii, A. synchronicia, Corymbia hamersleyana, Hakea lorea* spp. *lorea, *Malvastrum americanum, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna artemisioides* ssp. *oligophylla, Senna glutinosa* ssp. *glutinosa, Senna glutinosa* ssp. *pruinosa, Swainsona formosa, Tephrosia uniovulata* and *Triodia epactia.* Sites ASA011, CP211.

P4b ChAaTw *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* scattered shrubs over *Triodia wiseana* hummock grassland
This vegetation type occurred predominantly on the Boolgeeda and Robe Land Systems with proportions on the Capricorn and Rocklea Land Systems. Associated species: *Acacia bivenosa, A. inaequilatera, A. maitlandii, A. synchronicia, Corchorus parviflorus, Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron, Hakea lorea* ssp. *lorea, Ptilotus astrolasius* var. *astrolasius, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *pruinosa* and *Tephrosia uniovulata.* Sites CP492, CP493.

5. Snakewood Shrublands

P5d AxTw *Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* very open hummock grassland
This vegetation type occurred throughout the study area. It occurred predominantly on the Robe and Boolgeeda Land Systems with a proportion on the Rocklea and Capricorn Land Systems. Associated species: *Acacia ancistrocarpa, A. bivenosa, A. inaequilatera, A. synchronicia, A. tumida* var. *pilbarensis, Bulbostylis barbata, Corymbia hamersleyana, Duperreya commixta, Enchylaena tomentosa* var. *tomentosa, Eremophila cuneifolia, Eriachne pulchella* ssp. *pulchella, Eucalyptus leucophloia* ssp. *leucophloia, Euphorbia australis, E. boophthona* (Large seed form), *Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Jasminum didymum* ssp. *lineare, Lepidium platypetalum, Maireana georgei, M. planifolia, Polycarpaea holtzei, Portulaca oleracea, Ptilotus calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus, Salsola tragus* ssp. *tragus, Sarcostemma viminale* ssp. *australe, Senna artemisioides* ssp. *oligophylla, S. artemisioides* ssp *oligophylla* x *helmsii, S. glutinosa* ssp. *pruinosa, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, S. glutinosa* ssp. x *luerssenii, S. stricta, Sida* aff. *echinocarpa* (MET 15,350), *Solanum diversiflorum, S. lasiophyllum, Trianthema triquetra* var. *triquetra, Tribulus suberosus, Trichodesma zeylanicum* var. *zeylanicum* and *Triodia epactia.* Sites ASA002, ASN011, ASN027, ASN029, AD007, CMP020, CP064, CP244, CP245, CP492, CP493, CP533, CW046, CW047, CW049, CW050, CW055, CW057, CW068, HR057, JW013, KB006, TR084, TRW005, WPI-402, WPI-473.

P5e AxTwTe *Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* and occasionally *T. epactia* very open hummock grassland
This vegetation type occurred throughout the study area. It occurred predominantly on the Robe and Capricorn Land Systems with a proportion on the Boolgeeda, Urandy, Rocklea and Stuart Land Systems. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. bivenosa, A. inaequilatera, A. synchronicia, Corymbia hamersleyana, Eremophila cuneifolia, Eucalyptus leucophloia* ssp. *leucophloia, Heliotropium heteranthum, Indigofera monophylla, Maireana georgei, M. melanocoma, Ptilotus astrolasius* var. *astrolasius, P. exaltatus* var. *exaltatus, Sclerolaena eriacantha, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, S. artemisioides* ssp. *oligophylla, Solanum lasiophyllum* and **Vachellia farnesiana.* Sites ASA004, ASA007, ASA015, AD026, AD031, AD032, CP058, CP086, CP088, CP104, CP206, CP208, CP209,

CP212, CP220, CP225, CP232, CP235, CP279, CP325, CP334, CP348, CP350, CP352, CP366, CP430, CP452, CP536, CWW058, WPI-479.

6. Soft Spinifex Hummock Grasslands

P6a AiAbTe *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Boolgeeda and Robe Land Systems with a proportion on the Capricorn and Rocklea Land Systems. Associated species: *Acacia synchronicia, A. ancistrocarpa, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Senna artemisioides* ssp. *oligophylla* and *Senna glutinosa* ssp. *pruinosa.* Sites JW008, CR026, CR020, TR066, API1053.

P6b AiAtTe *Acacia inaequilatera, Acacia tumida* var. *pilbarensis* scattered shrubs over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Urandy Land System with a proportion on the Robe and Rocklea Land Systems. Associated species: *Acacia bivenosa, A. maitlandii, Bonamia rosea, Cleome viscosa, Corymbia hamersleyana, Goodenia microptera, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Hakea lorea* ssp. *lorea, Indigofera boviperda* ssp. *boviperda, I. monophylla* (grey leaflet form), *Mollugo molluginea, Solanum lasiophyllum, Stylobasium spathulatum, Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601) and *T. uniovulata.* Sites HR073, KBW002, KBW010, KBW011.

P6c ChAaAiTe *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa, A. inaequilatera* shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred only on the Rocklea Land System and was recorded in the Transport Corridor. Associated species: *Acacia bivenosa, A. sclerosperma* ssp. *sclerosperma, A. trachycarpa, Corchorus parviflorus, Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron, Grevillea wickhamii* ssp. *hispidula, Hakea lorea* ssp. *lorea, Indigofera monophylla, Ptilotus astrolasius* var. *astrolasius, Tephrosia uniovulata* and *Solanum lasiophyllum.* Sites CP082, CP132, CP136, CP138.

P6d ChAbAaTe *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa*, *A. ancistrocarpa* high shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Urandy and Robe Land Systems with a proportion on the Rocklea and Capricorn Land Systems. Associated species: *Abutilon trudgenii* MS, *Acacia inaequilatera, A. synchronicia, Alternanthera nana, Cleome viscosa, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia australis, E. tannensis* ssp. *eremophila* (Hamersley form), *Evolvulus alsinoides* var. *villosicalyx, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Hibiscus sturtii* var. aff. *grandiflorus, Indigofera colutea, I. monophylla* (grey leaflet form), *Jasminum didymum* ssp. *lineare, Paspalidium clementii, Polycarpaea longiflora* (White form, M13-7), *Pterocaulon sphacelatum, Ptilotus astrolasius* var. *astrolasius, Rhynchosia minima* var. *australis, Scaevola spinescens* (broad form), *Senna artemisioides* aff. ssp. *oligophylla* x *helmsii, S. artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, Sida* aff. *echinocarpa* (MET 15,350), *S. arsiniata, S. echinocarpa, Solanum diversiflorum, S. ellipticum, Sporobolus australasicus, Tribulus suberosus, Trichodesma zeylanicum* var. *zeylanicum, Triodia wiseana* and *Waltheria indica.* Sites KB022, KB024, TC152, TC153.

P6e ChAiAbTe *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia epactia* open hummock grassland

This vegetation type occurred throughout the study area on seven Land Systems. It occurred predominantly on the Urandy Land System with a proportion on the Boolgeeda, Robe, Capricorn, Newman, Rocklea and Stuart Land Systems. Associated species include: *Abutilon trudgenii* MS, *Acacia ancistrocarpa*, *A. synchronicia*, *A. tumida* var. *pilbarensis*, *Boerhavia gardneri*, *Cleome viscosa*, *Corchorus sidoides* ssp. *sidoides*, *Dysphania rhadinostachya* var. *rhadinostachya*, *Eucalyptus leucophloia* ssp. *leucophloia*, *Euphorbia australis*, *Goodenia microptera*, *Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron*, *Grevillea wickhamii* ssp. *hispidula*, *Hakea lorea* ssp. *lorea*, *Hibiscus brachychlaenus*, *Indigofera boviperda* ssp. *boviperda*, *Jasminum didymum* ssp. *lineare*, *Ptilotus astrolasius* var. *astrolasius*, *Rhynchosia minima* var. *australis*, *Salsola tragus* ssp. *tragus*, *Senna artemisioides* ssp. *oligophylla*, *S. artemisioides* ssp. *oligophylla* x *glutinosa*, *S. glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *pruinosa*, *S. notabilis*, *S.* sp. Port Hedland (SPB 20-09-05B), *Sida* aff. *echinocarpa (MET 15,350)*, *Sida arsiniata*, *Solanum diversiflorum*, *Stylobasium spathulatum*, *Tephrosia uniovulata*, *Trichodesma zeylanicum* var. *zeylanicum* and *Triumfetta clementii*.
Sites CNW002, CR033, HR047, HR048, HR049, HR063, HR064, HR068, HR071, JW014, KB002, KBW004, KBW008, KBW009, KB027, KB035, KB036, TC006, TC030, TC043, TC044, TC056, TC058, TC059, TC060, TC107, TC108, TC117, TC119, TC123, UCW017, UCW022, API-3204, API-3208, WPI-226.

P6f ChApyGpTe *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia, Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Triodia epactia* open hummock grassland

This vegetation type was widespread throughout the Transport Corridor within the study area. It predominantly occurred on the Urandy Land System with a proportion on the Boolgeeda and Robe Land Systems. Associated species include: *Acacia ancistrocarpa, A. inaequilatera, A. synchronicia, Boerhavia coccinea*, *B. gardneri, Bonamia media* var. *villosa, Bulbostylis barbata, *Cenchrus ciliaris, *C. setiger, Cleome viscosa, Corchorus* aff. *parviflorus* (JW011-11), *C. sidoides* ssp. *sidoides, Cullen lachnostachys, C. leucochaites, Eremophila longifolia, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Indigofera colutea, I. monophylla, Pentalepis trichodesmoides, Portulaca oleracea, Ptilotus astrolasius* var. *astrolasius, Senna notabilis, S. venusta, Solanum diversiflorum, Sporobolus australasicus, Tephrosia* aff. *supina* (06BP45-006), *T. rosea* var. *glabrior, Trianthema pilosa* and *Yakirra australiensis* var. *australiensis.* Sites CP132, CP136, CP138, CR024, TC002, TC004, TC021, TC022, TC025, TC138, TC139, TC140, TC148, TC149, TC15.

P6g ChAwTe *Corymbia hamersleyana* scattered low trees over *Acacia wanyu* low open shrubland over *Triodia epactia* open hummock grassland

This vegetation type predominantly occurred on the Boolgeeda Land System, with a proportion on the Rocklea and Capricorn Land Systems. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. bivenosa, A. synchronicia, Bonamia rosea, Bulbostylis barbata, *Cenchrus ciliaris, Dysphania kalpari, D. rhadinostachya* ssp. *rhadinostachya, Goodenia microptera, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Hakea lorea* ssp. *lorea, Indigofera boviperda* ssp. *boviperda, Keraudrenia nephrosperma, Mollugo molluginea, Portulaca oleracea, Ptilotus aervoides, P. astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *x luerssenii, Solanum lasiophyllum* and *Sporobolus australasicus*. Sites HR037, HR038, TC009, WPI-925.

P6h ChTe/h (burnt) *Corymbia hamersleyana* scattered low trees over *Triodia epactia* very open hummock grassland over herbs; post-fire

This vegetation type occurred as equally dominant on the Robe and Boolgeeda Land Systems with a proportion on the Capricorn Land System. It was recorded in the Cardo East Waste Area within the study area. Associated species: *Acacia ancistrocarpa, A. trachycarpa* x *tumida* var. *pilbarensis, Alternanthera nana, Amaranthus cuspidifolius, Bonamia pannosa, B. rosea, Chrysopogon fallax, Cleome viscosa, Corchorus lasiocarpus* ssp. *parvus, Cullen martinii, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia australis, E. boophthona, Evolvulus alsinoides* var. *villosicalyx, Goodenia microptera, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *macrodonta, Hibiscus sturtii* var. aff. *grandiflorus, Indigofera boviperda* ssp. *boviperda, Jasminum didymum ssp. lineare, Portulaca oleracea, Ptilotus astrolasius* var. *astrolasius, P. auriculifolius, P. axillaris, P. calostachyus* var. *calostachyus, Rhynchosia minima* var. *australis, Salsola tragus* ssp. *tragus, Senna artemisioides* ssp. *oligophylla* x *helmsii, S. notabilis, Sida* aff. *echinocarpa* (MET 15,350), *S.* aff. *fibulifera, S. arsiniata, Solanum diversiflorum, Streptoglossa bubakii, S. decurrens, Tephrosia uniovulata, Tribulus macrocarpus, Trichodesma zeylanicum* var. *zeylanicum* and *Waltheria indica.* Sites CEW001, CEW002, CEW003.

P6i Te *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda and Capricorn Land Systems, with a very small proportion on the Robe Land System. It was recorded throughout the Transport Corridor within the study area. Associated species: *Acacia ancistrocarpa*, *A. inaequilatera*, *A. synchronicia*, *Ptilotus exaltatus* var. *exaltatus*, *Sclerolaena densiflora*, *Senna glutinosa* ssp. *pruinosa*, *Solanum lasiophyllum* and *Stylobasium spathulatum*. Sites TC105, TC134, TC135, TC036, TC142, TC143, TC144, TC145.

Stony Hills and Breakaways (S)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

S1a AbAatkTw *Acacia bivenosa* and *A. atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type only occurred in the Robe Land System. It was recorded on the Airstrip Access track within the study area. Associated species: *Acacia synchronicia, Grevillea wickhamii, Hakea lorea* ssp. *lorea, Indigofera monophylla, Keraudrenia velutina, Ptilotus astrolasius, P. calostachyus, P. exaltatus, P. polystachyus, Senna glutinosa* ssp. *pruinosa* and *Solanum lasiophyllum*. Site ASA003.

S1b AbAatkTwTe *Acacia bivenosa, A. atkinsiana* scattered low shrubs over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System, with a proportion on the Robe and Stuart Land Systems. Associated species: *Acacia inaequilatera, A. synchronicia, Hakea lorea* ssp. *lorea, Ptilotus calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus* and *P. roei*. Sites HR070, CP233.

S1c GwAbAatkTw *Grevillea wickhamii* ssp. *hispidula* scattered tall shrubs over *Acacia bivenosa, A. atkinsiana* shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a proportion in the Capricorn Land System. It was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa, Senna glutinosa* ssp. *pruinosa*. Sites TR026, TR054.

2. *Acacia bivenosa* Open Heath over *Triodia wiseana*

S2b AcAbTeTw *Acacia citrinoviridis* scattered tall shrubs over *A. bivenosa* open heath over *Triodia epactia, T. wiseana* open hummock grassland

This vegetation type occurred on the Urandy, Robe and Boolgeeda Land Systems. This vegetation type was recorded on Kens Bore Mesa within the study area. Associated species: *Abutilon trudgenii* MS, *Acacia colei* var. *colei*, *A. inaequilatera*, *A. tumida* var. *pilbarensis*, *Amaranthus mitchellii*, *Bulbostylis barbata*, *Cleome viscosa*, *Cymbopogon ambiguus*, *Cyperus hesperius*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eriachne mucronata* (typical form), *Euphorbia boophthona* (Large seed form), *Gomphrena cunninghamii*, *Gossypium australe* (Burrup Peninsula form), *G. robinsonii*, *Hibiscus sturtii* var. *platychlamys*, *Jasminum didymum* ssp. *lineare*, *Polycarpaea longiflora*, *Pterocaulon sphacelatum*, *P. sphaeranthoides*, *Ptilotus astrolasius*, *P. auriculifolius*, *P. axillaris*, *P. obovatus* var. *obovatus*, *Rhynchosia minima* var. *australis*, *Senna artemisioides* ssp. *oligophylla* x *helmsii*, *Sida* aff. *echinocarpa* (MET 15,350), *Trichodesma zeylanicum* var. *zeylanicum*, *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *Triumfetta clementii*. Site KB011.

3. *Acacia pruinocarpa* Shrublands

S3a AiApTw *Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa, A. bivenosa, Corymbia hamersleyana, Eucalyptus leucophloia* ssp. *leucophloia, Hakea lorea* ssp. lorea*, Senna glutinosa* ssp. *glutinosa* and *S. glutinosa* ssp. *pruinosa.* Sites TR070, TR077, TR071.

S3b ApAarTw *Acacia pruinocarpa, A. arida* high shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Catho Well Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Hibiscus brachychlaenus*, *Ptilotus exaltatus* var. *exaltatus*, *Senna glutinosa* ssp. *glutinosa*, *Solanum lasiophyllum*, *S. sturtianum* and *Tephrosia uniovulata*. Sites CW009, CW026, CW087.

S3c ApAbTw *Acacia pruinocarpa* high open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. atkinsiana*, *A. inaequilatera*, *Grevillea wickhamii*, *Ptilotus calostachyus* var. *calostachyus*, *Stylobasium spathulatum* and *Tribulus suberosus*. Sites TR010, TR012, TR037, TR049, TR050, TR052, TR053, TR085, WPI-227, WPI-259.

S3d ApAiERfTw *Acacia pruinocarpa* and *A. inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* low open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Jewell mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *A. synchronicia*, *A. trudgeniana*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eriachne pulchella* ssp. *pulchella*, *Hakea lorea* ssp. *lorea*, *Paspalidium clementii*, *Portulaca oleracea*, *Ptilotus astrolasius* var. *astrolasius*, *Ptilotus calostachyus* var. *calostachyus*, *Sida* aff. *echinocarpa* (MET 15, 350) and *Tribulus suberosus*. Site JW002.

S3e ApGwAarTw *Acacia pruinocarpa, Grevillea wickhamii* ssp. *hispidula* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Trinity mesa within the study area. Associated sites: *Acacia bivenosa, A. ancistrocarpa, A. bivenosa, A. inaequilatera, A. synchronicia, Corymbia hamersleyana, Hakea lorea* ssp. *lorea, Senna glutinosa* ssp. *pruinosa, S. glutinosa* ssp. *glutinosa, Stylobasium spathulatum, Indigofera monophylla* (grey/green leaflet form), *Jasminum didymum* ssp. *lineare, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, Ptilotus exaltatus* var. *exaltatus, Ptilotus roei* and *Solanum sturtianum*. Sites TR008, TR058, TR059, TR060.

S3f ApTw *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a small proportion on the Rocklea Land System. It occurred on Kens Bore mesa and a small area on the Transport Corridor. Associated species: *Abutilon dioicum, Acacia inaequilatera, Acacia bivenosa, Cleome viscosa, Cucumis maderaspatanus, Gossypium australe* (Burrup form), *Jasminum didymum* ssp. *lineare, Senna glutinosa* ssp. *pruinosa, Senna notabilis, Clerodendrum floribundum* var. *lanceolatum, Corchorus parviflorus, Dysphania rhadinostachya* ssp. *rhadinostachya, Tribulus suberosus, Corchorus sidoides* ssp. *sidoides, Gomphrena cunninghamii, Ptilotus astrolasius* var. *astrolasius, Ptilotus exaltatus* var. *exaltatus, Senna glutinosa* ssp. *glutinosa, Solanum horridum, Tephrosia uniovulata, Trichodesma zeylanicum* var. *zeylanicum, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Ficus brachypoda.* Sites KB008, TR015, KB007, KB023, TC115.

4. *Acacia* Shrublands

S4b AarTw *Acacia arida* shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Robe Land System, with a proportion on the Rocklea and Capricorn Land Systems. Associated species include: *Acacia ancistrocarpa, A. bivenosa, A. pyrifolia* var. *pyrifolia, A. tumida* var. *pilbarensis, Dampiera candicans, Dysphania rhadinostachya* ssp. *rhadinostachya, Eucalyptus leucophloia* ssp. *leucophloia, Euphorbia australis, Grevillea wickhamii* ssp. *hispidula, Keraudrenia nephrosperma, Petalostylis labicheoides, Ptilotus aervoides, P. astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, Sida* aff. *echinocarpa* (MET 15,350), *S. echinocarpa, Solanum lasiophyllum, Tephrosia uniovulata, Tribulus suberosus* and *Trichodesma zeylanicum* var. *zeylanicum.* Sites CW001, CW002, CW003, CW006, CW008, CW012, CW015, CW021, CW024, CW032, CW037, CW038, CW039, CW040, CW059, CW062, CW067, CW078, CW079, CW081, HR003, TC012, TC017, TC042, TC096, TC097, TC098, TC099, WPI-400, WPI-405.

S4c AbAaPlTw *Acacia bivenosa, A. ancistrocarpa, Petalostylis labicheoides* open shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a very small proportion on the Capricorn Land System. It was recorded on Trinity mesa within the study area. Associated species: *Acacia inaequilatera, A. tumida, Corymbia hamersleyana, Eucalyptus leucophloia* ssp. *leucophloia, Petalostylis labicheoides* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*. Site TR043.

S4d AbAaTe *Acacia bivenosa* and *A. ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a proportion on the Robe and Boolgeeda Land Systems. It was recorded on Catho Well mesa and in the

Catho Well Waste Area within the study area. Associated species: *Acacia synchronicia, A. tumida* var. *pilbarensis, Corymbia hamersleyana, Dysphania rhadinostachya* ssp. *rhadinostachya, Eucalyptus leucophloia* ssp. *leucophloia, Euphorbia australis, Indigofera monophylla, Petalostylis labicheoides, Ptilotus astrolasius* var. *astrolasius, P. exaltatus* var. *exaltatus, Senna glutinosa* ssp. *luerssenii, S. glutinosa* ssp. *pruinosa, Tephrosia uniovulata* and *Triodia wiseana.* Sites CW036, CW045, CW048, CW051, CW053, CW054, CW074, CWW055, WPI401.

S4e AcAbGOrTw *Acacia citrinoviridis* high open shrubland over *A. bivenosa, Gossypium robinsonii* open shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with smaller proportions on the Capricorn and Urandy Land Systems. It was recorded predominately on Trinity mesa with a small amount on Kens Bore mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. tumida* var. *pilbarensis*, *Eucalyptus leucophloia* ssp. *leucophloia* and *Petalostylis labicheoides*. Sites TR040, TR046.

S4f AcApTw *Acacia citrinoviridis, A. pruinocarpa* high shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Trinity mesa within the study area. Associated species: *Acacia bivenosa, A. synchronicia, A. tumida* var. *pilbarensis, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Petalostylis labicheoides, Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, S. artemisioides* ssp. *helmsii, S. artemisioides* ssp. *oligophylla, Solanum lasiophyllum, S. sturtianum, Streptoglossa decurrens, Tephrosia uniovulata* and *Trachymene oleracea* ssp. *oleracea*. Sites TR014, TR016, TR034, TR105.

S4g AcSTYsTsprrTe *Acacia citrinoviridis, Stylobasium spathulatum* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)*, T. epactia* open hummock grassland

This vegetation type occurred as a very small area only on the Robe Land System. It was recorded on Upper Cane mesa within the study area. Associated species: *Acacia aneura* (narrow, fine veined, site 1259), *A. bivenosa*, *A. inaequilatera*, *A. tumida* var. *pilbarensis*, *Cymbopogon ambiguus*, *Duperreya commixta*, *Eremophila latrobei* ssp. *latrobei*, *Eriachne mucronata* (typical form), *Gossypium robinsonii*, *Grevillea wickhamii* ssp. *hispidula*, *Hakea lorea* ssp. *lorea*, *Indigofera monophylla* (BRO 46-12), *I. monophylla* (Cape Preston form), *Jasminum didymum* ssp. *lineare*, *Senna artemisioides* ssp. *oligophylla*, *S. artemisioides* ssp. *oligophylla* x helmsii, *S. glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *luerssenii*, *Tephrosia rosea* var. *glabrior*, *T. uniovulata*, *Themeda triandra* and *Triodia wiseana*. Site UC006.

S4h AcTwTe *Acacia citrinoviridis* high shrubland over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a smaller proportion on the Capricorn Land System. It was recorded on Trinity mesa within the study area. Associated species: *Acacia bivenosa, A. arida, A. pruinocarpa, A. pyrifolia* var. *morrisonii, A. tumida, Gossypium australe, G. robinsonii, Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301), *Abutilon dioicum, Eucalyptus leucophloia* ssp. *leucophloia, Amaranthus mitchellii, Bidens bipinnata, Chenopodium melanocarpum, Cleome viscosa, Corchorus crozophorifolius, Crotalaria medicaginea, Cymbopogon ambiguus, Dodonaea petiolaris, Duperreya commixta, Dysphania rhadinostachya* ssp. *rhadinostachya, Enneapogon caerulescens* var. *caerulescens, Eremophila latrobei* ssp. *latrobei, Eremophila longifolia, Eriachne mucronata* (typical form), *Eriachne tenuiculmis, Euphorbia biconvexa, Flaveria australasica, Flueggea virosa* ssp. *melanthesoides, Heliotropium crispatum, Hybanthus aurantiacus, Indigofera monophylla, Jasminum didymum* ssp. *lineare, Lepidum muelleri-ferdinandii, Leptopus decaisnei* var. *orbicularis, *Malvastrum americanum, Paspalidium tabulatum* (Whim Creek form), *Petalostylis labicheoides,*

Polycarpaea longiflora, Ptilotus astrolasius var. *astrolasius, P. calostachyus* var. *calostachyus, Senna glutinosa* ssp. *glutinosa, S. notabilis, Solanum lasiophyllum, Streptoglossa decurrens, Tephrosia uniovulata, Trachymene oleracea* ssp. *oleracea, Tribulus suberosus* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites TR021, TR033, TR106.

S4i AiApTwTsprr/h *Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a smaller proportion on the Capricorn Land System. It was recorded on Upper Cane mesa within the study area. Associated species: *Acacia citrinoviridis*, *Eremophila fraseri* ssp. *fraseri*, *Indigofera monophylla* (grey/green leaflet form), *Ptilotus astrolasius* var. *astrolasius*, P. *calostachyus* var. *calostachyus*, *Senna artemisioides* ssp. *helmsii*, *S. artemisioides* ssp. *oligophylla*, *S. glutinosa* ssp. *luerssenii*, *S. glutinosa* ssp. *pruinosa*, *Solanum* aff. *phlomoides*. Sites UC009, UC015, UC032.

S4k AtGwTw *Acacia tumida* var. *pilbarensis, Grevillea wickhamii* ssp. *hispidula* high shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Catho Well mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. arida*, *Corymbia hamerslayana*, *Cucumis maderaspatanus*, *Dampiera candicans*, *Duperreya commixta*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Enneapogon caerulescens*, *Eriachne pulchella* ssp. *pulchella*, *Eucalyptus leucophloia* ssp. *leucophloia*, *Hibiscus sturtii* var. *campylochlamys*, *H. sturtii* var. *platychlamys*, *Indigofera monophylla*, *Ipomoea muelleri*, *Jasminum didymum* ssp. *lineare*, *Keraudrenia nephrosperma*, *Marsdenia australis*, *Paspalidium clementii*, *Petalostylis labicheoides*, *Pterocaulon serrulatum*, *Senna artemisioides* ssp. *oligophylla* x *helmsii*, *S. glutinosa* ssp. *glutinosa*, *Solanum lasiophyllum*, *S. sturtianum*, *Streptoglossa bubakii*, *S. decurrens*, *Tephrosia uniovulata* and *Triodia epactia*. Sites CW011, CW080, CW082, CW088.

S4l AtPlTwTsprr *Acacia tumida* var. *pilbarensis, Petalostylis labicheoides* high shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Kens Bore mesa within the study area. Associated species: *Acacia bivenosa*, *A. inaequilatera*, *Cleome viscosa*, *Cymbopogon ambiguus*, *Eriachne mucronata* (typical form), *Euphorbia wheeleri*, *Gossypium australe* (Burrup Peninsula form), *G. robinsonii*, *Hibiscus* aff. *coatesii* (site 693), *H. sturtii* var. aff. *grandiflorus*, *Indigofera monophylla* (grey/green leaflet form), *I. monophylla* (grey leaflet form), *Paraneurachne muelleri*, *Paspalidium clementii*, *Pterocaulon sphaeranthoides*, *Senna glutinosa* ssp. *glutinosa*, *S. notabilis*, *Solanum diversiflorum*, *S. horridum*, *Tephrosia* aff. *densa* (B17), *T. uniovulata*, *Trachymene oleracea* ssp. *oleracea*, *Trichodesma zeylanicum* var. *zeylanicum* and *Triumfetta clementii*. Sites KB010, KB017, KB019, KB038, KB039, KB041, API-1127.

S4m GwAbTw *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a smaller amount on the Capricorn Land System. It was recorded on Trinity mesa within the study area. Associated species: *Acacia arida, Acacia pruinocarpa, Corymbia hamersleyana, Indigofera monophylla, Ptilotus astrolasius, P. calostachyus, Solanum sturtianum* and *Tephrosia uniovulata.* Sites TR007, TR055.

S4n GwPlAbTsprrTw *Grevillea wickhamii* ssp. *hispidula, Petalostylis labicheoides* scattered tall shrubs over *Acacia bivenos*a shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Trinity mesa within the study area. Associated species: *Acacia ancistrocarpa, A. citrinoviridis, A. arida, A.*

synchronicia, Eucalyptus leucophloia ssp. *leucophloia, Gossypium robinsonii, Senna glutinosa* ssp. *glutinosa* and *Tephrosia uniovulata*. Sites TR039, TR100.

5. Acacia Shrublands over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Triodia wiseana* Hummock Grasslands

S5b AatkAbTwTsprr *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland
This vegetation type occurred predominantly on the Robe Land System with smaller proportions on the Boolgeeda and Newman Land Systems. Associated species: *Corchorus lasiocarpus* ssp. *parvus*, *Grevillea wickhamii* ssp. *macrodonta*, *Indigofera monophylla* (grey/green leaflet form), *Ptilotus calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *pruinosa*, *Sida* aff. *pilbarensis* (EOB46-01B) and *Tephrosia uniovulata*. Sites CE002, CE004, CE005, CE006, CE007, CE008, CE011, CE013, CE017, CE018, CE020, CE021, CE022, CE023, CE024, CE025, CE027, TC125, API-5009.

S5c AbDAcTsprrTw *Acacia bivenosa* open shrubland over *Dampiera candicans* low shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* hummock grassland
This vegetation type occurred only on the Robe Land System. It was recorded on Cochrane mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *A. inaequilatera*, *Corchorus laniflorus*, *Dodonaea coriacea*, *Grevillea pyramidalis* ssp. *leucadendron*, *Jasminum* didymum ssp. *lineare*, *Ptilotus astrolasius* var. *astrolasius*, *Ptilotus calostachyus* var. *calostachyus*, *P. exaltatus* var. *exaltatus*, *Senna glutinosa* ssp. *glutinosa*, *Sida* aff. *pilbarensis* (EOB46-01B) and *Solanum* aff. *phlomoides*. Site CR003.

S5d AbTwTsprr *Acacia bivenosa* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland
This vegetation type occurred predominantly on the Robe Land System with smaller proportions on the Capricorn and Urandy Land Systems. Associated species: *Acacia ancistrocarpa*, *Bonamia media* var. *villosa*, *Corchorus* aff. *parviflorus*, *C. sidoides* ssp. *sidoides*, *Dodonaea coriacea*, *Ptilotus astrolasius* var. *astrolasius*, *Ptilotus calostachyus* var. *calostachyus*, *Senna* glutinosa ssp. *glutinosa* x *luerssenii*, *S. glutinosa* ssp. *luerssenii*, *S. glutinosa* ssp. *pruinosa*, *Sida* aff. *pilbarensis* (EOB46-01B) and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CN005, CR001, CR004, FM001, FM002, FM021, WPI-209, WPI-215, WPI-218, WPI-219, WPI-220, WPI-221, 939, WPI-940.

S5e AcApAiTwTsprr *Acacia citrinoviridis, A. pruinocarpa, A. inaequilatera* high open shrubland over *Triodia wiseana, T.* sp Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland
This vegetation type occurred only on the Robe Land System. It was recorded on Upper Cane mesa within the study area. Associated species: *Acacia bivenosa*, *Eucalyptus leucophloia* ssp. *leucophloia*, *Jasminum didymum* ssp. *lineare*, *Keraudrenia nephrosperma*, *Ptilotus calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa* and *Solanum* aff. *phlomoides*. Sites UC003, UC012, UC017, UC020, UC022, WPI-288, WPI-289.

S5f AiAbTwTsprr *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland
This vegetation type occurred only on the Robe Land System. It was recorded on Kens Bore mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. pruinocarpa*, *Goodenia stobbsiana*, *Gossypium australe* (Burrup Peninsula form), *Petalostylis labicheoides*, *Ptilotus astrolasius* var. *astrolasius*, *P. calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *pruinosa*, *S. notabilis*, *Sida pilbarensis* (ferruginous form), *Tephrosia*

uniovulata and *Trichodesma zeylanicum* var. *zeylanicum*. Sites KB001, KB027, KB037, KB042, KB043, KB044, KB045, KB046.

S5g AiAcTwTsprr *Acacia inaequilatera, A. citrinoviridis* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Upper Cane mesa within the study area. Associated species: *Acacia bivenosa*, *A. pruinocarpa*, *A. ptychophylla*, *Eremophila fraseri* ssp. *fraseri*, *Indigofera monophylla* (Cape Preston form), *Senna glutinosa* ssp. *pruinosa* and *Solanum* aff. *phlomoides*. Sites UC001, UC013, UC014, UC016, UC021, UC024, WPI-290.

S5h AiPlTsprrTw *Acacia inaequilatera, Petalostylis labicheoides* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Kens Bore mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Bonamia media* var. *villosa*, *Bulbostylis barbata*, *Cleome viscosa*, *Corchorus* aff. *parviflorus* (JW011-11), *C. sidoides* ssp. *sidoides*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eriachne mucronata* (typical form), *Goodenia stobbsiana*, *Grevillea pyramidalis* ssp. *leucadendron*, *Portulaca oleracea*, *Ptilotus astrolasius* var. *astrolasius*, *P. fusiformis* var. *fusiformis*, *Senna glutinosa* ssp. *pruinosa*, *S. notabilis*, *Trachymene oleracea* ssp. *oleracea* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites KB009, KB026, KB031, WPI-255, WPI-256, WPI-257, WPI-258.

S5i ApAbTwTsprr *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

This vegetation type occurred only on the Robe Land System. This vegetation occurred on Cardo North mesa. Associated species: *Acacia ancistrocarpa, Acacia atkinsiana, Corchorus laniflorus, Cassytha capillaris, Jasminum didymum* ssp. *lineare* and *Petalostylis labicheoides*. Sites CN002, CP167.

S5j ApTsprrTw *Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Cardo North and Jewell mesa within the study area. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. bivenosa, Eucalyptus leucophloia* ssp. *leucophloia, Eremophila fraseri* ssp. *fraseri, Grevillea wickhamii, Petalostylis labicheoides, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, P. incanus* var. *incanus, Senna glutinosa* ssp. g*lutinosa*, *S. glutinosa* ssp. *pruinosa* and *Tribulus suberosus.* Sites CN003, CN007, CN008, CN009, JW001.

S5k ApERfTwTsprr *Acacia pruinocarpa* scattered tall shrubs over *Eremophila fraser*i ssp. *fraseri* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Cardo East and Upper Cane mesa within the study area. Associated species: *Acacia ancistrocarpa, A. aneura* var. *aneura, A. bivenosa, A. citrinoviridis, A. inaequilatera, Corchorus laniflorus, C. sidoides, Dysphania rhadinostachya* ssp. *rhadinostachya, Eucalyptus leucophloia* ssp. *leucophloia, Gossypium australe* (Burrup Peninsula form), *Grevillea berryana, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, S. notabilis, Sida* aff. *echinocarpa* (MET 15,350) and *Solanum lasiophyllum.* Sites CE001, CE003, CE029, CE031, UC007, UC008, UC029, UC030, API5020.

S5l CfAcERlaTsprr *Corymbia ferriticola* ssp. *ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

This vegetation type occurred only on the Robe Land System. It was recorded on Upper Cane mesa within the study area. Associated species: *Acacia colei* var. *colei*, *A. tumida* var. *pilbarensis*, *Cheilanthes brownii*, *Clerodendrum floribundum* var. *angustifolium*, *Cymbopogon ambiguus*, *Cyperus cunninghamii* ssp. *cunninghamii*, *Dodonaea pachyneura*, *Duperreya commixta* and *Eriachne mucronata* (typical form). Site UC002.

6. *Acacia synchronicia* Shrublands

S6a AsTw *Acacia synchronicia* open shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a smaller proportion on the Stuart Land System. Associated species: *Acacia atkinsiana, A. bivenosa, A. inaequilatera, Corymbia hamersleyana, Corchorus laniflorus, Euphorbia boophthona* (Large seed form), *Gossypium australe, Senna notabilis, Sida arsiniata, Ptilotus astrolasius, Senna artemisioides* ssp. *oligophylla, Stylobasium spathulatum, Tephrosia uniovulata* and *Triodia epactia*. Sites CMP001, CMP009, CP146.

7. Hard Spinifex Hummock Grasslands

S7c AbSsspTw *Acacia bivenosa, Senna* spp. open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Capricorn and Robe Land Systems with a proportion on the Boolgeeda, Newman, Rocklea, Stuart and Urandy Land Systems. Mixed species of *Senna* within this vegetation type consisted of, *Senna artemisioides* ssp*. helmsii, S. artemisioides* ssp*. oligophylla, S. artemisioides* ssp*. oligophylla x helmsii, S. glutinosa* ssp*. glutinosa, S. glutinosa* ssp*. luerssenii, S. glutinosa* ssp*. x luerssenii, S. glutinosa* ssp*. pruinosa* and *S. notabilis.* Other associated species include: *Acacia ancistrocarpa, A. inaequilatera, A. synchronicia, Cleome viscosa, Dysphania rhadinostachya* ssp*. rhadinostachya, Euphorbia* sp. (B170-4)*, E. australis, Gossypium australe* (Burrup Peninsula form)*, Hibiscus sturtii* var*. campylochlamys, Ptilotus astrolasius* var*. astrolasius, P. calostachyus* var*. calostachyus, P. fusiformis* var*. fusiformis, Sida* aff*. echinocarpa* (MET 15,350)*, Solanum diversiflorum, S. lasiophyllum, Tribulus suberosus* and *Trichodesma zeylanicum* var*. zeylanicum.* Sites CMP019, CMP022, CR018, CW028, CW061, CW060, CWW061, KB027, KB030, JW011, TR032, UCW004.

S7d AbTw *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type was widespread throughout the study area and occurred predominantly on the Capricorn and Robe Land Systems with a proportion on the Boolgeeda, Newman, Rocklea and Urandy Land Systems. It was also one of the most widespread vegetation types throughout the Cape Preston Rail study area. Associated species: *Acacia ancistrocarpa, A. arida, A. inaequilatera, A. pyrifolia* var. *pyrifolia, A. synchronicia, Corchorus lasiocarpus, C. parviflorus, C. sidoides, Eucalyptus leucophloia* ssp. leucophloia*, Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron, Hakea lorea* ssp. *lorea, Petalostylis labicheoides, Tephrosia uniovulata, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Scaevola spinescens* (broad form), *Senna artemisioides* ssp. *oligophylla*, *Senna glutinosa* ssp. *glutinosa, Senna glutinosa* ssp. *pruinosa* and *Triodia epactia.* Sites AD019, ASA009, CP062, CP068, CP072, CP128, CP140, CP169, CP193, CP213, CP249, CMP024, CR029, CP166, CP182, CP186, CP204, CP214, CP226, CP285, CP297, CP301, CP315, CP333, CP397, CP023, CP099, CP117, CP399, CP401, CP433, CP439, CP459, CP460, CP475, CP476, CP477,

CP481, CW075, CWW064, CWW065, CWW063, HR072, JW006, KB028, KB030, TC101, TC102, TC103.

S7e AiAbTw *Acacia inaequilatera* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a proportion on the Rocklea and Urandy Land Systems. Associated species: *Acacia ancistrocarpa, Hakea lorea* ssp. *lorea*, *Corchorus incanus* ssp. *incanus, Senna glutinosa* ssp. *glutinosa, Triumfetta clementii, Enneapogon caerulescens, Aristida contorta, Bonamia media* var. *villosa, Gomphrena cunninghamii, Solanum lasiophyllum, Scaevola spinescens* (broad form), *Hibiscus sturtii* var. *platychlamys, Swainsona formosa* and *Ptilotus calostachyus* var*. calostachyus* and *P. auriculifolius.* No sites in this vegetation type were recorded within the study area, however sites were recorded in this vegetation type within the Cape Preston Rail study area.

S7f AiAmAbTw *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa, A. maitlandii* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred only in the Robe Land System. Associated species: *Acacia ancistrocarpa, Grevillea wickhamii,* Hakea lorea ssp. *lorea, Ptilotus astrolasius var. astrolasius* and *Senna glutinosa* ssp. *glutinosa.* Sites TR025, TR072, TR073.

S7g AiAsTw *Acacia inaequilatera* and *A. synchronicia* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred in the Boolgeeda, Capricorn, Robe and Rocklea Land Systems. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. bivenosa, Cleome viscosa, Corchorus sidoides* ssp. *sidoides, Eremophila cuneifolia, Eucalyptus leucophloia* ssp. *leucophloia, Gomphrena cunninghamii, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Rhynchosia minima* var. *australis, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, Sida arsiniata, Solanum lasiophyllum, Tephrosia uniovulata, Triodia epactia* and *Triumfetta clementii.* Sites CP177, CP179, CP181, TC037.

S7h AiTEspbTw *Acacia inaequilatera* scattered tall shrubs over *Tephrosia* sp. B Kimberley Flora (C.A. Gardner 7300) open shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Boolgeeda Land System with a very small area. Associated species: *Gossypium australe* (Burrup Peninsula form), *G. robinsonii*, *Senna artemisioides* ssp. *oligophylla* and *Stylobasium spathulatum*. Site CP114.

S7i AiTw *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland

This vegetation type was widespread throughout the study area. It occurred predominantly in the Rocklea Land System with a proportion in the Boolgeeda, Capricorn, Newman, Robe, Stuart and Urandy Land Systems. Associated species: *Acacia ancistrocarpa, A. bivenosa, A, synchronicia, Bonamia media* var. *villosa, Boerhavia gardneri, Corchorus laniflorus, C. parviflorus, Corymbia hamersleyana, Cullen leucochaites, Eucalyptus leucophloia* spp. *leucophloia, Eremophila fraseri* ssp. *fraseri, Grevillea pyramidalis* ssp. *leucadendron, G. wickhamii, Hakea lorea spp. lorea, Hibiscus sturtii* var. *campylochlamys, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna artemisioides* ssp. *helmsii*, *S. artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, Sida* aff. *echinocarpa, Sida pilbarensis, Solanum diversifolium, S. lasiophyllum, Tephrosia uniovulata, Trachymene oleracea* ssp. *oleracea, Tribulus suberosus* and *Trichodesmoides zeylanicum* var. *zeylanicum.* Sites AD001, AD005, AD016, AD018, AD022, AD029, AD030, ASN030, ASN002, ASN003, ASN024, ASN025, CMP010, CMP012, CMP013, CP039, CP074, CP078, CP080, CP150, CP152, CP175, CP189, CP215, CP221, CP534, CP537, CW084, HR002, HR014, HR022, HR028, HR031, HR033,

HR035, IN002, IN008, IN010, IN011, IN012, OF002, TC007, TC040, TC066, TC068, TC070, TC072, TC073, TC074, TC075, TC077, TC078, TC079, TC080, TC081, TC083, TC084, TC087, TC089, TC090, TC093, TC095, TC151, UCW015, UCW016, UC031, WPI271, WPI272.

S7j ChAbTw *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred only in the Capricorn Land System with a very small area. Associated species: *Acacia ancistrocarpa, A. inaequilatera, A. synchronicia, Eriachne helmsii*, *Gossypium australe* (Burrup Peninsula form), *Senna glutinosa* ssp. *pruinosa, S. artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, Ptilotus astrolasius* ssp. *astrolasius, Sida pilbarensis* (green form) and *Hakea lorea* ssp. *lorea.* No sites were recorded in the study area with this vegetation type, however sites were recorded in the Cape Preston Rail study area with this vegetation type.

S7k ChAmTw *Corymbia hamersleyana* scattered low trees over *Acacia maitlandii* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type only occurred in the Capricorn Land System with a very small area. It was recorded in the Upper Cane Waste area within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Dampiera candicans*, *Grevillea wickhamii* ssp. *hispidula*, *Hakea lorea* ssp. *lorea*, *Jasminum didymum* ssp. lineare, *Keraudrenia nephrosperma*, *Senna glutinosa* ssp. *pruinosa*, *Solanum horridum*, *Solanum lasiophyllum* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Site UCW007.

S7l ChGwAiAbTw *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* ssp. *hispidula, Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* low scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type only occurred in the Capricorn Land System and was recorded in the proposed Airstrip. Associated species: *Bonamia media* var. *villosa, Corchorus laniflorus, Ptilotus calostachyus* var. calostachyus, *P. clementii, Senna artemisioides* ssp. *oligophylla* x *helmsii* and *Tephrosia uniovulata.* Sites ASN015, ASN021, ASN038.

S7n Tw *Triodia wiseana* open hummock grassland

This vegetation type was widespread throughout the study area. It predominantly occurred in the Capricorn and Robe Land Systems with a proportion in the Boolgeeda, Newman, Rocklea, Stuart and Urandy Land Systems. Associated species: *Acacia ancistrocarpa, A. bivenosa, A. synchronicia, A. inaequilatera, A. xiphophylla, A. atkinsiana, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, Senna artemisioides* ssp. *oligophylla, Senna artemisioides* ssp. oligophylla x *helmsii, Eucalyptus leucophloia* ssp. *leucophloia, Senna glutinosa* ssp. *luerssenii, Indigofera monophylla, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus* and *Gossypium australe*. Sites AD017, ASA008, ASN014, ASN026, CE030, CMP002, CNW001, CNW004, CNW007, CR021, CW025, CW058, HR046, KB029, KB032, TC011, TC049, TC051, TC120, TC124, TC137, TRW002, UCW020, UCW021.

8. Low Mulga Woodlands

S8a AaneDOcTw *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Dodonaea coriacea* open shrubland over *Triodia wiseana* hummock grassland

This vegetation type occurred in the Boolgeeda, Capricorn and Robe Land Systems. Associated species: *Amaranthus mitchellii, Cleome viscosa, Cucumis maderaspatanus, Dysphania rhadinostachya* ssp. *rhadinostachya, Hibiscus coatesii, Maireana tomentosa* ssp. *tomentosa, Polycarpaea longiflora, Ptilotus exaltatus, P. obovatus, Salsola tragus* ssp. *tragus*, *Senna glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *pruinosa, Themeda triandra* and *Trachymene oleracea* ssp. *oleracea.* Sites CWW062, HR036.

S8b AaneERlalTw *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Eremophila latrobei* ssp. *latrobei* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Acacia bivenosa, A. pruinocarpa, Corchorus incanus* ssp. *incanus, Lepidium pedicellosum, Maireana georgei, M. planifolia, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus, Senna artemisioides* ssp. *oligophylla* x *helmsii, S. glutinosa* ssp. *luerssenii* and *Solanum lasiophyllum.* Sites TR009r, TR027, TR062.

S8c AaneGwAatkTe *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Grevillea wickhamii* ssp. *hispidula, Acacia atkinsiana* high shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Abutilon* aff. *lepidum* (1) (MET 15 352), *Acacia bivenosa, A. pruinocarpa, Cheilanthes sieberi* ssp. *sieberi, Corchorus* aff. *parviflorus, Corchorus incanus* ssp. *incanus, Corymbia hamersleyana, Cymbopogon ambiguus, Dodonaea coriacea, Dysphania rhadinostachya* ssp. *rhadinostachya, Eriachne pulchella* ssp. *pulchella, Euphorbia boophthona, Goodenia microptera, Gossypium australe, Gossypium robinsonii, Haloragis gossei* var. *gossei, Hibiscus sturtii* var. aff. *grandiflorus, Jasminum didymum* ssp. *lineare, Pterocaulon serrulatum, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, Ptilotus exaltatus* var. *exaltatus, Senna artemisioides* ssp. *helmsii, S. artemisioides* ssp. *oligophylla, S. artemisioides* ssp. *oligophylla x helmsii, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, Senna notabilis, Solanum diversiflorum, S. horridum, S. lasiophyllum, S. sturtianum, Trachymene oleracea* ssp. *oleracea, Tribulus suberosus, Trichodesma zeylanicum* var. *zeylanicum* and *Triodia wiseana*. Sites TR019.

9. Low Shrublands

S9a AaDAcTw *Acacia ancistrocarpa* open shrubland over *Dampiera candicans* low shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion in the Capricorn Land System. It was recorded on Catho Well mesa within the study area. Associated species: *Acacia arida*, *A. bivenosa*, *A. pyrifolia* var. *morrisonii*, *Keraudrenia nephrosperma*, *Ptilotus calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *Sida pilbarensis* (ferruginous form) and *Tephrosia uniovulata*. Site CW004.

10. Snappy Gums and *Acacia* shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)

S10a ElAaneAcGbTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia, Acacia aneura* (narrow, fine veined, Site 1259) low open woodland over *A. citrinoviridis, Grevillea berryana* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Upper Cane Mesa within the study area. Associated species: *Acacia pruinocarpa*, *Corymbia ferriticola* ssp. *ferriticola*, *Eremophila fraseri* ssp. *fraseri*, *E. latrobei* ssp. *latrobei*, *Sarcostemma viminale* ssp. *australe*, *Sida rohlenae* ssp. *rohlenae* and *Polycarpaea longiflora* (Whiye form, M13-7). Sites UC004, UC005, UC025, UC026.

S10b ElAatkAbTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* very open hummock grassland

This vegetation type occurred predominantly in the Capricorn Land System with a proportion in the Boolgeeda and Robe Land Systems. Associated species: *Acacia synchronicia, Bonamia media* var. *villosa, Dysphania rhadinostachya* ssp. *rhadinostachya, Goodenia stobbsiana, Grevillea pyramidalis* ssp. *leucadendron, Indigofera monophylla, Mollugo molluginea, Polycarpaea holtzei, P. longiflora, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, Sida pilbarensis* (ferruginous form) *Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, Solanum diversiflorum* and *Trianthema glossostigma.* Sites TC041, TRW001

S10c ElAbTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* very open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. pruinocarpa*, *A. synchronicia*, *A. tumida* var. *pilbarensis*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Ptilotus calostachyus* var. *calostachyus* and *Sida pilbarensis* (ferruginous form). Sites TR020, TR023, TR045, TR103.

S10d ElAbTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Cochrane Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. atkinsiana*, *Corchorus* aff. *parviflorus*, *Corchorus sidoides* ssp. *sidoides*, *Dodonaea coriacea*, *Gossypium australe* (Burrup Peninsula form), *Petalostylis labicheoides*, *Ptilotus astrolasius* var. *astrolasius*, *Ptilotus calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *Sida* aff. *pilbarensis* (EOB46-01B) and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CR006, CR008, CR012.

S10e ElAcAiTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis, A. inaequilatera* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

This vegetation type occurred in the Capricorn, Newman and Robe Land Systems and was recorded on Upper Cane Mesa within the study area. Associated species: *Grevillea wickhamii* ssp. *hispidula*, *Ptilotus calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *luerssenii* and *Solanum* aff. *phlomoides*. Sites UC010, UC023.

S10f ElAcTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Upper Cane and Kens Bore mesas within the study area. Associated species: *Acacia pruinocarpa*, *Eremophila fraseri* ssp. *fraseri* and *Triodia wiseana*. Sites UC011, UC018, UC019, UC027.

S10g ElAcTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Ken's Bore Mesa within the study area. Associated species: *Acacia bivenosa*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eremophila fraseri* ssp. *fraseri*, *Gomphrena cunninghamii*, *Paspalidium clementii*, *Polycarpaea holtzei*, *Ptilotus astrolasius* var. *astrolasius*, *Sarcostemma viminale* ssp. *australe*, *S. glutinosa* ssp. *glutinosa*, *Solanum diversiflorum* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites KB012, KB013.

S10h ElAmTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia maitlandii* open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred in the Capricorn and Robe Land Systems in the Upper Cane Waste Area within the study area. Associated species: *Acacia synchronicia, Corchorus laniflorus, C. sidoides, Senna glutinosa* ssp. *luerssenii, S. glutinosa* ssp. *pruinosa* and *Solanum lasiophyllum.* Sites UCW005, UCW006, UCW009.

S10i ElApTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* open hummock grassland

This vegetation type occurred in the Capricorn, Robe and Urandy Land Systems. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eremophila fraseri* ssp. *fraseri*, *Eriachne mucronata* (typical form), *Gossypium australe* (Burrup Peninsula form), *Gossypium robinsonii*, *Ptilotus astrolasius* var. *astrolasius*, *P. calostachyus* var. *calostachyus*, *Senna glutinosa* ssp. *glutinosa*, *Tribulus suberosus* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CN001, CN007, CN009, CMP018, CR014, FM020, JW001, JW003, TR005, TR028, TR063, TR064, TR065, TR086, API-1167, WPI-216.

S10j ElApTwTsprrERIm *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Triodia wiseana, T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland over *Eriachne mucronata* very open tussock grassland

This vegetation type occurred in the Capricorn, Newman, Robe and Urandy Land Systems. Associated species: *Abutilon dioicum, Acacia bivenosa, Cymbopogon ambiguus, Dysphania rhadinostachya* ssp. *rhadinostachya, Eucalyptus leucophloia* ssp. *leucophloia, Jasminum didymum* ssp. *lineare, Paspalidium clementii, Ptilotus astrolasius* var. *astrolasius, Rhodanthe margarethae, Senna glutinosa* ssp. *glutinosa* and *Trichodesma zeylanicum* var. *zeylanicum.* Sites JW002r, TR004r, CR001r, KB027, TR081, API1166.

S10k ElAtTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred in only the Robe Land System, predominantly on Cardo East Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Dodonaea coriacea*, *Grevillea wickhamii* ssp. *macrodonta*, *Hibiscus sturtii* var. *campylochlamys*, *Indigofera monophylla* (grey/green leaflet form) and *Ptilotus fusiformis* var. *fusiformis*. Sites CE009, CE010, CE012, CE014, CE016, CE019, API-5010, API-5011.

S10l ElPlAaTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Petalostylis labicheoides* high open shrubland over *Acacia ancistrocarpa* scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* very open hummock grassland

This vegetation type occurred in only the Robe Land System on Trinity Mesa within the study area. Associated species: *Acacia maitlandii*, *A. pruinocarpa*, *A. bivenosa*, *A. citrinoviridis*, *Corymbia hamersleyana* and *Gossypium robinsonii*. Sites TR017, TR040, TR078, TR079, TR080.

S10m ElPlTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Petalostylis labicheoides* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *T. wiseana* open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Jewell Mesa within the study area. Associated species: *Abutilon dioicum*, *Acacia bivenosa*, *A. synchronicia*,

Eriachne mucronata (typical form), *Gossypium australe* (Burrup Peninsula form) and *Jasminum didymum* ssp. *lineare*. Sites JW001r, JW005, JW007.

S10n ElTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Capricorn and Robe Land Systems with a proportion in the Boolgeeda, Newman and Stuart Land Systems. Associated species: *Acacia bivenosa, A. inaequilatera, Eriachne mucronata, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. glutinosa, *S. glutinosa* ssp. *luerssenii* and *Trichodesma zeylanicum* var. *zeylanicum.* Sites CN004, JW004, KB004, TsRR020, TsRR021.

11. Snappy Gums over *Acacia* Shrubs

S11a ElAaAbTw *Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistro*carpa, *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred in the Capricorn and Robe Land Systems and was recorded on Catho Well Mesa or in the Catho Well Waste Area within the study area. Associated species: *Acacia citrinoviridis, A. inaequilatera, Petalostylis labicheoides, Ptilotus calostachyus, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa* and *Tribulus suberosus.* Sites CWW052, CWW053, CWW054, CWW056, CW056, CW070, CW071, CW072, CW076, CW077.

S11b ElAaneApTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia aneura* (narrow, fine veined, Site 1259) low open woodland over *A. pruinocarpa* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion in the Boolgeeda Land System. It was recorded predominantly on Trinity Mesa within the study area. Associated species: *Acacia bivenosa, Corchorus incanus* ssp. *incanus, Eremophila latrobei* ssp. *latrobei, Eriachne mucronata, Ficus brachypoda, Ptilotus astrolasius* var. *astrolasius, Solanum diversiflorum, S. horridum, S. lasiophyllum* and *Triodia epactia.* Sites TR003, TR067, TR029, TR074, KB030.

S11c ElAarAbTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia arida, A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion in the Capricorn Land System. It was recorded predominantly on Catho Well Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *Dampiera candicans*, *Dodonaea coriacea*, *Indigofera monophylla*, *Petalostylis labicheoides*, *Ptilotus astrolasius* var. *astrolasius*, *P. calostachyus* var. *calostachyus* and *Senna glutinosa* ssp. *glutinosa*. Sites CW020, CW023, CW042, CW063, CW083.

S11d ElAbAsTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland to low woodland over *Acacia bivenosa* and *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion in the Capricorn and Rocklea Land Systems. Associated species: *Boerhavia coccinea*, *Cymbopogon ambiguus*, *Gomphrena cunninghamii*, *Goodenia forrestii*, *Grevillea wickhamii*, *Hakea lorea* ssp. *lorea*, *Paspalidium clementii*, *Ptilotus astrolasius* var. *astrolasius*, *Senna glutinosa* ssp. *glutinosa* and *Streptoglossa decurrens.* Sites CP165, JW009, TR057.

S11e ElAbTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland
This vegetation type occurred predominantly in the Capricorn Land System with a proportion in the Boolgeeda, Newman, Robe, Rocklea and Urandy Land Systems. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. pruinocarpa, A. synchronicia, Corchorus sidoides, Eriachne mucronata, Gossypium australe* (Burrup Peninsula form), *Indigofera monophylla, Pterocaulon sphaeranthoides, Ptilotus calostachyus* var. *calostachyus, P. obovatus* var. *obovatus, Senna glutinosa* spp. *glutinosa, S. glutinosa* spp. *pruinosa, Solanum diversiflorum, Stylobasium spathulatum, Terminalia canescens* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Sites ASA001, AD002, AD020, AD021, AD033, CEW007, CMP023, CNW006, CP165, CP195, TR056, TC104, TC127, TC128, WPI469, WPI470.

S11f ElAcTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high shrubland over *Triodia wiseana* open hummock grassland
This vegetation type occurred in only the Robe Land System on Catho Well and Trinity Mesas within the study area. Associated species: *Acacia ancistrocarpa, A. arida, A. bivenosa, A. pruinocarpa, Corymbia hamersleyana, Cymbopogon ambiguus, Duperreya commixta, Dysphania rhadinostachya* ssp. *rhadinostachya, Eriachne mucronata, Euphorbia boophthona, Gossypium australe* (Burrup Peninsula form)*, G. robinsonii, Grevillea wickhamii* ssp. *hispidula*, *Indigofera monophylla* (grey/green leaflet form), *Jasminum didymum* ssp. *lineare, Keraudrenia nephrosperma, Leptopus decaisnei* var. *orbicularis, Petalostylis labicheoides, Ptilotus astrolasius* var. *astrolasius, P. obovatus* var. *obovatus, Senna artemisioides* ssp. *oligophylla* x *helmsii, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *luerssenii, Sida* aff*. pilbarensis* (EOB46-01B), *Solanum diversifolium, S. Sturtianum, Sporobolus, Streptoglossa decurrens, Tephrosia uniovulata, Themeda triandra, Trachymene oleracea* ssp. *oleracea, Tribulus suberosus* and *Trichodesma zeylanicum* var. *zeylanicum.* Sites CW010, CW016, CW017r, CW018, CW066, CW041, CW069, CW066, TR069, TR024, TR075.

S11g ElAptTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia ptychophylla* low open shrubland over *Triodia wiseana* hummock grassland
This vegetation type occurred in the Rocklea and Urandy Land Systems and was recorded in the Transport Corridor within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *Ptilotus astrolasius* var. *astrolasius*, *Senna glutinosa* ssp. *glutinosa*, *S. glutinosa* ssp. *pruinosa* and *Tribulus suberosus*. Sites TC113, TC114, TC118.

S11h ElApTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland
This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa, A. bivenosa, A. inaequilatera, A. atkinsiana, A. synchronicia, Grevillea wickhamii, Senna glutinosa* ssp. *glutinosa, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *Corymbia hamersleyana, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, P. clementii, Senna glutinosa* ssp. *luerssenii, S. notabilis, Tribulus suberosus, Dysphania rhadinostachya* ssp. *rhadinostachya, Cymbopogon ambiguus, Corchorus parviflorus, Ptilotus exaltatus* var. *exaltatus, Solanum horridum, Sida pilbarensis* (ferruginous form), *Trichodesma zeylanicum* var. *zeylanicum, Triodia epactia* and *Solanum lasiophyllum*. Sites TR001, TR002, TR013, TR015, TR031, TR035, TR036, TR047, TR051, TR061, TR068, TR076, WPI-900.

S11i ElAtAarTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Acacia arida* scattered shrubs over *Triodia wiseana* open hummock grassland
This vegetation type occurred in the Capricorn and Robe Land Systems and was recorded on Catho Well Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*,

Petalostylis labicheoides, *Senna glutinosa* ssp. *glutinosa*, *Tephrosia uniovulata* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CW005, CW007, CW044, CW064, CW073.

S11j ElAtTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred in the Capricorn and Robe Land Systems and was recorded on Trinity Mesa within the study area. Associated species: *Acacia bivenosa, A. atkinsiana, A. pruinocarpa, Grevillea wickhamii, Senna glutinosa* ssp. *glutinosa, Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367), *Indigofera monophylla*, *I.* sp. Bungaroo Creek (S. van Leeuwen 4301), *Petalostylis labicheoides, Trichodesma zeylanicum* var. *zeylanicum, Senna notabilis, Solanum sturtianum, Stylobasium spathulatum, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, P. obovatus, Pterocaulon serrulatum, Keraudrenia nephrosperma, Euphorbia boophthona, Goodenia microptera* and *Gossypium australe*. Sites TR011, TR038, TR087, TR107.

S11k ElChAbTw *Eucalyptus leucophloia* ssp*. leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly in the Capricorn Land System with proportions in the Boolgeeda, Newman and Robe Land Systems. It was recorded predominantly in the proposed Airstrip within the study area. Associated species: *Acacia inaequilatera, Corchorus laniflorus, Cymbopogon ambiguus, Indigofera monophylla, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna glutinosa* ssp. *glutinosa, Tephrosia uniovulata, Terminalia canescens* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Sites ASN007, ASN008, ASN010, ASN028, ASN03, ASN035, ASN036, ASA010, API3237, API7035, API3241.

S11l ElGwApTwERIt *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland *Grevillea wickhamii* ssp. *hispidula, Acacia pruinocarpa* high shrubland over *Triodia wiseana* very open hummock grassland over *Eriachne tenuiculmis* very open tussock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Abutilon dioicum, Aristida burbidgeae, Cymbopogon ambiguus, Cyperus cunninghamii* ssp. *cunninghamii, Eremophila latrobei* ssp. *latrobei* and *Stylobasium spathulatum.* Site TR006.

S11m ElTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* hummock grassland

This vegetation type occurred in the Robe, Rocklea and Urandy Land Systems and was recorded on Ken's Bore Mesa within the study area. Associated species: *Acacia ancistrocarpa*, *A. bivenosa*, *A. inaequilatera*, *Cleome viscosa*, *Corchorus* aff. *parviflorus*, *C. sidoides* ssp. *sidoides*, *Cymbopogon ambiguus*, *Gossypium australe* (Burrup Peninsula form), *Indigofera monophylla* (grey leaflet form), *Jasminum didymum* ssp. *lineare*, *Polycarpaea holtzei*, *P. longiflora* (White form, M13-7), *Ptilotus astrolasius* var. *astrolasius*, *P. fusiformis* var. *fusiformis*, *P. obovatus* var. *obovatus*, *Senna artemisioides* ssp. *oligophylla* x *helmsii*, *S. glutinosa* ssp. *pruinosa*, *Sida* aff. *echinocarpa* (MET 15,350), *S. clementii* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367). Site KB003.

12. Soft Spinifex Hummock Grasslands

S12a AbTe *Acacia bivenosa* shrubland over *Triodia epactia* hummock grassland

This vegetation type occurred in the Robe and Urandy Land Systems. Associated species: *Acacia ancistrocarpa*, *A, inaequilatera*, *A. tumida*, *Grevillea wickhamii*, *Ptilotus astrolasius*,

Ptilotus calostachyus, *Senna artemisioides* ssp. *oligophylla*, *S. glutinosa* ssp. *luerssenii* and *Solanum diversiflorum*. Sites KBW012, HR067, TC055.

S12b Tsprr *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Cardo North Mesa within the study area. Associated species: *Acacia bivenosa, Acacia pruinocarpa, Clerodendrum floribundum* var. *angustifolium, Corchorus lasiocarpus* ssp. *parvus, Cymbopogon ambiguus, Eriachne pulchella* ssp. *lineare, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Senna glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa* and *Solanum horridum.* Sites CN006, CN010.

S12c Tsprr (burnt) *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland, recently burnt

This vegetation type occurred in only the Robe Land System and was recorded on Cardo East Mesa within the study area. Associated species: *Acacia bivenosa*, *A. victoriae*, *Indigofera monophylla*, *Ptilotus calostachyus* var. *calostachyus*, *Senna notabilis* and *Sida pilbarensis*. Site CE026.

13. *Terminalia* Woodlands

S13a TERcAcTw *Terminalia canescens, Acacia citrinoviridis* low woodland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred in only the Capricorn Land System and was recorded in the proposed Airstrip within the study area. Associated species: *Indigofera rugosa*, *Senna artemisioides* ssp. *oligophylla* and *Themeda triandra*. Site ASN034.

S13b TERcTw *Terminalia canescens* low open woodland over *Triodia wiseana* scattered hummock grasses

This vegetation type occurred predominantly in the Capricorn Land System with a proportion in the Boolgeeda, Robe and Rocklea Land Systems. Associated species: *Ptilotus obovatus* var. *obovatus, Acacia arida, Corchorus crozophorifolius, Senna glutinosa* ssp. *glutinosa, Polycarpaea longiflora, Eucalyptus leucophloia* ssp. *leucophloia* and *Ptilotus auriculifolius*. Sites HR006, HR043, TC015, TR030, TR042.

14*. Triodia epactia* and *Triodia wiseana* Hummock Grasslands

S14a AbTeTw *Acacia bivenosa* scattered shrubs over *Triodia epactia, T. wiseana* open hummock grassland

This vegetation type occurred in only the Robe Land System and was recorded on Trinity Mesa within the study area. Associated species: *Acacia ancistrocarpa, Acacia synchronicia, Corchorus parviflorus, Ptilotus astrolasius* var. *astrolasius, P. exaltatus* var. *exaltatus, Senna glutinosa* ssp. *glutinosa, Solanum horridum* and *Tephrosia uniovulata.* Sites TR022, TR018.

S14b AiAbTwTe *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion within the Newman, Rocklea and Urandy Land Systems. It was recorded predominantly on Ken's Bore Mesa within the study area. Associated species: *Acacia synchronicia*, *Cleome viscosa*, *Cucumis maderaspatanus*, **C. melo* ssp. *agrestis*, *Dysphania rhadinostachya* ssp. *rhadinostachya*, *Eremophila fraseri* ssp. *fraseri*, *Euphorbia australis*, *Gossypium australe* (Burrup Peninsula form), *Ptilotus astrolasius* var. *astrolasius*, *P. calostachyus* var. *calostachyus*, *Senna artemisioides* ssp. *oligophylla*, *Senna glutinosa* ssp. *pruinosa*, *Sida* aff. *echinocarpa* (MET 15,350), *Solanum* aff. *gabrielae*, *S. diversiflorum*, *Trichodesma zeylanicum* var. *zeylanicum* and

Triumfetta clementii. Sites KB014, KB015, KB016, KBW001, HR075, KB005, WPI-264, WPI-265, WPI-266.

S14c AiERfTwTe *Acacia inaequilatera* scattered tall shrubs over *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland

This vegetation type occurred predominantly in the Rocklea Land System with a proportion in the Boolgeeda Land System. Associated species: *Acacia ancistrocarpa, A. atkinsiana, A. bivenosa, A. colei* var. *colei, A. synchronicia, A. wanyu, Eremophila cuneifolia, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Indigofera monophylla, Pentalepis trichodesmoides, Ptilotus astrolasius* var. *astrolasius, Senna artemisioides* ssp. *oligophylla, S. artemisioides* ssp. *helmsii, S. glutinosa* ssp. *glutinosa, S. glutinosa* ssp. *pruinosa, Sida* aff. *echinocarpa* (MET 15,350), *Sida* sp. Wittenoom (W.R. Barker 1962), *Solanum lasiophyllum* and *Trichodesma zeylanicum* var. *zeylanicum.* Sites CP090, CP096, CP100, CP205, CP207, WPI477, WPI731, WPI478.

S14d AxAbTwTe *Acacia xiphophylla* scattered tall shrubs over *Acacia bivenosa* scattered shrubs over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly in the Robe Land System with a proportion in the Boolgeeda, Capricorn and Rocklea Land Systems. Associated species: *Acacia aneura, A. synchronicia, A. atkinsiana, A. citrinoviridis, Eucalyptus leucophloia ssp. leucophloia*, *Stylobasium spathulatum, Senna glutinosa* ssp. *pruinosa, S. glutinosa* ssp. *luerssenii, Ptilotus astrolasius, P. exaltatus, P. obovatus, Solanum lasiophyllum, Indigofera monophylla, Tribulus suberosus, Goodenia microptera* and *Keraudrenia velutina*. Sites CMP017, TC131, TC132, TR041, TR048, TR104, TRW003, TRW004, TRW006, TRW007.

Minor Creekline (I)

1. *Acacia ancistrocarpa, A. bivenosa* Shrublands

I1c ChAaAbTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. bivenosa* high shrubland over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with a smaller proportion occurring on the Robe Land System. It has been recorded in the vicinity of Catho Well mesa and Catho Well Waste areas. Associated species: *Acacia synchronicia, A. inaequilatera, Cleome viscosa, Ptilotus astrolasius, P. exaltatus* and *Sporobolus australasicus*. Sites CW043, CW052, CWW059, CWW060.

I1e ElAbAaTe *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa, A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda and Robe Land Systems with a smaller proportion occurring on the Capricorn Land System. Associated species: *Corymbia hamersleyana* and *Acacia maitlandii*. Sites BOR233, HR056, TR082.

I1f GOrAaAbTeTw *Gossypium robinsonii* scattered tall shrubs over *Acacia ancistrocarpa, A. bivenosa* shrubland over *Triodia epactia, T. wiseana* open hummock grassland

This vegetation type occurred only on the Rocklea Land System. Associated species: *Acacia inaequilatera, A. synchronicia, Corymbia hamersleyana, Corchorus laniflorus, Cymbopogon ambiguus, Gossypium australe, Scaevola spinescens* (broad form), *Senna glutinosa* ssp. *glutinosa* and *Senna notabilis*. Sites AD023, IN009, IN013, OF001.

2. *Acacia pyrifolia* High Shrublands

I2a ApyAbTe *Acacia pyrifolia* var. *pyrifolia* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Capricorn Land System with a smaller proportion occurring on the Boolgeeda Land System. It was recorded in the Transport Corridor within the study area. Associated species: *Salsola tragus* ssp. *tragus, Stylobasium spathulatum, Gossypium robinsonii, Scaevola spinescens, Senna glutinosa* ssp. *glutinosa, Ptilotus obovatus, A. ancistrocarpa, Corchorus laniflorus, Crotalaria medicaginea, Cymbopogon ambiguus, Euphorbia biconvexa, Hybanthus aurantiacus, *Malvastrum americanum, Pterocaulon sphaeranthoides, Rhynchosia minima, Solanum diversiflorum* and *S. sturtianum.* Sites TC129, TC130, TC133.

I2c ApyAcGOrTe *Acacia pyrifolia* var. *pyrifolia, A. citrinoviridis, Gossypium robinsonii* high shrubland over *Triodia epactia* very open hummock grassland
This vegetation type occurred predominantly on the Rocklea and Capricorn Land Systems with a smaller proportion on the Robe and Boolgeeda Land Systems. Associated species: *Acacia bivenosa*, *Cleome viscosa*, *Gossypium robinsonii*, *Stylobasium spathulatum*, **Malvastrum americanum*, *Solanum diversiflorum* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites BOR085, BOR152, CWW051, HR005, TC013.

I2d ChApyAtrTe/h *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Acacia trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland over mixed open herbland
This vegetation type occurred predominantly on the Urandy Land System with a smaller proportion on the Robe Land System. Associated species: *Cleome viscosa, Gossypium australe, Indigofera boviperda* ssp. *boviperda, Indigofera monophylla* and *Ptilotus astrolasius* var. *astrolasius*. Sites CR032, TC001, TC005, TC023, TC024.

I2e ChApyTe *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Boolgeeda and Capricorn Land Systems with a smaller proportion occurring on the Rocklea and Urandy Land Systems. Associated species: *Acacia bivenosa*, *Gossypium australe*, *G. robinsonii*, *Stylobasium spathulatum* and *Corchorus sidoides* ssp. *sidoides.* Sites HR016, HR051, TC111.

I2f EvChApyGOrTe/g *Eucalyptus victrix, Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia, Gossypium robinsonii* high open shrubland over *Triodia epactia* scattered hummocks over mixed open grassland
This vegetation type occurred only on the Rocklea Land System. Associated species: *Acacia ancistrocarpa*, *A. citrinoviridis*, *A. bivenosa*, **Cenchrus ciliaris*, *Tephrosia rosea* var. *glabrior*, *Gossypium australe* (Burrup Peninsula form) and *Pterocaulon sphaeranthoides*. Sites BOR102, HR026, TC032, TC033, TC034, TC035, TC036, TC039, UCW001.

3. *Acacia* Shrublands

I3a AcAbERlSTYsTe *Acacia citrinoviridis* high open shrubland over *A. bivenosa, Eremophila longifolia, Stylobasium spathulatum* open shrubland over *Triodia epactia* open hummock grassland
This vegetation type occurred predominantly on the Rocklea Land System with a smaller proportion on the Capricorn and Robe Land Systems. It has been recorded in the Transport Corridor area. Associated species: *Acacia ancistrocarpa, Corymbia hamersleyana, Pterocaulon*

sphaeranthoides, Mollugo molluginea, Ptilotus astrolasius var. *astrolasius, Senna artemisioides* ssp. *oligophylla* and *Solanum diversiflorum*. Sites TC014, TC094, TC100.

I3c ChAaTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Rocklea Land System with smaller proportions on the Boolgeeda, Urandy, Robe, Capricorn, Stuart and Newman Land Systems. Associated species: *Acacia inaequilatera, A. bivenosa, A. synchronicia, Gossypium australe, Triodia wiseana, Hakea lorea* ssp. *lorea, Senna artemisioides* ssp. *oligophylla, Stylobasium spathulatum, Rhynchosia minima* var. *australis* and *Indigofera monophylla*. Sites CMP004, CMP014, CP034, CP185, CP203, HR007, HR015, HR024, HR032, IN004, KB033, KB034, TC031, TC050, TC067, TC071, TC076, TC082, TC085, TC086, TC088, TC091, TC092, WPI-260, WPI-261.

I3f ElChAtTeTw *Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with smaller proportions on the Stuart and Boolgeeda Land Systems. Associated species: *Acacia ancistrocarpa, A. bivenosa, Grevillea wickhamii, Gossypium robinsonii* and *Stylobasium spathulatum*. Sites CMP008, CMP011, CMP016, CMP021, HR054.

5. *Corymbia* Woodlands

I5a CcAadAcAaAbTp *Corymbia candida* ssp. *candida* low open woodland over *Acacia adsurgens, A. citrinoviridis* high shrubland over *Acacia ancistrocarpa, Acacia bivenosa* open heath over *Triodia pungens* hummock grassland

This vegetation type occurred only on the Boolgeeda Land System. Associated species: *Eremophila longifolia*, *Jasminum didymum* ssp. *lineare* and *Senna artemisioides* ssp. *helmsii*. Sites HR009, HR052.

I5d ChAaAbTeTw *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* closed hummock grassland

This vegetation type occurred predominantly on the Boolgeeda and Robe Land Systems with smaller proportions on the Urandy and Newman Land Systems. It was recorded on Cochrane mesa within the study area. Associated species: *Acacia inaequilatera*, *Corchorus* aff. *parviflorus*, *Gossypium australe*, *Hakea lorea* ssp. *lorea*, *Senna artemisioides* ssp. *oligophylla*, *Waltheria indica*, *Indigofera boviperda* ssp. *boviperda*, *Cleome viscosa*, *Euphorbia coghlanii*, *Jasminum didymum* ssp. *lineare*, *Mollugo molluginea* and *Hibiscus sturtii* var. *grandiflorus*. Sites CR002, CR005, CR010, CR016, CR021.

I5e ChAatkAbTw *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurs only on the Capricorn Land System and was recorded in the proposed Airstrip within the study area. Associated species: *Acacia inaequilatera, A. tumida, Corchorus laniflorus, Evolvulus alsinoides, Grevillea wickhamii* ssp. *hispidula, Hibiscus sturtii* var. *campylochlamys, Indigofera monophylla, Jasminum didymum* ssp. *lineare, Sida* aff. *fibulifera* (HD200-6), *Sida* sp. spiciform panicles (E. Leyland s.n. 14/8/90) *Tephrosia uniovulata* and *Trichodesma zeylanicum* var. *zeylanicum.* Site ASN004.

I5f ChAcolAbGOrTe *Corymbia hamersleyana* low open woodland over *Acacia colei* var. *colei, A. bivenosa, Gossypium robinsonii* high open shrubland over *Triodia epactia* very open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with a proportion on the Robe Land System. It was recorded in the Kens Bore Waste area. Associated species: *Acacia ancistrocarpa, Acacia pyrifolia* var. *pyrifolia, Acacia synchronicia, Alternanthera nana, Bulbostylis barbata, Cleome viscosa, Corchorus laniflorus, Cucumis maderaspatanus, Cyperus vaginatus, Eragrostis cumingii, Euphorbia coghlanii, Evolvulus alsinoides* var. villosicalyx, *Goodenia stobbsiana, Gossypium australe* (Burrup Peninsula form), *Indigofera boviperda* ssp. *boviperda, Indigofera linifolia, Leptopus decaisnei* var. *orbicularis, *Malvastrum americanum, Melhania* sp. Burrup, *Pluchea ferdinandi-muelleri, Pterocaulon sphaeranthoides, Ptilotus astrolasius* var. *astrolasius, Rhynchosia bungarensis, Rhynchosia minima* var. *australis, Sida* sp *spiciform panicles* (E. Leyland s.n. 14/8/1990), *Sporobolus australasicus, Stemodia grossa, Stylobasium spathulatum, Tephrosia rosea* var. *glabrior, Themeda triandra, Triumfetta clementii, *Vachellia farnesiana, Waltheria indica.* Site KBW007.

I5g ChAiAaTe *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* high open shrubland over *A. ancistrocarpa* scattered shrubs over *Triodia epactia* open hummock grassland

This vegetation type occurred only on the Urandy Land System. Associated species: *Acacia bivenosa*, *Acacia synchronicia*, *Acacia trachycarpa*, *Acacia tumida* var. *pilbarensis*, *Corchorus parviflorus*, *Grevillea pyramidalis* ssp. *leucadendron*, *Grevillea wickhamii* ssp. *hispidula*, *Hakea lorea* ssp. *lorea*, *Indigofera monophylla*, *Indigofera rugosa*, *Senna artemisioides* ssp. *oligophylla* and *Tephrosia rosea* var. *glabrior*. Sites CP134, CP148.

I5h ChAtAatkAaTw *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis, A. atkinsiana* and *A. ancistrocarpa* shrubland over *Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with a proportion on the Boolgeeda, Capricorn, Robe and Stuart Land Systems. Associated species: *Acacia bivenosa, Acacia inaequilatera, Aristida holathera* var. *holathera, Aristida holathera* var. *latifolia, Bonamia rosea, *Cenchrus ciliaris, Cymbopogon ambiguus, Eragrostis* aff. *eriopoda* (WAS site 963), *Eremophila longifolia, Eriachne aristidea, Eucalyptus leucophloia* ssp. *leucophloia, Grevillea wickhamii* ssp. *hispidula, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* spp. *lorea, Hibiscus sturtii* var. *campylochlamys, Indigofera monophylla, Jasminum didymum* ssp. *lineare, Keraudrenia velutina* ssp. *elliptica, Petalostylis labicheoides, Ptilotus astrolasius* var. *astrolasius, Ptilotus calostachyus* var. *calostachyus, Scaevola spinescens* (broad form), *Senna artemisioides* ssp. *oligophylla, Senna glutinosa* ssp. *glutinosa, Sida pilbarensis, Tephrosia uniovulata, Trianthema pilosa, Trichodesma zeylanicum* var. *zeylanicum* and *Triodia epactia*. Sites CP066, CP108, CP112, CP116, CP171, CP231, CP239.

I5j ChAtAcAaTe *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis, A. citrinoviridis* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland

This vegetation type occurred predominantly on the Robe Land System with a proportion on the Capricorn Land System. It was recorded on Catho Well mesa within the study area. Associated species: *Ptilotus obovatus* var. *obovatus, Acacia bivenosa, Triodia wiseana, Alternanthera nana, Amaranthus mitchellii, Cleome viscosa, *Cenchrus ciliaris, Crotalaria medicaginea, Cucumis maderaspatanus, Dysphania rhadinostachya* ssp. *rhadinostachya, Goodenia forrestii, Trichodesma zeylanicum* var. *zeylanicum, Sida* aff. *fibulifera (FMG 125-20), Gossypium robinsonii, Solanum diversiflorum, Euphorbia biconvexa, Evolvulus alsinoides* var. *villosicalyx, Jasminum didymum* ssp. *lineare, Leptopus decaisnei* var. *orbicularis, Ptilotus astrolasius* var. *astrolasius, Senna artemisioides* ssp. *oligophylla, S. notabilis, Solanum sturtianum* and *Sporobolus australasicus*. Sites CW013, CW014, CW019, CW030, CW034, CW065, CW085, CW086.

I5k ChAtGOrTwTe *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis, Gossypium robinsonii* open scrub over *Triodia wiseana, T. epactia* very open hummock grassland

This vegetation type occurred predominantly on the Rocklea Land System with a proportion on the Boolgeeda Land System. Associated species: *Gossypium australe, Hibiscus sturtii* var. *campylochlamys, Indigofera monophylla*, *Pterocaulon sphacelatum, P. sphaeranthoides, Ptilotus calostachyus* var. *calostachyus, Scaevola spinescens, Sida rohlenae* ssp. *rohlenae, Trichodesma zeylanicum* var. *zeylanicum, Waltheria indica, Abutilon trudgenii* MS, *Acacia bivenosa, A. inaequilatera, Alternanthera nana, Amaranthus mitchellii, Aristida holathera* var. *holathera, Aristida holathera* var. *latifolia, Boerhavia coccinea, Cleome viscosa, Clerodendrum floribundum* var. *angustifolium, Clerodendrum tomentosum* var. *lanceolatum, Corchorus* aff. *parviflorus, Corchorus sidoides* ssp. *sidoides, Cymbopogon ambiguus, Cymbopogon obtectus, Dodonaea coriacea, Dysphania rhadinostachya* ssp. *rhadinostachya, Eragrostis* aff. *eriopoda* (WAS site 963), *Eragrostis cumingii, Euphorbia australis, Euphorbia coghlanii, Euphorbia tannensis, Euphorbia tannensis* ssp. *eremophila* (Hamersley form), *Evolvulus alsinoides* var*. villosicalyx, Goodenia forrestii, Hakea lorea* ssp*. lorea, Hibiscus sturtii* var. aff. *grandiflorus, Jasminum didymum* ssp. *lineare, Mollugo molluginea, Mukia maderaspatana, Oldenlandia crouchiana, Paspalidium clementii, Petalostylis labicheoides, Phyllanthus maderaspatensis, Ptilotus astrolasius, Ptilotus astrolasius* var. *astrolasius, Ptilotus fusiformis* var. *fusiformis, P. obovatus, Rhynchosia minima* var. *australis, Senna artemisioides* ssp. *oligophylla* x *glutinosa, S. artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, Senna glutinosa* ssp. *pruinosa, S. notabilis*, S. sp. Port Hedland (SPB 20-09-05B), *Sida pilbarensis* (ferruginous form), *Solanum horridum, Trachymene oleracea* and *Tribulus suberosus*. Site CR002.

I5l ChGOrAbTw *Corymbia hamersleyana* low open woodland over *Gossypium robinsonii* high shrubland over *Acacia bivenosa* shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Capricorn Land System and was recorded in the proposed Airstrip within the study area. Associated species: *Cleome viscosa, Corchorus laniflorus, Dysphania rhadinostachya* ssp. *rhadinostachya, Jasminum didymum* ssp. *lineare, Senna artemisioides* ssp. *oligophylla, Sida* aff. *fibulifera* (HD200-6), *Solanum diversiflorum, Streptoglossa decurrens* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites ASN009.

I5m ChSTYsERIm *Corymbia hamersleyana* scattered low trees over *Stylobasium spathulatum* open shrubland over *Eriachne mucronata* scattered tussock grasses

This vegetation type occurred on the Urandy and Rocklea Land Systems as very small areas. Associated species: *Acacia ancistrocarpa, A. maitlandii, A. ptychophylla, Euphorbia biconvexa, Indigofera monophylla, Tephrosia rosea*, *T*. sp. B Kimberley Flora (C. A. Gardner 7300) and *Triodia wiseana*. Site TC121.

I5n ElAaAbTwTsprr *Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

This vegetation type occurred only on the Capricorn Land System. Associated species: *Acacia atkinsiana, A. maitlandii, Dampiera candicans, Gossypium australe* (Burrup Peninsula form) *Indigofera monophylla, Jasminum didymum* ssp. *lineare, Senna artemisioides* ssp. *oligophylla* and *S. glutinosa* ssp. *glutinosa.* Sites CP197, CP199.

I5o ElChAaAatkTeTw *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. atkinsiana* open shrubland over *Triodia epactia* and *T. wiseana* open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda Land System with a very small proportion on the Capricorn Land System. Associated species: *Acacia atkinsiana, A. bivenosa,*

A. inaequilatera, A. tumida var. *pilbarensis, Corchorus incanus* ssp. *incanus, C. parviflorus, Gossypium robinsonii, Grevillea wickhamii* ssp. *hispidula, Indigofera monophylla, Jasminum didymum* ssp. *lineare, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Rhagodia eremaea* and *Senna glutinosa* ssp. *glutinosa.* Sites CP118, CP120, CP124.

I5p ElChAbTwTe *Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with proportions on the Robe and Rocklea Land Systems. Associated species: *Acacia ancistrocarpa*, *A. trachycarpa*, *Cleome viscosa*, *Senna artemisioides* ssp. *oligophylla*, *Gossypium australe*, *Indigofera boviperda* ssp. *boviperda* and *Jasminum didymum* ssp. *lineare*. Sites CR019, CR030, TC112.

6. *Eucalyptus* Woodlands

I6c EcGOrTEspbCEc *Eucalyptus camaldulensis* var. *obtusa* low open woodland over *Gossypium robinsonii* high open shrubland over Tephrosia sp. B Kimberley flora (C.A. Gardner 7300) scattered low shrubs over **Cenchrus ciliaris* very open tussock grassland

This vegetation type occurred only on the Boolgeeda Land System. Associated species: **Vachellia farnesiana, Bulbostylis barbata, Corchorus parviflorus, Eremophila longifolia, Euphorbia coghlanii, Jasminum didymum* ssp. *lineare, Waltheria indica, Acacia ancistrocarpa, A. citrinoviridis, Acacia pyrifolia* var. *pyrifolia, Capparis spinosa* var. *nummularia, Cymbopogon ambiguus, Eucalyptus leucophloia* ssp. *leucophloia, Gossypium australe, Grevillea wickhamii* ssp. *hispidula, Themeda triandra* and *Triodia wiseana*. Sites CP155, CP157.

I6d ElChAtTw *Eucalyptus leucophloia ssp. leucophloia, Corymbia hamersleyana* low open woodland over *Acacia tumida* high open shrubland over *Triodia wiseana* very open hummock grassland

This vegetation type occurred only on the Capricorn Land System. Associated species: *Acacia bivenosa, Cymbopogon ambiguus, Gossypium robinsonii, Themeda triandra* and *Rhynchosia minima*. Sites API-3239, ASN030, ASN032, ASN033.

I6e EvChAatkAtAwAbGOaTe *Eucalyptus victrix, Corymbia hamersleyana* low open woodland over *Acacia atkinsiana, A. tumida* var. *pilbarensis, A. wanyu* high shrubland over *Acacia bivenosa, Gossypium australe* open shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred only on the Capricorn Land System. Associated species: *Acacia synchronicia, Abutilon otocarpum, Alternanthera nana*, *Boerhavia coccinea, Cleome viscosa, Corchorus lasiocarpus* ssp. *parvus, Euphorbia biconvexa, Evolvulus alsinoides* var. *villosicalyx, Gomphrena kanisii, Goodenia forrestii, G. microptera, *Malvastrum americanum, Ptilotus appendiculatus, Rhynchosia minima* var. *australis, Senna artemisioides* ssp. *oligophylla* x *helmsii, Sida arsiniata, Sida* sp. *spiciform panicles* (E. Leyland s.n. 14/8/90), *Sida* sp. verrucose glands (F.H. Mollemans 2423), *Sida spinosa* and *Waltheria indica*. Sites ASN020, ASN037.

Major Creekline (A)

1. *Acacia pyrifolia* high shrublands

A1a AtrApyTeCEc *Acacia trachycarpa* high shrubland over *A. pyrifolia* var. *pyrifolia* scattered shrubs over *Triodia epactia* very open hummock grassland over **Cenchrus ciliaris* very open tussock grassland
This vegetation type occurred on floodplains associated with tributaries of the Robe River within the Cape Preston Rail corridor (Western Botanical 2009). In the current study area this vegetation type occurred predominantly on the Urandy Land System with a smaller proportion on the Robe Land System. Associated species: *Alternanthera nana*, *Cleome viscosa*, *Corchorus parviflorus, Eucalyptus camaldulensis* var. *obtusa, Euphorbia coghlanii, Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron, Cucumis maderaspatanus, Senna artemisioides* ssp. *oligophylla, Stylobasium spathulatum* and *Tephrosia rosea* var. *glabrior*. Sites CP160, KB025, TC003, TC141.

3. *Corymbia* Woodlands

A3a CcChAcolAaTe *Corymbia candida* ssp. *candida* and *C. hamersleyana* low open woodland over *Acacia colei var. colei* and *A. ancistrocarpa* high open shrubland over *Triodia epactia* very open hummock grassland
This vegetation type occurred predominantly on the Boolgeeda Land System with smaller proportions on the Urandy, Rocklea and Capricorn Land Systems. Associated species: *Acacia inaequilatera*, *A. bivenosa*, **Cenchrus ciliaris, Eucalyptus camaldulensis* var. *obtusa, Gossypium australe* (Burrup Peninsula form), *Jasminum didymum* ssp. *lineare, Senna artemisioides* ssp. *oligophylla, Sida sp. Wittenoom* (W.R. Barker 1962), *Tephrosia uniovulata, Trichodesma zeylanicum* var. *zeylanicum* and *Triodia wiseana*. Sites AD015, CP076, CP094, CP098, CP317, CP319, CP535, TC029.

A3b ChAaAbAsTe *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa, A. bivenosa* and *A. synchronicia* shrubland over *Triodia epactia* hummock grassland
This vegetation type occurred predominantly on the Urandy Land System with a smaller proportion on the Robe Land System. Associated species: *Abutilon trudgenii, Acacia colei* var. colei, *A. inaequilatera, Alternanthera nana, Bulbostylis barbata, Cleome viscosa, Corchorus laniflorus, Cucumis maderaspatanus, Cymbopogon ambiguus, Dactyloctenium radulans, Eriachne mucronata* (Typical form), *Euphorbia australis, E. coghlanii, Evolvulus alsinoides* var. *villosicalyx, Gomphrena cunninghamii, Goodenia forrestii, Gossypium australe* (Burrup Peninsula form), *G. robinsonii, Grevillea pyramidalis* ssp. *leucadendron, Indigofera boviperda* ssp. *boviperda, Jasminum didymum* ssp. *lineare, Leptopus decaisnei* var. *orbicularis, Ptilotus astrolasius* var. *astrolasius, Ptilotus axillaris, Rhynchosia minima* var. *australis, Senna artemisioides* ssp. *oligophylla* x *helmsii, Sida arsiniata, S. rohlenae* ssp. *rohlenae, S.* sp. spiciforme panicles (E. Leyland s.n. 14/8/1990) *Sporobolus australasicus, Stemodia grossa* and *Triumfetta clementii.* Site KBW006.

A3c ChAaAtrTe/g *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland over *Aristida holathera* var. *latifolia, Eragrostis* aff. *eriopoda* (WAS site 963) and **Cenchrus ciliaris* very open grassland
This vegetation type occurred predominantly on the Urandy Land System with a proportion on the Robe Land System. Associated species: *Acacia atkinsiana, Acacia pyrifolia* var. *pyrifolia, Bonamia rosea, Eremophila longifolia, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Grevillea pyramidalis* ssp. *leucadendron, Petalostylis labicheoides, Ptilotus astrolasius* var. *astrolasius, Rhynchosia minima* var. *australis, Scaevola spinescens*

(broad form), *Senna artemisioides* ssp. *oligophylla, Tephrosia uniovulata* and *Trichodesma zeylanicum* var. *zeylanicum*. Sites CP035, CP143, CP157, CP147, WPI-452.

A3d ChAbAcApyTeTw *Corymbia hamersleyana* low open woodland over *Acacia bivenosa, A. citrinoviridis, A. pyrifolia* var. *pyrifolia* high shrubland over *Triodia epactia, Triodia wiseana* open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda Land System with smaller proportions on the Capricorn and Urandy Land Systems. Associated species: *Acacia inaequilatera, A. maitlandii, A. synchronicia, Capparis spinosa* var. *nummularia, *Cenchrus ciliaris, Eucalyptus camaldulensis* var. *obtusa, Euphorbia wheeleri, Goodenia lamprosperma, Gossypium robinsonii, Grevillea pyramidalis* ssp. *leucadendron, Hakea lorea* ssp. *lorea* and *Rhynchosia bungarensis.* Sites HR010, HR012, HR040, HR042, HR045.

5. *Eucalyptus* Woodlands

A5c EcEvSTg *Eucalyptus camaldulensis* var. *obtusa, E. victrix* woodland over *Stemodia grossa* very open herbland

This vegetation type occurred predominantly on the Urandy Land System with a smaller proportion on the Robe Land System. Associated species: *Acacia pyrifolia* var. *pyrifolia*, **Argemone ochroleuca* ssp. *ochroleuca*, *Cleome viscosa*, *Cymbopogon ambiguus*, *Cyperus vaginatus*, *Euphorbia wheeleri*, *Gomphrena cunninghamii*, *Ipomoea muelleri*, *Pentalepis trichodesmoides*, *Phyllanthus maderaspatensis*, *Pluchea squarrosa*, *Pterocaulon sphacelatum*, *P. sphaeranthoides*, *Trachymene oleracea* ssp. *oleracea*, *Triodia epactia* and *Triumfetta appendiculata*. Sites CP031, CP187, CP141, KB021, TC018, TC019, TC020, WPI-468.

A5d EvAbGOrOaTeTw *Eucalyptus victrix* low woodland over *Acacia bivenosa, Gossypium robinsonii, Owenia acidula* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland

This vegetation type occurred predominantly on the Capricorn and Robe Land Systems with a smaller proportion on the Rocklea Land System. Associated species: *Acacia synchronicia, A. ancistrocarpa, Cymbopogon ambiguus, Corymbia hamersleyana, Enchylaena tomentosa* var. *tomentosa*, *Paraneurachne muelleri, Rhynchosia minima* var. *australis*, *Senna glutinosa* ssp. *glutinosa*, *Sida* aff. *fibulifera* and **Vachellia farnesiana*. Sites AD003, AD004, OF003.

A5e EvApyTe *Eucalyptus victrix* open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with smaller proportions on the Rocklea, Capricorn, Robe, Boolgeeda and Newman Land Systems. Associated species: *Acacia maitlandii*, *Cymbopogon ambiguus*, *Euphorbia biconvexa*, *Gossypium robinsonii*, *Grevillea pyramidalis* ssp. *leucadendron*, *G. wickhamii* ssp. *hispidula* and *Tephrosia rosea* var. *glabrior*. Sites HR017, HR029, HR050. HR066, HR069, TC054, TC106, TC109, TC110, TC116, API-1098.

A5f EvMlMgTe/h *Eucalyptus victrix* woodland over *Melaleuca linophylla*, *Melaleuca glomerata* high shrubland over *Triodia epactia* very open hummock grassland over mixed scattered herbs

This vegetation type occurred predominantly on the Boolgeeda Land System with smaller proportions on the Urandy and Capricorn Land Systems. *Acacia ampliceps, A. bivenosa, A. citrinoviridis, A. pyrifolia* var. *pyrifolia, A. tumida* var. *pilbarensis, Adriana urticoides, Amaranthus mitchellii, Alternanthera nana, *Argemone ochroleuca* ssp. *ochroleuca, Boerhavia coccinea, B. gardneri, Calocephalus knappii, *Cenchrus ciliaris, Cleome viscosa, Corchorus laniflorus, Cymbopogon ambiguus, Cyperus difformis, C. vaginatus, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia boophthona* (Large seed form), *Goodenia forrestii, Goodenia lamprosperma, Gossypium australe* (Burrup Peninsula form) , *Gossypium robinsonii, Hybanthus*

aurantiacus, Indigofera monophylla (BRO 46-12), *Ipomoea muelleri, Pterocaulon sphacelatum, P. sphaeranthoides, Ptilotus appendiculatus* var. *appendiculatus, Stemodia grossa, Sporobolus australasicus, Trachymene oleracea, Tribulus occidentalis, Trichodesma zeylanicum* var. *zeylanicum, Triodia wiseana, Wahlenbergia tumidifructa.* Sites TC008, HR011, HR044.

Clayey Plains (C)

1. *Acacia atkinsiana, A. bivenosa* Shrublands

C1a AatkAbTeTw *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* open hummock grassland

This vegetation type occurred predominantly on the Robe and Capricorn Land Systems with smaller proportions on the Boolgeeda and Rocklea Land Systems. Associated species: *Acacia ancistrocarpa, A. inaequilatera, A. tumida* var. *pilbarensis, A. wanyu, Bonamia rosea, Cucumis maderaspatanus, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii, Hibiscus sturtii* var. *campylochlamys, Indigofera monophylla, Keraudrenia velutina* ssp. *elliptica, Ptilotus astrolasius* var. *astrolasius, P. calostachyus* var. *calostachyus, Tephrosia uniovulata* and *Triodia wiseana.* Sites AD027, AD028, ASN012, ASN013, ASN023, TC028.

2. *Acacia* Shrublands

C2b AiAaPTaTe *Acacia inaequilatera* scattered shrubs over *A. ancistrocarpa* and *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia epactia* very open hummock grassland

This vegetation type occurred predominantly on the Robe and Urandy Land Systems with a proportion on the Capricorn Land System. Associated species: *Acacia atkinsiana, A. synchronicia, A. tumida* var. *pilbarensis, Bonamia rosea, Corymbia hamersleyana, Cucumis maderaspatanus, Dodonaea coriacea, Gossypium australe* (Burrup Peninsula form), *Grevillea wickhamii* ssp. *hispidula, Hakea lorea* ssp. *lorea, Ptilotus calostachyus* var. *calostachyus, P. exaltatus* var. *exaltatus, P. roei, Senna artemisioides* ssp. *oligophylla, S. glutinosa* ssp. *glutinosa, Sida pilbarensis* (green form), *Solanum diversiflorum* and *Tephrosia uniovulata.* Sites CP149, CP229.

C2c AiAaTe *Acacia inaequilatera* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred on the Capricorn and Robe Land Systems. Associated species: *Acacia atkinsiana*, *Acacia bivenosa*, *Acacia synchronicia*, *Acacia trachycarpa*, *Aristida holathera* var. *holathera*, *Bonamia rosea*, **Cenchrus ciliaris*, *Cleome viscosa*, *Corchorus incanus* ssp. *incanus*, *Eremophila longifolia, Gossypium australe* (Burrup Peninsula form), *Grevillea pyramidalis* ssp. *leucadendron, Hakea lorea* ssp. *lorea*, *Indigofera monophylla, Ptilotus astrolasius* var. *astrolasius* and *Senna artemisioides* ssp. *oligophylla*. No sites were recorded in this vegetation type in the study area, however sites were recorded in this vegetation type in the Cape Preston Rail study area.

3. *Acacia synchronicia* Shrublands

C3a AsTe *Acacia synchronicia* open shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Capricorn Land System with smaller proportions on the Robe, Urandy and Boolgeeda Land Systems. Associated species: *Acacia bivenosa, Sclerolaena densiflora, Sporobolus australasicus, Maireana melanocoma, Portulaca oleracea, Senna artemisioides* ssp. *oligophylla, Cleome viscosa, Ptilotus exaltatus, Lepidium pholidogynum, Eremophila cuneifolia, Streptoglossa decurrens, Eragrostis dielsii, Sclerolaena costata, Indigofera boviperda* ssp. *boviperda* and *Sida arsiniata*. Sites CWW057, CWW066, KBW005, TC010.

C3b ChAsTe *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with a smaller proportion on the Capricorn Land System. Associated species include: *Abutilon trudgenii* MS, *Acacia bivenosa, A. inaequilatera, Boerhavia gardneri, Cleome viscosa, Dysphania rhadinostachya* ssp. *rhadinostachya, Euphorbia australis, E. boophthona* (Large seed form), *Goodenia forrestii, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Indigofera monophylla, Paspalidium clementii, Portulaca oleracea, Ptilotus astrolasius* var. *astrolasius, P. axillaris, Salsola tragus* ssp. *tragus, Senna artemisioides* ssp. *oligophylla, S. notabilis, Sida* aff. *echinocarpa* (MET 15,350), *S.* aff. *fibulifera* (FMG 125-20), *S. arsiniata, S. clementii, Sporobolus australasicus* and *Triumfetta clementii.* Sites CP033, CP183.

4. *Acacia synchronicia, A. bivenosa* Shrublands

C4a AsAbTe *Acacia synchronicia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland

This vegetation type occurred predominantly on the Robe Land System with smaller proportions on the Urandy, Boolgeeda and Capricorn Land Systems. Associated species: *Acacia ancistrocarpa* and *Senna artemisioides* ssp. *oligophylla*. Sites CW035, UCW019.

6. Snakewood Shrublands

C6a AsAxTe *Acacia synchronicia, A. xiphophylla* high shrubland over *Triodia epactia* open hummock grassland

This vegetation type occurred predominantly on the Boolgeeda Land System with smaller proportions also occurring on the Rocklea, Urandy and Capricorn Land Systems. Associated species: *Acacia bivenosa*, *Senna artemisioides* ssp. *oligophylla* and *Triodia wiseana*. Sites CP084, CP092, HR020, HR021, TC045, TC046.

C6c ChAsAaAxTe *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* and *A. xiphophylla* high open shrubland to open shrubland over *Triodia epactia* hummock grassland

This vegetation type occurred only on the Urandy Land System. Associated species: *Acacia aneura* var. *intermedia, A. atkinsiana, A. bivenosa, A. inaequilatera, A. pyrifolia* var. *pyrifolia, A. tumida* var. *pilbarensis, Amaranthus cuspidifolius, Cleome viscosa, Corchorus sidoides* ssp. *sidoides, Duperreya commixta, Dysphania rhadinostachya* ssp. *rhadinostachya, Enchylaena tomentosa* var. *tomentosa, Eremophila forrestii* ssp. *forrestii, Eriachne mucronata* (typical form), *E. pulchella* ssp. *pulchella, Euphorbia australis, E. boophthona* (Large seed form), *Goodenia forrestii, Gossypium australe* (Burrup Peninsula form), *Hakea lorea* ssp. *lorea, Heliotropium heteranthum, Indigofera monophylla, Paspalidium clementii, Portulaca oleracea, Ptilotus aervoides, P. calostachyus* var. *calostachyus, Salsola tragus* ssp. *tragus, Sclerolaena*

densiflora, Senna artemisioides ssp*. oligophylla* x *helmsii, S. glutinosa* ssp. x *luerssenii, S. notabilis, Sida* aff*. echinocarpa* (MET 15,350), *S.* aff*. fibulifera* (FMG 125-20), *Solanum diversiflorum, Sporobolus australasicus, Streptoglossa decurrens, Stylobasium spathulatum, Trianthema triquetra* and **Vachellia farnesiana.* Sites: CP030, CP137, CP139, CP151, CP223, CP227.

7. Soft Spinifex Hummock Grasslands

C7a AiTe *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland

This vegetation type occurred predominantly on the Boolgeeda Land System with smaller proportions on the Rocklea, Robe, Stuart, Capricorn and Urandy Land Systems. Associated species: *Acacia ancistrocarpa*, *Gossypium australe*, *Hakea lorea* ssp. *lorea*, *Bonamia media*, *Ptilotus astrolasius* var. *astrolasius*, *Ptilotus roei*, *Solanum diversiflorum* and *Tephrosia uniovulata*. Sites API-5004, HR027, CEW004, CEW005, UCW002, CP032, CP036, CP060, CP070, CP130, CP144, CP153, CP159, CP161, WPI-726, WPI-728, WPI-738.

C7b ApyGpTe *Acacia pyrifolia* var. *pyrifolia* scattered tall shrubs over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* hummock grassland

This vegetation type occurred predominantly on the Urandy Land System with smaller proportions on the Rocklea, Robe and Newman Land Systems. Associated species: *Grevillea wickhamii*, *Acacia inaequilatera*, *A. bivenosa*, *Eucalyptus leucophloia* ssp. *leucophloia, Hakea lorea* ssp. *lorea* and *Indigofera boviperda*. Sites HR065, TC052, TC053, TC126.

Appendix 4 Representative Photographs of the Vegetation of the Study Area

Stony Plains (P)

P1a AatkAbAaTw *Acacia atkinsiana*, *A. bivenosa* and *A. ancistrocarpa* high shrubland to open shrubland over *Triodia wiseana* open hummock grassland (Site TC047, July 2009)

P1b AatkAbAwTw *Acacia atkinsiana, A. bivenosa, A. wanyu* shrubland over *Triodia wiseana* open hummock grassland (Site ASA006, July 2009)

P1c ChAatkAbTwTe *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open to closed hummock grassland (Site BOR241, July 2009)

P2b AaTeTw *Acacia ancistrocarpa* high shrubland over *Triodia epactia, Triodia wiseana* open hummock grassland (Site KBW003, August 2008)

P2c AmAaTwTsprr *Acacia maitlandii* high open shrubland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana, T.* sp. Robe River very open hummock grassland (Site UCW008, August 2008)

P2d ChAaTwTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland (Site CP173, October 2007)

P2f ChAiAbTw *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland (Site TC122, July 2009)

P2g ChAsAaTwTe *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia, A. ancistrocarpa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland (Site HR034, July 2008)

P3a AsERcTw *Acacia synchronicia, Eremophila cuneifolia* open shrubland over *Triodia wiseana* open hummock grassland (Site HR061, July 2008)

P3c AsAbTwTe *Acacia synchronicia, Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* very open hummock grassland (Site CR027, June 2008)

P4a AiAaTw *Acacia inaequilatera* scattered tall shrubs over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland (Site ASA011, July 2009)

P5d AxTw *Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* very open hummock grassland (Site CW057, July 2008)

P5e AxTwTe *Acacia xiphophylla* low open woodland to high open shrubland over *Triodia wiseana* and occasionally *T. epactia* very open hummock grassland (Site CWW058, September 2008)

P6a AiAbTe *Acacia inaequilatera* scattered tall shrubs over *A. bivenos*a open shrubland over *Triodia epactia* hummock grassland (Site CR026, June 2008)

P6b AiAtTe *Acacia inaequilatera, Acacia tumida* var. *pilbarensis* scattered shrubs over *Triodia epactia* hummock grassland (Site KBW002, August 2008)

P6c ChAaAiTe *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa and A. inaequilatera* shrubland over *Triodia epactia* hummock grassland (Site CP082, October 2007)

P6d ChAbAaTe *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* and *A. ancistrocarpa* high shrubland over *Triodia epactia* hummock grassland (Site TC152, July 2009)

P6e ChAiAbTe *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia epactia* open hummock grassland (Site KB002 Rescore, July 2008)

P6f ChApyGpTe *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia, Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Triodia epactia* open hummock grassland (Site TC149, July 2009)

P6g ChAwTe *Corymbia hamersleyana* scattered low trees over *Acacia wanyu* low open shrubland over *Triodia epactia* open hummock grassland (Site TC009, August 2008)

P6h ChTe/h (burnt) *Corymbia hamersleyana* scattered low trees over *Triodia epactia* very open hummock grassland over herbs; post-fire (Site CEW002, August 2008)

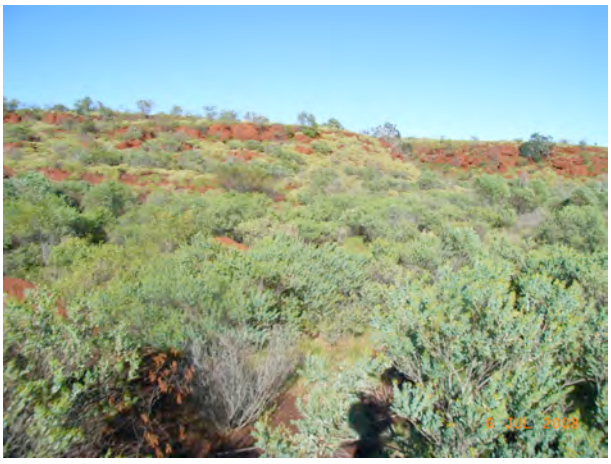
P6i Te *Triodia epactia* open hummock grassland (Site TC135, July 2009)

Stony Hills and Breakaways

S1a AbAatkTw *Acacia bivenosa* and *A. atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland (Site ASA003, July 2009)

S1b AbAatkTwTe *Acacia bivenosa* and *A. atkinsiana* scattered low shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland (Site CP233, October 2007)

S1c GwAbAatkTw *Grevillea wickhamii* ssp. *hispidula* scattered tall shrubs over *Acacia bivenosa, A. atkinsiana* shrubland over *Triodia wiseana* open hummock grassland (Site TR054, September 2008)



S2b AcAbTeTw *Acacia citrinoviridis* scattered tall shrubs over *A. bivenosa* open heath over *Triodia epactia, T. wiseana* open hummock grassland (Site KB011 Rescore, July 2008)

S3a AiApTw *Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana* open hummock grassland (Site TR070, September 2008)

S3b ApAarTw *Acacia pruinocarpa, A. arida* high shrubland over *Triodia wiseana* open hummock grassland (Site CW009 Rescore, July 2008)

S3c ApAbTw *Acacia pruinocarpa* high open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland (Site TR010 Rescore, July 2008)

S3d ApAiERfTw *Acacia pruinocarpa* and *A. inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* low open shrubland over *Triodia wiseana* open hummock grassland (Site JW002 Rescore, July 2008)

S3e ApGwAarTw *Acacia pruinocarpa, Grevillea wickhamii* ssp. *hispidula* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland (Site TR059, September 2008)

S3f ApTw *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland (Site KB007 Rescore, July 2008)

S4b AarTw *Acacia arida* shrubland over *Triodia wiseana* open hummock grassland (Site CW022 Rescore, July 2008)

S4c AbAaPlTw *Acacia bivenosa*, *A. ancistrocarpa*, *Petalostylis labicheoides* open shrubland over *Triodia wiseana* very open hummock grassland (Site TR043, September 2008)

S4d AbAaTe *Acacia bivenosa* and *A. ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland (Site CW048, July 2008)

S4e AcAbGOrTw *Acacia citrinoviridis* high open shrubland over *A. bivenosa, Gossypium robinsonii* open shrubland over *Triodia wiseana* very open hummock grassland (Site TR046, September 2008)

S4f AcApTw *Acacia citrinoviridis, A. pruinocarpa* high shrubland over *Triodia wiseana* very open hummock grassland (Site TR014, November 2007)

S4g AcSTYsTsprrTe *Acacia citrinoviridis, Stylobasium spathulatum* high shrubland over *Triodia* sp. Robe River, *T. epactia* open hummock grassland (Site UC006, June 2007)

S4h AcTwTe *Acacia citrinoviridis* high shrubland over *Triodia wiseana, T. epactia* open hummock grassland (Site TR021 Rescore, July 2008)

S4i AiApTwTsprr/h *Acacia inaequilatera, A. pruinocarpa* high open shrubland over *Triodia wiseana, T.* sp. Robe River very open hummock grassland (Site UC009, August 2007)

S4k AtGwTw *Acacia tumida* var. *pilbarensis, Grevillea wickhamii* ssp. *hispidula* high shrubland over *Triodia wiseana* very open hummock grassland (Site CW011 Rescore, July 2008)

S4l AtPlTwTsprr *Acacia tumida* var. *pilbarensis, Petalostylis labicheoides* high shrubland over *Triodia wiseana, T.* sp. Robe River very open hummock grassland (Site KB010 Rescore, July 2008)

S4m GwAbTw *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland (Site TR007 Rescore, July 2008)

S4n GwPlAbTsprrTw *Grevillea wickhamii* ssp. *hispidula, Petalostylis labicheoides* scattered tall shrubs over *Acacia bivenos*a shrubland over *Triodia* sp. Robe River, *T. wiseana* open hummock grassland (Site TR100, July 2009)

S5b AstkAbTwTsprr *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia wiseana, T*. sp. Robe River open hummock grassland (Site CE007, August 2008)

S5c AbDAcTsprrTw *Acacia bivenosa* open shrubland over *Dampiera candicans* low shrubland over *Triodia* sp. Robe River, *T. wiseana* hummock grassland (Site CR003 Rescore, June 2008)

S5d AbTwTsprr *Acacia bivenosa* open shrubland over *Triodia wiseana, T*. sp. Robe River open hummock grassland (Site CR004 Rescore, June 2008)

S5e AcApAiTwTsprr *Acacia citrinoviridis, A. pruinocarpa, A. inaequilatera* high open shrubland over *Triodia wiseana, T*. sp Robe River hummock grassland (Site UC022, November 2007)

S5f AiAbTwTsprr *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana, T.* sp. Robe River open hummock grassland (Site KB042, July 2009)

S5g AiAcTwTsprr *Acacia inaequilatera, A. citrinoviridis* high open shrubland over *Triodia wiseana, T*. sp. Robe River open hummock grassland (Site UC001 Rescore, August 2008)

S5h AiPlTsprrTw *Acacia inaequilatera, Petalostylis labicheoides* high open shrubland over *Triodia* sp. Robe River, *T. wiseana* hummock grassland (Site KB009 Rescore, July 2008)

S5i ApAbTwTsprr *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* and *T*. sp. Robe River hummock grassland (Site CN002, August 2008)

S5j ApTsprrTw *Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River, *T. wiseana* hummock grassland (Site CN009, August 2008)

S5k ApERfTwTsprr *Acacia pruinocarpa* scattered tall shrubs over *Eremophila fraser*i ssp. *fraseri* open shrubland over *Triodia wiseana, T*. sp. Robe River open hummock grassland (Site UC008, August 2007)

S5l CfAcERlaTsprr *Corymbia ferriticola* ssp. *ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* open shrubland over *Triodia* sp. Robe River very open hummock grassland (Site UC002 Rescore, August 2008)

S6a AsTw *Acacia synchronicia* open shrubland over *Triodia wiseana* very open hummock grassland (Site CMP009, September 2008)

S7c AbSsspTw *Acacia bivenosa, Senna* spp. open shrubland over *Triodia wiseana* open hummock grassland (Site CW061, September 2008)

10 S7d AbTw *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland (Site JW006 Rescore, June 2008)

S7f AiAmAbTw *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa, A. maitlandii* open shrubland over *Triodia wiseana* open hummock grassland (Site TR025, November 2008)

S7g AiAsTw *Acacia inaequilatera* and *A. synchronicia* scattered shrubs over *Triodia wiseana* open hummock grassland (Site CP177, October 2007)

S7i AiTw *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland (Site AD005, August 2008)

S7k ApGwAarTw *Acacia pruinocarpa, Grevillea wickhamii* ssp. *hispidula* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland (Site UCW007, August 2008)

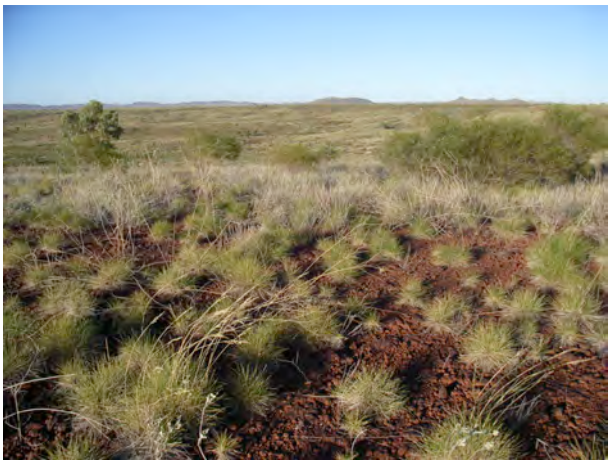
S7l ChGwAiAbTw *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* ssp. *hispidula, Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* low scattered shrubs over *Triodia wiseana* open hummock grassland (Site ASN021, June 2009)

S7n Tw *Triodia wiseana* open hummock grassland (Site CE030, June 2009)

S8a AaneDOcTw *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Dodonaea coriacea* open shrubland over *Triodia wiseana* hummock grassland (Site CWW062, September 2008)

S8b AaneERlalTw *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Eremophila latrobei* ssp. *latrobei* scattered shrubs over *Triodia wiseana* open hummock grassland (Site TRr009 Rescore, July 2008)

S8c AaneGwAatkTe *Acacia aneura* (narrow, fine veined, Site 1259) low woodland over *Grevillea wickhamii* ssp. *hispidula, Acacia atkinsiana* high shrubland over *Triodia epactia* open hummock grassland (Site TR019 Rescore, July 2008)



S9a AaDAcTw *Acacia ancistrocarpa* open shrubland over *Dampiera candicans* low shrubland over *Triodia wiseana* open hummock grassland (Site CW004 Rescore, July 2008)

S10a ElAaneAcGbTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia, Acacia aneura (narrow, fine veined, Site 1259)* low open woodland over *A. citrinoviridis, Grevillea berryana* high open shrubland over *Triodia* sp. Robe River, *T. wiseana* open hummock grassland (Site UC004 Rescore, August 2008)

S10b ElAatkAbTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia* sp. Robe River, *T. wiseana* very open hummock grassland (Site TRW001, August 2008)

S10c ElAbTsprr Tw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia* sp. Robe River, *T. wiseana* very open hummock grassland (Site TR020, November 2007)

S10d ElAbTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T.* sp. Robe River open hummock grassland (Site CR012 Rescore, June 2008)

S10e ElAcAiTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis, A. inaequilatera* high open shrubland over *Triodia wiseana, T.* sp. Robe River hummock grassland (Site UC010, August 2007)

S10f ElAcTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Triodia* sp. Robe River very open hummock grassland (Site UC018, November 2007)

S10g ElAcTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana, T*. sp. Robe River open hummock grassland (Site KB013 Rescore, July 2008)

S10h ElAmTwTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia maitlandii* open shrubland over *Triodia wiseana, T.* sp. Robe River open hummock grassland (Site UCW005, August 2008)

S10i ElApTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Triodia* sp. Robe River, *T. wiseana* open hummock grassland (Site CN001, August 2008)

S10j ElApTwTsprrERIm *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Triodia wiseana, T*. sp. Robe River very open hummock grassland over *Eriachne mucronata* very open tussock grassland (Site TRr004, November 2007)

S10k ElAtTsprr *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia* sp. Robe River open hummock grassland (Site CE019, August 2008)

S10l ElPlAaTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Petalostylis labicheoides* high open shrubland over *Acacia ancistrocarpa* scattered shrubs over *Triodia* sp. Robe River, *T. wiseana* very open hummock grassland (Site TR017, November 2007)

S10m ElPlTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Petalostylis labicheoides* open shrubland over *Triodia* sp. Robe River, *T. wiseana* open hummock grassland (Site JWr001, May 2007)

S10n ElTsprrTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia* sp. Robe River, *T. wiseana* open hummock grassland (Site JW004 Rescore, July 2008)

S11a ElAaAbTw *Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistrocarpa*, *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland (Site CW072, September 2008)

S11b ElAaneApTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia aneura* (narrow, fine veined, Site 1259) low open woodland over *A. pruinocarpa* scattered shrubs over *Triodia wiseana* open hummock grassland (Site TR003 Rescore, July 2008)

S11c ElAarAbTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia arida, A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland (Site CW063, September 2008)

S11d ElAbAsTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland to low woodland over *Acacia bivenosa* and *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland (Site JW009, July 2008)

S11e ElAbTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland (Site AD002, August 2008)

S11f ElAcTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high shrubland over *Triodia wiseana* open hummock grassland (Site TR075, September 2008)

S11g ElAptTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia ptychophylla* low open shrubland over *Triodia wiseana* hummock grassland (Site TC114, July 2009)

S11h ElApTw *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland (Site TR031, September 2008)

S11i ElAtAarTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Acacia arida* scattered shrubs over *Triodia wiseana* open hummock grassland (Site CW005 Rescore, July 2008)

S11j ElAtTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* open hummock grassland (Site TR087, July 2009)

S11k ElChAbTw *Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland (Site ASA010, July 2009)

S11l ElGwApTwERIt *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland *Grevillea wickhamii* ssp. *hispidula, Acacia pruinocarpa* high shrubland over *Triodia wiseana* very open hummock grassland over *Eriachne tenuiculmis* very open tussock grassland (Site TR006, November 2007)

S11m ElTw *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* hummock grassland (Site KB003, June 2007)

S12a AbTe *Acacia bivenosa* shrubland over *Triodia epactia* hummock grassland (Site HR067, July 2008)

S12b Tsprr *Triodia* sp. Robe River open hummock grassland (Site CN006, September 2008)

S12c Tsprr (burnt) *Triodia* sp. Robe River very open hummock grassland, recently burnt (Site CE026, August 2008)

S13b TERcTw *Terminalia canescens* low open woodland over *Triodia wiseana* scattered hummock grasses (Site TR042, September 2008)

S14a AbTeTw *Acacia bivenosa* scattered shrubs over *Triodia epactia, T. wiseana* open hummock grassland (Site TR022 Rescore, July 2008)

S14b AiAbTwTe *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia wiseana, T. epactia* hummock grassland (Site KB015 Rescore, July 2008)

S14c AiERfTwTe *Acacia inaequilatera* scattered tall shrubs over *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland (Site CP090, October 2007)

154 S14d AxAbTwTe *Acacia xiphophylla* scattered tall shrubs over *Acacia bivenosa* scattered shrubs over *Triodia wiseana, T. epactia* open hummock grassland (Site TR048, September 2008)

Minor Creekline

I1c ChAaAbTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. bivenosa* high shrubland over *Triodia wiseana, T. epactia* open hummock grassland (Site CWW059, September 2008)

I1e ElAbAaTe *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa, A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland (Site TR082, September 2008)

I1f GOrAaAbTeTw *Gossypium robinsonii* scattered tall shrubs over *Acacia ancistrocarpa, A. bivenosa* shrubland over *Triodia epactia, T. wiseana* open hummock grassland (Site IN013, November 2007)

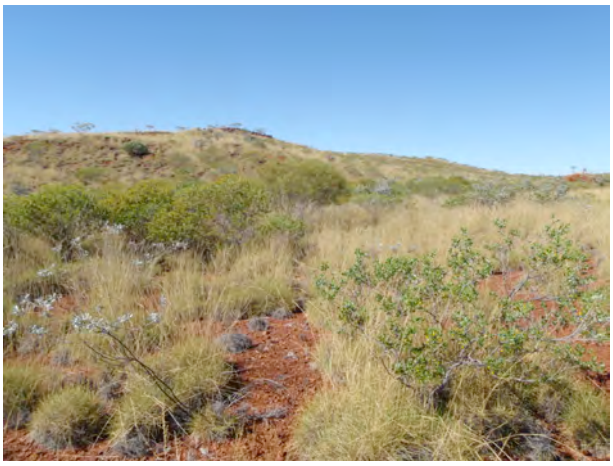
I2a ApyAbTe *Acacia pyrifolia* var. *pyrifolia* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland (Site TC133, July 2009)

I2c ApyAcGOrTe *Acacia pyrifolia* var. *pyrifolia, A. citrinoviridis, Gossypium robinsonii* high shrubland over *Triodia epactia* very open hummock grassland (Site CWW051, September 2008)

I2d ChApyAtrTe/h *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Acacia trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland over mixed open herbland (Site TC001, August 2008)

I2e ChApyTe *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* hummock grassland (Site TC111, July 2009)

I2f EvChApyGorTe/g *Eucalyptus victrix, Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia, Gossypium robinsonii* high open shrubland over *Triodia epactia* scattered hummocks over mixed open grassland (Site UCW001, August 2008)



I3a AcAbERlSTYsTe *Acacia citrinoviridis* high open shrubland over *A. bivenosa, Eremophila longifolia, Stylobasium spathulatum* open shrubland over *Triodia epactia* open hummock grassland (Site TC094, July 2009)

I3c ChAaTe *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia epactia* open hummock grassland (Site CP034, October 2007)

I3f ElChAtTeTw *Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland (Site CMP011, September 2008)

I5a CcAadAcAaAbTp *Corymbia candida* ssp. *candida* low open woodland over *Acacia adsurgens, A. citrinoviridis* high shrubland over *Acacia ancistrocarpa, Acacia bivenosa* open heath over *Triodia pungens* hummock grassland (Site HR009, November 2007)

I5d ChAaAbTeTw *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* closed hummock grassland (Site CR016 Rescore, June 2008)

I11a ChAcolAbGOrTe *Corymbia hamersleyana* low open woodland over *Acacia cole*i var. *colei, A. bivenosa, Gossypium robinsonii* high open shrubland over *Triodia epactia* very open hummock grassland (Site KBW007, September 2008)

I5j ChAtAcAaTe *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis, A. citrinoviridis* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland (Site CW014, July 2008)

I5k ChAtGOrTwTe *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis, Gossypium robinsoinii* open scrub over *Triodia wiseana, T. epactia* very open hummock grassland (Site CR002, May 2007)

I5m ChSTYsERIlm *Corymbia hamersleyana* scattered low trees over *Stylobasium spathulatum* open shrubland over *Eriachne mucronata* scattered tussock grasses (Site TC121, July 2009)

I5n ElAaAbTwTsprr *Eucalyptus leucophloia* spp. *leucophloia* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River hummock grassland (Site CP199, October 2007)

I5p ElChAbTwTe *Eucalyptus leucophloia* ssp. *leucophloia, Corymbia hamersleyana* low open woodland over *Acacia bivenosa* open shrubland over *Triodia wiseana, T. epactia* open hummock grassland (Site CR019, June 2008)

I6e EvChAatkAtAwAbGOaTe *Eucalyptus victrix, Corymbia hamersleyana* low open woodland over *Acacia atkinsiana, A. tumida* var. *pilbarensis, A. wanyu* high shrubland over *Acacia bivenosa, Gossypium australe* open shrubland over *Triodia epactia* open hummock grassland (Site ASN020, June 2009)

Major Creekline

A1a AtrApyTeCEc *Acacia trachycarpa* high shrubland over *A. pyrifolia* var. *pyrifolia* scattered shrubs over *Triodia epactia* very open hummock grassland over **Cenchrus ciliaris* very open tussock grassland (Site CP160, October 2007)

A3a CcChAcolAaTe *Corymbia candida* ssp. *candida* and *C. hamersleyana* low open woodland over *Acacia colei* var. *colei* and *A. ancistrocarpa* high open shrubland over *Triodia epactia* very open hummock grassland (Site CP094, October 2007)

A3b ChAaAbAsTe *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa, A. bivenosa* and *A. synchronicia* shrubland over *Triodia epactia* hummock grassland (Site KBW006, September 2008)

A3d ChAbAcApyTeTw *Corymbia hamersleyana* low open woodland over *Acacia bivenosa, A. citrinoviridis, A. pyrifolia* var. *pyrifolia* high shrubland over *Triodia epactia, T. wiseana* open hummock grassland (Site HR012, November 2007)

A5c EcEvSTg *Eucalyptus camalulensis* var. *obutsa, E. victrix* woodland over *Stemodia grossa* very open herbland (Site CP031, October 2007)

A5d EvAbGOrOaTeTw *Eucalyptus victrix* low woodland over *Acacia bivenosa, Gossypium robinsonii, Owenia acidula* high shrubland over *Triodia epactia, T. wiseana* very open hummock grassland (Site AD004, August 2008)

A5e EvApyTe *Eucalyptus victrix* open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* open hummock grassland (Site TC054, July 2009)

A5f EvMlMgTe/h *Eucalyptus victrix* woodland over *Melaleuca linophylla*, *Melaleuca glomerata* high shrubland over *Triodia epactia* very open hummock grassland over mixed scattered herbs (Site HR011, November 2007)

Clayey Plain

C1a AatkAbTeTw *Acacia atkinsiana, A. bivenosa* open shrubland over *Triodia epactia, T. wiseana* open hummock grassland (Site ASN023, June 2009)

C2c AiAaTe *Acacia inaequilatera* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland (Site CP041 Rescore, June 2008)

C3a AsTe *Acacia synchronicia* open shrubland over *Triodia epactia* open hummock grassland (Site CWW057, September 2008)

C3bChAsTe *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia* and *A. ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland (Site CP033 Rescore, July 2008)

C4a AsAbTe *Acacia synchronicia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland (Site CW035, November 20007)

C6a AsAxTe *Acacia synchronicia, A. xiphophylla* high shrubland over *Triodia epactia* open hummock grassland (Site TC045, July 2009)

C7a AiTe *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland (Site UCW002, August 2008)

C7b ApyGpTe *Acacia pyrifolia* var. *pyrifolia* scattered tall shrubs over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* hummock grassland (Site TC126, July 2009)

Appendix 5 Summary of Site Data from Quadrats and Relevés

Abbreviations used for site names and numbers (eg. CR110 is a Cochrane site):

Resource Area:	
Cochrane	CR
Farnum	FM (sometimes FN)
Jewell	JW
Kens Bore	KB
Upper Cane	UC
Cardo East	CE
Cardo North	CN
Trinity	TR
Catho Well	CW
Other Areas:	
Admin Areas	AD
Airstrip Access track July 2009	ASA
Airstrip ASN Version November 2008	ASN
Borrow Pits	BOR
Cardo East Waste Dump Area	CEW
Camp September 2009	CMP08
Cape Preston	CP
Cape Preston Northern sites	CPN
Catho Well Waste Dump Area	CWW
Red Hill Waste Dump Area	RHW (incudes some JW, CR and FM sites)
Haul roads	HR
Infrastructure Areas	IN
Office Area	OF
Transport Corridor	TC (includes HR and some CP/CPN sites)
Trinity Waste Dump Area	TRW
West Pilbara Opportunistic Collections	WPIOP

West Pilbara Iron **Site** AD001 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 08/08/2008

Habitat Undulating plain

Soil Loose, firm, red brown, sandy clay

Rock Ferrous with some quartz

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* hummock grassland

Veg Condition Excellent with no effective disturbance except grazing by hoofed animals

Fire Age 5-10 years

West Pilbara Iron **Site** AD002 **Quadrat size** 70 x 30 m

Described Bridget Watkins **Survey Date** 08/08/2008

Habitat Low hill side

Soil Loose, firm, brown red, fine silty clay

Rock Possibly BIF with some calcrete

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance except grazing by hoofed animals

Fire Age > 5 years

West Pilbara Iron **Site** AD003 **Quadrat size** 120 x 20 m

Described Denise True **Survey Date** 08/08/2008

Habitat Creekline confluence in low rolling hills

Soil Loose soil

Rock Mixture, aggregrates, sedimentary

Vegetation *Eucalyptus victrix* low open forest over *Acacia bivenosa* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Excellent, no effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** AD004 **Quadrat size** 120 x 10 m

Described Rebecca Graham **Survey Date** 08/08/2008

Habitat Bank of drainage line on alluvial plain

Soil Red brown, firm, loose sandy clay

Rock Ferrous CID outcropping

Vegetation *Owenia acidula* low woodland over *Acacia bivenosa*, *A. tumida* var. *pilbarensis*, *Vachellia farnesiana* and *Gossypium robinsonii* high shrubland over *Triodia epactia* open hummock grassland

Veg Condition Excellent, with no effective disturbance except by hoofed animals

Fire Age >10 years

West Pilbara Iron **Site** AD005 **Quadrat size** 50 x 50 m
Described Rebecca Graham **Survey Date** 08/08/2008
Habitat Crest of small hill
Soil Loose, firm, red brown, sandy clay
Rock CID with some quartz
Vegetation *Acacia inaequilatera* high open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Excellent, no effective disturbance except grazing by hoofed animals
Fire Age > 10 years

West Pilbara Iron **Site** AD007 **Quadrat size** 60 x 40 m
Described Denise True **Survey Date** 08/08/2008
Habitat Midslope of low rolling hills
Soil Soft soil
Rock Metamorphic
Vegetation *Acacia xiphophylla* open shrubland over *Senna stricta* scattered shrubs over *Triodia wiseana* very open hummock grassland
Veg Condition Excellent, with no effective disturbance
Fire Age Unknown

West Pilbara Iron **Site** AD021 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 27/10/2008
Habitat Range of rocky hills
Rock Basalt
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** AD022 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 27/10/2008
Habitat Low rolling hills
Rock Basalt?
Vegetation *Acacia inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* low scattered shrubs over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** AD023 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 27/10/2008

Habitat Drainage line between low rolling hills

Soil Silty gravelly sand

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* and *A. ancistrocarpa* open heath over *Triodia wiseana* and *T. epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** AD027 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Vegetation *Acacia ancistrocarpa* and *A. atkinsiana* high open shrubland over *A. bivenosa* and *A. wanyu* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** AD028 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Vegetation *Acacia atkinsiana* open shrubland over *Triodia wiseana* and *T. epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA001 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Low rolling hills

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA002 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Low rolling hills

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia xiphophylla* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA003 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Low rolling hills

Vegetation *Acacia bivenosa* and *A. atkinsiana* low open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA004 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Rocky plain and low hills

Soil Patches of bare clay with surface flake

Vegetation *Acacia xiphophylla* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA005 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Rocky plain and low hills

Soil Sandy, silty loam

Vegetation *Acacia atkinsiana* and *A. bivenosa* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA006 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 18/07/2009

Habitat Plain

Vegetation *Acacia wanyu, A. atkinsiana* and *A. bivenosa* low open heath over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA007 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 18/07/2009

Habitat Undulating low hills

Vegetation *Acacia xiphophylla* shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASA008 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Low rolling hills
Vegetation *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASA009 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Low rolling hills
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASA010 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Crest of low undulating hills
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASA011 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Alluvial plain
Soil Fine, silty, clay loam
Vegetation *Acacia ancistrocarpa* scattered tall shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASA012 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Alluvial plain
Soil Silty, clay loam
Vegetation *Acacia synchronicia* high open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASA015 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Soil Loose, silty, clay loam
Vegetation *Acacia xiphophylla* over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age < 5 years

West Pilbara Iron **Site** ASA016 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 18/07/2009
Habitat Low rolling hills
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia ancistrocarpa*, *A. atkinsiana* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland with drainage lines of *Acacia bivenosa* over *Triodia wiseana*
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN001 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Alluvial plain
Soil Red-brown, sandy clay
Rock Type Iron and quartz
Vegetation *Acacia wanyu* open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN002 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Low outcropping hills
Soil Sandy clay
Rock Type Calcrete/ dolomite
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN004 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Drainage line on edge of rocky hills and alluvial plain
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* and *A. atkinsiana* open shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN005 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Alluvial plain
Vegetation *Acacia ancistrocarpa* low open shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age < 5 years

West Pilbara Iron **Site** ASN006 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Plain, onto rocky hills.
Vegetation *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age < 5 years
Notes *Acacia bivenosa* in drainage lines, still burnt

West Pilbara Iron **Site** ASN007 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Ranges
Vegetation *Corymbia hamersleyana* over *Acacia bivenosa* over *Triodia wiseana*
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN008 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Top of ridge
Rock Type Dolomite/calcrete
Vegetation *Terminalia canescens* scattered low trees over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN009 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Habitat Large drainage line
Vegetation *Corymbia hamersleyana* low open woodland over *Gossypium robinsonii* high shrubland over *Acacia bivenosa* shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN010 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2008

Habitat Rocky ridge

Rock Type Calcrete

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN011 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2008

Vegetation *Acacia xiphophylla* low woodland over *Triodia wiseana* scattered hummock grasses

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN012 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2008

Habitat Broad and shallow drainage line within a sandy alluvial plain

Soil Sandy soils

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN013 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2008

Habitat Alluvial plain

Vegetation *Acacia atkinsiana* and *A. ancistrocarpa* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age < 5 years

West Pilbara Iron **Site** ASN014 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2008

Rock Type Ferric

Vegetation *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN015 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 26/11/2008
Vegetation *Grevillea wickhamii* scattered tall shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN020 **Quadrat size** 50 x 50 m
Described Hayley Hughes **Survey Date** 09/06/2009
Habitat Major drainage line
Soil Firm cracking clay loam
Vegetation *Eucalyptus victrix*, *Corymbia hamersleyana* and *Acacia wanyu* low open woodland over *A. ancistrocarpa, A. tumida* var. *pilbarensis* and *A. atkinsiana* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Good
Fire Age More than 6 years

West Pilbara Iron **Site** ASN021 **Quadrat size** 50 x 50 m
Described Hayley Hughes **Survey Date** 09/06/2009
Habitat Low rolling hills
Soil Firm, gritty clay loam
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* and *Tephrosia uniovulata* low open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** ASN022 **Quadrat size** 50 x 50 m
Described Hayley Hughes **Survey Date** 09/06/2009
Habitat Undulating plain
Soil Stony, clayey, soil, loose, ferruginous surface crust
Rock Mixed rock type
Vegetation *Acacia wanyu* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Good
Fire Age >5 years

West Pilbara Iron **Site** ASN023 **Quadrat size** 50 x 50 m
Described Kellie McMaster **Survey Date** 09/06/2009
Habitat Broad drainage, shallow, minor
Soil Firm, loose, patches of silty sand over harder clays
Rock Calcrete and Channel Iron Deposit underlying, sedimantary
Vegetation *Acacia atkinsiana*, *A. bivenosa*, *A. wanyu* and *A. ancistrocarpa* open shrubland over *Triodia wiseana* and *T. epactia* very open hummock grassland
Veg Condition Good, no effective disturbance except grazing by hoofed animals
Fire Age <3 years

West Pilbara Iron **Site** ASN026 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Habitat Top of low rocky hill

Vegetation *Acacia synchronicia* scattered shrubs over *Triodia wiseana*

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN027 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Acacia xiphophylla* shrubland over *Triodia wiseana* scattered hummock grasses over *Trianthema turgidifolia* and *Maireana georgei* scattered herbs

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN028 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN030 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN031 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Ptilotus astrolasius* var. *astrolasius* and *Corchorus laniflorus* low open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown, but burnt

West Pilbara Iron **Site** ASN032 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Habitat Highly dissected drainage

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia tumida* var *pilbarensis* high open shrubland over *Triodia wiseana* very open hummock grassland over *Themeda triandra* and *Cymbopogon ambiguus* scattered tussock grasses

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN033 **Relevé** ~50 x 50m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Terminalia canescens* high open shrubland over *Acacia tumida* var. *pilbarensis* scattered tall shrubs over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** ASN034 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 09/06/2009

Vegetation *Terminalia canescens* and *Acacia citrinoviridis* high shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** BOR102 **Quadrat size** 120 x 5 m

Described Hayley Hughes **Survey Date** 10/06/2009

Habitat Drainage line between rolling hills

Soil Soft, cracking, surface crust, stony and silty clay

Vegetation *Corymbia hamersleyana* low woodland over *Malvastrum americanum*, *Brachyachne prostrata*, *Polymeria* aff. *ambigua* and *Sida* aff. *fibulifera* open herbland over *Cenchrus ciliaris*, *Themeda triandra*, *Eragrostis cumingii* and *Chrysopogon fallax* tussock grassland

Veg Condition Good

Fire Age >3 years

West Pilbara Iron **Site** CE003 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 27/08/2008

Habitat Mesa top

Soil Hard setting, red-brown, clay

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age > 5 years

West Pilbara Iron **Site** CE004 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 27/08/2008

Habitat Top slope of rounded mesa top

Soil Firm, loose, cracking, orange-brown, silty-clay

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CE005 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 27/08/2008

Habitat Mesa top

Soil Hard setting, red-brown underneath with fine layer of iron rich pebbles on top

Rock Channel Iron Deposit

Vegetation *Acacia atkinsiana* shrubland over *Triodia wiseana* hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CE006 **Quadrat size** 30 x 70 m

Described Kellie McMaster **Survey Date** 27/08/2008

Habitat Top slope of mesa

Soil Firm, loose, red-brown, silty clay

Rock Channel Iron Deposit

Vegetation *Acacia ancistrocarpa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CE007 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 28/08/2008

Habitat Mesa top

Soil Soft, fine, gritty red-brown soil

Rock Channel Iron Deposit

Vegetation *Acacia ancistrocarpa*, *A. atkinsiana* and *A. bivenosa* low open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals, drill pad present

Fire Age > 5 years

West Pilbara Iron **Site** CE008 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Top of mesa

Soil Firm, loose, orange-brown, silty clay

Rock Channel Iron Deposit

Vegetation *Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low open shrubland

Veg Condition No effective disturbance

Fire Age 1.5 years - Jan 2007

West Pilbara Iron **Site** CE009 **Quadrat size** 10 x 100 m

Described Hayley Hughes **Survey Date** 28/08/2008

Habitat Gully on mesa

Soil Hard setting, red-brown colour

Rock Channel Iron Deposit

Vegetation *Acacia tumida* var. *pilbarensis* closed heath over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals and track through quadrat

Fire Age > 5 years

West Pilbara Iron **Site** CE010 **Quadrat size** 10 x 120 m

Described Gemma Lindschau **Survey Date** 28/08/2008

Habitat Drainage line on top of mesa

Soil Firm, loose, cracking silty clay

Rock Channel Iron Deposit

Vegetation *Triodia wiseana* and *T. epactia* very open hummock grassland and mixed shrub very open shrubland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age Recent- January 2007

West Pilbara Iron **Site** CE011 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 29/08/2008

Habitat Breakaway on northern side of mesa

Soil Firm, dark red-brown silty clay

Rock Channel Iron Deposit

Vegetation *Acacia atkinsiana* low open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CE012 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 29/08/2008

Habitat Gully on mesa side/top

Soil Loose

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp*. leucophloia* scattered trees over Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367*)*open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age Jan 2007

West Pilbara Iron **Site** CE013 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 29/08/2008

Habitat Mesa top

Soil Soft, silty clay

Rock Channel Iron Deposit

Vegetation *Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low open shrubland

Veg Condition No effective disturbance

Fire Age < 1 year

West Pilbara Iron **Site** CE014 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 29/08/2008

Habitat Top slope of mesa

Soil Firm and loose orange brown sandy silty clay

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Good

Fire Age Jan 2007

West Pilbara Iron **Site** CE016 **Quadrat size** 30 x 70 m

Described Kellie McMaster **Survey Date** 29/08/2008

Habitat Mesa slope - debris slope

Soil Firm to loose brown silty clay

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered trees over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition No effective disturbance

Fire Age Jan 2007

West Pilbara Iron **Site** CE017 **Quadrat size** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Mesa top

Vegetation *Acacia ancistrocarpa* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes More *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)on south east side of track

West Pilbara Iron **Site** CE019 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Drainage line on mesa top

Vegetation *Acacia tumida* var. *pilbarensis* closed scrub

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CE020 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Mesa top

Vegetation *Acacia atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CE021 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Mesa top

Vegetation *Acacia atkinsiana* and *A. bivenosa* open shrubland over Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CE024 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Upper mesa slope

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good

Fire Age Jan 2007

Notes Regrowth post fire

West Pilbara Iron **Site** CE026 **Relevé**~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Mesa top

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good

Fire Age Recently burnt

West Pilbara Iron **Site** CE027 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 28/08/2008

Habitat Mesa top

Vegetation *Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) scattered hummock grasses

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CE030 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Habitat Debris slope

Rock Channel Iron Deposit

Vegetation *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CE031 **Relevé** ~ 50 x 50 m

Described Cassie Adam **Survey Date** 19/07/2009

Habitat Mesa free face

Soil No soil present

Rock Type Channel Iron deposit

Vegetation *Acacia pruinocarpa* and *A. citrinoviridis* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good

Fire Age <5 years

West Pilbara Iron **Site** CEW001 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 28/08/2008

Habitat Plain

Soil Firm dark red brown soil

Rock Varied colours of smooth weathered rocks

Vegetation *Ptilotus astrolasius* var. *astrolasius* low scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age <1year

West Pilbara Iron **Site** CEW002 **Quadrat size** 30 x 70 m

Described Hayley Hughes **Survey Date** 28/08/2008

Habitat Plain

Soil Hard setting red brown clay loamy soil

Rock Varied colours mainly red brown, smooth weathered rock

Vegetation *Corymbia hamersleyana* low open woodland over mixed herbland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age <1 year

West Pilbara Iron **Site** CEW003 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 29/08/2008

Habitat Alluvial plain or pediment

Soil Loose red brown gritty soil

Rock River rocks - weathered and various colours and sizes

Vegetation *Corymbia hamersleyana* scattered low trees over *Tephrosia uniovulata* and *Cleome viscosa* low open shrubland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** CEW004 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Vegetation *Acacia inaequilatera* and *Tephrosia uniovulata* open shrubland over *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CEW005 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Vegetation *Acacia inaequilatera* scattered shrubs over *Ptilotus astrolasius* var. *astrolasius* low scattered shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CEW007 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Habitat Top of calcrete ridge

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CMP001 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 23/09/2008

Habitat On flat between hills with a minor drainage line, at the base of a slight ridge

Soil Firm to loose fine silty clay loam brown in colour

Vegetation *Acacia synchronicia* scattered tall shrubs over *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age 5-10 yrs

Notes Fire response observed in the vegetation. Mixed species with few dominants

West Pilbara Iron **Site** CMP002 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 23/09/2008

Habitat Lower slope of a hill

Soil Firm to loose red brown clay loam

Rock Dolomite, iron and quartz

Vegetation *Senna glutinosa* ssp. *pruinosa* and *Acacia bivenosa* scattered shrubs over *Tephrosia uniovulata* low scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age >5 yrs

West Pilbara Iron **Site** CMP004 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 23/09/2008

Habitat Minor drainage line

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* closed heath over *Triodia epactia* closed hummock grassland

Veg Condition No effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CMP006 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 21/09/2008

Soil Firm to loose red/brown sandy clay

Rock Ferrous/Iron

Vegetation *Acacia bivenosa* scattered shrubs over *Acacia atkinsiana* low open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age 5 yrs

West Pilbara Iron **Site** CMP008 **Relevé**~ 50 x 50 m

Described Rebecca Graham **Survey Date** 23/09/2008

Habitat Minor drainage line

Soil Sandy clay

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia epactia* hummock grassland

Veg Condition No disturbance

Fire Age >5yrs

West Pilbara Iron **Site** CMP009 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/09/2008

Vegetation *Ptilotus astrolasius* var. *astrolasius* low scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age < 2 years

West Pilbara Iron **Site** CMP010 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 23/09/2008

Habitat Ridge

Rock Dolomite

Vegetation *Acacia inaequilatera* over *Senna artemisioides* ssp. *oligophylla* low scattered shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age < 2 years

West Pilbara Iron **Site** CMP011 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/09/2008

Habitat Incised drainage line

Vegetation *Corymbia hamersleyana* low open woodland over *Gossypium robinsonii*, *Acacia tumida* var. *pilbarensis* and *Stylobasium spathulatum* scattered shrubs over *Triodia wiseana* scattered hummock grasses

Veg Condition Very good

Fire Age < 2 years

West Pilbara Iron **Site** CMP018 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 23/09/2008

Habitat Crest/free face

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes On a tilted, narrow ridge/mesa

West Pilbara Iron **Site** CN001 **Quadrat size** 80 x 20 m

Described Andrew Taylor **Survey Date** 30/08/2008

Habitat Flat mesa top

Soil Loose red brown soil

Rock Channel Iron Deposit

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Good

Fire Age >5yrs

West Pilbara Iron **Site** CN002 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 30/08/2008

Habitat Shallow gully

Soil Soft to loose red brown sandy silt, very little present

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* shrubland over *Petalostylis labicheoides* low shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent

Fire Age ~5 years

West Pilbara Iron **Site** CN003 **Quadrat size** 60 x 40 m

Described Hayley Hughes **Survey Date** 31/08/2008

Habitat Mesa top/crest

Soil Firm orange red brown coloured soil, silty and gritty texture

Rock Channel Iron Deposit

Vegetation *Petalostylis labicheoides* open shrubland over *Acacia pruinocarpa*, *A. atkinsiana* and *A. bivenosa* scattered low shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent

Fire Age <5yrs

West Pilbara Iron **Site** CN004 **Quadrat size** 60 x 40 m

Described Gemma Lindschau **Survey Date** 31/08/2008

Habitat Debris slope/mesa slope

Soil Firm, brown red soil, although the site is mostly bare rock

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition No effective disturbance

Fire Age Long unburnt

West Pilbara Iron **Site** CN005 **Quadrat size** 80 x 20 m

Described Hayley Hughes **Survey Date** 31/08/2008

Habitat Mesa crest

Soil Firm, light red brown soil

Rock Channel Iron Deposit

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition No effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CN006 **Quadrat size** 70 x 30 m

Described Kellie McMaster **Survey Date** 01/09/2008

Habitat Sloping mesa top

Soil Loose, firm, brown-red silty clay

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* low shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Limited clearing

Fire Age Unknown

West Pilbara Iron **Site** CN007 **Quadrat size** 70 x 30 m

Described Andrew Taylor **Survey Date** 01/09/2008

Habitat Flat top of mesa

Soil Loose, red brown soil

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)hummock grassland

Veg Condition No effective disturbance

Fire Age < 10 years

West Pilbara Iron **Site** CN008 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 31/08/2008

Habitat Mesa top

Vegetation *Acacia pruinocarpa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CN009 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 31/08/2008

Habitat Mesa top

Vegetation *Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CN010 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 31/08/2008

Habitat Mesa top and slope

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CNW001 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 31/08/2008

Habitat On the lower slope of medium sized hills

Soil Firm red/orange/brown, silty clay

Rock Dolomite

Vegetation *Triodia wiseana* hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age > 5 years

West Pilbara Iron **Site** CNW002 **Quadrat size** 60 x 40 m

Described Kellie McMaster **Survey Date** 31/08/2008

Habitat Drainage line in an alluvial plain

Soil Loose, firm, red-brown, silty soil

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa*, *A. atkinsiana* and *A. bivenosa* open heath over *Triodia epactia* closed hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CNW003 **Quadrat size** 50 x 50 m

Described Andrew Taylor **Survey Date** 01/09/2008

Habitat Plain

Soil Firm, dark, red brown soil

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia epactia* hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age < 10 years

West Pilbara Iron **Site** CNW004 **Quadrat size** 50 x 50 m
Described Kellie McMaster **Survey Date** 01/09/2008
Habitat Pediment
Soil Loose, firm, brown red, silty clay
Rock Channel Iron Deposit
Vegetation *Triodia epactia* open hummock grassland
Veg Condition No effective disturbance except grazing by hoofed animals
Fire Age Unknown, > 5 years

West Pilbara Iron **Site** CNW006 **Quadrat size** 50 x 50 m
Described Kellie McMaster **Survey Date** 01/09/2008
Habitat Debris slope
Soil Loose, firm, brown orange, silty clay
Rock Calcrete/dolomite
Vegetation *Triodia wiseana* hummock grassland
Veg Condition No effective disturbance
Fire Age > 5 years

West Pilbara Iron **Site** CNW007 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 06/06/09
Vegetation *Acacia bivenosa*, *A. synchronicia*, *A. inaequilatera* and *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP030 **Quadrat size** 50 x 50 m
Described Cassie Adam **Survey Date** 17/10/2007
Habitat Stony alluvial flat
Soil Firm, dark reddish brown, sandy clay loam
Vegetation *Acacia xiphophylla* and *A. synchronicia* high shrubland over *Triodia epactia* very open hummock grassland
Veg Condition Excellent, no effective disturbance except grazing by hoofed animals
Fire Age > 10 yrs

West Pilbara Iron **Site** CP031 **Quadrat size** 120 x 10 m
Described Cassie Adam **Survey Date** 17/10/2007
Habitat Creek/drainage line
Soil Loose
Vegetation *Eucalyptus victrix* woodland over mixed very open herbland
Veg Condition Excellent
Fire Age > 10 years

West Pilbara Iron **Site** CP032 **Quadrat size** 50 x 50 m
Described Denise True **Survey Date** 18/10/2007
Habitat Plain
Soil Firm, sandy silty clay
Vegetation *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland
Veg Condition Good.
Fire Age > 5 yrs

West Pilbara Iron **Site** CP033 **Quadrat size** 50 x 50 m
Described Kellie McMaster **Survey Date** 20/10/2007
Habitat Alluvial flood plain
Soil Firm, loose, red-brown, sandy clay loam
Vegetation *Acacia synchronicia* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Excellent
Fire Age < 5 yrs

West Pilbara Iron **Site** CP034 **Quadrat size** 50 x 50 m
Described Kellie McMaster **Survey Date** 20/10/2007
Habitat Alluvial plain on edge of wide river
Vegetation *Acacia ancistrocarpa* shrubland over *Triodia epactia* hummock grassland
Veg Condition Excellent, no effective disturbance except grazing by hoofed animals
Fire Age > 5 years.

West Pilbara Iron **Site** CP035 **Quadrat size** 50 x 50 m
Described Amy Douglas **Survey Date** 20/10/2007
Habitat Alluvial flood plain
Soil Loose, firm red brown sandy clay loam
Vegetation *Corymbia hamersleyana* low open woodland over *Triodia epactia* closed hummock grassland
Veg Condition Very good, no effective disturbance except minor grazing by hoofed animals.
Fire Age ~ 5 years

West Pilbara Iron **Site** CP036 **Quadrat size** 30 x 70 m
Described Kellie McMaster **Survey Date** 21/10/2007
Habitat Wide drainage line on an alluvial plain
Soil Hard setting, brown, silty clay loam
Vegetation Mixed *Acacia* sp., *Hakea lorea* ssp. *lorea* and *Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Scaevola spinescens* (broad form) low open shrubland over *Triodia epactia* closed hummock grassland
Veg Condition Excellent, no effective disturbance except grazing by hoofed animals
Fire Age > 5 yrs

West Pilbara Iron **Site** CP060 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Flat, narrow (approx 250 m) alluvial plain between mesas
Soil Firm, silty clay
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Ptilotus astrolasius* var. *astrolasius* low open shrubland and *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP062 **Relevé** ~ 50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Mesa pediment
Soil Firm, fine soil matrix
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP064 **Relevé** ~25 x 25 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Pediment and lower debris slope of mesa
Vegetation *Acacia xiphophylla* high open shrubland over *Triodia wiseana* scattered hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP066 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Small drainage in mesa pediment
Soil Firm and silty
Vegetation *Acacia atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP068 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Edge of pediment and alluvial plain
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP070 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Low rise between shallow drainages on pediment
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP072 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 18/10/2007
Habitat Top of a rise/mesa
Rock Channel Iron Deposit
Vegetation *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP076 **Relevé** ~ 50 x 50 m
Described Daniel Brassington **Survey Date** 21/10/2007
Habitat Pediment and flats
Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia wiseana* hummock grassland
Veg Condition Recently burnt in places, otherwise excellent
Fire Age < 1 yr in places

West Pilbara Iron **Site** CP078 **Relevé** ~ 50 x 50 m
Described Daniel Brassington **Survey Date** 21/10/2007
Habitat Low rolling hills, pediment and flats
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP080 **Relevé** ~50 x 50 m
Described Daniel Brassington **Survey Date** 21/10/2007
Habitat Rocky hill top
Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP082 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Broad alluvial basin

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa*, *A. sclerosperma* ssp. *sclerosperma*, A. *bivenosa* and *A. inaequilatera* shrubland over *Triodia epactia* hummock grassland

Veg Condition Excellent

Fire Age Unknown

West Pilbara Iron **Site** CP084 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Alluvial plain

Vegetation *Acacia synchronicia* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP086 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Alluvial plain

Soil Reddish brown, sandy clay loam

Vegetation *Acacia xiphophylla* high shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP088 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Alluvial plain

Vegetation *Corymbia candida* ssp. *candida* scattered low trees over mixed *Acacia* sp. open shrubland over *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP090 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Low rocky rise

Vegetation *Acacia inaequilatera* open shrubland over *A. bivenosa* and *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP092 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat North east side of an alluvial plain, drainage basin, adjacent to large river

Soil Cracking clay to self mulching clays or clay loam

Vegetation *Acacia synchronicia* and *A. xiphophylla* high shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP094 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Large river in alluvial plain

Soil Dusty cracking clay, reddish brown

Vegetation *Corymbia candida* ssp. *candida* low woodland over *Acacia colei* var. *colei* high shrubland over *Triodia epactia* scattered hummock grasses

Veg Condition Heavily impacted by cattle grazing

Fire Age Unknown

West Pilbara Iron **Site** CP096 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Low rocky rise east of a large river

Vegetation Mixed *Acacia* sp. scattered tall shrubs over *Eremophila fraseri* ssp. *fraseri* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP098 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Broad drainage line

Vegetation *Corymbia candida* ssp. *candida* and *C. hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A. inaequilatera* scattered tall shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Recently burnt and impacted by grazing

Fire Age < 1 year

West Pilbara Iron **Site** CP100 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 21/10/2007

Habitat Broad minor drainage between low rocky rise and Snakewood flat

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP102 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Alluvial plain dissected by minor drainage lines

Soil Loose, red brown, silty clay loam

Vegetation *Acacia ancistrocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective signs of impact

Fire Age Unknown

West Pilbara Iron **Site** CP104 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Alluvial plain

Soil Brown red

Vegetation *Acacia xiphophylla* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP106 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Vegetation *Acacia ancistrocarpa*, *A. atkinsiana*, *A. inaequilatera* and *A. synchronicia* scattered shrubs over *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia wiseana* open to very open hummock grassland

Veg Condition Very good

Fire Age < 2 years

West Pilbara Iron **Site** CP108 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Drainage in an alluvial plain

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP110 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Drainage in alluvial plain/ pediment

Vegetation *Acacia atkinsiana* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP112 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Drainage line in pediment/alluvial plain

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP114 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Low rocky rise, outcropping

Soil Very little soil present

Rock Pale dolorite?

Vegetation *Acacia inaequilatera* and *Gossypium robinsonii* scattered tall shrubs over *Tephrosia* sp. B Kimberley Flora (C.A. Gardener 7300) scattered shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP118 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Alluvial plain/pediment

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana* open shrubland over *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP120 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Very broad drainage line in alluvial plain, pediment

Soil Loose, brown-red soil

Vegetation *Corymbia hamersleyana* and *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* and *T. epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP124 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 22/10/2007

Habitat Drainage in alluvial plain/pediment

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* open woodland over *Acacia ancistrocarpa* and *A. atkinsiana* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP126 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 22/10/2007
Habitat Pediment/ alluvial plain
Vegetation *Ptilotus astrolasius* var. *astrolasius* and *Acacia atkinsiana* low open shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP128 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 22/10/2007
Habitat Pediment/debris slope of low mesa
Rock Channel Iron Deposit
Vegetation *Acacia bivenosa* low open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP130 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 22/10/2007
Habitat Low rocky hills
Soil Loose, hard, red-brown soil
Vegetation *Acacia inaequilatera* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Excellent, no effective disturbance except by grazing hoofed animals
Fire Age Unknown

West Pilbara Iron **Site** CP132 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 23/10/2007
Habitat Alluvial plain
Soil Brown, silty clay loam
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* and *Grevillea wickhamii* ssp. *hispidula* scattered tall shrubs over *Acacia ancistrocarpa* and *A. trachycarpa* scattered shrubs over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP134 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 23/10/2007
Habitat Drainage line in an alluvial plain
Soil Silty clay loam
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* scattered shrubs over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP136 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 23/10/2007
Habitat Alluvial plain
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP137 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 17/10/2007
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* and mixed *Acacia* sp. high open shrubland over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP139 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 17/10/2007
Soil Silty soil with some gravel
Vegetation *Acacia synchronicia* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP140 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 23/10/2007
Habitat Low rocky rise
Soil Clay silt
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown.

West Pilbara Iron **Site** CP141 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 17/09/2007
Habitat Drainage line
Soil Red brown, pebbly sand
Vegetation *Eucalyptus victrix* open woodland over *Acacia trachycarpa* scattered shrubs over *Cymbopogon ambiguus* scattered tussock grasses
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP142 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 23/10/2007

Habitat Pediment, alluvial plain

Soil Dark reddish brown, silty clay loam

Vegetation *Acacia inaequilatera*, *A. bivenosa*, *A. ancistrocarpa* and *A. synchronicia* open shrubland over *Triodia epactia* and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown.

West Pilbara Iron **Site** CP143 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/10/2007

Habitat Flood plain

Soil Silty soil

Vegetation *Acacia trachycarpa* and *Gossypium australe* (Burrup Peninsula form) scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age < 5 years

West Pilbara Iron **Site** CP144 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 23/10/2007

Habitat Alluvial plain

Soil Loose, firm, brown, clay loam

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP145 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/10/2007

Soil Silty soil with very little gravel

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia trachycarpa* and *Grevillea pyramidalis* ssp. *leucadendron* low open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP146 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 23/10/2007

Habitat Pediment

Soil Dark reddish brown, silty clay loam

Vegetation *Acacia synchronicia* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP147 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/10/2007

Habitat Pediment from mesa, off rail line to the east

Soil Very silty and loose soil

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Ptilotus astrolasius* var. *astrolasius*, *Acacia ancistrocarpa* and *A. atkinsiana* low open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age < 5 years

West Pilbara Iron **Site** CP148 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 23/10/2007

Habitat Low hills with minor drainages between

Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia epactia* and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP149 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/10/2007

Soil Gritty, silty soil with fine pebbles

Vegetation *Acacia ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age < 3 years

West Pilbara Iron **Site** CP153 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 18/10/2007

Soil Firm, gritty, silty soils

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP157 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 18/10/2007

Habitat Creekline

Soil Sandy, silt soils

Vegetation *Eucalyptus camaldulensis* var. *obtusa* low open woodland over *Gossypium robinsonii* high open shrubland over *Cenchrus cilliaris* very open tussock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP161 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 18/10/2007

Soil Red, silty soil

Vegetation *Acacia ancistrocarpa* and *Hakea lorea* ssp. *lorea* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP165 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 18/10/2007

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP169 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 19/10/2007

Vegetation *Senna glutinosa* ssp. *glutinosa* and *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP171 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat Incised drainage line

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epacia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP173 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat Pediment and lower slope with dissecting drainage lines

Vegetation *Acacia ancistrocarpa*, *A.atkinsiana*, *A. inaequilatera* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP175 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat Debris slope

Vegetation *Acacia inaequilatera* and *A. ancistrocarpa* scattered tall shrubs over *A. bivenosa*, *A. synchronicia* and *Senna glutinosa* ssp. *pruinosa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP181 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat Rocky hill slope

Vegetation *Acacia synchronicia*, *A. bivenosa* and *A. inaequilatera* scattered shrubs over *Senna glutinosa* ssp. *glutinosa* low scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP183 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat Alluvial plain

Soil Pebbly silt soils

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia* and *Acacia ancistrocarpa* shrubland with *Acacia bivenosa* scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP185 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 19/10/2007

Soil Firm, loose, brown-red, silty clay soils

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP187 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 19/10/2007

Habitat River bed/ river bank

Vegetation *Eucalyptus victrix* open woodland over *Stemodia grossa* very open herbland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP189 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Low hills

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa*, *A. synchronicia* and *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP191 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Flood plain with numerous drainage lines, some incised

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia wiseana* and *T. epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP193 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Pediment of range to the west

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP195 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Edge of range, up a gully, approximately 10 metres elevation from the range base

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367)

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP197 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Valley with an incised drainage line

Vegetation *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP199 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 20/10/2007

Habitat Valley, dissected by an incised drainage line

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia ancistrocarpa*, *A. bivenosa* and *A. maitlandii* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP203 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 21/10/2007

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open heath over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP205 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 21/10/2007

Soil Pebbly silty soils

Vegetation *Acacia inaequilatera* and *A. ancistrocarpa* scattered tall shrubs over *Triodia wiseana* and *T. epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP209 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 21/10/2007

Vegetation *Acacia xiphophylla* high open shrubland over *A. atkinsiana* and *A. synchronicia* scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP211 **Relevé** ~ 50 x 50 m

Described Amy Douglas **Survey Date** 21/10/2007

Habitat Pediment, plain dissected by numerous minor drainage lines

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP213 **Relevé** ~ 50 x 50 m

Described Amy Douglas **Survey Date** 21/10/2007

Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP215 **Relevé** ~ 50 x 50 m
Described Amy Douglas **Survey Date** 21/10/2007
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP223 **Relevé** ~ 50 x 50 m
Described Daniel Brassington **Survey Date** 22/10/2007
Habitat Minor drainage line
Soil Hard-setting, silty clay loam soils
Vegetation *Acacia ancistrocarpa* and *A. atkinsiana* shrubland over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age < 10 years

West Pilbara Iron **Site** CP225 **Relevé** ~ 50 x 50 m
Described Cassie Adam **Survey Date** 22/10/2007
Soil Dusky red, silty clay loam soils
Vegetation *Acacia xiphophylla* high shrubland over *Triodia epactia* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CP227 **Relevé** ~ 50 x 50 m
Described Daniel Brassington **Survey Date** 22/10/2007
Soil Reddish-brown, silty clay loam, with cracking clays
Vegetation *Acacia aneura* var. *intermedia* scattered low trees over *A. ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age < 5 years

West Pilbara Iron **Site** CP229 **Relevé** ~ 50 x 50 m
Described Daniel Brassington **Survey Date** 22/10/2007
Vegetation *Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* ssp. *hispidula* and *Acacia ancistrocarpa* scattered shrubs over *Triodia epactia* very open hummock grassland
Veg Condition Very good
Fire Age < 5 years

West Pilbara Iron **Site** CP231 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Vegetation *Acacia tumida* var. *pilbarensis* high shrubland over *A. ancistrocarpa* and *A. atkinsiana* scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP233 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Vegetation *Acacia bivenosa* and *A. atkinsiana* scattered shrubs over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP235 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Vegetation *Acacia xiphophylla* high open shrubland over *Triodia wiseana* and *T. epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP237 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Habitat Plain dissected by numerous drainage lines

Soil Reddish brown, silty clay loam soils

Vegetation *Acacia synchronicia* high open shrubland over *A. ancistrocarpa*, *A. atkinsiana* and *A. bivenosa* shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP239 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Habitat Broad, shallow drainage line

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* shrubland to scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP241 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 22/10/2007

Soil Brown, silty clay loam

Vegetation *Acacia atkinsiana* and *A. ancistrocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP492 **Relevé** ~ 50 x 50 m

Described Amy Douglas **Survey Date** 21/10/2007

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CP600 **Relevé** ~ 100 x 10 m

Described Kellie McMaster **Survey Date** 19/07/2009

Habitat Mesa free face

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CR001 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 20/05/2007

Habitat Flat crest of mesa

Soil Firm, red-brown, fine silty clay

Rock Channel Iron Deposit (CID)

Vegetation *Acacia bivenosa* shrubland over *Triodia wiseana* hummock grassland

Veg Condition May 2007: Excellent, no effective disturbance

June 2008: Limited clearing, green vegetation after Mar/ April 2008 rain

Fire Age > 5 yrs

West Pilbara Iron **Site** CR001r **Quadrat size** 10 x 170 m

Described Shapelle McNee **Survey Date** 22/05/2007

Habitat South west facing break away (free face)

Soil Mostly extremely shallow except under *Eucalypts* where it is part of a mulch and is loose, dark black-brown

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland and *Eriachne mucronata* very open tussock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR002 **Quadrat size** 78 x 13 m

Described Shapelle McNee **Survey Date** 20/05/2007

Habitat Creekline/drainage line on a flat/alluvial/pediment

Soil Loose sandy soil with high quantities of iron sand grains. Very dark purple-brown in creek course and paler red-

brown. Surface crust forming

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis* and *Gossypium robinsonii* open scrub over *G. australe* and *Scaevola spinescens* low open shrubland over *Triodia epactia* and *T. wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

Notes Vegetation in better condition further up the creekline (west), some Spinifex in the middle of the creek, but most is closer to the edge and along the banks

West Pilbara Iron **Site** CR003 **Quadrat size** 60 x 40 m

Described Denise True **Survey Date** 22/05/2007

Habitat Upper slope of mesa with a north facing slight slope

Soil Loose soil

Rock Channel Iron Deposit (CID)

Vegetation *Acacia bivenosa* open shrubland over *Dampiera candicans* low shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age 5-10 yrs

West Pilbara Iron **Site** CR004 **Quadrat size** 40 x 60 m

Described Ben Eckermann **Survey Date** 10/05/2007

Habitat Northwest facing upper slope and crest of mesa

Soil Loose, fine and coarse sand. red-brown in colour with fine material mix

Rock Channel Iron Deposit (CID)

Vegetation *Acacia bivenosa* shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** CR005 **Quadrat size** 100 x 10 m

Described Denise True **Survey Date** 20/05/2007

Habitat Minor drainage line in flat alluvial plain

Soil Firm, clay silt soils

Vegetation *Acacia bivenosa* shrubland over *Triodia epactia* closed hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age <5 yrs

Notes Occasional *Corymbia hamersleyana* and *Acacia inaequilatera* in the surrounding area. Termite mounds Present

West Pilbara Iron **Site** CR006 **Quadrat size** 40 x 60 m

Described Ben Eckermann **Survey Date** 21/05/2007

Habitat South face of upper most debris slope, immedietly below the first free face down to the mid slope of the mesa

Soil Loose, red-brown, fine material matrix within coarse iron rich sand

Rock Channel Iron Deposit (CID)

Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** CR007r **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 23/05/2007

Habitat Flat alluvial plain

Soil Firm soil

Vegetation *Acacia synchronicia* high open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR008 **Quadrat size** 100 x 5 m

Described Ben Eckermann **Survey Date** 21/05/2007

Habitat Southwest facing creekline in between Cochrane and Farnum mesa

Soil Loose, red-brown, coarse sand/gravel with little fine material in matrix, surface crust forming

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR010 **Quadrat size** 50 x 50 m

Described Ben Eckerman **Survey Date** 21/05/2007

Habitat Broad drainage on flat plain

Soil Firm, strongly crusting soil

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Recent - 6 months

West Pilbara Iron **Site** CR012 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 22/May/2007

Habitat South southeast facing upper slope of mesa from a rounded crest to the beginning of a gully head

Soil Loose, brown-orange soil, surface crust forming

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR014 **Quadrat size** 40 x 60 m

Described Ben Eckermann **Survey Date** 22/05/2007

Habitat Upper slope, near to the top of the mesa on a southwest facing aspect

Soil Red-brown, loose, shallow soil, fine material amongst coarse grains

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR016 **Quadrat size** 30 x 80 m

Described Shapelle McNee **Survey Date** 23/05/2007

Habitat Large drainage line on flat alluvial plain

Soil Orange-brown soil, loose below surface crust, some areas of surface flaking

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa*, *A. tumida* var. *pilbarensis* and *A. bivenosa* open shrubland over *Triodia epactia* closed hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CR018 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 23/05/2007

Habitat Flat pediment

Soil Coarse and loose soil, plus fine "bulldust" with plenty of iron black sand grains. Quadrat contains a couple of areas with lag gravel and a surface crust

Rock Channel Iron Deposit (CID), with lots of quartz (white), fine grain maffic rock (basalt), as well as ferricrete from rock face

Vegetation *Acacia bivenosa* low shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

Notes Site between the lower north face of the Cochrane mesa debris scree and an alluvial plain

West Pilbara Iron **Site** CR019 **Quadrat size** 20 x 80 m

Described Rebecca Graham **Survey Date** 21/06/2008

Habitat Minor drainage line on flat, within bottom third of landform element and at edge of pediment

Soil Dark brown-red firm loose soil, slow runoff

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia bivenosa* open shrubland over *Indigofera boviperda* ssp. *boviperda* low open shrubland over *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Excellent, with no effective disturbance. Rain in March 2008

Fire Age >10 yrs

West Pilbara Iron **Site** CR020 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 21/06/2008

Habitat Alluvial basin within pediment

Soil Firm, loose, black-brown sandy silt, high iron content

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Indigofera boviperda* ssp.

boviperda scattered herbs over *Triodia epactia* hummock grassland

Veg Condition Good, no effective disturbance, moderate seasonal conditions after some summer rain

Fire Age >5 yrs

Notes Large *Triodia epactia* hummocks very green, with bare ground between them. Alluvial basin within pediment of two mesas and the Hamersley Ranges

West Pilbara Iron **Site** CR021 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 21/06/2008

Habitat Dissected alluvial flat plain

Soil Firm, red-brown soil

Rock Channel Iron Deposit

Vegetation *Acacia synchronicia* and *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition Excellent with no effective disturbance, rain in March 2008

Fire Age >5 yrs

Notes Dissected alluvial flat plain in bottom third of landform element, bounded by ranges

West Pilbara Iron **Site** CR022 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 21/06/2008

Habitat Pediment

Soil Firm, loose, cracking red-brown silty clay

Rock Channel Iron Deposit

Vegetation *Acacia synchronicia* high shrubland over *Senna artemisioides* ssp. *oligophylla* low open shrubland over *Triodia epactia* and *T. wiseana* very open hummock grassland

Veg Condition Good, no effective disturbance, moderate seasonal conditions

Fire Age <5 yrs

West Pilbara Iron **Site** CR024 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 21/06/2008

Habitat Broad alluvial plain

Soil Firm, loose, brown silty soil

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* and *Grevillea pyramidalis* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Good, no effective disturbance

Fire Age >5 yrs

West Pilbara Iron **Site** CR026 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 21/06/2008

Soil Red to brown sandy silt

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CR028 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 21/06/2008

Soil Red brown gravelly silty sand

Vegetation *Acacia synchronicia* and *A. bivenosa* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CR029 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 21/06/2008

Habitat Low hill

Vegetation *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CR030 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 21/06/2008

Habitat Creek line

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low woodland over *Acacia bivenosa* and *Gossypium australe* open shrubland over *Cleome viscosa* open herbland over *Triodia epactia* and *T. wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CR032 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 21/06/2008

Habitat Broad alluvial plain

Soil Sandy silt

Vegetation *Corymbia hamersleyana* low woodland over *Acacia inaequilatera* scattered tall shrubs over *A. pyrifolia* and *Gossypium australe* open shrubland over *Cleome viscosa* open herbland

Veg Condition Very good

Fire Age ~18 months

Notes 800 m from the base of Cochrane

West Pilbara Iron **Site** CR033 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 04/06/2009

Habitat Alluvial plain

Soil Red to brown silty clay

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* high open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes There is more Corymbia hamersleyana to the north and less to the south, but otherwise the vegetation appears to be uniform

West Pilbara Iron **Site** CW001 **Quadrat size** 60 x 40 m
Described Shapelle McNee **Survey Date** 03/08/2007
Habitat Crest/flat of mesa
Soil Loose soil
Rock Channel Iron Deposit (CID)
Vegetation *Acacia arida* shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Excellent, no effective disturbance, except for grazing by hoofed animals
Fire Age 3-5 years

West Pilbara Iron **Site** CW002 **Quadrat size** 60 x 40 m
Described Denise True **Survey Date** 04/08/2007
Habitat Acacia shrubland on mesa top, mid to upper slope
Soil Soft, silty loam, red-brown
Rock Channel Iron Deposit (CID)
Vegetation *Acacia arida* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Good, limited clearing and grazing by hooved animals
Fire Age 5-10 years
Notes Road in the middle of the Quadrat, and a lot of dead *Tephrosia uniovulata*

West Pilbara Iron **Site** CW003 **Quadrat size** 60 x 40 m
Described Shapelle McNee **Survey Date** 04/08/2007
Habitat East facing slope of mesa crest
Soil Loose
Rock Channel Iron Deposit (CID)
Vegetation *Acacia arida* high shrubland over *Triodia wiseana* hummock grassland
Veg Condition Excellent, no effective disturbance
Fire Age 15-20 years

West Pilbara Iron **Site** CW004 **Quadrat size** 30 x 70 m
Described Denise True **Survey Date** 04/08/2007
Habitat Narrow mesa top/crest
Soil Firm, red, silty loam
Rock Channel Iron deposit (CID)
Vegetation *Acacia ancistrocarpa* open shrubland over *Dampiera candicans* low shrubland over *Triodia wiseana* hummock grassland
Veg Condition Excellent, no effective disturbance.
Fire Age <5-10 yrs
Notes 2008: Some *Dampiera candicans* has died off since first visit. *Triodia* and *Acacia* have grown since first visit.

West Pilbara Iron **Site** CW005 **Quadrat size** 130 x 10 m

Described Shapelle McNee **Survey Date** 04/08/2007

Habitat Floor of narrow gully/valley between two hills on top of mesa

Soil Loose

Rock Channel Iron Deposit (CID)

Vegetation *Acacia tumida* var. *pilbarensis* open scrub over *A. ancistrocarpa* and *Senna glutinosa* ssp. *glutinosa* shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age 3-5 yrs

West Pilbara Iron **Site** CW006 **Quadrat size** 30 x 70 m

Described Denise True **Survey Date** 04/08/2007

Habitat South west facing upper slope of mesa

Soil Firm, red-brown, silty loam

Rock Channel Iron Deposit (CID)

Vegetation *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CW007 **Quadrat size** 25 x 75 m

Described Shapelle McNee **Survey Date** 04/08/2007

Habitat West facing upper to mid slope of small gully (heading south) from top of mesa

Soil Clay loam, sandy, dark reddish brown when wet, firm

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Triodia wiseana* hummock grassland

Veg Condition No effective disturbance

Fire Age > 10 yrs

West Pilbara Iron **Site** CW008 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 05/08/2007

Habitat East facing mid slope of the mesa

Soil Soft, red-brown

Rock Channel Iron Deposit (CID)

Vegetation *Acacia arida* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CW009 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 05/08/2007

Habitat Top of mesa on a very slight slope

Soil Dark reddish brown silty clay loam, loose, with a surface crust where silt collects

Rock Channel Iron Deposit (CID)

Vegetation *Acacia pruinocarpa* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good, no effective disturbance

Fire Age > 10 yrs

Notes 2007: Plenty of dead shrubs bent over, possibly burnt in part of the Quadrat. Plenty of new shrubs coming up among mature plants of *Acacia arida*

West Pilbara Iron **Site** CW010 **Quadrat size** 160 x 10 m

Described Denise True **Survey Date** 05/08/2007

Habitat Minor drainage on mesa top

Soil Loose, red brown, silty loam, deeper soil at 100 m down the gully, with higher clay content, where water pools following rain

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Good, limited clearing, but the transect is crossed by 2 drill grid lines

Fire Age 5-10 yrs +

Notes 2008: *Acacia citrinoviridis* has been burnt and regrowth is present

West Pilbara Iron **Site** CW011 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 05/08/2007

Habitat Crest of mesa with a slight slope down towards access track and then into a mesa gully

Soil Clay loam, sandy under lag gravel, with more loam/silt under dense stands of vegetation, loose with a surface crust in places with no lag gravel

Rock Channel Iron Deposit (CID)

Vegetation *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* ssp. *hispidula* open scrub over *Triodia wiseana* open hummock grassland over mixed very open herbland

Veg Condition Very good, no effective disturbance

Fire Age 3-5 and 15-20yrs

Notes 2008: There appears to be two vegetation communities in this Quadrat: *Grevillea wickhamii* ssp. *hispidula* and *Acacia tumida* var. *pilbarensis* over *Triodia wiseana*; and *A. arida* over *T. wiseana*

West Pilbara Iron **Site** CW012 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 05/08/2007

Habitat Mesa top/crest

Soil Red-brown, silty, firm

Rock Channel Iron Deposit (CID)

Vegetation *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CW013 **Quadrat size** 30 x 70 m

Described Shapelle McNee **Survey Date** 05/08/2007

Habitat Flat valley floor in upper section of valley within mesa

Soil Surface crust and flake on soil

Rock Channel Iron Deposit (CID)

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia tumida* var. *pilbarensis*, *A. citrinoviridis* and *Gossypium robinsonii* open scrub over *Stylobasium spathulatum* and *Senna artemisioides* ssp*. oligophylla* open shrubland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CW014 **Quadrat size** 120 x 10 m

Described Denise True **Survey Date** 05/08/2007

Habitat Gully (dissected drainage) approximately 5-10 m wide and 6 m deep

Soil Red-brown, loose, gravelly loam

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* and *Grevillea wickhamii* ssp. *hispidula* and *Gossypium robinsonii* open scrub over *Petalostylis labicheoides* open shrubland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

Notes July 2008: More species present in 2008 including seedlings and herbs

West Pilbara Iron **Site** CW015 **Quadrat size** 40 x 60 m

Described Shapelle McNee **Survey Date** 05/08/2007

Habitat On a short steep slope descending from near the mesa top to the nearby valley floor

Soil Dark, rusty brown, loose, loam-sand

Rock Channel Iron Deposit (CID)

Vegetation *Acacia tumida* var. *pilbarensis* high shrubland over *A. arida* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CW016 **Quadrat size** 40 x 60 m

Described Denise True **Survey Date** 05/08/2007

Habitat On the upper slope at the head of a gully, below a breakaway on the mesa top/side

Soil Red-brown, firm, silty loam

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good, limited clearing for a drill hole and grid line at the head of the gully

Fire Age 5-10 yrs

Notes July 08: Drill pad within boundary of Quadrat and track, many seedlings present on soil disturbed by drill pad

West Pilbara Iron **Site** CW017r **Relevé** ~50 x 10 m

Described Shapelle McNee **Survey Date** 08/06/2007

Habitat Breakaway/freeface on the south side of a mesa

Soil Loose, sandy loam, very gritty

Rock Channel Iron Deposit (CID)

Vegetation *Acacia citrinoviridis* shrubland over *Triodia wiseana* very open hummock grassland and *Eriachne mucronata* very open tussock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CW018 **Quadrat size** 100 x 10 m

Described Denise True **Survey Date** 06/08/2007

Habitat Gully (dissected drainage) between two parts of the mesa

Soil Firm

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Acacia citrinoviridis* and *A. tumida* var. *pilbarensis* high shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unburnt

West Pilbara Iron **Site** CW019 **Quadrat size** 30 x 100 m

Described Shapelle McNee **Survey Date** 06/08/2007

Habitat A drainage line on valley floor between two sections of the mesa

Soil Loose, sandy silt, with surface crust and flake

Rock Channel Iron Deposit (CID)

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* and *A.tumida* var. *pilbarensis* high open shrubland over *A. bivenosa* and *A. arida* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

Notes 2008: Many more seedlings noted on second visit

West Pilbara Iron **Site** CW020 **Quadrat size** 70 x 30 m

Described Denise True **Survey Date** 06/08/2007

Habitat Rocky debris slope just below the mesa top, on the upper to mid slope of the landform

Soil Very little soil present

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia ssp. leucophloia* low open woodland over *Acacia arida* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CW021 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 06/08/2007

Habitat Top of mesa at northwest end

Soil Loose, sandy loam, with surface crust

Rock Channel Iron Deposit (CID) ironstone pisolites, some white quartz (rare)

Vegetation *Acacia arida* and *A. bivenosa* shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** CW022

Described Denise True **Survey Date** 06/08/2007 **Quadrat size** 50 x 50 m

Habitat Mesa top/crest

Soil Firm, red-brown, silty loam

Rock Channel Iron Deposit (CID)

Vegetation *Acacia arida* shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 10yrs

Notes Site is west of the main north/south track running along the mesa

West Pilbara Iron **Site** CW023 **Quadrat size** 25 x 75 m

Described Shapelle McNee **Survey Date** 06/08/2007

Habitat Upper to mid slope of mesa, facing southwest onto a water way in the flat plain below

Soil Firm, sandy clay loam, dark reddish brown

Rock Channel Iron Deposit (CID)

Vegetation *Eucalyptus leucophloia ssp. leucophloia* low woodland over *Acacia arida* shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 10 years

West Pilbara Iron **Site** CW024 **Quadrat size** 100 x 10 m

Described Denise True **Survey Date** 06/08/2007

Habitat Shallow drainage on the flat of the mesa top

Soil Where present, soil is a loose but firm clay/silt/sand

Rock Channel Iron Deposit (CID)

Vegetation *Acacia tumida var. pilbarensis* open scrub over *A. arida* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 10 yrs

West Pilbara Iron **Site** CW025 **Quadrat size** 24 x 41 m

Described Shapelle McNee **Survey Date** 07/08/2007

Habitat North west facing mesa slope on north east edge of mesa, above small gully

Soil Silty loam, with a thin layer of loose soil on the surface, but firm underneath

Rock Channel Iron Deposit (CID)

Vegetation *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CW026 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 07/08/2007

Habitat Flat slope of a mesa crest

Soil Reddish brown, soft, gravelly, silt loam, deep in some areas

Rock Channel Iron Deposit (CID)

Vegetation *Acacia pruinocarpa, A. bivenosa* and *A. arida* high shrubland over *Triodia wiseana* hummock grassland

Veg Condition Limited clearing, with a gridline running through the area

Fire Age > 10 yrs

West Pilbara Iron **Site** CW028 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 07/08/2007

Habitat lower foot slope

Soil Loose but firm, brown, clay loam

Rock Channel Iron Deposit (CID)

Vegetation *Acacia arida* scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** CW030 **Relevé** 120 x 10 m

Described Kellie McMaster **Survey Date** 07/08/2007

Habitat Drainage line, on the plain

Soil Loose but firm, dark red brown, silty clay loam, with some surface flake

Rock Channel Iron Deposit (CID)

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* closed scrub over *Senna artemisioides ssp. oligophylla* open shrubland over *Triodia epactia* scattered hummock grasses

Veg Condition No effective disturbance, except grazed by hoofed animals

Fire Age > 5 yrs

West Pilbara Iron **Site** CW032 **Quadrat size** 60 x 40 m

Described Kellie McMaster **Survey Date** 08/08/2007

Habitat Rocky mid slope, over a gully, with a north and north-east facing aspect

Soil Firm, dusky red, silty clay loam

Rock Channel Iron Deposit (CID)

Vegetation *Acacia inaequilatera* high open shrubland over *A. arida* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >5 years

West Pilbara Iron **Site** CW034 **Quadrat size** 10 x 120 m

Described Kellie McMaster **Survey Date** 08/08/2007

Habitat A wide dissected drainage or gully on the flat

Soil Firm, red brown, silty loam

Rock Channel Iron Deposit (CID)

Vegetation *Corymbia hamersleyana* low open forest over *Acacia tumida* var. *pilbarensis* scattered tall shrubs over *Cenchrus ciliaris* closed tussock grassland

Veg Condition Excellent, no effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** CW035 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 24/11/2007

Habitat Flat plain

Soil Red-brown, silty soils

Vegetation *Acacia synchronicia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW036 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 24/11/2007

Habitat Diffuse drainage line

Vegetation *Acacia bivenosa* shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age 5-10 years

West Pilbara Iron **Site** CW037 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Habitat Mesa crest, undulating slopes with numerous drainage lines

Vegetation *Acacia arida* and *Tephrosia uniovulata* low shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW038 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Habitat Gully

Vegetation *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* open heath over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW039 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW040 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Habitat Mesa crest

Vegetation *Acacia arida* shrubland over *Dampiera candicans* low shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW041 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Habitat Gully

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia citrinoviridis* high open shrubland over *Tephrosia uniovulata* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW042 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 23/11/2007

Habitat Mesa slope

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia arida* shrubland over *Tephrosia uniovulata* low scattered shrubs over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW045 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 27/11/2007

Habitat Alluvial plain/pediment

Soil Brown, silty clay loam

Rock Channel Iron Deposit (CID)

Vegetation *Acacia ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW046 **Relevé** ~ 50 x 50 m

Described Daniel Brassington **Survey Date** 27/11/2007

Habitat Alluvial plain/pediment

Soil Reddish brown. sandy clay loam

Rock Channel Iron Deposit (CID)

Vegetation *Acacia xiphophylla* high open shrubland over *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW048 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Vegetation *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW049 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Vegetation *Acacia xiphophylla* high open shrubland over *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW050 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Vegetation *Acacia synchronicia* scattered tall shrubs over *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW051 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Vegetation *Acacia ancistrocarpa* shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW052 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Habitat Broad very minor drainage at the base of a rocky outcrop

Soil Loose soil

Vegetation *Corymbia hamersleyana* low open woodland over *Stylobasium spathulatum* and *Acacia ancistrocarpa* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW053 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 21/07/2008

Habitat Flat/plain

Vegetation *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW054 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 21/07/2008
Habitat Rocky plain below mesa
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* and *A. ancistrocarpa* shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW055 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 21/07/2008
Rock Type Quartzy, rocky pediment
Vegetation *Acacia xiphophylla* high open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW056 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 21/07/2008
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW057 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 21/07/2008
Vegetation *Acacia xiphophylla* high shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW059 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa top
Vegetation *Acacia arida* and *A. ancistrocarpa* open heath over *Triodia wiseana* hummock grassland
Veg Condition Some limited clearing for drill tracks
Fire Age Unknown

West Pilbara Iron **Site** CW060 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa slope
Vegetation *Acacia bivenosa* shrubland over *Triodia wiseana* hummock grassland
Veg Condition No effective disturbance except grazing by hoofed animals
Fire Age Unknown

West Pilbara Iron **Site** CW061 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Drainage line

Vegetation *Acacia ancistrocarpa* and *A. bivenosa* open scrub over *Triodia wiseana* very open hummock grassland

Veg Condition No effective disturbance

Fire Age No evidence

West Pilbara Iron **Site** CW062 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Low valley/depression on mesa top

Vegetation *Acacia bivenosa* and *A. ancistrocarpa* high shrubland over *Triodia wiseana* scattered hummock grasses

Veg Condition No effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** CW063 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Mesa crest

Vegetation *Eucalyptus leucophloia* spp. *leucophloia* open woodland over *Acacia arida* shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW064 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Drainage line

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* and *Gossypium robinsonii* open scrub

Veg Condition Very good

Fire Age Unknown. Burnt

West Pilbara Iron **Site** CW065 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Creek between two parts of mesa

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia citrinoviridis*, *A. bivenosa*, *A. synchronicia*, *A. pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* high shrubland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** CW066 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa edge and free face
Rock Channel Iron Deposit
Vegetation *Eucalyptus leucophloia* ssp. l*eucophloia* low open woodland over mixed *Acacia* sp. scattered shrubs over *Triodia wiseana* open hummock grassland
Veg Condition No effective disturbance
Fire Age Unknown

West Pilbara Iron **Site** CW067 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa top
Rock Channel Iron Deposit
Vegetation *Acacia arida* open heath over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW068 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Crest of low mesa
Soil Loose soil
Vegetation *Acacia xiphophylla* high shrubland over *Triodia wiseana* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW069 **Relevé**~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa slope
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia citrinoviridis* and *A. bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW070 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 25/09/2008
Habitat Mesa crest
Vegetation *Acacia ancistrocarpa*, *Petalostylis labicheoides* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CW071 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Mesa crest

Vegetation *Acacia ancistrocarpa* shrubland over *A. bivenosa* low open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW073 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 25/09/2008

Habitat Minor drainage

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis* open scrub over *A. arida* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW075 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 26/09/2008

Habitat Mesa crest

Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW079 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 28/10/2008

Habitat Crest and upper slope of mesa

Rock Channel Iron Deposit

Vegetation *Acacia arida* and *A. ancistrocarpa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CW080 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 28/10/2008

Habitat Creekline on low mesa with small hills

Soil Silty

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia tumida* var. *pilbarensis* high shrubland over *Gossypium robinsonii* open shrubland over *Triodia wiseana* scattered hummock grasses

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CWW051 **Quadrat size** 120 x 10 m

Described Cassie Adam **Survey Date** 24/09/2008

Habitat Incised drainage line

Soil Soft, loose

Vegetation *Acacia citrinoviridis* high shrubland over *Gossypium robinsonii* shrubland over *Triodia epactia* open hummock grassland over mixed very open herbs

Veg Condition Very good

Fire Age >10 years

West Pilbara Iron **Site** CWW052 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 26/09/2008

Habitat Small hill

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CWW053 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 26/09/2008

Habitat Plain with minor drainage lines

Soil Some sandy clay

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia ancistrocarpa* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CWW054 **Relevé** ~ 50 x 50 m

Described Rebecca Graham **Survey Date** 26/09/2008

Vegetation *Acacia bivenosa* and *A. ancistrocarpa* shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** CWW055 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 24/09/2008

Habitat Flat of surrounding mesa

Soil Firm, loose soil with surface crust

Vegetation *Acacia bivenosa* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age ~5-10 years

West Pilbara Iron **Site** CWW057 **Quadrat size** 50 x 50 m
Described Cassie Adam **Survey Date** 24/09/2008
Habitat Flat
Soil Firm to loose soil
Vegetation *Acacia synchronicia* open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age 10 years

West Pilbara Iron **Site** CWW058 **Relevé** ~ 50 x 50 m
Described Rebecca Graham **Survey Date** 26/09/2008
Vegetation *Acacia xiphophylla* shrubland over *Triodia wiseana* and *T. epactia* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** CWW059 **Quadrat** 30 x 70 m
Described Cassie Adam **Survey Date** 25/09/2008
Habitat Flood plain/drainage line between surrounding mesas, outcropping crests and knolls
Soil Firm to loose silty clay loam (some surface flake)
Vegetation *Acacia bivenosa* and *A. ancistrocarpa* open scrub over *Triodia epactia* open hummock grassland
Veg Condition No effective disturbance
Fire Age >10 years

West Pilbara Iron **Site** CWW061 **Relevé** ~ 50 x 50 m
Described Cassie Adam **Survey Date** 24/09/2008
Habitat Pediment
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* over *Triodia wiseana*
Veg Condition Very good
Fire Age Unknown
Notes Nearby crest appears to have *Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia arida* over *Triodia wiseana*, presence of *Acacia xiphophylla*

West Pilbara Iron **Site** CWW062 **Relevé** ~ 25 x 10 m
Described Cassie Adam **Survey Date** 25/09/2008
Vegetation *Acacia aneura* (narrow, fine veined, site 1259) low woodland over *Dodonaea coriacea* open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** FM001 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 24/05/2007

Habitat Minor drainage line

Soil Loose, firm, red to brown soil

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** FM002 **Quadrat size** 35 x 65 m

Described Shapelle McNee **Survey Date** 24/05/2007

Habitat Top/crest and upper slope

Soil Loose, yellow to brown soil, some coarse grains, most fine grains (silt/clay)

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* low scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance except drill hole just adjacent to quadrat

Fire Age < 5 yrs

West Pilbara Iron **Site** FM020 **Quadrat size** 40 x 60 m

Described Hayley Hughes **Survey Date** 02/09/2008

Habitat Minor drainage line on mesa crest

Soil Soft, red, orange to brown soil

Rock Iron stone, sedimentary

Vegetation *Acacia atkinsiana* and *Acacia pruinocarpa* open heath over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** FM021 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 02/09/2008

Habitat Upper slope of the mesa top

Soil Firm, shiny and silty

Rock Ironstone

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** HAM001 **Quadrat size** 60 x 40 m

Described Denise True **Survey Date** 05/08/2008

Habitat Plateau

Soil Firm soil

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Good

Fire Age Unknown

Notes Hamersley formation. *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)regional vegetation distribution 8.75 km east of site KB21.

West Pilbara Iron **Site** HR001 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 24/11/2007

Habitat Drainage line with adjacent low rolling hills

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa*, *A. bivenosa* and *A. citrinoviridis* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR004 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 24/11/2007

Habitat Creekline

Vegetation *Eucalyptus camaldulensis* var. *obtusa* woodland over *Gossypium robinsonii*, *Acacia bivenosa* and *A. citrinoviridis* over *Cyperus vaginatus* and *Cenchrus ciliaris*

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR008 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 24/11/2007

Habitat Drainage line

Soil Orange-red, silty loam with some quaztite stones

Rock Quartzite and metamorphic sandstone

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* and *A. bivenosa* shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR009 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 24/11/2007

Habitat Drainage line

Rock Channel Iron Deposit

Vegetation *Corymbia candida* ssp. *candida* low open woodland over *Acacia adsurgens* high shrubland over *A. ancistrocarpa* and *A. bivenosa* open heath over *Senna artemisioides* ssp. *helmsii* low open shrubland over *Triodia pungens* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR010 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 24/11/2007

Habitat Drainage line, site on edge of river

Soil Alluvial sandy silt

Vegetation *Acacia pyrifolia* var. *pyrifolia* and *A. citrinoviridis* high shrubland over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR011 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 24/11/2007

Habitat Stony river bed

Vegetation *Eucalyptus camaldulensis* var. *obtusa* open forest over *Melaleuca linophylla* high open shrubland over *Goodenia stobbsiana* shrubland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR012 **Relevé**~ 50 x 50 m

Described Denise True **Survey Date** 24/11/2007

Rock Calcrete

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia citrinoviridis* high open shrubland over *A. bivenosa*, *A. pyrifolia* var. *pyrifolia* and *A. synchronicia* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR016 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 25/11/2007

Habitat Floodplain of a river

Soil Silty loam soils

Rock Type Basalt

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia citrinoviridis* scattered tall shrubs over *A. pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* open shrubland over *Tephrosia rosea* var. *glabrior*, *Senna artemisioides* ssp. *oligophylla* and *Corchorus sidoides* ssp. *sidoides* low open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR017 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 25/11/2007

Habitat Drainage line

Vegetation *Eucalyptus camaldulensis* var. *obtusa* open woodland over *Triodia epactia* open hummock grassland over *Pluchea dentex* very open herbland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR019 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 25/11/2007

Habitat Undulating alluvial plain

Soil Silty loam soils

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* and *A. synchronicia* high shrubland over *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR020 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 25/11/2007

Soil Silty soils

Vegetation *Acacia xiphophylla* high shrubland over *Triodia epactia* scattered hummock grasses

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR021 **Relevé** ~ 50 x 50 m

Described Shapelle McNee **Survey Date** 25/11/2007

Soil Crusting and cracking silty clay soils

Vegetation *Acacia synchronicia* and *A. ancistrocarpa* open heath over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR038 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 05/07/2008

Habitat Sandy alluvial plain

Soil Red sands, with some lag gravel

Vegetation *Eucalyptus victrix* low open woodland over *Acacia atkinsiana*, *A. ancistrocarpa* and *A. bivenosa* shrubland over *Triodia epactia* and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age < 5 years

West Pilbara Iron **Site** HR044 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 05/07/2008

Habitat River

Vegetation *Eucalyptus victrix* woodland over *Melaleuca linophylla* high shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR055 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 05/07/2008

Vegetation *Acacia atkinsiana*, *A. bivenosa* and *A. ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland with *Corymbia hamersleyana* over *Acacia ancistrocarpa* drainage lines

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR061 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 05/07/2008

Habitat Pediment/slope to low hill

Vegetation *Acacia synchronicia* scattered shrubs over *Eremophila cuneifolia* low open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age < 5 years

West Pilbara Iron **Site** HR066 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 04/07/2008

Vegetation *Eucalyptus camaldulensis* var. *obtusa* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** HR075 **Relevé** ~50 x 50 m
Described Denise True **Survey Date 0**4/07/2008
Habitat Low mesa
Rock Channel Iron Deposit
Vegetation *Acacia citrinoviridis* and *A. inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** IN002 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 25/11/2007
Habitat Plain and low rolling hills
Soil Red brown, sandy clay loam
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* and *T. epactia* hummock grassland
Veg Condition Very good
Fire Age 5-10 yrs

West Pilbara Iron **Site** IN004 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 25/11/2007
Habitat Plain and low rolling hills
Soil Reddish brown, sandy clay loam
Vegetation *Acacia ancistrocarpa* high open shrubland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** IN005 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 25/11/2007
Habitat Plain and low rolling hills
Vegetation *Acacia xiphophylla* high shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Some disturbance from cattle grazing
Fire Age Unknown

West Pilbara Iron **Site** IN006 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 25/11/2007
Habitat Plain
Soil Reddish brown, silty clay loam
Vegetation *Acacia aneura* var. *intermedia* low woodland over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** IN007 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 25/11/2007

Habitat Plain and low rolling hills

Soil Reddish brown, sandy clay loam

Vegetation *Acacia atkinsiana* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age > 10 yrs

West Pilbara Iron **Site** IN008 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 25/11/2007

Habitat Minor drainage line within a plain

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Eremophila fraseri* ssp. *fraseri* low scattered shrubs over *Triodia wiseana* open hummock grassland with *Acacia ancistrocarpa* scattered shrubs in drainage lines

Veg Condition Very good

Fire Age Unknown

Notes *Acacia inaquilatera* dominates on the rolling plain with *Eremophila fraseri*, but included in this overall vegetation type are minor drainage lines dominated by *Acacia ancistrocarpa*

West Pilbara Iron **Site** IN009 **Relevé** ~50 x 50 m

Described Daniel Brassington **Survey Date** 25/11/2007

Habitat Incised drainage line

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** IN012 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 25/11/2007

Habitat Incised drainage system

Soil Reddish brown, silty clay loam

Vegetation *Acacia ancistrocarpa* and *Acacia inaequilatera* high open shrubland over *Eremophila fraseri* ssp. *fraseri* scattered shrubs over *Triodia wiseana* closed hummock grassland

Veg Condition Very good

Fire Age > 10 yrs

West Pilbara Iron **Site** IN013 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 25/11/2007

Habitat Large creekline

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** JW001 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 17/05/2007

Habitat Mesa top/crest

Soil Very fine, loose, brown to red soil with some sand. Present in thin layer under lag gravel and above rock

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent - Very good (driven over once, otherwise no effective disturbance).

Fire Age > 5 years

Notes Limited clearing on outskirts of quadrat

West Pilbara Iron **Site** JW001r **Quadrat size** 60 x 10 m

Described Shapelle McNee **Survey Date** 19/05/2007

Habitat Mesa free face

Soil Soft, self-mulching, dark brown soil, reasonably deep with large amounts of decomposing leaf litter

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia atkinsiana* high shrubland over *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 yrs

West Pilbara Iron **Site** JW002 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 18/05/2007

Habitat Mesa crest/flat top

Soil Loose, dry, very fine silty clay with minor amounts of sand. Red to brown. Gravel over the top and lag gravel embedded in soil

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *Eremophila fraseri* ssp. *fraseri* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW002r **Quadrat size** 140 x 10 m

Described Shapelle McNee **Survey Date** 19/05/2007

Habitat Free face and debris slope

Soil Loose soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* very open hummock grassland and *Eriachne mucronata* (typical form) open tussock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

Notes Transect runs along a vertical rock face, largely bare, south facing, thus more shade

West Pilbara Iron **Site** JW003 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 18/05/2007

Habitat Flat top/crest of Jewell mesa

Soil Loose, firm, red to brown, fine silty loam

Rock Type Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

Notes Eastern end of mesa

West Pilbara Iron **Site** JW004 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 18/05/2007

Habitat Upper slope

Soil Very fine texture, hardly any depth to it at surface below lag gravel (pisolite). Loose with high quantities of silt and clay

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW005 **Quadrat size** 10 x 120 m

Described Denise True **Survey Date** 18/05/2007

Habitat Drainage in gully on pediment/debris slope

Soil Loose, hard setting, fine silt clay, red to brown in colour

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* and *Petalostylis labicheoides*

shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good-excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW006 **Quadrat size** 60 x 40 m

Described Shapelle McNee **Survey Date** 19/05/2007

Habitat Mesa slope

Soil Very shallow below lag gravel and above rock face. Reasonably coarse and loose, red to brown with some silt quantities

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* low open *shrubland* over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

Notes A termite mound was noted on top side of the quadrat above an outcropping of rock. Very steep slope. Some dead shrubs unidentifiable, possibly *Sida* or *Hibiscus* sp.

West Pilbara Iron **Site** JW007 **Quadrat size** 10 x 100 m

Described Denise True **Survey Date** 19/05/2007

Habitat Drainage gully on mesa debris slope

Soil Loose, soft, dark red-brown, silt and clay soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Abutilon* aff. *dioicum* (HD72-14) high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW008 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 19/05/2007

Habitat Aluvial plain

Soil Loose red to brown soil containing some quantities of silt, clay and reasonably coarse with sand (iron particle

sand). Soil also forms a surface crust

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age 5-10 yrs

West Pilbara Iron **Site** JW009 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 19/05/2007

Habitat Mid to lower mesa debris slope

Soil Loose soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Acacia bivenosa* open shrubland over *Triodia* wiseana open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW011 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 19/05/2007

Habitat Alluvial plain/pediment

Soil Firm, red to brown fine silt clay

Rock Laterite

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

Notes A high number of ephemerals were found and were mostly dead/parched and difficult to determine. Termite mounds common

West Pilbara Iron **Site** JW013 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 20/05/2007

Habitat Drainage flat

Soil Soft, red to brown, silty clay

Rock Quartzite and hematite present

Vegetation *Acacia xiphophylla* high shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** JW014 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 19/05/2007

Soil Silty clay

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* high open shrubland over *Triodia epactia* closed hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KB001 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 13/06/2007

Habitat Mesa top/crest

Soil Firm, red to brown, fine silty clay

Rock Channel Iron Deposit

Vegetation *Acacia synchronicia* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >10 years

West Pilbara Iron **Site** KB002 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 13/06/2007

Habitat Valley

Soil Loose, surface crust forming soil

Rock Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age No evidence

West Pilbara Iron **Site** KB003 **Quadrat size** 30 x 70 m

Described Denise True **Survey Date** 13/06/2007

Habitat Upper slope

Soil Firm, red to brown soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* closed hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** KB004 **Quadrat size** 70 x 30 m

Described Shapelle McNee **Survey Date** 13/06/2007

Habitat Midslope

Soil Loose, shallow and coarse soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >5 years

West Pilbara Iron **Site** KB005 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 13/06/2007

Habitat Mesa crest

Soil Firm, red to brown silty soil

Rock Channel Iron Deposit

Vegetation *Acacia* aff. *aneura* (narrow fine veined; site 1259) and *A. inaequilatera* scattered tall shrubs over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** KB006 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 14/06/2007

Habitat Pediment

Soil Firm soil with surface crusts and flakes

Rock Channel Iron Deposit. Some white small flakey stones and white quartz present

Vegetation *Acacia xiphophylla* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance. Few cattle footprints

Fire Age >10 years

West Pilbara Iron **Site** KB007 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 14/06/2007

Habitat Mesa crest

Soil Firm, red to brown silty clay

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 yrs

West Pilbara Iron **Site** KB008 **Quadrat size** 60 x 40 m

Described Shapelle McNee **Survey Date** 14/06/2007

Habitat Crest/flat mesa top

Soil Soft soil

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* and *A. inaequilatera* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age No evidence

West Pilbara Iron **Site** KB009 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 14/06/2007

Habitat Mesa slope

Soil Firm, red to brown, silty clay soil

Rock Channel Iron Deposit

Vegetation *Petalostylis labicheoides* and *Acacia inaequilatera* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland

Veg Condition Limited clearing

Fire Age > 5 years

West Pilbara Iron **Site** KB010 **Quadrat size** 70 x 30 m

Described Shapelle McNee **Survey Date** 15/06/2007

Habitat Mesa mid slope

Soil Soft soil

Rock Channel Iron Deposit

Vegetation *Acacia tumida* var. *pilbarensis* high shrubland over *A. bivenosa* shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >10 years

West Pilbara Iron **Site** KB011 **Quadrat size** 70 x 30 m

Described Denise True **Survey Date** 15/06/2007

Habitat Flat at mesa perimeter

Soil Soft, dark red-brown silty loam, deeper soil

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* open scrub over *Triodia epactia* and *T. wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Long unburnt

West Pilbara Iron **Site** KB012 **Quadrat size** 110 x 10 m

Described Shapelle McNee **Survey Date** 15/06/2007

Habitat Mesa crest

Soil Soft soil

Rock Channel Iron Deposit

Vegetation *Acacia citrinoviridis* high open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Good, limited clearing by a tractor track

Fire Age Unknown

West Pilbara Iron **Site** KB013 **Quadrat size** 60 x 40 m

Described Denise True **Survey Date** 15/06/2007

Habitat Upper debris slope

Soil Hard setting, red to brown soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Long unburnt

West Pilbara Iron **Site** KB014 **Quadrat size** 50 x 50 m

Described Shapelle McNee **Survey Date** 16/06/2007

Habitat Mesa crest

Soil Firm soil that forms a surface crust

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >10 years

West Pilbara Iron **Site** KB015 **Quadrat size** 60 x 40 m
Described Denise True **Survey Date** 15/06/2007
Habitat Mesa crest
Soil Firm, red to brown, silty clay soil
Rock Channel Iron Deposit
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* hummock grassland
Veg Condition Excellent, no effective disturbance
Fire Age Long unburnt

West Pilbara Iron **Site** KB016 **Quadrat size** 50 x 50 m
Described Shapelle McNee **Survey Date** 16/06/2007
Habitat Mesa crest with gentle slope
Soil Loose soil
Rock Channel Iron Deposit
Vegetation *Acacia bivenosa* high shrubland over *Triodia wiseana* hummock grassland
Veg Condition Excellent, no effective disturbance except grazing by hoofed animals
Fire Age Long unburnt

West Pilbara Iron **Site** KB017 **Quadrat size** 70 x 5 m
Described Denise True **Survey Date** 16/06/2007
Habitat Dissected drainage on the mid slope off the edge of the mesa
Soil Loose, red to brown, gravelly silt soils
Rock Channel Iron Deposit
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open wodland over *Petalostylis labicheoides* and *Acacia tumida* var. *pilbarensis* open scrub over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland
Veg Condition Excellent, no effective disturbance
Fire Age Long unburnt

West Pilbara Iron **Site** KB019 **Quadrat size** 84 x 5 m
Described Denise True **Survey Date** 16/06/2007
Habitat Mesa crest
Soil Soft, red to brown silt
Rock Channel Iron Deposit
Vegetation *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* open scrub over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland
Veg Condition Excellent, no effective disturbance
Fire Age Long unburnt

West Pilbara Iron **Site** KB021 **Quadrat size** 120 x 10 m

Described Stephen Kern **Survey Date** 16/06/2007

Habitat Large river bed and banks

Soil Loose, soft soil with rocky alluvial fragments (gravel) in riverbed and red silty clay on banks

Rock Channel Iron Deposit

Vegetation *Eucalyptus camaldulensis* var. *obtusa* and *E. victrix* open forest over *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei* scattered tall shrubs over mixed very open herbland

Veg Condition Excellent, no effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** KB022 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 09/08/2007

Habitat Pediment

Soil Firm, brown, silty sand loam

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* open scrub over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age >10 years

West Pilbara Iron **Site** KB024 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 28/11/2007

Habitat Slightly undulating site

Soil Loose, firm, coarse, red brown, sandy silty loam

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* high shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KB025 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 28/11/2007

Habitat Adjacent to a river bed, on a gentle slope, running away from the river towards the mesa.

Soil Dusky red to pink, silty sandy loam

Vegetation *Acacia trachycarpa* and *Grevillea wickhamii* ssp. *hispidula* high shrubland over *Acacia pyrifolia* var. *pyrifolia* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age < 20 yrs

West Pilbara Iron **Site** KB042 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 27/10/2008

Habitat Mesa top

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Jan 2007

West Pilbara Iron **Site** KB043 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 27/10/2008

Habitat Mesa top

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KB044 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 27/10/2008

Habitat Mesa top

Vegetation *Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KB045 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 19/07/2009

Habitat Mesa top

Soil Scarce loose to firm red brown silty clay

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Corchorus* aff. *Parviflorus* (JWO11-11) scattered shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age Jan 2007

West Pilbara Iron **Site** KB046 **Quadrat size** 60 x 40 m

Described Kellie McMaster **Survey Date** 19/07/2009

Habitat Mesa top/crest

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KBW001 **Relevé** ~50 x 50 m

Described Rebecca Graham **Survey Date** 06/08/2008

Habitat Mesa top

Soil Red brown firm loose soil

Rock Channel Iron Deposit

Vegetation *Acacia citrinoviridis* high open shrubland over *A. bivenosa* and *A. inaequilatera* shrubland over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance except by grazing hoofed animals. March and June 2008 rain

Fire Age > 10 years

West Pilbara Iron **Site** KBW002 **Quadrat** 50 x 50 m

Described Kellie McMaster **Survey Date** 08/06/2008

Habitat Alluvial plain

Soil Firm, loose silty clay sand

Rock Channel Iron Deposit

Vegetation *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance except by grazing hoofed animals

Fire Age > 5 years.

West Pilbara Iron **Site** KBW003 **Quadrat** 50 x 50 m

Described Rebecca Graham **Survey Date** 08/06/2008

Habitat Flat

Soil Firm to loose, red to brown soil

Rock Channel Iron Deposit

Vegetation *Acacia ancistrocarpa* high shrubland over *Triodia epactia* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 10 years

West Pilbara Iron **Site** KBW004 **Quadrat** 50 x 50 m

Described Kellie McMaster **Survey Date** 10/06/2009

Habitat Alluvial plain

Soil Silty clay, firm and loose

Rock Channel Iron Deposit

Vegetation *Acacia ancistrocarpa* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good, no effective disturbance except grazing by hoofed animals

Fire Age less than 10 years

West Pilbara Iron **Site** KBW005 **Quadrat** 50 x 50 m
Described Kellie McMaster **Survey Date** 30/08/2008
Habitat Alluvial plain
Soil Loose to soft, brown to red, silty clay
Vegetation *Acacia synchronicia* high shrubland over *Triodia epactia* hummock grassland
Veg Condition No effective disturbance except grazing by hoofed animals
Fire Age Long unburnt

West Pilbara Iron **Site** KBW006 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 01/09/2008
Habitat Alluvial plain
Soil Loose, firm, cracking, red to brown, silty clay surface crust
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa, A. bivenosa and A. synchronicia* shrubland over *Triodia epactia* hummock grassland
Veg Condition No effective disturbance except grazing by hoofed animals

West Pilbara Iron **Site** KBW007 **Quadrat** 120 x 10 m
Described Hayley Hughes **Survey Date** 01/09/2008
Habitat Creek line on plain
Soil Loose, firm, red to brown, stony, silty sand
Rock Type Channel Iron Deposit
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia colei* var. *colei* high open shrubland over *Triodia epactia* very open hummock grassland
Veg Condition No effective disturbance except grazing by hoofed animals
Fire Age > 5 years

West Pilbara Iron **Site** KBW008 **Relevé** ~50 x 50 m
Described Hayley Hughes **Survey Date** 07/06/2009
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age 2-5 years ago
Notes Near access road to Kens Bore Mesa, old drill and water bore near Relevé

West Pilbara Iron **Site** KBW009 **Relevé** ~50 x 50 m
Described Hayley Hughes **Survey Date** 07/06/2008
Habitat Flood Plain
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** KBW010 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 08/06/2008

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia tumida var. pilbarensis* and *A. ancistrocarpa* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KBW011 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 08/06/2008

Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** KBW012 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 08/06/2008

Habitat Bottom of pediment

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* high shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC001 **Quadrat size** 120 x 10 m

Described Rebecca Graham **Survey Date** 06/08/2008

Habitat Minor drainage line on plain

Soil Loose, firm, red brown sandy clay

Rock Ferrous Channel Iron Deposit

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia*, *A. trachycarpa* and *A. ancistrocarpa* high shrubland over *Tephrosia rosea* var. *glabrior* low open shrubland over *Triodia epactia* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age 5-10 years

West Pilbara Iron **Site** TC002 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 06/08/2008

Habitat Alluvial plain. Flat and on the bottom third of the landform element

Soil Firm and loose silty sand

Rock Channel Iron Deposit

Vegetation *Acacia pyrifolia* var. *pyrifolia* open shubland over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Cleoma viscosa* low open heath

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age Jan 2007 - 19 months

West Pilbara Iron **Site** TC003 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 06/08/2008

Habitat Riverbed, floodplain

Soil Loose silty soil

Vegetation *Eucalyptus victrix* open woodland over *Acacia trachycarpa*, *A. pyrifolia* var. *pyrifolia* and *Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition No effective disturbance except heavy grazing by hoofed animals

Fire Age >10 yrs

West Pilbara Iron **Site** TC004 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 06/08/2008

Habitat Flat Alluvial plain

Soil Firm to loose silty sand

Rock Possibly Channel Iron Deposit

Vegetation *Acacia pyrifolia* var. *pyrifolia* high shrubland over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age > 5 years

West Pilbara Iron **Site** TC005 **Quadrat size** 70 x 30 m

Described Rebecca Graham **Survey Date** 06/08/2008

Habitat Minor drainage area

Soil Soft to loose red brown soil

Rock Ferrous rock type

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Gossypium australe* (Burrup Peninsula form) open shrubland over *Cleome viscosa* low shrubland

Veg Condition Good but drying out, no effective disturbance except grazing by hoofed animals

Fire Age Early 2007

West Pilbara Iron **Site** TC006 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 06/08/2008

Habitat Alluvial plain

Soil Loose, firm, silty clay sand

Rock Possibly Channel Iron Deposit

Vegetation *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa* scattered shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Excellent, with no effective disturbance except grazing by hoofed animals

Fire Age < 5 yrs

West Pilbara Iron **Site** TC007 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 07/08/2008

Habitat Low hill

Soil Red brown, firm, loose sandy clay

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent, with no effective disturbance

Fire Age 5-10 yrs

West Pilbara Iron **Site** TC008 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 07/08/2008

Habitat River bed

Rock Sedimentary. Possible Ironstone from Channel Iron Deposit and BIF's

Vegetation *Eucalyptus victrix* woodland over *Melaleuca linophylla* and *M. glomerata* high open shrubland

Veg Condition Excellent, no effective disturbance except grazing by hoofed animals

Fire Age Unknown

West Pilbara Iron **Site** TC009 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 07/08/2008

Habitat Alluvial plain with numerous drainage lines

Soil Firm, red-brown, sandy silt

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia wanyu*, *A. ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age < 10 years.

West Pilbara Iron **Site** TC010 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 07/08/2008

Habitat Pediment

Soil Firm, loose, red-brown silty sand

Rock Channel Iron Deposit

Vegetation *Acacia synchronicia* scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age <5 years

West Pilbara Iron **Site** TC011 **Quadrat size** 75 x 25 m

Described Rebecca Graham **Survey Date** 07/08/2008

Habitat South facing hill slope

Soil Firm, loose, red-brown

Rock Ferrous/ Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age > 10 years.

West Pilbara Iron **Site** TC012 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 07/08/2008

Habitat Slope of low hill/ degraded mesa

Soil Firm, loose, red-brown silty clay

Vegetation *Acacia arida* and *Senna glutinosa* ssp. *pruinosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance except grazing by hoofed animals

Fire Age < 5 years.

West Pilbara Iron **Site** TC013 **Quadrat size** 100 x 10 m

Described Denise True **Survey Date** 07/08/2008

Habitat Floodplain, river bed

Soil Firm

Rock Sedimentary, calcrete outcropping nearby

Vegetation *Acacia pyrifolia* var. *pyrifolia* and *A. citrinoviridis* open shrubland over *Cenchrus ciliaris* open tussock grassland over *Dysphania melanocarpa* forma. *leucocarpa* very open herbland

Veg Condition Very good

Fire Age <5-10 years

West Pilbara Iron **Site** TC014 **Quadrat size** 100 x 10 m

Described Kellie McMaster **Survey Date** 07/08/2008

Habitat Minor drainage line

Soil Hard-setting, firm, loose, cracking, brown-red, clay silt sand

Rock Unknown, probably Channel Iron Deposit. Sedimentary

Vegetation Acacia citrinoviridis high shrubland over Acacia bivenosa, Stylobasium spathulatum and Eremophila longifolia shrubland over Triodia epactia open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC015 **Quadrat size** 50 x 50 m

Described Amy Douglas **Survey Date** 07/08/2008

Habitat Hill crest with minor gully in one side

Soil Soft, brown silty soil

Rock Dolomite outcrop

Vegetation Stylobasium spathulatum high open shrubland over Indigofera rugosa low open shrubland over Triodia wiseana open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age > 5 years

West Pilbara Iron **Site** TC017 **Quadrat size** 50 x 50 m

Described Denise True **Survey Date** 07/08/2008

Habitat Mid slope low rolling hills

Soil Soft soil

Rock Basalt outcropping

Vegetation *Triodia wiseana* open hummock grassland

Veg Condition No effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** TC024 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 04/07/2008

Habitat Broad drainage area, floodplain

Vegetation *Grevillea pyramidalis* ssp. *leucadendron* scattered tall shrubs over *Acacia pyrifolia* var. *pyrifolia* open shrubland over *Triodia epactia* hummock grassland with *Corymbia hamersleyana* over *Acacia pyrifolia* var. *pyrifolia* over *Triodia epactia* drainage lines

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC026 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 04/07/2008

Vegetation *Eucalyptus camaldulensis* var. *obtusa* over *Acacia colei* var. *colei* over *Cenchrus ciliaris*

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC028 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Habitat Alluvial plain

Vegetation *Acacia wanyu* low open shrubland over *Triodia epactia* and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC029 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Habitat Drainage alluvial plain

Soil Silty clay

Vegetation *Corymbia candida* ssp. *candida*, *C. hamersleyana* and *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana* and *A. ancistrocarpa* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC030 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 06/06/2009

Habitat Alluvial plain

Soil Silty

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC032 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat Drainage

Vegetation *Corymbia hamersleyana* over *Gossypium robinsonii* over *Tephrosia rosea* var. *glabrior* over *Triodia epactia*

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC033 **Relevé**~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat River bank

Vegetation *Eucalyptus victrix* scattered trees over *Acacia citrinoviridis* and *A. synchronicia* scattered tall shrubs over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC034 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat River/creekbed

Vegetation *Eucalyptus victrix* scattered trees over *Acacia citrinoviridis*, *A. pyrifolia* var. *pyrifolia*, and *Gossypium robinsonii* scattered tall shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC036 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat Broad drainage

Vegetation *Corymbia hamersleyana* low open woodland over *Cenchrus ciliaris* closed tussock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC037 **Relevé**~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Vegetation *Acacia ancistrocarpa* and *Senna artemisioides* ssp. *oligophylla* low open shrubland over *Triodia epactia* very open hummock grassland over scattered herbs

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC039 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat Creek line/herbland

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia citrinoviridis*, *A. ancistocarpa*, *A. bivenosa*, *A. pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* open scrub over *Triodia epactia* scattered hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC041 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 19/07/2009

Habitat Top of Banded Ironstone Formation high hill

Soil Scarce, mostly rock

Rock Channel Iron Deposit/BIF

Vegetation *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Very good

Fire Age <5yrs

West Pilbara Iron **Site** TC042 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 15/07/2009

Habitat Low rocky hills

Vegetation *Acacia arida* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC043 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Habitat Plain

Soil Silty, clay loam

Vegetation *Corymbia hamersleyana* scattered low trees over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes *Eucalyptus camaldulensis* and *Acacia ancistrocarpa* have a greater presence in the creek line, but also have a presence in the *Triodia epactia* community

West Pilbara Iron **Site** TC045 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Soil Silty loam

Vegetation *Acacia xiphophylla* high shrubland over *A. synchronicia* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC047 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Vegetation *Acacia inaequilatera, A. ancistrocarpa, A. atkinsiana* and *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes *Triodia wiseana* is dominant and *Acacia bivenosa* comes down from the north and *Acacia ancistrocarpa* and *Acacia atkinsiana* come from the south where they meet and become co-dominant

West Pilbara Iron **Site** TC050 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Soil Silty clay

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* open shrubland over *A. synchronicia* low open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC052 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Habitat Alluvial plain

Soil Silty clay

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia tumida* var. *pilbarensis* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC054 **Relevé** ~50 x 50 m

Described Fiona Mayberry **Survey Date** 16/07/2009

Habitat Incised drainage line

Vegetation *Eucalyptus camaldulensis var. obtusa* low open woodland over *Melaleuca glomerata* high open shrubland over *Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Incised drainage line has steep banks and a pool of water present, vegetation description applies to bank of drainage line

West Pilbara Iron **Site** TC066 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 17/07/2009
Habitat Pediment of hill (saddle between two hills) and alluvial plain
Soil Red, brown, silty clay loam
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age <5 years

West Pilbara Iron **Site** TC070 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 17/07/2009
Habitat Flat between hills
Vegetation *Acacia inaequilatera* open shrubland over *Corchorus sidoides* ssp. *sidoides*, *C. laniflorus* and *Sida* aff. *echinocarpa* (MET 15,350) low shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC076 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 17/07/2009
Habitat Drainage line
Soil Loose, brown, clay loam
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open scrub over *Triodia wiseana* very open hummock grassland
Veg Condition Very Good
Fire Age Unknown

West Pilbara Iron **Site** TC080 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 17/07/2009
Habitat Drainage line
Soil Loose, clay loam
Vegetation *Acacia ancistrocarpa* and *A. bivenosa* open scrub over *Triodia wiseana* closed hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC082 **Relevé** ~50 x 50 m
Described Cassie Adam **Survey Date** 17/07/2009
Habitat Drainage line
Soil Hard, red, brown, clay loam
Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* open heath over *Triodia epactia* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC084 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 17/07/2009

Habitat Low rolling hills

Vegetation *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Crest of a hill to saddle of *Triodia wiseana* hills, low rolling hills has the same vegetation type

West Pilbara Iron **Site** TC086 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 17/07/2009

Habitat Drainage line

Soil Clay loam

Vegetation *Acacia ancistrocarpa* open scrub over *A. bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC088 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 17/07/2009

Habitat Drainage line

Soil Clay loam

Vegetation *Acacia ancistrocarpa* over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC091 **Relevé** ~50 x 50 m

Described Cassie Adam **Survey Date** 17/07/2009

Habitat Drainage line

Soil Clay loam

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC094 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 15/07/2009

Habitat Drainage line

Vegetation *Acacia bivenosa* shrubland over *Triodia epactia* hummock grassland

Veg Condition Very Good

Fire Age Unknown

West Pilbara Iron **Site** TC095 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/07/2009
Vegetation *Acacia inaequilatera* scattered shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC099 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/07/2009
Habitat Top of rocky hill
Vegetation *Acacia arida* shrubland over *Triodia wiseana* scattered hummock grasses
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC100 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/07/2009
Habitat Drainage line
Vegetation *Acacia ancistrocarpa* open scrub over *Triodia epactia* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC102 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/7/2009
Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC103 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/07/2009
Vegetation *Acacia bivenosa* open shrubland over *Triodia epactia* and *T. wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown
Notes More *Triodia epactia* in base of drainage line and more *Triodia wiseana* on hillslope

West Pilbara Iron **Site** TC104 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 15/07/09
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana* and *A. bivenosa* open shrubland over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC105 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 15/07/2009

Vegetation *Acacia atkinsiana* and *Stylobasium spathulatum* scattered shrubs over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC106 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Broad river bed

Vegetation *Eucalyptus victrix* open woodland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC107 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Alluvial plain between rivers

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa* scattered shrubs over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC108 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Alluvial plain

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC109 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat River bank

Vegetation *Eucalyptus victrix* scattered trees over *Acacia maitlandii* and *A. pyrifolia var. pyrifolia* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC110 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat River bed

Vegetation *Eucalyptus victrix* open woodland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC111 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Alluvial plain adjacent to river

Vegetation *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *A. bivenosa* and *Stylobasium spathulatum* open shrubland over *Triodia epactia* closed hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC112 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Pediment

Vegetation *Corymbia hamersleyana* and *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Pediment of Hamersley Ranges

West Pilbara Iron **Site** TC114 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Habitat Pediment

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered trees over *Acacia ptychophylla* scattered low shrubs over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC116 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Vegetation *Eucalyptus victrix* open woodland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC119 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 16/07/2009

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. inaequilatera* and *A. bivenosa* open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC120 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 16/07/2009
Habitat Debris slope
Vegetation *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC121 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 16/07/2009
Habitat Rocky creekline
Vegetation *Corymbia hamersleyana* over *Stylobasium spathulatum* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC123 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 16/07/2009
Vegetation *Corymbia hamersleyana* scattered low trees over *Stylobasium spathulatum* scattered shrubs over *Triodia epactia* very open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC126 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 16/07/2009
Vegetation *Acacia pyrifolia* var. *pyrifolia* scattered tall shrubs over *Grevillea pyramidalis* ssp. *leucadendron* scattered shrubs over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC123 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Hills and slopes
Rock Calcrete outcropping on hills
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC128 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Drainage line in valley
Vegetation *Acacia bivenosa* shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC129 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Vegetation *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes *Acacia bivenosa* in drainage line to the north and *Corymbia hamersleyana* and *Gossypium robinsonii* in drainage line to the south

West Pilbara Iron **Site** TC130 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Habitat Drainage line

Vegetation *Acacia bivenosa* open heath over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Highly dissected drainage line

West Pilbara Iron **Site** TC131 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Habitat Minor flat drainage line

Soil Clay silt with some surface flake

Vegetation *Corymbia hamersleyana* scattered low trees over *Gossypium robinsonii* shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC132 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/09

Habitat Pisolite pediment

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Large bare patches of no vegetation

West Pilbara Iron **Site** TC133 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Habitat Broad drainage line in plain

Vegetation *Acacia pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* high shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC134 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Rocky plain
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC135 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Pediment
Rock Calcrete
Vegetation *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown
Notes On calcrete pediment with *Fimbristylis dichotoma* and *Sclerolaena densiflora* present in bare patches

West Pilbara Iron **Site** TC136 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC137 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Pediment
Vegetation *Triodia wiseana* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC138 **Relevé** ~50 x 50 m
Described Kellie McMaster **Survey Date** 17/07/2009
Habitat Low rise
Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* high open shrubland over *Triodia epactia* open hummock grassland over *Eragrostis eriopoda* open tussock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TC139 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Habitat Plain

Soil Silty

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* and *Grevillea pyramidalis* ssp. *leucadendron* high open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Appears to be a mosaic of bare patches on rises and dense parts lower down, almost grove like

West Pilbara Iron **Site** TC141 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 17/07/2009

Vegetation *Acacia pyrifolia* var. *pyrifolia* high shrubland over *Grevillea pyramidalis* ssp. *leucadendron* open shrubland over *Triodia epactia* scattered hummock grasses over *Cenchrus ciliaris* very open tussock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC144 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 15/07/2009

Habitat Plain

Soil Silty

Vegetation *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Spinifex with herbs and chenopods present. Small open chenopod patch in *Triodia epactia*

West Pilbara Iron **Site** TC147 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 15/07/2009

Vegetation *Acacia aneura* (narrow, fine veined, site 125a) scattered low shrubs over *Eremophila cuneifolia* scattered low shrubs over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC148 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/07/2009

Habitat Low undulating stony rises

Soil Silty sandy loam, swales

Vegetation *Acacia pyrifolia* var. *pyrifolia* high shrubland over *Grevillea pyramidalis* ssp. *leucadendron* open shrubland over *Triodia epactia* very open hummock grassland over *Eragrostis* aff. *eriopoda* (WAS site 963) very open tussock grassland

Veg Condition Very good

Fire Age Burnt <5 years

West Pilbara Iron **Site** TC149 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/07/2009

Vegetation *Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Cullen lachnostachys* shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC150 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/07/2009

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia synchronicia* scattered tall shrubs over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Vegetation type exists as a patch

West Pilbara Iron **Site** TC151 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 18/07/2009

Habitat Low rolling hills

Vegetation *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Presence of bare ground

West Pilbara Iron **Site** TC152 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 18/07/2009

Habitat Drainage line

Soil Silty

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* open shrubland over *Triodia epactia* closed hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TC153 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 18/07/2009
Soil Silty
Vegetation *Corymbia hamersleyana* scattered low trees over *Gossypium robinsonii* high open shrubland over *Acacia ancistrocarpa* and *A. bivenosa* shrubland over *Triodia epactia* closed hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** TR001 **Quadrat size** 50 x 50 m
Described Shapelle McNee **Survey Date** 22/11/2007
Habitat Mesa top/crest
Soil Loose, dusky red, silty clay loam. Forms a firm surface crust
Rock Channel Iron Deposit
Vegetation *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Good - dry though, many dead plants.
Fire Age 5-10 yrs
Notes 2007: *Acacia pruinocarpa* stags. 2.5 m tall burnt *Acacia pruinocarpa*, resprouting to 1.4 - 1.7 m.

West Pilbara Iron **Site** TR002 **Quadrat size** 50 x 50 m
Described Shapelle McNee **Survey Date** 22/11/2007
Habitat Flat top, crest of mesa
Soil Loose with small area of surface flake
Rock Channel Iron Deposit
Vegetation *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland
Veg Condition Excellent
Fire Age < 5 years

West Pilbara Iron **Site** TR003 **Quadrat size** 70 x 30 m
Described Amy Douglas **Survey Date** 22/11/2007
Habitat Mesa top/edge
Soil Firm, red-brown, surface crust forming soil.
Rock Channel Iron Deposit
Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Acacia aneura* (narrow fine veined; site 1259) low open woodland
over *A. pruniocarpa* scattered shrubs over *Triodia wiseana* open hummock grassland
Veg Condition Good
Fire Age < 10 years

West Pilbara Iron **Site** TR004r **Quadrat size** 160 x 5 m

Described Shapelle McNee **Survey Date** 22/11/2007

Habitat Rock face community on upper slope/breakaway

Soil Loose, sandy loam

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Dodonaea pachyneura* and *Ptilotus obovatus* var. *obovatus* scattered shrubs over *Triodia wiseana* very open hummock grassland over *Eriachne mucronata* very open tussock grassland over *Rhodanthe margarethae* very open herbs

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** TR005 **Quadrat size** 60 x 40 m

Described Cassie Adam **Survey Date** 22/11/2007

Habitat Upper slope

Soil Loose, orange-brown, silty clay loam

Rock Channel iron deposit

Vegetation *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* and *T*. sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** TR006 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 23/11/2007

Habitat Gully of mesa

Soil Loose soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Grevillea wickhamii* ssp. *hispidula* and *Acacia pruinocarpa* high shrubland over *Abutilon dioicum* open shrubland over *Triodia wiseana* very open hummock grassland over *Eriachne tenuiculmis* very open tussock grassland

Veg Condition Very good

Fire Age > 10 yrs

West Pilbara Iron **Site** TR007 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 23/11/2007

Habitat Mesa crest

Soil Loose soil

Rock Channel Iron Deposit

Vegetation *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia bivenosa* and *A. pruinocarpa* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Good

Fire Age > 5 years

West Pilbara Iron **Site** TR008 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 23/11/2007

Habitat Mesa crest

Soil Firm, loose soil

Rock Channel Iron Deposit

Vegetation *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia arida* open shrubland over *Triodia wiseana*

hummock grassland

Veg Condition Excellent

Fire Age Unknown

Notes *Acacia inaequilatera* dominant over entire area of quadrat, with *Acacia arida* and *Grevillea wickhamii* present in patches.

West Pilbara Iron **Site** TR009r **Relevé** ~160 x 10 m

Described Kellie McMaster **Survey Date** 23/11/2007

Habitat Mesa slope

Soil Firm soil

Rock Channel Iron Deposit

Vegetation *Acacia aneura* (narrow, fine veined, site 1259) low woodland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent though parched

Fire Age > 5 years

Notes A few dead grasses observed but not collected. *Acacia xiphophylla* occurs at bottom of slope, at middle to bottom of the community

West Pilbara Iron **Site** TR010 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 24/11/2007

Habitat Mesa crest

Soil Loose, firm, dusky red, clay loam

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* high shrubland over *Stylobasium spathulatum* and *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age Unknown

Notes *Triodia wiseana* and *Acacia pruinocarpa* growing vigorously after March and June 2008 rain.

West Pilbara Iron **Site** TR011 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 24/11/2007

Habitat Minor drainage lline on mesa crest

Soil Firm, loose, flaking, brown-red, silty clay loam

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia tumida* var. *pilbarensis* open scrub over *Stylobasium spathulatum* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age > 5 years

West Pilbara Iron **Site** TR012 **Quadrat size** 50 x 50 m

Described Amy Douglas **Survey Date** 24/11/2007

Habitat Mesa crest

Soil Firm, dusky red, clay loam

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Good, no effective disturbance

Fire Age 10-15 years

Notes

West Pilbara Iron **Site** TR013 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 24/11/2007

Habitat Gentle sloping crest of mesa

Soil Loose, firm, brown-red soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 years

Notes 2007: Quite a few dead ephemerals with no leaves and unrecognisable.

West Pilbara Iron **Site** TR014 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 24/11/2007

Habitat Mesa crest

Soil Loose, firm, red-brown, clay loam

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age >10years

West Pilbara Iron **Site** TR015 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 24/11/2007

Habitat Rocky crest on mesa top

Soil Firm, brown, silty clay loam

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age ~ 6 years

Notes Good growth of *Triodia wiseana* and *Acacia pruinocarpa* after March and June 2008 rain. Many dead smaller shrubs

West Pilbara Iron **Site** TR016 **Quadrat size** 60 x 40 m

Described Cassie Adam **Survey Date** 24/11/2007

Habitat Mesa crest

Soil Loose, brown, clay loam with surface crust forming

Rock Channel Iron Deposit

Vegetation *Acacia citrinoviridis* high open shrubland over *A. pruinocarpa* open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Good, no effective disturbance

Fire Age < 5 years

West Pilbara Iron **Site** TR017 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 24/11/2007

Habitat Midslope/hill of low rolling internal drainage basin on mesa top

Rock Channel Iron Deposit

Vegetation *Petalostylis labicheoides* high shrubland over *Grevillea wickhamii* ssp. *hispidula* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) and *T. wiseana* open hummock grassland

Veg Condition Excellent

Fire Age < 5 years

West Pilbara Iron **Site** TR018 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2007

Habitat Drainage on mesa slope

Soil Loose, firm, fine, brown-red soil, soft and clayey

Rock Channel Iron Deposit

Vegetation *Triodia epactia* open hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age < 5 years

West Pilbara Iron **Site** TR019 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 24/11/2007

Habitat Minor drainage

Soil Loose, firm, red-brown, clay loam with areas of surface flake

Rock Channel Iron Deposit

Vegetation *Acacia aneura* (narrow, fine veined, site 1259) low open woodland over *A. atkinsiana* and *Grevillea wickhamii* ssp. *hispidula* high shrubland over *Triodia pungens* open hummock grassland

Veg Condition Excellent

Fire Age > 5 years

Notes Shallow dip in mesa crest/upper slope.

West Pilbara Iron **Site** TR020 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 26/11/2007

Habitat Upper slope/crest of internal drainage basin

Soil Loose, firm soil

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia* sp Robe River open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR021 **Quadrat size** 120 x 10 m

Described Daniel Brassington **Survey Date** 26/11/2007

Habitat Rocky gully

Soil Soft, dark brown, sandy loam

Rock Channel Iron Deposit and Dolomite

Vegetation *Acacia citrinoviridis* low open forest over *Indigofera monophylla*, *Gossypium robinsonii* and *Senna glutinosa* ssp. *glutinosa* open shrubland over *Triodia wiseana* very open hummock grassland and mixed very open herbs

Veg Condition Excellent, however, dry after little summer rain

Fire Age < 10 years

West Pilbara Iron **Site** TR022 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 27/11/2007

Habitat Drainage basin on crest edge of mesa

Soil Loose, firm, dusky red, silty clay loam

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Excellent

Fire Age ~5 years

West Pilbara Iron **Site** TR023 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 26/11/2007

Habitat Mesa top

Soil Soft, reddish brown, silty loam. Surface crust forming

Rock Channel Iron Deposit

Vegetation *Acacia atkinsiana* and *Petalostylis labicheoides* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Good, no effective disturbance

Fire Age Unknown

West Pilbara Iron **Site** TR024 **Quadrat size** 120 x 10 m

Described Kellie McMaster **Survey Date** 27/11/2007

Habitat Minor drainage line on upper slope of mesa

Soil Loose, firm, red-brown, cracking clay loam

Rock Channel Iron Deposit

Vegetation Drainage line: *Corymbia hamersleyana* low open woodland over *Acacia adsurgens* and *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia maitlandii* and *Senna artemisioides* ssp. *oligophylla* shrubland over *Triodia wiseana* hummock grassland

Gully: *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low woodland over Acacia *citrinoviridis* and *A. pruinocarpa* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age > 5 years

Notes Vegetation type changes at 73 m where the gully starts, vegetation type becomes *Eucalyptus leucophloia* and *Corymbia hamersleyana* over *Acacia pruinocarpa* and *Acacia citronoviridis* over *Triodia wiseana*.

West Pilbara Iron **Site** TR025 **Quadrat size** 50 x 50

Described Hayley Hughes **Survey Date** 27/11/2007

Habitat Mid slope of mesa

Soil Loose soil

Rock Channel Iron Deposit

Vegetation *Acacia bivenosa*, *A. inaequilatera* and *A. ancistrocarpa* open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Good

Fire Age > 5 years

West Pilbara Iron **Site** TR026 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 23/11/2007

Habitat Mesa crest

Soil Loose, dusky red, sandy clay loam. Most of the site covered in a continuous lag gravel, the remaining in a surface crust

Rock Channel Iron Deposit

Vegetation *Grevillea wickhamii* ssp. *hispidula* high open shrubland over *Acacia atkinsiana* and *A. bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Good although a few dead trees and shrubs

Fire Age Unknown

West Pilbara Iron **Site** TR031 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 24/09/2008

Habitat Mesa top

Soil Thin soil

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age > 5 years

West Pilbara Iron **Site** TR042 **Relevé** ~ 50 x 50 m

Described Denise True **Survey Date** 24/09/2008

Rock Dolomite

Vegetation *Terminalia canescens* low open woodland over *Stylobasium spathulatum* scattered shrubs

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR052 **Relevé**~ 50 x 50 m

Described Kellie McMaster **Survey Date** 24/09/2008

Habitat Mesa top

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* high open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR067 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 24/09/2008

Habitat Mesa top

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Acacia aneura* (narrow, fine veined, site 1259) low open woodland over *A. pruinocarpa* scattered tall shrubs over *Triodia epactia* and *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes TR067 was a vegetation description originally, but was updated to a Relevé in 2009. Mulga is in a small patch on a slope, no *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)found here.

West Pilbara Iron **Site** TR070 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 24/09/2008

Habitat Mesa top

Vegetation *Acacia inaequilatera* open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR085 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 28/10/2008

Habitat Mesa top

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* and *A. bivenosa* shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age < 5 yrs

Notes Very dry, no annuals or ephemerals

West Pilbara Iron **Site** TR086 **Quadrat size** 20 x 80 m

Described Cassie Adam **Survey Date** 21/07/2009

Habitat Mesa top

Soil No soil present

Rock Very rocky (20-50% bedrock exposed) with moderately rapid runoff and continuous lag gravel of medium pebbles to stones

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age >10 years

Notes *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)appears to be only in this small patch.

West Pilbara Iron **Site** TR087 **Quadrat size** 120 x 10 m

Described Gemma Lindschau **Survey Date** 21/07/2009

Habitat Gully

Soil Firm red-brown silty clay

Rock Channel Iron Deposit and creekbed rocks

Vegetation *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* high shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age <5 years

West Pilbara Iron **Site** TR100 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 21/07/2009

Habitat Mesa top

Soil Scarce, loose, red-brown, silty clay

Rock Channel Iron Desposit

Vegetation *Grevillea wickhamii* scattered tall shrubs over *Acacia bivenosa* shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Good

Fire Age <10 years

West Pilbara Iron **Site** TR103 **Quadrat size** 30 x 70 m

Described Andrew Taylor **Survey Date** 21/07/2009

Habitat Mesa slope

Soil Scarce

Rock Pisolite

Vegetation *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Good

Fire Age > 10 years

West Pilbara Iron **Site** TR104 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 15/07/2009

Rock Channel Iron Deposit

Vegetation *Acacia atkinsiana* open shrubland over *Senna glutinosa* ssp. *luersenii* over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR106 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 21/07/2009

Habitat Base of gully

Vegetation *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TR107 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 21/07/2009

Habitat Gully

Soil Soil scarce

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* open woodland over *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** TRW001 **Quadrat size** 50 x 50 m

Described Rebecca Graham **Survey Date** 08/08/2008

Habitat Low rolling hill

Soil Firm loose, red brown soil

Rock Ferrous

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana* and *A. bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* very open hummock grassland

Veg Condition Excellent

Fire Age 5 years

West Pilbara Iron **Site** TRW002 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 08/08/2008

Habitat Pediment of mesa

Soil Firm loose brown red silty clay

Rock Channel Iron Deposit

Vegetation *Triodia wiseana* very open hummock grassland with *Petalostylis labicheoides* and *Acacia bivenosa* scattered shrubs in drainage lines

Veg Condition Excellent

Fire Age < 5 years.

West Pilbara Iron **Site** TRW004 **Relevé** ~50 x 50 m
Described Denise True **Survey Date** 18/07/2009
Habitat Stony plain
Vegetation *Acacia citrinoviridis* over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown
Notes Numerous minor drainage across pediment/basin

West Pilbara Iron **Site** TRW005 **Relevé**~50 x 50 m
Described Denise True **Survey Date** 18/07/2009
Habitat Stony plain
Vegetation *Acacia xiphophylla* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown
Notes Numerous *Acacia bivenosa* drainage lines. More *Acacia xiphophylla* than *Acacia bivenosa*

West Pilbara Iron **Site** TRW006 **Relevé** ~ 50 x 50 m
Described Denise True **Survey Date** 18/07/2009
Habitat Stony plain
Vegetation *Acacia bivenosa* high open shrubland over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown
Notes *Acacia bivenosa* drainage lines present; *Triodia epactia* stony plain. Small patch of *Acacia xiphophylla*

West Pilbara Iron **Site** TsRR015 **Quadrat size** 60 x 40 m
Described Kellie McMaster **Survey Date** 02/09/2008
Habitat Mesa top
Soil Loose, firm, orange-brown, fine, clay-silt
Rock Channel Iron Deposit
Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* hummock grassland
Veg Condition Very good
Fire Age < 5 years

West Pilbara Iron **Site** TsRR016 **Quadrat size** 50 x 50 m

Described Gemma Lindschau **Survey Date** 02/09/2008

Habitat Mesa top

Soil Loose, firm, red-brown, silty clay

Rock Channel Iron Deposit

Vegetation *Acacia atkinsiana* open scrub over *A. bivenosa* low open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Top of mesa but head of gully.

West Pilbara Iron **Site** TsRR020 **Quadrat size** 70 x 30 m

Described Cassie Adam **Survey Date** 26/09/2008

Habitat Upper slope of hill

Soil Firm, loose, red-brown, sandy clay

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Very good with no effective disturbance of the site

Fire Age ~5 yrs

West Pilbara Iron **Site** TsRR021 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 26/09/2008

Habitat Slope of a low hill

Rock Pisolite deposit

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)hummock grassland

Veg Condition Very good

Fire Age > 10 yrs

West Pilbara Iron **Site** TsRR031 **Quadrat size** 50 x 50 m

Described Cassie Adam **Survey Date** 20/07/2009

Habitat Crest of low rollling hills

Soil No soil present

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age > 10 years

West Pilbara Iron **Site** TsRR040 **Quadrat size** 60 x 40 m

Described Kellie McMaster **Survey Date** 20/07/2009

Habitat Mesa slope

Soil Presence of soil is scarce

Rock Channel Iron Desposit

Vegetation *Acacia bivenosa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Very good

Fire Age <5 years

West Pilbara Iron **Site** TsRR041 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 20/07/2009

Habitat Mesa top

Soil Presence of soil is scarce

Rock Channel Iron Deposit

Vegetation *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)open hummock grassland

Veg Condition Good

Fire Age <5 years

West Pilbara Iron **Site** TsRR042 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 20/07/2009

Soil Presence of soil is scarce

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* scattered tall shrubs over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Very good

Fire Age <5 years

West Pilbara Iron **Site** UC001 **Quadrat size** 50 x 50 m

Described Steve Kern **Survey Date** 19/06/2007

Habitat Mesa crest

Soil Soft, red silty soil

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age Within 5 Years

West Pilbara Iron **Site** UC002 **Quadrat size** 120 x 10 m

Described Steve Kern **Survey Date** 19/06/2007

Habitat Creek line

Soil Restricted to rock crevices, firm, red, silty clay with high gravel content

Rock Channel Iron Deposit

Vegetation *Corymbia ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* and *Dodonaea pachyneura* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Excellent

Fire Age >10 yrs

West Pilbara Iron **Site** UC003 **Quadrat size** 50 x 50 m

Described Steve Kern **Survey Date** 19/06/2007

Habitat Mesa crest

Soil Firm but soft, red silt with high gravel content

Rock Channel Iron Deposit

Vegetation *Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, dry after little summer rain

Fire Age <5 yrs

West Pilbara Iron **Site** UC004 **Quadrat size** 50 x 50 m

Described Steve Kern **Survey Date** 18/06/2007

Habitat Upper slope of mesa

Soil Firm, red, sandy silt with high gravel content

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia* aff. *aneura* (narrow fine veined; site 1259), *A. citrinoviridis* and *Grevillea berryana* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* open hummock grassland

Veg Condition Good, dry after little summer rain

Fire Age >10 yrs

West Pilbara Iron **Site** UC005 **Quadrat size** 30 x 70 m

Described Steve Kern **Survey Date** 20/06/2007

Habitat Rocky mid slope of mesa

Soil Sparse, loose and firm, red clay silt in between very rocky surface

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia ferriticola* low open woodland over *Acacia citrinoviridis* high open shrubland over *A. pruinocarpa* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)very open hummock grassland

Veg Condition Excellent

Fire Age > 5 yrs

West Pilbara Iron **Site** UC006 **Quadrat size** 120 x 10 m

Described Steve Kern **Survey Date** 20/06/2007

Habitat Valley floor

Soil Loose, red silty sand with high gravel content

Rock Channel Iron Deposit

Vegetation *Acacia citrinoviridis* and *Stylobasium spathulatum* high shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. epactia* open hummock grassland

Veg Condition Excellent

Fire Age 5-10 years

West Pilbara Iron **Site** UC007 **Quadrat size** 50 x 50 m

Described Steve Kern **Survey Date** 20/06/2007

Habitat Flat top/crest of mesa

Soil Firm, red silt

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UC008 **Quadrat size** 60 x 40 m

Described Kellie McMaster **Survey Date** 09/08/2007

Habitat Crest/flat top of mesa

Soil Firm, dusky red, silty loam

Rock Channel iron deposit

Vegetation *Acacia pruinocarpa* and *Eremophila fraseri* ssp. *fraseri* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland

Veg Condition Very good

Fire Age > 3 years

West Pilbara Iron **Site** UC009 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 08/09/2007

Habitat Wide flat crest on mesa top

Soil Firm, dark reddish brown, silty loam

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* and *A. pruinocarpa* open shrubland over *Corchorus sidoides* ssp. *sidoides* and *Ptilotus astrolasius* var. *astrolasius* low shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)and *T. wiseana* very open hummock grassland

Veg Condition Excellent

Fire Age >5 years

West Pilbara Iron **Site** UC010 **Quadrat size** 50 x 50 m

Described Kellie McMaster **Survey Date** 08/08/2007

Habitat Upper slope/flat top/crest

Soil Dusky red, silty clay loam

Rock Channel Iron Deposit

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia inaequilatera* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland

West Pilbara Iron **Site** UC015 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 27/10/2008

Habitat Mesa top

Vegetation *Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UC016 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 27/10/2008

Habitat Gently sloping mesa top

Vegetation *Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *A. citrinoviridis* open shrubland over *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW001 **Quadrat size** 10 x 120 m

Described Hayley Hughes **Survey Date** 09/08/2008

Habitat Major creekline in undulating hills running from west to east

Soil Red-brown loose, gritty soil

Rock Layered sedimentary rock

Vegetation *Corymbia hamersleyana* and *Eucalyptus* sp. scattered low trees over *Gossypium robinsonii* and *Acacia pyrifolia* var. *pyrifolia* high shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age >5 years ago

West Pilbara Iron **Site** UCW002 **Quadrat size** 50 x 50 m

Described Hayley Hughes **Survey Date** 09/08/2008

Habitat Low undulating hills on a plain

Soil Red to brown, loose, gritty soil

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age > 5 years

West Pilbara Iron **Site** UCW004 **Quadrat size** 50 x 50 m

Described Andrew Taylor **Survey Date** 30/08/2008

Habitat Plain

Soil Red to brown soft soil

Rock Channel Iron Deposit

Vegetation *Acacia inaequilatera* and *A. ancistrocarpa* scattered shrubs over *A. bivenosa* and *A. victoriae* scattered low shrubs over *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Very good

Fire Age >5 years

West Pilbara Iron **Site** UCW005 **Quadrat size** 50 x 50 m

Described Andrew Taylor **Survey Date** 30/08/2008

Habitat Hill crest

Soil Red brown, loose, surface crust

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia maitlandii* low open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Very good

Fire Age <10 years

West Pilbara Iron **Site** UCW006 **Relevé** ~ 50 x 50 m

Described Gemma Lindschau **Survey Date** 30/08/2008

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW007 **Relevé** ~ 50 x 50 m

Described Gemma Lindschau **Survey Date** 30/08/2008

Habitat Valley and lower slope between hills

Vegetation *Corymbia hamersleyana* scattered low trees over *Triodia wiseana* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Bare soil in the drainage line

West Pilbara Iron **Site** UCW008 **Relevé** ~ 50 x 50 m

Described Gemma Lindschau **Survey Date** 30/08/2008

Habitat Valley and lower slope between hills

Rock Channel Iron Deposit

Vegetation *Acacia maitlandii* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW009 **Relevé** ~ 50 x 50 m

Described Gemma Lindschau **Survey Date** 30/08/2008

Vegetation *Acacia maitlandii* open shrubland over *Triodia wiseana* and *T.* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) very open hummock grassland and *Eriachne mucronata* very open tussock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW015 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 30/08/2008

Habitat Basin

Vegetation *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* scattered low trees over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Recently burnt

West Pilbara Iron **Site** UCW016 **Relevé** ~ 50 x 50 m

Described Kellie McMaster **Survey Date** 30/08/2008

Habitat Slope

Vegetation *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW017 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat Basin

Soil Sandy, silty, brown red soil

Vegetation *Corymbia hamersleyana* low open woodland over *Ptilotus astrolasius* low shrubland over *Triodia epactia* very

open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** UCW018 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Vegetation *Triodia epactia* hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Presence of some shrubs

West Pilbara Iron **Site** UCW019 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Habitat Clay pan

Vegetation *Acacia synchronicia* scattered tall shrubs over *A. arida*, *A. bivenosa*, *A. ancistrocarpa* and *A. inaequilatera* open shrubland over *Eremophila cuneifolia* low open shrubland over *Triodia epactia* open hummock grassland

Veg Condition Very good

Fire Age Unknown

Notes Mixed Acacias

West Pilbara Iron **Site** UCW022 **Relevé** ~50 x 50 m

Described Kellie McMaster **Survey Date** 07/06/2009

Soil Sandy

Vegetation *Corymbia hamersleyana* low open woodland over *Stylobasium spathulatum* open shrubland over *Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia epactia* very open hummock grassland

Veg Condition Very good

Fire Age Unknown

West Pilbara Iron **Site** PL001 **Relevé** ~50 x 50 m

Described Shapelle McNee **Survey Date** 18/6/2007

Habitat On flat ca. 55m wide

Soil Soft soil with areas of surface crusts and surface flaking

Vegetation *Acacia ancistrocarpa* open scrub over scattered low shrubs over *Triodia epactia* and *T. wiseana* hummock grassland

Veg Condition Good, no effective disturbance except grazing by hoofed animals

Fire Age Unknown

Notes Termite mound present

West Pilbara Iron **Site** PL002 **Relevé** ~50 x 50 m
Described Shapelle McNee **Survey Date** 18/6/2007
Habitat Crest of a low hill
Soil Cracking soil that forms a surface crust, under the crust the soil is loose
Rock Type Sedimentary
Vegetation *Acacia xiphophylla* high shrubland over *Vachellia farnesiana* scattered shrubs over *Acacia synchronicia* low open shrubland over *Triodia epactia* very open hummock grassland
Veg Condition Evidence of cattle trampling and grazing
Fire Age Unknown

West Pilbara Iron **Site** PL003 **Relevé** ~50 x 50 m
Described Shapelle McNee **Survey Date** 18/6/2007
Habitat Flat plain
Vegetation *Corymbia hamersleyana* scatered low trees over *Acacia synchronicia, A. bivenosa and A. ancistrocarpa* scattered shrubs over *Triodia epactia* open hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** PL004 **Relevé** ~50 x 50 m
Described Shapelle McNee **Survey Date** 18/6/2007
Habitat Hill slope/crest and a small wide valley between two hills
Rock Type Igneous phenocryst
Vegetation Scattered shrubs over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** PL005 **Relevé** ~50 x 50 m
Described Shapelle McNee **Survey Date** 18/6/2007
Habitat Creekline
Vegetation *Acacia citrinoviridis* and *A. inaequilatera* open scrub over *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire Age Unknown

West Pilbara Iron **Site** PL006 **Relevé** ~50 x 50 m
Described Shapelle McNee **Survey Date** 18/6/2007
Habitat Flat top hill
Vegetation *Triodia wiseana* hummock grassland
Veg Condition Very good
Fire age Unknown

West Pilbara Iron **Site** OF001 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/6/2007

Habitat Drainage line

Soil Red-brown clay, loose in the riverbed and firm on the banks

Vegetation *Gossypium robinsonii* high open shrubland over *Vachellia farnesiana* scattered shrubs over *Acacia bivenosa* shrubland over *Triodia wiseana* open hummock grassland

Veg Condition Excellent

Fire Age 5-10 years

West Pilbara Iron **Site** OF002 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/6/2007

Habitat Midslope on low undulating hills

Soil Firm, red-brown soil

Rock Type Basalt/dolomite

Vegetation *Acacia inaequilatera* high open shrubland over *Triodia wiseana* hummock grassland

Veg Condition Excellent, no effective disturbance

Fire Age Long unburnt

West Pilbara Iron **Site** OF003 **Relevé** ~50 x 50 m

Described Denise True **Survey Date** 17/6/2007

Habitat Dissected drainage line between low undulating hills

Soil Loose, red-brown, silty clay soils

Vegetation *Eucalyptus victrix* low open forest over *Gossypium robinsonii* and *Acacia synchronicia* high open shrubland over *Triodia wiseana* and *T. epactia* very open hummock grassland

Veg Condition Excellent

Fire Age Long unburnt

Appendix 6 Locations of Quadrats and Releves (WGS 84, Zone 50)

Site ID	Type	Easting	Northing	Latitude	Longitude
AD001	Quadrat	417847	7552855	-22.127334	116.203413
AD002	Quadrat	417174	7552327	-22.132079	116.196860
AD003	Quadrat	417658	7552243	-22.132856	116.201542
AD004	Quadrat	416455	7551840	-22.136439	116.189861
AD005	Quadrat	417921	7552046	-22.134646	116.204087
AD007	Quadrat	416612	7551980	-22.135184	116.191386
ASN020	Quadrat	414028	7548106	-22.170049	116.166132
ASN021	Quadrat	413933	7548428	-22.167136	116.165223
ASN022	Quadrat	413302	7549264	-22.133949	116.208948
ASN-023	Quadrat	413520	7549165	-22.160462	116.161255
BOR102	Quadrat	422869	7543845	-22.208964	116.251672
CE003	Quadrat	421900	7545662	-22.192504	116.242354
CE004	Quadrat	420412	7544895	-22.199361	116.227885
CE005	Quadrat	420305	7545529	-22.193629	116.226878
CE006	Quadrat	420169	7545234	-22.196292	116.225542
CE007	Quadrat	419584	7545260	-22.196029	116.219869
CE008	Quadrat	420396	7545731	-22.191812	116.227773
CE009	Quadrat	419513	7545151	-22.197013	116.219179
CE010	Quadrat	420477	7545415	-22.194673	116.228539
CE011	Quadrat	419640	7545541	-22.193496	116.220433
CE012	Quadrat	421130	7545397	-22.194861	116.234872
CE013	Quadrat	420100	7545575	-22.193208	116.224892
CE014	Quadrat	421471	7545488	-22.194055	116.238192
CE016	Quadrat	421276	7545281	-22.195918	116.236290
CEW001	Quadrat	420887	7544079	-22.206761	116.232453
CEW002	Quadrat	419971	7544157	-22.206009	116.223568
CEW003	Quadrat	420598	7546293	-22.186743	116.229756
CMP001	Quadrat	413084	7556143	-22.097403	116.157401
CMP002	Quadrat	412959	7557150	-22.088298	116.156246
CMP006	Quadrat	411899	7555321	-22.104771	116.145870
CN001	Quadrat	420648	7551477	-22.139915	116.230498
CN002	Quadrat	420047	7551366	-22.140895	116.224667
CN003	Quadrat	418895	7550233	-22.151076	116.213442
CN004	Quadrat	419088	7550627	-22.147526	116.215329
CN005	Quadrat	418942	7549722	-22.155695	116.213867
CN006	Quadrat	420925	7551788	-22.137120	116.233197
CN007	Quadrat	419247	7550837	-22.145636	116.216883
CNW001	Quadrat	420838	7550873	-22.145384	116.232315
CNW002	Quadrat	420049	7550969	-22.144481	116.224664
CNW003	Quadrat	419464	7550541	-22.148318	116.218973
CNW004	Quadrat	420273	7551671	-22.138148	116.226869
CNW006	Quadrat	420592	7551699	-22.137905	116.229968
CP030	Quadrat	412837	7561714	-22.047063	116.155306
CP031	Quadrat	412887	7561161	-22.052067	116.155761
CP032	Quadrat	411151	7573054	-21.944542	116.139592
CP033	Quadrat	412878	7560937	-22.054088	116.155664
CP034	Quadrat	412909	7561041	-22.053148	116.155970
CP035	Quadrat	412908	7562827	-22.037014	116.156056
CP036	Quadrat	408419	7578539	-21.894852	116.113445
CR001	Quadrat	410038	7576473	-21.913599	116.129005
CR001r	Quadrat	411265	7576316	-21.915080	116.140875
CR002	Quadrat	410465	7575249	-21.924676	116.133069
CR003	Quadrat	412144	7575786	-21.919912	116.149351
CR004	Quadrat	411513	7576541	-21.913055	116.143286
CR005	Quadrat	411175	7575039	-21.926609	116.139932
CR006	Quadrat	411212	7576292	-21.915290	116.140360
CR007r	Quadrat	410965	7575153	-21.925569	116.137905

Site ID	Type	Easting	Northing	Latitude	Longitude
CR008	Quadrat	410729	7576085	-21.917142	116.135666
CR010	Quadrat	409918	7576234	-21.915754	116.127825
CR012	Quadrat	411319	7575927	-21.918597	116.141377
CR014	Quadrat	412223	7576640	-21.912199	116.150164
CR016	Quadrat	410817	7575457	-21.922813	116.136491
CR018	Quadrat	410726	7576452	-21.913824	116.135659
CR019	Quadrat	411384	7576186	-21.916256	116.142013
CR020	Quadrat	411551	7576085	-21.917177	116.143626
CR021	Quadrat	411123	7575481	-21.922618	116.139452
CR022	Quadrat	412018	7576293	-21.915324	116.148161
CR024	Quadrat	409941	7577732	-21.902216	116.128136
CW001	Quadrat	423339	7523786	-22.390184	116.255274
CW002	Quadrat	427114	7518415	-22.438867	116.291696
CW003	Quadrat	426166	7519103	-22.432612	116.282516
CW004	Quadrat	428100	7518931	-22.434246	116.301296
CW005	Quadrat	427717	7518967	-22.433909	116.297576
CW006	Quadrat	425381	7519873	-22.425617	116.274919
CW007	Quadrat	425709	7519816	-22.426149	116.278108
CW008	Quadrat	425928	7521472	-22.411204	116.280316
CW009	Quadrat	426639	7519931	-22.425155	116.287152
CW010	Quadrat	425607	7521449	-22.411398	116.277189
CW011	Quadrat	426557	7520134	-22.423317	116.286365
CW012	Quadrat	425251	7521444	-22.411423	116.273732
CW013	Quadrat	425445	7520486	-22.420085	116.275578
CW014	Quadrat	425058	7521681	-22.409273	116.271866
CW015	Quadrat	425449	7520428	-22.420614	116.275611
CW016	Quadrat	425396	7521789	-22.408317	116.275162
CW018	Quadrat	424334	7522371	-22.403009	116.264870
CW019	Quadrat	425176	7521169	-22.413904	116.272988
CW020	Quadrat	423977	7522941	-22.397844	116.261428
CW021	Quadrat	425256	7520941	-22.415969	116.273755
CW022	Quadrat	424739	7522379	-22.402954	116.268807
CW023	Quadrat	425315	7520615	-22.418912	116.274320
CW024	Quadrat	425399	7521945	-22.406904	116.275196
CW025	Quadrat	426627	7520889	-22.416496	116.287075
CW026	Quadrat	424736	7522026	-22.406145	116.268761
CW028	Quadrat	423905	7522849	-22.398669	116.260722
CW032	Quadrat	424363	7523072	-22.396680	116.265187
CW034	Quadrat	423496	7523545	-22.392366	116.256780
CWW051	Quadrat	425309	7522768	-22.399465	116.274356
CWW055	Quadrat	427492	7519656	-22.427671	116.295428
CWW057	Quadrat	425362	7522870	-22.398548	116.274880
CWW059	Quadrat	425970	7522108	-22.405456	116.280749
FM001	Quadrat	410008	7575441	-21.922918	116.128650
FM002	Quadrat	410000	7575974	-21.918108	116.128607
FM020	Quadrat	410036	7574503	-21.931391	116.128877
FM021	Quadrat	410067	7574715	-21.929480	116.129189
HAM001	Quadrat	429658	7553717	-22.120068	116.317963
JW001	Quadrat	410471	7574081	-21.935230	116.133066
JW001r	Quadrat	410885	7574040	-21.935619	116.137070
JW002	Quadrat	410979	7573962	-21.936331	116.137976
JW002r	Quadrat	411404	7573990	-21.936097	116.142092
JW003	Quadrat	411653	7574176	-21.934434	116.144508
JW004	Quadrat	412034	7574106	-21.935083	116.148194
JW005	Quadrat	410647	7574380	-21.932540	116.134784
JW006	Quadrat	410233	7574228	-21.933892	116.130767
JW007	Quadrat	410810	7574195	-21.934215	116.136352
JW008	Quadrat	410607	7575086	-21.926154	116.134433

Site ID	Type	Easting	Northing	Latitude	Longitude
JW009	Quadrat	411450	7573972	-21.936262	116.142532
JW011	Quadrat	410555	7574540	-21.931090	116.133904
JW013	Quadrat	410961	7574737	-21.929331	116.137846
KB001	Quadrat	416820	7560737	-22.056090	116.193852
KB002	Quadrat	416743	7561114	-22.052676	116.193133
KB003	Quadrat	415640	7561740	-22.046972	116.182476
KB004	Quadrat	416789	7561296	-22.051034	116.193580
KB005	Quadrat	415143	7561908	-22.045428	116.177664
KB006	Quadrat	415973	7561455	-22.049563	116.185684
KB007	Quadrat	414858	7562069	-22.043958	116.174911
KB008	Quadrat	418316	7559313	-22.069022	116.208285
KB009	Quadrat	417040	7560180	-22.061125	116.195961
KB010	Quadrat	418556	7558856	-22.073157	116.210586
KB011	Quadrat	418493	7558940	-22.072398	116.209980
KB012	Quadrat	418805	7558897	-22.072801	116.213004
KB013	Quadrat	418808	7558848	-22.073248	116.213023
KB014	Quadrat	418708	7558636	-22.075154	116.212051
KB015	Quadrat	418827	7558502	-22.076370	116.213192
KB016	Quadrat	420949	7557255	-22.087730	116.233696
KB017	Quadrat	418415	7558828	-22.073411	116.209218
KB019	Quadrat	418430	7558753	-22.074084	116.209360
KB021	Quadrat	421529	7557057	-22.089548	116.239309
KB022	Quadrat	414759	7562270	-22.042135	116.173960
KB045	Quadrat	420491	7557650	-22.084143	116.229276
KB046	Quadrat	416277	7561756	-22.046856	116.188650
KBW001	Quadrat	420091	7559129	-22.070769	116.225477
KBW002	Quadrat	418958	7559551	-22.066902	116.214517
KBW003	Quadrat	417284	7561707	-22.047343	116.198403
KBW004	Quadrat	417372	7559293	-22.069158	116.199130
KBW005	Quadrat	415668	7561162	-22.052195	116.182710
KBW006	Quadrat	415523	7561284	-22.051079	116.181319
KBW007	Quadrat	415378	7561436	-22.049701	116.179919
TC001	Quadrat	409931	7577463	-21.904653	116.128021
TC002	Quadrat	411356	7578466	-21.895660	116.141867
TC003	Quadrat	412313	7578263	-21.897547	116.151120
TC004	Quadrat	410709	7579048	-21.890370	116.135641
TC005	Quadrat	411396	7577175	-21.907322	116.142190
TC006	Quadrat	415530	7564476	-22.022251	116.181548
TC007	Quadrat	426451	7537450	-22.266887	116.286127
TC008	Quadrat	427198	7535641	-22.283258	116.293293
TC009	Quadrat	427211	7536795	-22.272836	116.293471
TC010	Quadrat	427879	7532132	-22.314988	116.299750
TC011	Quadrat	426985	7535261	-22.286682	116.291210
TC012	Quadrat	426599	7525393	-22.375808	116.287008
TC013	Quadrat	427417	7526158	-22.368932	116.294988
TC014	Quadrat	427459	7522657	-22.400560	116.295242
TC015	Quadrat	427107	7526590	-22.365019	116.292002
TC017	Quadrat	426728	7523544	-22.392519	116.288184
TC041	Quadrat	412870	7574083	-21.935328	116.156294
TR001	Quadrat	431997	7529395	-22.339878	116.339610
TR002	Quadrat	433044	7529415	-22.339743	116.349785
TR003	Quadrat	432692	7529687	-22.337273	116.346373
TR004r	Quadrat	432461	7529463	-22.339287	116.344126
TR005	Quadrat	432588	7529545	-22.338547	116.345355
TR006	Quadrat	430661	7527437	-22.357512	116.326551
TR007	Quadrat	431229	7527550	-22.356519	116.332073
TR008	Quadrat	431633	7527660	-22.355534	116.336009
TR010	Quadrat	430033	7526793	-22.363305	116.320429

Site ID	Type	Easting	Northing	Latitude	Longitude
TR011	Quadrat	430099	7526435	-22.366546	116.321054
TR012	Quadrat	430046	7526981	-22.361612	116.320564
TR013	Quadrat	429970	7526364	-22.367182	116.319796
TR014	Quadrat	430634	7522373	-22.403257	116.326072
TR015	Quadrat	430054	7525948	-22.370937	116.320596
TR016	Quadrat	430556	7522283	-22.404069	116.325314
TR017	Quadrat	429164	7524327	-22.385550	116.311879
TR018	Quadrat	429281	7524143	-22.387215	116.313005
TR019	Quadrat	429736	7523039	-22.397209	116.317377
TR020	Quadrat	429004	7525185	-22.377786	116.310366
TR021	Quadrat	430441	7522056	-22.406117	116.324185
TR022	Quadrat	429533	7524065	-22.387925	116.315450
TR023	Quadrat	429636	7522945	-22.398047	116.316401
TR024	Quadrat	434369	7530338	-22.331452	116.362682
TR025	Quadrat	434359	7530588	-22.329198	116.362600
TR026	Quadrat	431092	7527552	-22.356493	116.330745
TR086	Quadrat	434517	7530949	-22.325940	116.364149
TR087	Quadrat	429815	7523413	-22.393829	116.318158
TR100	Quadrat	429855	7523467	-22.393347	116.318551
TR103	Quadrat	428690	7525054	-22.378956	116.307303
TRW001	Quadrat	428405	7526116	-22.369356	116.304585
TRW002	Quadrat	429128	7526508	-22.365840	116.311629
TsRR015	Quadrat	409538	7574232	-21.933818	116.124036
TsRR016	Quadrat	409557	7573727	-21.938383	116.124196
TsRR020	Quadrat	423402	7547925	-22.172126	116.257031
TsRR021	Quadrat	423739	7547504	-22.175949	116.260280
TsRR031	Quadrat	423313	7548136	-22.170213	116.256186
TsRR040	Quadrat	417463	7544774	-22.200320	116.199269
TsRR041	Quadrat	417852	7544984	-22.198441	116.203056
TsRR042	Quadrat	418532	7547466	-22.176055	116.209780
UC001	Quadrat	424955	7545840	-22.191029	116.272002
UC002	Quadrat	424981	7545650	-22.192751	116.272245
UC003	Quadrat	425672	7546072	-22.188967	116.278963
UC004	Quadrat	424566	7545321	-22.195705	116.268199
UC005	Quadrat	424381	7545453	-22.194498	116.266418
UC006	Quadrat	424428	7545485	-22.194218	116.266873
UC007	Quadrat	423655	7545310	-22.195760	116.259366
UC008	Quadrat	423337	7545291	-22.195916	116.256276
UC009	Quadrat	424242	7545526	-22.193832	116.265073
UC010	Quadrat	424631	7546270	-22.187131	116.268881
UCW001	Quadrat	425029	7544821	-22.200238	116.272668
UCW002	Quadrat	425008	7544651	-22.201770	116.272463
UCW004	Quadrat	424279	7546073	-22.188899	116.265453
UCW005	Quadrat	424028	7546033	-22.189247	116.263021
AD021	Relevé	416724	7553094	-22.125124	116.192534
AD022	Relevé	418422	7552126	-22.133949	116.208948
AD023	Relevé	418406	7552256	-22.132774	116.208800
AD027	Relevé	417990	7550497	-22.148644	116.204677
AD028	Relevé	418506	7550819	-22.145760	116.209697
ASA001	Relevé	416755	7551828	-22.136562	116.192769
ASA002	Relevé	416625	7551712	-22.137603	116.191503
ASA003	Relevé	416469	7551556	-22.139005	116.189982
ASA004	Relevé	415745	7550984	-22.144137	116.182932
ASA005	Relevé	415525	7550915	-22.144750	116.180795
ASA006	Relevé	415179	7550793	-22.145835	116.177434
ASA007	Relevé	413148	7550003	-22.152871	116.157697
ASA008	Relevé	413261	7550071	-22.152262	116.158796
ASA009	Relevé	413330	7550120	-22.151823	116.159468

Site ID	Type	Easting	Northing	Latitude	Longitude
ASA010	Relevé	413585	7550252	-22.150644	116.161948
ASA011	Relevé	413649	7550285	-22.150349	116.162570
ASA012	Relevé	413777	7550351	-22.149759	116.163815
ASA015	Relevé	414119	7550466	-22.148737	116.167138
ASA016	Relevé	414467	7550552	-22.147977	116.170517
ASN001	Relevé	413349	7549220	-22.159954	116.159604
ASN002	Relevé	413138	7549440	-22.157956	116.157570
ASN004	Relevé	412818	7549717	-22.155438	116.154481
ASN005	Relevé	412776	7549771	-22.154948	116.154077
ASN006	Relevé	412601	7549937	-22.153440	116.152389
ASN007	Relevé	412521	7550029	-22.152605	116.151618
ASN008	Relevé	412416	7550106	-22.151904	116.150604
ASN009	Relevé	412231	7550270	-22.150413	116.148819
ASN010	Relevé	412177	7550307	-22.150076	116.148297
ASN011	Relevé	412166	7550144	-22.151548	116.148182
ASN012	Relevé	413395	7549150	-22.160589	116.160046
ASN013	Relevé	413459	7549104	-22.161008	116.160665
ASN014	Relevé	413641	7548929	-22.162597	116.162420
ASN015	Relevé	413758	7548813	-22.163651	116.163549
ASN026	Relevé	413032	7550191	-22.151167	116.156582
ASN027	Relevé	413204	7550304	-22.150155	116.158256
ASN028	Relevé	413408	7550456	-22.148792	116.160242
ASN030	Relevé	413160	7550574	-22.147714	116.157844
ASN031	Relevé	413106	7550590	-22.147566	116.157321
ASN032	Relevé	421841	7550713	-22.146871	116.242031
ASN033	Relevé	412679	7551013	-22.143724	116.153203
ASN034	Relevé	412458	7551012	-22.143722	116.151060
CE017	Relevé	419355	7545295	-22.195700	116.217654
CE019	Relevé	419554	7545051	-22.197914	116.219572
CE020	Relevé	419553	7545278	-22.195863	116.219573
CE021	Relevé	419658	7545485	-22.193998	116.220602
CE024	Relevé	419924	7545234	-22.196278	116.223170
CE026	Relevé	420623	7544732	-22.200845	116.229926
CE027	Relevé	420349	7545677	-22.192296	116.227315
CE030	Relevé	421386	7545647	-22.192614	116.237372
CE031	Relevé	421873	7545787	-22.191371	116.242103
CEW004	Relevé	421362	7545915	-22.190192	116.237153
CEW005	Relevé	421945	7545001	-22.198475	116.242763
CEW007	Relevé	421484	7544608	-22.202004	116.238272
CMP004	Relevé	412785	7556991	-22.089727	116.154553
CMP008	Relevé	412061	7555589	-22.102356	116.147460
CMP009	Relevé	413108	7556130	-22.097521	116.157638
CMP010	Relevé	413120	7556221	-22.096700	116.157759
CMP011	Relevé	413310	7556036	-22.098380	116.159591
CMP018	Relevé	412239	7555857	-22.099944	116.149200
CN008	Relevé	418873	7550001	-22.153166	116.213215
CN009	Relevé	419139	7550774	-22.146196	116.215833
CN010	Relevé	420912	7551771	-22.137271	116.233074
CNW007	Relevé	418884	7550926	-22.144811	116.213368
CP060	Relevé	410230	7573896	-21.936886	116.130720
CP062	Relevé	410170	7573908	-21.936775	116.130139
CP064	Relevé	409565	7574778	-21.928885	116.124330
CP066	Relevé	409592	7574877	-21.927992	116.124596
CP068	Relevé	409504	7575225	-21.924844	116.123764
CP070	Relevé	409419	7575687	-21.920666	116.122966
CP072	Relevé	409459	7575905	-21.918698	116.123366
CP076	Relevé	417521	7555514	-22.103301	116.200385
CP078	Relevé	417248	7555431	-22.104038	116.197734

Site ID	Type	Easting	Northing	Latitude	Longitude
CP080	Relevé	416786	7555155	-22.106509	116.193241
CP082	Relevé	416913	7554908	-22.108746	116.194460
CP084	Relevé	416786	7555155	-22.106509	116.193241
CP086	Relevé	417140	7554815	-22.109597	116.196655
CP088	Relevé	417301	7554758	-22.110120	116.198213
CP090	Relevé	417260	7554605	-22.111500	116.197808
CP092	Relevé	417763	7554974	-22.108190	116.202703
CP094	Relevé	417946	7554956	-22.108362	116.204476
CP096	Relevé	418055	7554732	-22.110390	116.205522
CP098	Relevé	417950	7554468	-22.112770	116.204490
CP100	Relevé	417952	7554297	-22.114315	116.204501
CP102	Relevé	412946	7568774	-21.983293	116.156745
CP104	Relevé	412895	7568844	-21.982659	116.156254
CP106	Relevé	412933	7568907	-21.982091	116.156626
CP108	Relevé	412874	7568958	-21.981628	116.156057
CP110	Relevé	412855	7569060	-21.980705	116.155879
CP112	Relevé	412843	7569158	-21.979819	116.155768
CP114	Relevé	412873	7569180	-21.979622	116.156059
CP118	Relevé	412545	7570021	-21.972009	116.152927
CP120	Relevé	412470	7570267	-21.969783	116.152214
CP124	Relevé	412385	7570529	-21.967412	116.151405
CP126	Relevé	412320	7570788	-21.965069	116.150790
CP128	Relevé	412184	7571200	-21.961340	116.149495
CP130	Relevé	412045	7571634	-21.957412	116.148172
CP132	Relevé	409350	7577184	-21.907139	116.122381
CP134	Relevé	409299	7577455	-21.904688	116.121902
CP136	Relevé	409265	7577594	-21.903431	116.121581
CP137	Relevé	412866	7561855	-22.045793	116.155600
CP139	Relevé	412856	7562186	-22.042802	116.155520
CP140	Relevé	409094	7577932	-21.900368	116.119944
CP141	Relevé	412865	7562359	-22.041240	116.155617
CP142	Relevé	408857	7578187	-21.898053	116.117664
CP143	Relevé	412876	7562461	-22.040319	116.155729
CP144	Relevé	408750	7578295	-21.897071	116.116635
CP145	Relevé	412883	7562847	-22.036832	116.155815
CP146	Relevé	408353	7578620	-21.894115	116.112810
CP147	Relevé	412879	7563126	-22.034312	116.155794
CP148	Relevé	408013	7578792	-21.892543	116.109528
CP149	Relevé	412853	7563567	-22.030327	116.155565
CP153	Relevé	412051	7571634	-21.957413	116.148230
CP157	Relevé	411738	7572390	-21.950568	116.145240
CP161	Relevé	411058	7573122	-21.943921	116.138695
CP165	Relevé	410488	7573718	-21.938508	116.133208
CP169	Relevé	414589	7558214	-22.078769	116.172104
CP171	Relevé	414441	7558709	-22.074290	116.170696
CP173	Relevé	414378	7558921	-22.072372	116.170096
CP175	Relevé	414182	7559456	-22.067529	116.168225
CP181	Relevé	413506	7560216	-22.060630	116.161714
CP183	Relevé	413318	7560354	-22.059374	116.159899
CP185	Relevé	413035	7560722	-22.056036	116.157177
CP187	Relevé	412883	7561164	-22.052036	116.155727
CP189	Relevé	416484	7555178	-22.106287	116.190315
CP191	Relevé	416355	7555366	-22.104582	116.189074
CP193	Relevé	416101	7555794	-22.100703	116.186634
CP195	Relevé	415681	7556526	-22.094071	116.182600
CP197	Relevé	415622	7556750	-22.092044	116.182040
CP199	Relevé	415556	7556877	-22.090894	116.181407
CP203	Relevé	418107	7554056	-22.116499	116.205992

Site ID	Type	Easting	Northing	Latitude	Longitude
CP205	Relevé	417935	7554169	-22.115471	116.204330
CP209	Relevé	417241	7553643	-22.120189	116.197575
CP211	Relevé	416875	7553647	-22.120136	116.194026
CP213	Relevé	416549	7554095	-22.116073	116.190889
CP215	Relevé	416522	7554744	-22.110209	116.190661
CP223	Relevé	412990	7563954	-22.026837	116.156913
CP225	Relevé	413057	7564104	-22.025486	116.157571
CP227	Relevé	412966	7564145	-22.025111	116.156691
CP229	Relevé	413238	7564572	-22.021267	116.159349
CP231	Relevé	413498	7565356	-22.014198	116.161910
CP233	Relevé	413623	7565651	-22.011539	116.163136
CP235	Relevé	413662	7565864	-22.009617	116.163526
CP237	Relevé	413591	7566726	-22.001826	116.162883
CP239	Relevé	413397	7567318	-21.996469	116.161036
CP241	Relevé	412951	7568730	-21.983691	116.156791
CP492	Relevé	416682	7554148	-22.115601	116.192181
CP600	Relevé	410175	7573675	-21.938880	116.130175
CR026	Relevé	411601	7576076	-21.917263	116.144112
CR028	Relevé	412023	7576251	-21.915703	116.148207
CR029	Relevé	412023	7576251	-21.915703	116.148207
CR030	Relevé	412240	7576508	-21.913392	116.150322
CR032	Relevé	410646	7577212	-21.906952	116.134929
CR033	Relevé	411093	7576805	-21.910652	116.139234
CW017r	Relevé	425160	7521248	-22.413189	116.272839
CW030	Relevé	423761	7522774	-22.399343	116.259323
CW035	Relevé	427370	7520115	-22.423519	116.294261
CW036	Relevé	427466	7519897	-22.425492	116.295184
CW037	Relevé	425409	7520999	-22.415449	116.275249
CW038	Relevé	425542	7520912	-22.416241	116.276537
CW039	Relevé	425788	7520882	-22.416523	116.278926
CW040	Relevé	425884	7520896	-22.416400	116.279859
CW041	Relevé	425406	7520732	-22.417861	116.275207
CW042	Relevé	424706	7521283	-22.412853	116.268432
CW045	Relevé	426742	7520862	-22.416744	116.288194
CW046	Relevé	426806	7520866	-22.416711	116.288816
CW048	Relevé	426708	7520904	-22.416364	116.287865
CW049	Relevé	426805	7520921	-22.416214	116.288808
CW050	Relevé	426822	7520849	-22.416865	116.288970
CW051	Relevé	426761	7520824	-22.417088	116.288376
CW052	Relevé	426932	7520980	-22.415687	116.290045
CW053	Relevé	426986	7520807	-22.417252	116.290562
CW054	Relevé	426890	7520720	-22.418033	116.289625
CW055	Relevé	426793	7520690	-22.418300	116.288681
CW056	Relevé	426734	7520734	-22.417900	116.288110
CW057	Relevé	426561	7521183	-22.413837	116.286450
CW059	Relevé	422794	7523491	-22.392822	116.249963
CW060	Relevé	422786	7523461	-22.393093	116.249884
CW061	Relevé	422781	7523436	-22.393319	116.249834
CW062	Relevé	422734	7523550	-22.392287	116.249383
CW063	Relevé	422753	7523666	-22.391244	116.249568
CW064	Relevé	422551	7523976	-22.388435	116.247621
CW065	Relevé	422662	7524106	-22.387261	116.248711
CW066	Relevé	423453	7523697	-22.390991	116.256374
CW067	Relevé	423426	7523719	-22.390791	116.256113
CW068	Relevé	423186	7523884	-22.389290	116.253790
CW069	Relevé	423118	7523796	-22.390082	116.253125
CW070	Relevé	423014	7524227	-22.386189	116.252131
CW071	Relevé	422498	7524354	-22.385013	116.247130

Site ID	Type	Easting	Northing	Latitude	Longitude
CW073	Relevé	422557	7524696	-22.381926	116.247719
CW075	Relevé	422596	7524921	-22.379896	116.248109
CW079	Relevé	425804	7521534	-22.410634	116.279111
CW080	Relevé	426957	7518731	-22.436004	116.290185
CWW052	Relevé	423567	7524737	-22.381601	116.257532
CWW053	Relevé	423609	7524681	-22.382109	116.257937
CWW054	Relevé	423701	7524658	-22.382321	116.258830
CWW058	Relevé	423484	7524609	-22.382754	116.256719
CWW061	Relevé	425177	7522551	-22.401419	116.273068
CWW062	Relevé	425863	7522438	-22.402470	116.279727
HR001	Relevé	426103	7524413	-22.384639	116.282150
HR004	Relevé	426527	7525580	-22.374116	116.286322
HR008	Relevé	428604	7530090	-22.333462	116.306698
HR009	Relevé	426447	7534974	-22.289252	116.285977
HR010	Relevé	426016	7535981	-22.280137	116.281840
HR011	Relevé	426017	7536107	-22.278998	116.281855
HR012	Relevé	426034	7536246	-22.277744	116.282027
HR016	Relevé	423080	7547472	-22.176204	116.253892
HR017	Relevé	423043	7547408	-22.176780	116.253530
HR019	Relevé	417661	7558508	-22.076261	116.201894
HR020	Relevé	425802	7537902	-22.262774	116.279852
HR021	Relevé	425899	7537824	-22.263483	116.280789
HR038	Relevé	427365	7537684	-22.264810	116.295011
HR044	Relevé	427118	7535685	-22.282858	116.292523
HR055	Relevé	427927	7532634	-22.310453	116.300238
HR061	Relevé	428108	7528506	-22.347751	116.301810
HR066	Relevé	417181	7562546	-22.039761	116.197447
HR075	Relevé	420221	7559152	-22.070563	116.226738
IN002	Relevé	417466	7553905	-22.117833	116.199769
IN004	Relevé	417512	7553583	-22.120744	116.200199
IN005	Relevé	417331	7553518	-22.121323	116.198441
IN006	Relevé	417114	7553651	-22.120111	116.196344
IN007	Relevé	417115	7553614	-22.120445	116.196352
IN008	Relevé	417353	7553239	-22.123844	116.198640
IN009	Relevé	417573	7553092	-22.125182	116.200765
IN012	Relevé	418250	7552746	-22.128340	116.207312
IN013	Relevé	418275	7552231	-22.132994	116.207528
JW014	Relevé	412351	7573432	-21.941185	116.151232
KB024	Relevé	415149	7562342	-22.041506	116.177747
KB025	Relevé	415259	7562413	-22.040870	116.178817
KB042	Relevé	420440	7557618	-22.084430	116.228785
KB043	Relevé	417091	7561001	-22.053713	116.196497
KB044	Relevé	416336	7561657	-22.047751	116.189214
KBW008	Relevé	418888	7557704	-22.083582	116.213746
KBW009	Relevé	418962	7557767	-22.083016	116.214466
KBW010	Relevé	419335	7559413	-22.068164	116.218164
KBW011	Relevé	419324	7559321	-22.068995	116.218052
KBW012	Relevé	419222	7559079	-22.071176	116.217052
TC024	Relevé	412043	7577159	-21.907502	116.148450
TC026	Relevé	409333	7578108	-21.898791	116.122268
TC028	Relevé	419635	7552682	-22.128983	116.220737
TC029	Relevé	419415	7552971	-22.126362	116.218619
TC030	Relevé	422435	7546139	-22.188217	116.247572
TC032	Relevé	423094	7543348	-22.213459	116.253831
TC033	Relevé	423020	7543514	-22.211956	116.253121
TC034	Relevé	422964	7543528	-22.211827	116.252578
TC036	Relevé	422833	7543664	-22.210593	116.251314
TC037	Relevé	422841	7544863	-22.199762	116.251449

Site ID	Type	Easting	Northing	Latitude	Longitude
TC039	Relevé	423028	7544066	-22.206970	116.253225
TC042	Relevé	426300	7521500	-22.410962	116.283929
TC043	Relevé	415019	7565264	-22.015103	116.176640
TC045	Relevé	415256	7565224	-22.015476	116.178934
TC047	Relevé	415684	7564871	-22.018686	116.183062
TC050	Relevé	416410	7564626	-22.020934	116.190084
TC052	Relevé	416853	7564430	-22.022726	116.194366
TC054	Relevé	416940	7564303	-22.023877	116.195202
TC056	Relevé	417138	7564222	-22.024618	116.197116
TC066	Relevé	413756	7542906	-22.217011	116.163213
TC070	Relevé	424615	7542166	-22.224204	116.268532
TC076	Relevé	425530	7541840	-22.227188	116.277394
TC080	Relevé	425925	7542261	-22.223402	116.281246
TC082	Relevé	425927	7542456	-22.221641	116.281275
TC084	Relevé	425844	7542679	-22.219623	116.280480
TC086	Relevé	425406	7543068	-22.216090	116.276248
TC088	Relevé	425033	7543396	-22.213111	116.272645
TC091	Relevé	424655	7543245	-22.214458	116.268970
TC094	Relevé	427396	7522105	-22.405544	116.294604
TC095	Relevé	427341	7522066	-22.405894	116.294068
TC099	Relevé	427252	7522036	-22.406161	116.293202
TC100	Relevé	427132	7521976	-22.406698	116.292034
TC102	Relevé	426869	7521820	-22.408096	116.289471
TC103	Relevé	426824	7521762	-22.408618	116.289032
TC104	Relevé	430084	7528492	-22.347959	116.320999
TC105	Relevé	430188	7528368	-22.349083	116.322003
TC106	Relevé	418854	7560237	-22.060698	116.213543
TC107	Relevé	418940	7560274	-22.060368	116.214378
TC108	Relevé	419119	7560336	-22.059816	116.216116
TC109	Relevé	419181	7560375	-22.059466	116.216719
TC110	Relevé	419201	7560389	-22.059341	116.216913
TC111	Relevé	419229	7560421	-22.059053	116.217186
TC112	Relevé	419347	7560591	-22.057523	116.218338
TC114	Relevé	419322	7561048	-22.053393	116.218119
TC116	Relevé	419125	7561358	-22.050584	116.216225
TC119	Relevé	418871	7561598	-22.048404	116.213776
TC120	Relevé	418746	7561986	-22.044893	116.212584
TC121	Relevé	418634	7562189	-22.043054	116.211509
TC123	Relevé	418404	7562839	-22.037171	116.209313
TC126	Relevé	418155	7563671	-22.029644	116.206942
TC127	Relevé	431310	7527948	-22.352922	116.332881
TC128	Relevé	431169	7527930	-22.353079	116.331511
TC129	Relevé	430934	7528062	-22.351878	116.329235
TC130	Relevé	430867	7528071	-22.351794	116.328584
TC131	Relevé	430851	7528013	-22.352317	116.328426
TC132	Relevé	430809	7527941	-22.352966	116.328015
TC133	Relevé	430556	7528128	-22.351266	116.325566
TC134	Relevé	429850	7528400	-22.348780	116.318722
TC135	Relevé	429254	7528077	-22.351674	116.312920
TC136	Relevé	429042	7528341	-22.349280	116.310873
TC137	Relevé	428833	7528551	-22.347374	116.308853
TC138	Relevé	411452	7577835	-21.901365	116.142765
TC139	Relevé	411611	7577910	-21.900696	116.144308
TC141	Relevé	411816	7578404	-21.896243	116.146319
TC144	Relevé	429170	7528198	-22.350577	116.312110
TC147	Relevé	429101	7529252	-22.341053	116.311486
TC148	Relevé	411451	7577833	-21.901383	116.142755
TC149	Relevé	411073	7578201	-21.898040	116.139116

Site ID	Type	Easting	Northing	Latitude	Longitude
TC150	Relevé	410888	7578456	-21.895727	116.137339
TC151	Relevé	421779	7548608	-22.165884	116.241328
TC152	Relevé	421567	7548690	-22.165133	116.239276
TC153	Relevé	421375	7548928	-22.162975	116.237425
TR009r	Relevé	432255	7528661	-22.346524	116.342089
TR031	Relevé	429056	7521642	-22.409796	116.310711
TR042	Relevé	427908	7524949	-22.379874	116.299707
TR052	Relevé	430567	7527596	-22.356072	116.325650
TR067	Relevé	433517	7529604	-22.338050	116.354383
TR070	Relevé	434125	7530301	-22.331777	116.360316
TR085	Relevé	430415	7527652	-22.355560	116.324176
TR104	Relevé	429992	7527921	-22.353113	116.320080
TR106	Relevé	430482	7522051	-22.406160	116.324583
TR107	Relevé	430691	7522544	-22.401715	116.326635
TRW004	Relevé	430610	7527003	-22.361431	116.326042
TRW005	Relevé	430270	7525684	-22.373332	116.322682
TRW006	Relevé	429399	7522276	-22.404083	116.314071
UC015	Relevé	424119	7545581	-22.193332	116.263880
UC016	Relevé	424881	7545584	-22.193338	116.271272
UCW006	Relevé	423938	7546006	-22.189485	116.262144
UCW007	Relevé	423963	7545934	-22.190137	116.262383
UCW008	Relevé	424050	7545859	-22.190818	116.263224
UCW009	Relevé	424097	7545896	-22.190486	116.263682
UCW015	Relevé	425374	7546060	-22.189060	116.276076
UCW016	Relevé	425387	7546001	-22.189593	116.276200
UCW017	Relevé	423194	7545519	-22.193852	116.254904
UCW018	Relevé	423269	7545566	-22.193430	116.255634
UCW019	Relevé	423354	7545731	-22.191944	116.256466
OF001	Relevé	417934	7552365	-22.131767	116.204229
OF002	Relevé	417781	7552492	-22.130612	116.202752
OF003	Relevé	417664	7552326	-22.132106	116.201609
PL001	Relevé	418076	7553940	-22.117546	116.205685
PL002	Relevé	418130	7553940	-22.117548	116.206209
PL003	Relevé	418332	7554071	-22.116375	116.208174
PL004	Relevé	418351	7554025	-22.116791	116.208356
PL005	Relevé	418647	7553370	-22.122722	116.211192
PL006	Relevé	418033	7553108	-22.12506	116.205226
UCW022	Relevé	423498	7546029	-22.189258	116.257877

Appendix 7 Species Representation in Vegetation Types for the Study Area

	Stony Plain																						Stony Hills and Breakaways																																																																				
Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
Species	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlaiTw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERlm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Abutilon aff. *dioicum* (HD72-14)																																																																																			1			
Abutilon aff. *lepidum* (1) (MET 15 352)																																							1																														1																	
Abutilon amplum																																																																																						
Abutilon cunninghamii																																																																																						
Abutilon dioicum																																	1	1					1	1			1																																					1			1			
Abutilon otocarpum											1									1																																																																		
Abutilon trudgenii MS										1								1	1	1		1					1						1			1							1																																		1				1					
Acacia adsurgens																																																																																						
Acacia aff. *aneura* (narrow fine veined; site 1259)																																																																							1															
Acacia ampliceps																																																																																						
Acacia ancistrocarpa	1	1	1	1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1	1	1		1	1	1	1					1	1		1	1	1	1		1	1	1	1	1	1		1	1	1	1	1		1	1		1				1			1	1					1	1	1	1	1	1	1	1
Acacia aneura (narrow, fine veined, site 1259)			1										1																										1							1									1						1				1		1	1	1		1														1	1
Acacia aneura var. *aneura*																																																							1																															
Acacia aneura var. *intermedia*																																																																																						
Acacia aneura var. *pilbarana*														1																																																																								
Acacia arida													1																1			1		1		1		1		1		1		1	1													1	1											1															1	
Acacia atkinsiana	1	1	1			1		1	1		1			1	1				1		1		1	1	1	1				1								1					1			1		1					1	1							1		1			1			1			1	1	1					1		1	1	1	1		
Acacia bivenosa	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1		1	1	1	1		1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1
Acacia citrinoviridis					1											1											1		1					1			1	1	1	1	1	1			1				1		1	1			1	1										1					1				1	1	1				1	1			1	
Acacia colei var. *colei*														1													1						1																							1																												1		
Acacia elachantha																			1																																																																			
Acacia elachantha (silvery hairy variant)																																																																																						
Acacia inaequilatera	1	1		1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	1		1	1	1	1	1	1	1			1		1		1			1	1	1	1	1	1	1			1		1	1	1	1	1	1	1		1	1							1		1				1	1	1	1	1	1	1	1
Acacia kempeana (1)																																																																																						
Acacia maitlandii			1		1	1					1	1	1		1	1			1									1																											1			1	1	1			1	1														1				1				
Acacia monticola																																																																																1						
Acacia orthocarpa																																																																																				1		
Acacia pruinocarpa																										1		1	1	1	1	1	1	1			1	1	1	1	1	1		1				1	1	1	1		1	1	1				1							1		1	1		1		1	1		1		1	1	1	1	1		1		1
Acacia ptychophylla	1																		1																													1			1																					1														
Acacia ptychophylla x *ancistrocarpa*																																																1																																						
Acacia pyrifolia var. *morrisonii*																																		1						1																														1																
Acacia pyrifolia var. *pyrifolia*																			1	1		1	1											1						1						1																												1												
Acacia sclerosperma subsp. *sclerosperma*																	1			1																																																																		
Acacia sericophylla																																																																																						
Acacia stowardii																																																																																						
Acacia synchronicia	1	1	1	1				1	1	1	1		1	1	1		1	1	1	1	1		1	1	1					1	1	1	1	1		1		1							1	1		1		1							1	1	1		1		1		1	1						1	1					1	1	1	1		1	1	1	1
Acacia tenuissima																																																																																						
Acacia trachycarpa																	1			1																																																															1			
Acacia trachycarpa x *tumida* var. *pilbarensis*																			1			1																																																																
Acacia tumida var. *pilbarensis*	1	1										1	1			1	1		1			1					1		1					1	1	1	1	1	1	1		1	1		1	1						1				1										1							1								1	1				
Acacia victoriae																						1																								1																																			1					
Acacia wanyu		1						1			1										1	1																																					1				1																							
Acacia xiphophylla													1	1					1															1												1												1	1							1		1																		1
Achyranthes aspera																																																																																						
Adriana urticoides var. *urticoides*																																																																																						
Alternanthera nana																		1				1											1																																																1					
Alysicarpus muelleri																																																																																						
Amaranthus aff. *pallidiflorus* (D89)																																																																																						
Amaranthus cuspidifolius										1												1					1						1							1			1																				1				1										1		1							
Amaranthus undulatus																																																																																	1		1			
Ammannia auriculata																																																																																						
Amphipogon sericeus																																																																										1												
Amphipogon sericeus (Newman form BR2-21)																																																1																										1												
Amyema sanguinea var. *sanguinea*																																																																																						
* *Argemone ochroleuca* subsp. *ochroleuca*																																																																																						
Aristida burbidgeae																																																																				1												1						
Aristida contorta																							1																																								1																							
Aristida holathera var. *holathera*																																																																																						
Aristida holathera var. *latifolia*										1									1	1																												1																																						
Aristida ingrata																																																																																						
Bergia pedicellaris																																																																																	1					
* *Bidens bipinnata*																																								1																																														
Boerhavia coccinea										1					1					1							1																1																				1			1								1												
Boerhavia gardneri										1									1	1																																											1																							
Bonamia media var. *villosa*				1											1				1	1		1	1											1														1				1											1		1	1						1									1					
Bonamia pannosa																						1																																																											1					
Bonamia rosea			1	1												1	1		1	1	1	1															1																																														1				
Brachyachne prostrata		1												1																																																																								
Bulbostylis barbata				1						1			1							1	1		1				1							1									1									1														1											1	1			1					

	Stony Plain																							Stony Hills and Breakaways																																																																		
Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
Species	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlaITw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERlm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Calandrinia ptychosperma										1																																																																															
Calocephalus knappii																																																																																										
Calocephalus sp. Pilbara-Desert (M.E. Trudgen 11454)																																																																																									
Capparis spinosa var. *nummularia*																																	1																																															1						
Capparis umbonata																																																																																										
Cassytha capillaris													1																																	1							1																							1						1			1		
* *Cenchrus ciliaris*																			1	1	1																																																																				
* *Cenchrus setiger*																				1																																																																				
Cheilanthes austrotenuifolia																																																																																	1						
Cheilanthes brownii																																																								1																														
Cheilanthes lasiophylla																																	1																																																						
Cheilanthes sieberi subsp. *sieberi*																																																																					1		1															
Chrysopogon fallax																						1																																																																	
Cleome viscosa				1						1					1	1		1	1	1		1					1						1	1		1				1			1			1		1				1						1			1		1				1				1	1		1			1		1		1					
Clerodendrum floribundum var. *angustifolium*																																	1																						1															1									1			1			
Clerodendrum tomentosum var. *lanceolatum*																																	1																						1																		1												
Codonocarpus cotinifolius																													1															1		1																																								
Commicarpus australis																																																				1																																		
Corchorus aff. *parviflorus*															1																																	1									1							1								1							1		1			
Corchorus aff. *parviflorus* (JW011-11)				1															1	1									1				1	1		1					1	1	1	1						1		1											1						1				1	1					1		1					
Corchorus aff. *walcotti* (K.J. Atkins 570)																																																																					1																		
Corchorus crozophorifolius																																								1															1																										1					1		
Corchorus incanus subsp. *incanus*																	1		1	1														1							1													1				1					1			1		1	1																	1
Corchorus laniflorus											1		1					1	1	1		1	1						1				1	1					1								1						1	1	1			1	1				1		1	1												1	1	1				1		1
Corchorus lasiocarpus subsp. *parvus*																			1			1																								1		1																																	1			1		
Corchorus parviflorus	1					1											1			1										1			1	1										1				1																				1					1									1				
Corchorus sidoides subsp. aff. *vermicularis* (GLD NIM17-16)																																											1																																												
Corchorus sidoides subsp. *sidoides*	1	1			1					1									1	1			1				1		1	1			1	1					1		1		1			1		1		1		1			1	1		1	1		1		1			1				1				1			1	1	1	1	1		1			
Corchorus sp. (inadequate material)						1						1	1																				1	1		1						1																	1			1												1					1							
Corymbia candida subsp. *candida*														1																																																																									
Corymbia ferriticola subsp. *ferriticola*																																	1																						1	1															1															
Corymbia hamersleyana	1	1	1		1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1				1	1				1		1	1	1	1	1			1	1	1	1		1		1		1								1	1				1	1	1	1			1					1				1		1	1	1	1			1
Crotalaria medicaginea (Burrup form; B65-11)																																																																																						
Crotalaria medicaginea var. *neglecta*																																								1																																									1					
Cucumis maderaspatanus																			1	1													1							1	1	1	1							1				1	1											1	1		1								1		1		1		1			
* *Cucumis melo* subsp. *agrestis*																																																																																				1			
Cullen lachnostachys																			1	1																																											1																							
Cullen leucochaites																																																																1			1																				
Cullen martinii															1							1																																																																	
Cullen pogonocarpum																																																																																									
Cymbopogon ambiguus																											1						1						1	1			1			1									1	1		1					1					1	1		1								1	1			1			1
Cymbopogon obtectus																																	1																																																						
Cymbopogon procerus																																																																																									
Cyperochloa hirsuta																																																																																									
Cyperus cunninghamii subsp. *cunninghamii*																																																								1																														
Cyperus difformis																																																																																									
Cyperus hesperius																											1						1																																																							
Cyperus iria																			1																																																																				
Cyperus vaginatus																																																																																									
Dactyloctenium radulans																				1																																																																				
Dampiera candicans		1																	1															1		1						1				1	1	1											1					1		1				1		1														
Dicladanthera forrestii																																																																																									
Diplatia grandibractea																																																																															1								
Dodonaea coriacea		1				1													1														1	1												1	1	1											1		1					1	1		1				1	1					1		1		1	1		
Dodonaea pachyneura																																																	1							1															1									1						1
Dodonaea petiolaris																																								1																															1															
Duperreya commixta													1									1							1				1						1	1		1														1																					1			1						
Dysphania kalpari																					1													1																																						1														
Dysphania melanocarpa forma *leucocarpa*																																								1																																														
Dysphania rhadinostachya subsp. *rhadinostachya*	1			1						1								1	1	1	1	1				1	1		1		1		1	1		1				1	1	1	1			1		1		1		1			1			1					1				1		1		1	1	1	1			1		1	1	1		1			
Ehretia saligna var. *saligna*																																																																													1									
Enchylaena tomentosa var. *tomentosa*													1																																																							1																		
Enneapogon caerulescens var. *caerulescens*										1																			1					1						1		1																1					1																							
Enneapogon intermedius																																																																																								
Enneapogon lindleyanus																																																																																								
Enneapogon polyphyllus																																																																																								
Eragrostis aff. *eriopoda* (WAS site 963)					1															1																																																																		
Eragrostis cumingii										1										1																																																																		
Eragrostis dielsii																																																																																								

Stony Plain

Species / Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i
	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te
Eragrostis laniflora																							
Eragrostis tenellula																							
Eremophila cuneifolia			1					1	1					1	1										1
Eremophila forrestii subsp. *forrestii*																						1	
Eremophila fraseri subsp. *fraseri*													1		1								
Eremophila latrobei subsp. *glabra*																							
Eremophila latrobei subsp. *latrobei*																							
Eremophila longifolia														1			1		1	1		1	
Eremophila youngii x *latrobei*																							
Eriachne aristidea										1													
Eriachne helmsii																						1	
Eriachne mucronata																							
Eriachne mucronata (typical form)																							
Eriachne obtusa															1								
Eriachne pulchella subsp. *dominii*																							
Eriachne pulchella subsp. *pulchella*			1										1										
Eriachne tenuiculmis																							
Erythrina vespertilio																							
Eucalyptus camaldulensis var. *obtusa*																							
Eucalyptus leucophloia subsp. *leucophloia*		1	1			1							1	1					1		1		1
Eucalyptus victrix																			1		1		
Eulalia aurea																							
Euphorbia australis	1			1									1					1	1	1		1	1
Euphorbia biconvexa																							
Euphorbia boophthona										1												1	
Euphorbia boophthona (Large seed form)													1		1								
Euphorbia coghlanii																							
Euphorbia schultzii																							
Euphorbia sp. (B170-4)										1					1								
Euphorbia sp. (BPBS10-50)																							
Euphorbia sp. (M80-1)																							
Euphorbia sp. (site 1089)																						1	
Euphorbia tannensis																						1	
Euphorbia tannensis subsp. *eremophila* (Hamersley form)																		1					
Euphorbia wheeleri																				1			
Evolvulus alsinoides var. *decumbens*																							
Evolvulus alsinoides var. *villosicalyx*												1	1					1				1	
Ficus aculeata var. *indecora*																							
Ficus brachypoda																							
Fimbristylis dichotoma																							1
Flaveria australasica subsp. *australasica*																							
Flueggea virosa subsp. *melanthesoides*																							
Glycine canescens																							
Gomphrena affinis subsp. *pilbarensis*																							
Gomphrena canescens																							
Gomphrena cunninghamii				1															1			1	
Gomphrena kanisii																							
Goodenia cusackiana															1								
Goodenia forrestii									1	1					1							1	
Goodenia lamprosperma																							
Goodenia microptera			1	1												1			1		1	1	1
Goodenia stobbsiana		1																					
Gossypium australe (Burrup Peninsula form)	1	1		1	1					1		1	1	1	1	1	1	1	1	1	1	1	
Gossypium australe (Whim Creek form)																							
Gossypium robinsonii						1												1	1				1
Grevillea berryana																							
Grevillea pyramidalis subsp. *leucadendron*																	1		1	1		1	
Grevillea wickhamii		1	1													1	1		1	1			
Grevillea wickhamii subsp. *aprica*																							
Grevillea wickhamii subsp. *hispidula*	1	1		1												1	1		1	1	1		
Grevillea wickhamii subsp. *macrodonta*																						1	
Hakea lorea subsp. *lorea*	1	1	1		1	1		1			1	1	1		1	1	1	1	1	1	1		1
Haloragis gossei var. *gossei*	1																						
Heliotropium crispatum																							
Heliotropium cunninghamii																							
Heliotropium heteranthum										1				1								1	1
Heliotropium inexplicitum																							
Heliotropium ovalifolium																			1				
Hibiscus aff. *coatesii* (MET 15 305)																							

Stony Hills and Breakaways

Species / Vegetation Type:	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlaITw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERlm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Eragrostis laniflora																																																															
Eragrostis tenellula																																																										1					
Eremophila cuneifolia							1				1		1																							1		1					1																				
Eremophila forrestii subsp. *forrestii*																																																															
Eremophila fraseri subsp. *fraseri*				1				1			1							1									1		1			1	1								1								1					1	1		1		1					1
Eremophila latrobei subsp. *glabra*																																																							1							1
Eremophila latrobei subsp. *latrobei*																1	1									1							1												1			1										1						1
Eremophila longifolia																	1																																														
Eremophila youngii x *latrobei*																																																															
Eriachne aristidea																																																															
Eriachne helmsii																																																															
Eriachne mucronata										1						1																	1							1										1					1	1	1				1		1
Eriachne mucronata (typical form)				1						1	1					1	1			1					1				1		1		1			1							1		1			1								1	1	1		1	1		
Eriachne obtusa																																																															
Eriachne pulchella subsp. *dominii*	1																						1																										1							1		1					
Eriachne pulchella subsp. *pulchella*								1		1					1				1				1		1							1											1			1				1						1	1						
Eriachne tenuiculmis																	1																																														
Erythrina vespertilio																																																															
Eucalyptus camaldulensis var. *obtusa*																																																															
Eucalyptus leucophloia subsp. *leucophloia*					1	1	1				1	1	1	1	1	1	1	1	1	1		1		1		1	1				1	1	1		1	1		1		1			1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Eucalyptus victrix																																																															
Eulalia aurea																																																										1					
Euphorbia australis						1				1	1		1						1	1							1								1					1			1															1					
Euphorbia biconvexa																	1															1																														
Euphorbia boophthona						1					1		1						1																1					1						1											1	1					
Euphorbia boophthona (Large seed form)				1																1																							1															1					
Euphorbia coghlanii																				1																																						1					
Euphorbia schultzii																																																										1					
Euphorbia sp. (B170-4)																									1										1																												
Euphorbia sp. (BPBS10-50)																											1																																				
Euphorbia sp. (M80-1)																																																									1						
Euphorbia sp. (site 1089)																																																															
Euphorbia tannensis																																																															
Euphorbia tannensis subsp. *eremophila* (Hamersley form)										1	1																								1																												
Euphorbia wheeleri																1				1																1																											
Evolvulus alsinoides var. *decumbens*										1																																																				
Evolvulus alsinoides var. *villosicalyx*																							1																	1			1					1															
Ficus aculeata var. *indecora*																																																															
Ficus brachypoda							1			1																					1				1	1							1													1	1						1
Fimbristylis dichotoma											1																					1											1					1	1														
Flaveria australasica subsp. *australasica*																	1																		1																												
Flueggea virosa subsp. *melanthesoides*										1							1												1																																		
Glycine canescens																																																															
Gomphrena affinis subsp. *pilbarensis*																																			1																												
Gomphrena canescens																																											1																				
Gomphrena cunninghamii				1		1				1	1						1								1											1		1							1										1		1	1	1					
Gomphrena kanisii																																																															
Goodenia cusackiana																																			1																												
Goodenia forrestii																																			1								1														1						
Goodenia lamprosperma																																																															
Goodenia microptera											1		1		1								1												1					1						1					1			1				1					
Goodenia stobbsiana						1					1										1		1		1		1		1		1																		1		1					1		1					
Gossypium australe (Burrup Peninsula form)				1						1	1		1		1		1	1		1			1		1		1			1		1			1	1		1	1	1			1			1					1			1		1	1	1		1			
Gossypium australe (Whim Creek form)																									1																		1																				
Gossypium robinsonii				1						1	1			1		1	1		1	1		1									1		1							1	1			1			1					1					1	1	1	1				
Grevillea berryana				1																												1	1															1															
Grevillea pyramidalis subsp. *leucadendron*																								1					1		1			1						1			1						1							1							
Grevillea wickhamii	1				1		1												1			1	1				1	1			1						1	1		1		1	1													1					1		1
Grevillea wickhamii subsp. *aprica*																									1																																					
Grevillea wickhamii subsp. *hispidula*			1						1	1	1		1			1			1		1		1			1			1			1				1				1	1					1				1		1			1			1	1				
Grevillea wickhamii subsp. *macrodonta*			1							1													1		1																																1					
Hakea lorea subsp. *lorea*	1	1		1	1			1	1						1		1		1			1		1	1	1	1			1			1	1	1	1			1	1																1							
Haloragis gossei var. *gossei*													1										1																							1												1					
Heliotropium crispatum																	1																																														
Heliotropium cunninghamii																																			1																							1					
Heliotropium heteranthum											1		1												1															1			1															1					
Heliotropium inexplicitum										1																																																				
Heliotropium ovalifolium																																																								1							
Hibiscus aff. *coatesii* (MET 15 305)																																																									1						

Stony Plain

Species (Vegetation Type)	P1a AatkAbAaTw	P1b AatkAbAwTw	P1c ChAatkAbTwTe	P2b AaTeTw	P2c AmAaTwTsprr	P2d ChAaTwTe	P2f ChAiAbTw	P2g ChAsAaTwTe	P3a AsERcTw	P3c AsAbTwTe	P4a AiAaTw	P4b ChAaTw	P5d AxTw	P5e AxTwTe	P6a AiAbTe	P6b AiAtTe	P6c ChAaAiTe	P6d ChAbAaTe	P6e ChAiAbTe	P6f ChApyGpTe	P6g ChAwTe	P6h ChTe/h (burnt)	P6i Te
Hibiscus aff. *coatesii* (MET 16,542)																							
Hibiscus aff. *coatesii* (site 693)																							
Hibiscus aff. *coatesii* (site 733)																			1				
Hibiscus aff. *coatesii* (site 751)																							
Hibiscus aff. *sturtii* (site 1209)														1									
Hibiscus austrinus var. *austrinus*																							
Hibiscus brachychlaenus																	1		1				
Hibiscus burtonii																							
Hibiscus coatesii																							
Hibiscus gardneri																							
Hibiscus goldsworthii																							
Hibiscus leptocladus																			1	1		1	
Hibiscus sturtii										1													
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)																							
Hibiscus sturtii var. aff. *grandiflorus*			1							1								1	1			1	
Hibiscus sturtii var. *campylochlamys*					1					1			1						1				
Hibiscus sturtii var. *platychlamys*																							
Hybanthus aurantiacus																							
Indigofera boviperda subsp. *boviperda*				1											1	1			1	1	1	1	
Indigofera colutea																		1		1		1	
Indigofera linifolia																							
Indigofera monophylla	1	1				1						1	1	1	1		1		1	1			1
Indigofera monophylla (Burrup form)																							
Indigofera monophylla (Cape Preston form)																							
Indigofera monophylla (grey leaflet form)																1		1					
Indigofera monophylla (grey/green leaflet form)																			1			1	
Indigofera monophylla (small calyx form)																							
Indigofera rugosa																		1					
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN																							
Ipomoea muelleri																			1	1			
Ipomoea polymorpha																							
Iseilema dolichotrichum																							
Iseilema membranaceum																							
Isotropis atropurpurea																							
Jasminum didymum subsp. *lineare*												1	1					1	1			1	
Keraudrenia nephrosperma																					1		
Keraudrenia velutina subsp. *elliptica*	1		1																				
Lepidium muelleri-ferdinandii																							
Lepidium pedicellosum																							
Lepidium pholidogynum																							
Lepidium platypetalum													1										
Leptopus decaisnei var. *orbicularis*										1													
Lobelia heterophylla																							
Lysiana casuarinae																							
Maireana aff. *georgei*														1									
Maireana georgei	1	1											1										
Maireana melanocoma													1	1									1
Maireana planifolia													1										
Maireana tomentosa subsp. *tomentosa*		1											1										
Maireana trichoptera									1														
* *Malvastrum americanum*											1								1	1			
Marsdenia australis																							
Marsilea drummondii																		1					
Melaleuca glomerata																							
Melaleuca linophylla																							
Melhania sp. (Burrup)																							
Melhania sp. (CH15-39)																							
Melhania sp. Turee Creek (MJ1-35)																							
Mollugo molluginea																1			1	1	1		1
Nicotiana benthamiana																							
Nicotiana occidentalis subsp. *occidentalis*																							
Oldenlandia crouchiana																							
Owenia acidula																							
Paraneurachne muelleri			1																			1	
Paspalidium clementii										1								1		1			
Paspalidium rarum																							
Paspalidium tabulatum (Whim Creek form)																							
Pentalepis trichodesmoides																			1	1			
Perotis rara																							

Stony Hills and Breakaways

Species (Vegetation Type)	S1a AbAatkTw	S1b AbAatkTwTe	S1c GwAbAatkTw	S2b AcAbTeTw	S3a AiApTw	S3b ApAarTw	S3c ApAbTw	S3d ApAiERfTw	S3e ApGwAarTw	S3f ApTw	S4b AarTw	S4c AbAaPlTw	S4d AbAaTe	S4e AcAbGOrTw	S4f AcApTw	S4g AcSTYsTsprrTe	S4h AcTwTe	S4i AiApTwTsprr/h	S4k AtGwTw	S4l AtPlTwTsprr	S4m GwAbTw	S4n GwPlAbTsprrTw	S5b AatkAbTwTsprr	S5c AbDAcTsprrTw	S5d AbTwTsprr	S5e AcApAiTwTsprr	S5f AiAbTwTsprr	S5g AiAcTwTsprr	S5h AiPlTsprrTw	S5i ApAbTwTsprr	S5j ApTsprrTw	S5k ApERfTwTsprr	S5l CfAcERlaTsprr
Hibiscus aff. *coatesii* (MET 16,542)																1		1															
Hibiscus aff. *coatesii* (site 693)																				1													
Hibiscus aff. *coatesii* (site 733)																				1													
Hibiscus aff. *coatesii* (site 751)																							1							1			
Hibiscus aff. *sturtii* (site 1209)										1																							
Hibiscus austrinus var. *austrinus*																																	
Hibiscus brachychlaenus						1																											
Hibiscus burtonii																																	
Hibiscus coatesii																																	
Hibiscus gardneri																																	1
Hibiscus goldsworthii										1													1										
Hibiscus leptocladus																				1													
Hibiscus sturtii																							1										
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)										1																							
Hibiscus sturtii var. aff. *grandiflorus*																		1		1			1									1	
Hibiscus sturtii var. *campylochlamys*											1							1	1	1			1									1	1
Hibiscus sturtii var. *platychlamys*				1															1														
Hybanthus aurantiacus																	1																
Indigofera boviperda subsp. *boviperda*																																	
Indigofera colutea																																	
Indigofera linifolia																																	
Indigofera monophylla	1			1							1		1					1	1		1		1					1				1	1
Indigofera monophylla (Burrup form)																																	
Indigofera monophylla (Cape Preston form)																1				1								1					
Indigofera monophylla (grey leaflet form)											1					1				1			1									1	
Indigofera monophylla (grey/green leaflet form)						1			1									1		1			1										
Indigofera monophylla (small calyx form)																				1													
Indigofera rugosa																																	
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN						1										1	1		1														
Ipomoea muelleri																			1														
Ipomoea polymorpha																																	
Iseilema dolichotrichum											1																						
Iseilema membranaceum																																	
Isotropis atropurpurea																																	
Jasminum didymum subsp. *lineare*				1		1	1		1	1	1					1	1	1	1	1	1			1		1				1	1	1	1
Keraudrenia nephrosperma						1					1		1						1				1			1						1	
Keraudrenia velutina subsp. *elliptica*	1									1													1				1						
Lepidium muelleri-ferdinandii																	1																
Lepidium pedicellosum																																	
Lepidium pholidogynum																																	
Lepidium platypetalum																																	
Leptopus decaisnei var. *orbicularis*				1													1			1													
Lobelia heterophylla																																	
Lysiana casuarinae																																	
Maireana aff. *georgei*																																	
Maireana georgei																																	
Maireana melanocoma											1																						
Maireana planifolia															1																		
Maireana tomentosa subsp. *tomentosa*																																	
Maireana trichoptera																																	
* *Malvastrum americanum*																	1																
Marsdenia australis																			1														
Marsilea drummondii																																	
Melaleuca glomerata																																	
Melaleuca linophylla																																	
Melhania sp. (Burrup)																																	
Melhania sp. (CH15-39)																																	
Melhania sp. Turee Creek (MJ1-35)																																	
Mollugo molluginea						1					1																						
Nicotiana benthamiana																																	
Nicotiana occidentalis subsp. *occidentalis*																	1																
Oldenlandia crouchiana											1																						
Owenia acidula																																	
Paraneurachne muelleri															1					1													
Paspalidium clementii				1				1		1									1	1													
Paspalidium rarum																																	
Paspalidium tabulatum (Whim Creek form)																	1																
Pentalepis trichodesmoides																											1						
Perotis rara																																	

Species (Vegetation Type)	S6a AsTw	S7c AbSsspTw	S7d AbTw	S7f AiAmAbTw	S7g AiAsTw	S7h AiTEspbTw	S7i AiTw	S7k ChAmTw	S7l ChGwAiAbTw	S7n Tw	S8a AaneDOcTw	S8b AaneERlalTw	S8c AaneGwAatkTe	S9a AaDAcTw	S10a ElAaneAcGbTsprrTw	S10b ElAatkAbTsprrTw	S10c ElAbTsprrTw	S10d ElAbTwTsprr	S10e ElAcAiTwTsprr	S10f ElAcTsprr	S10g ElAcTwTsprr	S10h ElAmTwTsprr	S10i ElApTsprrTw	S10j ElApTwTsprrERlm	S10k ElAtTsprr	S10l ElPlAaTsprrTw	S10m ElPlTsprrTw	S10n ElTsprrTw	S11a ElAaAbTw	S11b ElAaneApTw
Hibiscus aff. *coatesii* (MET 16,542)							1																							
Hibiscus aff. *coatesii* (site 693)																		1												
Hibiscus aff. *coatesii* (site 733)																														
Hibiscus aff. *coatesii* (site 751)							1	1																						
Hibiscus aff. *sturtii* (site 1209)																														
Hibiscus austrinus var. *austrinus*																														
Hibiscus brachychlaenus																														
Hibiscus burtonii																														
Hibiscus coatesii											1																			
Hibiscus gardneri															1															
Hibiscus goldsworthii			1																											
Hibiscus leptocladus							1																		1					
Hibiscus sturtii																														
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)		1																												
Hibiscus sturtii var. aff. *grandiflorus*													1												1					
Hibiscus sturtii var. *campylochlamys*			1				1																		1			1		
Hibiscus sturtii var. *platychlamys*																														
Hybanthus aurantiacus		1																												
Indigofera boviperda subsp. *boviperda*																														
Indigofera colutea																														
Indigofera linifolia																														
Indigofera monophylla		1	1		1		1			1						1									1					
Indigofera monophylla (Burrup form)																														
Indigofera monophylla (Cape Preston form)																														
Indigofera monophylla (grey leaflet form)										1															1					
Indigofera monophylla (grey/green leaflet form)										1															1					
Indigofera monophylla (small calyx form)							1																							
Indigofera rugosa							1																							
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN		1															1													
Ipomoea muelleri																														
Ipomoea polymorpha																														
Iseilema dolichotrichum																														
Iseilema membranaceum																														
Isotropis atropurpurea																														
Jasminum didymum subsp. *lineare*								1		1			1					1			1		1	1	1		1	1		
Keraudrenia nephrosperma								1						1			1	1								1				
Keraudrenia velutina subsp. *elliptica*																														
Lepidium muelleri-ferdinandii																														
Lepidium pedicellosum												1																		
Lepidium pholidogynum																														
Lepidium platypetalum																														
Leptopus decaisnei var. *orbicularis*																														
Lobelia heterophylla																														
Lysiana casuarinae																														
Maireana aff. *georgei*																														
Maireana georgei			1				1			1		1											1							
Maireana melanocoma		1																											1	
Maireana planifolia										1		1																		
Maireana tomentosa subsp. *tomentosa*																														
Maireana trichoptera											1																			
* *Malvastrum americanum*							1																		1					
Marsdenia australis																														
Marsilea drummondii																														
Melaleuca glomerata																														
Melaleuca linophylla																														
Melhania sp. (Burrup)																														
Melhania sp. (CH15-39)																														
Melhania sp. Turee Creek (MJ1-35)																														
Mollugo molluginea							1			1						1							1		1					
Nicotiana benthamiana																								1	1		1			
Nicotiana occidentalis subsp. *occidentalis*																														
Oldenlandia crouchiana		1					1											1							1					
Owenia acidula																														
Paraneurachne muelleri		1																			1									
Paspalidium clementii															1			1			1		1	1	1		1	1		
Paspalidium rarum																														
Paspalidium tabulatum (Whim Creek form)																														
Pentalepis trichodesmoides																														
Perotis rara																														

Stony Plain

Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i
Species	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te
Petalostylis labicheoides													1						1				
Phyllanthus erwinii										1													
Phyllanthus maderaspatensis										1									1			1	
Pluchea dentex																							
Pluchea ferdinandi-muelleri																							
Pluchea tetranthera																							
Polycarpaea corymbosa var. *corymbosa*				1															1	1		1	
Polycarpaea holtzei													1										
Polycarpaea longiflora																		1		1			
Polycarpaea longiflora (red form)																							
Polycarpaea longiflora (White form, M13-7)																		1					
Polymeria aff. *ambigua*																			1				
Polymeria aff. *ambigua* (PAN 26B-20)																							
Polymeria ambigua																							
Polymeria sp. (site 1365)																							
* *Portulaca oleracea*										1			1							1	1	1	
Pterocaulon serrulatum																							
Pterocaulon sphacelatum																		1	1				
Pterocaulon sphaeranthoides																			1			1	
Ptilotus aervoides																					1		
Ptilotus appendiculatus var. *appendiculatus*																							
Ptilotus astrolasius var. *astrolasius*	1	1	1	1	1	1				1	1			1	1	1	1	1	1	1	1	1	1
Ptilotus auriculifolius																						1	
Ptilotus axillaris	1									1					1				1			1	1
Ptilotus calostachyus var. *calostachyus*	1	1				1				1	1		1	1					1	1	1	1	1
Ptilotus clementii																			1			1	
Ptilotus exaltatus var. *exaltatus*	1			1						1			1	1								1	1
Ptilotus fusiformis var. *fusiformis*		1		1															1				
Ptilotus gaudichaudii var. *gaudichaudii*																							
Ptilotus gomphrenoides var. *gomphrenoides*																							
Ptilotus incanus var. *elongatus*																							
Ptilotus incanus var. *incanus*																							
Ptilotus macrocephalus																							
Ptilotus obovatus var. *obovatus*													1										
Ptilotus polystachyus var. *polystachyus*																							
Ptilotus roei	1									1									1				
Rhagodia eremaea																							
Rhodanthe margarethae																							
Rhynchosia bungarensis																							
Rhynchosia minima var. *australis*										1			1					1	1			1	
Rutidosis helichrysoides																							
Salsola tragus													1						1			1	
Salsola tragus subsp. *tragus*										1			1	1					1			1	
Sarcostemma viminale subsp. *australe*													1										
Scaevola spinescens (broad form)																		1	1				
Sclerolaena costata																							
Sclerolaena cuneata														1									
Sclerolaena densiflora			1										1	1					1			1	1
Sclerolaena diacantha														1									
Sclerolaena eriacantha		1											1	1									1
Senna artemisioides aff. subsp. *oligophylla* (thinly sericeous)																				1			
Senna artemisioides aff. subsp. *oligophylla* x *helmsii*																		1					
Senna artemisioides subsp. *helmsii*																							
Senna artemisioides subsp. *oligophylla*	1							1		1	1		1	1	1			1	1		1		1
Senna artemisioides subsp. *oligophylla* x *glutinosa*																			1				
Senna artemisioides subsp. *oligophylla* x *helmsii*		1											1		1							1	1
Senna glutinosa subsp. *glutinosa*	1	1	1	1		1				1	1		1	1	1			1	1	1			1
Senna glutinosa subsp. *glutinosa* x *luerssenii*										1			1										
Senna glutinosa subsp. *luerssenii*		1																	1				1
Senna glutinosa subsp. *pruinosa*	1	1		1						1	1		1	1	1			1	1	1			1
Senna glutinosa subsp. x *luerssenii*		1		1					1	1			1						1		1		
Senna notabilis	1			1		1				1					1				1	1		1	
Senna sp. Port Hedland (SPB 20-09-05B)																			1				
Senna stricta													1										
Senna venusta																				1			
Setaria dielsii																							
* *Setaria verticillata*																							
Sida aff. *clementii*															1								
Sida aff. *echinocarpa* (MET 15,350)				1						1			1	1	1		1	1	1			1	

Stony Hills and Breakaways

Vegetation Type:	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l
Species	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr
Petalostylis labicheoides						1				1	1	1	1	1	1		1		1	1		1			1		1		1	1	1		
Phyllanthus erwinii																				1													
Phyllanthus maderaspatensis											1																						
Pluchea dentex																																	
Pluchea ferdinandi-muelleri																																	
Pluchea tetranthera																																	
Polycarpaea corymbosa var. *corymbosa*																																	
Polycarpaea holtzei											1																						
Polycarpaea longiflora				1						1							1			1													1
Polycarpaea longiflora (red form)																																	
Polycarpaea longiflora (White form, M13-7)										1	1					1				1												1	
Polymeria aff. *ambigua*																																	
Polymeria aff. *ambigua* (PAN 26B-20)																																	
Polymeria ambigua																																	
Polymeria sp. (site 1365)																																	
* *Portulaca oleracea*								1			1																		1				
Pterocaulon serrulatum													1						1														
Pterocaulon sphacelatum				1						1						1				1							1					1	
Pterocaulon sphaeranthoides				1						1	1									1			1										
Ptilotus aervoides											1							1															
Ptilotus appendiculatus var. *appendiculatus*																																	
Ptilotus astrolasius var. *astrolasius*	1			1		1	1	1	1	1	1		1		1		1	1		1	1		1	1	1		1		1		1	1	
Ptilotus auriculifolius				1						1	1									1													
Ptilotus axillaris				1																			1		1							1	
Ptilotus calostachyus var. *calostachyus*	1	1					1	1	1	1	1				1		1	1	1	1	1		1	1	1	1	1		1		1	1	
Ptilotus clementii										1	1								1				1		1								
Ptilotus exaltatus var. *exaltatus*	1	1				1			1	1	1		1						1	1	1		1	1	1		1						
Ptilotus fusiformis var. *fusiformis*				1				1		1			1							1			1		1		1		1			1	
Ptilotus gaudichaudii var. *gaudichaudii*																																	
Ptilotus gomphrenoides var. *gomphrenoides*																																	
Ptilotus incanus var. *elongatus*																																	
Ptilotus incanus var. *incanus*																				1											1		
Ptilotus macrocephalus																																	
Ptilotus obovatus var. *obovatus*				1		1					1								1	1					1							1	
Ptilotus polystachyus var. *polystachyus*	1																										1						
Ptilotus roei		1							1																								
Rhagodia eremaea																																	
Rhodanthe margarethae																											1						
Rhynchosia bungarensis																																	
Rhynchosia minima var. *australis*				1							1					1																	
Rutidosis helichrysoides																																	
Salsola tragus																																	
Salsola tragus subsp. *tragus*											1		1																				
Sarcostemma viminale subsp. *australe*																																1	
Scaevola spinescens (broad form)			1																														
Sclerolaena costata																																	
Sclerolaena cuneata																																	
Sclerolaena densiflora																																	
Sclerolaena diacantha																																	
Sclerolaena eriacantha																																	
Senna artemisioides aff. subsp. *oligophylla* (thinly sericeous)																									1								
Senna artemisioides aff. subsp. *oligophylla* x *helmsii*																																	
Senna artemisioides subsp. *helmsii*							1				1				1			1															
Senna artemisioides subsp. *oligophylla*				1		1					1		1		1	1		1	1	1	1				1			1	1			1	
Senna artemisioides subsp. *oligophylla* x *glutinosa*																																	
Senna artemisioides subsp. *oligophylla* x *helmsii*				1		1				1	1				1	1		1	1													1	
Senna glutinosa subsp. *glutinosa*			1	1	1	1	1		1	1	1		1		1	1	1	1	1	1		1	1	1	1	1	1				1	1	1
Senna glutinosa subsp. *glutinosa* x *luerssenii*																									1								
Senna glutinosa subsp. *luerssenii*																							1				1					1	
Senna glutinosa subsp. *pruinosa*	1	1	1		1				1	1	1		1		1			1		1	1		1		1		1	1	1		1	1	
Senna glutinosa subsp. x *luerssenii*										1	1		1			1		1			1		1		1								
Senna notabilis				1						1	1						1	1		1			1		1		1		1		1	1	
Senna sp. Port Hedland (SPB 20-09-05B)																																	
Senna stricta																																	
Senna venusta										1																							
Setaria dielsii										1																							
* *Setaria verticillata*																																	
Sida aff. *clementii*																																	
Sida aff. *echinocarpa* (MET 15,350)				1		1		1		1	1									1			1		1							1	

Vegetation Type:	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
Species	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlalTw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERlm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Petalostylis labicheoides		1	1							1							1	1					1			1	1	1	1	1
Phyllanthus erwinii																														
Phyllanthus maderaspatensis																									1					
Pluchea dentex																														
Pluchea ferdinandi-muelleri																														
Pluchea tetranthera																														
Polycarpaea corymbosa var. *corymbosa*																														
Polycarpaea holtzei																1					1				1					
Polycarpaea longiflora							1			1	1				1	1					1	1								
Polycarpaea longiflora (red form)																														
Polycarpaea longiflora (White form, M13-7)															1															
Polymeria aff. *ambigua*																														
Polymeria aff. *ambigua* (PAN 26B-20)																														
Polymeria ambigua																														
Polymeria sp. (site 1365)																														
* *Portulaca oleracea*							1									1					1									
Pterocaulon serrulatum													1																	
Pterocaulon sphacelatum							1					1					1													1
Pterocaulon sphaeranthoides																					1				1					
Ptilotus aervoides																														
Ptilotus appendiculatus var. *appendiculatus*																														
Ptilotus astrolasius var. *astrolasius*	1	1	1	1	1		1			1		1	1	1		1	1	1			1		1	1	1	1		1		1
Ptilotus auriculifolius		1					1											1			1				1					
Ptilotus axillaris		1					1														1				1					
Ptilotus calostachyus var. *calostachyus*		1	1	1	1		1		1	1		1	1	1		1	1	1	1		1		1	1	1	1		1	1	
Ptilotus clementii		1							1	1															1					
Ptilotus exaltatus var. *exaltatus*		1	1				1			1	1	1	1				1	1			1		1		1			1		
Ptilotus fusiformis var. *fusiformis*		1															1							1	1					
Ptilotus gaudichaudii var. *gaudichaudii*							1																							
Ptilotus gomphrenoides var. *gomphrenoides*							1																							
Ptilotus incanus var. *elongatus*																														
Ptilotus incanus var. *incanus*																							1		1					
Ptilotus macrocephalus																														
Ptilotus obovatus var. *obovatus*		1	1		1		1			1	1						1					1	1	1				1		1
Ptilotus polystachyus var. *polystachyus*																							1	1						
Ptilotus roei		1	1				1																							
Rhagodia eremaea																														
Rhodanthe margarethae																								1						
Rhynchosia bungarensis																														
Rhynchosia minima var. *australis*					1		1																		1					
Rutidosis helichrysoides																														
Salsola tragus			1				1																							
Salsola tragus subsp. *tragus*											1																			
Sarcostemma viminale subsp. *australe*												1			1						1									
Scaevola spinescens (broad form)	1						1																							
Sclerolaena costata							1																							
Sclerolaena cuneata																														
Sclerolaena densiflora										1																				
Sclerolaena diacantha																														
Sclerolaena eriacantha										1																				
Senna artemisioides aff. subsp. *oligophylla* (thinly sericeous)																														
Senna artemisioides aff. subsp. *oligophylla* x *helmsii*																														
Senna artemisioides subsp. *helmsii*		1					1						1																	
Senna artemisioides subsp. *oligophylla*	1	1	1		1	1	1			1		1	1		1		1						1				1	1		1
Senna artemisioides subsp. *oligophylla* x *glutinosa*							1																							
Senna artemisioides subsp. *oligophylla* x *helmsii*			1				1		1	1		1	1												1					1
Senna glutinosa subsp. *glutinosa*		1	1	1	1		1			1	1	1	1	1	1	1	1	1	1		1		1	1	1		1	1	1	1
Senna glutinosa subsp. *glutinosa* x *luerssenii*		1																												
Senna glutinosa subsp. *luerssenii*			1							1															1			1		
Senna glutinosa subsp. *pruinosa*		1	1				1	1		1	1										1	1	1		1		1	1	1	1
Senna glutinosa subsp. x *luerssenii*		1					1			1		1	1		1	1			1		1	1						1	1	
Senna notabilis		1					1			1			1					1			1		1	1	1			1		
Senna sp. Port Hedland (SPB 20-09-05B)																														
Senna stricta																														
Senna venusta										1																	1			
Setaria dielsii																														
* *Setaria verticillata*																														
Sida aff. *clementii*																														
Sida aff. *echinocarpa* (MET 15,350)		1	1				1			1													1					1		

	Stony Plain																						
Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i
Species	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te
Sida aff. *fibulifera*																						1	
Sida aff. *fibulifera* (B181-5B)										1													
Sida aff. *fibulifera* (B64-13B)										1													
Sida aff. *fibulifera* (FMG 125-20)																			1				
Sida aff. *fibulifera* (HD200-6)																							
Sida aff. *fibulifera* (MET Site 1346)																							
Sida aff. *fibulifera* 'var. L'																							
Sida aff. *pilbarensis* (EOB46-01B)																				1			
Sida aff. *spiciforme panicles* (FML46-13)																							
Sida arsiniata										1					1			1	1	1		1	1
Sida cardiophylla																							
Sida clementii				1						1									1			1	
Sida echinocarpa																		1					
Sida pilbarensis (ferruginous form)		1													1				1				
Sida pilbarensis (green form)																	1			1			
Sida rohlenae subsp. *rohlenae*																						1	
Sida sp. Articulation below (A.A. Mitchell PRP 1605)																							
Sida sp. Pilbara (A.A. Mitchell PRP 1543)																							
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)																						1	
Sida sp. verrucose glands (F.H. Mollemans 2423)																			1				
Sida spinosa																							
Solanum aff. *gabrielae*																			1				
Solanum aff. *phlomoides*					1																		
Solanum diversiflorum	1		1	1		1				1			1		1			1	1	1		1	1
Solanum ellipticum		1											1					1					
Solanum horridum				1															1			1	
Solanum lasiophyllum		1	1		1								1	1	1	1	1		1		1		1
Solanum phlomoides																							
Solanum sturtianum																						1	
* *Sonchus oleraceus*																							
Sporobolus australasicus										1								1		1	1	1	
Stemodia grossa																							
Stemodia viscosa																							
Streptoglossa bubakii										1										1		1	
Streptoglossa decurrens																						1	
Streptoglossa tenuiflora																							
Stylobasium spathulatum	1					1										1			1	1			1
Swainsona canescens										1													
Swainsona formosa				1							1												
Synaptantha tillaeacea var. *tillaeacea*																							
Tephrosia aff. *densa* (B17)																							
Tephrosia aff. *supina* (06BP45-006)																							
Tephrosia aff. *supina* (MET 12,357)																							
Tephrosia clementii																							
Tephrosia rosea var. *glabrior*																			1	1		1	
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)																							
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)																1			1			1	
Tephrosia spechtii																							
Tephrosia supina (06BP45-006)																				1			
Tephrosia uniovulata		1	1			1					1				1	1	1		1	1		1	1
Terminalia canescens																							
Themeda triandra																			1				
Tinospora smilacina																							
Trachymene oleracea subsp. *oleracea*				1															1				
Trianthema aff. *triquetra* (M3.35)																						1	1
Trianthema glossostigma																							1
Trianthema oxycalyptra var. *oxycalyptra*														1								1	
Trianthema pilosa															1					1			
Trianthema triquetra										1			1										
Trianthema turgidifolia													1										
Tribulus astrocarpus										1													
Tribulus hirsutus																							
Tribulus macrocarpus															1							1	
Tribulus occidentalis																				1			1
Tribulus platypterus																							
Tribulus suberosus													1		1			1					1
Trichodesma zeylanicum var. *zeylanicum*	1	1											1					1	1			1	
Triodia epactia		1	1	1		1		1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
Triodia pungens																							

	Stony Hills and Breakaways																																																													
Vegetation Type:	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
Species	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlalTw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERIm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Sida aff. *fibulifera*																																																															
Sida aff. *fibulifera* (B181-5B)																																																															
Sida aff. *fibulifera* (B64-13B)																																																															
Sida aff. *fibulifera* (FMG 125-20)																																																															
Sida aff. *fibulifera* (HD200-6)																																																										1					
Sida aff. *fibulifera* (MET Site 1346)																																																															
Sida aff. *fibulifera* 'var. L'																																																										1					
Sida aff. *pilbarensis* (EOB46-01B)						1					1							1					1	1	1										1																1					1		1					
Sida aff. *spiciforme panicles* (FML46-13)																																																														
Sida arsiniata										1	1												1									1						1					1								1					1		1					
Sida cardiophylla											1												1																																	1		1					
Sida clementii																		1							1																																						
Sida echinocarpa											1																					1			1																												
Sida pilbarensis (ferruginous form)							1			1	1							1			1		1		1		1		1			1				1				1			1				1		1	1						1	1	1	1		1		1
Sida pilbarensis (green form)																																		1		1																											
Sida rohlenae subsp. *rohlenae*																																																1															
Sida sp. Articulation below (A.A. Mitchell PRP 1605)																				1													1																														
Sida sp. Pilbara (A.A. Mitchell PRP 1543)											1								1				1				1																				1																
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)																																																										1					
Sida sp. verrucose glands (F.H. Mollemans 2423)																																																														
Sida spinosa																																																															
Solanum aff. *gabrielae*																				1			1				1													1								1									1	1			1		
Solanum aff. *phlomoides*																		1						1		1		1																	1			1				1									1		
Solanum diversiflorum				1		1				1	1		1							1	1		1		1		1		1			1			1					1			1			1			1		1			1				1					1
Solanum ellipticum										1																						1																								1							
Solanum horridum										1	1							1		1	1		1		1		1								1					1	1		1			1								1		1	1	1					1
Solanum lasiophyllum	1				1	1	1			1	1				1		1	1	1		1		1					1			1	1			1			1		1	1		1		1	1				1					1	1	1	1					1
Solanum phlomoides				1														1		1								1	1			1											1					1						1									
Solanum sturtianum						1			1				1		1				1		1																									1				1								1			1		
* *Sonchus oleraceus*																																																															
Sporobolus australasicus				1																																				1																							
Stemodia grossa																																																															
Stemodia viscosa																																																															
Streptoglossa bubakii											1		1						1	1	1																			1																	1	1					
Streptoglossa decurrens											1				1		1		1				1		1		1									1				1					1						1							1					
Streptoglossa tenuiflora																											1																																				
Stylobasium spathulatum							1		1				1			1												1					1		1	1			1				1																				1
Swainsona canescens																																																															
Swainsona formosa										1																														1																							
Synaptantha tillaeacea var. *tillaeacea*																																								1																		1					
Tephrosia aff. *densa* (B17)																				1																																											
Tephrosia aff. *supina* (06BP45-006)																																								1																							
Tephrosia aff. *supina* (MET 12,357)																																																															
Tephrosia clementii																																																										1					
Tephrosia rosea var. *glabrior*																1																	1																														
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)																																							1	1																							
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)																									1																																						
Tephrosia spechtii																		1														1	1																						1								
Tephrosia supina (06BP45-006)																																																															
Tephrosia uniovulata						1				1	1		1		1	1	1	1	1	1	1	1	1		1		1		1						1	1		1		1		1	1				1			1						1		1	1			1	
Terminalia canescens										1																									1																												
Themeda triandra																1				1													1											1													1						
Tinospora smilacina										1																																																					
Trachymene oleracea subsp. *oleracea*				1						1	1				1		1			1					1		1		1											1				1		1												1					
Trianthema aff. *triquetra* (M3.35)																																																															
Trianthema glossostigma																																											1						1														
Trianthema oxycalyptra var. *oxycalyptra*																																																															
Trianthema pilosa																																																															
Trianthema triquetra																																																															
Trianthema turgidifolia																																																															
Tribulus astrocarpus																																																															
Tribulus hirsutus																																																										1					
Tribulus macrocarpus																																																															
Tribulus occidentalis																																																															
Tribulus platypterus																																																															
Tribulus suberosus							1	1		1	1						1								1		1				1				1	1				1			1		1	1				1	1					1	1				1	1	1
Trichodesma zeylanicum var. *zeylanicum*				1		1	1	1		1	1		1			1	1	1	1	1	1		1		1		1		1		1	1			1					1					1	1				1	1			1		1	1	1	1	1	1		
Triodia epactia		1		1		1							1		1	1	1		1	1			1												1	1		1		1			1		1					1							1	1				1	1
Triodia pungens																																			1											1																	

Stony Plain

Vegetation Type:	P1a	P1b	P1c	P2b	P2c	P2d	P2f	P2g	P3a	P3c	P4a	P4b	P5d	P5e	P6a	P6b	P6c	P6d	P6e	P6f	P6g	P6h	P6i
Species	AatkAbAaTw	AatkAbAwTw	ChAatkAbTwTe	AaTeTw	AmAaTwTsprr	ChAaTwTe	ChAiAbTw	ChAsAaTwTe	AsERcTw	AsAbTwTe	AiAaTw	ChAaTw	AxTw	AxTwTe	AiAbTe	AiAtTe	ChAaAiTe	ChAbAaTe	ChAiAbTe	ChApyGpTe	ChAwTe	ChTe/h (burnt)	Te
Triodia sp. Robe River					1								1						1	1			
Triodia wiseana	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
Tripogon loliiformis																							
Triumfetta aff. *chaetocarpa* (PAN3/4)		1																				1	
Triumfetta aff. *chaetocarpa* (Panorama form)																			1				
Triumfetta appendiculata																			1				
Triumfetta appendiculata (Burrup Form)																							
Triumfetta appendiculata (Mardie form)																							
Triumfetta chaetocarpa																							
Triumfetta chaetocarpa (Panorama Form)																							
Triumfetta clementii				1															1			1	
Triumfetta johnstonii																			1				
Triumfetta maconochieana																							
* *Vachellia farnesiana*														1				1					
Velleia connata															1								
Vigna lanceolata var. *lanceolata*																							
Wahlenbergia tumidifructa																							
Waltheria indica																		1	1			1	
Waltheria virgata																							
Yakirra australiensis var. *australiensis*																				1			
Total Species Richness (Count) per Vegetation Type	32	38	25	33	16	22	4	11	8	55	21	13	63	37	42	23	26	45	107	73	31	84	45

Stony Hills and Breakaways

Vegetation Type:	S1a	S1b	S1c	S2b	S3a	S3b	S3c	S3d	S3e	S3f	S4b	S4c	S4d	S4e	S4f	S4g	S4h	S4i	S4k	S4l	S4m	S4n	S5b	S5c	S5d	S5e	S5f	S5g	S5h	S5i	S5j	S5k	S5l
Species	AbAatkTw	AbAatkTwTe	GwAbAatkTw	AcAbTeTw	AiApTw	ApAarTw	ApAbTw	ApAiERfTw	ApGwAarTw	ApTw	AarTw	AbAaPlTw	AbAaTe	AcAbGOrTw	AcApTw	AcSTYsTsprrTe	AcTwTe	AiApTwTsprr/h	AtGwTw	AtPlTwTsprr	GwAbTw	GwPlAbTsprrTw	AatkAbTwTsprr	AbDAcTsprrTw	AbTwTsprr	AcApAiTwTsprr	AiAbTwTsprr	AiAcTwTsprr	AiPlTsprrTw	ApAbTwTsprr	ApTsprrTw	ApERfTwTsprr	CfAcERlaTsprr
Triodia sp. Robe River				1			1			1		1		1	1	1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1
Triodia wiseana	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tripogon loliiformis																																1	
Triumfetta aff. *chaetocarpa* (PAN3/4)																																	
Triumfetta aff. *chaetocarpa* (Panorama form)						1																	1										
Triumfetta appendiculata																																	
Triumfetta appendiculata (Burrup Form)																																	
Triumfetta appendiculata (Mardie form)																																	
Triumfetta chaetocarpa																																	
Triumfetta chaetocarpa (Panorama Form)																																	
Triumfetta clementii				1						1	1		1							1							1					1	
Triumfetta johnstonii																																	
Triumfetta maconochieana											1												1										
* *Vachellia farnesiana*										1																							
Velleia connata																																	
Vigna lanceolata var. *lanceolata*																																	
Wahlenbergia tumidifructa																																	
Waltheria indica										1																							
Waltheria virgata																																	
Yakirra australiensis var. *australiensis*																																	
Total Species Richness (Count) per Vegetation Type	15	12	11	51	13	40	25	18	20	84	92	9	44	11	30	40	55	41	47	73	26	14	71	17	60	17	45	19	33	12	29	57	31

Vegetation Type:	S6a	S7c	S7d	S7f	S7g	S7h	S7i	S7k	S7l	S7n	S8a	S8b	S8c	S9a	S10a	S10b	S10c	S10d	S10e	S10f	S10g	S10h	S10i	S10j	S10k	S10l	S10m	S10n	S11a	S11b
Species	AsTw	AbSsspTw	AbTw	AiAmAbTw	AiAsTw	AiTEspbTw	AiTw	ChAmTw	ChGwAiAbTw	Tw	AaneDOcTw	AaneERlaITw	AaneGwAatkTe	AaDAcTw	ElAaneAcGbTsprrTw	ElAatkAbTsprrTw	ElAbTsprrTw	ElAbTwTsprr	ElAcAiTwTsprr	ElAcTsprr	ElAcTwTsprr	ElAmTwTsprr	ElApTsprrTw	ElApTwTsprrERIm	ElAtTsprr	ElPlAaTsprrTw	ElPlTsprrTw	ElTsprrTw	ElAaAbTw	ElAaneApTw
Triodia sp. Robe River		1					1	1		1					1	1	1	1	1	1	1	1	1	1	1	1	1	1		1
Triodia wiseana	1	1	1	1	1	1	55	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tripogon loliiformis																														
Triumfetta aff. *chaetocarpa* (PAN3/4)																									1					
Triumfetta aff. *chaetocarpa* (Panorama form)																														
Triumfetta appendiculata																														
Triumfetta appendiculata (Burrup Form)																														
Triumfetta appendiculata (Mardie form)																														
Triumfetta chaetocarpa																														
Triumfetta chaetocarpa (Panorama Form)																														
Triumfetta clementii		1			1		1			1															1					
Triumfetta johnstonii																												1		
Triumfetta maconochieana																					1									
* *Vachellia farnesiana*			1				1			1															1					
Velleia connata																														
Vigna lanceolata var. *lanceolata*																														
Wahlenbergia tumidifructa																														
Waltheria indica																									1					
Waltheria virgata																														
Yakirra australiensis var. *australiensis*																														
Total Species Richness (Count) per Vegetation Type	11	70	50	10	27	8	148	15	13	78	18	31	41	14	34	28	35	43	10	6	40	20	61	53	104	23	32	41	18	36

Species \ Vegetation Type:	Stony Hills and Breakaways																			
	S11c ElAarAbTw	S11d ElAbAsTw	S11e ElAbTw	S11f ElAcTw	S11g ElAptTw	S11h ElApTw	S11i ElAtAarTw	S11j ElAtTw	S11k ElChAbTw	S11l ElGwApTwERIt	S11m ElTw	S12a AbTe	S12b Tsprr	S12c Tsprr (burnt)	S13a TERcAcTw	S13b TERcTw	S14a AbTeTw	S14b AiAbTwTe	S14c AiERfTwTe	S14d AxAbTwTe
Abutilon aff. *dioicum* (HD72-14)										1										
Abutilon aff. *lepidum* (1) (MET 15 352)								1												
Abutilon amplum																				
Abutilon cunninghamii																				
Abutilon dioicum			1	1		1				1						1				
Abutilon otocarpum																				
Abutilon trudgenii MS																		1		
Acacia adsurgens				1		1														
Acacia aff. *aneura* (narrow fine veined; site 1259)																		1		
Acacia ampliceps																				
Acacia ancistrocarpa	1	1	1	1	1	1	1	1	1		1	1					1	1	1	1
Acacia aneura (narrow, fine veined, site 1259)			1																	1
Acacia aneura var. *aneura*																				
Acacia aneura var. *intermedia*																				
Acacia aneura var. *pilbarana*																				
Acacia arida	1			1		1	1	1								1				
Acacia atkinsiana			1			1		1									1		1	1
Acacia bivenosa	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1
Acacia citrinoviridis				1	1										1	1		1		1
Acacia colei var. *colei*																			1	
Acacia elachantha																				
Acacia elachantha (silvery hairy variant)																				
Acacia inaequilatera	1	1	1			1			1		1	1	1					1	1	1
Acacia kempeana (1)																				
Acacia maitlandii			1	1	1	1					1							1		
Acacia monticola																				
Acacia orthocarpa																		1		
Acacia pruinocarpa		1	1	1		1		1		1			1				1	1		
Acacia ptychophylla					1															
Acacia ptychophylla x *ancistrocarpa*																				
Acacia pyrifolia var. *morrisonii*																				
Acacia pyrifolia var. *pyrifolia*					1															
Acacia sclerosperma subsp. *sclerosperma*																				
Acacia sericophylla					1															
Acacia stowardii			1																	
Acacia synchronicia		1	1	1		1			1							1	1	1	1	1
Acacia tenuissima				1		1														
Acacia trachycarpa																				
Acacia trachycarpa x *tumida* var. *pilbarensis*																				
Acacia tumida var. *pilbarensis*	1		1	1	1	1	1	1	1			1						1		1
Acacia victoriae														1						
Acacia wanyu																			1	
Acacia xiphophylla									1											1
Achyranthes aspera																				
Adriana urticoides var. *urticoides*																				
Alternanthera nana					1	1														1
Alysicarpus muelleri																				
Amaranthus aff. *pallidiflorus* (D89)																				
Amaranthus cuspidifolius		1		1	1		1											1		
Amaranthus undulatus																				
Ammannia auriculata																				
Amphipogon sericeus																				
Amphipogon sericeus (Newman form BR2-21)																				
Amyema sanguinea var. *sanguinea*																				
* *Argemone ochroleuca* subsp. *ochroleuca*																				
Aristida burbidgeae				1		1		1		1										
Aristida contorta				1		1											1			
Aristida holathera var. *holathera*																				
Aristida holathera var. *latifolia*																				
Aristida ingrata																				
Bergia pedicellaris																				
* *Bidens bipinnata*																				
Boerhavia coccinea		1			1															
Boerhavia gardneri			1																	
Bonamia media var. *villosa*								1												
Bonamia pannosa																				
Bonamia rosea	1						1													
Brachyachne prostrata																				
Bulbostylis barbata					1															

Species \ Vegetation Type:	Major Creeklines								
	A1a AtrApyTeCEc	A3a CcChAcolAaTe	A3b ChAaAbAsTe	A3c ChAaAtrTe/g	A3d ChAbAcApyTeTw	A5c EcEvSTg	A5d EvAbGOrOaTeTw	A5e EvApyTe	A5f EvMlMgTe/h
Abutilon aff. *dioicum* (HD72-14)									
Abutilon aff. *lepidum* (1) (MET 15 352)									
Abutilon amplum									
Abutilon cunninghamii									
Abutilon dioicum	1								
Abutilon otocarpum									
Abutilon trudgenii MS			1						
Acacia adsurgens									
Acacia aff. *aneura* (narrow fine veined; site 1259)									
Acacia ampliceps									1
Acacia ancistrocarpa		1	1	1	1		1	1	
Acacia aneura (narrow, fine veined, site 1259)									
Acacia aneura var. *aneura*									
Acacia aneura var. *intermedia*									
Acacia aneura var. *pilbarana*									
Acacia arida									
Acacia atkinsiana		1		1			1		
Acacia bivenosa		1	1	1	1		1	1	1
Acacia citrinoviridis					1	1			1
Acacia colei var. *colei*	1	1	1	1		1			
Acacia elachantha									
Acacia elachantha (silvery hairy variant)									
Acacia inaequilatera		1	1	1	1				
Acacia kempeana (1)									
Acacia maitlandii	1				1			1	
Acacia monticola									
Acacia orthocarpa									
Acacia pruinocarpa									
Acacia ptychophylla									
Acacia ptychophylla x *ancistrocarpa*									
Acacia pyrifolia var. *morrisonii*						1	1		
Acacia pyrifolia var. *pyrifolia*	1				1	1		1	1
Acacia sclerosperma subsp. *sclerosperma*									
Acacia sericophylla									
Acacia stowardii									
Acacia synchronicia		1	1		1		1		
Acacia tenuissima									
Acacia trachycarpa	1		1	1		1			
Acacia trachycarpa x *tumida* var. *pilbarensis*									
Acacia tumida var. *pilbarensis*						1	1		1
Acacia victoriae									
Acacia wanyu									
Acacia xiphophylla							1		
Achyranthes aspera						1			
Adriana urticoides var. *urticoides*									1
Alternanthera nana	1		1	1		1		1	1
Alysicarpus muelleri									
Amaranthus aff. *pallidiflorus* (D89)						1			
Amaranthus cuspidifolius	1					1	1		1
Amaranthus undulatus									
Ammannia auriculata									1
Amphipogon sericeus									
Amphipogon sericeus (Newman form BR2-21)									
Amyema sanguinea var. *sanguinea*						1			
* *Argemone ochroleuca* subsp. *ochroleuca*	1					1		1	1
Aristida burbidgeae									
Aristida contorta									
Aristida holathera var. *holathera*									
Aristida holathera var. *latifolia*									
Aristida ingrata							1		
Bergia pedicellaris									
* *Bidens bipinnata*							1		
Boerhavia coccinea	1								1
Boerhavia gardneri	1							1	1
Bonamia media var. *villosa*				1					
Bonamia pannosa									
Bonamia rosea				1					
Brachyachne prostrata									
Bulbostylis barbata	1		1	1		1			

Species \ Vegetation Type:	Minor Creeklines																										
	I1c ChAaAbTe	I1e ElAbAaTe	I1f GOrAaAbTeTw	I2a ApyAbTe	I2c ApyAcGOrTe	I2d ChApyAtrTe/h	I2e ChApyTe	I2f EvChApyGOrTe/g	I3a AcAbERISTYsTe	I3c ChAaTe	I3f ElChAtTeTw	I5a CcAadAcAaAbTp	I5d ChAaAbTeTw	I5e ChAatkAbTw	I5f ChAcolAbGOrTe	I5g ChAiAaTe	I5h ChAtAatkAaTw	I5j ChAtAcAaTe	I5k ChAtGOrTwTe	I5l ChGOrAbTw	I5m ChSTYsERIm	I5n ElAaAbTwTsprr	I5o ElChAaAatkTeTw	I5p ElChAbTwTe	I6c EcGOrTEspbCEc	I6d ElChAtTw	I6e EvChAatkAtAwAbGOaTe
Abutilon aff. *dioicum* (HD72-14)																											
Abutilon aff. *lepidum* (1) (MET 15 352)																		1									
Abutilon amplum																											
Abutilon cunninghamii																		1									
Abutilon dioicum																		1									
Abutilon otocarpum																											1
Abutilon trudgenii MS													1						1								
Acacia adsurgens												1															
Acacia aff. *aneura* (narrow fine veined; site 1259)																											
Acacia ampliceps																											
Acacia ancistrocarpa	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1			1	1	1	1	1		1
Acacia aneura (narrow, fine veined, site 1259)																											
Acacia aneura var. *aneura*																											
Acacia aneura var. *intermedia*																											
Acacia aneura var. *pilbarana*																											
Acacia arida									1									1									
Acacia atkinsiana										1	1		1	1			1	1				1	1	1			1
Acacia bivenosa	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1
Acacia citrinoviridis					1		1	1	1	1		1						1							1		
Acacia colei var. *colei*			1												1												
Acacia elachantha																											
Acacia elachantha (silvery hairy variant)						1																					
Acacia inaequilatera	1		1			1		1	1	1			1	1		1	1	1	1				1	1			
Acacia kempeana (1)																		1									
Acacia maitlandii		1					1	1		1							1				1	1					
Acacia monticola																											
Acacia orthocarpa																											
Acacia pruinocarpa																											
Acacia ptychophylla																					1						
Acacia ptychophylla x *ancistrocarpa*																											
Acacia pyrifolia var. *morrisonii*																		1									
Acacia pyrifolia var. *pyrifolia*				1	1	1	1	1	1	1			1		1			1							1	1	
Acacia sclerosperma subsp. *sclerosperma*										1																	
Acacia sericophylla									1																		
Acacia stowardii																											
Acacia synchronicia	1		1					1	1	1			1		1	1	1	1						1			1
Acacia tenuissima																											
Acacia trachycarpa						1				1			1			1								1			
Acacia trachycarpa x *tumida* var. *pilbarensis*																											
Acacia tumida var. *pilbarensis*	1				1			1	1	1	1		1	1		1	1	1	1				1			1	1
Acacia victoriae																											
Acacia wanyu	1									1																	1
Acacia xiphophylla													1													1	
Achyranthes aspera																											
Adriana urticoides var. *urticoides*																											
Alternanthera nana					1	1		1	1	1			1		1			1	1								1
Alysicarpus muelleri																		1									
Amaranthus aff. *pallidiflorus* (D89)																											
Amaranthus cuspidifolius	1				1			1	1	1			1					1	1								
Amaranthus undulatus																											
Ammannia auriculata																											
Amphipogon sericeus																											
Amphipogon sericeus (Newman form BR2-21)																											
Amyema sanguinea var. *sanguinea*																											
* *Argemone ochroleuca* subsp. *ochroleuca*																											
Aristida burbidgeae					1																						
Aristida contorta										1																	
Aristida holathera var. *holathera*					1	1							1						1								
Aristida holathera var. *latifolia*						1							1						1								
Aristida ingrata																											
Bergia pedicellaris																											
* *Bidens bipinnata*																		1									
Boerhavia coccinea			1		1	1			1				1						1								1
Boerhavia gardneri					1					1																	
Bonamia media var. *villosa*						1																					
Bonamia pannosa																											
Bonamia rosea								1		1			1				1	1						1			
Brachyachne prostrata								1																			
Bulbostylis barbata									1						1										1		

Species \ Vegetation Type:	Clayey Plain									
	C1a AatkAbTeTw	C2b AiAaPTaTe	C2c AiAaTe	C3a AsTe	C3b ChAsTe	C4a AsAbTe	C6a AsAxTe	C6c ChAsAaAxTe	C7a AiTe	C7b ApyGpTe
Abutilon aff. *dioicum* (HD72-14)										
Abutilon aff. *lepidum* (1) (MET 15 352)										
Abutilon amplum									1	
Abutilon cunninghamii										
Abutilon dioicum										
Abutilon otocarpum										
Abutilon trudgenii MS				1	1					
Acacia adsurgens										
Acacia aff. *aneura* (narrow fine veined; site 1259)										
Acacia ampliceps										
Acacia ancistrocarpa	1	1	1		1	1	1	1	1	1
Acacia aneura (narrow, fine veined, site 1259)										
Acacia aneura var. *aneura*										
Acacia aneura var. *intermedia*								1		
Acacia aneura var. *pilbarana*										
Acacia arida						1				
Acacia atkinsiana	1	1			1		1	1	1	
Acacia bivenosa	1			1	1	1	1	1	1	1
Acacia citrinoviridis										
Acacia colei var. *colei*										
Acacia elachantha										
Acacia elachantha (silvery hairy variant)										
Acacia inaequilatera	1	1	1	1	1	1		1	1	1
Acacia kempeana (1)										
Acacia maitlandii										
Acacia monticola										
Acacia orthocarpa										
Acacia pruinocarpa										
Acacia ptychophylla										
Acacia ptychophylla x *ancistrocarpa*										
Acacia pyrifolia var. *morrisonii*										
Acacia pyrifolia var. *pyrifolia*								1	1	1
Acacia sclerosperma subsp. *sclerosperma*										
Acacia sericophylla										
Acacia stowardii										
Acacia synchronicia	1	1		1	1	1	1	1	1	
Acacia tenuissima										
Acacia trachycarpa									1	
Acacia trachycarpa x *tumida* var. *pilbarensis*										
Acacia tumida var. *pilbarensis*	1	1					1	1		1
Acacia victoriae										
Acacia wanyu	1									
Acacia xiphophylla				1			1	1		
Achyranthes aspera										
Adriana urticoides var. *urticoides*										
Alternanthera nana									1	
Alysicarpus muelleri									1	
Amaranthus aff. *pallidiflorus* (D89)										
Amaranthus cuspidifolius								1		
Amaranthus undulatus										
Ammannia auriculata										
Amphipogon sericeus										
Amphipogon sericeus (Newman form BR2-21)										
Amyema sanguinea var. *sanguinea*										
* *Argemone ochroleuca* subsp. *ochroleuca*										
Aristida burbidgeae										
Aristida contorta										
Aristida holathera var. *holathera*										
Aristida holathera var. *latifolia*										
Aristida ingrata										
Bergia pedicellaris										
* *Bidens bipinnata*										
Boerhavia coccinea										
Boerhavia gardneri	1				1		1			
Bonamia media var. *villosa*									1	
Bonamia pannosa										
Bonamia rosea	1	1							1	
Brachyachne prostrata										
Bulbostylis barbata				1					1	

	Stony Hills and Breakaways																				Major Creeklines									Minor Creeklines																											Clayey Plain									
Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Calandrinia ptychosperma																																		1	1																															
Calocephalus knappii					1																								1					1				1																												
Calocephalus sp. Pilbara-Desert (M.E. Trudgen 11454)																																		1																																
Capparis spinosa var. *nummularia*																									1	1																												1											1	
Capparis umbonata																																							1																											
Cassytha capillaris			1	1					1																																																									
* *Cenchrus ciliaris*			1																		1		1	1	1	1			1					1			1										1							1			1						1		1	
* *Cenchrus setiger*																																			1																															
Cheilanthes austrotenuifolia				1																																																														
Cheilanthes brownii				1																																																														
Cheilanthes lasiophylla																																																																		
Cheilanthes sieberi subsp. *sieberi*																																																																		
Chrysopogon fallax					1																													1	1		1	1				1		1																					1	
Cleome viscosa				1	1		1				1					1		1			1	1	1			1	1	1	1	1				1	1		1	1	1			1		1			1	1	1				1			1				1	1			1	1	
Clerodendrum floribundum var. *angustifolium*													1					1																								1					1	1																	1	
Clerodendrum tomentosum var. *lanceolatum*				1		1																												1								1						1																		
Codonocarpus cotinifolius																																																																		
Commicarpus australis																											1																																							
Corchorus aff. *parviflorus*						1																													1							1						1																		
Corchorus aff. *parviflorus* (JW011-11)				1							1							1			1					1	1								1							1					1																		1	
Corchorus aff. *walcotti* (K.J. Atkins 570)																																																																	
Corchorus crozophorifolius				1												1										1		1						1																																
Corchorus incanus subsp. *incanus*						1																		1				1											1													1														
Corchorus laniflorus			1	1		1			1							1							1				1		1			1	1	1				1					1	1			1		1											1						1
Corchorus lasiocarpus subsp. *parvus*													1																								1		1																	1	1									
Corchorus parviflorus				1		1				1							1							1		1																			1	1						1		1											1	
Corchorus sidoides subsp. aff. *vermicularis* (GLD NIM17-16)																																																																		
Corchorus sidoides subsp. *sidoides*	1		1			1					1							1			1					1		1						1	1	1			1			1						1																1		
Corchorus sp. (inadequate material)			1			1															1			1																	1										1	1						1							1	
Corymbia candida subsp. *candida*																						1																			1																						1		1	
Corymbia ferriticola subsp. *ferriticola*																																																																		
Corymbia hamersleyana		1	1	1	1	1		1	1		1					1				1		1	1	1	1		1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1	1			1			1	1	1
Crotalaria medicaginea (Burrup form; B65-11)																										1									1		1					1																								
Crotalaria medicaginea var. *neglecta*				1																													1				1										1																			
Cucumis maderaspatanus				1	1											1		1			1	1	1			1		1	1					1			1	1	1			1		1			1	1					1		1		1	1							1	
* *Cucumis melo* subsp. *agrestis*				1						1								1																																																
Cullen lachnostachys					1																	1																1																												
Cullen leucochaites																																1																																		
Cullen martinii																																							1			1					1																			
Cullen pogonocarpum					1																													1				1				1					1																			
Cymbopogon ambiguus		1	1	1		1	1	1	1	1	1		1			1		1					1	1		1	1	1	1			1	1	1								1		1			1	1						1	1		1								1	
Cymbopogon obtectus				1																																						1						1							1											
Cymbopogon procerus																										1																																								
Cyperochloa hirsuta																																		1																																
Cyperus cunninghamii subsp. *cunninghamii*										1																																																								
Cyperus difformis																													1																																					
Cyperus hesperius																										1																																								
Cyperus iria																																																																		
Cyperus vaginatus																										1	1	1	1			1												1																						
Dactyloctenium radulans																					1		1												1																															
Dampiera candicans	1																																							1											1						1									
Dicladanthera forrestii																										1																																								
Diplatia grandibractea																																																																		
Dodonaea coriacea	1					1	1										1																		1							1						1					1					1								
Dodonaea pachyneura																																																																		
Dodonaea petiolaris																																																																		
Duperreya commixta				1																							1							1	1												1																	1	1	
Dysphania kalpari																																		1																																
Dysphania melanocarpa forma *leucocarpa*					1																													1				1									1																		1	
Dysphania rhadinostachya subsp. *rhadinostachya*				1	1	1		1									1	1						1		1			1	1				1	1		1	1	1			1					1	1	1				1							1	1			1		
Ehretia saligna var. *saligna*																											1																																							
Enchylaena tomentosa var. *tomentosa*																											1			1																																		1		
Enneapogon caerulescens var. *caerulescens*						1										1												1						1			1		1								1																			
Enneapogon intermedius																											1																																							
Enneapogon lindleyanus																										1																													1										1	
Enneapogon polyphyllus																																															1																			
Eragrostis aff. *eriopoda* (WAS site 963)																																										1						1																	1	
Eragrostis cumingii																																		1			1					1		1			1	1												1					1	
Eragrostis dielsii																																																												1						

	Stony Hills and Breakaways																				Major Creeklines									Minor Creeklines																											Clayey Plain									
Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Eragrostis laniflora																								1																																										
Eragrostis tenellula																																																																		
Eremophila cuneifolia																			1																																									1		1			
Eremophila forrestii subsp. *forrestii*				1														1																																														1		
Eremophila fraseri subsp. *fraseri*				1							1					1		1	1																				1																										
Eremophila latrobei subsp. *glabra*																																																																		
Eremophila latrobei subsp. *latrobei*										1																																																							
Eremophila longifolia	1				1														1						1			1	1				1				1	1	1	1		1				1	1							1						1			1		1	1
Eremophila youngii x *latrobei*						1																																																												
Eriachne aristidea																																					1																													
Eriachne helmsii																								1																													1												
Eriachne mucronata			1	1				1	1																			1										1																				1												
Eriachne mucronata (typical form)		1	1	1		1								1			1								1																											1																	1	1	
Eriachne obtusa																																																																		
Eriachne pulchella subsp. *dominii*													1																																																				
Eriachne pulchella subsp. *pulchella*						1							1				1									1									1																															1		
Eriachne tenuiculmis			1							1															1		1																																								
Erythrina vespertilio																																																																	1	
Eucalyptus camaldulensis var. *obtusa*																					1	1		1	1	1		1	1											1			1	1														1												1
Eucalyptus leucophloia subsp. *leucophloia*	1	1	1	1	1	1	1	1	1	1	1		1			1	1	1		1		1									1								1	1	1						1	1				1	1	1	1	1		1								1	1
Eucalyptus victrix																					1			1		1	1	1	1								1																											1										1
Eulalia aurea																																																																		
Euphorbia australis				1				1										1	1		1		1	1				1								1				1				1								1	1																	1			1	1	
Euphorbia biconvexa				1	1	1														1							1					1	1				1									1			1							1										
Euphorbia boophthona				1				1										1										1	1							1	1		1									1																				
Euphorbia boophthona (Large seed form)																		1						1					1										1																						1	1			1		
Euphorbia coghlanii																							1	1								1			1		1					1		1				1						1											1	
Euphorbia schultzii																																																																		
Euphorbia sp. (B170-4)																																					1																												1	
Euphorbia sp. (BPBS10-50)																																													1																					
Euphorbia sp. (M80-1)																																																																		
Euphorbia sp. (site 1089)																																																																		
Euphorbia tannensis																																										1						1																			
Euphorbia tannensis subsp. *eremophila* (Hamersley form)																		1			1													1								1						1																			
Euphorbia wheeleri																									1	1																																								
Evolvulus alsinoides var. *decumbens*																																																																		
Evolvulus alsinoides var. *villosicalyx*				1	1																1				1								1	1		1	1	1			1	1	1			1	1								1	1			1				1	
Ficus aculeata var. *indecora*																										1																																							1	
Ficus brachypoda																1																																																	1	
Fimbristylis dichotoma																																																																		
Flaveria australasica subsp. *australasica*				1				1							1																																																	1	
Flueggea virosa subsp. *melanthesoides*									1																	1																												1												
Glycine canescens																																															1																		
Gomphrena affinis subsp. *pilbarensis*					1																																1								1																		
Gomphrena canescens			1																																																													
Gomphrena cunninghamii		1	1	1		1			1						1	1		1					1			1																					1													1					
Gomphrena kanisii																																																								1									
Goodenia cusackiana																																																																		
Goodenia forrestii		1			1																	1						1					1	1		1	1	1			1		1			1	1								1					1			1	1	
Goodenia lamprosperma																									1	1			1																																				
Goodenia microptera			1	1				1									1			1																				1				1				1			1										1	1						1			
Goodenia stobbsiana								1												1								1	1										1					1																					
Gossypium australe (Burrup Peninsula form)	1		1	1	1	1		1	1		1					1		1	1		1	1	1	1		1	1	1	1	1		1		1	1	1	1	1	1			1		1	1	1	1	1				1		1	1		1	1	1	1	1	1	1	1	1	1	1
Gossypium australe (Whim Creek form)																																																																		
Gossypium robinsonii	1		1	1	1		1	1										1		1	1		1	1	1	1	1	1	1	1			1	1	1	1	1	1		1	1		1		1			1	1	1			1	1	1	1												1
Grevillea berryana																																																																		
Grevillea pyramidalis subsp. *leucadendron*						1															1		1	1	1			1									1	1	1		1						1							1													1	1
Grevillea wickhamii		1	1	1		1		1	1			1													1				1							1		1			1	1		1																	1								1	1
Grevillea wickhamii subsp. *aprica*																																																																		
Grevillea wickhamii subsp. *hispidula*				1		1		1		1								1			1			1											1			1			1		1	1	1						1		1				1									
Grevillea wickhamii subsp. *macrodonta*																																							1																										
Hakea lorea subsp. *lorea*		1	1		1				1							1	1	1			1			1							1				1		1	1			1			1	1		1					1			1	1	1	1	1	1		1	1	1
Haloragis gossei var. *gossei*																1	1																																																		
Heliotropium crispatum																1																														1																		
Heliotropium cunninghamii																																																																		
Heliotropium heteranthum				1		1											1																						1			1																						1		
Heliotropium inexplicitum																																																																		
Heliotropium ovalifolium																																		1			1		1																										
Hibiscus aff. *coatesii* (MET 15 305)				1																																																													

Stony Hills and Breakaways

Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe
Hibiscus aff. *coatesii* (MET 16,542)																				
Hibiscus aff. *coatesii* (site 693)																				
Hibiscus aff. *coatesii* (site 733)				1				1												
Hibiscus aff. *coatesii* (site 751)																				
Hibiscus aff. *sturtii* (site 1209)																				
Hibiscus austrinus var. *austrinus*																				
Hibiscus brachychlaenus																				
Hibiscus burtonii				1																
Hibiscus coatesii																				
Hibiscus gardneri																				
Hibiscus goldsworthii								1												
Hibiscus leptocladus																				
Hibiscus sturtii																				
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)																				
Hibiscus sturtii var. aff. *grandiflorus*																				
Hibiscus sturtii var. *campylochlamys*			1	1			1													
Hibiscus sturtii var. *platychlamys*				1																
Hybanthus aurantiacus				1																
Indigofera boviperda subsp. *boviperda*																				
Indigofera colutea					1															
Indigofera linifolia																				
Indigofera monophylla	1		1	1				1	1		1			1				1	1	1
Indigofera monophylla (Burrup form)																				
Indigofera monophylla (Cape Preston form)																				
Indigofera monophylla (grey leaflet form)											1									
Indigofera monophylla (grey/green leaflet form)				1				1												
Indigofera monophylla (small calyx form)																				
Indigofera rugosa															1	1				
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN			1					1												
Ipomoea muelleri																				
Ipomoea polymorpha																				
Iseilema dolichotrichum																				
Iseilema membranaceum																				
Isotropis atropurpurea							1													
Jasminum didymum subsp. *lineare*				1		1		1	1	1	1		1					1		
Keraudrenia nephrosperma				1			1	1												
Keraudrenia velutina subsp. *elliptica*								1												1
Lepidium muelleri-ferdinandii																				
Lepidium pedicellosum																				
Lepidium pholidogynum			1																	
Lepidium platypetalum																				
Leptopus decaisnei var. *orbicularis*				1												1		1		
Lobelia heterophylla				1																
Lysiana casuarinae																		1		
Maireana aff. *georgei*																				
Maireana georgei			1																	
Maireana melanocoma																				
Maireana planifolia																				
Maireana tomentosa subsp. *tomentosa*			1																	
Maireana trichoptera																				
* *Malvastrum americanum*					1		1													
Marsdenia australis																				
Marsilea drummondii																				
Melaleuca glomerata																				
Melaleuca linophylla																				
Melhania sp. (Burrup)																				
Melhania sp. (CH15-39)																				
Melhania sp. Turee Creek (MJ1-35)																				
Mollugo molluginea			1		1															
Nicotiana benthamiana				1																
Nicotiana occidentalis subsp. *occidentalis*																				
Oldenlandia crouchiana					1													1		
Owenia acidula			1																	
Paraneurachne muelleri				1		1	1													
Paspalidium clementii		1		1							1									
Paspalidium rarum																				
Paspalidium tabulatum (Whim Creek form)																1				
Pentalepis trichodesmoides																			1	
Perotis rara																				

Major Creeklines

Vegetation Type:	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f
Species	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h
Hibiscus aff. *coatesii* (MET 16,542)									
Hibiscus aff. *coatesii* (site 693)									
Hibiscus aff. *coatesii* (site 733)									
Hibiscus aff. *coatesii* (site 751)									
Hibiscus aff. *sturtii* (site 1209)									
Hibiscus austrinus var. *austrinus*						1			
Hibiscus brachychlaenus									
Hibiscus burtonii									
Hibiscus coatesii									
Hibiscus gardneri									
Hibiscus goldsworthii									
Hibiscus leptocladus									
Hibiscus sturtii									
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)									
Hibiscus sturtii var. aff. *grandiflorus*									
Hibiscus sturtii var. *campylochlamys*									
Hibiscus sturtii var. *platychlamys*									
Hybanthus aurantiacus	1			1		1	1		1
Indigofera boviperda subsp. *boviperda*			1					1	
Indigofera colutea	1								
Indigofera linifolia							1		
Indigofera monophylla			1			1		1	1
Indigofera monophylla (Burrup form)									
Indigofera monophylla (Cape Preston form)									
Indigofera monophylla (grey leaflet form)									
Indigofera monophylla (grey/green leaflet form)									
Indigofera monophylla (small calyx form)									
Indigofera rugosa									
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN									1
Ipomoea muelleri	1					1		1	1
Ipomoea polymorpha									
Iseilema dolichotrichum									
Iseilema membranaceum									
Isotropis atropurpurea									
Jasminum didymum subsp. *lineare*		1	1	1		1	1		
Keraudrenia nephrosperma									
Keraudrenia velutina subsp. *elliptica*									
Lepidium muelleri-ferdinandii									
Lepidium pedicellosum									
Lepidium pholidogynum									
Lepidium platypetalum									
Leptopus decaisnei var. *orbicularis*	1		1						
Lobelia heterophylla									
Lysiana casuarinae									
Maireana aff. *georgei*									
Maireana georgei									
Maireana melanocoma									
Maireana planifolia									
Maireana tomentosa subsp. *tomentosa*									
Maireana trichoptera									
* *Malvastrum americanum*		1					1	1	
Marsdenia australis									
Marsilea drummondii									
Melaleuca glomerata								1	1
Melaleuca linophylla									1
Melhania sp. (Burrup)							1		
Melhania sp. (CH15-39)	1								
Melhania sp. Turee Creek (MJ1-35)									
Mollugo molluginea									
Nicotiana benthamiana						1			
Nicotiana occidentalis subsp. *occidentalis*						1			1
Oldenlandia crouchiana									
Owenia acidula							1		
Paraneurachne muelleri							1		
Paspalidium clementii								1	
Paspalidium rarum									
Paspalidium tabulatum (Whim Creek form)									
Pentalepis trichodesmoides						1			
Perotis rara									

Minor Creeklines

Vegetation Type:	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e
Species	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe
Hibiscus aff. *coatesii* (MET 16,542)																											
Hibiscus aff. *coatesii* (site 693)																											
Hibiscus aff. *coatesii* (site 733)																		1									
Hibiscus aff. *coatesii* (site 751)																											
Hibiscus aff. *sturtii* (site 1209)																											
Hibiscus austrinus var. *austrinus*																											
Hibiscus brachychlaenus										1																	
Hibiscus burtonii																											
Hibiscus coatesii																											
Hibiscus gardneri																											
Hibiscus goldsworthii					1																						
Hibiscus leptocladus																											
Hibiscus sturtii																											
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)													1											1			
Hibiscus sturtii var. aff. *grandiflorus*													1						1								
Hibiscus sturtii var. *campylochlamys*													1	1				1	1								
Hibiscus sturtii var. *platychlamys*																											
Hybanthus aurantiacus				1		1							1					1									
Indigofera boviperda subsp. *boviperda*						1							1		1									1			
Indigofera colutea						1			1	1			1														
Indigofera linifolia			1												1												
Indigofera monophylla					1	1	1	1		1			1	1		1	1	1	1		1	1	1				
Indigofera monophylla (Burrup form)																											
Indigofera monophylla (Cape Preston form)																											
Indigofera monophylla (grey leaflet form)								1					1														
Indigofera monophylla (grey/green leaflet form)																		1									
Indigofera monophylla (small calyx form)													1						1								
Indigofera rugosa																1											
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN					1																						
Ipomoea muelleri					1	1							1					1									
Ipomoea polymorpha																											
Iseilema dolichotrichum																											
Iseilema membranaceum																											1
Isotropis atropurpurea																		1									
Jasminum didymum subsp. *lineare*			1		1	1		1		1	1	1	1	1			1	1	1	1		1	1	1	1		
Keraudrenia nephrosperma										1														1			
Keraudrenia velutina subsp. *elliptica*					1																						
Lepidium muelleri-ferdinandii																											
Lepidium pedicellosum																											
Lepidium pholidogynum																											
Lepidium platypetalum																											
Leptopus decaisnei var. *orbicularis*						1									1			1									
Lobelia heterophylla																											
Lysiana casuarinae															1												
Maireana aff. *georgei*																											
Maireana georgei																											
Maireana melanocoma																											
Maireana planifolia																											
Maireana tomentosa subsp. *tomentosa*																											
Maireana trichoptera																											
* *Malvastrum americanum*	1		1	1	1	1		1	1				1		1			1						1			1
Marsdenia australis																											
Marsilea drummondii																											
Melaleuca glomerata																											
Melaleuca linophylla																											
Melhania sp. (Burrup)															1												
Melhania sp. (CH15-39)						1							1														
Melhania sp. Turee Creek (MJ1-35)										1														1			
Mollugo molluginea					1			1	1	1			1					1	1								
Nicotiana benthamiana																											
Nicotiana occidentalis subsp. *occidentalis*								1										1									
Oldenlandia crouchiana									1				1					1	1								
Owenia acidula																											
Paraneurachne muelleri			1								1		1														
Paspalidium clementii						1							1					1	1								
Paspalidium rarum					1													1									
Paspalidium tabulatum (Whim Creek form)																											
Pentalepis trichodesmoides					1	1		1																			
Perotis rara					1																						

Clayey Plain

Vegetation Type:	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Hibiscus aff. *coatesii* (MET 16,542)										
Hibiscus aff. *coatesii* (site 693)										
Hibiscus aff. *coatesii* (site 733)										
Hibiscus aff. *coatesii* (site 751)										
Hibiscus aff. *sturtii* (site 1209)										
Hibiscus austrinus var. *austrinus*										
Hibiscus brachychlaenus										
Hibiscus burtonii										
Hibiscus coatesii										
Hibiscus gardneri										
Hibiscus goldsworthii										
Hibiscus leptocladus										
Hibiscus sturtii										
Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)										
Hibiscus sturtii var. aff. *grandiflorus*										
Hibiscus sturtii var. *campylochlamys*	1									
Hibiscus sturtii var. *platychlamys*										
Hybanthus aurantiacus										
Indigofera boviperda subsp. *boviperda*				1					1	1
Indigofera colutea									1	
Indigofera linifolia									1	
Indigofera monophylla	1				1			1	1	
Indigofera monophylla (Burrup form)									1	
Indigofera monophylla (Cape Preston form)									1	
Indigofera monophylla (grey leaflet form)										
Indigofera monophylla (grey/green leaflet form)										
Indigofera monophylla (small calyx form)										
Indigofera rugosa										
Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) PN										
Ipomoea muelleri									1	
Ipomoea polymorpha									1	
Iseilema dolichotrichum										
Iseilema membranaceum										
Isotropis atropurpurea										
Jasminum didymum subsp. *lineare*						1			1	
Keraudrenia nephrosperma										
Keraudrenia velutina subsp. *elliptica*	1								1	
Lepidium muelleri-ferdinandii										
Lepidium pedicellosum										
Lepidium pholidogynum				1						
Lepidium platypetalum										
Leptopus decaisnei var. *orbicularis*										
Lobelia heterophylla										
Lysiana casuarinae										
Maireana aff. *georgei*										
Maireana georgei										
Maireana melanocoma				1						
Maireana planifolia										
Maireana tomentosa subsp. *tomentosa*										
Maireana trichoptera										
* *Malvastrum americanum*									1	
Marsdenia australis										
Marsilea drummondii										
Melaleuca glomerata										
Melaleuca linophylla										
Melhania sp. (Burrup)										
Melhania sp. (CH15-39)										
Melhania sp. Turee Creek (MJ1-35)										
Mollugo molluginea									1	1
Nicotiana benthamiana										
Nicotiana occidentalis subsp. *occidentalis*										
Oldenlandia crouchiana										
Owenia acidula										
Paraneurachne muelleri									1	
Paspalidium clementii					1			1		
Paspalidium rarum										
Paspalidium tabulatum (Whim Creek form)										
Pentalepis trichodesmoides										1
Perotis rara										

	Stony Hills and Breakaways																				Major Creeklines									Minor Creeklines																											Clayey Plain									
Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Petalostylis labicheoides	1			1		1	1	1									1	1																					1			1					1	1																		
Phyllanthus erwinii								1																					1													1																								
Phyllanthus maderaspatensis				1																						1			1					1					1			1		1			1	1																	1	
Pluchea dentex																										1	1	1	1							1																														
Pluchea ferdinandi-muelleri																																												1																						
Pluchea tetranthera																										1																																								
Polycarpaea corymbosa var. *corymbosa*					1																																	1				1					1																			
Polycarpaea holtzei											1							1																																																
Polycarpaea longiflora											1					1										1								1																										1						
Polycarpaea longiflora (red form)				1																																																														
Polycarpaea longiflora (White form, M13-7)				1							1					1																					1																												1	
Polymeria aff. *ambigua*																																					1																		1											
Polymeria aff. *ambigua* (PAN 26B-20)																																		1													1																			
Polymeria ambigua																																					1										1																			
Polymeria sp. (site 1365)																																										1																								
* *Portulaca oleracea*					1																1			1						1				1	1			1	1			1					1													1	1			1	1	
Pterocaulon serrulatum				1				1																																							1																			
Pterocaulon sphacelatum						1				1						1					1					1			1					1			1					1						1																		
Pterocaulon sphaeranthoides			1		1	1		1										1		1			1			1		1	1				1	1	1	1	1	1				1		1			1	1									1			1					1	
Ptilotus aervoides																														1																														1				1	1	
Ptilotus appendiculatus var. *appendiculatus*																													1	1				1	1		1					1					1									1										
Ptilotus astrolasius var. *astrolasius*	1	1	1	1	1	1	1	1	1		1	1	1				1	1	1	1	1		1	1						1		1		1	1		1	1	1	1		1		1		1	1	1				1					1	1		1	1		1		1	
Ptilotus auriculifolius	1															1		1																			1																												1	
Ptilotus axillaris					1													1					1											1	1			1	1			1					1						1								1				1	
Ptilotus calostachyus var. *calostachyus*	1		1	1		1		1	1			1	1	1			1	1																1	1				1			1				1	1	1				1					1	1						1	1	
Ptilotus clementii						1																																									1																			
Ptilotus exaltatus var. *exaltatus*			1	1	1	1			1								1	1		1		1								1				1	1			1	1								1											1		1					1	
Ptilotus fusiformis var. *fusiformis*				1		1		1			1							1								1		1		1				1	1							1					1	1												1						
Ptilotus gaudichaudii var. *gaudichaudii*																																							1			1																								
Ptilotus gomphrenoides var. *gomphrenoides*					1																													1				1																												
Ptilotus incanus var. *elongatus*																										1																																								
Ptilotus incanus var. *incanus*													1			1		1																																																
Ptilotus macrocephalus																																		1													1																			
Ptilotus obovatus var. *obovatus*			1	1		1		1			1					1								1						1	1	1		1					1					1	1																	1	
Ptilotus polystachyus var. *polystachyus*			1						1																																																									
Ptilotus roei																																							1																			1							1	
Rhagodia eremaea																																																				1					1								1	
Rhodanthe margarethae				1																																																														
Rhynchosia bungarensis																									1	1			1															1																						
Rhynchosia minima var. *australis*																							1	1			1					1	1	1	1		1		1			1		1			1	1							1	1									1	
Rutidosis helichrysoides																													1																																					
Salsola tragus																1																							1																										1	
Salsola tragus subsp. *tragus*																				1													1																												1			1	1	
Sarcostemma viminale subsp. *australe*				1																																																														
Scaevola spinescens (broad form)					1																						1					1	1	1	1		1	1	1			1						1							1										1	
Sclerolaena costata																																																												1						
Sclerolaena cuneata																																																																	
Sclerolaena densiflora			1																																																								1			1	1		
Sclerolaena diacantha																																																																	
Sclerolaena eriacantha			1																																																															
Senna artemisioides aff. subsp. *oligophylla* (thinly sericeous)					1																																	1				1																								
Senna artemisioides aff. subsp. *oligophylla* x *helmsii*																							1																																		1									
Senna artemisioides subsp. *helmsii*				1		1		1											1															1					1		1						1																			
Senna artemisioides subsp. *oligophylla*	1			1	1	1		1				1			1	1	1	1	1	1		1		1			1	1		1		1		1	1	1	1	1	1			1			1	1	1	1	1		1		1		1		1	1		1	1	1	1	1	1	
Senna artemisioides subsp. *oligophylla* x *glutinosa*																1												1														1						1							1											
Senna artemisioides subsp. *oligophylla* x *helmsii*				1		1					1						1	1					1				1			1									1														1			1				1				1		
Senna glutinosa subsp. *glutinosa*	1	1	1	1		1	1	1	1		1		1			1	1	1	1	1	1						1					1	1		1	1			1			1				1	1	1			1	1	1				1	1						1	1	
Senna glutinosa subsp. *glutinosa* x *luerssenii*																		1																	1																															
Senna glutinosa subsp. *luerssenii*									1			1								1																																			1		1						1		1	
Senna glutinosa subsp. *pruinosa*	1		1	1		1	1		1		1		1					1	1	1								1							1				1			1					1	1					1													
Senna glutinosa subsp. x *luerssenii*			1	1		1	1				1						1	1																	1																									1				1		
Senna notabilis			1	1		1	1	1	1	1	1			1		1	1	1								1		1				1			1				1			1				1	1					1								1			1	1	
Senna sp. Port Hedland (SPB 20-09-05B)																								1																		1						1																		
Senna stricta				1		1																																																												
Senna venusta																																																																	
Setaria dielsii																																		1													1																			
* *Setaria verticillata*																										1	1							1	1		1																												1	
Sida aff. *clementii*																																																																	
Sida aff. *echinocarpa* (MET 15,350)	1				1	1					1							1	1													1						1	1			1					1						1								1			1	1	

	Stony Hills and Breakaways																				Major Creeklines									Minor Creeklines																												Clayey Plain									
Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Sida aff. *fibulifera*																																					1					1					1																			
Sida aff. *fibulifera* (B181-5B)																																																																		
Sida aff. *fibulifera* (B64-13B)																					1																																													
Sida aff. *fibulifera* (FMG 125-20)																																			1												1														1			1	1	
Sida aff. *fibulifera* (HD200-6)																											1																1						1																	
Sida aff. *fibulifera* (MET Site 1346)																											1								1												1																			
Sida aff. *fibulifera* 'var. L'																																												1																						
Sida aff. *pilbarensis* (EOB46-01B)	1			1																															1							1					1																			
Sida aff. *spiciforme panicles* (FML46-13)																							1																																											
Sida arsiniata											1												1												1		1		1			1														1				1	1				1	
Sida cardiophylla																																																																		
Sida clementii											1																								1																										1				1	
Sida echinocarpa				1															1																																															
Sida pilbarensis (ferruginous form)			1	1		1					1						1																		1				1			1						1																		
Sida pilbarensis (green form)																																													1	1												1							1	
Sida rohlenae subsp. *rohlenae*																						1	1			1	1							1								1						1					1												1	
Sida sp. Articulation below (A.A. Mitchell PRP 1605)																																		1																																
Sida sp. Pilbara (A.A. Mitchell PRP 1543)														1																																																				
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)																							1												1				1			1	1	1			1									1										
Sida sp. verrucose glands (F.H. Mollemans 2423)																																																								1										
Sida spinosa																																																								1										
Solanum aff. *gabrielae*													1					1																																															1	
Solanum aff. *phlomoides*																																																																		
Solanum diversiflorum			1	1	1	1			1			1						1		1													1	1	1			1	1								1		1									1						1	1	
Solanum ellipticum			1								1																																																							
Solanum horridum				1		1			1				1			1	1	1																1	1							1						1																		
Solanum lasiophyllum				1		1												1	1	1												1					1		1								1													1						
Solanum phlomoides			1																																																															
Solanum sturtianum				1				1		1						1				1								1					1														1																			
* *Sonchus oleraceus*																										1																																								
Sporobolus australasicus			1	1	1																1		1			1			1	1					1		1	1	1					1			1						1							1	1			1	1	
Stemodia grossa								1	1													1	1			1	1	1	1															1																					1	
Stemodia viscosa																										1	1					1																																		
Streptoglossa bubakii				1	1	1												1												1				1			1	1				1					1													1						
Streptoglossa decurrens		1		1		1										1	1				1														1		1		1								1		1											1				1		
Streptoglossa tenuiflora																																																																		
Stylobasium spathulatum	1		1		1	1		1		1						1				1	1		1			1	1	1		1			1	1		1	1	1	1	1				1			1			1														1	1	1
Swainsona canescens																																					1																													
Swainsona formosa																																			1																															
Synaptantha tillaeacea var. *tillaeacea*																																							1																											
Tephrosia aff. *densa* (B17)																																																																	
Tephrosia aff. *supina* (06BP45-006)																																																																	
Tephrosia aff. *supina* (MET 12,357)																																															1																			
Tephrosia clementii																																																																		
Tephrosia rosea var. *glabrior*			1																		1					1		1						1	1	1	1			1				1	1					1															1	
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)																								1		1		1											1	1					1					1				1												
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)																																							1	1																										
Tephrosia spechtii																																																																		
Tephrosia supina (06BP45-006)																																																																		
Tephrosia uniovulata	1		1	1		1	1		1								1	1																					1	1			1			1	1										1	1							1	
Terminalia canescens			1						1						1	1												1																											1											
Themeda triandra			1	1											1												1							1	1		1			1				1			1							1	1											
Tinospora smilacina									1																																																									
Trachymene oleracea subsp. *oleracea*				1				1		1								1								1		1	1					1	1		1					1					1	1																		
Trianthema aff. *triquetra* (M3.35)																																																												1						
Trianthema glossostigma																																																																		
Trianthema oxycalyptra var. *oxycalyptra*																																																												1						
Trianthema pilosa																																			1																		1													
Trianthema triquetra																																			1																													1		
Trianthema turgidifolia																																																																		
Tribulus astrocarpus																																																																		
Tribulus hirsutus																																																																		
Tribulus macrocarpus																																										1																								
Tribulus occidentalis																					1								1																																				1	
Tribulus platypterus									1							1																																																		
Tribulus suberosus			1	1		1	1				1		1					1		1															1							1						1																		
Trichodesma zeylanicum var. *zeylanicum*			1	1	1	1	1	1		1						1	1	1	1		1			1			1	1	1			1		1	1	1	1	1	1			1	1			1	1	1	1						1		1								1	
Triodia epactia	1		1	1	1	1	1					1					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1		1	1	1	1	1				1	1			1	1	1	1	1	1	1	1	1	1	1
Triodia pungens																																									1																									

Stony Hills and Breakaways

Vegetation Type:	S11c	S11d	S11e	S11f	S11g	S11h	S11i	S11j	S11k	S11l	S11m	S12a	S12b	S12c	S13a	S13b	S14a	S14b	S14c	S14d
Species	ElAarAbTw	ElAbAsTw	ElAbTw	ElAcTw	ElAptTw	ElApTw	ElAtAarTw	ElAtTw	ElChAbTw	ElGwApTwERlt	ElTw	AbTe	Tsprr	Tsprr (burnt)	TERcAcTw	TERcTw	AbTeTw	AiAbTwTe	AiERfTwTe	AxAbTwTe
Triodia sp. Robe River			1			1		1	1		1		1	1				1		
Triodia wiseana	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
Tripogon loliiformis																				
Triumfetta aff. *chaetocarpa* (PAN3/4)																				
Triumfetta aff. *chaetocarpa* (Panorama form)								1												
Triumfetta appendiculata																				
Triumfetta appendiculata (Burrup Form)																				
Triumfetta appendiculata (Mardie form)																				
Triumfetta chaetocarpa			1																	
Triumfetta chaetocarpa (Panorama Form)																				
Triumfetta clementii			1	1							1							1		
Triumfetta johnstonii																		1		
Triumfetta maconochieana			1																	
* *Vachellia farnesiana*																				
Velleia connata																				
Vigna lanceolata var. *lanceolata*																				
Wahlenbergia tumidifructa																				
Waltheria indica																				
Waltheria virgata																				
Yakirra australiensis var. *australiensis*																				
Total Species Richness (Count) per Vegetation Type	27	20	68	101	52	71	27	51	36	21	36	12	21	7	7	42	32	70	24	33

Major Creeklines

Vegetation Type:	A1a	A3a	A3b	A3c	A3d	A5c	A5d	A5e	A5f
Species	AtrApyTeCEc	CcChAcolAaTe	ChAaAbAsTe	ChAaAtrTe/g	ChAbAcApyTeTw	EcEvSTg	EvAbGOrOaTeTw	EvApyTe	EvMlMgTe/h
Triodia sp. Robe River									
Triodia wiseana					1	1	1	1	1
Tripogon loliiformis									
Triumfetta aff. *chaetocarpa* (PAN3/4)									
Triumfetta aff. *chaetocarpa* (Panorama form)									
Triumfetta appendiculata									
Triumfetta appendiculata (Burrup Form)						1			
Triumfetta appendiculata (Mardie form)						1			
Triumfetta chaetocarpa									
Triumfetta chaetocarpa (Panorama Form)									
Triumfetta clementii			1						
Triumfetta johnstonii									
Triumfetta maconochieana									
* *Vachellia farnesiana*				1			1		1
Velleia connata									
Vigna lanceolata var. *lanceolata*						1			
Wahlenbergia tumidifructa						1			1
Waltheria indica	1		1	1		1			
Waltheria virgata									
Yakirra australiensis var. *australiensis*									
Total Species Richness (Count) per Vegetation Type	45	22	45	42	19	75	53	52	53

Minor Creeklines

Vegetation Type:	I1c	I1e	I1f	I2a	I2c	I2d	I2e	I2f	I3a	I3c	I3f	I5a	I5d	I5e	I5f	I5g	I5h	I5j	I5k	I5l	I5m	I5n	I5o	I5p	I6c	I6d	I6e
Species	ChAaAbTe	ElAbAaTe	GOrAaAbTeTw	ApyAbTe	ApyAcGOrTe	ChApyAtrTe/h	ChApyTe	EvChApyGOrTe/g	AcAbERlSTYsTe	ChAaTe	ElChAtTeTw	CcAadAcAaAbTp	ChAaAbTeTw	ChAatkAbTw	ChAcolAbGOrTe	ChAiAaTe	ChAtAatkAaTw	ChAtAcAaTe	ChAtGOrTwTe	ChGOrAbTw	ChSTYsERlm	ElAaAbTwTsprr	ElChAaAatkTeTw	ElChAbTwTe	EcGOrTEspbCEc	ElChAtTw	EvChAatkAtAwAbGOaTe
Triodia sp. Robe River						1							1									1					
Triodia wiseana		1	1		1	1				1	1		1	1		1	1	1	1	1	1	1	1	1	1	1	
Tripogon loliiformis																											
Triumfetta aff. *chaetocarpa* (PAN3/4)																											1
Triumfetta aff. *chaetocarpa* (Panorama form)																		1									
Triumfetta appendiculata																											
Triumfetta appendiculata (Burrup Form)																											
Triumfetta appendiculata (Mardie form)																											
Triumfetta chaetocarpa																											
Triumfetta chaetocarpa (Panorama Form)			1																								
Triumfetta clementii					1					1			1		1			1									
Triumfetta johnstonii																											
Triumfetta maconochieana																											
* *Vachellia farnesiana*			1		1	1		1					1		1			1							1		
Velleia connata																											
Vigna lanceolata var. *lanceolata*						1							1														
Wahlenbergia tumidifructa																											
Waltheria indica			1			1		1		1			1		1			1	1					1	1		1
Waltheria virgata							1																				
Yakirra australiensis var. *australiensis*																											
Total Species Richness (Count) per Vegetation Type	25	7	35	21	87	89	25	69	51	89	21	13	106	16	46	20	26	115	64	13	11	14	20	37	21	23	31

Clayey Plain

Vegetation Type:	C1a	C2b	C2c	C3a	C3b	C4a	C6a	C6c	C7a	C7b
Species	AatkAbTeTw	AiAaPTaTe	AiAaTe	AsTe	ChAsTe	AsAbTe	AsAxTe	ChAsAaAxTe	AiTe	ApyGpTe
Triodia sp. Robe River										
Triodia wiseana	1						1		1	
Tripogon loliiformis										
Triumfetta aff. *chaetocarpa* (PAN3/4)										
Triumfetta aff. *chaetocarpa* (Panorama form)										
Triumfetta appendiculata										
Triumfetta appendiculata (Burrup Form)										
Triumfetta appendiculata (Mardie form)										
Triumfetta chaetocarpa										
Triumfetta chaetocarpa (Panorama Form)										
Triumfetta clementii	1				1					
Triumfetta johnstonii										
Triumfetta maconochieana										
* *Vachellia farnesiana*								1		
Velleia connata										
Vigna lanceolata var. *lanceolata*										
Wahlenbergia tumidifructa										
Waltheria indica									1	
Waltheria virgata										
Yakirra australiensis var. *australiensis*										
Total Species Richness (Count) per Vegetation Type	37	23	5	41	30	11	18	46	99	21

Appendix 8 Frequency In Which Species Were Recorded Within Survey Sites (Quadrats, Relevés, Vegetation Descriptions, Opportunistic Observations) for each Project Component in the Study Area.

Refer to Appendix 2 and Section 4.2 in the Report for locations of and proposed impacts to Priority species and Species of Interest

				Number of Survey Sites that Species were Recorded within each Project Component in the study area																			
Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
			Unknown sp. (inadequate material)		1			1	3	3	1	2								3			14
Adiantaceae			*Cheilanthes austrotenuifolia*	1	1																		2
Adiantaceae			*Cheilanthes brownii*		1			1				2											4
Adiantaceae			*Cheilanthes lasiophylla*						1														1
Adiantaceae			*Cheilanthes sieberi* spp. *sieberi*								1	1											2
Adiantaceae			*Cheilanthes* sp. (inadequate material)									1											1
Marsileaceae			*Marsilea drummondii*																	1			1
Poaceae			*Amphipogon sericeus*	1																			1
Poaceae			*Amphipogon sericeus* (Newman form BR2-21)	2		1					1												4
Poaceae			*Aristida burbidgeae*								6												6
Poaceae			*Aristida contorta*		1						2									6			9
Poaceae			*Aristida holathera* var. *holathera*							1										1			2
Poaceae			*Aristida holathera* var. *latifolia*	1		1			1	2										1			6
Poaceae			*Aristida ingrata*				1																1
Poaceae			*Aristida* sp. (inadequate material)								1									5			6
Poaceae			*Brachyachne prostrata*				2													1			3
Poaceae			*Chrysopogon fallax*							2					2				1	6			11
Poaceae			*Cymbopogon ambiguus*		4		14	5	6	1	13	4	1	2	1	2			3	15		1	72
Poaceae			*Cymbopogon obtectus*				1			1	1									1			4
Poaceae			*Cymbopogon procerus*																	1			1
Poaceae			*Cymbopogon* sp. (inadequate material)																1	1			2
Poaceae			*Dactyloctenium radulans*																1	3			4
Poaceae			*Enneapogon caerulescens* var. *caerulescens*		6					1	2									7			16
Poaceae			*Enneapogon intermedius*				1																1
Poaceae			*Enneapogon lindleyanus*				1		1											1			3
Poaceae			*Enneapogon polyphyllus*		1																		1
Poaceae			*Enneapogon* sp. (inadequate material)																	1			1
Poaceae			*Eragrostis* aff. *eriopoda* (WAS site 963)							2			1							6			9
Poaceae			*Eragrostis cumingii*		3					3									2	5			13
Poaceae			*Eragrostis dielsii*																1				1
Poaceae			*Eragrostis laniflora*																	1			1

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Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Poaceae			*Eragrostis* sp. (inadequate material)							1										2			3
Poaceae			*Eragrostis tenellula*											1									1
Poaceae			*Eriachne aristidea*							1										1			2
Poaceae			*Eriachne helmsii*							1					1					1			3
Poaceae			*Eriachne mucronata*	1	1		3				9	2	2		1					5		3	27
Poaceae			*Eriachne mucronata* (typical form)	2	4	1	1	4	5	1	6	3		2		4			1	7			41
Poaceae			*Eriachne obtusa*							1													1
Poaceae			*Eriachne pulchella* spp. *dominii*			1	1							3		2				1			8
Poaceae			*Eriachne pulchella* spp. *pulchella*	3	2	1	1	1	1	1	5	1		1		1				3			21
Poaceae			*Eriachne* sp. (inadequate material)				1	2												1			4
Poaceae			*Eriachne tenuiculmis*								2									3			5
Poaceae			*Eulalia aurea*											1									1
Poaceae			*Iseilema dolichotrichum*	1																1			2
Poaceae			*Iseilema membranaceum*				1																1
Poaceae			*Paraneurachne muelleri*		2		4		4	1	4				1					3		1	20
Poaceae			*Paspalidium clementii*	3	5			8	10	2	1	1		1						6			37
Poaceae			*Paspalidium rarum*		1															1			2
Poaceae			*Paspalidium tabulatum* (Whim Creek form)								2												2
Poaceae			*Perotis rara*																	1			1
Poaceae			*Poaceae* sp. (inadequate material)					1	1											1			3
Poaceae			*Setaria dielsii*		2				1									1					4
Poaceae			*Setaria* sp. (inadequate material)		1																		1
Poaceae			*Sporobolus australasicus*		6				2	4					2			3	3	17			37
Poaceae			*Themeda triandra*		2		6	2	1		2	2	1					2	1	6			25
Poaceae			*Triodia epactia*	1	22		33		17	20	17	1	7	2	5		3	8	13	171	4		324
Poaceae			*Triodia pungens*		1						1									1			3
Poaceae			*Triodia* sp. (inadequate material)						2	1	1	1								1			6
Poaceae			*Triodia* sp. *Robe River*	20		4	10	11	28	2	27	30	5	21	1	9			1	8	1	9	187
Poaceae			*Triodia wiseana*	27	78	5	100	13	59	17	83	30	10	21	2	9	4	9	3	170	3	8	651
Poaceae			*Tripogon loliiformis*									1											1
Poaceae			*Yakirra australiensis* var. *australiensis*																	2			2

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Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Poaceae	*		*Cenchrus ciliaris*		6		1			2			1						1	20			31
Poaceae	*		*Cenchrus setiger*						4											3			7
Poaceae	*		*Setaria verticillata*				1		1											4			6
Cyperaceae			*Bulbostylis barbata*				1		5	3			1	1					4	15			30
Cyperaceae			*Cyperaceae* sp. (inadequate material)				1								1					1			3
Cyperaceae			*Cyperus cunninghamii* spp. *cunninghamii*	1					1		2	1											5
Cyperaceae			*Cyperus difformis*																	1			1
Cyperaceae			*Cyperus hesperius*						3														3
Cyperaceae			*Cyperus iria*						1														1
Cyperaceae			*Cyperus vaginatus*				2		1										1	8			12
Cyperaceae			*Fimbristylis dichotoma*									2								5			7
Moraceae			*Ficus aculeata* var. *indecora*						1											1			2
Moraceae			*Ficus brachypoda*	1				9	4							1				3			18
Moraceae			*Ficus platypoda*					4	1														5
Moraceae			*Ficus* sp. (inadequate material)						1		1												2
Proteaceae			*Grevillea berryana*						1			7	1	1									10
Proteaceae			*Grevillea pyramidalis* spp. *leucadendron*	1				1	5	3	1				1				1	44			57
Proteaceae			*Grevillea wickhamii*	1	2	1	14		3	1	16	1	1	2		2			3	19		2	68
Proteaceae			*Grevillea wickhamii* spp. *aprica*			1																	1
Proteaceae			*Grevillea wickhamii* spp. *hispidula*		11		3		6		10	3	2	5					3	20			63
Proteaceae			*Grevillea wickhamii* spp. *macrodonta*			2			3		1			7	2					1			16
Proteaceae			*Hakea lorea* spp. *lorea*	1	1	1	11	1	8	13	6	4	5	1	1	1	2		4	70		1	131
Loranthaceae			*Amyema preissii*						3														3
Loranthaceae			*Amyema sanguinea* var. *sanguinea*						1											1			2
Loranthaceae			*Diplatia grandibractea*										1										1
Loranthaceae			*Lysiana casuarinae*																2				2
Chenopodiaceae			*Dysphania kalpari*		1															2	1		4
Chenopodiaceae			*Dysphania melanocarpa* forma *leucocarpa*		3						1									3			7
Chenopodiaceae			*Dysphania rhadinostachya* spp. *rhadinostachya*	4	12		4	4	16	8	10	3	3	8	3			5	2	14	1		97
Chenopodiaceae			*Enchylaena tomentosa* var. *tomentosa*				2		1		1							1		1			6
Chenopodiaceae			*Maireana* aff. *georgei*				1																1

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Chenopodiaceae			*Maireana georgei*		4		8				1									5	2	1	21
Chenopodiaceae			*Maireana melanocoma*		1		1											5		1			8
Chenopodiaceae			*Maireana planifolia*				1			1	2									2			6
Chenopodiaceae			*Maireana* sp. (inadequate material)																	1	1		2
Chenopodiaceae			*Maireana tomentosa* spp. *tomentosa*				3											1					4
Chenopodiaceae			*Maireana trichoptera*																	1			1
Chenopodiaceae			*Rhagodia eremaea*				1													2			3
Chenopodiaceae			*Salsola tragus*				2								2					6			10
Chenopodiaceae			*Salsola tragus* spp. *tragus*				1		1	1	1				1			2		10			17
Chenopodiaceae			*Sclerolaena costata*																1	1			2
Chenopodiaceae			*Sclerolaena cuneata*				1																1
Chenopodiaceae			*Sclerolaena densiflora*				3								1		1	2		9			16
Chenopodiaceae			*Sclerolaena diacantha*																	1			1
Chenopodiaceae			*Sclerolaena eriacantha*				6										1			2			9
Chenopodiaceae			*Sclerolaena* sp. (inadequate material)				1			2										1			4
Amaranthaceae			*Achyranthes aspera*						1														1
Amaranthaceae			*Alternanthera nana*		5		2		3	2	1		1	1	2				2	13			32
Amaranthaceae			*Alternanthera* sp. (inadequate material)					1							1								2
Amaranthaceae			*Amaranthus* aff. *pallidiflorus* (D89)																	1			1
Amaranthaceae			*Amaranthus cuspidifolius*	1	6		1	1	7	3	1		1		2			3	1	10			37
Amaranthaceae			*Amaranthus interruptus*									1											1
Amaranthaceae			*Amaranthus* sp. (inadequate material)																	1			1
Amaranthaceae			*Amaranthus undulatus*					1				1		1									3
Amaranthaceae			*Gomphrena affinis* spp. *pilbarensis*		2															1			3
Amaranthaceae			*Gomphrena canescens*												1								1
Amaranthaceae			*Gomphrena cunninghamii*	10	4	2	3	4	7		5	2		1	1			1	3	6			49
Amaranthaceae			*Gomphrena kanisii*				1																1
Amaranthaceae			*Gomphrena* sp. (inadequate material)						1														1
Amaranthaceae			*Ptilotus aervoides*		1							1						2		5			9
Amaranthaceae			*Ptilotus appendiculatus* var. *appendiculatus*		2		1			2								2		5			12
Amaranthaceae			*Ptilotus astrolasius* var. *astrolasius*	10	27	4	27	7	24	14	22	4	6	10	5	3	3	4	10	78	2	7	267

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Amaranthaceae			*Ptilotus auriculifolius*	1	2				5				3	2	2					4			19
Amaranthaceae			*Ptilotus axillaris*	1	2	1	1		16	5	1	1		7	3				1	9			48
Amaranthaceae			*Ptilotus calostachyus* var. *calostachyus*	8	25	3	16	6	10	5	20	6	2	15	4	3		2	1	30	2	6	164
Amaranthaceae			*Ptilotus clementii*		6	1	2		4		2			2	1								18
Amaranthaceae			*Ptilotus exaltatus* var. *exaltatus*	3	12	1	5	1	8	2	11	2	1	5	1			4	1	19	2	2	80
Amaranthaceae			*Ptilotus fusiformis* var. *fusiformis*	2	6	1	1	1	11	2	3	1		8				3	1	4			44
Amaranthaceae			*Ptilotus gaudichaudii* var. *gaudichaudii*		2					1										2			5
Amaranthaceae			*Ptilotus gomphrenoides* var. *gomphrenoides*				1													1			2
Amaranthaceae			*Ptilotus incanus* var. *elongatus*						2														2
Amaranthaceae			*Ptilotus incanus* var. *incanus*	2					5					2		3			1	1			14
Amaranthaceae			*Ptilotus macrocephalus*		1															1			2
Amaranthaceae			*Ptilotus obovatus* var. *obovatus*	2	11		4	1	3	1	12	1	3	1				3		8			50
Amaranthaceae			*Ptilotus polystachyus* var. *polystachyus*	1			2	1	1						1								6
Amaranthaceae			*Ptilotus roei*				1			2	1		3		2					7			16
Amaranthaceae			*Ptilotus* sp. (inadequate material)	1		1			5	3	2									1			13
Nyctaginaceae			*Boerhavia coccinea*	1			3	1	2	5										8			20
Nyctaginaceae			*Boerhavia gardneri*				6			4										13			23
Nyctaginaceae			*Boerhavia* sp. (inadequate material)												1								1
Nyctaginaceae			*Commicarpus australis*				1		1														2
Gyrostemonaceae			*Codonocarpus cotinifolius*								2			2									4
Aizoaceae			*Trianthema* aff. *triquetra* (M3.35)							1					1				1	1			4
Aizoaceae			*Trianthema glossostigma*								2						1			2	1		6
Aizoaceae			*Trianthema oxycalyptra* var. *oxycalyptra*				2								1					1			4
Aizoaceae			*Trianthema pilosa*	1						2										3			6
Aizoaceae			*Trianthema triquetra*							2										2			4
Aizoaceae			*Trianthema turgidifolia*				1																1
Molluginaceae			*Mollugo molluginea*		3		1	1	1	3			2	1				1	2	17	1		33
Portulacaceae			*Calandrinia ptychosperma*							1										2			3
Portulacaceae			*Portulaca* sp. (inadequate material)	1						2													3
Portulacaceae	*		*Portulaca oleracea*		2		1	1	2	4					2			2		15	1		30
Caryophyllaceae			*Polycarpaea corymbosa* var. *corymbosa*		2					1					1				1	3			8

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Caryophyllaceae			*Polycarpaea holtzei*						7					1					1	2	1		12
Caryophyllaceae			*Polycarpaea longiflora*				5		5		2	3	1					2	1	5		1	25
Caryophyllaceae			*Polycarpaea longiflora* (red form)		2																	1	3
Caryophyllaceae			*Polycarpaea longiflora* (White form, M13-7)		1				5			3	1							4			14
Menispermaceae			*Tinospora smilacina*				1	1	1		1												4
Lauraceae			*Cassytha capillaris*	1			4		1		1			3						1			11
Papaveraceae	*		*Argemone ochroleuca* spp. *ochroleuca*						1											6			7
Capparaceae			*Capparis spinosa* var. *nummularia*						3		1									4			8
Capparaceae			*Capparis umbonata*				1																1
Capparaceae			*Cleome viscosa*	4	9	1	3		18	16	1	1	1	5	3			5	7	38			112
Brassicaceae			*Lepidium muelleri-ferdinandii*								1												1
Brassicaceae			*Lepidium pedicellosum*								1												1
Brassicaceae			*Lepidium pholidogynum*														1			1			2
Brassicaceae			*Lepidium platypetalum*							1													1
Surianaceae			*Stylobasium spathulatum*		5		6		2		10	4	2				1	1	4	44	2		81
Mimosaceae			*Acacia adsurgens*								2									1			3
Mimosaceae			*Acacia* aff. *aneura* (narrow fine veined; site 1259)						2		1	3											6
Mimosaceae			*Acacia ampliceps*																	1			1
Mimosaceae			*Acacia ancistrocarpa*	6	53	3	2	2	18	16	32	4	8	13	4	6	5	8	6	151		3	340
Mimosaceae			*Acacia aneura* (narrow, fine veined, site 1259)				1		1		9	6		4	1			2		3	2		29
Mimosaceae			*Acacia aneura* var. *aneura*									1											1
Mimosaceae			*Acacia aneura* var. *intermedia*				2													2			4
Mimosaceae			*Acacia aneura* var. *pilbarana*						1											1	1		3
Mimosaceae			*Acacia arida*		45						10		1					2		12			70
Mimosaceae			*Acacia atkinsiana*	2	1	4	31	3	2	2	16			13		4	4			54	2	3	141
Mimosaceae			*Acacia bivenosa*	20	59	4	81	8	41	21	65	7	8	19	1	9	6	13	10	163	7	7	549
Mimosaceae			*Acacia citrinoviridis*		21		1		7		14	25	1	4				1	3	24	1	1	103
Mimosaceae			*Acacia colei* var. *colei*				1		3			1				1			2	6			14
Mimosaceae			*Acacia elachantha*																1				1
Mimosaceae			*Acacia elachantha* (silvery hairy variant)																	1			1
Mimosaceae			*Acacia inaequilatera*	18	10	3	44	6	58	21	22	18	9	10	3	2	5	4	12	145		7	397

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Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Mimosaceae			*Acacia kempeana* (1)		1																		1
Mimosaceae			*Acacia maitlandii*	1	1		1		5		10	2	6				1		1	20			48
Mimosaceae			*Acacia monticola*								1												1
Mimosaceae			*Acacia orthocarpa*						1							1							2
Mimosaceae			*Acacia pruinocarpa*	8	7	1	2	5	7		52	21	1	5		10		1		6	1	2	129
Mimosaceae			*Acacia ptychophylla*	2					3			4								7			16
Mimosaceae			*Acacia ptychophylla* x *ancistrocarpa*	1																			1
Mimosaceae			*Acacia pyrifolia* var. *morrisonii*		5		1		1		1												8
Mimosaceae			*Acacia pyrifolia* var. *pyrifolia*	1	4		1		4	5	1		1	2	1			1	2	53			76
Mimosaceae			*Acacia sclerosperma* spp. *sclerosperma*	1						1										8			10
Mimosaceae			*Acacia sericophylla*																	1			1
Mimosaceae			*Acacia* sp. (inadequate material)																	2			2
Mimosaceae			*Acacia stowardii*				1																1
Mimosaceae			*Acacia synchronicia*	10	18	2	33	4	20	12	20		5	3	1	2	5	6	5	91	4	6	247
Mimosaceae			*Acacia tenuissima*								2												2
Mimosaceae			*Acacia trachycarpa*						1	5									1	15			22
Mimosaceae			*Acacia trachycarpa* x *tumida* var. *pilbarensis*						1						2								3
Mimosaceae			*Acacia tumida* var. *pilbarensis*		37		19		14	3	15	2	1	7	1				5	28			132
Mimosaceae			*Acacia victoriae*	1							1	1	1	3	1								8
Mimosaceae			*Acacia wanyu*				12		1						1			1		10			25
Mimosaceae			*Acacia xiphophylla*		7		20		2	3	2			1			2	1	1	18	5		62
Mimosaceae	*		*Vachellia farnesiana*		2		2		1	1				1					1	12			20
Caesalpiniaceae			*Petalostylis labicheoides*	6	36	1		6	22	2	19					4		3			1		100
Caesalpiniaceae			*Senna artemisioides* aff. spp. *oligophylla* (thinly sericeous)	1						1										2			4
Caesalpiniaceae			*Senna artemisioides* aff. spp. *oligophylla* x *helmsii*				2		1										1				4
Caesalpiniaceae			*Senna artemisioides* spp. *helmsii*		3		2		1		5	1								11			23
Caesalpiniaceae			*Senna artemisioides* spp. *oligophylla*	1	23		13		10	18	11	5	4	1	1		1	4	2	65	2	2	163
Caesalpiniaceae			*Senna artemisioides* spp. *oligophylla* x *glutinosa*				1		1	1										5			8
Caesalpiniaceae			*Senna artemisioides* spp. *oligophylla* x *helmsii*		5		4		6	2	7	2	1	2	2		1	2	2	7	1		44
Caesalpiniaceae			*Senna glutinosa*					1															1
Caesalpiniaceae			*Senna glutinosa* spp. *glutinosa*	9	26		21	7	20	6	25	8	3	15	1	3	5	4	2	60	3	7	225

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Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Caesalpiniaceae			*Senna glutinosa* spp. *glutinosa* x *luerssenii*	1		2			1	3													7
Caesalpiniaceae			*Senna glutinosa* spp. *luerssenii*				4		1		1		1	3	1		1		1	4	1	4	22
Caesalpiniaceae			*Senna glutinosa* spp. *pruinosa*	2	19	2	14	1	11	7	9	5	5	11	1	4	3	3	3	34		7	141
Caesalpiniaceae			*Senna glutinosa* spp. x *luerssenii*	1	8	2	5	1	10	4	8	5	2	2			1	4	2	6	1	2	64
Caesalpiniaceae			*Senna notabilis*	3	10	1	9		21	8	9	1	1	14	3	1	1		3	18			103
Caesalpiniaceae			*Senna* sp. (inadequate material)	1	1							1											3
Caesalpiniaceae			*Senna* sp. Port Hedland (SPB 20-09-05B)						1	1										3			5
Caesalpiniaceae			*Senna stricta*		2		1				1												4
Caesalpiniaceae			*Senna venusta*					1	1											2			4
Papilionaceae			*Alysicarpus muelleri*		2															1			3
Papilionaceae			*Crotalaria medicaginea* (Burrup form; B65-11)						1	1			1							1			4
Papilionaceae			*Crotalaria medicaginea* var. *neglecta*		6						2			1						2			11
Papilionaceae			*Cullen lachnostachys*				1												1	9			11
Papilionaceae			*Cullen leucochaites*				2													2			4
Papilionaceae			*Cullen martinii*		3					1					2		1			1			8
Papilionaceae			*Cullen pogonocarpum*		1					1								1		1			4
Papilionaceae			*Erythrina vespertilio*																	1			1
Papilionaceae			*Glycine canescens*		1																		1
Papilionaceae			*Indigofera boviperda* spp. *boviperda*						1	11			1		2				7	12			34
Papilionaceae			*Indigofera colutea*						1	2					1					7			11
Papilionaceae			*Indigofera linifolia*				2												1	1			4
Papilionaceae			*Indigofera monophylla*		10		15		2	1	4	4	3	4			1	1	2	57	2		106
Papilionaceae			*Indigofera monophylla* (small calyx form)																				0
Papilionaceae			*Indigofera rugosa*																				0
Papilionaceae			*Indigofera* sp. (inadequate material)																				0
Papilionaceae		P3	*Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301) PN		2		2				5	2								2			13
Papilionaceae			*Isotropis atropurpurea*		2																		2
Papilionaceae		P3	*Rhynchosia bungarensis*						1										1	2			4
Papilionaceae			*Rhynchosia minima* var. *australis*		3		10		2	7	1	1		1	2		1		2	19			49
Papilionaceae			*Swainsona canescens*							1			1										2
Papilionaceae			*Swainsona formosa*				1		1										1	2			5

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Papilionaceae			*Tephrosia* aff. *densa* (B17)						2														2
Papilionaceae			*Tephrosia* aff. *supina* (06BP45-006)							1										1			2
Papilionaceae			*Tephrosia* aff. *supina* (MET 12,357)		1																		1
Papilionaceae			*Tephrosia clementii*						1					1									2
Papilionaceae			*Tephrosia rosea* var. *glabrior*				1		4	1		3	1		2		1		1	21			35
Papilionaceae			*Tephrosia* sp. (inadequate material)											1						2			3
Papilionaceae			*Tephrosia* sp. B Kimberley Flora (C.A. Gardner 7300)				2		1											9			12
Papilionaceae			*Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601)			1	2		1						1				2	1			8
Papilionaceae			*Tephrosia spechtii*						2			3	1										6
Papilionaceae			*Tephrosia supina* (06BP45-006)																	1			1
Papilionaceae			*Tephrosia uniovulata*		36	2	21		13	1	11	2		13	6			1	2	19		1	128
Papilionaceae			*Vigna lanceolata* var. *lanceolata*						1	1										1			3
Zygophyllaceae			*Tribulus astrocarpus*							2													2
Zygophyllaceae			*Tribulus hirsutus*						1					1									2
Zygophyllaceae			*Tribulus macrocarpus*							3					2								5
Zygophyllaceae			*Tribulus occidentalis*	1											1					4			6
Zygophyllaceae			*Tribulus platypterus*	1			1		2			1								1			6
Zygophyllaceae			*Tribulus* sp. (inadequate material)	1			1													1			3
Zygophyllaceae			*Tribulus suberosus*	3	12		1	1	8	2	14		1			4		1		10	1		58
Meliaceae		P3	*Owenia acidula*				11																11
Euphorbiaceae			*Adriana urticoides* var. *urticoides*																	1			1
Euphorbiaceae			*Euphorbia australis*		11		2		9	2	2		2	3	4			1	3	15			54
Euphorbiaceae			*Euphorbia biconvexa*		5		1				3	1								8			18
Euphorbiaceae			*Euphorbia boophthona*		10		1			3	4		2	1	3				1	3			28
Euphorbiaceae			*Euphorbia boophthona* (Large seed form)				1		4	1				1			1		1	5			14
Euphorbiaceae			*Euphorbia coghlanii*				1		1	3			1	1					2	6			15
Euphorbiaceae			*Euphorbia schultzii*											1									1
Euphorbiaceae			*Euphorbia* sp. (B170-4)	1						4										1			6
Euphorbiaceae			*Euphorbia* sp. (BPBS10-50)						1										1				2
Euphorbiaceae			*Euphorbia* sp. (inadequate material)				2		1		2									2			7
Euphorbiaceae			*Euphorbia* sp. (M80-1)	1																			1

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Euphorbiaceae			*Euphorbia* sp. (site 1089)												1								1
Euphorbiaceae			*Euphorbia tannensis*							1					1					1			3
Euphorbiaceae			*Euphorbia tannensis* spp. *eremophila* (Hamersley form)						3	2										3			8
Euphorbiaceae			*Euphorbia wheeleri*					1	3			1								4			9
Euphorbiaceae			*Flueggea virosa* spp. *melanthesoides*				2		3		1												6
Euphorbiaceae			*Leptopus decaisnei* var. *orbicularis*		6				3	1	2								2	4			18
Euphorbiaceae			*Phyllanthus erwinii*						1	3	1									1			6
Euphorbiaceae			*Phyllanthus maderaspatensis*		1				2	2	1			1	1				2	6			16
Sapindaceae			*Alectryon oleifolius* spp. *oleifolius*					3	1														4
Sapindaceae			*Dodonaea coriacea*	5	4	2	1		2	3	4			4		1		1		4	1	5	37
Sapindaceae			*Dodonaea pachyneura*								3	4											7
Sapindaceae			*Dodonaea petiolaris*								2	2											4
Tiliaceae			*Corchorus* aff. *parviflorus*	3		2				8	1			1									15
Tiliaceae			*Corchorus* aff. *parviflorus* (JW011-11)	2	7		1		9	1	6	1		3					2	6		1	39
Tiliaceae			*Corchorus* aff. *walcotti* (K.J. Atkins 570)								1												1
Tiliaceae			*Corchorus crozophorifolius*						1		4	1								4		1	11
Tiliaceae			*Corchorus incanus* spp. *incanus*		2		2				4	1				1				8			18
Tiliaceae			*Corchorus laniflorus*	1	5		26		4		3	3	3		1	3	3		4	21		1	78
Tiliaceae			*Corchorus lasiocarpus* spp. *parvus*			1	2							13	3	1	1			3		2	26
Tiliaceae			*Corchorus parviflorus*		2	1					12									17			32
Tiliaceae			*Corchorus sidoides* spp. aff. *vermicularis* (GLD NIM17-16)						1														1
Tiliaceae			*Corchorus sidoides* spp. *sidoides*	5	6	3	2	1	24	8	2	5	3	6	1				1	22		1	90
Tiliaceae			*Corchorus* sp. (inadequate material)	2	7				1		2				3					12			27
Tiliaceae			*Triumfetta* aff. *chaetocarpa* (denser indumentum)					2	1			1											4
Tiliaceae			*Triumfetta* aff. *chaetocarpa* (PAN3/4)				2				2	1		1	1								7
Tiliaceae			*Triumfetta* aff. *chaetocarpa* (Panorama form)		3				1		1			1									6
Tiliaceae			*Triumfetta appendiculata*							1			1										2
Tiliaceae			*Triumfetta appendiculata* (Burrup Form)																	1			1
Tiliaceae			*Triumfetta appendiculata* (Mardie form)																	2			2
Tiliaceae			*Triumfetta chaetocarpa*				1													1			2
Tiliaceae			*Triumfetta chaetocarpa* (Panorama Form)				1																1

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Tiliaceae			*Triumfetta clementii*		4		5		13	2	1	1	1	1	1				5	10			44
Tiliaceae			*Triumfetta johnstonii*						3										1				4
Tiliaceae			*Triumfetta maconochieana*		1				1					1	1								4
Tiliaceae			*Triumfetta* sp. (inadequate material)									1											1
Malvaceae			*Abutilon* aff. *dioicum* (HD72-14)					1			1												2
Malvaceae			*Abutilon* aff. *lepidum* (1) (MET 15 352)		1						2	1											4
Malvaceae			*Abutilon amplum*																	1			1
Malvaceae			*Abutilon cunninghamii*		1																		1
Malvaceae			*Abutilon dioicum*		1			2	3	1	7	2								3			19
Malvaceae			*Abutilon lepidum*						1														1
Malvaceae			*Abutilon otocarpum*				2													2			4
Malvaceae			*Abutilon* sp. (inadequate material)		1		1	2	1		2								2				9
Malvaceae			*Abutilon trudgenii*						7	3				2	1			1	2	4			20
Malvaceae			*Gossypium australe* (Burrup Peninsula form)	7	7	1	13	3	24	18	7	3	9	9	6	1	3	2	9	91		2	215
Malvaceae			*Gossypium australe* (Whim Creek form)		1	1					1												3
Malvaceae			*Gossypium robinsonii*	3	13	1	16		5	3	9	2	1	1		1	1	1	3	38		1	99
Malvaceae			*Hibiscus* aff. *coatesii* (MET 15 305)	1	2																		3
Malvaceae			*Hibiscus* aff. *coatesii* (MET 16,542)				1					2											3
Malvaceae			*Hibiscus* aff. *coatesii* (site 693)	1					2														3
Malvaceae			*Hibiscus* aff. *coatesii* (site 733)		2				3		1												6
Malvaceae			*Hibiscus* aff. *coatesii* (site 751)										2	1		1							4
Malvaceae			*Hibiscus* aff. *sturtii* (site 1209)						1											1			2
Malvaceae			*Hibiscus austrinus* var. *austrinus*						1														1
Malvaceae			*Hibiscus brachychlaenus*		2				1											3			6
Malvaceae			*Hibiscus burtonii*		1	1			1														3
Malvaceae			*Hibiscus coatesii*															1					1
Malvaceae			*Hibiscus gardneri*									2											2
Malvaceae			*Hibiscus goldsworthii*					1	1		1			1						1			5
Malvaceae			*Hibiscus leptocladus*						9					1	1					2			13
Malvaceae			*Hibiscus* sp. (inadequate material)	3	3						1	1											8
Malvaceae			*Hibiscus sturtii*							1				1									2

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Malvaceae			*Hibiscus sturtii* var. aff. *campylochlamys* (MET 15,957)		1				2	3													6
Malvaceae			*Hibiscus sturtii* var. aff. *grandiflorus*						3	3	1	2		3	2		1			1			16
Malvaceae			*Hibiscus sturtii* var. *campylochlamys*	1	9		5	1	9	2		2	3	5	1		1					1	40
Malvaceae			*Hibiscus sturtii* var. *grandiflorus*							1													1
Malvaceae			*Hibiscus sturtii* var. *platychlamys*		2				1														3
Malvaceae			*Sida* aff. *clementii*							1													1
Malvaceae			*Sida* aff. *echinocarpa* (MET 15,350)	2	6	1	3	1	13	8	1	1	1	1	3		1		2	21			65
Malvaceae			*Sida* aff. *fibulifera*		1					1					2					2			6
Malvaceae			*Sida* aff. *fibulifera* (B181-5B)							1													1
Malvaceae			*Sida* aff. *fibulifera* (B64-13B)							1										1			2
Malvaceae			*Sida* aff. *fibulifera* (FMG 125-20)		4												1			7			12
Malvaceae			*Sida* aff. *fibulifera* (HD200-6)				3							1									4
Malvaceae			*Sida* aff. *fibulifera* (MET Site 1346)		1		1													1			3
Malvaceae			*Sida* aff. *fibulifera* 'var. L'		1									1					1				3
Malvaceae			*Sida* aff. *pilbarensis* (EOB46-01B)	7	8	3				2		1		8								1	30
Malvaceae			*Sida* aff. *spiciforme panicles* (FML46-13)																1				1
Malvaceae			*Sida arsiniata*	2	1		2		4	6				4	3		1		3	13			39
Malvaceae			*Sida cardiophylla*	1	1									3									5
Malvaceae			*Sida clementii*	1					1	2		1			1				1	3			10
Malvaceae			*Sida echinocarpa*		5		1		1			1								1			9
Malvaceae			*Sida pilbarensis*						3														3
Malvaceae			*Sida pilbarensis* (ferruginous form)	7	5	4	2	1	6	3	13	2		7						5	1	4	60
Malvaceae			*Sida pilbarensis* (green form)																	11			11
Malvaceae			*Sida rohlenae* spp. *rohlenae*	1			1		2	2		2			1				1	2			12
Malvaceae			*Sida* sp. (inadequate material)		5		4	5	1	2			1		2					7			27
Malvaceae			*Sida* sp. Articulation below (A.A. Mitchell PRP 1605)						1			1											2
Malvaceae			*Sida* sp. Pilbara (A.A. Mitchell PRP 1543)		3				3					4								1	11
Malvaceae			*Sida* sp. spiciform panicles (E. Leyland s.n. 14/8/90)		1		2		1	1				1	1				2	5			14
Malvaceae			*Sida* sp. verrucose glands (F.H. Mollemans 2423)				1			1													2
Malvaceae			*Sida spinosa*				1																1
Malvaceae			*Sida subarticulata*									1											1

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Malvaceae	*		*Malvastrum americanum*		4		5		1	4	2			1				2	1	14			34
Sterculiaceae			*Keraudrenia nephrosperma*	1	10					1	4	2	1	1						4		1	25
Sterculiaceae			*Keraudrenia velutina* spp. *elliptica*				4		2		1			2						2	1	1	13
Sterculiaceae			*Melhania* sp. (Burrup)				1												1				2
Sterculiaceae			*Melhania* sp. (CH15-39)							1										2			3
Sterculiaceae			*Melhania* sp. *Turee Creek* (MJ1-35)							1										1			2
Sterculiaceae			*Waltheria indica*		2		2		6	5			1	1	2				2	7			28
Sterculiaceae			*Waltheria virgata*																	1			1
Elatinaceae			*Bergia pedicellaris*											1									1
Violaceae			*Hybanthus aurantiacus*		7		1		1	2	1									7			19
Lythraceae			*Ammannia auriculata*																	1			1
Combretaceae			*Terminalia canescens*				5		1		2									7			15
Myrtaceae			*Corymbia candida* spp. *candida*				1													7			8
Myrtaceae			*Corymbia ferriticola* spp. *ferriticola*						1			2		1									4
Myrtaceae			*Corymbia hamersleyana*	2	14		39	1	16	15	14	2	7	1	3	1	2	2	8	121		2	250
Myrtaceae			*Eucalyptus camaldulensis* var. *obtusa*						3											17			20
Myrtaceae			*Eucalyptus leucophloia* spp. *leucophloia*	8	41	1	26	9	12	4	49	16	5	5	1	6	2	6		40	3	5	239
Myrtaceae			*Eucalyptus* sp. (inadequate material)	1						1		2	1										5
Myrtaceae			*Eucalyptus victrix*				4		1											17			22
Myrtaceae			*Melaleuca glomerata*																	3			3
Myrtaceae			*Melaleuca linophylla*																	3			3
Haloragaceae			*Haloragis gossei* var. *gossei*		2		1		1		2			3						1			10
Apiaceae			*Trachymene oleracea* spp. *oleracea*	1	3		1		18	1	7	2	3	1				1	1	6			45
Oleaceae			*Jasminum didymum* spp. *lineare*	3	11	1	6	6	10	8	8	6	2	2	2	3		1	3	26			98
Asclepiadaceae			*Marsdenia australis*		1																		1
Asclepiadaceae			*Sarcostemma viminale* spp. *australe*		3		1		2		1	2		1									10
Convolvulaceae			*Bonamia media* var. *villosa*	3	1	4	4		2	1	2			3	2		1		1	11		1	36
Convolvulaceae			*Bonamia pannosa*											1	2								3
Convolvulaceae			*Bonamia rosea*		4		3			2	1		1		2			1	2	13			29
Convolvulaceae			*Bonamia* sp. (inadequate material)		1																		1
Convolvulaceae			*Duperreya commixta*		5		1		4		3	2			1					4			20

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Convolvulaceae			*Evolvulus alsinoides* var. *decumbens*						1														1
Convolvulaceae			*Evolvulus alsinoides* var. *villosicalyx*		6		4	1	1	3		1		1	2				3	13			35
Convolvulaceae			*Ipomoea muelleri*		2				1	3								1		10			17
Convolvulaceae			*Ipomoea polymorpha*																	1			1
Convolvulaceae			*Polymeria* aff. *ambigua*				1										1			1			3
Convolvulaceae			*Polymeria* aff. *ambigua* (PAN 26B-20)		1															1			2
Convolvulaceae			*Polymeria ambigua*		1															1			2
Convolvulaceae			*Polymeria* sp. (site 1365)							1													1
Boraginaceae			*Ehretia saligna* var. *saligna*				1		2														3
Boraginaceae			*Heliotropium crispatum*		1						1									1			3
Boraginaceae			*Heliotropium cunninghamii*		1									1									2
Boraginaceae			*Heliotropium heteranthum*		1	1	2		1	2	2			1	1		1	1		6			19
Boraginaceae			*Heliotropium inexplicitum*						1														1
Boraginaceae			*Heliotropium ovalifolium*	1															1	2			4
Boraginaceae			*Heliotropium* sp. (inadequate material)																	3			3
Boraginaceae			*Trichodesma zeylanicum* var. *zeylanicum*	5	19	3	10	5	23	2	16	3	5	10	4	1		1	1	24		3	135
Verbenaceae			*Clerodendrum floribundum* var. *angustifolium*	1	1			8	6	1	1	4	1			2				1			26
Verbenaceae			*Clerodendrum tomentosum* var. *lanceolatum*	1	1				1	1	1	1								1			7
Solanaceae			*Nicotiana benthamiana*		1			2			1			1						1			6
Solanaceae			*Nicotiana occidentalis* spp. *occidentalis*		1				1		1		1							1			5
Solanaceae			*Nicotiana* sp. (inadequate material)				1											1					2
Solanaceae			*Solanum* aff. *gabrielae*	1					6			1	2	10		1			1			1	23
Solanaceae			*Solanum* aff. *phlomoides*	1							1	5	1									2	10
Solanaceae			*Solanum diversiflorum*	2	9		4		17	5	5		3	10	6		1	1	4	27			94
Solanaceae			*Solanum ellipticum*	1			1		2					1						2	1		8
Solanaceae			*Solanum horridum*	2	2		1		9	2	9	1	2	3	1	1			2	1			36
Solanaceae			*Solanum lasiophyllum*		14		8		3		17	4	6	6		1	2		1	26	1	4	93
Solanaceae			*Solanum phlomoides*						4			4		1	1								10
Solanaceae			*Solanum* sp. (inadequate material)								5	2								1			8
Solanaceae			*Solanum sturtianum*		11						10			1	1					3		2	28
Scrophulariaceae			*Peplidium aithocheilum*							1													1

				Number of Survey Sites that Species were Recorded within each Project Component in the study area																			
Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Scrophulariaceae			*Stemodia grossa*				2		1		1								2	9			15
Scrophulariaceae			*Stemodia* sp. (inadequate material)			1				2					2								5
Scrophulariaceae			*Stemodia viscosa*				2		1														3
Acanthaceae			*Dicladanthera forrestii*						1														1
Myoporaceae			*Eremophila cuneifolia*		2		2				1		1					1		11	2		20
Myoporaceae			*Eremophila forrestii* spp. *forrestii*		1				3						1					2			7
Myoporaceae			*Eremophila forrestii* x *latrobei*								1												1
Myoporaceae			*Eremophila fraseri* spp. *fraseri*		2	1	8	3	6		2	13		4		3			2	16			60
Myoporaceae			*Eremophila latrobei* spp. *glabra*								2												2
Myoporaceae			*Eremophila latrobei* spp. *latrobei*								6	5											11
Myoporaceae			*Eremophila longifolia*	1	2		2		2	2	1		2		1				1	24			38
Myoporaceae			*Eremophila* sp. (inadequate material)									1											1
Myoporaceae			*Eremophila youngii x latrobei*								1												1
Rubiaceae			*Oldenlandia crouchiana*	1	2				4	1	1			3						3			15
Rubiaceae			*Synaptantha tillaeacea* var. *tillaeacea*											1						2			3
Cucurbitaceae			*Cucumis maderaspatanus*		6		3	1	11	3	3	1	1	3		1		1	2	10		1	47
Cucurbitaceae	*		*Cucumis melo* spp. *agrestis*		1			1	1		1								1				5
Campanulaceae			*Wahlenbergia tumidifructa*						1											1			2
Lobeliaceae			*Lobelia heterophylla*		1																		1
Goodeniaceae			*Dampiera candicans*	2	10	2	3		1				2	1						4			25
Goodeniaceae			*Goodenia cusackiana*							2													2
Goodeniaceae			*Goodenia forrestii*	2	5		1	1	2	13	1				1				2	15			43
Goodeniaceae			*Goodenia lamprosperma*																	3			3
Goodeniaceae			*Goodenia microptera*	4	5	1	2		10		8	2	1	4	3				3	12			55
Goodeniaceae			*Goodenia* sp. (inadequate material)															1		1			2
Goodeniaceae			*Goodenia stobbsiana*	2	3	1	1	1	5		2			4					1	5	1	1	27
Goodeniaceae			*Scaevola spinescens* (broad form)				6		1	2	1		1							11			22
Goodeniaceae			*Velleia connata*							1													1
Asteraceae			*Asteraceae* sp. (inadequate material)								1												1
Asteraceae			*Calocephalus knappii*																	3			3
Asteraceae			*Calocephalus* sp. Pilbara-Desert (M.E. Trudgen 11454)															1					1

				Number of Survey Sites that Species were Recorded within each Project Component in the study area																			
Family	**Naturalised**	**Priority Status**	**Name**	**Cochrane**	**Catho Well**	**Farnum**	**Infrastructure Surveys**	**Jewel**	**Kens Bore**	**Red Hill North Waste**	**Trinity**	**Upper Cane**	**Upper Cane Waste**	**Cardo East**	**Cardo East Waste**	**Cardo North**	**Cardo North Waste**	**Catho Well Waste**	**Kens Bore Waste**	**Internal Transport Corridors**	**Trinity Waste**	**Triodia sp. Robe River Survey**	**Totals**
Asteraceae			*Centipeda minima* ssp. *macrophala*																	1			1
Asteraceae			*Flaveria australasica* spp. *australasica*		1						3									2			6
Asteraceae			*Pentalepis trichodesmoides*						3	1									1	13			18
Asteraceae			*Pluchea dentex*				1		1											6			8
Asteraceae			*Pluchea ferdinandi-muelleri*																1				1
Asteraceae			*Pluchea squarrosa*								1												1
Asteraceae			*Pluchea tetranthera*																	1			1
Asteraceae			*Pterocaulon serrulatum*		6						2												8
Asteraceae			*Pterocaulon* sp. (inadequate material)							1										1			2
Asteraceae			*Pterocaulon sphacelatum*				1		8	2	7	2							1	3			24
Asteraceae			*Pterocaulon sphaeranthoides*		2		1		11	2	2		1	3	3			1	3	17			46
Asteraceae			*Rhodanthe margarethae*	2	1			12	1		12									1			29
Asteraceae			*Rutidosis helichrysoides*																	1			1
Asteraceae			*Streptoglossa bubakii*	1	5				1	4	2		1	4	2			3	2	6			31
Asteraceae			*Streptoglossa decurrens*	2	5		1	2	1		6			2	2					7			28
Asteraceae			*Streptoglossa* sp. (inadequate material)							1	2				1			1					5
Asteraceae			*Streptoglossa tenuiflora*						1														1
Asteraceae	*		*Bidens bipinnata*		2		1				1												4
Asteraceae	*		*Sonchus oleraceus*						1														1

Appendix 9 Numerical Analysis of Floristic Data (Griffin & Trudgen, 2009)

Numerical analysis of floristic data from the Australian Premium Iron West Pilbara Iron Ore Project Area with other data from the Pilbara Bioregion of Western Australia

Prepared for

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1.0 INTRODUCTION

1.1 Purpose of this report

The purpose of this report is to investigate the conservation value of the vegetation of the Australian Premium Iron (API) West Pilbara Iron Ore Project Area, which is located in the western part of the Pilbara Bioregion of the northwest of Western Australia. To do this, the report presents the results of numerical analysis of the floristic data (lists of flora species present in vegetation recording quadrats) recorded by environmental consulting group Western Botanical for the study, combined in a data set with similar floristic data from earlier studies. The other data was from studies carried out by a number of consultancies for projects located in other parts of the Pilbara Bioregion. The combined data set has two thousand eight hundred and eighty-three (2,883) sites and provides a sufficient basis to enable an investigation of the floristic variation present in the vegetation sampled in the API Project Area in relation to the vegetation of the Pilbara Bioregion that is adequate for environmental impact assessment purposes.

1.2 Interpretation of the levels of classification in the analyses

A classification of vegetation quadrat data into groups of such sites with similar floristic composition (that is into groups of quadrats with similar lists of species in the quadrats placed together) was a fundamental part of the analyses being carried out. Some appreciation of the basis of the groups defined, and some caution are needed in interpreting these groups. They <u>are not</u> directly comparable to the classic assignment of vegetation stands into plant communities based on structure and dominance, or the grouping of such communities into vegetation associations and then vegetation formations. The different levels of units defined are simply defined by the presence and absence of the species recorded at the sites placed in them (that is, their *floristics*). When more groups are defined (from the same number of quadrats), the groups will have less variation in floristics and less variation in structure and dominance. This is a low level of synthesis. As the number of groups is decreased (from the same data set), the variation in floristic composition, structure and dominance will increase and the level of synthesis becomes higher. At a high level of synthesis (relatively few groups for the size of the data set), the variation in each group of floristics (as well as of the structure and dominance of the vegetation of the sites included) will be high and the groups will be quite abstract. This is meant to imply that they have varied composition, not that they do not possess some reality in the sense of dividing the data into different groups with some relationship within the groups defined. Nor is it meant to imply that these higher-level groups are not useful. Rather, it means that the groups defined at different levels should be used for purposes appropriate to their level.

In the analysis presented in this report, it likely that the groups defined in the lower level (the 600-group level) of the classification of the data set used vary from near, but above the plant community concept in level of synthesis to near or above the vegetation association level in level of synthesis. The plant community level groups together sites with similar structure, dominance and floristics, and the vegetation association level groups together similar plant communities. The 600-group level was chosen to be a somewhat similar level of synthesis to these concepts so that the groups defined would not be too abstract for environmental impact assessment purposes. However, it is emphasised that they are based on a different classification process of the data (that is floristics only, not floristics, dominance and structure).

The large overall data set (Table 3) used in the regional analysis carried out for this report samples the vegetation of a wide diversity of underlying geology, geomorphological types and soil, as well as some variation in climate. The consequent large diversity of vegetation sampled means that at the intermediate levels of the analysis at least a significant proportion of the groups defined are largely abstract and that at the higher levels the groups defined are quite abstract.

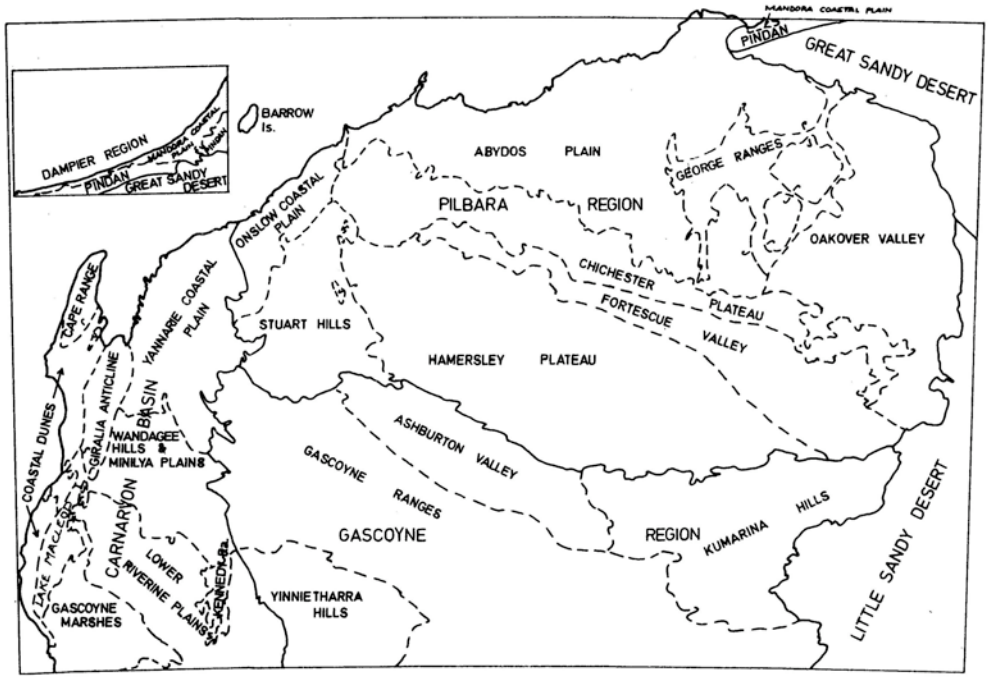
The intermediate levels of the analysis of the overall data set should be considered as varying from near, but higher than, the vegetation association level to the alliance level (or higher) in level of synthesis and are potentially useful for regional comparisons. The higher levels vary from near sub-formation to the formation level in level of synthesis. Again, it is emphasised that they are not the same as such units (which are based on structure, dominance and floristics, or subsets of these), as they are only based on floristics. Although of a different type of synthesis to traditional classifications of vegetation, the floristic units defined in this report, as long as their nature is understood, are useful for the purpose of the analysis.

1.3 Location of the project area

The API Project Area is located in the western part of the Pilbara region of Western Australia. It includes a group of mesas of the Robe Pisolite (channel iron deposits) in the Stuart Hills area east of Onslow and south of the Robe River, and a transport corridor leading north from there to near Cape Preston, which is some 50 kilometres south-west of Karratha.

1.4 Habitat diversity of the project area

The mesas of Robe Pisolite in the API Project Area are located in the Stuart Hills physiographic unit, one of several defined by Beard (1975, see Map 1) for the Pilbara. The transport corridor starts in that unit and skirts or crosses the Hamersley Plateau, Chichester Plateau and Abydos Plain physiographic units. The API Project Area thus includes a large range of topography, which provides a very strong modifier (as physical habitat) of the geological types present in the project area. The combination of geology and topography over time creates a large range of habitats for plants and thus of vegetation types, ranging from hilltops to coastal mudflats, with numerous types in-between.



Map 1: Natural Regions and physiographic units of the north west of Western Australia
Notes: The map is from Beard 1975, p. 7. Beard's Pilbara region is equivalent to the Pilbara Bioregion.

1.5 Geological types found in the API Project Area

The API Project Area has sites recorded from twenty-three geological types; these are listed in Table 1, with the number of sites recorded on each also given. Their lithology is briefly described in Table 2. Table 1 shows that the API Project Area has a significant diversity of geological types, which undoubtedly contributes to the diversity of vegetation found in it. For this report, the geological type of most interest is the unit that has generally been referred to as the "Robe Pisolite" (this name is used in this report as it is widely known, although the unit is referred to as Channel Iron Deposits in more recent geological literature).

Table 1. Geological types recorded for the API Project area with the number of sites recorded for each.

Notes: names could not be established for some codes. Where there is more than one name, it reflects usage on different 1: 250,00 sheets.

Code on 1:250,000 geological maps	Geological unit name or names	Number of sites recorded on the type for the API Project
AFk	KYLENA FORMATION or KYLENA BASALT	2
AHd	WITTENOOM FORMATION	1
Cp	[Not available]	2
Kny	YARRALOOLA CONGLOMERATE	14
Pfp	PILLINGINI TUFF	1
Pho	BOOLGEEDA IRON FORMATION	2
PLHb	BROCKMAN IRON FORMATION	4
Plk	[Not available]	2
PLWb	CHEELA SPRINGS BASALT	11
PLWd	DUCK CREEK DOLOMITE	9
PLWq	BEASLEY RIVER QUARTZITE	1
Pw	Shale, mudstone, sandstone, greywacke etc	1
Qa	Alluvium - unconsolidated	9
Qac	Alluvial -clay, silt	36
Qb	Alluvium - unconsolidated	1
Qc	Colluvium	139
QlC	[Not available]	1
Qp	Elluvim, colluvium, gilgais	13
Qr	[Not available]	2
Qrg	Quartzofeldspathic sand	1
Tp	ROBE PISOLITE	150
Wa	ASHBURTON FORMATION	1
Wm	MOUNT McGRATH FORMATION	24

The Robe Pisolite has a patchy distribution in the valleys of river systems and palaeodrainage channels in the Pilbara area of Western Australia and this distribution is shown on Map 4 (see section 4.2.3.1 below). It often occurs as the upper layer of mesa in valleys such as the Robe Valley, but also occurs grading into the sides of valleys with truncated outer edges and less commonly under alluvium in the floors of smaller valleys (for example at Bungaroo Creek). As mesas of this unit are the ore body targeted by the API West Pilbara Iron Project, the vegetation of this geological type was the most heavily sampled during the vegetation survey carried out for that project by Western Botanical.

Table 2: Brief descriptions of the geological units recorded from the API Project Area.

Notes: Descriptions of the units varies between sheets, partly reflecting development of different facies, partly reflecting exposure. (Descriptions from 1: 250,000 geological sheets.)

AFk: KYLENA BASALT/KYLENA FORMATION: massive or amygdaloidal basalt, basaltic andesite, and dacite; local komatiitic basalt and rhyolite; minor metabasaltic breccia and metasandstone; local high-Mg basalt and rhyolite; local basal sandstone	AHd: WITTENOOM DOLOMITE/FORMATION: Grey to blue calcitic crystalline dolomite, with chert and dolomitic shale towards top and bottom: thin-medium-bedded dolomite, dolomitic mudstone, chert, and volcanic sandstone; metamorphosed thin- to medium-bedded dolomite, dolomitic pelite, chert, and volcanic sandstone.
Kny: YARRALOOLA CONGLOMERATE. Poorly sorted conglomerate with shale, claystone lenses and interbedded sandstone; contains plant fossils.	Pfp: PILLINGINI TUFF. Bedded tuff and tuffaceous detrital rocks with jaspilite, dolomite, chert and shale; some lava. Contains volcanic pisoliths and Collenia.
Pho: BOOLGEEDA IRON FORMATION: f5007 7 f5011 & f5012 fine-grained, finely laminated banded iron-formation; mudstone, siltstone and chert, pelite	PLHb: BROCKMAN IRON FORMATION: f5007; banded iron-formation, chert, mudstone, and siltstone and pelite. Massive laminated jaspilite with thin shale, chert and dolomite; contains crocidilite and haematite.
PLWb: CHEELA SPRINGS BASALT: metamorphosed amygdaloidal basalt flows and metabasaltic breccia, pelite, metasandstone, and metadolomite. Vesicular and amygdaloidal basalt with minor tuff, tuffaceous mudstone and chert	PLWd: DUCK CREEK DOLOMITE: thin to thick bedded locally metamorphosed stromatolitic dolomite; metadolorudite; minor chert and pelite
PLWq: BEASLEY RIVER QUARTZITE: fine- to coarse-grained metamorphosed quartzitic sandstone, metamorphosed ferruginous sandstone and conglomerate, conglomerate, fine to coarse arenite (some silicified), mudstone and dolomite; locally includes Three Corner Conglomerate Member: clast and matrix supported lithic conglomerate with minor arenite and mudstone.	Pw: Undifferentiated Mt McGrath Fm, Beasley River Quartzite and Turee Creek Fm. Shale, mudstone, siltstone, quartz sandstone, greywacke, pebble conglomerate, and altered lava and tuff.
Qa: Sand, silt and gravel in active drainage channels; includes clay, silt and sand in poorly defined drainage courses on floodplains.	Qac: Clay and silt in claypans on floodplains, and in coastal lacustrine deposits
Qb: Alluvium. Unconsolidated sand, gravel and pebbles; over kunkar or granite	Qc: Colluvium: sand, silt, and gravel in scree and outwash fans. Unconsolidated quartz and rock fragments in soil. Locally derived soil, and scree, and talus deposits.
Qp: Eluvium and colluvium. Residual 'high level' clay and sandy clay plain with gilgais; intermittent veneer of alluvium; residual deposits of sand, gravel, and pebbles; sheet kunkar in places.	Qrg; Quartzofeldspathic eluvial sand with quartz and rock fragments; overlying and derived from granitoid rock.
Tp: ROBE PISOLITE: pisolitic limonite deposits developed along palaeodrainage lines; local clay and shale. Pisolitic, oolitic, and massive limonite goethite haematite deposits, containing fossil wood fragments; iron ore.	Wa: ASHBURTON FORMATION: wacke, mudstone, ferruginous mudstone, arenite and lithic conglomerate. Thin- to thick- bedded metasandstone, pelite, and local metaconglomerate
Wm: MOUNT McGRATH FORMATION: mudstone, arenite (some silicified), lithic conglomerate, dolomite and dolomitic mudstone. Metamorphosed ferruginous sandstone and conglomerate, pelite, and metadolomite	

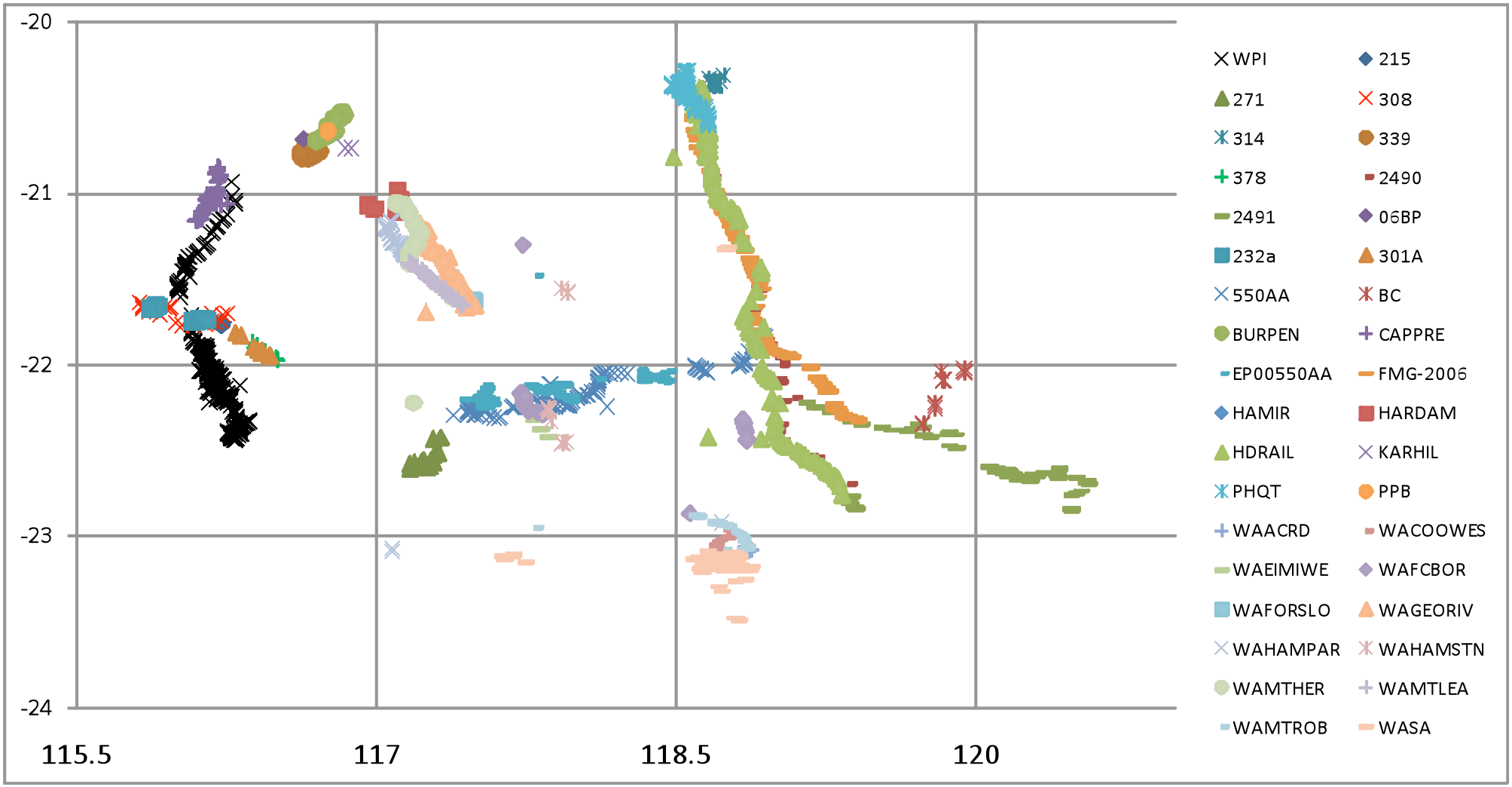
1.6 Data provided by Western Botanical

The data provided by Western Botanical consisted of flora lists and associated data (location, habitat, soil, etc.) from a total of four hundred and seventy-one (471) quadrats (vegetation sampling site defined by pegging or measuring out) and releves (vegetation sampling site, not measured out). The usual quadrat size was a 50m x 50m square, but where this size quadrat could not be located in a uniform vegetation type (for example, in narrow stands of vegetation along creeks), other shapes were used as was appropriate to sample the vegetation of the stand.

Western Botanical provided the data in a standardised database format that readily allowed the data to be combined into a single database with the data from the other studies being used in the analyses.

1.7 Data from other projects

The other data used in the analyses for comparison to the API Project Area data is all from the Pilbara Bioregion. The vegetation of this bioregion is mostly distinct from the vegetation of adjoining bioregions and it was not considered necessary to make comparisons to vegetation occurring outside the bioregion to make an assessment of the conservation value of the vegetation of the API Project Area.



Map 2: Location of the quadrats and releves used in the analyses carried out in this report colour coded to show the project they were recorded for.

Notes: 1:250,000 map sheets indicated by grey lines, degrees of latitude and longitude on the axes.

Table 3: Data sets used in the current study.

Notes: The three columns headed 1, 2 and 3 are the number of sites used from each project in the three analyses carried out.

Code	Project	1	2	3
06BP	Pluto Burrup Pipeline Survey 06	2		
215	Flora and vegetation survey of the Mesa J Extension area	6		2
232a	Mesa A / Mesa G vegetation and flora surveys (Rio Tinto)	27		24
2490	FMG Stage A	45		
2491	FMG Stage B	96		
271	Flora and vegetation survey of the Brockman Syncline 4 Project Area	22		1
301A	Flora and vegetation survey of Bungaroo Trial Pit and Transport Corridor to Mesa J	7		
308	Flora and vegetation survey of the Mesa A transport corridor, Warramboo deposit, and Yarraloola borefield and pipeline	23		3
314	Port Hedland Salt Expansion: Biological Survey	24		
339	Vegetation flora survey of the Dampier salt expansion area	36		
378	Flora and vegetation survey of the expanded Bungaroo Valley Project Area	9		1
550AA	EP00550AA - Flora and Vegetation Survey - Kennedy Rail	136		2
BC	BC Iron Bonnie Creek Flora and Vegetation survey	14		47*
BURPEN	Burrup Peninsula Floristic Survey	118		
CAPPRE	Cape Preston Flora Survey	106		
EP00550AA	ENVIPERT00550AA - Flora and Vegetation Survey, Solomon Surveys, FMG	268		54
FMG-2006	Fortescue Metals Group - Cloud Break to Pt Hedland	152		
HAMIR	Burrup Peninsula Floristic Survey	3		1
HARDAM	Burrup Peninsula Floristic Survey	11		
HDRAIL	Hope Downs rail alignment between Newman and Port Hedland	192		
KARHIL	Burrup Peninsula Floristic Survey	3		
PHQT	Sinclair Knight Merz Quantum Proj. Port Hedland	113		
PPB	Pluto Burrup Pipeline Survey	10		
WAACRD	West Angelas Access Road	13		
WACOOWES	West Angelas Coondewanna West Route	57		
WAEIMIWE	West Angelas Eight Mile Well Route	8		
WAFCBOR	West Angelas Four Corners Bore Route	41		1
WAFORSLO	West Angelas Fortescue Valley, slopes at east end Mt Leal route	18		
WAGEORIV	West Angelas George River Route	242		1
WAHAMPAR	West Angelas Hamersley Parallel Route	71		
WAHAMSTN	West Angelas Hamersley Station	21		
WAMTHER	West Angelas Mt Herbert Route	109		
WAMTLEA	West Angelas Mt Leal Route	111		3
WAMTROB	West Angelas Mt Robinson Route	73		
WASA	West Angelas Core Survey Area	271		
API [WPI]	API West Pilbara Iron Ore Project [API]	427	427	180
	TOTAL	2883	427	320

* Through an oversight, some sites from this project were omitted from the complete run. This omission was investigated and it was concluded that it had little impact on the interpretation of the regional patterns and relationships of the API sites.

Although the API data is only from the western part of the Pilbara Bioregion, the data compared to the API data comes from a band across the most of the Pilbara Bioregion. This was considered necessary because geological types (particularly the Robe Pisolite) represented in the API Project Area have distributions that extend to the eastern part of the bioregion, suggesting that vegetation types found in the API Project Area could occur further to the east than that survey area.

The data used includes data from projects relatively near the API Project Area and from areas as far away as Port Hedland and near Nullagine. For example, it includes data from Cape Preston, which is close to the access corridor and from the areas between Nullagine and Newman. The distribution of all the sites used is shown on Map 2 (see above). This map shows that the west to east spread of the sites used in the overall analysis is ca. five hundred and eighty (580) km and the north to south spread is ca. three hundred and fifty (350) km. The API sites are the black Xs on the western part of this map. The eastern most sites are from project 2491 (the Biota Environmental Sciences report for the FMG stage B Project).

The projects from which the data is sourced are listed in Table 3, which also gives the number of sites for each project used in this report. Reference to these data sets later in this report will be by means of the project code, eg API for the Western Botanical API Project data. All this data is part of a data set that is maintained by M.E. Trudgen.

2.0 METHODS

2.1 Data preparation

The data from the API Project and the data from the earlier projects were imported into a Microsoft Access database (file WPI_Sept_2009.mdb). The "queries" (short programs written using Microsoft Access) used to carry out the analyses were also incorporated into this database.

To make the data set as compatible as possible across the various projects used, a process of reconciliation of flora species names as applied in the different projects was undertaken. This was necessary partly because of changes in nomenclature over the period in which the studies have been carried out, but also because of the potential of project specific variations in the application of names. The reconciliation involved:

- reducing some infra-specific names to the relevant species name (where misidentifications were likely, or where in some projects specimens had been named to species only),
- combining some taxa where confusion is likely to have occurred in field observations and identifications, and
- omitting some records that were ambiguous.

Appendix 1 is the list of amendments/amalgamations that were considered necessary to reduce the impact of project related nomenclatural differences. Clearly for some projects, this reduced the distinction that was possible (e.g. by subsuming infraspecific taxa into species), but this has to be accepted to allow reasonable comparisons between projects to be made.

It should be noted that the data maintained by M.E. Trudgen is dynamic and (as much as time allows) is updated as the understanding of the application of existing and new names develops. However, there are some differences in names between the data sets analysed for earlier studies and the current one that reflect changes in nomenclature rather than in identification and the reconciliation process compensates for this.

2.2 Analyses carried out

The data from the API Project was run as a stand-alone data set (the local analysis) and also combined with the data from the other projects (see Table 3) to provide a regional analysis. As the Robe Pisolite (Channel Iron Deposits) is the focus of the API Project as a source of iron ore, a third analysis of only those sites in the total data set that were known to be located on areas of the Robe Pisolite or had been identified in the regional analysis as having similar vegetation and were therefore also possibly on Robe Pisolite (see results section) was also carried out, to investigate the variation in floristic composition of the vegetation on this geological type more closely.

In all three analyses, the presence and absence of species at a quadrat was taken into account. Cover (a measure of the abundance of species at a site) was not used. Analysing the presence and absence of species in such data sets has been found to be appropriate for assessing the regional variation in composition of site data in earlier analyses of data from the Pilbara bioregion (e.g. Griffin & Trudgen 2009a). Including the cover of species at sites tends to be more useful when analysing data sets from smaller areas with higher data density; therefore, cover was not used in the analyses carried out for this report. "Singletons" (species present in only one site in a data set) were retained for they often contain useful information to distinguish uncommon floristic types.

2.3 Use of the PATN numerical classification package

We have found that the numerical classification package PATN (Belbin 1987) is an effective tool for the analysis of data sets such as those analysed in this report. We have used it on such data sets from the Pilbara and from the south-west of Western Australia over a significant period of time. Our experience is that the resulting sorting (classification) of data sets has been meaningful in providing an ability to understand the variation in the data sets analysed.

Several modules of the PATN package (Belbin 1987) were used for the analyses. The modules used were ASO (calculation of similarity matrix), FUSE (classification), DEND (representation of classification) and SSH (a form of ordination) to display relationship of sites to the whole data set. The default parameter settings of these modules were used in all the analyses carried out.

For the analyses of the data sets, the modules were run with the sites as the classified objects (ie the species as the attributes). Classification of the data set with the species as the classified objects (ie the sites as the attributes) was also undertaken.

The dendrograms for the different analyses represent the way the classified rows (sites or species) fuse, in the case of sites indicating how similar the floristic composition of the sites is. This can be used to construct groups of similar sites (groups of rows in the dendrogram) by "cutting" at a particular value or cutting to obtain a particular number of groups. For the purpose of this study, "cuts" were made to divide (classify) the data into groups at different levels of synthesis (from very broad to moderate) in the different data sets. For ease of reference, these "cuts" are referred to as the "50-group", "100-group", "200-group", "400-group" and "600-group" classifications for the regional analysis or classification; the "25-group", "50-group" and "100-group" classifications for the local (API data only) analysis; and the "15-group", "30-group", "60-group" and "90-group", for the Robe Pisolite sites only analysis.

Classifications at several levels such as those outlined above provide opportunities to make interpretations of the nature of the variation in the floristic data from vegetation recording sites in relation to a range of other information; including geology and location. While the levels of these "cuts" (especially the higher level ones) are arbitrary, they come out of experience with this type of data. It should be noted that while the 600-group level of the regional analysis is still somewhat arbitrary, when the makeup of the 600 groups defined at this level of the regional analysis is examined, it is apparent that many of them have more than similar species lists in common. They also often have similar dominance and structure, come from similar habitat or are mostly from the same or similar geology.

From the ASO association matrix, it is possible to determine for each site, which other sites are most similar and how similar they are. This can be used in a number of ways including determining the nearest neighbours for sites and an indication of the homogeneity of the groups. By combining these with the classification a measure of concordance can be determined.

2.4 Summaries made

The results of the PATN analyses were imported into the Access database, where, using queries, it was joined and summarised with other information such as site characteristics. Key portions were exported to Microsoft Excel spreadsheets in which charts of the geographic distribution of the sites (e.g. Map 2) and the groups of sites defined were constructed.

3.0 LIMITATIONS

All exercises such as those carried out for this report have limitations, including those related to data quality (how well the sites were chosen and recorded, what the seasons were like before the sties were recorded, how well the specimens were identified, how carefully the data was entered into the data base, how well the data base is maintained), data density, data distribution and size of the total data set. Experience with analyses similar to those carried out here shows that the quality of field observation (which is related to the effort expended and the level of expertise available) has a significant influence on the classification obtained from the analyses, with poor data degrading results. However, the results of any analysis are influenced not only by the data quality, but also by the techniques employed.

Obviously, variations in seasonal conditions at the time of survey can affect the quality of data collected, as less species will be available in dry periods rather than after good rainfall (when better material, enabling better identifications can also be obtained). Similarly, variation in the standard of identifications can affect data quality between data sets. However, identifications is not a big issue in this case as most of the studies in the data set used for the current report have been carried out by one person (M.E. Trudgen), or by use of the same specimen reference set for at least the more difficult groups, by workers experienced with the Pilbara flora. This has given relatively consistent identification. Therefore, the major sources of difference in data quality between the projects in the data set are the differences in experience of those undertaking the primary observations, and variation in seasonal conditions.

Limitations in data density and distribution for the analyses carried out for this report (see Map 2) are also going to have an impact on the results produced, as there is significant clustering of the data (into project areas) rather than an even spread, and variation in the density (and therefore the number of replicates in different geological/habitat types in different projects) of data in different projects. Such limitations could lead to some of the units defined being poorly sampled and, therefore, appearing to be less common than they actually are, others could be more heavily sampled than in an even spread of sites and appear to be more common than they actually are.

Bearing in mind the limitations in the data discussed above, it is obvious that there must be limitations in the definition of the units defined, as it is acknowledged that the data on which they are based on is not ideal. Further, depending on the level of the group defined it should be recognised that the composition of the groups defined by these analyses should not necessarily be interpreted as communities that can be recognised in the field. This may be possible for a

proportion of the lower order groups defined, but an extensive process of review and refinement, aided by field knowledge and checking would be required to extend the analysis to such a point for all such groups at the lowest level.

The necessarily abstract nature of the intermediate and higher order groups defined is noted in section 1.2 above. This abstraction means that individual occurrences of (ie. sites referred to) a particular group may have quite different structure and dominance, particularly at higher levels of synthesis. However, at the various levels of synthesis there should be corresponding degrees of similarity in the floristic composition of stands referred to the different groups in them. So at the lowest level, the stands (sites) referred to a group should have relatively similar lists, particularly if data density is high.

In the overall data set used for this report, data density is variable for different projects, so groups in the lowest level of the classification (the 600-group level) will have a significant level of difference in number of sites.

4.0 RESULTS

4.1 Diversity of the data sets

The data set used is extremely diverse with 1337 species in the 2883 sites for the whole data set and 477 species in the 523 API West Pilbara Iron Ore Project sites. Over 10% of species were recorded in only 1 site and nearly 25% in only 1 or 2 sites (Figure 1). More than ¾ of the species occurred in less than 2% of the sites for the whole data set and in less than 5% of the sites for the API data set.

The combination of the diversity of species and the spread of those species in the sites recorded indicates that there is a high diversity of plant communities and vegetation associations represented in the data set. This is consistent with the size and geological and topographic diversity of the areas sampled, and their resulting habitat diversity.

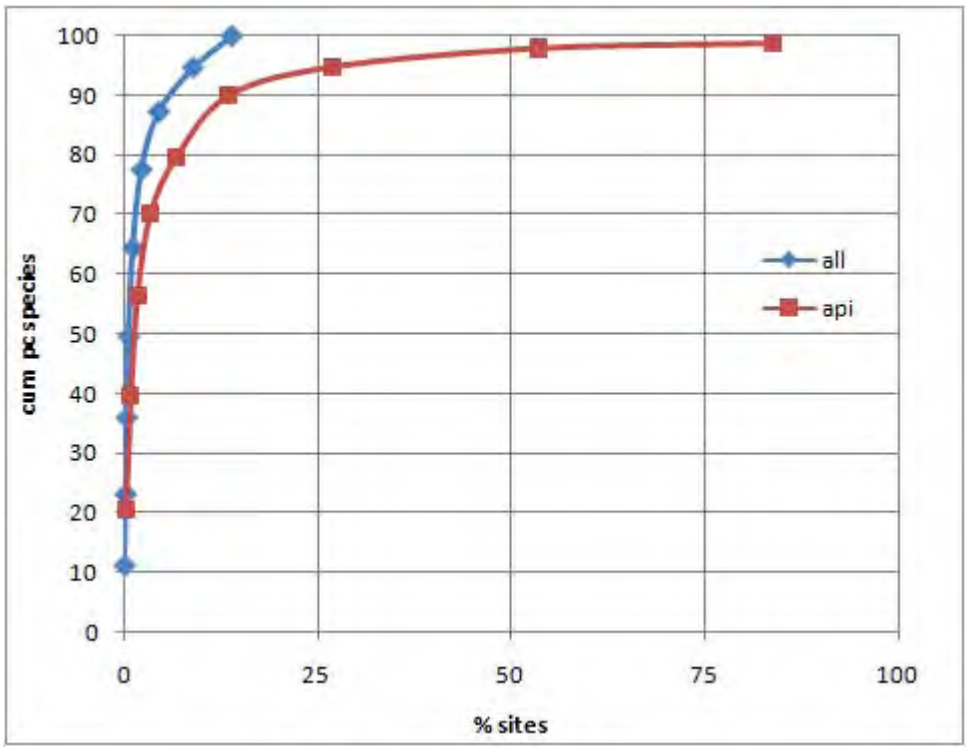


Figure 1. Cumulative frequency distribution of species at sites.

Determining the number of "real" groups present in data sets such as those investigated is a difficult task. One aspect of this is that the larger the data set, the more difficult the task becomes. The association matrix (which shows how similar each site is to each of the other sites) provides assistance in evaluating what could be considered a "reasonable" number of groups for a data set.

Another measure of the "right" number of groups for a data set is given by the average dissimilarity between sites within groups. This measure of the consistency of the groups defined was investigated for different numbers of groups for the larger data set (API plus other data). Table 4 shows that based on an average dissimilarity of about 0.5 as a reasonable value (experience with other large data sets suggests values near this level are a useful indicator of groups) 400 groups is probably too few and 600 is roughly the right number for the larger data set investigated. While this is a large number of groups, it has to be measured against the large geologically and topographically diverse area the data comes from. In this context, it is an appropriate number.

Table 4. Average dissimilarity between sites within groups for five classification levels for the combined (API plus other) data set.

	# Groups				
	50	100	200	400	600
% single site groups	0	1	4	10	17
dissimilarity	50	100	200	400	600
0.2	0	0	0	0	0
0.3	0	0	0	1	1
0.4	0	0	0	1	3
0.5	0	1	5	13	25
0.6	18	18	38	57	49
0.7	46	56	47	18	6
0.8	32	23	7	1	0
0.9	4	1	1	0	0

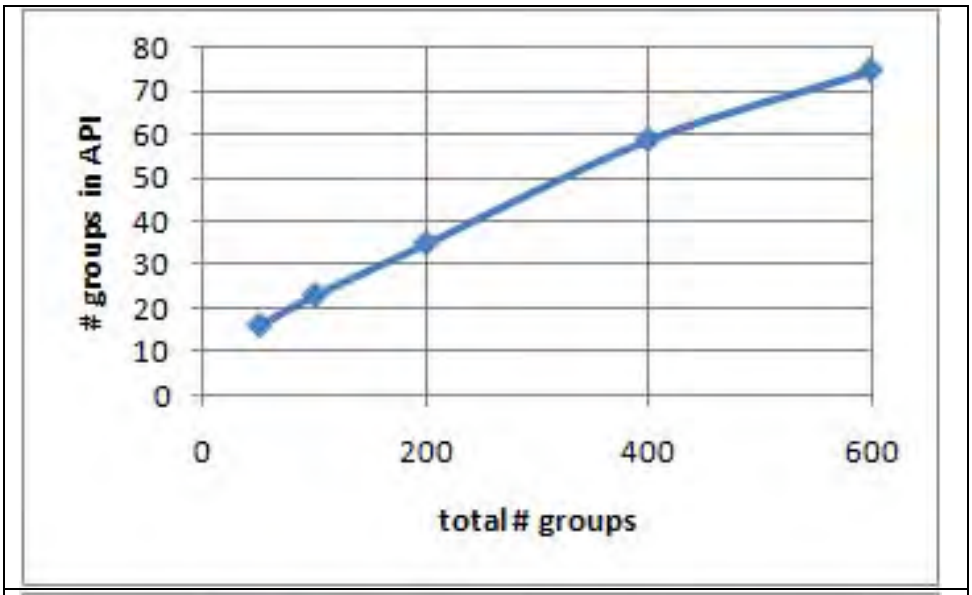
The appropriateness of the 600-group level was investigated further, using the association matrix for the combined data set. Figure 2 is a representation of a portion of this association matrix, where the rows and columns are groups at the 600-group level and the values (indicated by shading) are the average dissimilarities between sites from each combination of groups. The darker the shading, the more similar the groups are. The diagonal is the intra group comparison. Noteworthy, is that very few inter-group comparisons are shaded (i.e. are > 0.65). Thus, the arbitrary 600-group level used in the analysis is probably quite reasonable. Similar numbers of groups have been defined in other analyses of large data sets from the Pilbara Bioregion and found to be useful. For example, 400 groups were used in an analysis of 1,285 sites from the eastern part of the Pilbara Bioregion (Griffin & Trudgen 2009).

Figure 2. A portion of inter group association diagram from groups 1 to 100 of the 600-group level.

Notes: Dark shading < 0.5 dissimilarity, lightest < 0.65 dissimilarity.

As more groups were defined for the combined data set (i.e. increasing from 50 to 600), more groups are present in the API data set. Figure 3a-c shows the change in the representation of these groups in relation to the number for the whole combined data set. As the number of groups increase, so the number and proportion only from API increases. This is to be expected, and would be largely because the project is in a part of the Pilbara Bioregion that is otherwise poorly represented in the combined data set and presumably has geological types and habitats not present (or not well represented) in the data from other projects making up the combined data set. A second, and possibly important, factor is the climatic variation across the Pilbara Bioregion, which will have had some impact.

a



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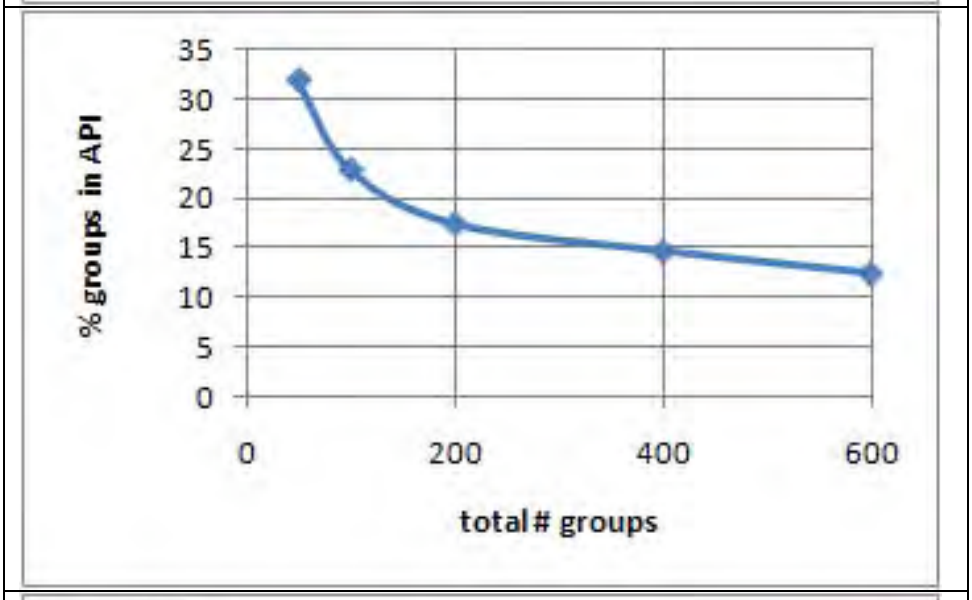

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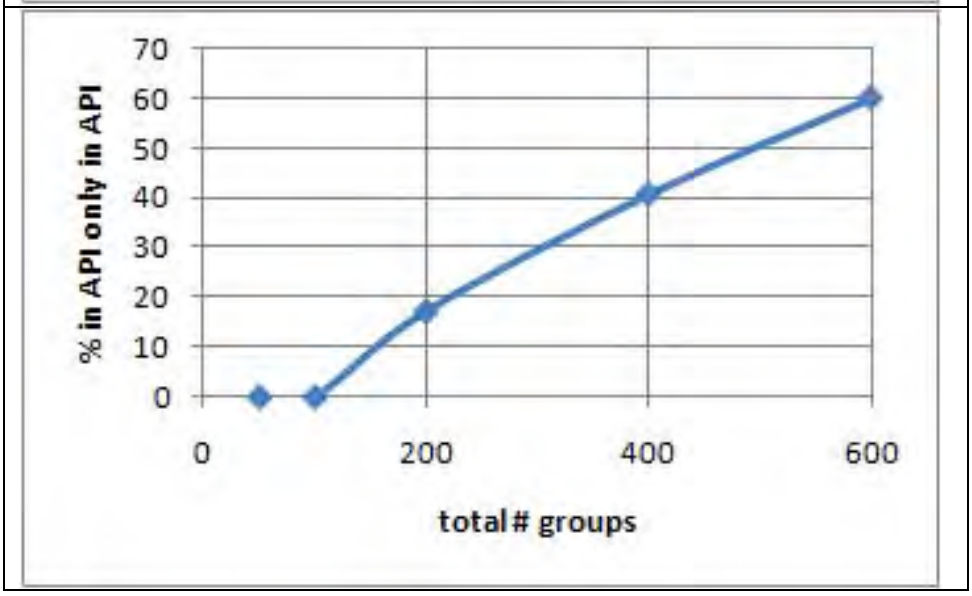


Figure 3. Relationship of the number of groups in API data related to the number in the combined data set.

Notwithstanding these factors explaining the presence of groups in the API Project Area not present in the other project areas in the combined data set, there will be some level of "artefacts" for the data from the API Project. That is some groups defined for the API data may be artefacts of the data set. Any such groups would be difficult to identify without careful examination of the composition of groups defined, and sites and is beyond the needs of this report. However, the relatively low proportion of groups with only 1 site (about an eighth of those in API) suggests that the level of such artefacts (if any are present) is probably modest and would not affect the major findings of this report.

4.2 Regional Analysis

The classification (analysis) of all the sites in the combined data set was carried out to evaluate regional patterns and to provide a framework for the classification of the API sites. The dendrogram representing this classification is given in Appendix 2.

4.2.1 Project Influences

Table 5 shows the number of sites in each project in the combined data set at the 50-group level of classification. It shows a significant project related grouping in the classification. That is, that at this level of classification the groups are not spread evenly across the projects. Classification at more detailed levels (ie., with more groups) gives more apparently project related distinction. Examination of Map 3 shows that while it is difficult to tell how much of this uneven spread is related to season and quality of recording of a project and how much to the projects sampling different geology and landforms, the latter is likely to be the major factor.

Investigating this further, the projects in Table 5 are ordered according to a classification of the presence/absence of the 100 groups that were in each project. Thus, projects with similar suites of classification groups will be adjacent. This table shows a modest geographic grouping, which is displayed on Figure 4. Significantly, within these there are some geographic patterns. Some projects are grouped together because they are large and very diverse (the black symbols).

Thus, it is concluded that a significant portion of the differences between projects is related to regional patterns. Thus, while it is unavoidable that there will still be some project related differences due to season, fire and the experience of observers, such problems are unlikely to have a significant effect on the analyses carried out for this report.

Table 5. Number of sites in each project at the 50-group level.

gp50	06BP	HAMR	KARHIL	HARDAM	PPB	EURPEN	215	301A	378	308	232a	2490	FMG-2006	HORAIL	2491	271	550AA	EP00550AA	BIC	WPI	314	PHQT	339	CAPPRE	WAFORSLO	WAGEORW	WAMTLEA	WAHAMPAR	WAMTHER	WAACRD	WACOOWES	WAMTROB	WASA	WAEIMWE	WAHAMSTN	WAFCBOR
1				1	2	1			3				1		1					8				1	1	80	23	25	56							4
2						2							1							2						20		12	5							
3										2																34	7	17	11							2
4					4								1							1						9		2	2							
5	1					17																		9		18	1	8	3							
6					1	1											3			3						2	1	2								
7										2		8	13	15		2	9			1	2	8							1							
8							1	3	5	4				1			5	4		68						2		1								
9												6	2	14			3	1	3																	
10													1				6	64														1				
11																									4	10	9									2
12																								69												
13											1					3	3	2	1	4					5	49	39	1	3	2	1	3	2			2
14					1							2	5	9			15		2	1						1										
15										2	22		1	9			5			2						2	2		1							
16																				20					1	1	4		1					1		1
17							1			3			1				1	2		148							1									
18								4	1	9	2									70																
19							4													80																
20													4				4	50									2								3
21										1	1						17	64		14															1
22													3		1		21	27	2																
23																	15	29																	
24													2									50														
25												1	16	2								35														
26												1	2	62							13			1											
27													3	4								3														
28												12	61	5																						
29												2		25	12																					
30													2	10	2																					
31						2							1								2	10		4												
32												1		6	2		1	2		1			3	15	2	2	4		2			1		1		1
33																							29													
34												2		1	26		18	15															1	1	8	2
35																	1																	5	7	5
36														1																	1	10	1		1	
37																														1	14	14	24		1	4
38												4		6			6		1					3	3	11	7	1	14					1		
39																											11	2	9			1	8		1	
40					1							1		1							7	3	3	3												
41																						4		1												
42															1	1	1								1						9	14	67			1
43																														4	7	4	57			
44													7	3	8		1	3	2																	
45												4	5	1	7			5	3	4					1	1			1			1	5	3			
46																															1	6	28		3	12
47											1	1	19	17	36	16															1					1
48																														6	22	14	79			
49	1		1			53																	1													
50		3	2	10	1	42																														

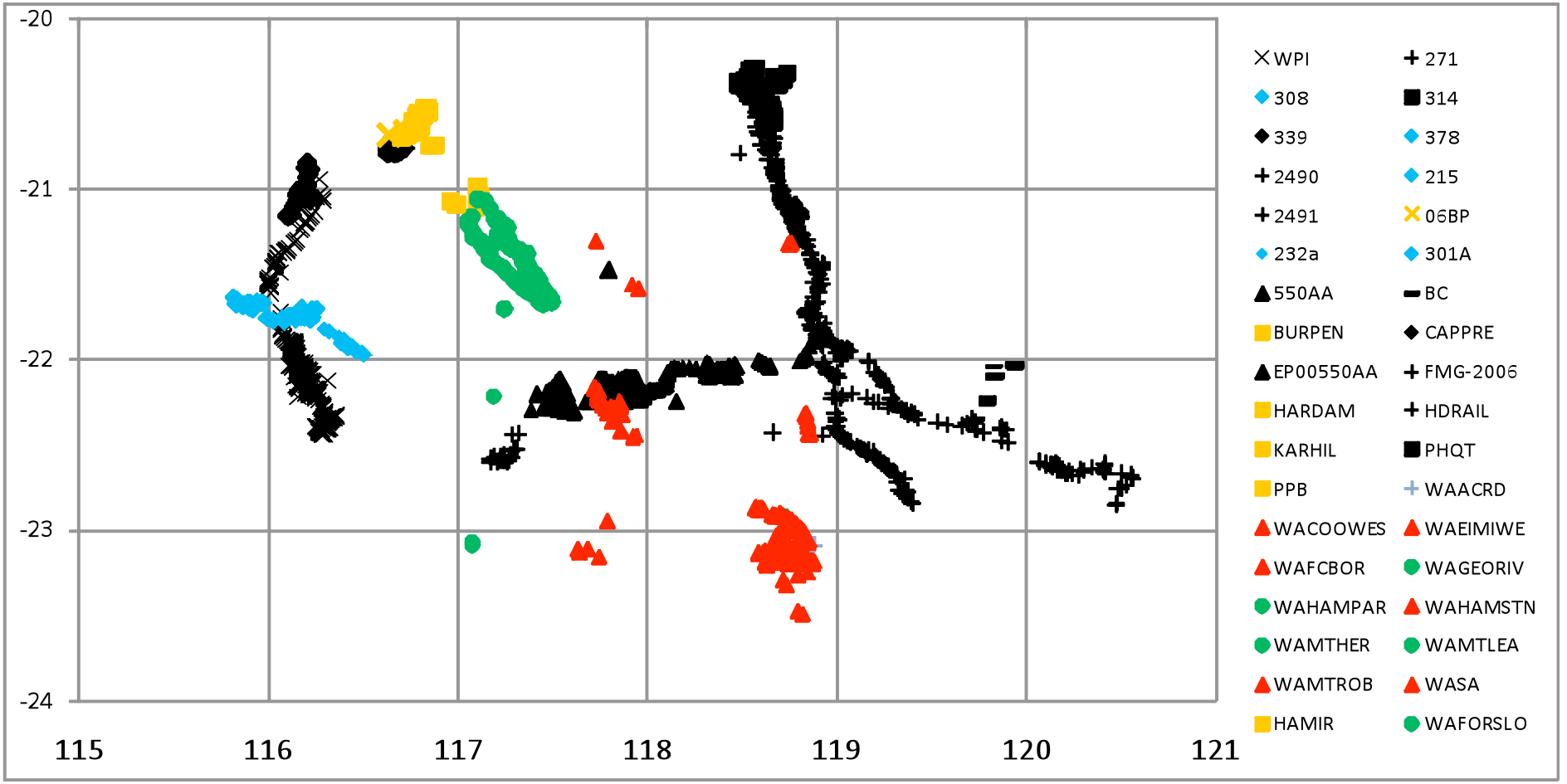
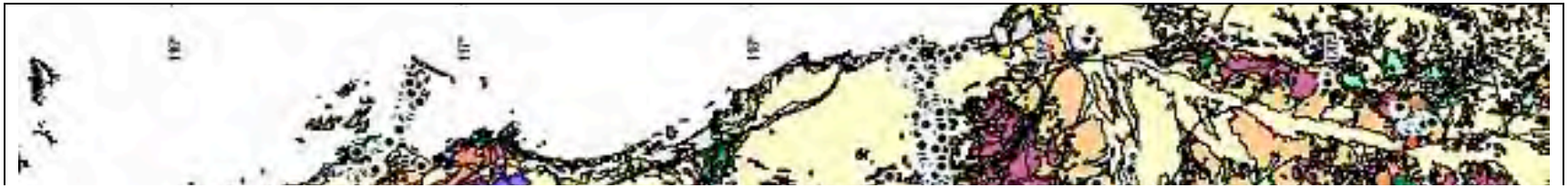


Figure 4. Distribution of sites with symbol colour and type indicating classification of projects according to the presence/absence of group 100 groups in projects.

Notes: Degrees of latitude and longitude on the axes. There is some scatter of sites due to incorrect site coordinates.



Map 3. Sites from the combined data set (API and other data except FMG Solomon) over geology.

Notes: Sites are indicated by black dotes with a white halo.

4.2.2 Consistency and level of the floristic Groups

It is not necessary for the purposes of this report to provided descriptions of the 600 floristic groups resulting from the 600-group classification of the 2883 sites in the combined (API plus other) data set. However, the consistency of the vegetation and habitat descriptions of the sites in the groups was examined (but not analysed). This showed a level of consistency that indicates that the groups mostly have a level of synthesis from somewhat above the plant community level to somewhat above the vegetation association level. Bearing in mind the type of classification and the limitations outlined above (that is that the classification is floristic only and that the data is not perfect in collection or geographic spread), this provides a further confirmation that the 600-group level classification of the data set used is a sufficiently robust framework for the analyses carried out in this report.

4.2.3 Project areas with similarity to the API Project Area

The analysis suggests that the API Project sites have more in common with sites from several projects (Codes WAGEORIV, WAMTLEA, WAMTHER, 550AA and 308 – see Table 3) from the western and central Pilbara Bioregion than the rest. Table 6 shows that these projects share more level 600-groups than other projects. In part this is a reflection of these projects having more sites and, therefore, a higher diversity of groups than some other projects, but the magnitude of the project (number of sites) is not the only factor. There is no clear similarity between these based on the surface geology units (Appendix 3). However, this does not represent the strong regional patterns in the parent rocks. Also, to some degree climate is likely to be a factor driving the overlap in groups.

Projects close by to the API Project Area, e.g. 215, 301A, 378 and 308 (all in the Robe valley and sampling similar geologies to a proportion of the API Project sites) share significant proportions of the groups with API. However, the Cape Preston Project which is also nearby, but is more coastal, shares only a small proportion and has many groups not in the API Project. This is likely to be caused partly by the sampling of different geological types (for example the Cape Preston Project Area has no Robe Pisolite and the API Project Area has no coastal dunes), and partly by the coastal location of much of the Cape Preston Project Area, with such areas having their climate modified by this factor.

Table 6. API groups: Percentage of groups API shares with the other projects and the other projects share with API.

	API shares with Other projects					Nearest Neighbours (from Other projects)	Other projects share with API				
Project	50	100	200	400	600	# sites	50	100	200	400	600
06BP	0	0	0	0	0	0	0	0	0	0	0
HAMIR	0	0	0	0	0	0	0	0	0	0	0
KARHIL	0	0	0	0	0	0	0	0	0	0	0
HARDAM	6	4	3	0	0	0	50	50	50	0	0
PPB	25	13	3	0	0	0	67	43	14	0	0
BURPEN	19	9	0	0	0	0	43	29	0	0	0
215	19	13	9	5	4	53	100	100	100	100	100
301A	13	13	9	5	3	15	100	100	100	100	67
378	19	13	11	5	3	4	100	75	80	60	40
308	38	26	20	10	8	67	86	86	88	60	50
232a	25	17	11	2	1	41	80	67	57	14	11
2490	25	4	0	0	0	0	31	6	0	0	0
FMG-2006	50	22	9	5	3	9	38	16	7	5	3
HDRAIL	38	17	6	3	1	3	32	15	6	4	2
2491	19	9	6	0	0	0	30	15	11	0	0
271	13	4	0	0	0		50	20	0	0	0
550AA	56	43	17	12	5	78	47	45	17	14	7
EP00550AA	38	26	14	7	5	51	46	35	19	10	7
BC	19	4	0	0	0	5	43	14	0	0	0
314	6	0	0	0	0	0	25	0	0	0	0
PHQT	6	0	0	0	0	0	14	0	0	0	0
339	6	0	0	0	0	4	25	0	0	0	0
CAPPRE	13	9	3	2	1	2	22	18	7	5	5
WAFORSLO	31	22	9	5	4	14	63	42	25	21	20
WAGEORIV	69	52	31	19	7	2	73	43	26	15	5
WAMTLEA	44	48	23	14	9	45	54	50	28	18	14
WAHAMPAR	38	35	9	7	3	24	60	57	13	13	5
WAMTHER	56	43	23	10	4	4	69	43	24	13	5
WAACRD	6	4	3	2	0	15	25	25	17	11	0
WACOOWES	13	4	3	0	0	1	22	9	7	0	0
WAMTROB	19	4	3	0	0	1	27	6	5	0	0
WASA	19	9	6	2	1	1	27	13	9	2	2
WAEIMIWE	6	0	0	0	0	4	25	0	0	0	0
WAHAMSTN	0	0	0	0	0	0	0	0	0	0	0
WAFCBOR	31	17	6	3	3	1	36	27	11	9	8

4.2.4 Relationship of results to geology

Appendix 3 is a tabulation of the occurrences of 109 geological units in the projects in the combined data set. This list of units was compiled from the units on the nine 1:250,000 map sheets that cover the area the combined data set is from. Unfortunately, these sheets have several different nomenclatural schemes that can be difficult to reconcile. Due to time limitations, it was only possible to reconcile a part of the nomenclatural variation and there is some duplication in this appendix. Bearing in mind this limitation, over three-quarters of the sites in the combined data set were from 15 geological units, which are shown in Table 7. Different colluvium units were the most frequently sampled. Because of the nomenclatural differences on maps and the different geologies sampled by the different projects, no regional patterns will be evident in these data.

Table 7. The most frequently sampled geological units in the regional analysis data set.

Unit	Description	sites	%
_A1f	(Not available)	122	4
_A1i	(Not available)	52	2
AFhy	Lyre Creek Member HARDEY FORMATION	53	2
AFm	MADDINA FORMATION or MADDINA BASALT	114	4
AFt	TUMBIANA FORMATION	63	2
Agm	Monzogranite	75	3
AHm	MARRA MAMBA IRON FORMATION	135	5
AyG	GIDLEY GRANOPHYRE	65	2
Czc	Colluvium	283	10
PLHb	BROCKMAN IRON FORMATION	82	3
Qa	Alluvium - unconsolidated	435	15
Qac	Alluvial - clay, silt	59	2
Qc	Colluvium	250	9
Qs	Eolian sand [siliceous]	187	6
Tp	ROBE PISOLITE	223	8
		2198	77

The sites recorded for the API Project sampled twenty-five geological units. As in the regional study, just a few units (in this case different colluvium units and the Robe Pisolite) accounted for most sites. This is a result of the project targeting the Robe Pisolite as the prospective ore source for the API Project and of the proposed transport corridor mainly running through areas low in the landscape.

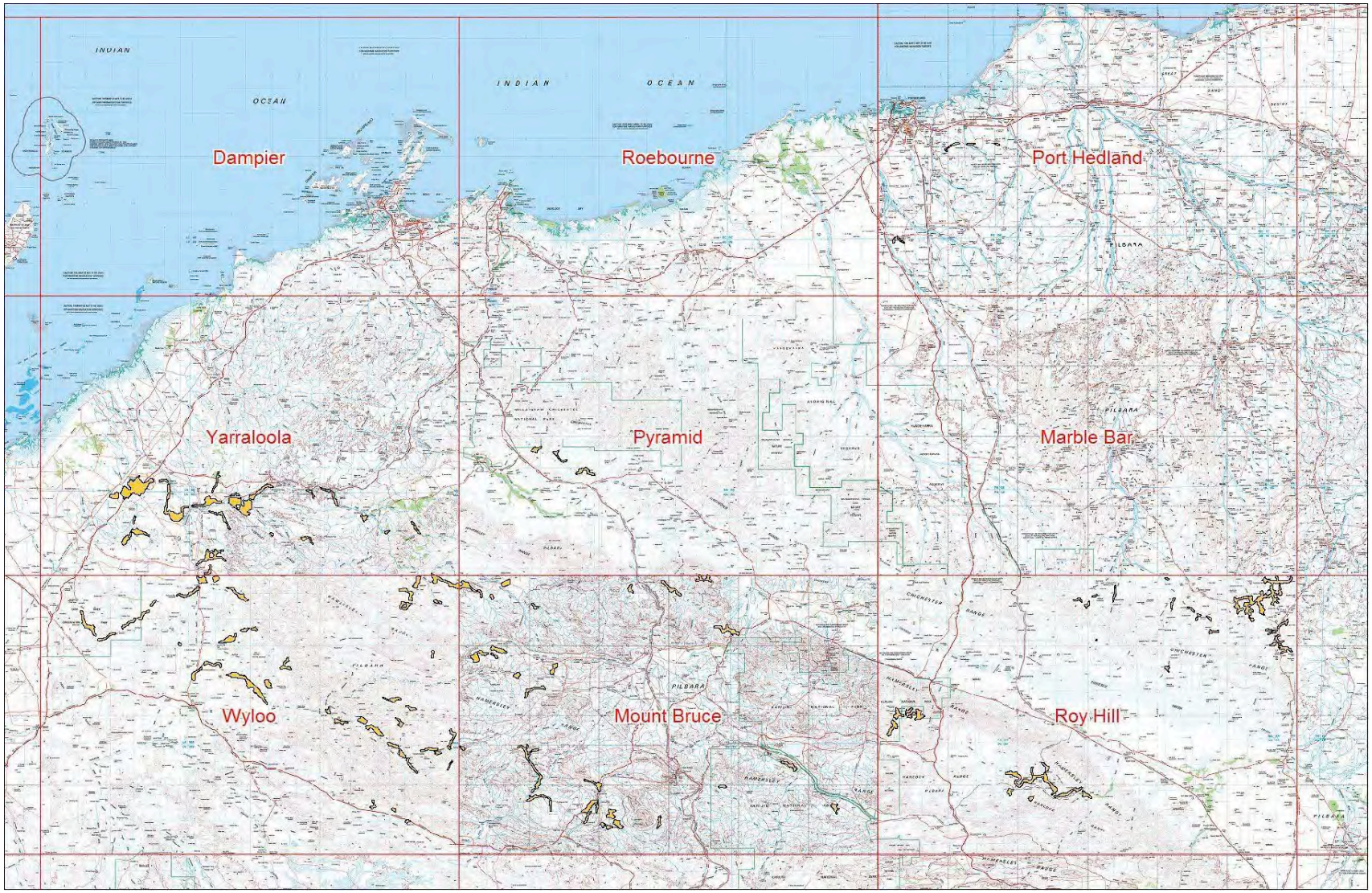
4.2.4.1 Analysis of sites on the Robe Pisolite

The Robe Pisolite is the proposed ore source for the API West Pilbara Iron Ore Project. As the vegetation on it will be the most heavily impacted by the project, it was appropriate that this vegetation was more closely investigated in this study than the vegetation of other geological types occurring in the API Project Area. This focus is supported by the results of an earlier study (Griffin & Trudgen 2009) that found that the vegetation of the Robe Pisolite in a part of the eastern Pilbara Bioregion was distinct from the vegetation of other geological units in that part of the bioregion and that the Robe Pisolite has conservation value that needed to be more closely studied.

In the classifications of the regional data set (API and other data), the Robe Pisolite occurred in many of the groups at all levels of the classification. For example at the 200-group level it was present in 28 groups and represented all of the sites in some groups to 1 or 2 sites in some groups. In part this is due to the coarse scale of the geological mapping (1:250,000), which has some inaccuracy when used in assigning geology to individual sites. Some sites would be thought to be Robe Pisolite but were actually recorded on another geological type adjacent to it.

Regardless of the latter problem (which is not thought to be large), the classification of the regional data set indicates that the vegetation on the Robe Pisolite is quite diverse. Although this geological unit is widespread, occurring mainly in the southern part of the Pilbara Bioregion, it is not particularly extensive (see Map 4). This indicates that the somewhat higher sampling density on the Robe Pisolite for its extent (due to it being the focus of several projects in the data set) means that the variation in the vegetation of this geological type is somewhat better represented in the data set than that of other units of the same geological diversity (note that some of the other units, such as colluvium and alluvium are inherently more varied and others are higher order units and are, therefore, considerably more varied).

The subset of the sites assigned to groups containing only or largely sites identified as from Robe Pisolite was investigated in a separate analysis to examine the variation of the vegetation of this unit in more detail. (Note that seven such sites from other projects were overlooked as the geology code “Eer” was not recognised at the time as being Robe Pisolite). The three hundred and twenty (320) sites used were all those that were identified by the geological mapping as on Robe Pisolite, plus those sites that grouped in the regional analysis with the sites that formed groups predominantly based on Robe Pisolite sites. This was done to capture sites that were on Robe Pisolite but not mapped as such due to the broad scale of the geological mapping.



Map 4. Distribution of the Robe Pisolite (Channel Iron Deposits) from 1:000,000 geology over a topographic base

The Robe Pisolite sites were mainly from four projects: the API Project; the BC Iron Project south-west of Nullagine; the FMG Solomon Project west of Karijini National Park; and the Rio Tinto Mesa A and G projects in the Robe Valley. Based on the description of the sites, a significant number were not on mesas; the archetypal landform for this unit. The geographical distribution of the sites is shown in Figure 5. A comparison with Map 4 shows that areas in the southern extent of the Robe Pisolite are not represented in this data set.

The classification (dendrogram) of the 320 sites used in the Robe Pisolite analysis is given in Appendix 4 and the main species in Appendix 5. These data suggest a strong project influence and a moderate landform influence, which is summarised in Table 8. Superficially, this suggests that factors related to season (good or poor), or recording effort for different projects might be influencing the classification. However, an examination of the species distinguishing the groups shows the classification is strongly based on distinct groups of species. When a classification of the same data set into a larger number of groups is examined (30-group level), the relationship of groups to landform types is more consistent (see Table 9) and it can be seen that most groups at the 30-group level are mostly on one landform.

Table 8. Distribution of the 15-group level groups of the Robe Pisolite sites analysis in projects and on landforms, with number of sites indicated and the percentage of sites assigned to the Robe Pisolite

		# sites from projects				**# sites on landform**		
15-gp number	% Robe Pisolite sites	API [WPI]	BC	Solomon	other	drainage	mesas	slopes
1	89				18	2	12	4
2	88				8	4	3	1
3	100	1						1
4	70	2	1	4	3	2	2	6
5	95	20				3	13	4
6	77	98	1		2	14	36	51
7	89	55				19	31	5
8	100*		20	1	1	5	2	15
9	100*		12				6	6
10	100	4				2		2
11	57		7			5		2
12	100		2	3	1	4	1	1
13	50		4					4
14	50			5	1	6		
15	57			43	3	12	7	27
* from 1:1M scale		180	47	56	37	78	113	129

Figure 5 shows the distribution of the groups defined at the 15-group level for this Robe Pisolite data set. The most important result of the analysis of the subset of mainly Robe Pisolite sites is that the distribution of the groups defined is related to geography (where the sites were located) rather than to surface geology (on or off of the Robe Pisolite). Thus, while in the regional analysis there is a correlation of groups to geology, within the smaller data set (mainly Robe Pisolite and colluvium sites) the relationship is to location. That is, in the Robe Pisolite data set the influence of geological unit is likely to be subordinate to regional patterns in floristic composition.

While the grain/scale in this pattern has not been determined, this classification suggests that the vegetation on the Robe Pisolite in the API area is distinct even from that in the Mesa A area, which is located nearby to the north, but in the Robe River Valley and closer to the coast.

Table 9. Relationship of groups from the 15- and 30-group level classification of the Robe Pisolite sites to landforms and the occurrence of *Triodia* sp. Robe River.

gp15	gp30	# sites on mesas	# sites on slopes	# sites on small drainage	# sites on larger drainage	# sites with *Triodia* sp. Robe River
1	1	11	3			
1	2	1	1	2		
2	3	3	1	4		4
3	4	1				
4	5	2	7	1		
5	6	13	4	3		2
6	7	4	18	1		6
6	8	17	17	4		27
6	9		1		1	1
6	10	16	14	8		33
7	11	14	7	2	1	12
7	12	4	6	4		
7	13	3	3	6	3	4
7	14			1	1	1
8	15		3		2	
8	16		3	3		
8	17	2	9			
9	18	3	2			
9	19	1	1			
9	20		3			
9	21	2				
10	22		2	1	1	4
11	23				1	
11	24		2	2	2	
12	25	1	1	1		
12	26			3		
13	27		4			
14	28			1	5	
15	29	4	5	1		
15	30	3	22	9	2	

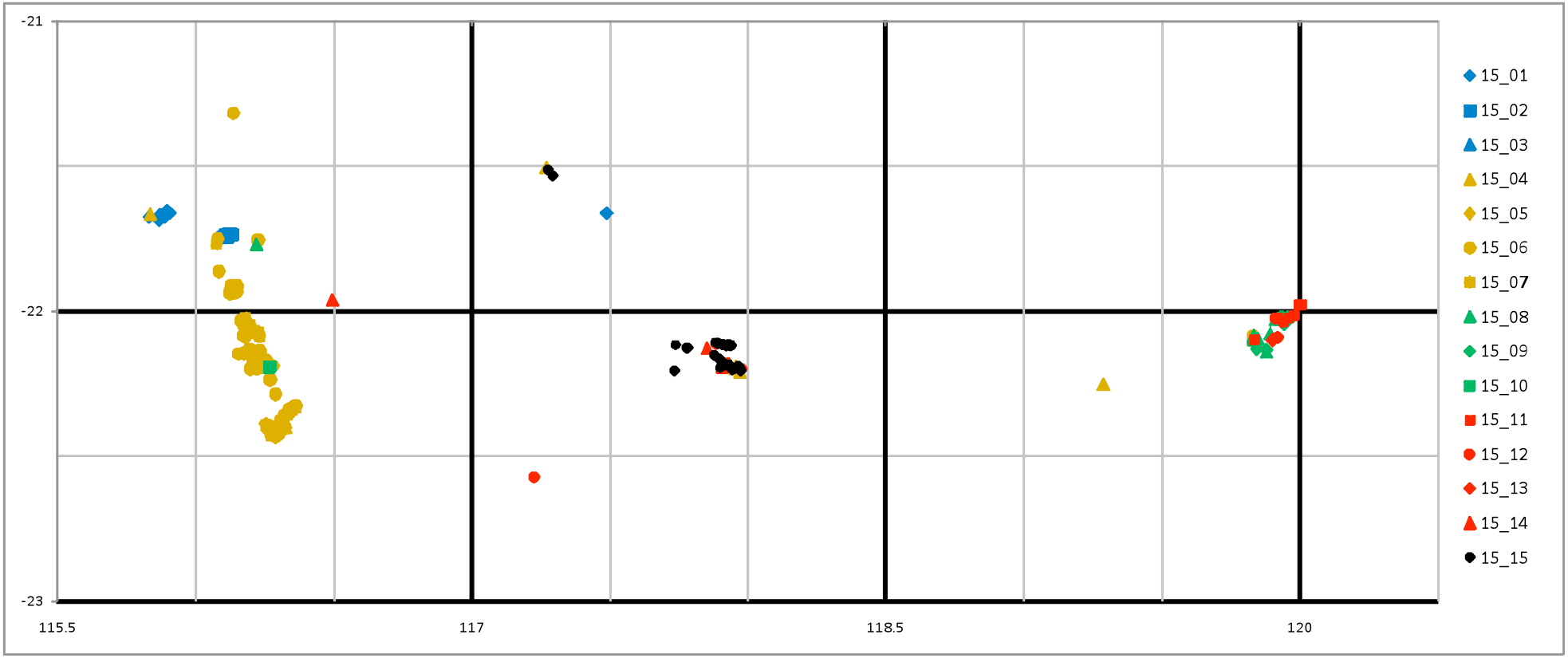


Figure 5. Distribution of the 15-group level units of the classification of the Robe Pisolite data set.

Notes: Colours according to 5 group level classification. 1:250,000 map sheets shown (black lines) with degrees of latitude and longitude on the axes. There are a few errors in the geocodes, leading to a few records scattered away from their survey area.

4.2.4.2 Distribution of *Triodia* sp. Robe River and occurrence in floristic groups

Triodia sp. Robe River (M.E. Trudgen 12,369) is an undescribed species of "spinifex" restricted to the western part of the Pilbara Bioregion; the records for this species in this data set are shown in Figure 6 (black symbols). Most of the known locations are represented. The others are in the same general area, but extend the range somewhat to the west in the Robe valley and a little to the east in the southern part of the distribution. While most of the *Triodia* sp. Robe River records in the data set are from the API Project, this is largely due to the number of sites recorded for that project.

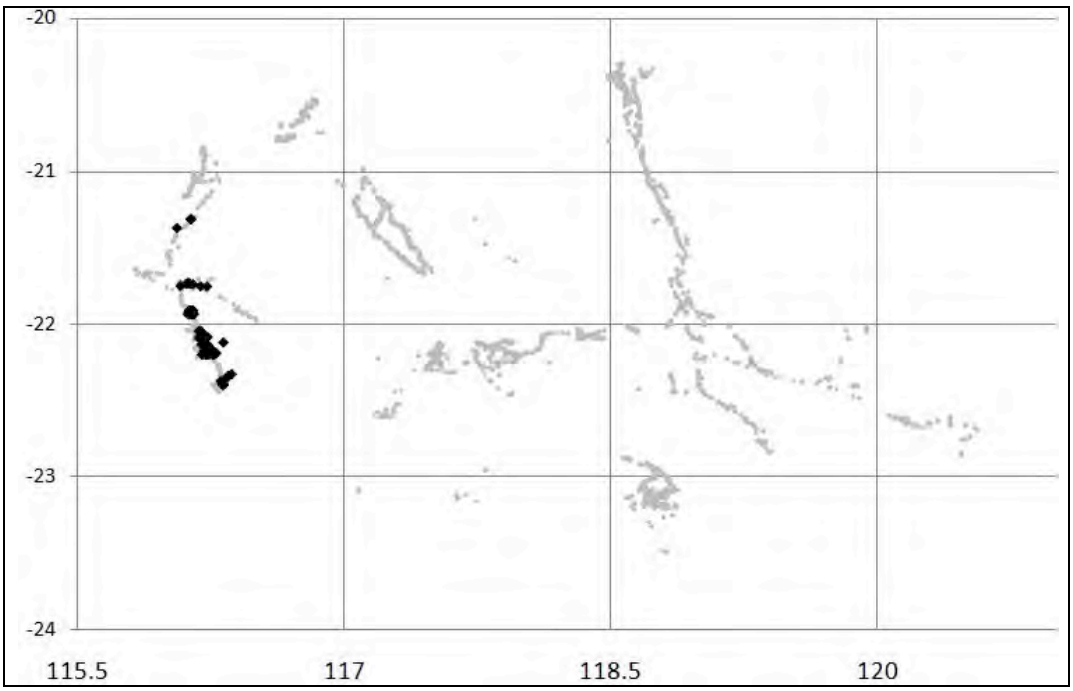


Figure 6 Distribution of records of *Triodia* sp. Robe River from the regional data set

Notes: Black symbols = sites with *Triodia* sp Robe River; the grey symbols are the sites in the data set without this *Triodia*). 1:250,000 map sheets indicated with degrees of latitude and longitude on the axes.

The distribution of *Triodia* sp. Robe River shown in Figure 6 is similar to the distribution of the orange symbols in Figure 5 (which indicate the distribution of four of the 15-group level groups defined in the Robe Pisolite sites analysis), and shows the close association of this species with the Robe Pisolite. The species was common in several groups defined at the 30-group level of the Robe Pisolite sites analysis. The occurrence of *Triodia* sp. Robe River in these groups is shown in the right hand column of Table 9 (see above).

4.3 Comparison of local analysis to regional analysis

To better understand the result of the regional analysis, an analysis of 522 sites (quadrats and releves) from the API Project Area data set was carried out for comparison to it. This analysis will be called the local classification to differentiate it from the regional classification. Table 10 compares the local classification with the distribution of the API sites in the regional classification.

A superficial assessment of this comparison suggests that there is discord between the local classification and the regional classification. However, a closer examination shows that a large proportion of sites stay together in both classifications in the groups displayed in this table. The disruption comes from the additional sites in each data set (that is the non-API sites in the regional data set and API sites included in the local analysis but not in the regional analysis, and the different factors emphasised in the two classifications. To expand on the latter point, the regional classification emphasises (highlights) regional floristics and the local classification emphasises habitat types.

As a result of the degree of accord between these two classifications, the regional classification is considered an adequate basis for discussing the floristic types present in the API Project Area. That is, it is an appropriate basis for assessing the conservation values of the vegetation in the API Project Area.

Table 11 shows the number of groups from the API Project data in each classification level of the regional classification. For example, at the 50-group level of the regional classification there are sixteen groups with sites from the API Project Area and at the 600-group level there are seventy-five groups with sites from the API Project Area. This means that the regional analysis is effectively a classification o the API Project Area data into 16, 23, 35, 59 and 75 groups.

Taking the latter level, of the 75 groups at the 600-group level of the regional analysis with API sites in them, more than two thirds of the groups predominantly consist of API sites. Of these groups, a significant proportion consisted of sites mainly recorded from areas of Robe Pisolite. At the 200-group level these were groups 88, 90, 91 and 93; and at the 600-group level groups 247, 250, 253, 255, 256, 257, 259, 267, 268, 269, 270, 303 and 304. None of the latter set had only one site from the API Project and only 2 had less than 5 sites.

Table 10. Comparison of local (API sites only) and regional classifications of data sets including the API sites.

Notes: The rows show two levels of groups (9- and 25-group levels) for the local classification. The columns show three levels of classification from the regional classification (50- 100- and 200-group levels). The numbers in the cells of the body of the table are the number of sites in that intersection that are in both the regional and local classifications (ie. they overlap where there are numbers). Cells coloured green indicate a high proportion of sites in both the regional and local classifications. Cells coloured blue is high proportion of groups in the regional classification groups (but not the local) and those coloured yellow indicate a high proportion of groups from the local classification, but not the regional classification.

		1	1	1	2	4	6	7	8	8	8	8	8	8	8	13	13	13	14	15	16	16	16	17	17	17	17	18	18	19	19	21	21	21	32	45
		1	2	3	7	13	20	22	24	24	24	25	25	25	26	33	34	35	38	39	41	41	41	42	42	42	42	43	43	44	44	46	47	47	63	94
gp9	gp25	4	5	9	17	28	39	43	47	48	49	50	51	52	53	66	68	71	79	80	85	86	87	88	89	90	91	92	93	94	95	100	102	103	134	186
1	1		1																						2		1									
1	2																											8		3	4					
1	3																											1		1	18					
1	4			1									1														1									
2	5										1	2	1								1	5						1		28	7					
2	6																								17	1				12	1					
2	7															1									1					3						2
2	8											1																1								2
3	9													3					1		2				1					1						
3	10						3																													
3	11											3																								
4	12												7		2																					
4	13									3		4	3																							
5	14							1							4																					
6	15																					8	3	1	4	5										
6	16				1												1			1	1				19	12				2						
6	17																	2		1					5		23									
6	18																								2	28	1		3			1	2			
6	19																							15	2											
7	20										18																	7								
8	21								14																											
8	22	1	5			1																												1		
8	23																																		1	
8	24				1									1										1		1			1				7	3		
9	25																							1	1	1	2	1	47							

Table 11. Number of groups in API data in Regional analysis.

Classification Level	Groups in API	% with single site in API	% groups in API predominantly in API	% groups in API predominantly in API and predominantly Robe
50	16	0	29	0
100	23	39	30	4
200	35	26	44	11
400	59	23	50	17
600	75	22	69	13

The main species in the groups at the 200-group level are shown in Appendix 6 in a matrix format. This is to provide an indication of the degree of distinction between groups in their composition. (The comparable Table from the 75 groups is too large to present in this report.)

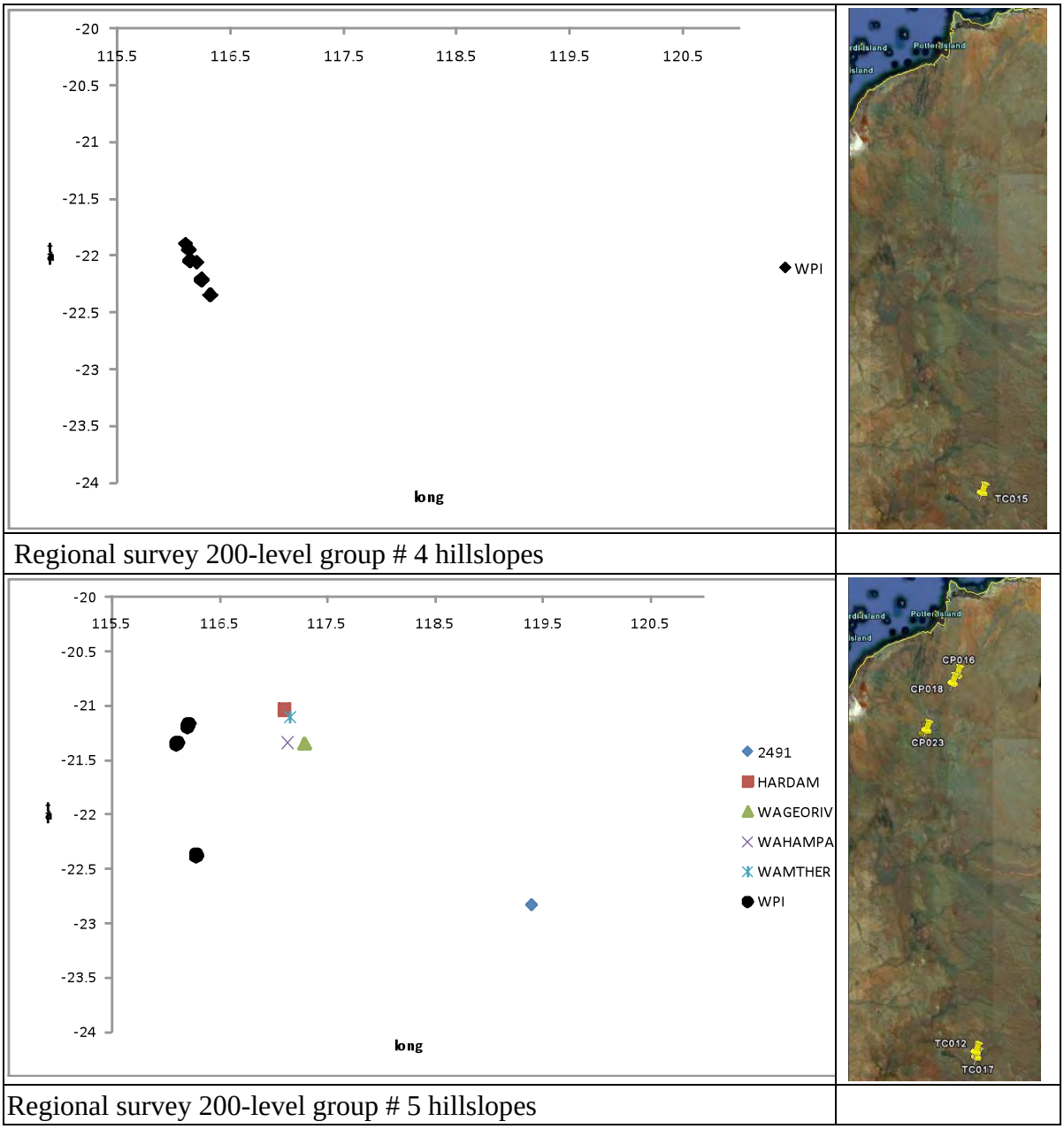
4.4 Distribution patterns of floristic groups in the regional analysis

As noted in the regional analysis, there are strong geographic patterns of distribution in the groups defined, with the API sites "belonging" to a largely western Pilbara grouping. Within the groups defined that have sites from the API Project, there is further geographic pattern, particularly a northern and southern pattern. The maps and accompanying images in Figure 7 illustrate both the regional patterns and the north-south pattern using the 200-group level groups from the regional analysis that include sites from the API Project. Examination of this figure shows that at the 200-group level, groups 4, 39, 48, 49, 51, 86, 91, 92, 93, 94 and 95 only have sites from the western part of the Pilbara Bioregion from the data set used. Similarly, at the same level, groups 9, 17, 28, 71, 66 and 72 only occur in the west and west-north-west of the Pilbara Bioregion. In contrast, groups 43, 50, 53, 58, 68, 80, 89, 90, 100, 102 and 103 occur in the west to centre of the bioregion, but usually have most of their sites in the western part. What is very clear is that only four of the groups, groups 5 (hillslopes), 88 (mesa crests and slopes), 134 (clay plain) and 186 (alluvial plain and lower slopes), extend from the west to the east of the bioregion. *These distributions clearly show that the floristic composition of the vegetation in the Pilbara Bioregion has strong regional patterns.*

Not surprisingly, the north-south variation tends to differentiate the group with sites on Robe Pisolite deposits (usually mesas) in the south from the transport corridor. To a degree, this is simply because the Robe Pisolite occurs in the southern part of the project area and not in the north. There are some other geographic patterns, which will be described under Mesas below.

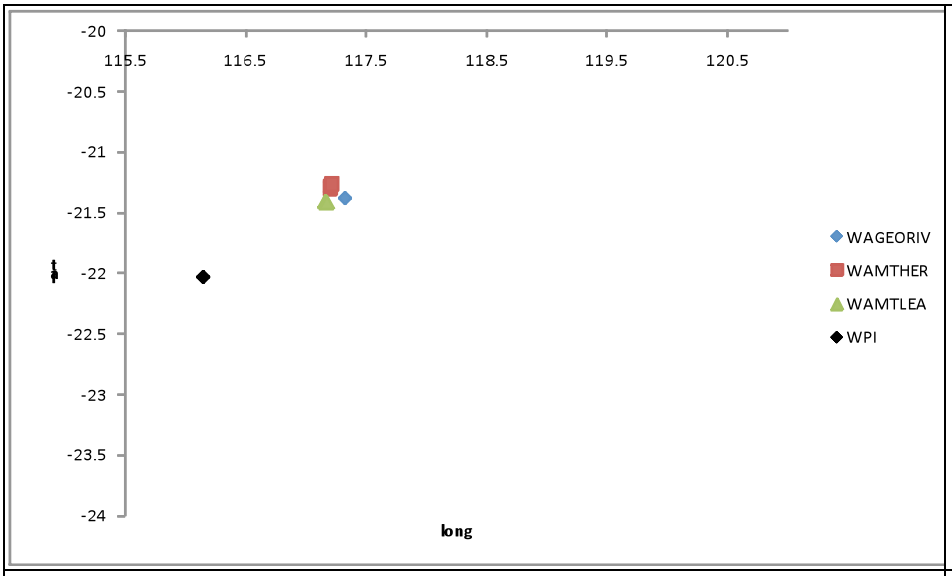
As well as the strong geographic patterns in the groups defined in the regional analysis at the 200-group level containing sites from the API Project; there is a strong association between the groups at this level and landscape types, the latter also being broad habitat types for vegetation, and flora. To illustrate the strong association with landscape types for many of the groups at 200-group level, the main habitat type is given on Figure 7 for each of the groups mapped in that figure.

Figure 7. Distribution of 200-group level groups from the regional analysis with sites from the API Project, with main habitat type.

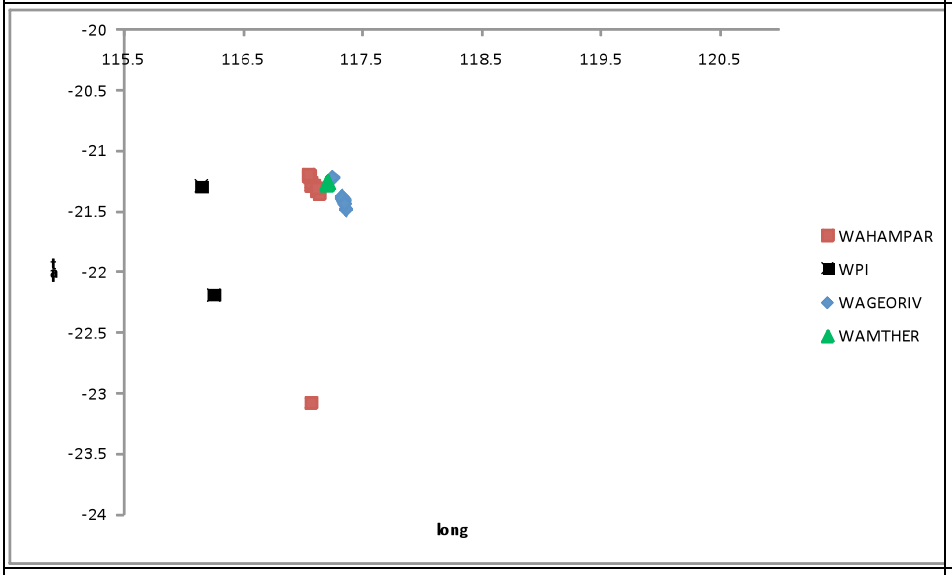


Regional survey 200-level group # 4 hillslopes

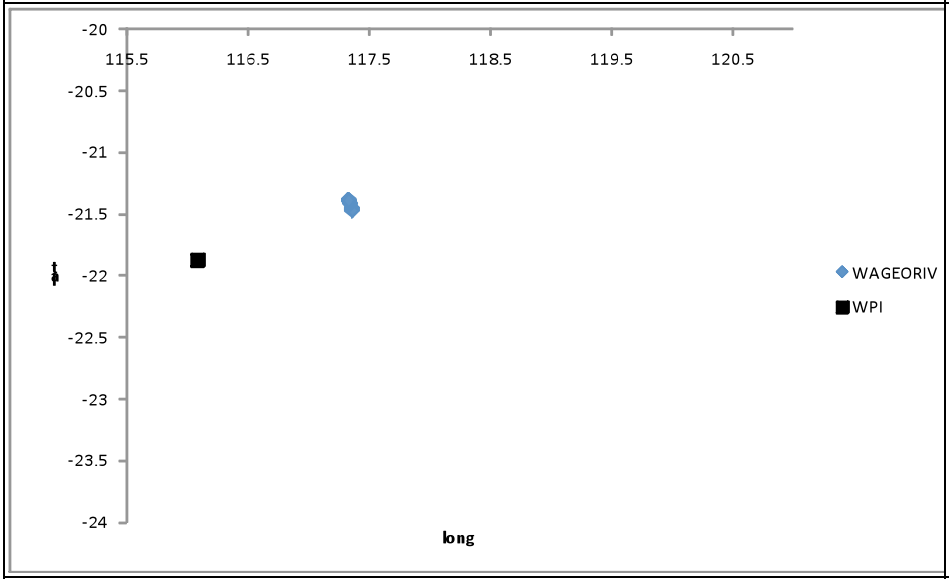
Regional survey 200-level group # 5 hillslopes



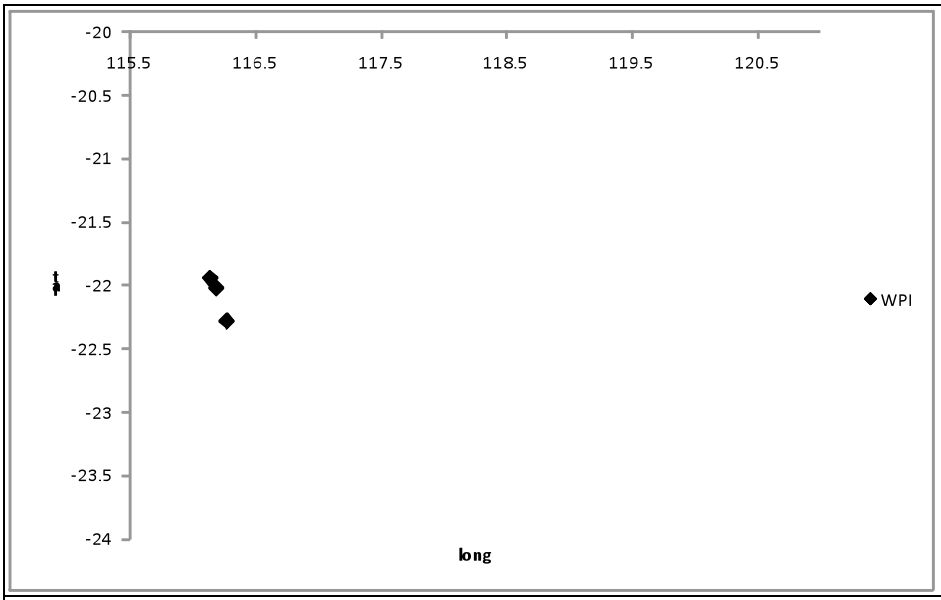
Regional survey 200-level group # 9 hillslopes



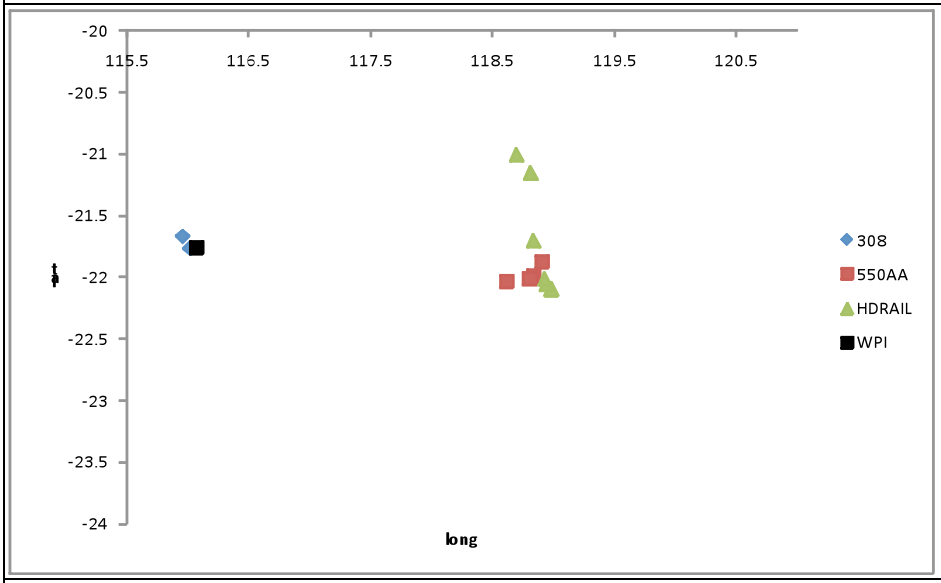
Regional survey 200-level group # 17 hillslopes



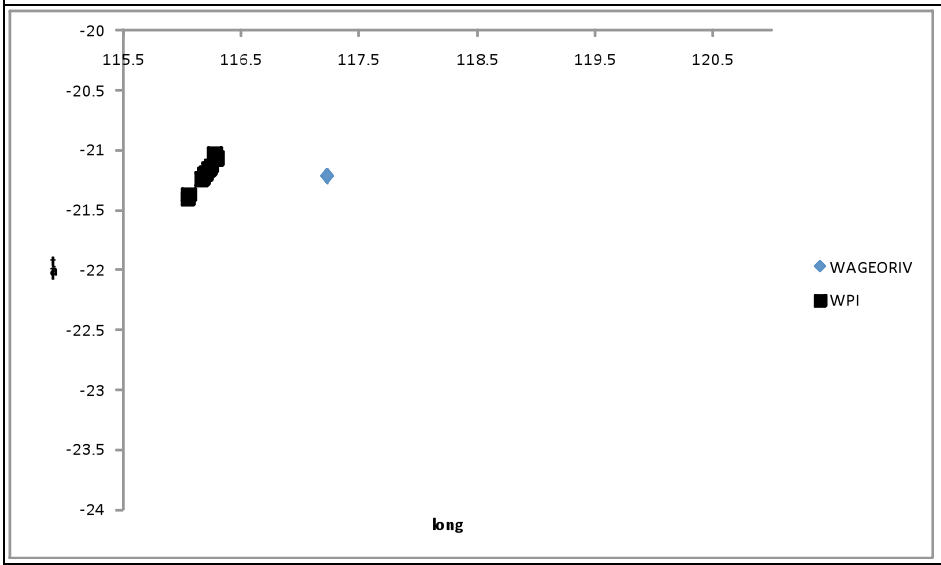
Regional survey 200-level group # 28 steep slopes



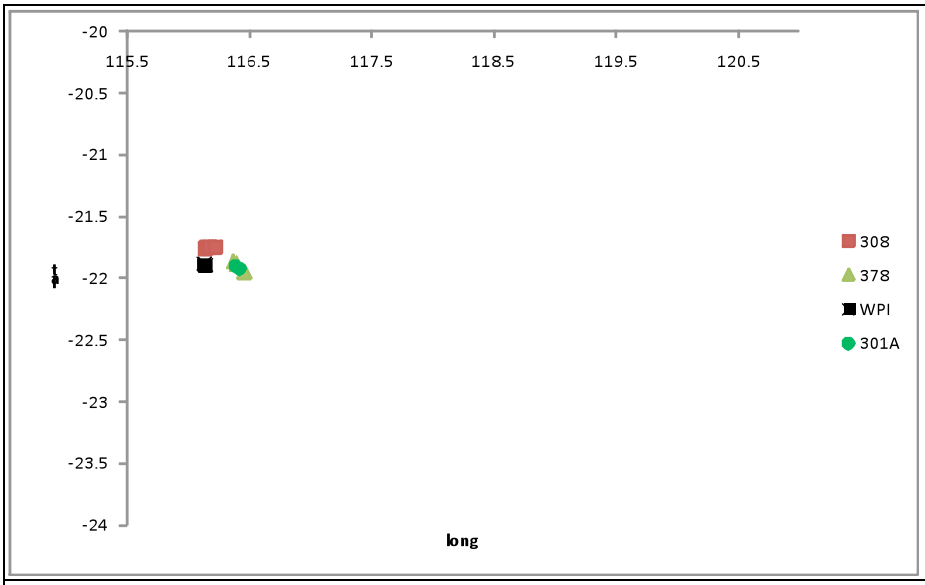
Regional survey 200-level group # 39 creek lines



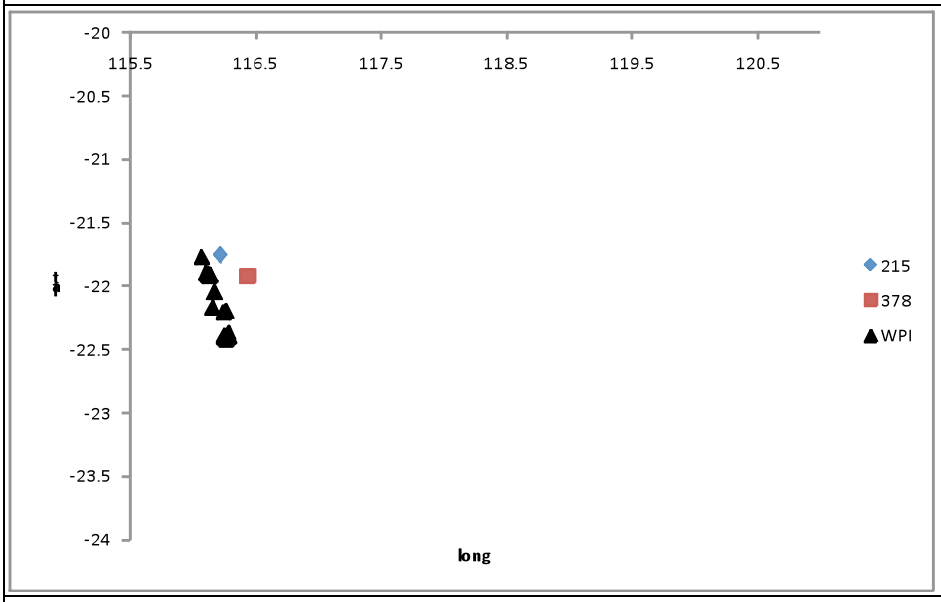
Regional survey 200-level group # 43 large creek lines



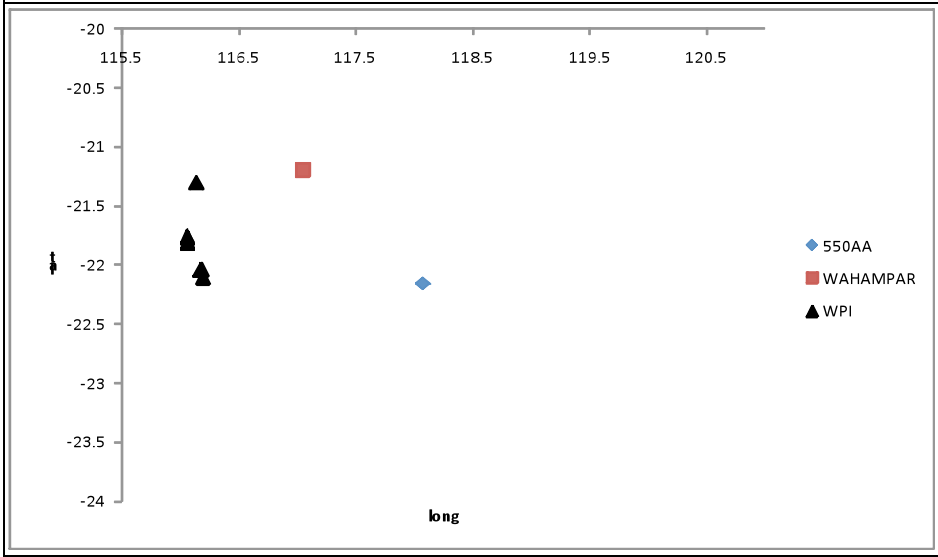
Regional survey 200-level group # 47 creek lines



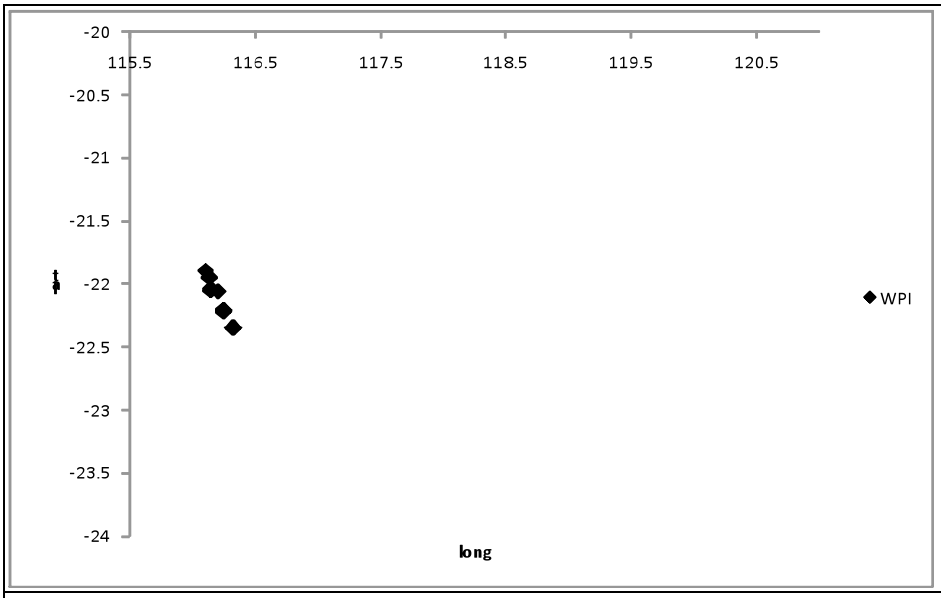
Regional survey 200-level group # 48 large creek lines



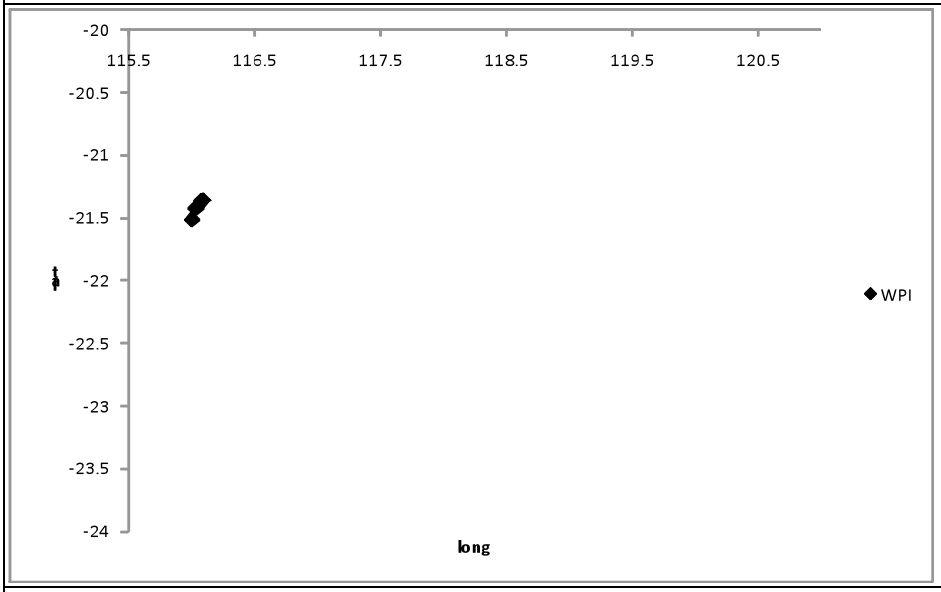
Regional survey 200-level group # 49 creek lines



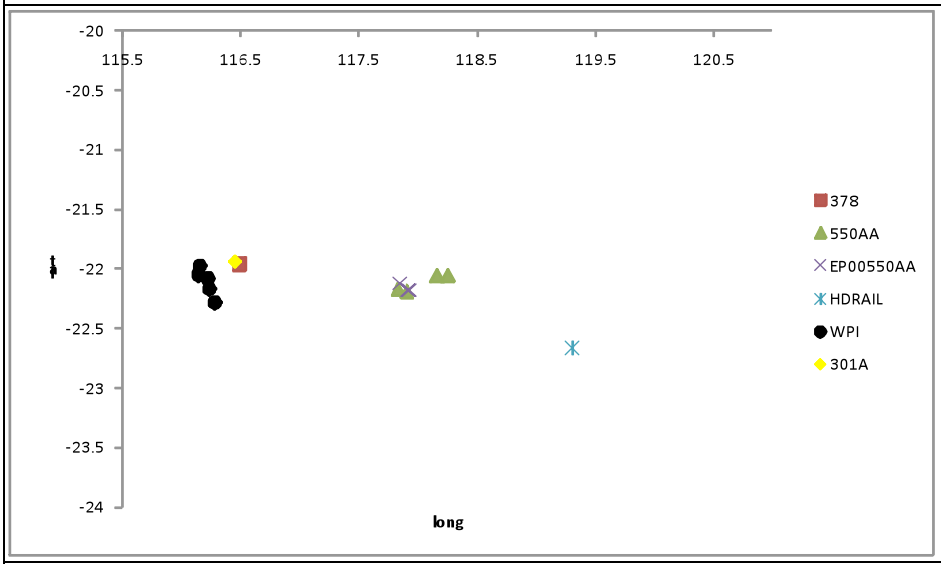
Regional survey 200-level group # 50 large creek lines



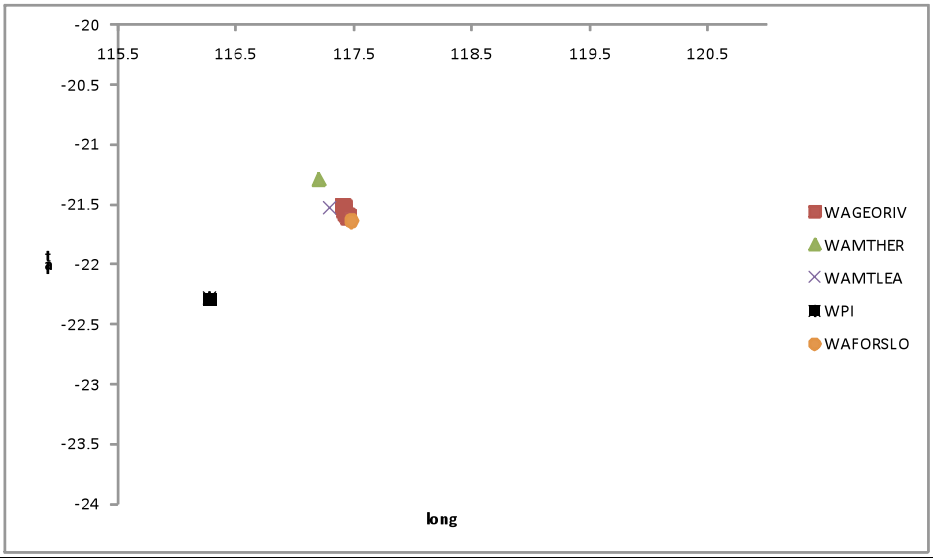
Regional survey 200-level group # 51 creek lines



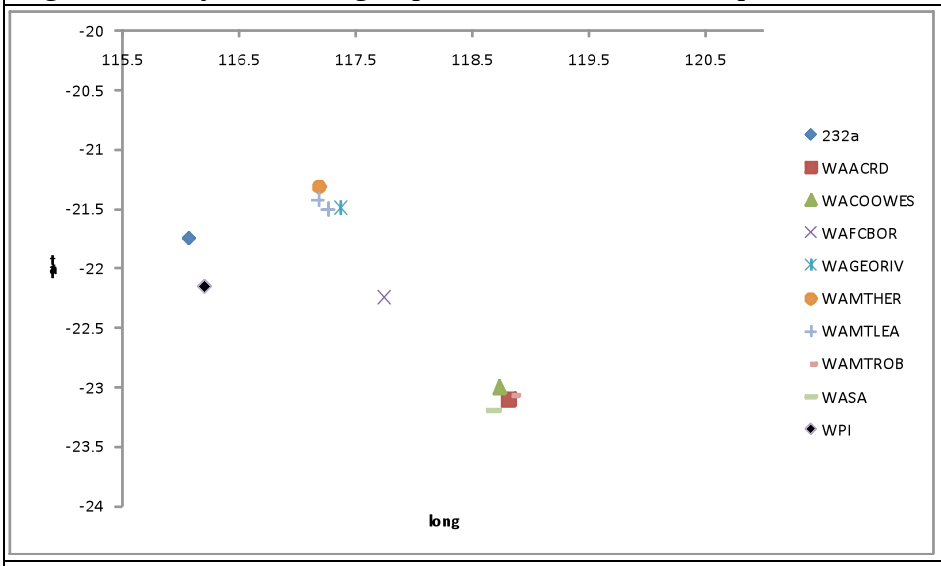
Regional survey 200-level group # 52 creek lines



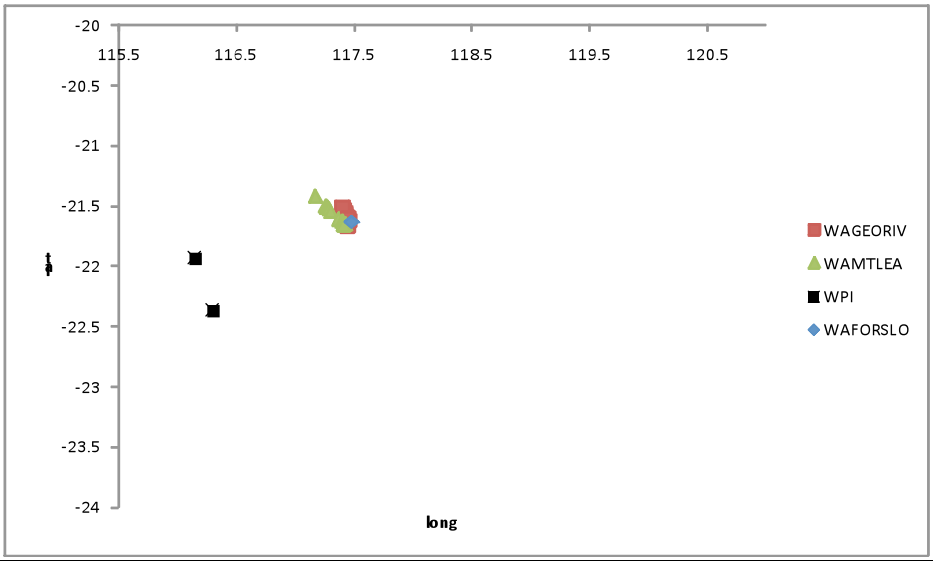
Regional survey 200-level group # 53 creek lines



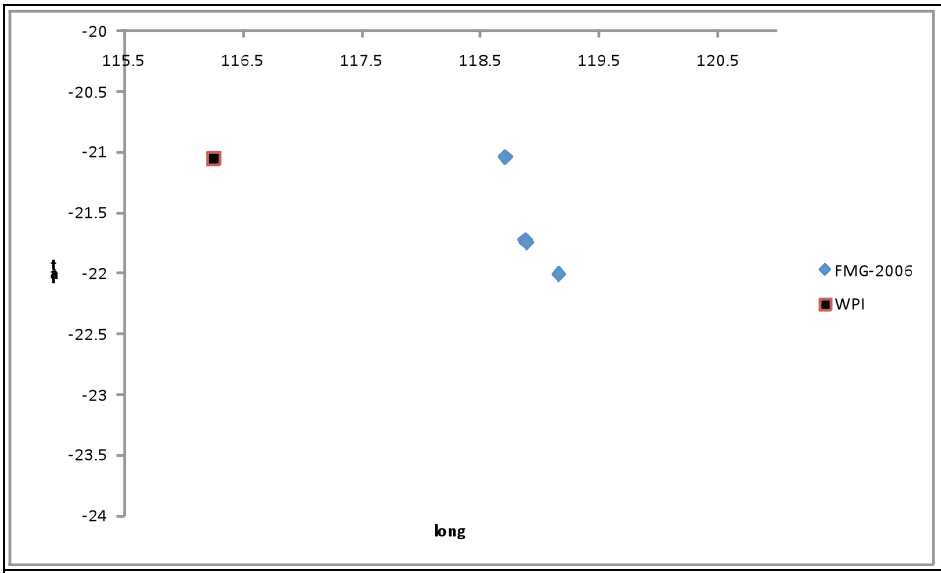
Regional survey 200-level group # 66 creek lines and slopes



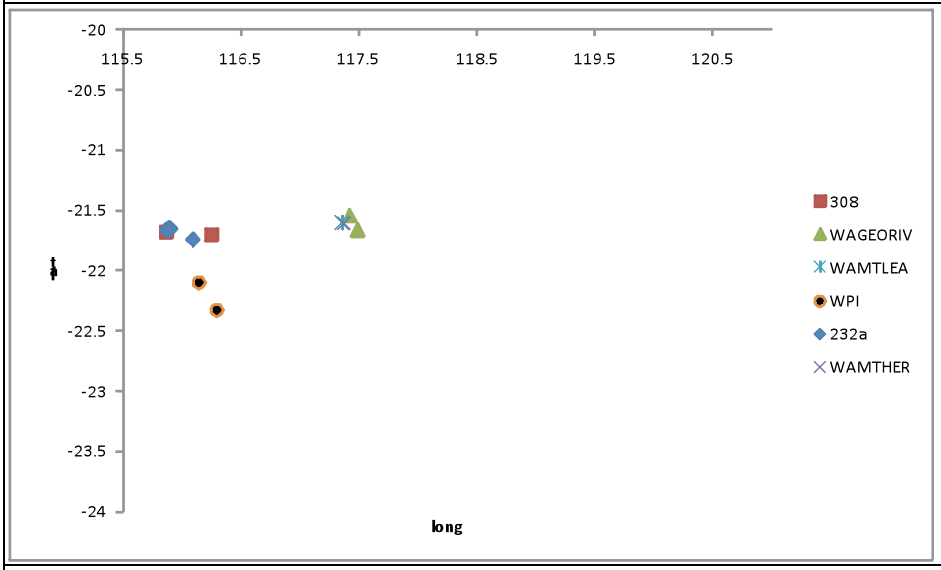
Regional survey 200-level group # 68 slopes and crests



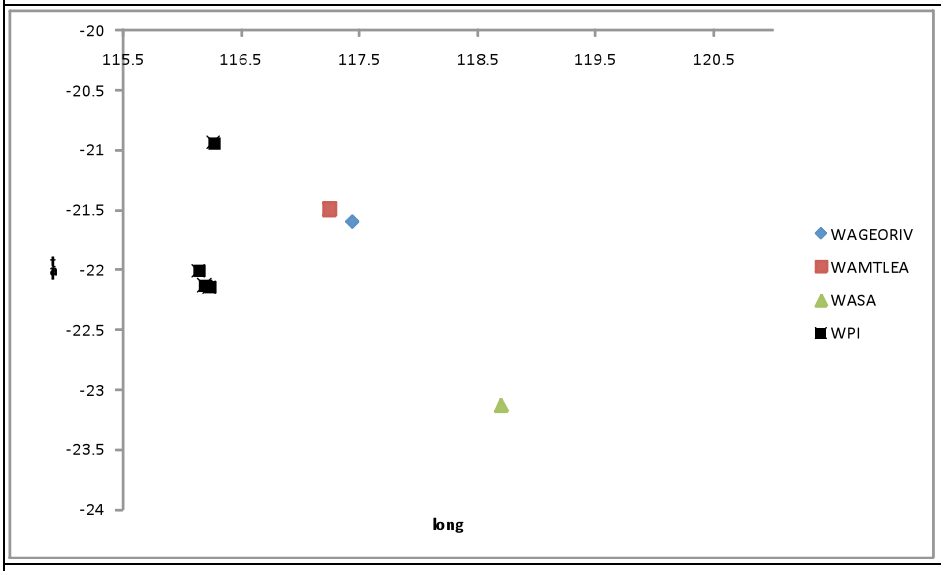
Regional survey 200-level group # 71 slopes and few crests



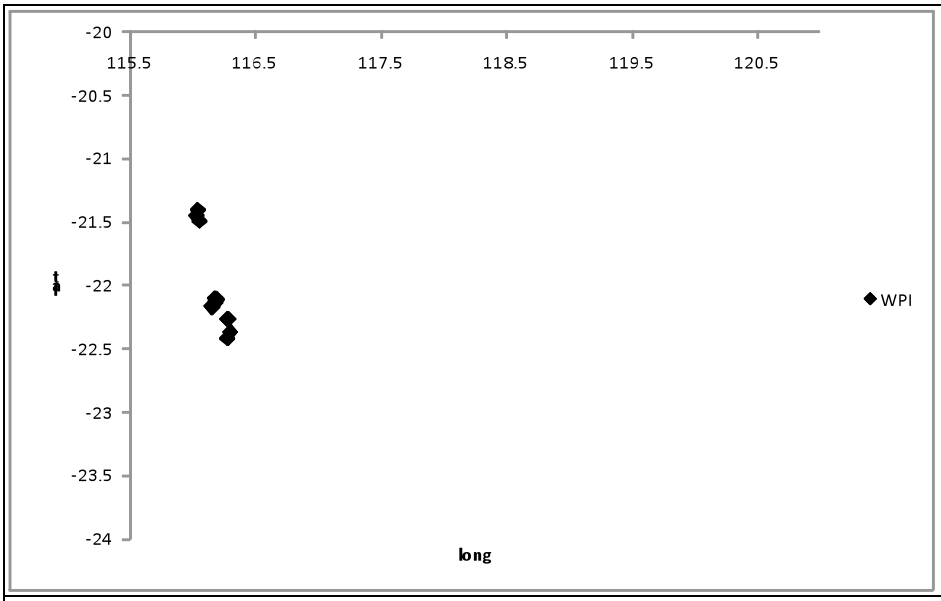
Regional survey 200-level group # 79 flats and creek lines



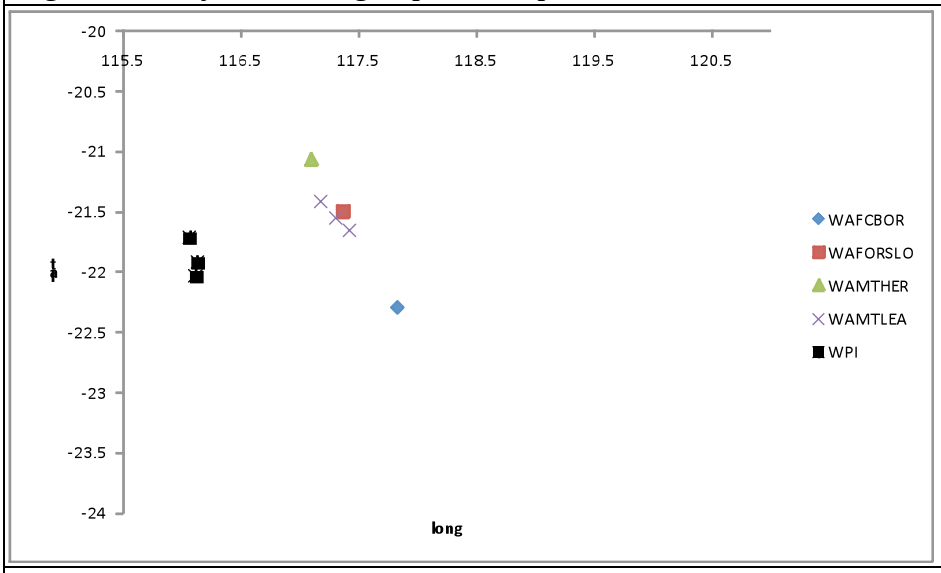
Regional survey 200-level group # 80 mesa crests and slopes



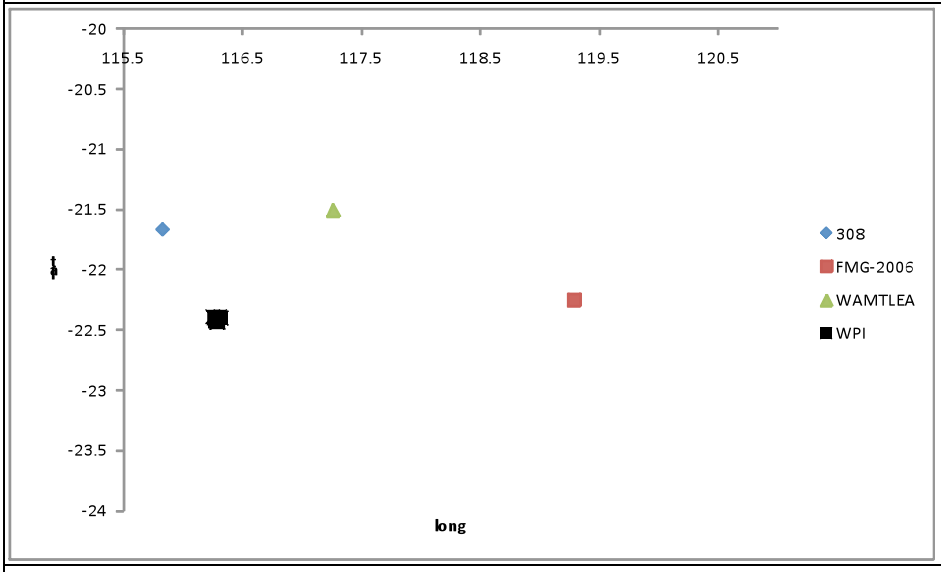
Regional survey 200-level group # 85 slopes and creek lines



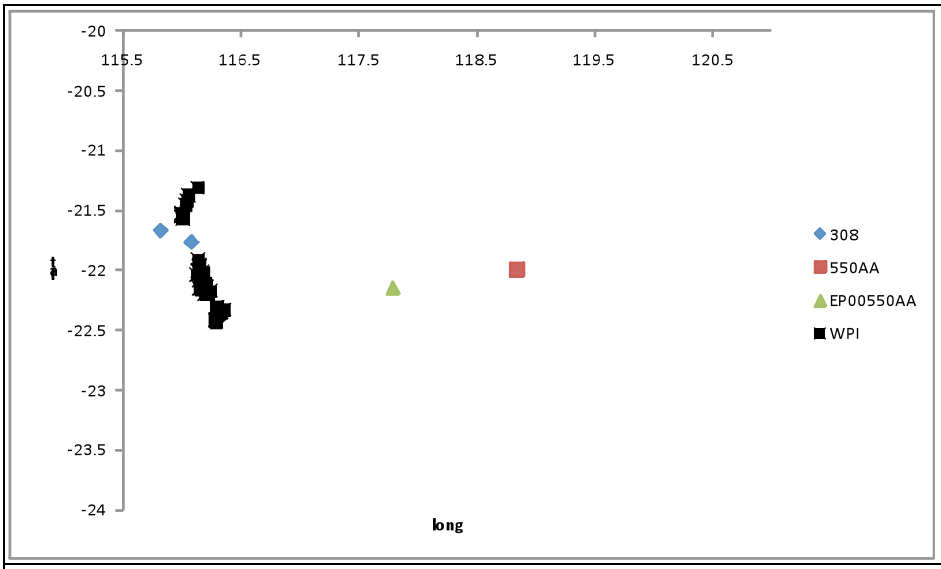
Regional survey 200-level group # 86 slopes and creek lines



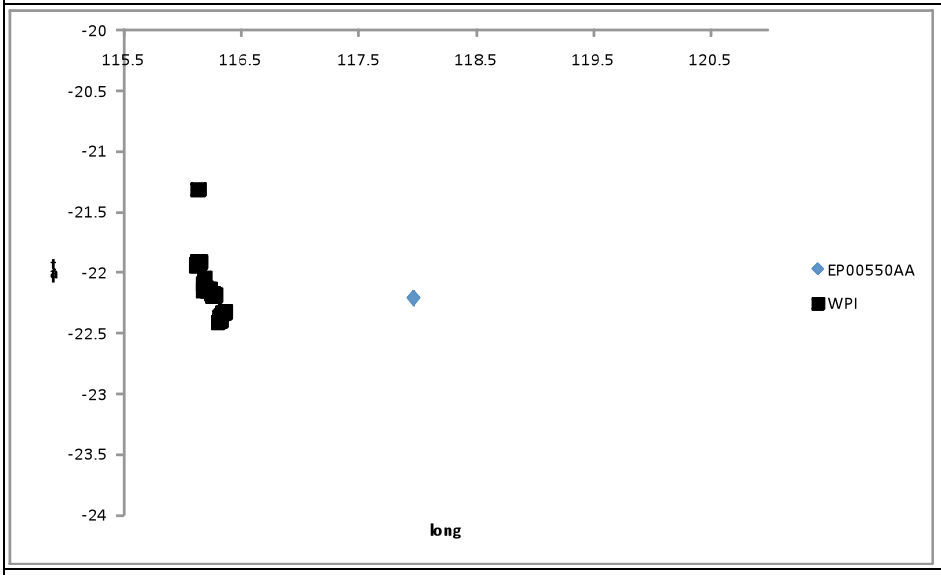
Regional survey 200-level group # 87 slopes and creek lines



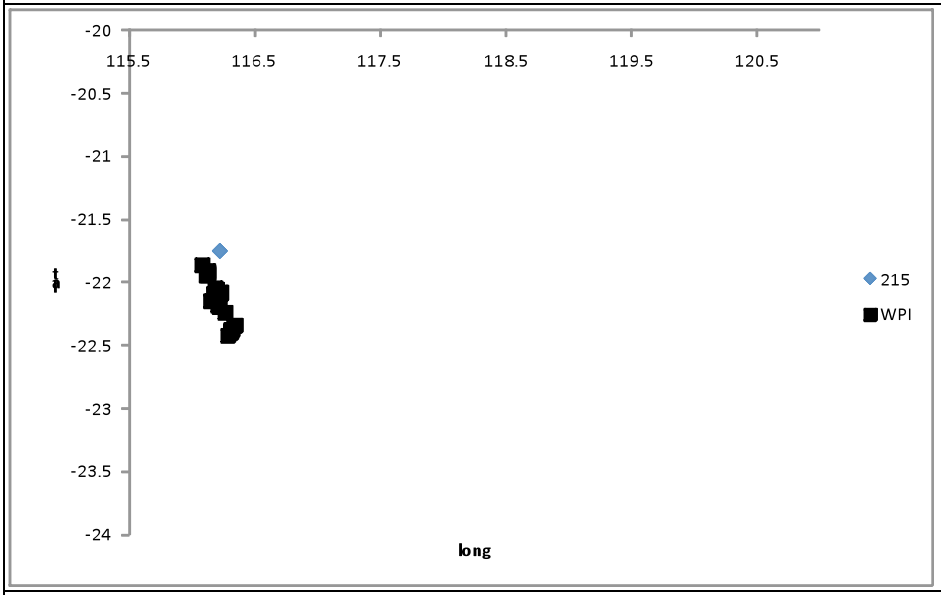
Regional survey 200-level group # 88 mesa crests and slopes



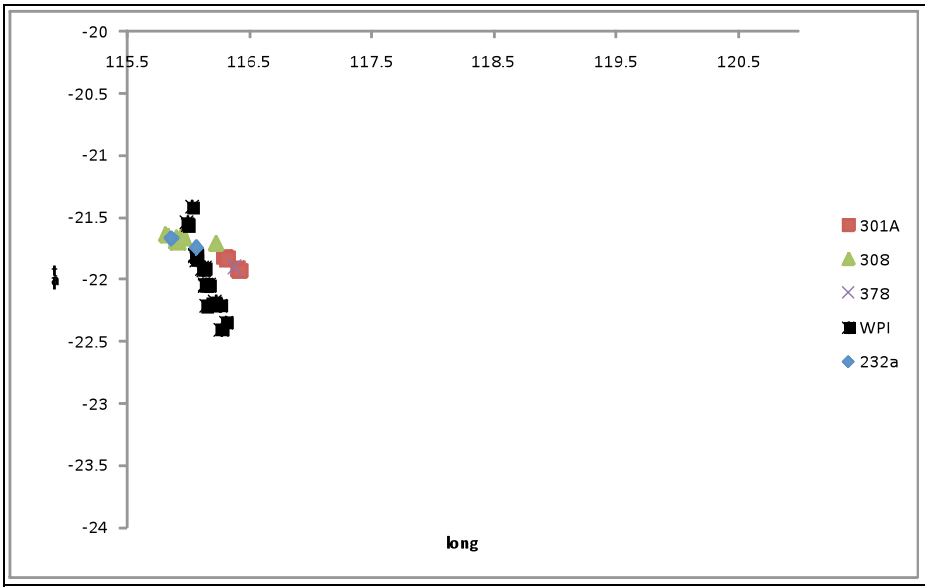
Regional survey 200-level group # 89 slopes, mesa crests & creek lines

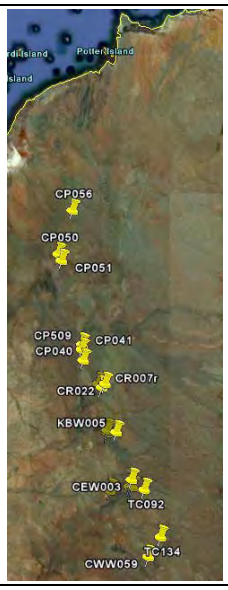


Regional survey 200-level group # 90 slopes, mesa crests & creek lines

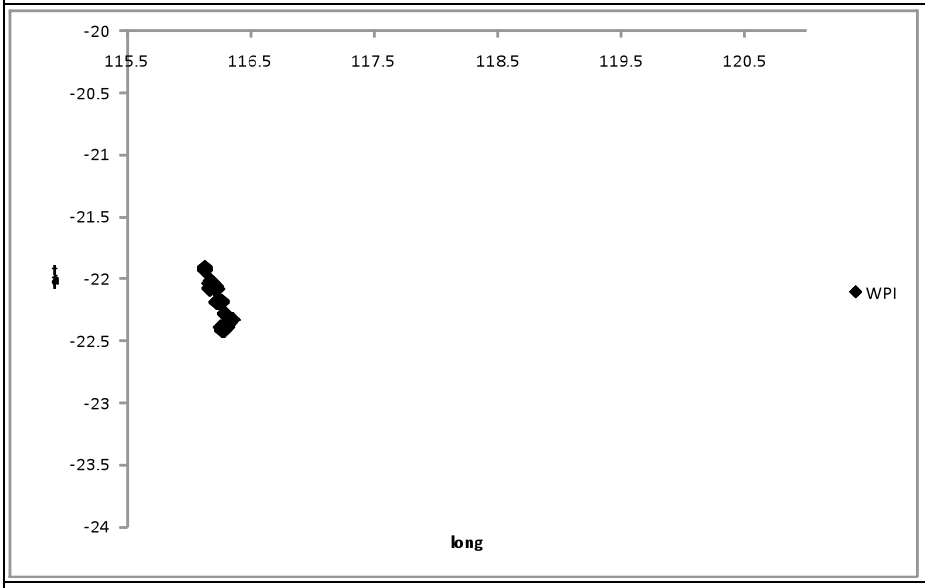


Regional survey 200-level group # 91 slopes and mesa crests

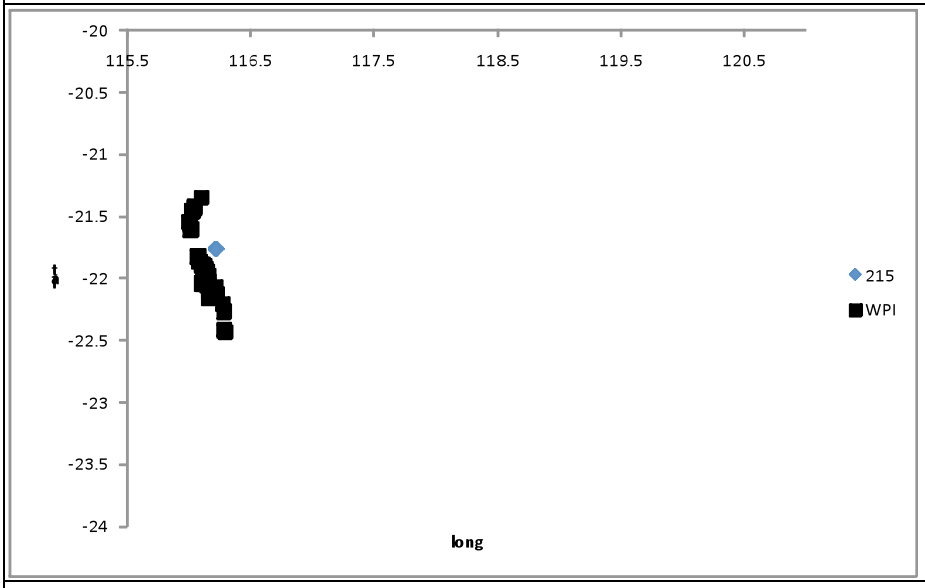




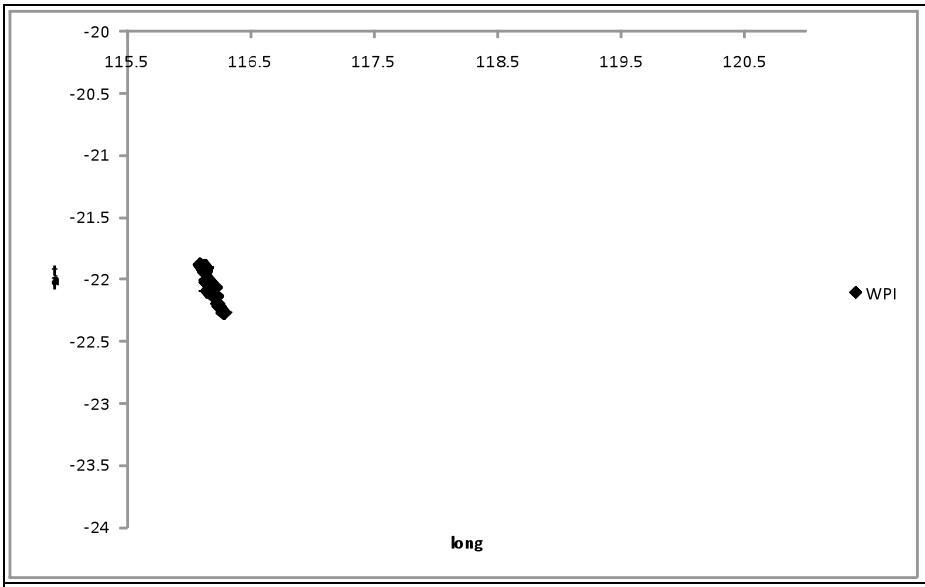
Regional survey 200-level group # 92 creek lines and slopes



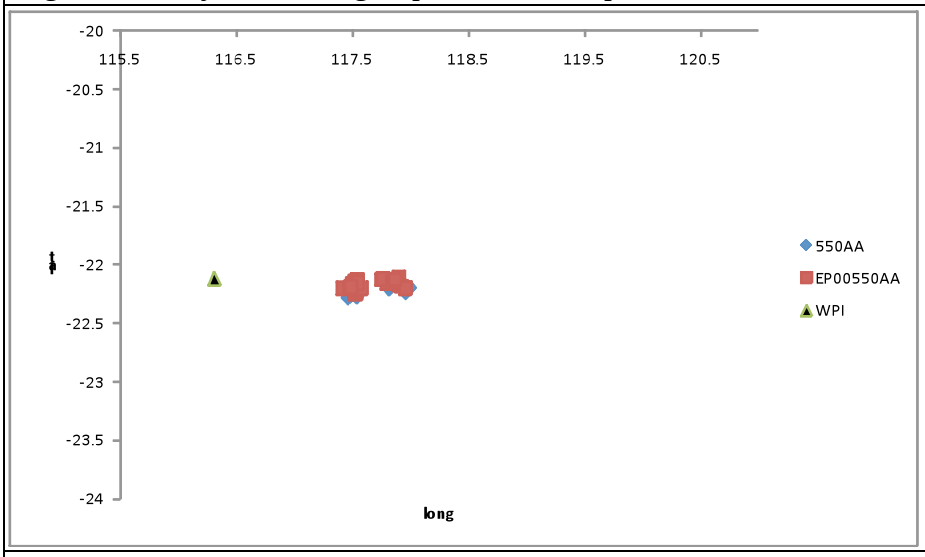
Regional survey 200-level group # 93 mesa crests and hillslopes



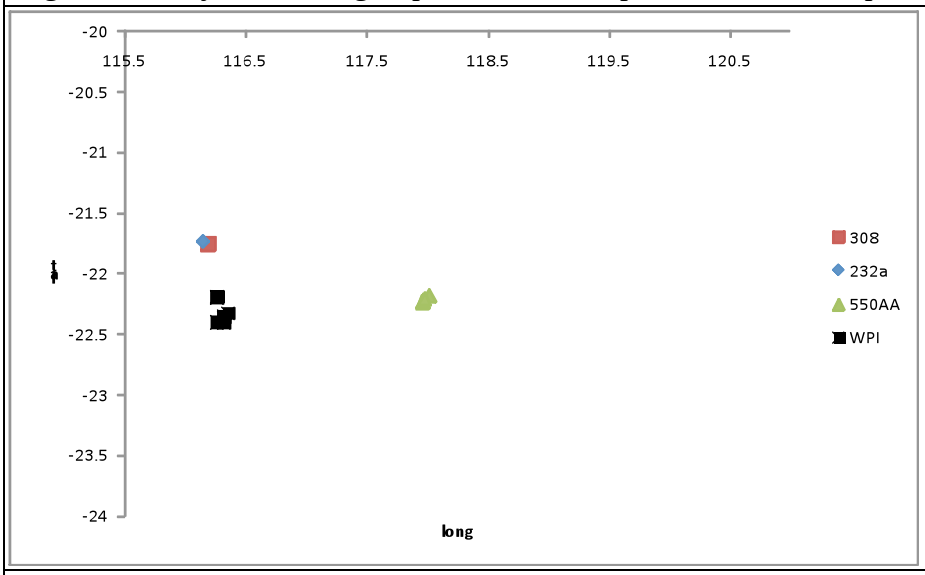
Regional survey 200-level group # 94 alluvial plains



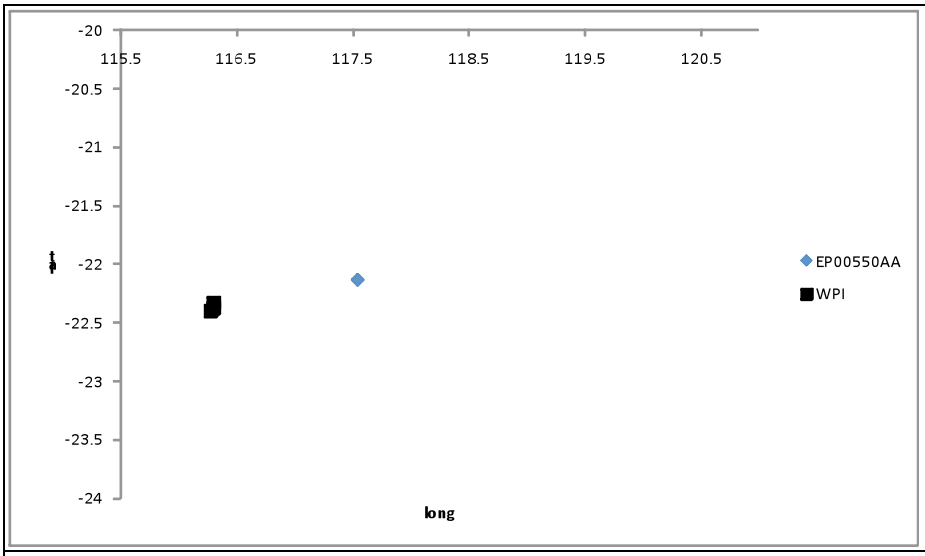
Regional survey 200-level group # 95 alluvial plain



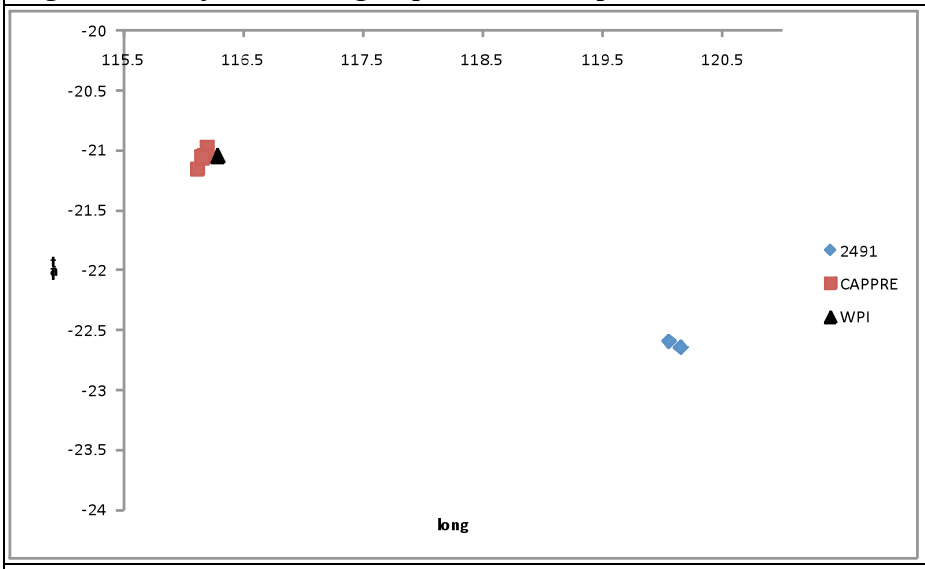
Regional survey 200-level group # 100 alluvial plain and lower slopes



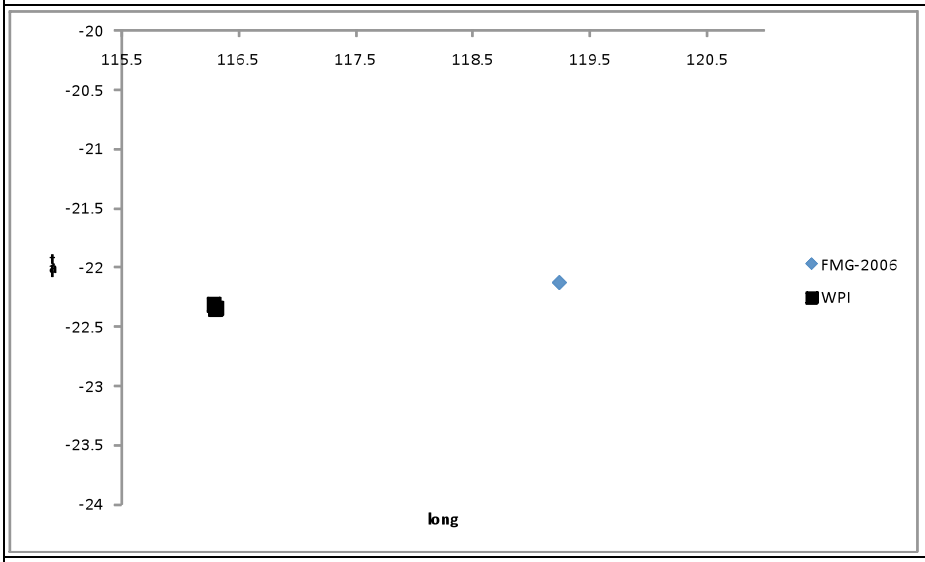
Regional survey 200-level group # 102 hillslopes and gullies



Regional survey 200-level group # 103 hillslopes



Regional survey 200-level group # 134 clay plain



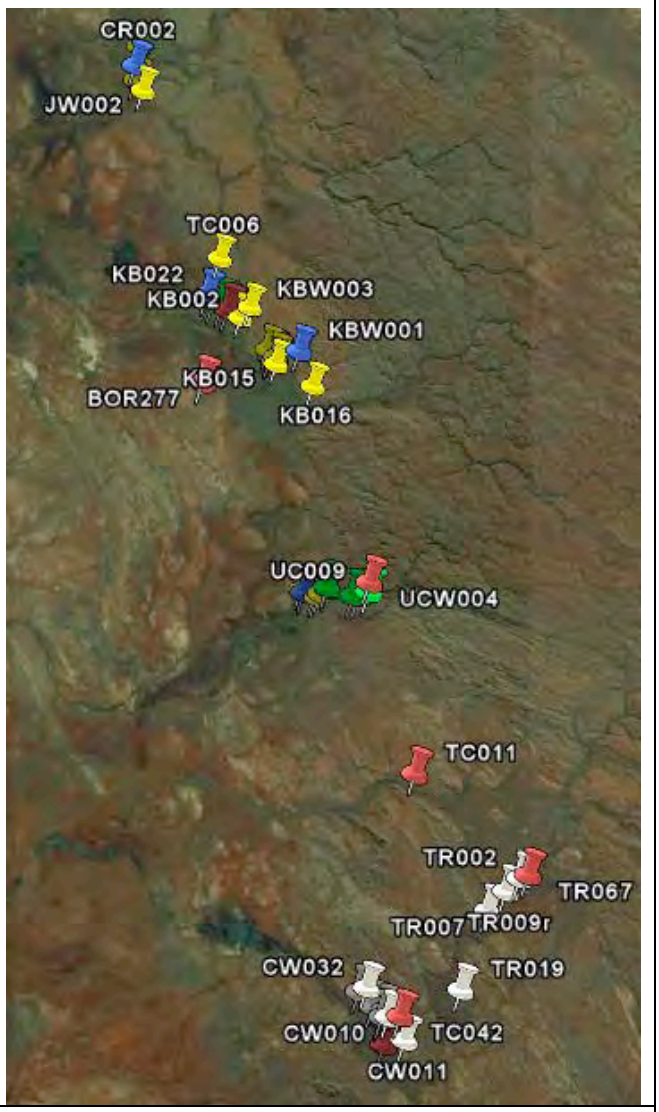
Regional survey 200-level group # 186 alluvial plain and lower slopes

Figure 7. Distribution of 200-group level groups from the regional analysis with sites from the API Project, with main habitat type.

Notes: The images only have the API sites marked on them.

Investigation of the geographic pattern of the 600-group level groups within 200-level-groups of the regional analysis shows further geographic patterns within the 200-level groups. The strength of this pattern could be expected to vary depending on how widespread the 200-level group investigated is. A group at this level with a restricted distribution would be expected to show less significant pattern in the geographic distribution of the 600-group level groups it covers than a more widespread group at this level. This would be expected because the driving factor in formation of the groups will change from regional floristic differences interacting with geology and habitat, but often more important than these factors, to geology and habitat differences as the sites would be from too small an area for regional flora distribution patterns to have any affect. A 200-level group with a wider distribution would be expected to show stronger geographic separation of the 600-level groups it covers for the same reasons.

A. Distribution of the five 600-group level groups covered by 200-group level group # 51



B. Distribution of the five 600-group level groups covered by 200-group level group # 93

Figure 8. Examples of geographic patterns at 600-group level.

The geographic pattern of the 600-group level groups in two 200-level groups occurring in the API Project was investigated. When the five groups at the 600-group level covered by 200-group # 51 are placed on satellite imagery (see left hand panel of Figure 8) it can be seen that there is some overlap of the 600-level groups. The relatively small number of sites referred to this group may mean that the geographic separation is over-emphasised by this figure. The right hand panel of Figure 8 shows the five 600-group level groups covered by 200-group level group 93. This shows geographic separation of some of the 600-group level groups, but close association of others.

4.5 Relationship of floristic units to geology

The sites from the API Western Pilbara Iron Ore Project Area were recorded from twenty-three geological map units on the regional scale (1: 250,000) mapping used in this report to investigate the relationship of vegetation types to physical factors. Most sites were recorded from Cainozoic surficial materials referred to colluvium, alluvium or the Robe Pisolite (Channel Iron Deposits).

The occurrence of the floristic groups at the different levels of the regional analysis on these twenty-three units is shown in Table 12. Also shown are the numbers of sites from the regional survey, the API Project Area and within that on mesas, near mesas and along the transport corridor to the north. The shading attempts to highlight the relative importance of the API Project Area sites in relation to the regional analysis (for the 600-group level and other groups) or the location or geology in relation to the API sites.

Colluvium and Robe Pisolite were sampled more than 100 times each in the API Project data; together making up nearly 70% of sites for that project. Just under 20% of the sites were on older geological units, mainly the Mt McGrath Formation, Yarraloola Conglomerate, Chela Springs Basalt and Duck Creek Dolomite. The sites from most geological units were from a range of floristic groups. For example, the 139 sites on colluviums were from 44 of the 75 groups at the 600-group level that included API sites. The number of floristic groups associated with a geological unit was roughly related to the number of sites sampled on that unit, presumably indicating significant variation in habitat types.

On the other hand, while some floristic groups at the 600-group level had sites from up to seven geological types, *more than two-thirds tended to be predominantly on just one geological unit*, a significant demonstration of the importance of geology in determining vegetation development.

There is some overlap between the floristic units on the Robe Pisolite and on the colluviums in the groups recorded from them at the 600-group level, but mostly at this level they are distinct. For example group 92 at the 600-group level has sites that were mostly recorded on colluvium, but the related group 93 is composed of sites that were mostly recorded on Robe Pisolite.

Table 12. Occurrence of the floristic units defined for the sites from the API Project on geological units.

Notes: Columns1-5 are the groups at the 50-, 100-, 200-, 400- and 600-group levels of the regional analysis respectively. Columns 6 and 7 are the number of sites for 600-group level group (cell to left) in the regional data set and API Project Area data set respectively. Column 8 is the number of sites for the 600-group level unit from Robe Pisolite mesas. Column 9 is the number of sites for the 600-group level unit from near Robe Pisolite mesas. Column 10 is the number of sites from the API transport corridor. The shading in the body of the table indicates the units (floristic and geological) with higher levels of occurrence in the API Project Area. A key to the geology codes is given at the bottom of the table.

1	2	3	4	5	6	7	8	9	10								**G**	**E**	**O**	**L**	**O**	**G**	**Y**									
gp50	gp100	gp200	gp400	gp600	no600	w600	Mesas	Near mesas	Tran	AHd	PLWq	AFk	Plk	Qr	Pfp	QlC	Qa	Qac	Qc	Wm	Tp	Kny	PLWb	Qp	PLWd	PLHb	Pho	Qb	Qrg	Cp	Wa	Pw
1	1	4	10	17	3	1		1																	1							
1	2	5	11	20	4	4		1	3			1	1										1	1								
1	2	5	12	21	3	2		1	1	1													1									
1	3	9	19	33	5	1		1									1															
2	7	17	36	60	4	1		1			1																					
2	7	17	37	63	1	1			1																	1						
4	13	28	57	94	1	1		1											1													
6	20	39	74	115	1	1		1											1													
6	20	39	75	116	2	2		2											2													
7	22	43	83	129	3	1			1					1																		
8	24	47	89	138	4	4			4									3	1													
8	24	47	90	139	7	7			7			1	1		1				1						2							
8	24	47	91	140	3	3			3										2			1										
8	24	48	92	141	9	3		3										3														
8	24	49	93	143	12	10	2	7	1							1		2	6		1											
8	24	49	93	144	9	9	5	4											3	1	4		1									
8	25	50	94	146	3	3		1	2										1					2								
8	25	50	95	147	7	7	1	1	5					1			2	3						1								
8	25	51	96	149	2	2		2											1	1												
8	25	51	96	150	3	3		3									1	1	1													
8	25	51	96	148	4	4		4											4													
8	25	51	97	151	1	1		1											1													
8	25	51	97	152	2	2		2									2															
8	25	52	98	153	4	4			4									1	2			1										
8	26	53	99	155	4	2		2											2													
8	26	53	101	159	5	4	1	3									2		2													
13	33	66	123	188	4	1		1											1													
13	34	68	127	195	3	1	1														1											
13	35	71	134	205	12	2		2												1							1					
14	38	79	148	226	1	1			1																			1				
15	39	80	150	229	7	2		2											1	1												
16	41	85	157	239	2	1		1											1													
16	41	85	157	240	3	2		2												1			1									
16	41	85	158	241	2	1			1																				1			
16	41	86	159	242	7	7	1	3	3										2	1	2	2										
16	41	86	160	243	6	6		6											4						1					1		
16	41	87	161	244	7	3	1	1	1										3													
17	42	88	163	246	5	2	2														2											
17	42	88	164	247	16	16	16												1		15											
17	42	89	165	248	6	4	1	2	1											1			2			1						

1	2	3	4	5	6	7	8	9	10							GEOLOGY															
gp50	gp100	gp200	gp400	gp600	no600	w600	Mesas	Near mesas	Tran	AHd	PLWq	AFk	Plk	Qr	Pfp	QlC	Qa	Qac	Qc	Wm	Tp	Kny	PLWb	Qp	PLWd	PLHb	Pho	Qb	Qrg	Cp	Wa	Pw
17	42	89	166	249	25	24	3	15	6									1	11	3	5	2			1					1		
17	42	89	166	250	11	11	10	1											2		9											
17	42	89	167	252	4	4	1	3										1	2		1											
17	42	89	167	251	12	11	1	6	4									1	6			4										
17	42	90	168	253	9	9	5	4											1	1	7											
17	42	90	169	254	8	7	4	3											2		4		1									
17	42	90	169	256	7	7	5	2										1			6											
17	42	90	169	255	7	7	7														7											
17	42	90	170	257	18	18	15	2	1										3	1	13					1						
17	42	91	171	258	4	4	1	3											3						1							
17	42	91	171	259	22	21	18	3										1	1		18				1							
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18	43	92	174	264	9	9		6	3									1	7			1										
18	43	92	175	265	10	10	3	4	3								1		6		1			2								
18	43	93	176	266	7	7	3	4											2	1	3				1							
18	43	93	176	267	11	11	11														10										1	
18	43	93	177	268	6	6	6														6											
18	43	93	178	270	9	9	8	1											2		7											
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19	44	94	179	272	5	1		1										1														
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19	44	94	180	274	14	14	1	4	9										5	1	1	3		3	1							
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19	44	95	181	275	6	6	2	4										5	1													
19	44	95	182	276	24	24	5	19										2	17	2	2						1					
21	46	100	193	295	5	1		1																		1						
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21	47	102	198	303	2	2	2														2											
21	47	102	199	304	4	4	4														4											
21	47	103	200	307	1	1		1												1												
21	47	103	200	305	2	2		2												2												
21	47	103	200	306	2	1	1																1									
32	63	134	265	405	5	1			1															1								
45	94	186	368	549	3	2	1	1											2													
45	94	186	369	550	2	2		2												2												
					505	427	170	188	69	1	1	2	2	2	1	1	9	36	139	24	150	14	11	13	9	4	2	1	1	2	1	1
% of occurrences in regional analysis										20	100	5.3	100	22	33	100	2.1	61	56	100	67	100	100	43	82	4.9	67	33	100	100	100	100

AHd	WITTENOOM FORMATION	1
PLWq	BEASLEY RIVER QUARTZITE	1
AFk	KYLENA FORMATION or KYLENA BASALT	2
Plk		2
Qr		2
Pfp	PILLINGINI TUFF	1
QlC		1
Qa	Alluvium - unconsolidated	9
Qac	Alluvial - clay, silt	36
Qc	Colluvium	139
Wm	MOUNT McGRATH FORMATION	24
Tp	ROBE PISOLITE	150

Kny	YARRALOOLA CONGLOMERATE	14
PLWb	CHEELA SPRINGS BASALT	11
Qp	Elluvim, colluvium, gilgais	13
PLWd	DUCK CREEK DOLOMITE	9
PLHb	BROCKMAN IRON FORMATION	4
Pho	BOOLGEEDA IRON FORMATION	2
Qb	Alluvium - unconsolidated	1
Qrg	Quartzofeldspathic sand	1
Cp		2
Wa	ASHBURTON FORMATION	1
Pw	Shale, mudstone, sandstone, greywacke etc	1

While the sites recorded from the Robe Pisolite tend to be only in the "upper" part of the classification (the dendrogram showing the PATN analysis of the site data, see Appendix 2), the colluvium is widely spread throughout it. This simply reflects the fact that the origin of the

colluvium is diverse, commonly inheriting some of its properties from the nearby parent rock or a combination of adjacent rock types.

One important result, therefore, is that the geological units are much more coarse than the floristic groups. This is an anticipated result because not only are many of the geological units mixed (either having strata of different types, or different facies developed in different places), but also have different habitats developed on them. For example, one mesa of Robe Pisolite could have a flat or sloping top, with small to larger flow lines on or through it, cliff faces or slopes of varying steepness on the sides, and colluvium slopes developed below cliffs. These different physical situations are going to provide quite different plant habitats, but all with their soil chemistry influenced by the Robe Pisolite.

The fact that the geological units are much more coarse than the 600-group level floristic groups is another indication that this level is appropriate for assessment of the environmental importance of the vegetation. The Robe Pisolite is a moderately variable geological unit, many others in the Pilbara Bioregion are much more variable, so if the vegetation units used were not less varied than the geological units, they would be too broad to be useful for conservation assessment.

4.6 Geographical variation in the floristic groups present on the Robe Pisolite Mesas

The API Project sites from mesas of Robe Pisolite had prefixes that indicated which mesa they were recorded from, allowing the data from the nine distinct mesas to be easily investigated for geographical variation in the floristic groups the sites were assigned to.

One hundred and seventy of the API Project sites were on mesas, 188 in the vicinity of the mesas and 69 along the transport corridor to the north. Sites in over two-thirds of the groups were confined to one of these three geographic units. That is, geography and landform are major determinates of the floristic patterns identified in the API site data in the regional analysis carried out using PATN.

The distribution of the mesas in the API Project is shown in Figure 9. The individual mesas were identified on satellite imagery (Figure 10) on which they are quite distinct. There is a tendency for the five groups at the 200-group level of the regional analysis that are predominantly on mesas

(groups 88, 90, 91, 92 and 93) to have a parallel alignment with 90 in the east and 88 in the west (Figure 11). This alignment is roughly related to the orientation of the underlying geological formations (see Figure 12). This suggests that underlying geology might be influencing the floristic patterns in the mesas; an interesting possibility for a superficial deposit having some characteristics of underlying material.

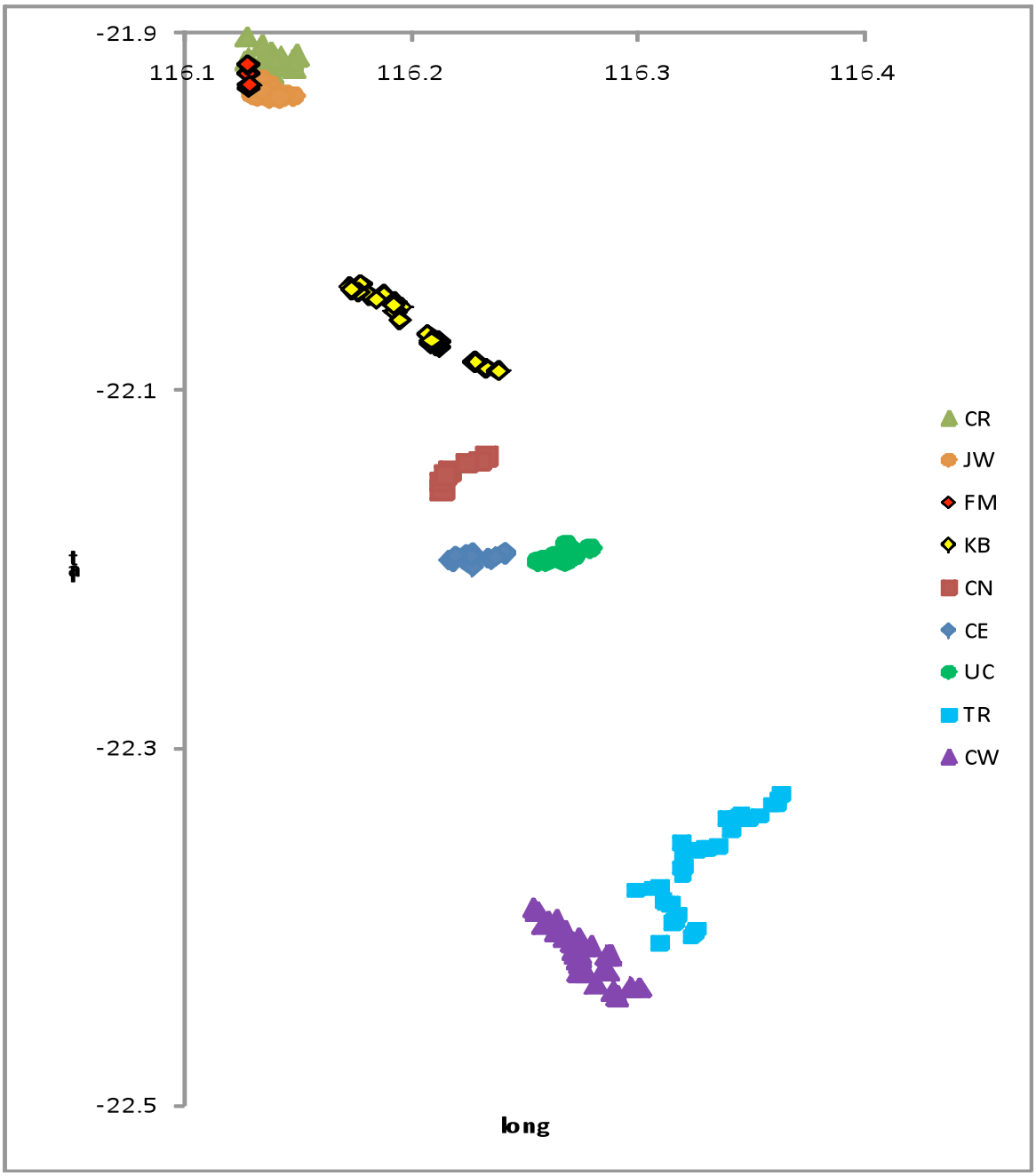
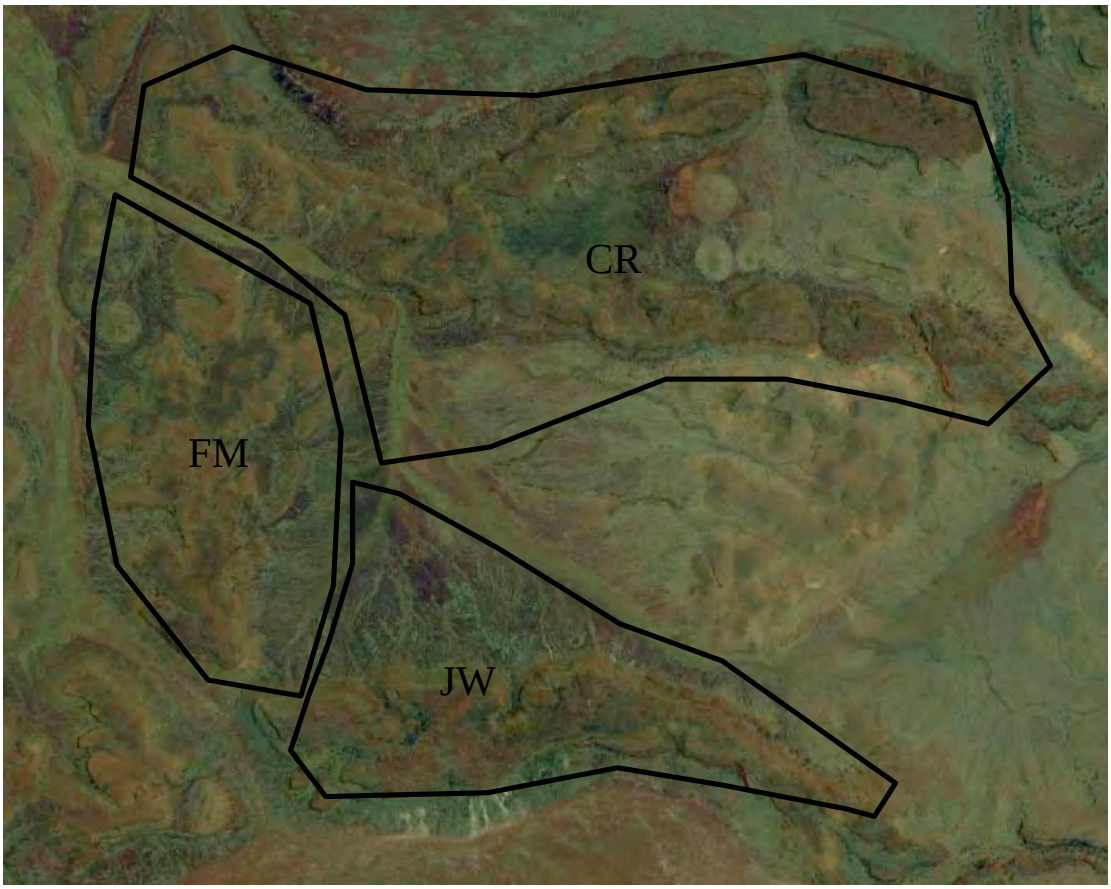


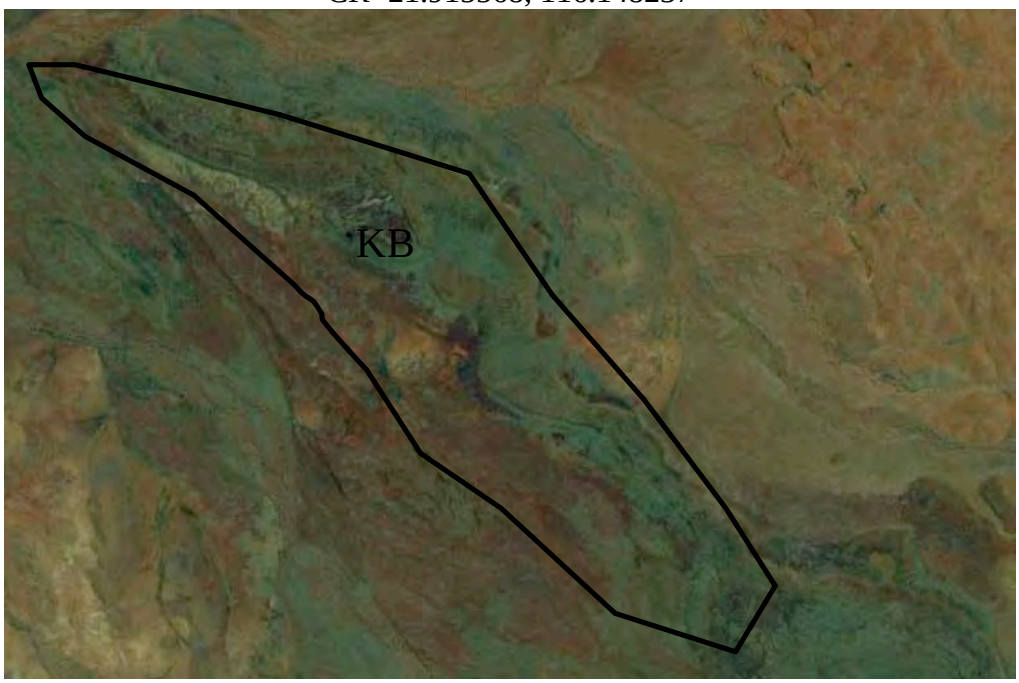
Figure 9. Location of the nine mesas in the API Project Area.

Notes: latitude and longitude are given, as are the two-letter codes used for each mesa, see beginning of section for key to these. The prefixes are: CE = Cardo East mesa, CN = Cardo North mesa, CR = Cochrane mesa, CW = Catho Well mesa, FM = Farnum Mesa, JW = Jewell Mesa, KB = Kens Bore Mesa, TR = Trinity Mesa and UC = Upper Cane Mesa.

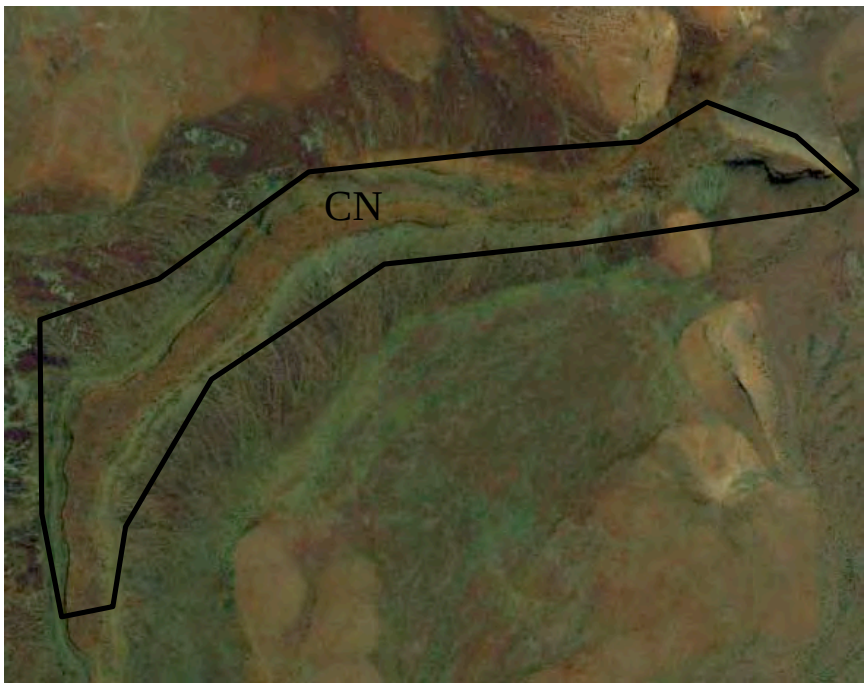
Figure 10. Satellite images showing the nine mesas in the API Project Area.



CR -21.915568, 116.148237

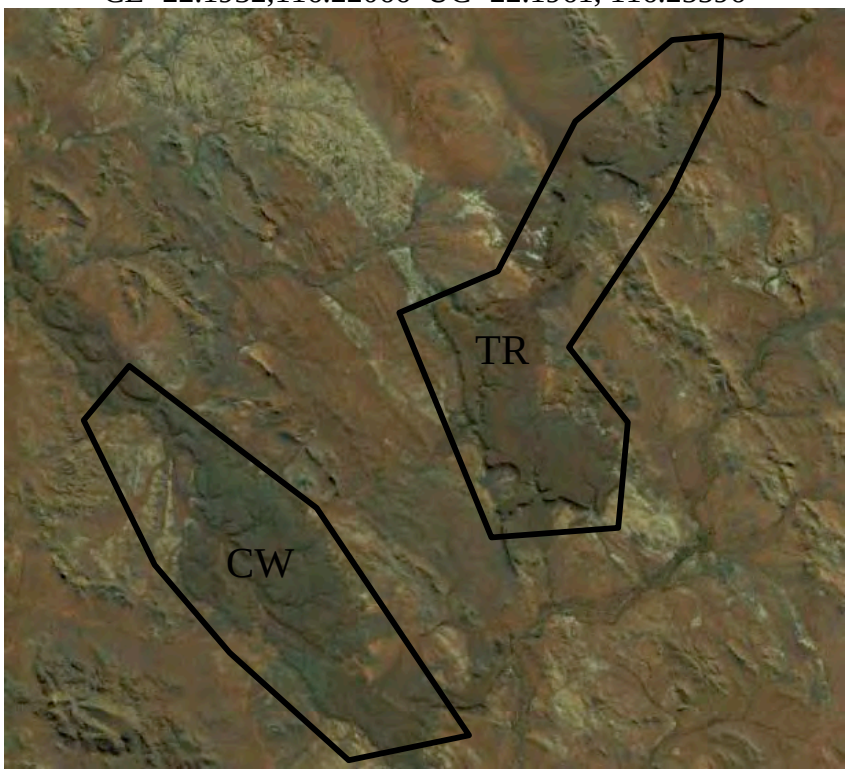


KB -22.073,116.2092



CN -22.1459, 116.216697

CE -22.1932,116.22066 UC -22.1961, 116.25596



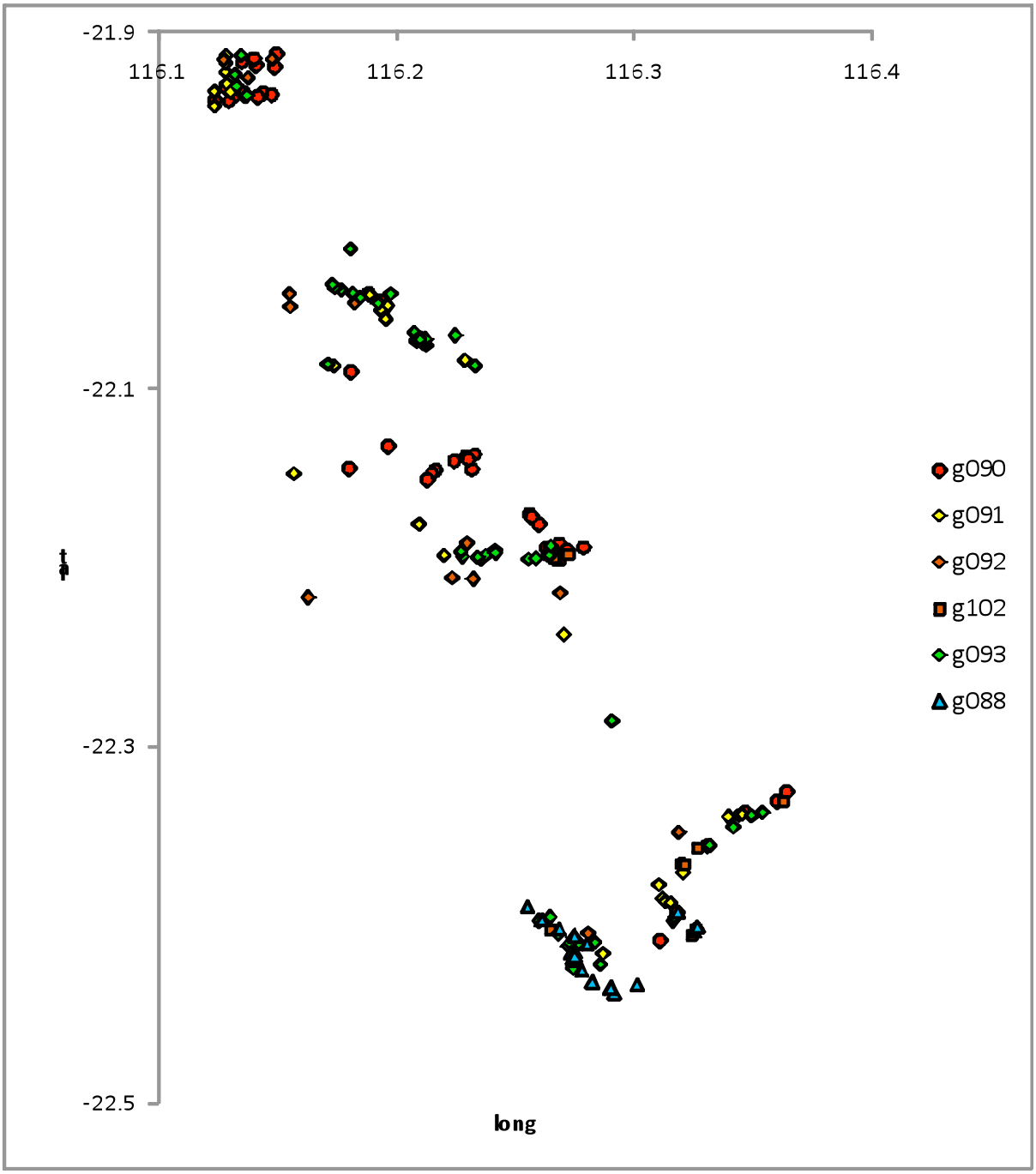


Figure 11. Distribution of floristic groups related to mesas from the 200-group level of the regional analysis on or near the mesas in the API Project Area.

Notes: Most but not all of these sites are on mesas. Compare to Figure 9 for mesa locations.

The mesas were sampled quite intensively in the API Project; with the sites recorded on them representing nearly 40% of the sites in the study. Nearly half of the groups from the 600-group level of the regional analysis with sites from the API Project Area were on the mesas, others were associated with mesas (see Table 12, above).

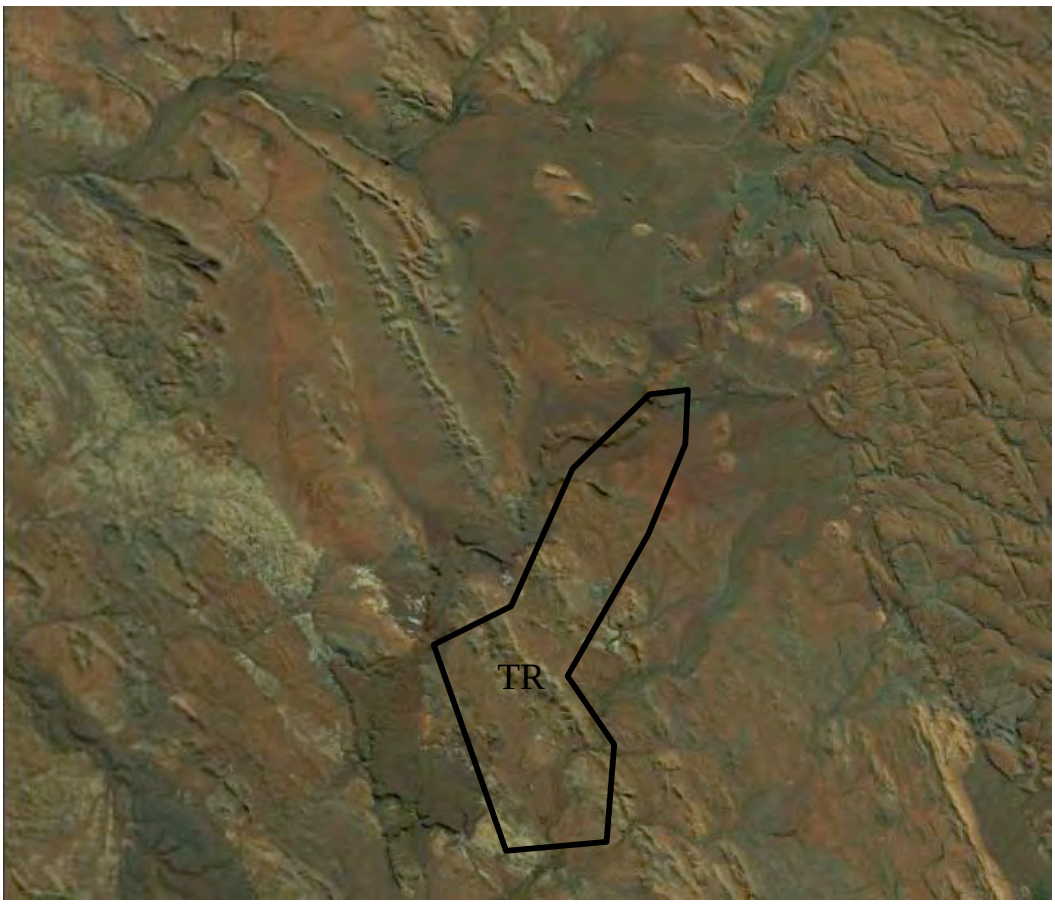


Figure 12 Satellite image in the vicinity of Trinity mesa showing NNW alignment of geology including the western edge of the plateau (Hamersley Ranges) in the right of the image.

As part of the process of defining the importance of the vegetation on the mesas, a hypothesis that there may be some floristic differences between mesas was tested. Table 13 is a summary attempting to represent this. The first result is that over 80% of sites on mesas belong to groups predominantly on mesas, implying that much of the vegetation found on them is likely to be restricted to them. Some of the groups were of sites in drainage lines, superficially not consistent with the mesa landform. In part the inconsistency may be due to the scale of mapping with some small drainage lines being on the mesa top.

The mesas had up to 8 groups each at the 200-group level of the regional analysis. The number of groups present appears to be primarily a function of the number of sites sampled (Figure 13) and perhaps to the size of the mesas. Thus, care needs to be taken in assessing the significance of apparent absences of floristic communities from some mesas.

Table 13. Number of sites on each mesa from the group 200-group level groups.

Notes: Highlighted cells in the body of the table indicate groups predominantly on mesas. Tp = Robe Pisolite. t = total number of sites for group. O = number of other sites for group. Table 13 is extracted from Table 14.

Regional group level			M E S A S											
gp50	gp100	gp200	CR	JW	FM	KB	CN	CE	UC	TR	CW	**t**	**Tp**	**O**
8	24	49	2								5	**7**	4	3
13	34	68					1					**1**	1	
17	42	88								3	15	**18**	17	1
17	42	89	1					7		5	3	**16**	12	4
17	42	90	6	8	1	2	6		4	9		**36**	32	4
17	42	91	1	1	3	6		1		8	1	**21**	18	3
18	43	93	2	2		16		7	3	5	9	**44**	38	6
19	44	95	6	1								**7**	1	6
21	47	102							4	4	1	**9**	8	1

Three of the groups represented in Table 13 were widespread on the mesas (#s 90, 91 and 93). The absence of group 90 from CE and CW might be consistent with these being on the western margin of this suite of mesas. There is an apparent complementary occurrence of group # 89. Group 88 is only in the west of the most southern mesas (CW and TR). In a broad sense, these presences and absences are consistent with the interpretation above that the distribution of some floristic groups might be related to the NNW to SSE orientation of the geological strata underlying the mesas. Even the limited distribution of group 88 appears to fit this possible influence of underlying geology on the vegetation of the mesas.

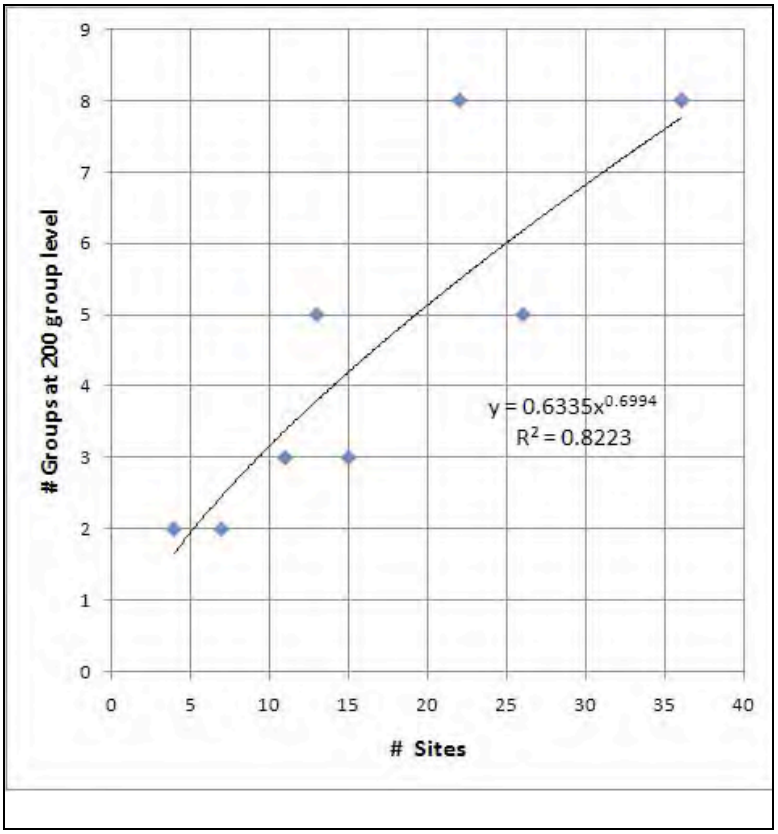


Figure 13. Relationship between the number of groups at the 200-group level of the regional analysis and the number of sites on Mesas.

Table 14 Mesas and other landforms by the regional group 200 level classification.

Notes: Tp = Robe Pisolite. t = total number of sites for group. O = number of other sites for group. Highlighted cells in the body of the table indicate groups predominantly on mesas.

			Mesas												Other Landforms																					
gp50	gp100	gp200	CR	JW	FM	KB	CN	CE	UC	TR	CW	**t**	Tp	O	TsRR	AD	AS	ASA	ASN	CEW	CMP	CNW	CWW	HAM	KBW	TRW	UCW	CP	HR	TC	BOR	**t**	Tp	O
1	1	4																												1		**1**		1
1	2	5																										4		2		**6**		6
1	3	9																										1				**1**		1
2	7	17																									1	1				**2**		2
4	13	28																										1				**1**		1
6	20	39																										1	1	1		**3**		3
7	22	43																										1				**1**		1
8	24	47																										14				**14**		14
8	24	48																												3		**3**		3
8	24	49	2								5	**7**	4	3					1			1		2		1	2		4	1	**12**	1	11
8	25	50				1						**1**		1														8	1			**9**		9
8	25	51																										2		7	3	**12**		12
8	25	52																										4				**4**		4
8	26	53				1						**1**		1														1	1	1	2	**5**		5
13	33	66																											1			**1**		1
13	34	68					1					**1**	1																					
13	35	71																								1				1		**2**		2
14	38	79																										1				**1**		1
15	39	80																			1										1	**2**		2
16	41	85														1			1									1			1	**4**		4
16	41	86									1	**1**	1			1			2							1		6			2	**12**	1	11
16	41	87		1								**1**		1			1											1				**2**		2
17	42	88								3	15	**18**	17	1																				
17	42	89	1					7		5	3	**16**	12	4	2	3	1	2	2		1	1						17	1	1	7	**38**	3	35
17	42	90	6	8	1	2	6		4	9		**36**	32	4	4	1		1				2					1	3				**12**	5	7
17	42	91	1	1	3	6		1		8	1	**21**	18	3	2				1									1			3	**7**	2	5
18	43	92	3									**3**	1	2						3			1		1			8		3		**16**		16
18	43	93	2	2		16		7	3	5	9	**44**	38	6											2		1			3	1	**7**	3	4
19	44	94	1								1	**2**	1	1		3	3	1			1	1	1		1		1	31		2	3	**48**		48
19	44	95	6	1								**7**	1	6						1	1	2			3			2		4	10	**23**	1	22
21	46	100																						1								**1**		1
21	47	102							4	4	1	**9**	8	1																					
21	47	103								1		**1**		1									1								2	**3**		3
32	63	134																										1				**1**		1
45	94	186								1		**1**		1																3		**3**		3
			22	13	4	26	7	15	11	36	36	**170**	134	36	8	9	5	4	7	4	4	6	4	1	9	2	5	112	5	36	36	**257**	16	241

4.7 Constancy of vegetation types to the Robe Pisolite

There is a close accord between the distribution of sites identified from 1:250,000 geological mapping as Robe Pisolite and the areas recognised in this study as mesas from field descriptions provided by Western Botanical staff and by plotting of sites on satellite imagery. Table 15 examines this with the values being the number of sites of Robe Pisolite or not Robe Pisolite (yes/no) versus mesa or not mesa. It shows that about 20% of the sites defined as being on mesas were not in areas mapped as Robe Pisolite on 1:250,000 geological map sheets. Likewise, 10% of the sites identified on 1:250,000 geological map sheets as on Robe Pisolite were not in areas identified as mesas. Both of these inconsistencies are probably the result of the 1:250,00 mapping scale leading to a level of error.

Table 15. Frequency distribution of Robe Pisolite by Mesas.
Notes: Values are # of sites.

		Robe Pisolite		
		Y	N	Total
Mesa	Y	134	36	170
Mesa	N	16	241	257
	Total	150	277	427

Fifteen (the number in the column 'R' of Table 17) of the twenty-seven groups from the 600-group level of the regional analysis were predominantly from sites assigned to Robe Pisolite (using 1: 250,000 geological mapping). This amounts to over 80% of the sites on Robe Pisolite in the API study. Figure 14 shows that groups tend to contain mostly Robe Pisolite or mostly other geologies. *It is therefore concluded that the vegetation on the Robe Pisolite is strongly confined to that geological type*.

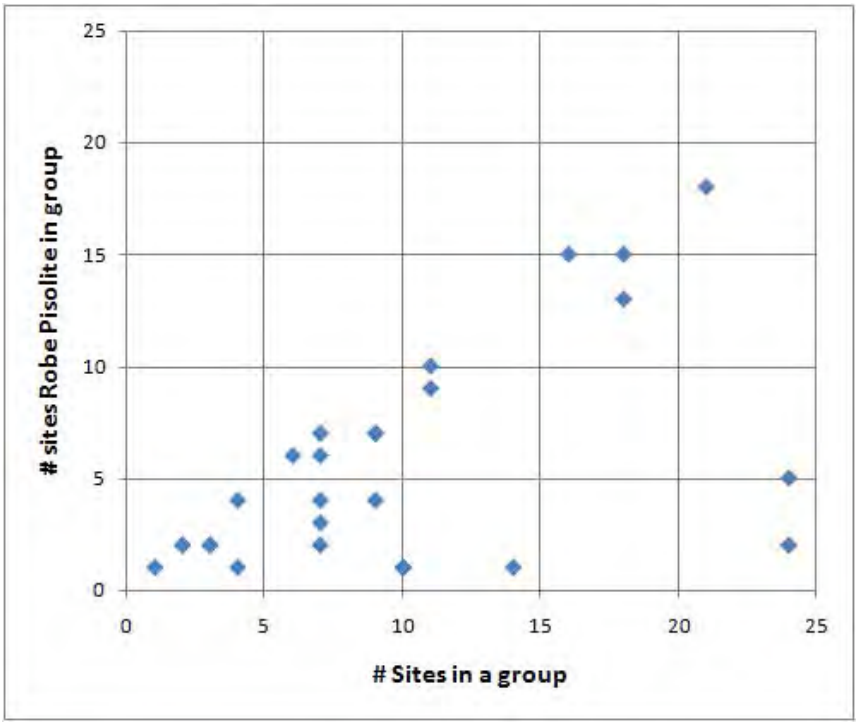


Figure 14. Proportion of Robe Pisolite sites in 600-group level groups with at least one Robe Pisolite site for the API Project Area

4.8 Relationship of distribution of Triodia sp. Robe River to geology

One question of interest for this report is the relationship of *Triodia* sp. Robe River (M.E. Trudgen 12,369) to environmental factors such as geology. Field observations have indicated that this species is largely restricted to the Robe Pisolite, but only occurs over part of the range of this geological type. In the API data set, there were 150 sites on Robe Pisolite, 170 sites on mesas (habitat) and 95 sites with *Triodia* sp. Robe River (Table 16). Of the 95 sites with *Triodia* sp. Robe River, 79 (~ 80%) were assigned to Robe Pisolite from the 1: 250,000 geological mapping, 76 (80%) were on mesas and 71 (75%) were on the combination of both Robe Pisolite and mesa. Only 11 (12%) were not on either. Thus, there is a strong relationship between *Triodia* sp. Robe River and this geology and landform. That is *Triodia* sp. Robe River is mainly on Robe Pisolite on mesas.

Table 16. Frequency table of sites with *Triodia* sp. Robe River x Robe Pisolite x Mesa
Notes: Shading indicates different levels of aggregation.

Geology	Landform	*Triodia* RR present	*Triodia* RR **not** present	
Robe Pisolite	**Mesa**	71	63	134
	Not mesa	8	8	16
	Total:	79	71	150
Not Robe Pisolite	**Mesa**	5	31	36
	Not mesa	11	230	241
	Total:	16	261	277
	Mesa	76	94	170
	Not mesa	19	238	257
	Total:	95	332	**427**

These combinations were further evaluated against the 600-group level of the classification. For each of the 600 group level classification group (rows in Table 17), the number of sites that were in the possible combinations of: the presence or absence of *Triodia* sp. Robe River and being on Robe Pisolite or not and being on a Mesa or not. These are identified as - or T, - or R and - or M respectively, to make combinations of ---, T--, -R-,... TRM. These were aggregated to generate the three pair wise combinations (TR, TM and RM ignoring the other.) These were further aggregated to T, R and M where the value of the other pair is ignored.

Table 18 is an extract of the groups with significant occurrences of any of these. Thus, twenty of the 75 groups at this level of classification had sites that were on Robe Pisolite, or were on mesas, or had *Triodia* sp. Robe River (Table 18) recorded at them. Many of the sites in these twenty groups had all three features, but some were missing one or two of them.

The distribution of the sites which either had *Triodia* sp. Robe River or Robe Pisolite or were a mesa is shown in Table 19. This shows clearly that the distribution of *Triodia* sp. Robe River across mesas is uneven. That is, it is in nearly all sites on some mesas while other mesas have some sites with it present and some absent.

Table 17. Combinations of *Triodia* sp. Robe River x Robe Pisolite x Mesa x classification groups.

Notes. 'T' = *Triodia*; R = Robe Pisolite; M = Mesa; '-' = absence; -** = no *Triodia*.
are combinations that are >2/3 of sites for a classification group.

gp 50	gp 100	gp 200	gp 400	gp 600	---	T--	-R-	TR-	--M	T-M	-RM	TRM	TR	TM	RM	T	R	M	-**
1	1	4	10	17	1														1
1	2	5	11	20	4														4
1	2	5	12	21	2														2
1	3	9	19	33	1														1
2	7	17	36	60		1										1#			
2	7	17	37	63	1														1
4	13	28	57	94	1														1
6	20	39	74	115	1														1
6	20	39	75	116	2														2
7	22	43	83	129	1														1
8	24	47	89	138	4														4
8	24	47	90	139	7														7
8	24	47	91	140	3														3
8	24	48	92	141	3														3
8	24	49	93	143	7		1		2								1	2	10
8	24	49	93	144	4				1		4				4		4	5	9
8	25	50	94	146	3														3
8	25	50	95	147	6				1									1	7
8	25	51	96	148	4														4
8	25	51	96	149	2														2
8	25	51	96	150	3														3
8	25	51	97	151	1														1
8	25	51	97	152	2														2
8	25	52	98	153	4														4
8	26	53	99	155	2														2
8	26	53	101	159	3				1									1	4
13	33	66	123	188	1														1
13	34	68	127	195								1	1	1	1	1#	1#	1#	
13	35	71	134	205		2										2#			
14	38	79	148	226	1														1
15	39	80	150	229	2														2
16	41	85	157	239	1														1
16	41	85	157	240	2														2
16	41	85	158	241	1														1
16	41	86	159	242	5		1				1				1		2	1	7
16	41	86	160	243	6														6
16	41	87	161	244	2				1									1	3
17	42	88	163	246							2				2		2#	2#	2
17	42	88	164	247					1		14	1	1	1	15	1	15#	16#	15
17	42	89	165	248	2	1			1							1		1	3
17	42	89	166	249	17	1	1	2	1		2		2		2	3	5	3	21
17	42	89	166	250	1					1	3	6	6	7	9	7	9#	10#	4
17	42	89	167	251	10				1									1	11
17	42	89	167	252	3						1				1		1	1	4
17	42	90	168	253		2		2			1	4	6	4	5	8#	7#	5	1
17	42	90	169	254	2		1		1		3				3		4	4	7
17	42	90	169	255								7	7	7	7	7#	7#	7#	
17	42	90	169	256		1		1			1	4	5	4	5	6#	6#	5#	1
17	42	90	170	257		2		1		3		12	13	15	12	18#	13#	15#	
17	42	91	171	258	3				1									1	4
17	42	91	171	259	1			2	1	1	3	13	15	14	16	16#	18#	18#	5
17	42	91	172	260	1							2	2	2	2	2	2	2	1
18	43	92	174	264	9														9
18	43	92	175	265	7				2			1	1	1	1	1	1	3	9
18	43	93	176	266	2		2		2		1				1		3	3	7
18	43	93	176	267					1		10				10		10#	11#	11
18	43	93	177	268							1	5	5	5	6	5#	6#	6#	1

gp 50	gp 100	gp 200	gp 400	gp 600	---	T--	-R-	TR-	--M	T-M	-RM	TRM	TR	TM	RM	T	R	M	-**
18	43	93	178	269	2				1		8	7	7	7	15	7	15#	16#	11
18	43	93	178	270			1		2		2	4	4	4	6	4	7#	8#	5
19	44	94	179	271	4														4
19	44	94	179	272	1														1
19	44	94	180	273	30				1									1	31
19	44	94	180	274	13						1				1		1	1	14
19	44	95	181	275	4				2									2	6
19	44	95	182	276	18		1		4		1				1		2	5	24
21	46	100	193	295		1										1#			
21	47	102	196	301					1		2				2		2	3#	3
21	47	102	198	303							2				2		2#	2#	2
21	47	102	199	304								4	4	4	4	4#	4#	4#	
21	47	103	200	305	2														2
21	47	103	200	306					1									1#	1
21	47	103	200	307	1														1
32	63	134	265	405	1														1
45	94	186	368	549	1				1									1	2
45	94	186	369	550	2														2
					230	11	8	8	31	5	63	71	79	76	134	95	150	170	332

gp50	gp100	gp200	gp400	gp600	T	R	M
2	7	17	36	60	1#		
21	46	100	193	295	1#		
13	35	71	134	205	2#		
13	34	68	127	195	1#	1#	1#
17	42	90	168	253	8#	7#	5
17	42	90	169	255	7#	7#	7#
17	42	90	169	256	6#	6#	5#
17	42	90	170	257	18#	13#	15#
17	42	91	171	259	16#	18#	18#
18	43	93	177	268	5#	6#	6#
21	47	102	199	304	4#	4#	4#
17	42	89	166	250	7	9#	10#
18	43	93	178	269	7	15#	16#
18	43	93	178	270	4	7#	8#
17	42	88	164	247	1	15#	16#
17	42	88	163	246		2#	2#
18	43	93	176	267		10#	11#
21	47	102	198	303		2#	2#
21	47	102	196	301		2	3#
21	47	103	200	306			1#

Table 18. Classification groups that had significant proportions of combinations of *Triodia* sp. Robe River x Robe Pisolite x Mesa (from Table17).

Notes: 'T' = *Triodia*;
R = Robe Pisolite;
M = Mesa;
'-' = absence;
'*' = any;
are combinations that are >2/3 of sites for a classification group.

Table 19. Combinations of *Triodia* sp. Robe River x Robe Pisolite x Mesa

Notes: 'T' = *Triodia*; R = Robe Pisolite; M = Mesa; # are combinations that are >2/3 of sites for classification group. Mesas arranged from north to south, 'not M' are sites not on mesas. (Groups with no sites with neither Triodia, Robe Pisolite nor on a mesa were omitted.)

					No *Triodia*									*Triodia*												
gp50	gp100	gp200	gp400	gp600	CR	JW	FM	KB	CN	CE	UC	TR	CW	CR	JW	FM	KB	CN	CE	UC	TR	CW	not M	T	R	M
2	7	17	36	60																			1	1#		
8	24	49	93	143	2																				1	2
8	24	49	93	144									5												4	5
8	25	50	95	147				1																		1
8	26	53	101	159				1																		1
13	34	68	127	195														1						1#	1#	1#
13	35	71	134	205																			2	2#		
16	41	86	159	242									1												2	1
16	41	87	161	244		1																				1
17	42	88	163	246								1	1												2#	2#
17	42	88	164	247								1	14								1			1	15#	16#
17	42	89	165	248								1											1	1		1
17	42	89	166	249								3											3	3	5	3
17	42	89	166	250						1		1	1	1					6					7	9#	10#
17	42	89	167	251									1													1
17	42	89	167	252									1												1	1
17	42	90	168	253							1						1			2	1		4	8#	7#	5
17	42	90	169	254								4													4	4
17	42	90	169	255											1		1	4		1				7#	7#	7#
17	42	90	169	256		1												1			3		2	6#	6#	5#
17	42	90	170	257										6	6	1		1			1		3	18#	13#	15#
17	42	91	171	258		1																				1
17	42	91	171	259								3	1	1		2	6				5		2	16#	18#	18#
17	42	91	172	260												1			1					2	2	2
18	43	92	175	265	2									1										1	1	3
18	43	93	176	266				1				1	1												3	3
18	43	93	176	267								4	7												10#	11#
18	43	93	177	268						1							1		1	3				5#	6#	6#
18	43	93	178	269	1	2		6									3		4					7	15#	16#
18	43	93	178	270	1			1		1			1				4							4	7#	8#
19	44	94	180	273	1																					1
19	44	94	180	274									1												1	1
19	44	95	181	275	2																					2
19	44	95	182	276	4	1																			2	5
21	46	100	193	295																			1	1#		
21	47	102	196	301								2	1												2	3#
21	47	102	198	303								2													2#	2#
21	47	102	199	304																4				4#	4#	4#
21	47	103	200	306								1														1#
45	94	186	368	549								1														1
					13	6	0	10	0	3	1	25	36	9	7	4	16	7	12	10	11	0	19	95	150	170

These suggest a geographic pattern, which is supported by Figure 15, of a low level of occurrence of *Triodia* sp. Robe River on the southern mesas. Figure 16 shows there is modest accord with the classification groups. The absences were mainly from group 88.

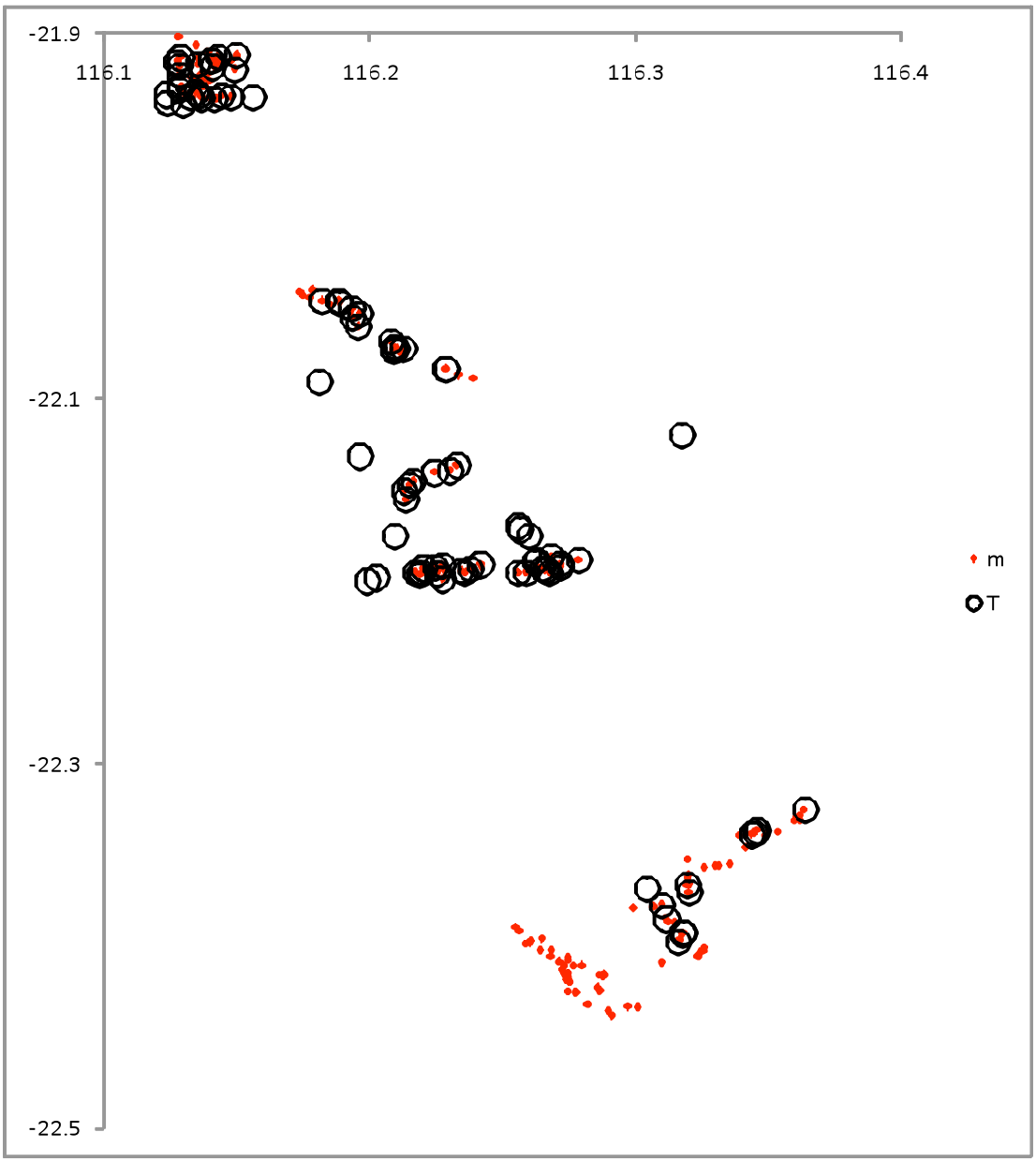


Figure 15. Distribution of *Triodia* sp. Robe River on Mesa sites

Notes: The figure has the same geographic extent as Figure 10. Circles (T) = sites with *Triodia* sp. Robe River; Red dots(m) = sites recorded as mesas.

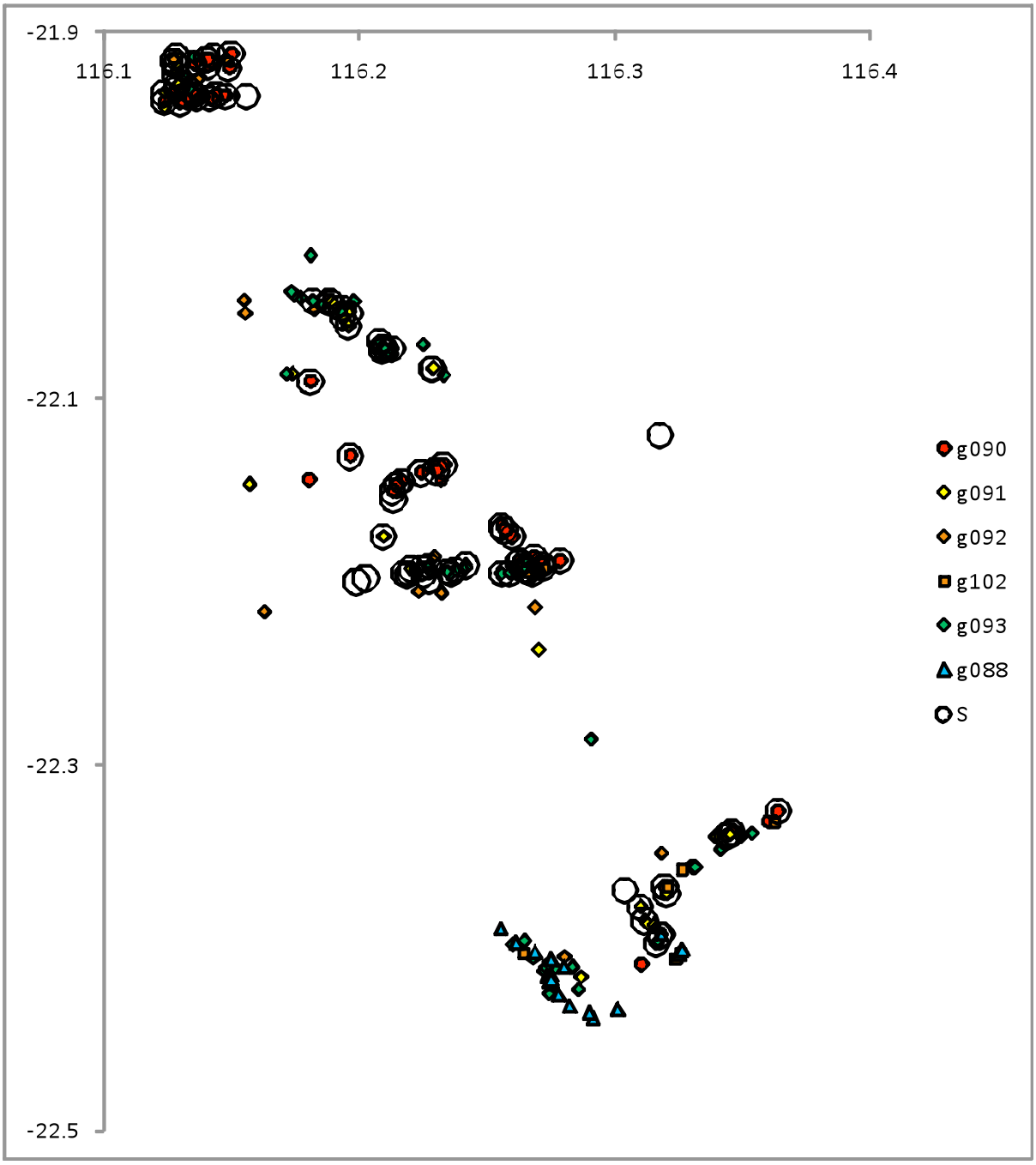


Figure 16. Distribution of *Triodia* sp. Robe River on classification groups.

Notes. The figure has the same geographic extent as Figure 11. Circles (S) = sites with *Triodia* sp. Robe River; g090 etc = groups at the 200-group level of the regional classification.

4.9 Relationship of some other species to the Robe Pisolite

The classification groups defined by the PATN analysis are the product of many species presence and absences (Appendix 6 illustrates this). A summary of this is presented in Table 20, which shows the main species from groups that are from mesas. This shows that there is

strong differentiation between the groups at this level. The occurrence of some of these species on different mesas is plotted in figures 17 to 25.

Table 20. Main species in the 200-group level groups that have sites on Mesas

Notes: Values are % of sites in group. Only values where a presence of >34% are shown. (* p = plots)

	At # Mesa sites	7	1	18	36	21	44	9	
	At # sites total	19	1	18	48	28	51	9	
Species ↓ 200-group level group → →		**49**	**68**	**88**	**90**	**91**	**93**	**102**	**p***
Dodonaea coriacea			100						
Corymbia hamersleyana			100						
Acacia arida				100					x
Petalostylis labicheoides				78					
Tephrosia uniovulata				89		43			x
Acacia ancistrocarpa			100	67		54			
Acacia synchronicia			100			36			
Sida pilbarensis (ferruginous form)						61			
Ptilotus calostachyus var. calostachyus			100	61		61	55		
Triodia sp. Robe River			100		63	57		44	x
Eucalyptus leucophloia subsp. leucophloia				56	58			89	
Ptilotus astrolasius var. astrolasius				56	40	68	71		x
Senna glutinosa subsp. glutinosa				72	56		65	67	x
Triodia wiseana			100	100	75	75	82	100	
Acacia bivenosa		37	100	83	65	75	76	78	
Senna artemisioides subsp. oligophylla				39			47	44	x
Acacia pruinocarpa			100		54		39	56	
Trichodesma zeylanicum var. zeylanicum						54	75	67	x
Cleome viscosa		37					43		
Senna glutinosa subsp. pruinosa			100				43		
Acacia inaequilatera						39	47		
Ptilotus exaltatus var. exaltatus						36	35		
Euphorbia australis							37		
Gossypium australe (Burrup Peninsula form)							53		
Sida aff. echinocarpa (MET 15,350)							37		
Corchorus sidoides subsp. sidoides							37		
Solanum diversiflorum							61		
Ptilotus fusiformis var. fusiformis							35		
Senna notabilis							53		
Dysphania rhadinostachya subsp. rhadinostachya							63		x
Senna glutinosa subsp. luerssenii							41		
Solanum lasiophyllum							43		
Eriachne mucronata (typical form)			100					78	
Gossypium robinsonii		37						56	
Jasminum didymum subsp. lineare		37						67	x
Stylobasium spathulatum								44	
Cymbopogon ambiguus								89	
Polycarpaea longiflora								56	
Acacia citrinoviridis								78	x
Eremophila latrobei subsp. latrobei								67	
Trachymene oleracea subsp. oleracea								56	
Duppereya commixta								44	
Indigofera monophylla								44	
Abutilon dioicum								44	
Grevillea wickhamii								56	
Acacia tumida var. pilbarensis				61				44	

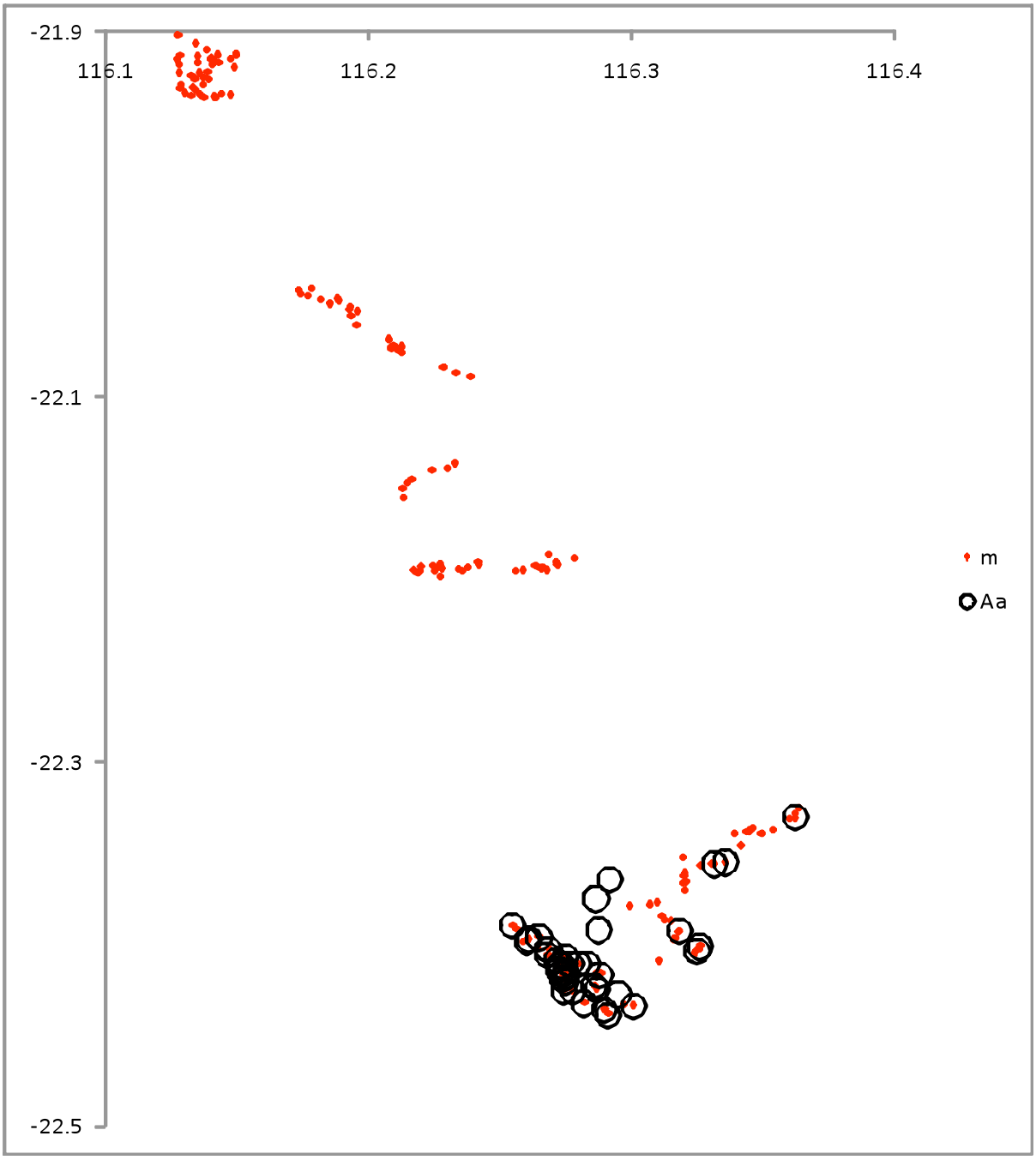


Figure 17. Distribution of *Acacia arida* on location of sites on Mesas

Notes: The red dots are all sites on the mesas, the black circles show the occurrence of the species

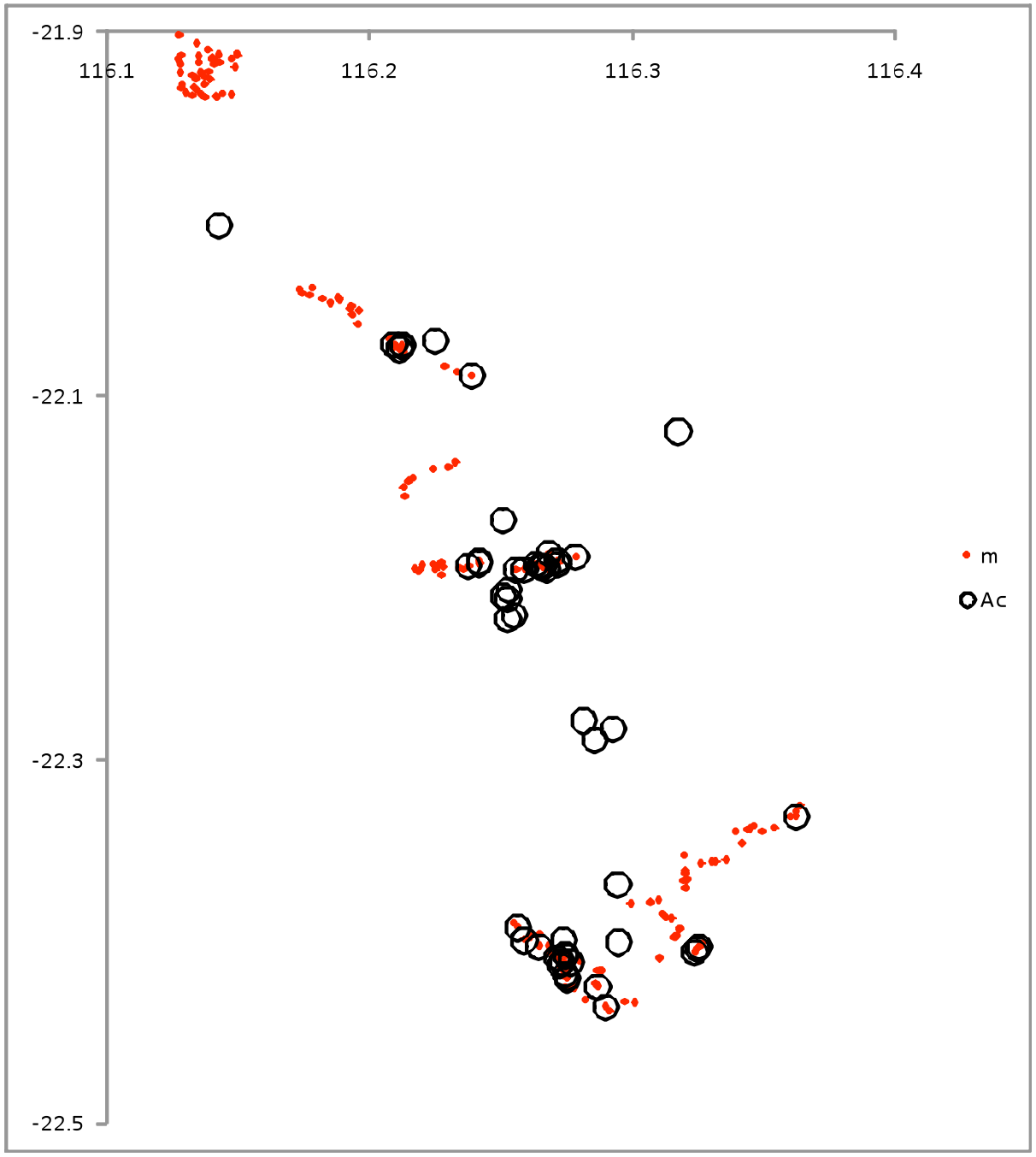


Figure 18. Distribution of *Acacia citrinoviridis* on location of sites on Mesas

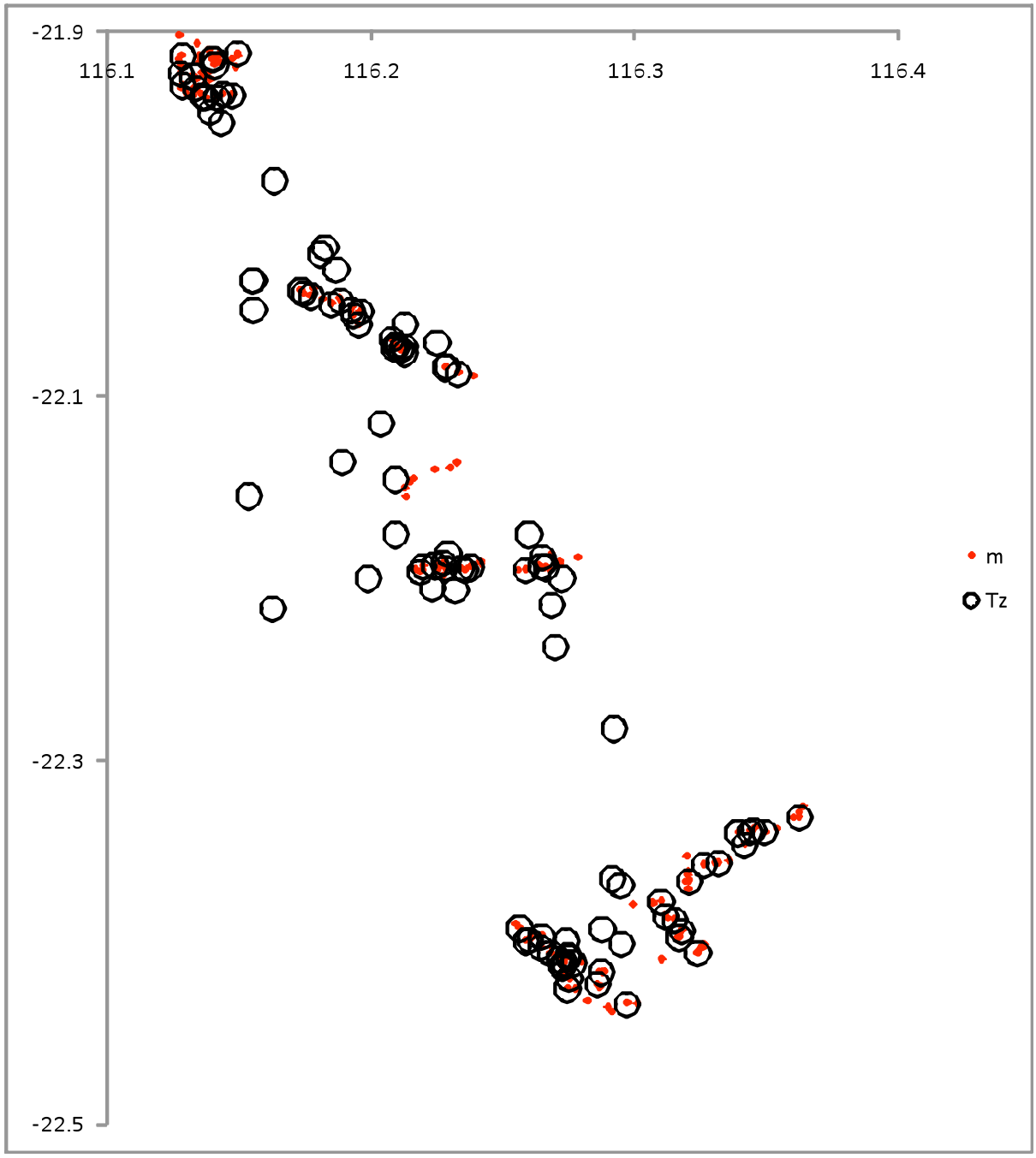


Figure 19. Distribution of *Trichodesma zeylanicum* var. *zeylanicum* on location of sites on Mesas

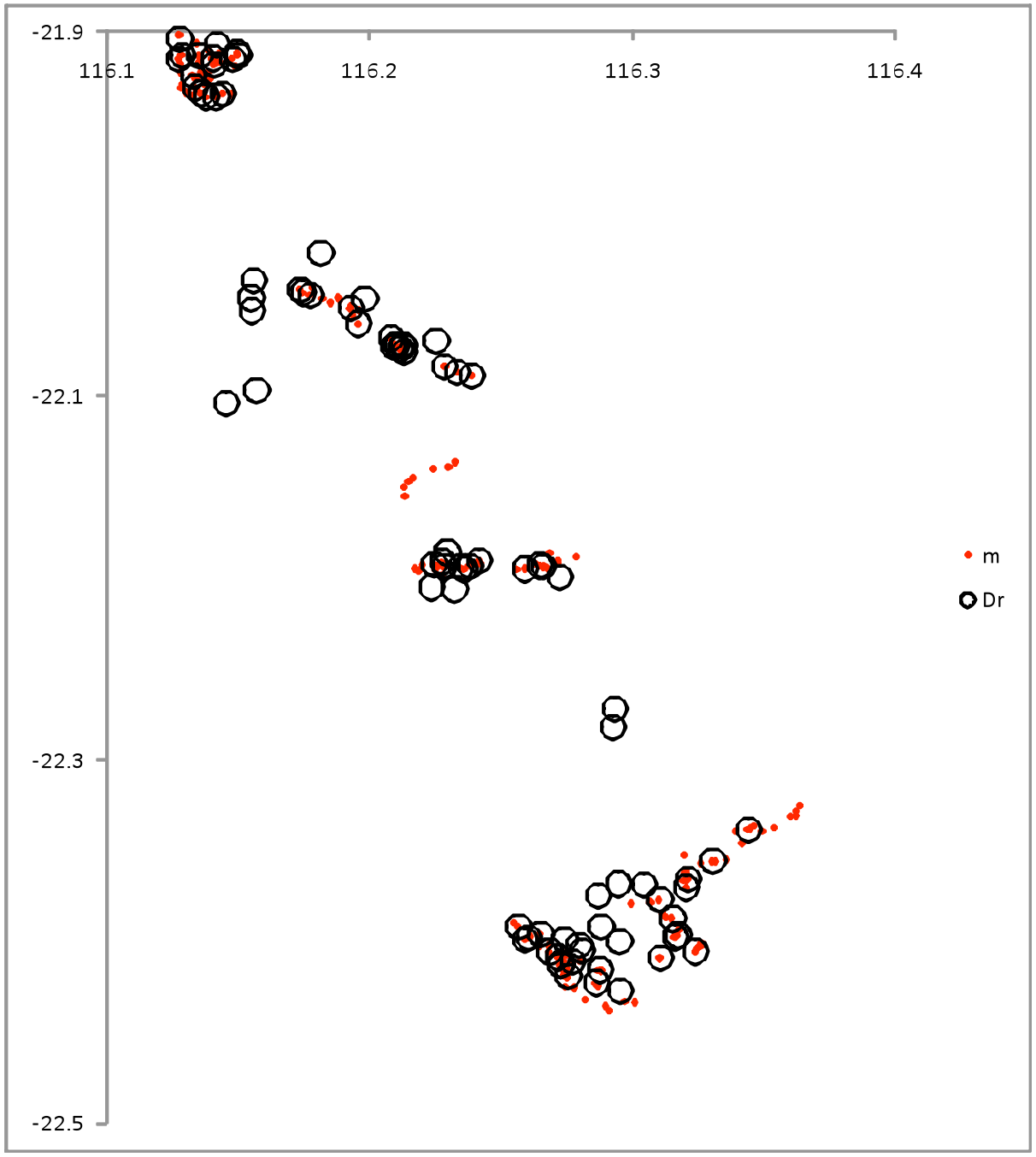


Figure 20. Distribution of *Dysphania rhadinostachya* subsp. *rhadinostachya* on location of sites on Mesas

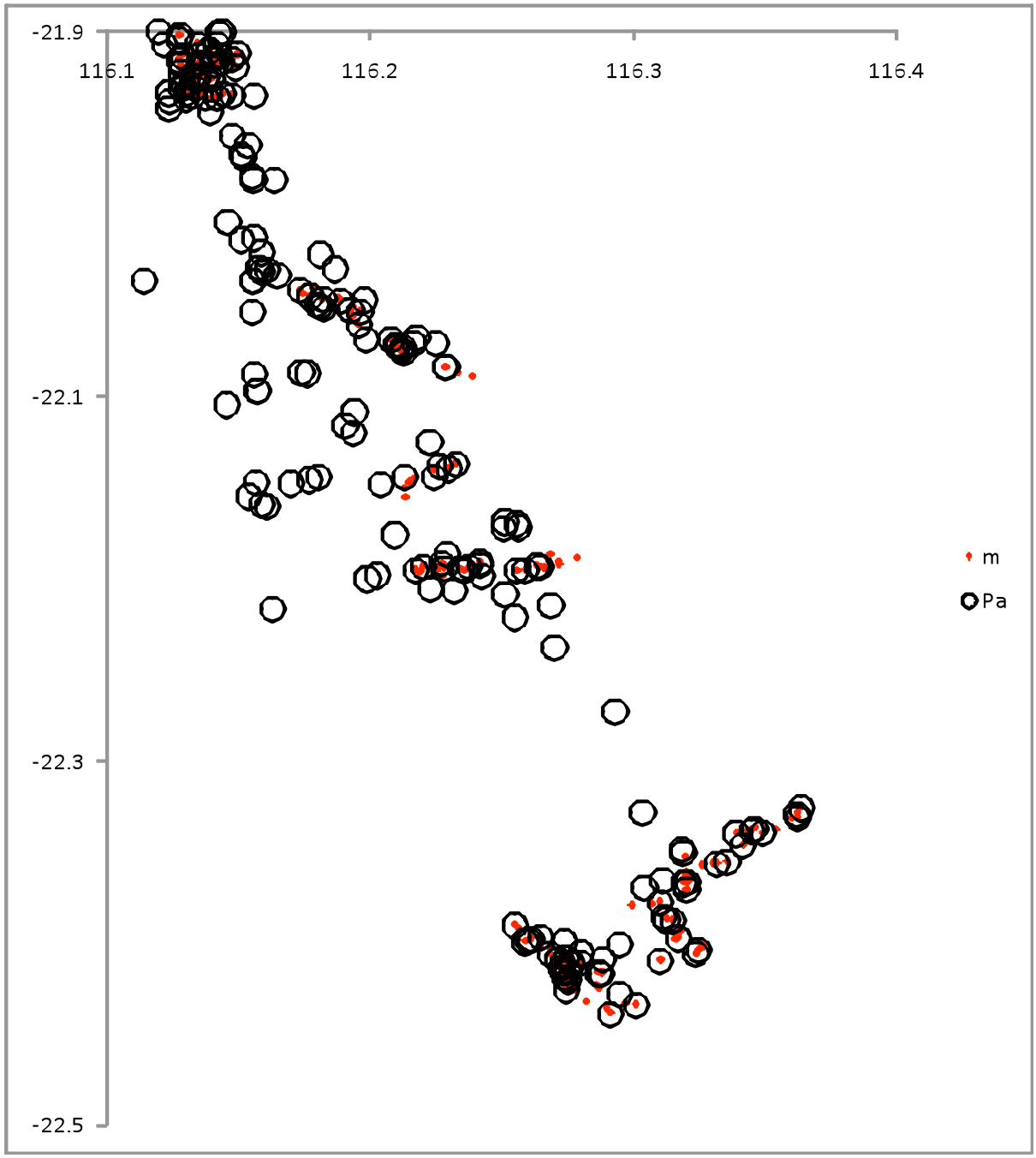


Figure 21. Distribution of *Ptilotus astrolasius* var. *astrolasius* on location of sites on Mesas

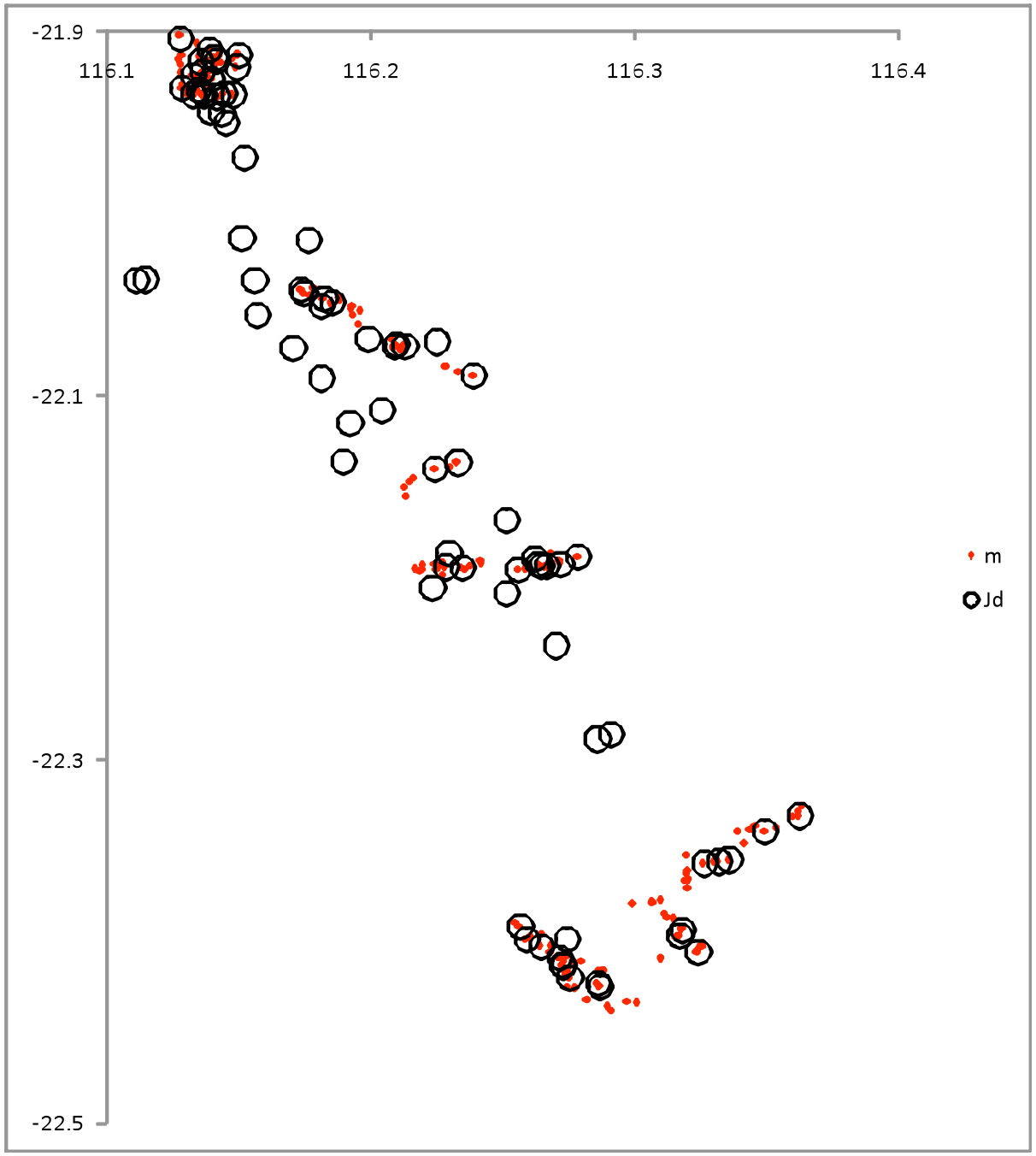


Figure 22. Distribution of *Jasminum didymum* subsp. *lineare* on location of sites on Mesas

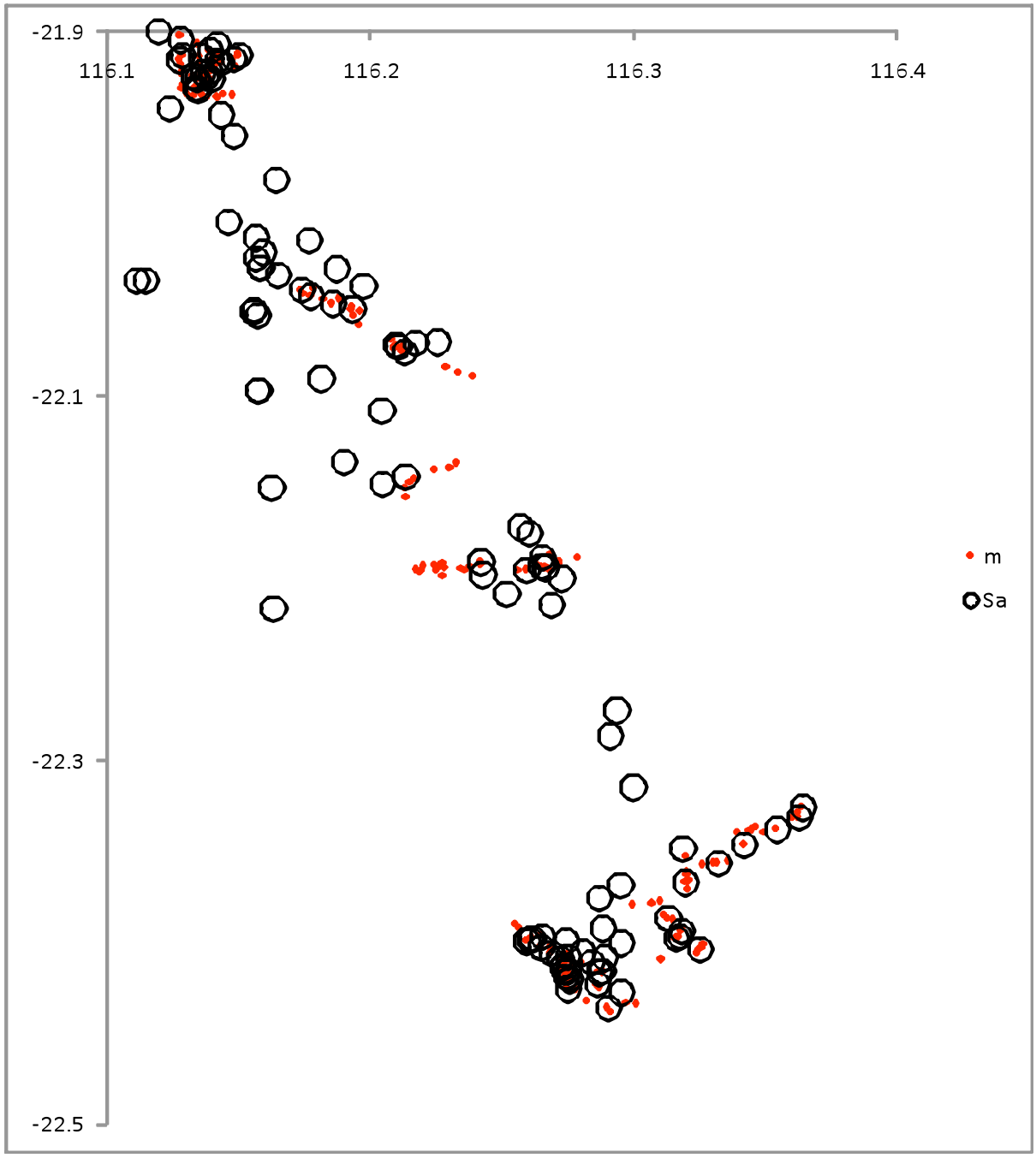


Figure 23. Distribution of *Senna artemisioides* subsp. *oligophylla* on location of sites on Mesas

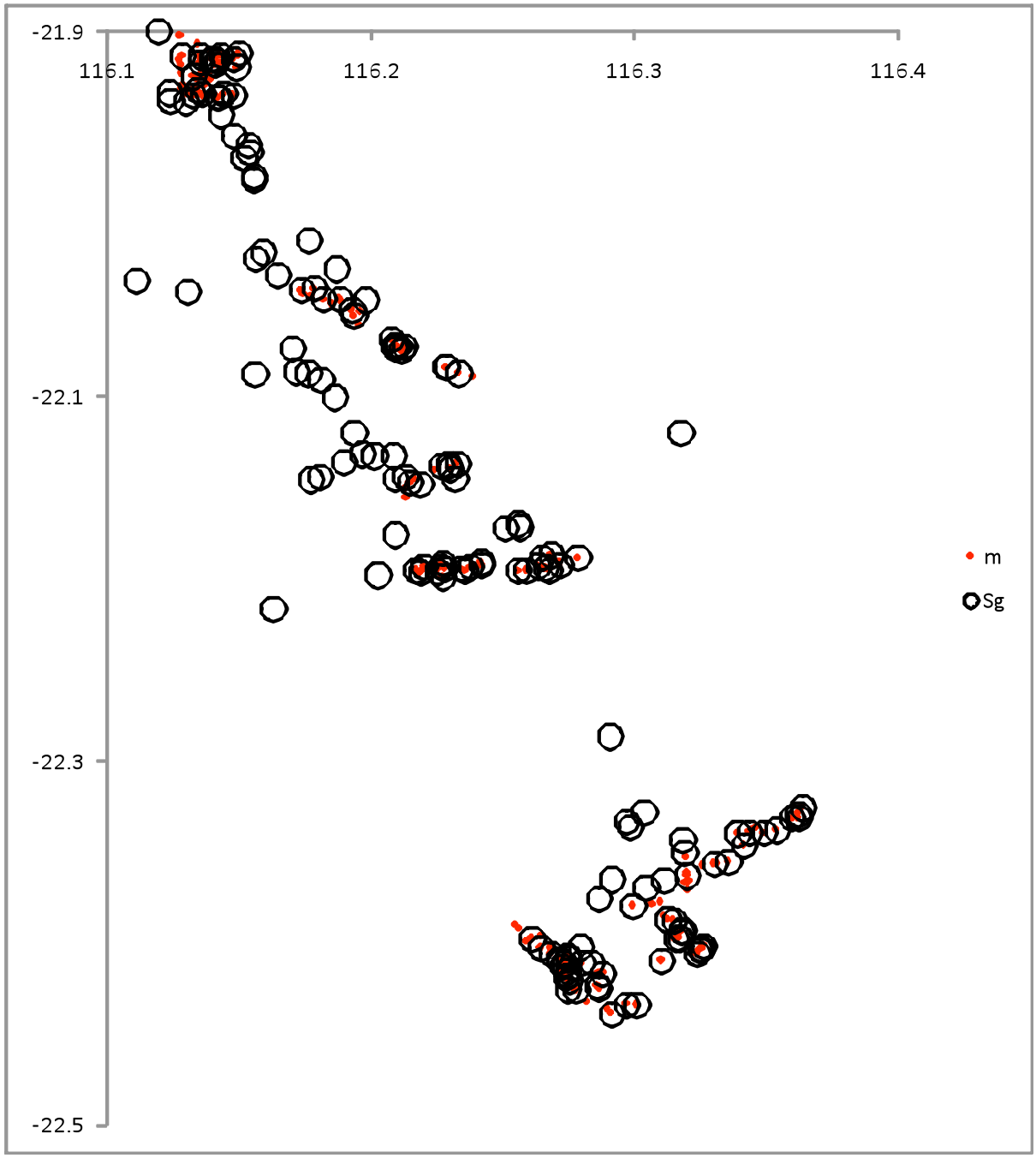


Figure 24. Distribution of *Senna glutinosa* subsp. *glutinosa* on location of sites on Mesas

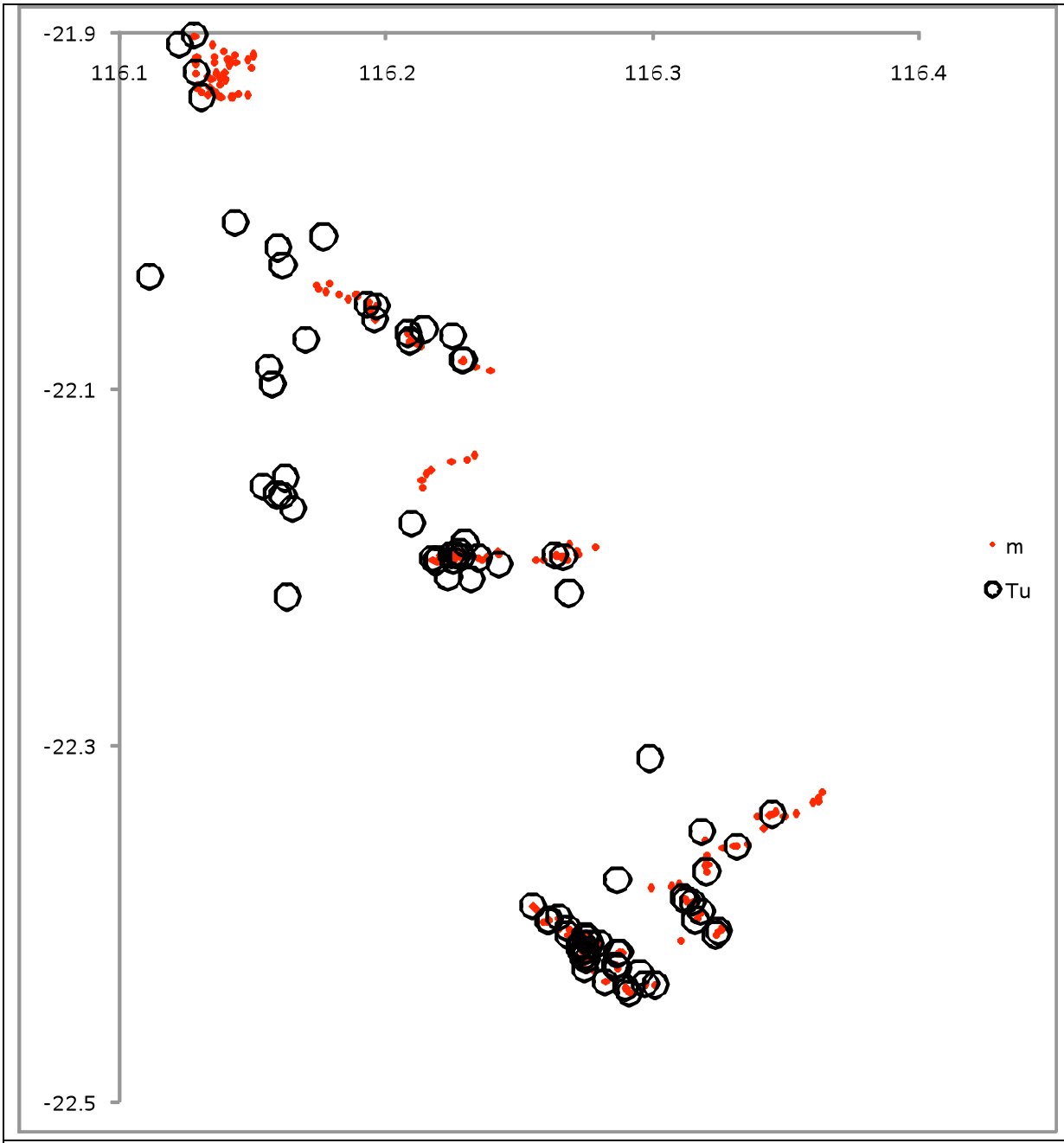


Figure 25. Distribution of *Tephrosia uniovulata* on location of sites on Mesas

5.0 CONSERVATION ASSESSMENT

5.1 Assessment framework

The conservation assessments for vegetation made in this report will largely be based on the floristic groups defined at the 600-group level of the regional analysis (classification) presented in the preceding sections. The assessment of the vegetation of the Robe Pisolite will also take into account the analysis of a smaller data set that included only sites from Robe Pisolite or sites apparently associated with Robe Pisolite (see section 4.2.4.1). The assessments will also take into account geological units, where these show a significant relationship to those groups. At a higher level, the understanding that there are significant differences in the vegetation of the physiographic units that Beard (1975, see Map 1 above) defined for the Pilbara Bioregion (as his Pilbara Region) will be used. The variation between the physiographic areas is based in their different geologies (although there is overlap) and probably to a lesser degree on climatic variation. However, this will not be relied upon for higher level assessments, as knowledge of the level of restriction of vegetation types to these physiographic areas is not detailed enough at this time to do so.

The 600-group classification is based on an analysis of a data set of 2,883 sites from a large part of the Pilbara Bioregion. The investigations of the results of the analysis given above indicate that the 600-group level of the analysis is an appropriate basis for such assessments. The use of geological units to help interpret the results of the classification accords with the generally accepted relationship between geology and vegetation and the investigation of the relationship of the results of the analysis to geological types. However, the effect of habitat type should be noted as providing a significant modifying factor on this relationship, it appears that at times (especially with wetlands, gullies and cracking clays) that this modifying factor is very strong.

Particular attention is paid in the conservation assessment to the vegetation of the Robe Pisolite (Channel Iron Deposits), as occurrences of this geological unit are the main impact areas of the API Project.

5.2 Overview of conservation value for vegetation of the API survey area

At the 600-group level, the API Project survey area (including the transport corridor) had seventy-five of the groups defined at the 600-group level of the regional analysis indicating a significant diversity of vegetation. Of these groups, forty-six were only recorded from the API data, which includes most of the data in the regional data set for the Stuart Hills physiographic area and data for other areas that are poorly represented in the data set. These figures indicate that the areas in which the API survey area is located have floristically diverse vegetation and that the much of it is poorly known. The latter point is undoubtedly related to the relatively low amount of development in the area, and therefore the low number of regional scale vegetation surveys.

That 12.5% of the units defined at the 600-group level for the regional analysis were recorded from the API survey area and that 7.7% were only represented in the data set from the API survey area data indicates that the physiographic regions the project is located in have significant conservation value for vegetation. In this context, it should be noted that the overall impact of the project is small compared to the size of these regions, and that only some of the units defined at the 600-group level are likely to be significantly impacted by the project; with those on the Robe Pisolite and adjoining colluvium derived from it identified as in this category.

5.3 Assessment of the conservation value of the vegetation of the Robe Pisolite in the API Project Area

The areas of the Robe Pisolite in the API survey area are part of a cluster of occurrences of this geological unit from the south-western part of its range. These occurrences lie within Beard's (1975, see Map 1 above) Stuart Hills physiographic area. They are partly separated from the occurrences along the Robe River to the north by the westernmost part of the Hamersley Range (although the northernmost mesa in the API Project Area is only ca. 16 kilometres from a mesa adjacent to the Robe River) and the occurrences to the east lie within the Hamersley and the Chichester Ranges (there are also a few isolated occurrences near Port Hedland). The occurrences in the Chichester Range include some sampled during the survey of the George River and Mount Leal rail line options of the West Angelas Project (these sites are a short distance east of Millstream) and another group of occurrences south-south-west of Nullagine, which were sampled in the survey for the BC Iron Project. The sites in the Hamersley Range

include those sampled for the FMG Solomon Project and one from the Four Corners Bore rail option of the survey for the West Angelas Project.

The available data for these occurrences of the Robe Pisolite was analysed as a separate PATN classification (see section 4.2.4.1 and Appendix 4, which is the dendrogram). Table 21 visually summarises the geographical arrangement of the dendrogram of this classification. It is very clear from this table that there is strong geographic pattern in the floristic composition of the vegetation of the Robe Pisolite. Most of the sites from the API survey in the Stuart Hills stay together, most of the sites from the Robe Valley (several surveys) stay together, most of the sites from the BC Iron survey in the eastern part of the Chichester Range stay together and most of the Solomon Project Robe Pisolite sites from the central Hamersley Range stay together (with a site from nearby recorded during the Four Corners Bore rail route recorded for the West Angelas Project). These regional groupings are strong enough to be largely maintained in spite of the data including a range of habitat differences it might have been anticipated would have broken them up more. Coupling this regional pattern with the following findings from earlier sections of this report that:

- Fifteen of the twenty-seven groups from the 600-group level of the regional analysis with any sites on Robe Pisolite (using 1: 250,000 geological mapping) were predominantly found on Robe Pisolite. Over 80% of the sites on Robe Pisolite were in these 15 groups (section 4.5, Table 12);

- The floristic groups on the Robe Pisolite are strongly confined to that geological type (sections 4.2.4.2 & 4.5);

- Twenty of the twenty-seven groups at the 600-group level with sites from the Robe Pisolite were only represented by sites from the API Project survey area (Table 12);

- There is a strong relationship between *Triodia* sp. Robe River and the Robe Pisolite and landform. That is *Triodia* sp. Robe River is mainly on Robe Pisolite on mesas. (section 4.8);

- *Triodia* sp. Robe River has a moderately geographically restricted distribution, with a large part of its know distribution on Robe Pisolite in the Stuart Hills area (section 4.2.4.2).

Table 21. Robe Pisolite and associated sites colour coded to indicate distribution in the Pilbara Bioregion.

Notes. Uncoloured columns are gp-90 number (from Appendix 4) and geology sites were recorded from. Tp, Czp and Eer are all = Robe Pisolite. See Table 3 for explanation of codes for projects.

API Stuart Hills sites			Eastern Chichester Range (BC Iron)			Hamersley Rge. (most = Solomon)			Robe River Valley			Western Chichester Range.		
WAGEORIV	1	Qao	WPI	18	Tp	WPI	32	Tp	WPI	42	Tp	BC	71	Tp
232a	1	Tp	232a	18	Tp	WPI	32	Tp	WPI	42	Tp	BC	72	Kylena
308	1	Tp	WPI	19	Wd	WPI	32	Tp	WPI	43	Tp	BC	73	Tp
232a	1	Tp	WPI	19	Qg	WPI	32	Tp	WPI	43	Tp	BC	73	Tp
232a	1	Tp	WPI	19	Qc	WPI	32	Tp	WPI	44	Tp	271	74	Czp
308	1	Tp	WPI	20	Tp	WPI	32	Tp	WPI	44	Qg	EP00550AA	75	Czp
232a	2	Tp	WPI	20	Pwd	WPI	32	Tp	WPI	44	Qc	EP00550AA	75	Czp
232a	2	Tp	WPI	21	Tp	WPI	32	Tp	WPI	44	Tp	EP00550AA	75	Czp
232a	2	Tp	WPI	22	Qc	WPI	32	Tp	WPI	44	Tp	BC	76	Tp
232a	3	Tp	WPI	23	Wd	WPI	33	Tp	WPI	44	Tp	BC	76	colluv
232a	3	Tp	WPI	23	Tp	WPI	33	Tp	WPI	44	Tp	BC	77	colluv
232a	3	Tp	WPI	23	Wb	WPI	33	Tp	WPI	45	Tp	BC	77	Tp
232a	3	Tp	WPI	23	Qc	WPI	34	Tp	WPI	45	Tp	378	78	Q1
232a	4	Qg	WPI	23	Tp	WPI	34	Tp	WPI	46	Tp	550AA	79	PLHb
232a	5	Tp	WPI	23	Wm	WPI	34	Tp	WPI	46	Tp	EP00550AA	79	Czp
232a	5	Tp	WPI	23	Tp	WPI	34	Tp	WPI	46	Tp	EP00550AA	79	Czp
232a	5	Tp	WPI	24	Tp	WPI	34	Tp	WPI	46	Tp	EP00550AA	80	Qa
232a	6	Tp	WPI	24	Tp	WPI	34	Tp	WPI	47	Tp	EP00550AA	80	Czp
232a	7	Tp	WPI	24	Tp	WPI	34	Tp	WPI	47	Tp	WAMTLEA	81	AFm
232a	7	Tp	WPI	24	Tp	WPI	34	Tp	WPI	48	Tp	550AA	81	PLHb
232a	7	Tp	WPI	24	Tp	WPI	34	Qg	WPI	48	Tp	WAMTLEA	82	Eer
232a	7	Tp	WPI	24	Tp	WPI	34	Qg	BC	49	Tp	EP00550AA	82	Czc
232a	7	Tp	WPI	24	Tp	WPI	34	Tp	BC	49	Tp	EP00550AA	82	Czc
232a	7	Tp	WPI	24	Tp	WPI	34	Qg	BC	50	Tp	EP00550AA	82	Czc
232a	7	Tp	WPI	25	Tp	WPI	35	Wm	BC	50	Tp	EP00550AA	82	Czc
232a	8	Qg	WPI	25	Tp	WPI	35	Tp	BC	51	Czk	EP00550AA	82	Czp
WPI	9	Tp	WPI	25	Tp	WPI	35	Tp	BC	52	Tp	EP00550AA	82	Czp
WAMTLEA	10	AFm	WPI	25	Tp	WPI	35	Tp	BC	52	Tp	EP00550AA	82	Czp
WPI	10	Tp	WPI	25	Tp	WPI	35	Tp	BC	52	Czp	WAFCBOR	83	Czc
WPI	10	Tp	WPI	26	Ql	WPI	36	Phb	BC	52	Tp	EP00550AA	83	Czc
308	10	Tp	WPI	26	Tp	WPI	37	Tp	215	53	Tp	EP00550AA	84	Czc
FMG-2006	11	Qc	WPI	26	Tp	WPI	38	Tp	EP00550AA	53	Czp	EP00550AA	84	Czc
BC	12	Tp	WPI	26	Tp	WPI	38	Tp	BC	54	Tp	EP00550AA	84	Czp
EP00550AA	12	Qa	WPI	26	Tp	WPI	38	Tp	BC	54	Czp	EP00550AA	84	Czc
EP00550AA	12	Czp	WPI	26	Tp	WPI	38	Tp	BC	55	Tp	EP00550AA	84	Czc
EP00550AA	13	Czp	WPI	26	Tp	WPI	38	Tp	BC	55	Tp	EP00550AA	85	Czp
EP00550AA	13	Czp	WPI	26	Tp	WPI	39	Tp	BC	56	Tp	EP00550AA	85	Czc
WPI	14	Tp	WPI	26	Tp	WPI	39	Tp	BC	56	Tp	EP00550AA	85	Qa
WPI	14	Tp	215	26	Tp	WPI	39	Tp	BC	56	Qa	EP00550AA	85	Czc
WPI	14	Tp	WPI	27	Qc	WPI	39	Tp	BC	56	Tp	EP00550AA	86	Czp
WPI	14	Tp	WPI	27	Qg	WPI	39	Tp	BC	57	Tp	EP00550AA	86	Czp
WPI	15	Tp	WPI	27	Tp	WPI	39	Tp	BC	57	Tp	EP00550AA	87	Czc
WPI	15	Tp	WPI	27	Tp	WPI	40	Tp	BC	58	Tp	EP00550AA	87	Czc
WPI	15	Tp	WPI	27	Tp	WPI	40	Tp	BC	59	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	28	Tp	WPI	40	Tp	BC	59	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Qg	BC	60	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Tp	BC	60	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Qc	WPI	40	Tp	BC	61	Tp	EP00550AA	87	Czp
WPI	15	Qc	WPI	29	Tp	WPI	40	Tp	BC	62	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Qc	BC	63	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Qc	BC	64	Tp	EP00550AA	87	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Tp	BC	64	AFm	EP00550AA	88	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Tp	BC	65	Czk	EP00550AA	88	Czp
WPI	15	Tp	WPI	29	Tp	WPI	40	Tp	BC	66	Czk	EP00550AA	88	Czp
WPI	15	Tp	WPI	30	Qc	WPI	41	Tp	BC	66	Tp	EP00550AA	88	PLHb
WPI	15	Tp	WPI	30	Tp	WPI	41	Tp	WPI	67	Tp	EP00550AA	88	Czp
WPI	15	Tp	WPI	31	Tp	WPI	41	Tp	WPI	67	Tp	EP00550AA	88	Czp
WPI	16	Wm	WPI	31	Tp	WPI	41	Wa	WPI	68	Tp	EP00550AA	89	Czc
WPI	16	Qc	WPI	31	Ql	WPI	41	Tp	WPI	68	Tp	EP00550AA	89	Czp
WPI	16	Qc	WPI	31	Tp	WPI	41	Tp	BC	69	Czp	EP00550AA	89	Czp
WPI	16	Tp	WPI	31	Tp	WPI	42	Tp	BC	70	Tp	EP00550AA	89	Czp
BC	17	Tp	WPI	31	Tp	WPI	42	Tp	BC	70	Tp	EP00550AA	89	Czp
WPI	17	Tp	WPI	31	Tp	WPI	42	Tp	BC	70	Kylena	EP00550AA	89	AHs
WPI	17	Tp	WPI	32	Tp	WPI	42	Tp	BC	71	Tumbiana	EP00550AA	90	Czp

It is therefore possible to summarise the relevant issues relating to the conservation status of the vegetation of the Robe Pisolite in the following way. With 27 groups at the 600-group level occurring on it in the regional analysis (but not all restricted to it), it is clear that the Robe Pisolite has varied vegetation. With fifteen of these groups occurring entirely or mainly on this geological unit, it is clear that much of the value for vegetation that this geological unit has is restricted to it. With twenty of these groups only recorded from the API survey area (of forty-six only from the API survey area at the 600-group level) and geographical location (physiographic area) having a large correlation with the distribution of the variation in the vegetation of the Robe Pisolite (section 4.2.4.1) it is clear that the Robe Pisolite in the API survey area has vegetation types not found elsewhere (also see Table 12 and Table 21) and, therefore, has conservation value not found elsewhere. In addition, it has a *Triodia* species dominant in some of the vegetation types found on it that is geographically and edaphically restricted.

Given the relatively small extent of the Robe Pisolite (see Map 4 above), it is clear from these points that the Robe Pisolite in the API survey area has vegetation with significant conservation value and that if a significant proportion of this geological unit in the API survey area was mined that this would have a significant impact on those values. Given this, it is important to look at the implications for conservation value of the distribution of vegetation types on the Robe Pisolite in the API survey area. This includes the distribution of vegetation types with *Triodia* sp. Robe River occurring in them or dominating them, but is not restricted to vegetation with that species.

The distribution of the nine mesas of Robe Pisolite in the API survey area relative to each other is shown on Figure 9, and satellite images of them are shown in Figure 10. Tables 12 and 13 show the presence on the mesas of different level groups from the regional analysis. This shows that the number of groups recorded at the 600-group level from a mesa is largely related to how many sites were recorded on it (which may be proportional to the size of the mesa); but that there is some difference in what units are recorded at this level.

Table 22 examines this more closely. The bottom row gives the approximate length of the mesas, which is a rough surrogate for the size as most are linear in shape. Comparing the lengths of the mesas to the number of sites and number of groups at the 600-group level

indicates that the number of groups at the 600-group level on a mesa is related to the size of the mesa, even when the number of sites is significantly higher for the length of the mesa. This means that the mesas do not all have the same conservation value for vegetation. This is highlighted by the fact that only the southern-most mesas (Trinity and Catho Well) have 600-group level groups 301, 302 and 304, which are from a different group at the 50-group level to the 600-group levels groups on the mesas. Of particular interest is that six of the twenty groups from the 600-group level were only recorded from one mesa each, while five were only recorded from two mesas each and three were only recorded from three mesas each. It is therefore clear, that the distribution of vegetation types and, therefore, conservation value for vegetation is unevenly distributed on the mesas in the API survey area. Further, it is strongly indicated that some of the variation in the vegetation at the 600-group level is very uncommon and areas of the vegetation of these groups therefore have higher conservation value.

Table 22. Summary of occurrence of groups at the 600-group level of the regional analysis on the mesas in the API survey area.

Notes: The mesas are arranged in order from left to right in the table to show their distribution from north to south. The table is colour coded to show the number of mesas each group occurs on. The length is a rough surrogate for size. CE = Cardo East, CN = Cardo North, CR = Cochrane, CW = Catho Well, FM = Farnum, JW = Jewell, KB = Kens Bore, TR = Trinity, UC = Upper Cane.

1 mesa only | 2 mesas only | 3 mesas only | 4 mesas | 5 mesas

Regional	**group**	**level**	**M**	**E**	**S**	**A**	**S**							
gp50	gp200	gp600	CR	JW	FM	KB	CN	CE	UC	TR	CW	**t**	**Tp**	**O**
8	49	144									5	5	4	1
13	68	195					1					1	1	
17	88	246								1	1	2	2	
17	88	247								2	14	16	15	1
17	89	250	1					7		1	1	10	9	1
17	89	252									1	1	1	
17	90	253				1			3	1		5	5	
17	90	254								4		4	3	1
17	90	255		1		1	4		1			7	7	
17	90	256		1			1			3		5	5	
17	90	257	6	6	1		1			1		15	12	3
17	91	259	1		2	6				8	1	18	16	2
17	91	260			1			1				2	2	
18	93	267								4	7	11	10	1
18	93	268				1		2	3			6	6	
18	93	269	1	2		9		4				16	15	1
18	93	270	1			5		1			1	8	6	2
21	102	301								2	1	3	2	1
21	102	303								2		2	2	
21	102	304							4			4	4	
Total gps	**@**	**600gp:**	5	4	3	6	4	5	4	11	15			
Total # of	**sites**	**recorded**	10	10	4	23	7	15	15	29	32			
Approx.	**length**	**km**	4.3	5.4	2	6.3	2.5	2	3	9	9			

5.4 Assessment of the conservation value for Triodia sp. Robe River vegetation types of the API Project Area

Obviously, there is significant overlap in the conservation value of the vegetation of the mesas and the vegetation with *Triodia* sp. Robe River as a major species, because of the high restriction of this species to the Robe Pisolite. However, it is desirable to make a separate assessment of the conservation value for vegetation with this species, because it is geographically restricted as well as more or less restricted to mesas of the Robe Pisolite. The need for a separate assessment is a reflection of one of the difficulties of studying vegetation, which is that dominance by a particular species of stands of a unit defined floristically does not necessarily mean that such stands are the only stands in the group.

Table 19 shows the occurrence of *Triodia* sp. Robe River in the groups defined at the 600-group level from the Robe Pisolite mesas and associated vegetation and the occurrence of groups on (or associated with) the mesas <u>without</u> *Triodia* sp. Robe River. This table and Figure 16 both show a moderate association between the definition of floristic groups and the occurrence of *Triodia* sp. Robe River. The conservation value of stands with *Triodia* sp. Robe River is therefore not entirely consistent with the conservation value of the 600-group level groups. This means that the detailed conservation assessment of the value of the individual mesas depends not only on what 600-level groups are on it, but also on whether or not the occurrences of these groups on it have a significant cover of *Triodia* sp. Robe River. However, it does detract from the fact that the mesas in the API Project Area have significant conservation value for vegetation with *Triodia* sp. Robe River dominant in, or a significant contributor to, the hummock grass layer. It is noteworthy, that only Catho Well Mesa (Figure 15) has no stands with *Triodia* sp. Robe River.

5.5 Assessment of the conservation value for vegetation of the individual units at the 600-group level in the Solomon Rail Project Area

A detailed assessment of the conservation value of the Robe Pisolite was made partly because assessments of two other survey areas (Griffin and Trudgen 2009a & b) had shown this geological type to have vegetation with significant conservation value and partly because two species with restricted distributions occur on it in the Solomon Project Area . It is not intended to make such detailed assessments of the conservation value of the vegetation of all the other geological types that occur in the Solomon Rail Project Area, but to give a more synoptic

assessment for each of the 600-group level units – giving the geology for each. The major reason for this is that because of the type of project involved, a long narrow corridor for a rail line, which crosses many geological types, but does not intersect a great area of any of them, the number sites for many of the geologies is limited, making assessment of each of the geological types difficult. This is particularly so, because the access corridor part of the API Project Area crosses areas that are relatively poorly sampled in the regional data set.

Note that it is not uncommon for colluvium sites to group with sites assigned to a particular rock type. This often indicates that the site is colluvium derived from that rock type. However, other instances involve incorrect attribution of sites to colluvium when they were on the rock type. This happens due to the scale of the geological mapping used (1: 250,000) meaning that small errors in the position of lines on the maps (many of which were made before GIS-systems) means that sites are plotted on the wrong side of a line. Also note that many different 600-level groups occur on colluvium or alluvium; this is because different areas of these materials are derived from different rock types or mixtures of them and therefore have different vegetation (with variation in habitat and climate adding to the diversity).

Where the left hand cells of the database extract is coloured yellow, it indicates that the site is from the API West Pilbara iron Ore Project. Where the geology code is highlighted orange-brown, it indicates a site on Robe Pisolite (a few have been corrected as not being actually on that unit). Note that the assessment must be made *on the available information*, which for the western Pilbara (in terms of numbers of sites not from the API Project Area) is not large. This may err on the side of assessing some units as being more restricted than they actually are, while this is unfortunate, it is consistent with the *precautionary principle*.

Each of the 600-group units is commented on separately. An extract from the dendrogram table showing the sites assigned to the unit, the projects they are from, the geology and vegetation description is given. The headings for these extracts are only given for the first one.

600-group unit 17.

Only three sites were assigned to this unit in the regional analysis, one from the API Project and two from the George River Rail option of the West Angelas Project survey (which crosses the Chichester Range east of Millstream. The API site was on the Duck Creek Dolomite and

the others on colluvium. As there were 563 colluvium sites in the regional analysis, the unit is uncommon. It is poorly sampled as well, with the George River Option sites probably not very similar to the API Project one.

Extract from dendrogram from the regional analysis for unit 17.

Project	Site	600-gp	Geol code	Geology	Vegetation description
WAGEO RIV	0058	17	Czc	Colluvium	Acacia arida open shrubland over Indigofera rugosa low open shrubland over Triodia wiseana hummock grassland.
WAGEO RIV	0062	17	Czc	Colluvium	Corchorus laniflorus, Indigofera rugosa scattered tall shrubs over Triodia wiseana very open hummock grassland.
WPI	TC015	17	PLWd	DUCK CREEK DOLOMITE	Stylobasium spathulatum high open shrubland over Indigofera rugosa low open shrubland over Triodia wiseana open hummock grassland

600-group unit 20.

Only four sites were assigned to this unit from the regional data set, all from the API Project Area. Two of the sites were from two different basalt units, and one from an "eluvium, colluvium" site. With 563 colluvium sites (79 from the API data) and 29 "eluvium, colluvium" sites in the regional analysis data set, this unit has a western Pilbara distribution, but is probably poorly sampled rather than uncommon.

Extract from dendrogram from the regional analysis for unit 20.

WPI	CP016	20	AFk	KYLENA FORMATION or KYLENA BASALT	Acacia ancistrocarpa high open shrubland over Triodia wiseana open hummock grassland
WPI	CP052	20	Qp	Elluvim, colluvium, gilgais	Acacia atkinsiana open shrubland over Triodia wiseana open hummock grassland
WPI	CP018	20	Plk		Acacia synchronicia open shrubland over Triodia wiseana very open hummock grassland over Aristida contorta tussock grassland and Bulbostylis barbata very open sedgeland
WPI	TC017	20	PLWb	CHEELA SPRINGS BASALT	Triodia wiseana open hummock grassland

600-group unit 21.

Only three sites were assigned to this unit from the regional data set, two from the API Project Area and one from the Hamersley Parallel rail segment option of the West Angelas Project. The two API sites were from the Cheela Springs Basalt and the Wittenoom Dolomite, while the remaining site was from colluvium. There is some incorrect allocation of sites to geology in the data set (see above) and this may be the case in this instance. The unit has a western to

central Pilbara distribution, but is probably poorly sampled rather than very uncommon. Further sites and possibly better data (the West Angelas sites are releves with only one visit) are needed to clarify the relationship to the previous unit and distribution of the units (it seems likely that further sites and better data would indicate more units with less wide distribution would be a more realistic outcome).

Extract from dendrogram from the regional analysis for unit 20.

WAHA MPAR	1095	21	Czcb	Colluvium	Acacia ancistrocarpa high to open shrubland over Triodia wiseana hummock grassland.
WPI	TC012	21	PLWb	CHEELA SPRINGS BASALT	Acacia arida and Senna glutinosa ssp. pruinosa open shrubland over Triodia wiseana open hummock grassland
WPI	CP023	21	AHd	WITTENOOM FORMATION	Acacia bivenosa and Petalostylis labicheoides open shrubland over Triodia wiseana hummock grassland

600-group unit 33.

Five sites were assigned to this unit, four from the Chichester Range from two Basalt units and one from the API survey from a colluvium site. This suggests that the unit as defined has a western-central Pilbara distribution and is uncommon in the western Pilbara (and presumably poorly sampled there). However, it seems likely (the API survey has *Triodia pungens* while the others have *Triodia wiseana*) that this is a case of a site (the API site) grouping with the most similar one, but they are not really very similar.

Extract from dendrogram from the regional analysis for unit 33.

WAMT HER	0326	33	AFk	KYLENA FORMATION or KYLENA BASALT	Triodia wiseana hummock grassland.
WAMT HER	0342	33	AFk	KYLENA FORMATION or KYLENA BASALT	Indigofera monophylla (grey leaflet form) low open shrubland over Triodia wiseana hummock grassland.
WAMT HER	0357	33	AFk	KYLENA FORMATION or KYLENA BASALT	Acacia trudgeniana), Grevillea pyramidalis scattered tall shrubs over Triodia wiseana open hummock grassland.
WAMTL EA	0410	33	AFm	MADDINA FORMATION or MADDINA BASALT	Triodia wiseana hummock grassland.
WPI	CP145	33	Qa	Alluvium - unconsolidated	Corymbia hamersleyana low open woodland over Acacia trachycarpa and Grevillea pyramidalis ssp. leucadendron low open shrubland over Triodia pungens

600-group unit 60.

Six sites were assigned to this unit, five from the Chichester Range from colluvium, the Tumbiana Formation and the Hardey Formation, and one from the API survey from a Beasley River Quartzite site. This suggests that the unit as defined has a western-central Pilbara distribution and is uncommon in the western Pilbara (and presumably poorly sampled).

Extract from dendrogram from the regional analysis for unit 60.

WAGEO RIV	0066	34	Czc	Colluvium	Goodenia stobbsiana, Corchorus laniflorus low open shrubland over Triodia wiseana open hummock grassland.
WAHA MPAR	1170	59	AFhst	HARDEY FORMATION	Triodia wiseana open to very open hummock grassland.
WAGEO RIV	0104	60	AFhy	Lyre Creek Member HARDEY FORMATION	Cajanus cinereus, Gossypium australe open heath over low Corchorus laniflorus scattered low shrubs over Triodia wiseana very open hummock grassland.
WAGEO RIV	0303	60	AFt	TUMBIANA FORMATION	Corymbia hamersleyana scattered low trees over Indigofera monophylla (grey leaflet form) and Corchorus laniflorus low open heath over Triodia wiseana hummock grassland.
WAHA MPAR	1086	60	AFt	TUMBIANA FORMATION	Corymbia hamersleyana, Acacia inaequilatera scattered low trees over Indigofera monophylla (grey leaflet form) low open shrubland over Triodia wiseana, Triodia brizoides hummock grassland.
WPI	UCW 007	60	PLWq	BEASLEY RIVER QUARTZITE	Corymbia hamersleyana scattered low trees over Triodia wiseana open hummock grassland

600-group unit 63.

Only one site from the API Project Area was assigned to this unit. It has scattered trees of Terminalia supranitifolia, which is very uncommon off the Burrup Peninsula and Dampier Archipelago. This would appear to be likely to be a quite uncommon vegetation type. Any disturbance to it should be minimised, or avoided if possible.

Extract from dendrogram from the regional analysis for unit 63.

WPI	CP119	63	PLHb	BROCKMAN IRON FORMATION	Terminalia supranitifolia scattered low trees over Grevillea wickhamii ssp. hispidula and Acacia arida scattered tall shrubs over Triodia wiseana very open hummock grassland

600-group unit 94.

Only one site from the API Project Area was assigned to this unit, which has open woodland of *Terminalia canescens* as the upper storey. While the attribution from geological mapping was to colluvium, the field attribution was to dolomite and inspecting the site on Google Earth imagery suggests the latter is correct. This appears to be a unit with restricted occurrence (or at least very poorly sampled), and impact on it should be minimised.

Extract from dendrogram from the regional analysis for unit 94.

WPI	CP038r	94	Qc	Colluvium [field observation was dolomite]	Terminalia canescens low open woodland over Triodia wiseana very open hummock grassland

600-group unit 115.

Only one site from the API Project Area was assigned to this unit. It is a creek line vegetation unit with the lower layer degraded by invasion by Buffel Grass (**Cenchrus ciliaris*). This is likely to be a poorly sampled unit, possibly not well allocated in the analysis due to the Buffel Grass invasion.

Extract from dendrogram from the regional analysis for unit 115.

WPI	CP157	115	Qc	Colluvium	Eucalyptus camaldulensis var. obtusa low open woodland over Gossypium robinsonii high open shrubland over Cenchrus cilliaris very open grassland

600-group unit 116.

Only two sites from the API Project Area were assigned to this unit in the regional analysis. The River Red Gum (*Eucalyptus camaldulensis*) overstorey indicates that the water table is fairly near the surface. Such sites usually have larger species lists than at these sites (11 and 14 species), indicating that this is a lower diversity variant of such vegetation (reflecting the stony creek bed habitat). It is likely to be a poorly sampled rather than very uncommon vegetation unit. Although creek line sites with *Melaleuca understorey* are usually not a large part of the creek line habitat, as they occur where the groundwater is forced closer (or to) the surface by rock. This unit is likely to have a west Pilbara distribution

Extract from dendrogram from the regional analysis for unit 116.

WPI	HR011	116	Qc	Colluvium	Eucalyptus camaldulensis var. obtusa open forest over Melaleuca linophylla high open shrubland over Goodenia stobbsiana shrubland
WPI	TC054	116	Qc	Colluvium	Eucalyptus camaldulensis low open woodland over Melaleuca glomerata high open shrubland over Acacia ancistrocarpa and Acacia bivenosa open shrubland over Triodia wiseana very open hummock grassland

600-group unit 129.

Only three sites from the API Project Area were assigned to this unit in the regional analysis. They are wetter creek line sites with River Red Gum overstorey, but are less stony sites than

the unit above. This unit is also likely to be poorly sampled rather than very uncommon, and is likely to have a West Pilbara distribution.

Extract from dendrogram from the regional analysis for unit 129.

WPI	CP508	129	Qr	[Alluvium]	Eucalyptus camaldulensis var. obtusa open forest over Melaleuca glomerata high open shrubland over Cyperus vaginatus, C. bifax and C. difformis very open sedgeland over Eragrostis tenellula scattered grasses over Ammannia auriculata and Stemodia grossa
308	MATH14	129	Qr	[Alluvium]	Eucalyptus camaldulensis low open woodland over Petalostylis labicheoides, Acacia trachycarpa tall open shrubland over Stemodia grossa, Cleome viscosa scattered herbs.
308	MEAS08	129	Qac	Alluvial -clay, silt	Eucalyptus camaldulensis low open forest over Melaleuca glomerata high shrubland over Eragrostis, Cyperus open tussock grasslands.

600-group unit 138.

Only four sites from API project survey area were assigned to this unit. The four sites suggest that it is not uncommon in that survey area. The lack of sites from other projects (remembering there is little other western Pilbara data in the regional data set) suggest this unit is likely to be restricted to the western Pilbara.

Extract from dendrogram from the regional analysis for unit 138.

WPI	CP013	138	Qc	Colluvium	Eucalyptus victrix scattered low trees over Acacia arida and A. trachycarpa open shrubland over Cenchrus cilliaris open tussock grassland
WPI	CP506	138	Qac	Alluvial -clay, silt	Eucalyptus victrix low open woodland over Acacia arida and A. coriacea subsp. coriacea high open shrubland over A. trachycarpa open shrubland over Triodia epactia very open hummock grassland over Cenchrus ciliaris very open tussock grassland
WPI	CP507	138	Qac	Alluvial -clay, silt	Eucalyptus victrix open woodland over Acacia trachycarpa and A. bivenosa high shrubland over Triodia epactia open hummock grassland over Cenchrus ciliaris open tussock grassland
WPI	CP020	138	Qac	Alluvial -clay, silt	Eucalyptus camaldulensis var. obtusa and E. victrix open forest over Acacia coriacea ssp. pendens, Melaleuca linophylla and M. glomerata high shrubland over Cenchrus setiger and C. ciliaris tussock grassland

600-group unit 139.

Seven sites from the API Project data set were referred to this unit, suggesting that it is locally common, but restricted to the western Pilbara. It is also quite variable in which species are

dominant and in the dendrogram the first two sites form a distinct subunit. It is likely that further sites would indicate that this unit should be split.

Extract from dendrogram from the regional analysis for unit 139.

WPI	CP014	139	Qc	Colluvium	Acacia pyrifolia var. pyrifolia and A. bivenosa open shrubland over Triodia wiseana hummock grassland over very open mixed tussock grasses
WPI	CP504	139	Qp	Elluvim, colluvium, gilgais	Acacia inaequilatera, A. coriacea subsp. coriacea and Grevillea pyramidalis subsp. leucadendron high open shrubland over Indigofera linifolia and Crotalaria medicaginea herbland over Eulalia aurea and Cenchrus ciliaris tussock grassland
WPI	CP015	139	AFk	KYLENA FORMATION or KYLENA BASALT	Corymbia hamersleyana scattered low trees over Acacia ancistrocarpa open scrub over Triodia wiseana open hummock grassland over very open Aristida contorta tussock grassland
WPI	CP017	139	Plk		Acacia tumida var. pilbarensis closed scrub over A. ancistrocarpa, A. pyrifolia var. pyrifolia and A. bivenosa shrubland over Triodia wiseana very open hummock grassland
WPI	CP021	139	Qp	Elluvim, colluvium, gilgais	Acacia synchronicia scattered tall shrubs over A. bivenosa and Senna artemisioides ssp. oligophylla low open shrubland over Triodia epactia and T. wiseana open hummock grassland over Aristida contorta scattered tussock grasses
WPI	CP019	139	Qac	Alluvial -clay, silt	Acacia bivenosa open scrub over Triodia wiseana very open hummock grassland
WPI	CP022	139	Pfp	PILLINGINI TUFF	Corymbia hamersleyana scattered low trees over Grevillea pyramidalis subsp. leucadendron high open shrubland over Acacia trachycarpa and A. pyrifolia var. pyrifolia shrubland over Triodia epactia and T. wiseana open hummock grasssland over Cenchrus ciliaris

600-group unit 140.

Only three sites from the API Project Area were referred to this unit in the regional analysis. The unit therefore only occurs in the western Pilbara, but as the sites are adjacent in number, it may be restricted in distribution. Any disturbance should therefore be minimised.

Extract from dendrogram from the regional analysis for unit 140.

WPI	CP053	140	Qc	Colluvium	Acacia xiphophylla high open shrubland over Triodia wiseana open hummock grassland
WPI	CP054	140	Qc	Colluvium	Acacia bivenosa high shrubland over Triodia wiseana open hummock grassland over Eriachne pulchella subsp. dominii scattered tussock grasses
WPI	CP055	140	Kny	YARRALOOLA CONGLOMERATE	Acacia aneura var. intermedia low woodland over Eremophila forrestii ssp. forrestii scattered shrubs over Triodia wiseana open hummock grassland

600-group unit 141.

Nine sites were assigned to this unit, three from the API Project Area, five from the Bungaroo Creek area and one from the flora and vegetation survey of the Mesa A transport corridor, Warramboo deposit, and Yarraloola borefield and pipeline. The unit is therefore restricted to the western Pilbara but apparently moderately common.

Extract from dendrogram from the regional analysis for unit 141.

308	2MATC 09	141	Qac	Alluvial -clay, silt	Corymbia hamersleyana scattered low trees over Stylobasium spathulatum (Acacia trachycarpa, A. pyrifolia, Grevillea pyramidalis) tall shrubland over Triodia epactia hummock grassland and Cenchrus setigerus very open tussock grassland.
378	BUN66	141	Qc	Colluvium	Corymbia hamerslyana scattered low trees to low open woodland over Acacia pyrifolia scattered tall shrubs over Triodia wiseana, (Triodia epactia) closed hummock grassland.
301A	BUN11	141	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia pyrifolia, Grevillea pyramidalis, Grevillea wickhamii tall open shrubland over Tephrosia rosea var. glabrior scattered low shrubs to low open shrubland over Triodia epactia (Triodia wiseana) mid-dense
378	BUN64	141	Qac	Alluvial -clay, silt	Corymbia hamersleyana low open woodland over Acacia sclerosperma subsp. sclerosperma, Acacia synchronicia, (Acacia pyrifolia, Grevillea pyramidalis) tall open shrubland over Gossypium australe, (Cullen lachnostachys), open shrubland over Indigofera colutea
301A	BUN20	141	Qac	Alluvial -clay, silt	Acacia pyrifolia scattered shrubs over Tephrosia rosea var. glabrior low shrubland over Triodia epactia open hummock grassland to hummock grassland
378	BUN50	141	Qac	Alluvial -clay, silt	Corymbia hamerslyana scattered low trees over Acacia inaequilatera, Grevillea pyramidalis scattered tall shrubs over Gossypium australe scattered shrubs over Triodia epactia hummock grassland
WPI	TC002	141	Qac	Alluvial -clay, silt	Acacia pyrifolia var. pyrifolia open shrubland over Grevillea pyramidalis ssp. pyramidalis scattered shrubs over Cleome viscosa low open heath
WPI	TC004	141	Qac	Alluvial -clay, silt	Acacia pyrifolia var. pyrifolia high shrubland over Grevillea pyramidalis subsp. leucadendron scattered shrubs over Triodia epactia open hummock grassland
WPI	TC003	141	Qac	Alluvial -clay, silt	Eucalyptus victrix open woodland over Acacia trachycarpa, A. pyrifolia var. pyrifolia and Grevillea pyramidalis ssp. leucadendron high open shrubland over open Triodia epactia very open hummock grassland

600-group unit 143.

Twelve sites were assigned to this unit in the regional analysis, ten from the API Project Area and one each from the Bungaroo Creek area and the nearby Mesa J extension. The API Project Area sites are from several sub-areas of the survey, so the unit is fairly common, but restricted to the western Pilbara. One of the API Project Area sites was assigned to the Robe Pisolite (see

separate assessment above), but is a creek line type, so it not typical of the vegetation of that geological unit (it may be a creek through a mesa).

Extract from dendrogram from the regional analysis for unit 143.

WPI	ASN 020	143	Qc	Colluvium	Eucalyptus camaldulensis/victrix, Corymbia hamersleyana and Acacia aneura low open woodland over Acacia ancistrocarpa, Acacia tumida var. pilbarensis and Acacia atkinsiana high shrubland over Acacia bivenosa open shrubland over Triodia epactia ope
WPI	BOR 102	143	Qc	Colluvium	Corymbia hamersleyana low woodland over Malvastrum americanum, Sida yellow clumps, Mauve creeper and Sida midget open herbland over Cenchrus ciliaris tussock grassland
WPI	CR01 6	143	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa, A. tumida var. pilbarensis and A. bivenosa open shrubland over Triodia epactia closed hummock grassland
215	MJ01	143	Qac	Alluvial - clay, silt	Corymbia candida subsp. candida low open forest over Stylobasium spathulatum, Acacia bivenosa, Gossypium robinsonii open shrubland.
378	BUN -MZ	143	Qac	Alluvial - clay, silt	Corymbia hamersleyana low open woodland over Acacia pyrifolia, A. inaequilatera, Gossypium robinsonii tall shrubland over Acacia bivenosa open shrubland over Triodia epactia (T. wiseana) hummock grassland
WPI	CP03 6	143	Qac	Alluvial - clay, silt	Acacia spp., Hakea lorea ssp. lorea and Grevillea pyramidalis ssp. leucadendron high open shrubland over Scaevola spinescens (broad form) low open shrubland over Triodia epactia closed hummock grassland
WPI	TC00 1	143	QlC		Corymbia hamersleyana low open woodland over Acacia pyrifolia var. pyrifolia, A. trachycarpa and A. ancistrocarpa high shrubland over Tephrosia rosea var. glabrior low open shrubland over Triodia epactia open hummock grassland
WPI	TC00 5	143	Qac	Alluvial - clay, silt	Corymbia hamersleyana low open woodland over Acacia pyrifolia var. pyrifolia high open shrubland over Gossypium australe (Burrup Peninsula form) open shrubland over Cleome viscosa low shrubland
WPI	KBW 006	143	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa, A. bivenosa and A. synchronicia shrubland over Triodia epactia hummock grassland
WPI	KBW 007	143	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa and Acacia bivenosa high open shrubland over Triodia epactia open hummock grassland
WPI	CP04 2	143	Tp	ROBE PISOLITE [See above]	Eucalyptus camaldulensis var. obtusa open woodland over Corymbia hamersleyana and C. candida ssp. candida low open forest over Acacia trachycarpa and A. ligulata high shrubland over Triodia wiseana and T. epactia very open hummock grassland over Cenchrus
WPI	CR03 0	143	Qc	Colluvium	Eucalyptus leucophloia ssp. leucophloia and Corymbia hamersleyana low woodland over Acacia bivenosa and Gossypium australe open shrubland over Cleome viscosa open herbland over Triodia epactia and T. wiseana very open hummock grassland

600-group unit 144.

Nine sites from the API Project Area were assigned to this unit, which has four subgroups in the dendrogram. The three Robe Pisolite (see above for assessment of the Robe Pisolite vegetation) sites at the top of the dendrogram extract (below) form one distinct subgroup and the next two sites another, the site assigned to the Robe Pisolite was described in the field notes

as “a wide dissected drainage or gully on the flat”, and is therefore probably not a Robe Pisolite site. The unit is restricted to the western Pilbara and should be assessed as three or four separate sub-units, as it has very mixed vegetation.

Extract from dendrogram from the regional analysis for unit 144.

WPI	CW013	144	Tp	ROBE PISOLITE	Corymbia hamersleyana low open woodland over Acacia tumida var. pilbarensis, A. citrinoviridis and Gossypium robinsonii open scrub over Stylobasium spathulatum and Senna artemisioides ssp. oligophylla open shrubland
WPI	CW014	144	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia tumida var. pilbarensis and Grevillea wickhamii ssp. hispidula and Gossypium robinsonii open scrub over Petalostylis labicheoides open shrubland
WPI	CW019	144	Tp	ROBE PISOLITE	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa and A. tumida var. pilbarensis high open shrubland over A. bivenosa and A. arida open shrubland over Triodia epactia hummock grassland
WPI	CW030	144	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa closed scrub over Senna artemisioides ssp. oligophylla open shrubland over Triodia epactia scattered hummock grasses
WPI	CW034	144	Tp	ROBE PISOLITE (probable error)	Corymbia hamersleyana low open forest over Acacia tumida var. pilbarensis scattered tall shrubs over Cenchrus ciliaris closed tussock grassland
WPI	TC013	144	Wm	MOUNT McGRATH FORMATION	Acacia pyrifolia var. pyrifolia and A. citrinoviridis open shrubland over Dysphania melanocarpa very open herbland over Cenchrus ciliaris open tussock grassland
WPI	TC014	144	PLWb	CHEELA SPRINGS BASALT	Acacia citrinoviridis high shrubland over Acacia bivenosa, Stylobasium spathulatum and Eremophila longifolia shrubland over Triodia epactia open hummock grassland
WPI	CWW051	144	Qc	Colluvium	Acacia citrinoviridis high shrubland over Gossypium robinsonii shrubland over Triodia epactia open hummock grassland over mixed very open herbland
WPI	UCW001	144	Qc	Colluvium	Corymbia hamersleyana and Eucalyptus sp. (WPI, UCW1-30) scattered low trees over Gossypium robinsonii and Acacia pyrifolia high shrubland over Triodia epactia hummock grassland

600-group unit 146.

Only three sites from the same survey sub-area of the API Project Area were assigned to this unit. The unit is therefore restricted to the western Pilbara and has restricted known distribution. However, the degree of restriction may be partly due to poor sampling of the western Pilbara in the data set used for the analysis. The unit is on colluvium, suggesting it is not likely to be highly impacted by the proposed project, however disturbance should be minimised.

Extract from dendrogram from the regional analysis for unit 146.

WPI	CP094	146	Qc	Colluvium	Corymbia candida ssp. candida low woodland over Acacia colei var. colei high shrubland over Triodia epactia scattered hummock grasses
WPI	CP162	146	Qp	Elluvim, colluvium, gilgais	Corymbia candida ssp. candida scattered low trees over Acacia trachycarpa, A. bivenosa and A. ancistrocarpa high open shrubland over Triodia epactia hummock grassland
WPI	CP531	146	Qp	Elluvim, colluvium, gilgais	Eucalyptus camaldulensis open forest over Corymbia candida ssp. candida low open woodland over Acacia bivenosa, A. ancistrocarpa and Senna artemisioides subsp. oligophylla open shrubland over Triodia epactia hummock grassland

600-group unit 147.

Seven sites from four sub-areas of the API Project Area were assigned to this unit. It is therefore restricted to the western Pilbara, but probably moderately common there.

Extract from dendrogram from the regional analysis for unit 147.

WPI	CP158	147	Qac	Alluvial - clay, silt	Eucalyptus camaldulensis var. obtusa low woodland over Acacia trachycarpa high open shrubland over Cenchrus ciliaris very open tussock grassland
WPI	CP160	147	Qac	Alluvial - clay, silt	Acacia trachycarpa high shrubland over Triodia epactia very open hummock grassland over Cenchrus ciliaris very open tussock grassland
WPI	HR066	147	Qa	Alluvium - unconsolidated	Eucalyptus camaldulensis var. obtusa scattered low trees over Acacia pyrifolia over Triodia epactia hummock grassland
WPI	KB025	147	Qa	Alluvium - unconsolidated	Acacia trachycarpa and Grevillea wickhamii ssp. hispidula high shrubland over Acacia pyrifolia var. pyrifolia open shrubland over Triodia epactia open hummock grassland
WPI	CP265	147	Qp	Elluvim, colluvium, gilgais	Eucalyptus camaldulensis var. obtusa open woodland over Corymbia hamersleyana and C. candida ssp. candida low open woodland over Acacia trachycarpa high shrubland over Petalostylis labicheoides scattered shrubs over Triodia wiseana and T. epactia very ope
WPI	CP271	147	Qr		Eucalyptus camaldulensis var. obtusa scattered trees over Corymbia candida ssp. candida scattered low trees over Acacia synchronicia, A. sclerosperma ssp. sclerosperma and A. trachycarpa high shrubland over Triodia epactia hummock grassland
WPI	CP465	147	Qac	Alluvial - clay, silt	Acacia synchronicia open scrub over A. pyrifolia var. pyrifolia scattered shrubs over Triodia wiseana hummock grassland

600-group unit 148.

Only four sites from one sub-area of the API Project Area were assigned to this unit. It is restricted to the western Pilbara and within that area apparently quite restritcted. It occurs on colluvium, and is therefore not likely to be heavily impacted by the proposed project. However, impact on the unit should be minimised.

Extract from dendrogram from the regional analysis for unit 148.

WPI	BOR095	148	Qc	Colluvium	Eucalyptus victrix, Eucalyptus camaldulensis var. obtusa , Corymbia hamersleyana open woodland

WPI	TC033	148	Qc	Colluvium	Eucalyptus victrix over Acacia citrinoviridis and Acacia synchronicia over Triodia epactia
WPI	TC039	148	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia citrinoviridis, Acacia ancistrocarpa, Acacia bivenosa, Acacia pyrifolia and Gossypium robinsonii open shrubland over Triodia epactia scattered hummock grassland
WPI	TC036	148	Qc	Colluvium	Corymbia hamersleyana low open woodland over mixed grasses

600-group unit 149.

Only two sites from one sub-area of the API Project Area were assigned to this unit, which is uncommon and restricted in distribution in the data set used (and available for the western Pilbara). The unit is recorded from The Mount McGrath Formation and colluvium, so the apparent degree of restriction may be partly due to poor sampling. However, on the currently available information the unit is uncommon and disturbance to it should be minimised.

Extract from dendrogram from the regional analysis for unit 149.

WPI	TC128	149	Wm	MOUNT McGRATH FORMATION	Acacia bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	TC133	149	Qc	Colluvium	Acacia pyrifolia high shrubland over Triodia epactia hummock grassland

600-group unit 150.

Only three sites from two sub-areas of the API Project Area were assigned to this unit and it is not common and at least moderately restricted in distribution. However, as it was recorded from alluvium and colluvium, this may partly reflect sampling density. Given the small number of occurrences of the unit in the data set, disturbance of the unit should be minimised.

Extract from dendrogram from the regional analysis for unit 150.

WPI	BOR111	150	Qac	Alluvial -clay, silt	Vachellia farnesiana, Acacia trachycarpa and Grevillea pyramidalis high open shrubland over Cenchrus cilliaris, etc tussock grassland.
WPI	TC032	150	Qc	Colluvium	Corymbia hamersleyana over Gossypium robinsonii over Tephrosia rosea and Triodia epactia
WPI	TC106	150	Qa	Alluvium - unconsolidated	Eucalyptus victrix open woodland over Triodia epactia very open hummock grassland

600-group unit 151.

Only one site from the API Project Area was assigned to this unit, which had significant invasion by Buffel Grass (**Cenchrus ciliaris*) the effect of which on the assignment of the unit

can not be ascertained (much more data would be required). In the absence of further information, the unit should be considered possibly very uncommon and restricted and disturbance to is should be minimised.

Extract from dendrogram from the regional analysis for unit 151.

WPI	BOR117	151	Qc	Colluvium	Gossypium robinsonii, Acacia pyrifolia ssp. pyrifolia open scrub over *Cenchrus ciliaris grassland

600-group unit 153.

Only two sites from one sub-area of the API Project Area were assigned to this unit, both from alluvium. The unit should be considered to be uncommon and restricted in distribution, disturbance of it should be minimised.

Extract from dendrogram from the regional analysis for unit 153.

WPI	CP034	152	Qa	Alluvium - unconsolidated	Acacia ancistrocarpa shrubland over Triodia epactia hummock grassland
WPI	CP035	152	Qa	Alluvium - unconsolidated	Corymbia hamersleyana low open woodland over Triodia epactia closed hummock grassland

600-group unit 153.

Four sites from one sub-area of the API Project Area were assigned to this unit, which is restricted in distribution but apparently locally fairly common. Given its localisation, disturbance to this unit should be minimised.

Extract from dendrogram from the regional analysis for unit 153.

WPI	CP135	153	Qc	Colluvium	Corymbia candida ssp. candida and C. hamersleyana scattered low trees over Acacia tumida var. pilbarensis and A. bivenosa open shrubland over Triodia wiseana hummock grassland
WPI	CP240	153	Qac	Alluvial -clay, silt	Corymbia hamersleyana and C. candida ssp. candida low open woodland over Acacia trachycarpa and Petalostylis labicheoides high open shrubland over Cenchrus ciliaris very open tussock grassland
WPI	CP373	153	Qc	Colluvium	Corymbia candida ssp. candida and C. hamersleyana low open woodland over Acacia trachycarpa high open shrubland over Cenchrus ciliaris very open tussock grassland
WPI	CP198	153	Kny	YARRALOOLA CONGLOMERATE	Eucalyptus leucophloia ssp. leucophloia, Corymbia hamersleyana and C. candida ssp. candida scattered low trees over Grevillea wickhamii ssp. hispidula high open shrubland over Triodia wiseana very open hummock grassland

600-group unit 155.

Only two sites from one sub-area of the API Project Area were assigned to this unit. Unit 155 is apparently not only restricted in distribution, but not common, although the degree of both factors may be partly due to sampling density. Disturbance of this unit should be minimised.

Extract from dendrogram from the regional analysis for unit 155.

WPI	BOR152	155	Qc	Colluvium	Acacia citrinoviridus and Acacia pyrifolia high shrubland over Triodia epactia scattered hummock grassland
WPI	BOR247	155	Qc	Colluvium	Grevillea wickhamii and Acacia tumida open scrub over Triodia epactia open hummock grassland

600-group unit 159.

Five sites were assigned to this unit, four from the API Project Area and one from the Bungaroo Creek area (a side valley to the Robe Valley). These are sites from medium to larger creeks at wetter places (indicated by the *Melaleuca linophylla*). The API sites were from four sub-areas of the survey, so this unit is restricted to the western Pilbara, not very common (although increased sampling density may indicate it is more common than this data suggests), but not localised. Disturbance of this unit should be minimised.

Extract from dendrogram from the regional analysis for unit 159.

301A	BUN05	159	Qac	Alluvial -clay, silt	Eucalyptus victrix open woodland over Acacia trachycarpa, Tephrosia rosea var. glabrior open shrubland over Triodia epactia open hummock grassland
WPI	CP031	159	Qa	Alluvium - unconsolidated	Eucalyptus victrix woodland over mixed very open herbland
WPI	HR044	159	Qc	Colluvium	Eucalyptus victrix woodland over Melaleuca linophylla high shrubland over Triodia epactia open hummock grassland
WPI	KB021	159	Qa	Alluvium - unconsolidated	Eucalyptus camaldulensis var. obtusa and E. victrix open forest over Acacia tumida var. pilbarensis and Acacia colei var. colei scattered tall shrubs over mixed very open herbland
WPI	TC008	159	Qc	Colluvium	Eucalyptus victrix woodland over Melaleuca linophylla and M. glomerata high open shrubland

600-group unit 188.

Four sites were assigned to this unit, one from the API Project Area, and three from two rail corridor options in the Chichester Range recorded for the West Angelas Project. However, the API site forms a separate sub-group in the dendrogram, so while the overall group is fairly widely distributed, the variation in the API Project Area is not and disturbance to this unit should be minimised there.

Extract from dendrogram from the regional analysis for unit 188.

WAFORSLO	0150	188	Czcf	Colluvium	Triodia pungens hummock grassland.
WAMTHER	0345	188	AFk	KYLENA FORMATION or KYLENA BASALT	Eucalyptus leucophloia scattered low trees over Triodia pungens hummock grassland.
WAMTLEA	0509	188	AFm	MADDINA FORMATION or MADDINA BASALT	Eucalyptus leucophloia scattered low trees over Triodia pungens hummock grassland.
WPI	HR009	188	Qc	Colluvium	Corymbia candida ssp. candida low open woodland over Acacia adsurgens high shrubland over A. ancistrocarpa and A. bivenosa open heath over Senna artemisioides ssp. helmsii low open shrubland over Triodia pungens hummock grassland

600-group unit 195.

Only three sites were assigned to this unit, one from the central Hamersley Range in the Four Corners Bore Rail option recorded for the West Angelas Project on Shale and Mt Sylvia Formation, one from the API Project Area and one from the Mesa A / Mesa G vegetation and flora survey. The latter two sites were recorded on Robe Pisolite (see section above for discussion of the conservation value of the vegetation of this geological unit), and form a distinct subgroup within the unit in the dendrogram. Given the small number of sites of this unit and the relatively dense sampling on Robe Pisolite, the two sites on Robe Pisolite represent a unit that is uncommon.

Extract from dendrogram from the regional analysis for unit 195.

WAFCBOR	1060	195	AHs	MOUNT McCRAE SHALE and MOUNT SYLVIA FM	Eucalyptus leucophloia scattered low trees over Acacia bivenosa shrubland over Triodia wiseana hummock grassland.
WPI	CN005	195	Tp	ROBE PISOLITE	Triodia sp. Robe River and Triodia wiseana hummock grassland
232a	MESG11	195	Tp	ROBE PISOLITE	Eucalyptus leucophloia scattered low trees over Acacia acradenia, Cassia pruinosa scattered shrubs over Triodia wiseana mid-dense hummock grassland

600-group unit 205.

Ten sites were assigned to this unit, two from the API Project Area and eight from rail options for the West Angelas Project recorded in the Chichester Range. Within the dendrogram the group show significant diversity, with the two API sites forming a subgroup. Consequently, disturbance to this type should be minimised.

Extract from dendrogram from the regional analysis for unit 205.

WAMT LEA	0415	205	AFm	MADDINA FORMATION or MADDINA BASALT	Eucalyptus leucophloia scattered low trees over Triodia wiseana hummock grassland.
WPI	TC041	205	Pho	BOOLGEEDA IRON FORMATION	Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	TRW001	205	Wm	MOUNT McGRATH FORMATION	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia atkinsiana and A. bivenosa open shrubland over Triodia sp. Robe River and T. wiseana very open hummock grassland
WAFO RSLO	0160	205	AFjsl	Mudstone, siltstone	Acacia atkinsiana high shrubland over Triodia wiseana open hummock grassland.
WAGE ORIV	0205	205	AFjkdl	JEERINAH FORMATION	Eucalyptus leucophloia scattered low trees over Cassia luerssenii scattered shrubs over Acacia bivenosa scattered low shrubs over Triodia wiseana hummock grassland.
WAGE ORIV	0314	205	Czc	Colluvium	Acacia bivenosa low shrubland over Triodia wiseana hummock grassland.
WAMT LEA	0544	205	AFjsl	Mudstone, siltstone	Eucalyptus leucophloia scattered low trees over Triodia wiseana hummock grassland.
WAMT LEA	0553	205	Qs	Eolian sand [siliceous]	Eucalyptus leucophloia scattered low trees over Acacia bivenosa scattered low shrubs over Triodia wiseana hummock grassland.
WAGE ORIV	0191	205	Qa	Alluvium - unconsolidated	Triodia wiseana, Triodia longiceps hummock grassland.
WAMT LEA	0473	205	AFjslg	JEERINAH FORMATION	Acacia bivenosa scattered low shrubs over Triodia wiseana open hummock grassland.

600-group unit 226.

Only one site from the API Project Area was assigned to this unit, which was present at fifty-three of the sites in the data set used for the regional analysis. It appears that this unit is an uncommon Snakewood (*Acacia xiphophylla*) vegetation type with restricted occurrence., although the degree of uncommonness may be related to the sample distribution in the data set used for the analysis. Therefore, the stand recorded is likely to have higher value than other Snakewood stands and disturbance to this unit should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 226.

WPI	CP510	226	Qb	Alluvium - unconsolidated	Acacia xiphophylla scattered tall shrubs over A. bivenosa scattered shrubs over Triodia wiseana scattered hummock grasses over Sporobolus australasicus and Cenchrus ciliaris very open tussock grassland

600-group unit 229.

Eight sites from six different surveys were assigned to this unit including two sites from the API Project Area, sites from the Robe River Valley area and sites from the Chichester Range.

There is variation in the group, but it is less than in others with sites from this geographic spread. Therefore, this unit is fairly widespread and relatively common.

Extract from dendrogram from the regional analysis for unit 229.

FMG-2006	P3JQ3	227	Agm	Monzogranite	Acacia bivenosa Shrubland over a Hummock Grassland of Triodia wiseana.
WAGEORIV	0206	229	AFjkdl	JEERINAH FORMATION	Eucalyptus leucophloia low open woodland over Acacia ancistrocarpa, Acacia atkinsiana open scrub over Acacia bivenosa shrubland over Triodia pungens, Triodia wiseana hummock grassland.
WAMTLEA	0541	229	Qa	Alluvium - unconsolidated	Eucalyptus leucophloia low woodland over Corchorus sidoides, Acacia bivenosa, Acacia atkinsiana low shrubland over Triodia pungens very open hummock grassland over Themeda triandra and Paraneurachne muelleri very open tussock grassland.
WAMTLEA	0543	229	Qa	Alluvium - unconsolidated	Acacia atkinsiana, Acacia ancistrocarpa low shrubland.
WAMTHER	0545	229	AFjsl	Mudstone, siltstone	Eucalyptus leucophloia scattered low trees over Acacia ancistrocarpa open scrub over Acacia bivenosa scattered shrubs over Triodia wiseana hummock grassland.
WPI	BOR229	229	Wm	MOUNT McGRATH FORMATION	Corymbia hamersleyana scattered low trees over Acacia ancistrocarpa, Acacia atkinsiana and Acacia bivenosa open shrubland over Triodia wiseana hummock grassland
308	2MATC08	229	Qc	Colluvium	Hakea chordophylla scattered shrubs over Triodia wiseana open hummock grassland.
WPI	CMP006	229	Qc	Colluvium	Acacia bivenosa scattered shrubs over Acacia atkinsiana low open shrubland over Triodia wiseana open hummock grassland

600-group unit 239.

Only two sites, one from the API Project Area and one from the George River rail option (which ran across the Chichester Range) of the West Angelas survey were assigned to this unit. While it is moderately widespread, this unit is not common and disturbance to it should be avoided or minimised. However, the number of records is likely to partly reflect the distribution of the sites in the data set used for the regional analysis.

Extract from dendrogram from the regional analysis for unit 239.

WAGEORIV	0182	239	AFjsl	Mudstone, siltstone	Cassia glutinosa scattered shrubs over Triodia brizoides, Triodia longiceps hummock grassland.
WPI	ASN032	239	Qc	Colluvium	Eucalyptus leucophloia and Corymbia hamersleyana low open woodland over Acacia tumida high open shrubland over Triodia wiseana very open hummock grassland and mixed grasses

600-group unit 240.

Only three sites were assigned to this unit, two from the API Project Area and one from the Mt Leal rail option (which ran across the Chichester Range) of the West Angelas survey. The unit is thus moderately widespread but is not common and disturbance to it should be avoided or minimised. However, the number of records is likely to partly reflect the distribution of the sites in the data set used for the regional analysis.

Extract from dendrogram from the regional analysis for unit 240.

WAMTLEA	0399	240	AFm	MADDINA FORMATION or MADDINA BASALT	Acacia bivenosa low open shrubland over Triodia wiseana hummock grassland.
WPI	BOR199	240	Wm	MOUNT McGRATH FORMATION	
WPI	AD003	240	PLWb	CHEELA SPRINGS BASALT	Eucalyptus victrix low open forest over Acacia bivenosa open shrubland over Triodia epactia very open hummock grassland

600-group unit 241.

Only two sites were assigned to this unit, one from the API Project Area and one from the West Angelas area east of Karijini National Park. Examination of the dendrogram indicates that while they are the closest sites to each other, they are only moderately similar and that if the data set had other similar sites, would probably form two different units. Therefore, the site from the API Project Area should be treated as representing a restricted and uncommon unit and disturbance to the unit should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 241.

WASA	0818	241	Czc	Colluvium	Eucalyptus gamophylla low open mallee woodland over Acacia holosericea scattered tall shrubs over Gossypium robinsonii high open shrubland over Acacia bivenosa closed scrub over Triodia pungens closed hummock grassland with scattered Chrysopogon fallax tussocks
WPI	CP519	241	Qrg	Quartzofeldspathic sand	Acacia bivenosa open shrubland over Triodia wiseana hummock grassland

600-group unit 242.

Seven sites from the API Project Area were assigned to this unit, including two assigned to the Robe Pisolite. The first of the two Robe Pisolite sites is on the colluvium slopes below a mesa and joins to the other sites at a significant dissimilarity (that is it almost certainly represents a separate unit), the other is on the top of a lower, dissected mesa and joins with one of the other site as another sub-group of the group. The general values for vegetation of the Robe Pisolite

are discussed above, however Snakewood (*Acacia xiphophylla*) vegetation would be unusual on this geological type or the colluvium downslope from it and it is not surprising that these sites do not group with other Robe Pisolite sites. They therefore have significant conservation value.

Extract from dendrogram from the regional analysis for unit 242.

WPI	AD007	242	Tp	ROBE PISOLITE [on colluvium downslope of]	Acacia xiphophylla open shrubland over Senna stricta scattered shrubs over Triodia wiseana very open hummock grassland
WPI	CP193	242	Qc	Colluvium	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	TRW002	242	Wm	MOUNT McGRATH FORMATION	Triodia wiseana very open hummock grassland with Petalostylis labicheoides and Acacia bivenosa scattered shrubs in drainage lines
WPI	CW049	242	Tp	ROBE PISOLITE	Acacia xiphophylla high open shrubland over A. synchronicia open shrubland over Triodia wiseana open hummock grassland
WPI	CP327	242	Kny	YARRALOOLA CONGLOMERATE	Acacia bivenosa and A. atkinsiana open shrubland over Triodia wiseana open hummock grassland
WPI	CP363	242	Kny	YARRALOOLA CONGLOMERATE	Acacia xiphophylla high open shrubland over A. bivenosa, A. ancistrocarpa and A. synchronicia open shrubland over Triodia wiseana very open hummock grassland
WPI	CP337	242	Qc	Colluvium	Acacia xiphophylla high open shrubland over A. bivenosa open shrubland over Triodia wiseana very open hummock grassland

600-group unit 243.

Six sites from the API Project Area were assigned to this unit, five from colluvium and one from the Duck Creek Dolomite. The sites are from three of the API sub-areas, so this unit is restricted to the western Pilbara, but apparently reasonably common there.

Extract from dendrogram from the regional analysis for unit 243.

WPI	ASN021	243	PL Wd	DUCK CREEK DOLOMITE	Corymbia hamersleyana low scattered trees over Acacia bivenosa and Tephrosia uniovulata low open shrubland over Triodia wiseana open hummock grassland
WPI	ASN022	243	Qc	Colluvium	Acacia wanyu open shrubland over Triodia wiseana open hummock grassland
WPI	CP213	243	Cp		Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	BOR-101	243	Qc	Colluvium	Acacia xiphophylla high open shrubland over Triodia wiseana and Triodia epactia very open hummock grassland
WPI	BOR183	243	Qc	Colluvium	Acacia aneura (dead) over Acacia xiphophylla over Triodia wiseana and Triodia epactia
WPI	CP08	243	Qc	Colluvium	Corymbia candida ssp. candida scattered low trees over Acacia spp. open shrubland over Triodia epactia and T. wiseana hummock

	8				grassland

600-group unit 244.

Seven sites, including three from the API Project Area sites were assigned to this unit; the other four sites were all from the Chichester Range east of Millstream. The sites are from a variety of geological units, but all have Snakewood (*Acacia xiphophylla*) vegetation. The API sites are from colluvium, and the last two in the dendrogram extract form a sub-group. This unit appears to be a more widespread Snakewood type, but is still not very common.

Extract from dendrogram from the regional analysis for unit 244.

WAFORSLO	0255	244	Czc	Colluvium	Acacia xiphophylla scattered tall shrubs over Triodia wiseana, Triodia pungens, Triodia angusta open hummock grassland.
WAMTLEA	0521	244	AFjkdl	JEERINAH FORMATION	Acacia xiphophylla high shrubland over Triodia brizoides open hummock grassland.
WPI	JW013	244	Qc	Colluvium	Acacia xiphophylla high shrubland over Triodia wiseana very open hummock grassland
WAMTLEA	0418	244	AFm	MADDINA FORMATION or MADDINA BASALT	Triodia wiseana hummock grassland.
WAFCBOR	1059	244	Qs	Eolian sand [siliceous]	Acacia xiphophylla high shrubland over Triodia wiseana open hummock grassland.
WPI	AS023	244	Qc	Colluvium	Acacia xiphophylla low open shrubland over Triodia wiseana very open hummock grassland
WPI	CP058	244	Qc	Colluvium	Acacia xiphophylla high shrubland over Triodia wiseana open hummock grassland

600-group unit 246.

Five sites were assigned to this unit, two from the API Project Area, one from the Mt Leal rail option in the Chichester Range east of Millstream, one from the FMG 2006 survey, one from the Mesa A transport corridor, Warramboo deposit, and Yarraloola borefield and pipeline survey. The latter site and the API sites were assigned to Robe Pisolite by the geological mapping, while eh FMG site was assigned to colluvium. The Mt Leal site was assigned to the Maddina Basalt, however when it was plotted onto Google Earth satellite imagery, it was adjacent to a small area of Robe Pisolite (the sites from this survey have geocodes from topographic maps, not from a GPS and so it seems likely it was actually on it). The vegetation value of the Robe Pisolite is discussed in detail above (see section 5.3 above), however this unit can be seen to be widespread, but not common.

Extract from dendrogram from the regional analysis for unit 246.

WAMTLEA	0487	246	AFm [Tp]	MADDINA BASALT [adjacent to Tp on Google Earth]	Eucalyptus leucophloia low open woodland over Acacia bivenosa, Acacia sp. scattered low shrubs over Triodia brizoides hummock grassland.
WPI	CW007	246	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Triodia wiseana hummock grassland
WPI	TR107	246	Tp	ROBE PISOLITE	Eucalyptus leucophloia open woodland over Acacia tumida and Petalostylis labicheoides high open shrubland over Triodia wiseana open hummock grassland
308	WAR03	246	Tp	ROBE PISOLITE	Eucalyptus leucophloia subsp. leucophloia scattered low trees over Acacia tumida var. pilbarensis tall open shrubland over A. atkinsiana tall shrubland over Triodia wiseana hummock grassland.
FMG-2006	P9Gto P9Fe	246	Qc	Colluvium	Eucalyptus leucophloia Low Open Woodland over Acacia tumida var. pilbarensis Open Shrubland and Grevillea wickhamii Closed Scrub over Acacia arida Low Open Shrubland over Triodia epactia Open Hummock Grassland

600-group unit 247.

Sixteen sites from Cardo Well Mesa in the API Project Area were assigned to this unit; fifteen were assigned to Robe Pisolite and one to colluvium. While the vegetation value of the Robe Pisolite is discussed in detail above (see section 5.3 above), this unit can be seen to be locally common, but very restricted in distribution.

Extract from dendrogram from the regional analysis for unit 247.

WPI	CW001	247	Tp	ROBE PISOLITE	Acacia arida shrubland over Triodia wiseana open hummock grassland
WPI	CW020	247	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia arida open shrubland over Triodia wiseana hummock grassland
WPI	CW023	247	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Acacia arida shrubland over Triodia wiseana hummock grassland
WPI	CW037	247	Tp	ROBE PISOLITE	Acacia arida and Tephrosia uniovulata low shrubland over Triodia wiseana open hummock grassland
WPI	TR016	247	Tp	ROBE PISOLITE	Acacia citrinoviridis high open shrubland over Acacia pruinocarpa open shrubland over Triodia wiseana very open hummock grassland
WPI	CW002	247	Tp	ROBE PISOLITE	Acacia arida high open shrubland over Triodia wiseana open hummock grassland
WPI	CW008	247	Tp	ROBE PISOLITE	Acacia arida shrubland over Triodia wiseana open hummock grassland
WPI	CW004	247	Qc	Colluvium	Acacia ancistrocarpa open shrubland over Dampiera candicans low shrubland over Triodia wiseana hummock grassland
WPI	CW021	247	Tp	ROBE PISOLITE	Acacia arida and A. bivenosa shrubland over Triodia wiseana very open hummock grassland
WPI	CW003	247	Tp	ROBE PISOLITE	Acacia arida high shrubland over Triodia wiseana hummock grassland
WPI	CW022	247	Tp	ROBE PISOLITE	Acacia arida shrubland over Triodia wiseana hummock grassland

WPI	TR100	247	Tp	ROBE PISOLITE	Grevillea wickhamii scattered tall shrubs over Acacia bivenosa shrubland over Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	CW015	247	Tp	ROBE PISOLITE	Acacia tumida var. pilbarensis high shrubland over A. arida shrubland over Triodia wiseana open hummock grassland
WPI	CW080	247	Tp	ROBE PISOLITE	Corymbia hamersleyana scattered low trees over Acacia tumida high shrubland over Gossypium robinsonii open shrubland over Triodia wiseana scattered hummock grasses
WPI	CW024	247	Tp	ROBE PISOLITE	Acacia tumida var. pilbarensis open scrub over A. arida and Petalostylis labicheoides open shrubland over Triodia wiseana very open hummock grassland
WPI	CW041	247	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia citrinoviridis high open shrubland over Tephrosia uniovulata open shrubland over Triodia wiseana very open hummock grassland

600-group unit 248.

Six sites were assigned to this unit, four from the API Project Area and one each from the Solomon Project and the Mesa A transport corridor, Warramboo deposit, and Yarraloola borefield and pipeline survey. The unit is therefore moderately widespread, but not common, although commoner in the API Project Area than the other survey areas.

Extract from dendrogram from the regional analysis for unit 248.

550AA	11RAIL1101	248	Plo	[Unit not known]	Open Heath of Acacia bivenosa, Senna artemisioides subsp. oligophylla x helmsii, S. glutinosa subsp. glutinosa x luerssenii and Acacia inaequilatera over Closed Hummock Grassland of Triodia wiseana over Heliotropium Low Shrubland
WPI	TR103	248	Wm	MT McGRATH FORMATION	Acacia bivenosa open shrubland over Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	CP472	248	PLHb	BROCKMAN IRON FORMATION	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia arida shrubland over Triodia wiseana open hummock grassland
308	WAR07	248	Tp	ROBE PISOLITE	Acacia atkinsiana tall open shrubland over A. arida open shrubland over Triodia wiseana hummock grassland.
WPI	AD001	248	PLWb	CHEELA SPRINGS BASALT	Acacia inaequilatera scattered tall shrubs over Triodia wiseana hummock grassland
WPI	AD005	248	PLWb	CHEELA SPRINGS BASALT	Acacia inaequilatera high open shrubland over Triodia wiseana hummock grassland

600-group unit 249.

Twenty-five sites were assigned to this unit, all but one from the API Project Area. The other site is from the Mesa A transport corridor, Warramboo deposit, and Yarraloola borefield and pipeline survey area in the Robe Valley area. Therefore, this unit is restricted to the western Pilbara, but is relatively common there, occurring in many of the sub-areas of the API Project

Area. It has some fairly distinct sub-groups and includes five Robe Pisolite sites (See section 5.3 above). Some of the subgroups are likely to have restricted distribution.

Extract from dendrogram from the regional analysis for unit 249.

WPI	AD028	249	Qc	Colluvium	Acacia atkinsiana open shrubland over Triodia wiseana and T. epactia hummock grassland
WPI	BOR222	249	Qac	Alluvial -clay, silt	Acacia tumida open scrub over Acacia atkinsiana scattered tall shrubs over Triodia wiseana scattered hummock grassland
WPI	CP205	249	Qc	Colluvium	Acacia inaequilatera and A. ancistrocarpa scattered tall shrubs over Triodia wiseana and T. epactia hummock grassland
WPI	CP248	249	Kny	YARRALOOLA CONGLOMERATE	Acacia bivenosa high open shrubland over Triodia wiseana hummock grassland
WPI	TC047	249	Qc	Colluvium	Acacia inaequilatera, A. ancistrocarpa, A. atkinsiana and A. bivenosa open shrubland over Triodia wiseana hummock grassland
WPI	AS021	249	Wm	MOUNT McGRATH FORMATION	Acacia spp. low open shrubland over Triodia wiseana open hummock grassland
WPI	CP057	249	Qc	Colluvium	Acacia atkinsiana high shrubland over A. bivenosa shrubland over Triodia wiseana closed hummock grassland
WPI	CP277	249	Qc	Colluvium	Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	CP295	249	Qc	Colluvium	Acacia bivenosa, A. ancistrocarpa and A. atkinsiana high open shrubland over Triodia wiseana hummock grassland
WPI	ASA016	249	Qc	Colluvium	Eucalyptus leucophloia over Acacia ancistrocarpa, A. atkinsiana, A. bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	CP211	249	Cp		Acacia inaequilatera scattered tall shrubs over A. ancistrocarpa open shrubland over Triodia wiseana hummock grassland
WPI	TR025	249	Tp	ROBE PISOLITE	Acacia bivenosa, A. inaequilatera and A. ancistrocarpa open shrubland over Triodia wiseana hummock grassland
WPI	ASN005	249	PL Wd	DUCK CREEK DOLOMITE	Acacia ancistrocarpa low open shrubland over Triodia wiseana very open hummock grassland
WPI	CP173	249	Qc	Colluvium	Acacia ancistrocarpa, A. atkinsiana, A. inaequilatera and A. bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	ASA006	249	Tp	ROBE PISOLITE	Acacia wanyu, Acacia atkinsiana and Acacia bivenosa low open heath over Triodia wiseana very open hummock grassland
308	MEAS24	249	Qp	Elluvim, colluvium, gilgais	Acacia bivenosa; (Acacia synchronicia), (Acacia atkinsiana) open heath over Triodia wiseana hummock grassland
WPI	BOR218	249	Qc	Colluvium	Acacia inaequilatera and Acacia bivenosa scattered low shrubs over Triodia wiseana hummock grassland
WPI	CMP002	249	Wm	MOUNT McGRATH FORMATION	Senna glutinosa ssp. pruinosa and Acacia bivenosa scattered shrubs over Tephrosia uniovulata low scattered shrubs over Triodia wiseana open hummock grassland
WPI	CNW007	249	Qc	Colluvium	Acacia bivenosa scattered shrubs over Triodia wiseana open hummock grassland or Acacia synchronicia scattered tall shrubs over Triodia wiseana open hummock grassland
WPI	TsRR040	249	Tp	ROBE PISOLITE	Acacia bivenosa open shrubland over Triodia sp. Robe River open hummock grassland
WPI	TsRR041	249	Tp	ROBE PISOLITE	Triodia sp. Robe River open hummock grassland
WPI	CP287	249	Qc	Colluvium	Acacia tumida var. pilbarensis scattered tall shrubs over A. bivenosa, Senna glutinosa ssp. pruinosa and Ptilotus calostachyus var. calostachyus open shrubland over Triodia wiseana very open

					hummock grassland
WPI	CP361	249	Kny	YARRALOOLA CONGLOMERATE	Acacia bivenosa, A. atkinsiana open shrubland over Triodia wiseana open hummock grassland
WPI	TR010	249	Wm	MOUNT McGRATH FORMATION	Acacia pruinocarpa high shrubland over Stylobasium spathulatum and A. bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	TR012	249	Tp	ROBE PISOLITE	Acacia inaequilatera high open shrubland over Triodia wiseana open hummock grassland

600-group unit 250.

Eleven sites were assigned to this unit, all from the API Project Area and nine of them assigned to Robe Pisolite (see section 5.3 above for discussion of the value of the vegetation of this geological unit) from the 250,000 geological mapping. However, of the other two one is on colluvium near Robe Pisolite and the other plots on Robe Pisolite on Google Earth satellite imagery and was recorded as from a Channel Iron Deposit mesa in the field. Unit 250 is restricted to the western Pilbara, but occurs only on or adjacent to several of the mesas in the API Project Area. It is therefore restricted in area of occurrence as well as geographical distribution .

Extract from dendrogram from the regional analysis for unit 250.

WPI	BOR123	250	Qc	Colluvium	Acacia citrinoviridis, Grevillea wickhamii and acacia ancistrocarpa over Triodia epactia
WPI	CE005	250	Tp	ROBE PISOLITE	Acacia atkinsiana shrubland over Triodia wiseana hummock grassland
WPI	CW009	250	Tp	ROBE PISOLITE	Acacia pruinocarpa high open shrubland over A. arida open shrubland over Triodia wiseana open hummock grassland
WPI	TR008	250	Tp	ROBE PISOLITE	Grevillea wickhamii ssp. hispidula high open shrubland over Acacia arida open shrubland over Triodia wiseana hummock grassland
WPI	CE004	250	Tp	ROBE PISOLITE	Acacia bivenosa scattered shrubs over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	CR004	250	Qc	Colluvium	Acacia bivenosa shrubland over Triodia sp. Robe River and T. wiseana hummock grassland
WPI	CE006	250	Tp	ROBE PISOLITE	Acacia ancistrocarpa scattered shrubs over Triodia wiseana hummock grassland
WPI	CE007	250	Tp	ROBE PISOLITE	Acacia ancistrocarpa, Acacia atkinsiana and Acacia bivenosa low open shrubland over Triodia wiseana and Triodia sp. Robe River open hummock grassland
WPI	CE017	250	Tp	ROBE PISOLITE	2008: Acacia ancistrocarpa and Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland 2009: Acacia ancistrocarpa high open shrubland over Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	CE00	250	Tp	ROBE PISOLITE	Acacia tumida closed heath over Triodia wiseana and

	9				Triodia sp. Robe River very open grassland
WPI	CE013	250	Tp	ROBE PISOLITE	Tephrosia uniovulata and Corchorus lasiocarpus low open shrubland

600-group 251.

Eleven sites from the API Project Area and one site from the Solomon Project Area were assigned to this unit, which is fairly common in the western Pilbara and uncommon elsewhere.

Extract from dendrogram from the regional analysis for unit 251.

WPI	ASN-023	251	Qc	Colluvium	Acacia atkinsiana, Acacia bivenosa, Acacia wanyu and Acacia ancistrocarpa open shrubland over Triodia wiseana and Triodia epactia very open hummock grassland
WPI	CP124	251	Qac	Alluvial -clay, silt	Eucalyptus leucophloia ssp. leucophloia open woodland over Acacia ancistrocarpa and A. atkinsiana open shrubland over Triodia epactia open hummock grassland
WPI	CP305	251	Kny	YARRALOOLA CONGLOMERATE	Acacia tumida var. pilbarensis, A. ancistrocarpa and A. atkinsiana high open shrubland over Triodia wiseana hummock grassland
WPI	CP323	251	Kny	YARRALOOLA CONGLOMERATE	Corymbia hamersleyana scattered low trees over Acacia inaequilatera scattered tall shrubs over A. bivenosa scattered shrubs over Triodia wiseana open hummock grassland
WPI	CP309	251	Kny	YARRALOOLA CONGLOMERATE	Corymbia hamersleyana low open woodland over Petalostylis labicheoides and Acacia tumida var. pilbarensis open shrubland over Triodia epactia and T. wiseana very open hummock grassland
WPI	CP184	251	Kny	YARRALOOLA CONGLOMERATE	Corymbia hamersleyana scattered low trees over Acacia tumida var. pilbarensis and A. ancistrocarpa high shrubland over Triodia wiseana very open hummock grassland
WPI	CW005	251	Qc	Colluvium	Acacia tumida var. pilbarensis open scrub over A. ancistrocarpa and Senna glutinosa ssp. glutinosa shrubland over Triodia wiseana very open hummock grassland
WPI	BOR285	251	Qc	Colluvium	Eucalyptus leucophloia subsp. Leucophloia and Corymbia hamersleyana scattered low trees over Acacia ancistrocarpa and Acacia maitlandii open shrubland over Triodia epactia open hummock grassland
WPI	BOR288	251	Qc	Colluvium	Acacia atkinsiana and Acacia ancistrocarpa open heath over Triodia epactia and Triodia wiseana closed hummock grassland
WPI	CP171	251	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia ancistrocarpa shrubland over Triodia wiseana and T. epactia hummock grassland
WPI	HR055	251	Qc	Colluvium	Acacia atkinsiana, A. bivenosa and A. ancistrocarpa over Triodia wiseana with Corymbia hamersleyana over Acacia ancistrocarpa drainage lines
EP00550AA	VOQ34	251	Qa	Alluvium - unconsolidated	Woodland of Corymbia hamersleyana and Eucalyptus leucophloia subsp. leucophloia to 7m over Tall Shrubland of Acacia tumida var. pilbarensis and Grevillea wickhamii subsp. hispidula to 3m over Open Tussock Grassland of Paraneurachne muelleri and Themeda tr

600-group unit 252.

Four sites from three different sub-areas of the API Project Area were assigned to this unit, which is restricted to the western Pilbara (in the data set used) and is moderately restricted in

distribution there and not common. One of the sites was allocated to Robe Pisolite using 1:250,000 geology, but when plotted on Google Earth is seen to be on colluvium adjacent to it and separated from it by a flow line. It should therefore not be considered to have vegetation of the Robe Pisolite.

Extract from dendrogram from the regional analysis for unit 252.

WPI	BOR 082	252	Qc	Colluvium	Triodia wiseana open hummock grassland
WPI	CP120	252	Qac	Alluvial -clay, silt	Corymbia hamersleyana and Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia ancistrocarpa open shrubland over Triodia wiseana and T. epactia hummock grassland
WPI	BOR 248	252	Qc	Colluvium	Eucalyptus leucophloia subsp. leucophloia open woodland over Stylobasium spathulatum open shrubland over Triodia wiseana and Triodia epactia open hummock grassland
WPI	CW051	252	Tp	ROBE PISOLITE [incorrect allocation]	Acacia ancistrocarpa shrubland over Triodia wiseana and T. epactia open hummock grassland

600-group unit 253.

Nine sites from the API Project Area were assigned to this unit; of these seven were referred to the Robe Pisolite (see section 5.3 above for discussion of the vegetation values of this geological unit). The sites are from five of the sub-areas of the API Project Area, so this unit is restricted to the western Pilbara mostly occurring on Robe Pisolite (of the two non-Robe Pisolite sites, one is on colluvium downslope from it and the other is some distance away, but on iron rich material). It is moderately restricted in distribution.

Extract from dendrogram from the regional analysis for unit 253.

WPI	AD002	253	Wm	MOUNT McGRATH FORMATION	Eucalyptus leucophloia ssp. leucophloia low open woodland over Triodia wiseana open hummock grassland
WPI	KB004	253	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Triodia sp. Robe River hummock grassland
WPI	TsRR021	253	Qc	Colluvium	Acacia inaequilatera high open shrubland over Triodia sp. Robe River hummock grassland
WPI	TR013	253	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia bivenosa open shrubland over Triodia wiseana hummock grassland
WPI	TsRR031	253	Tp	ROBE PISOLITE	Triodia sp. Robe River open hummock grassland
WPI	TsRR020	253	Tp	ROBE PISOLITE	Eucalyptus leucophloia subsp. leucophloia low woodland over Triodia sp. Robe River very open hummock grassland
WPI	UC003	253	Tp	ROBE PISOLITE	Acacia pruinocarpa high open shrubland over Triodia wiseana hummock grassland

WPI	UC010	253	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia inaequilatera and A. citrinoviridis high open shrubland over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	UC015	253	Tp	ROBE PISOLITE	Acacia inaequilatera and A. pruinocarpa high open shrubland over Triodia wiseana very open hummock grassland

600-group unit 254.

Eight sites were assigned to this unit, the first five are on the Robe Pisolite (one was misallocated using geology maps, but was recorded in the field as on a mesa) from the API Project Area and form a subgroup within group 254 on the dendrogram. The vegetation conservation value of the Robe Pisolite is discussed above (section 5.3), however it is appropriate to add here that the Robe Pisolite subgroup of unit 254 is restricted to the API Project Area where it is not very common. The other subgroup has two sites from the API Project Area and one from the Solomon Project; it is therefore moderately widespread, but not common.

Extract from dendrogram from the regional analysis for unit 254.

WPI	ASA005	254	Tp	ROBE PISOLITE	Acacia atkinsiana , Acacia bivenosa high shrubland over Triodia wiseana open hummock grassland
WPI	TR031	254	PLWb	~~CHEELA SPRINGS BASALT~~ [Robe Pisolite]	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia pruinocarpa high open shrubland over Triodia wiseana open hummock grassland
WPI	TR014	254	Tp	ROBE PISOLITE	Acacia pruinocarpa high shrubland over Triodia wiseana open hummock grassland
WPI	TR070	254	Tp	ROBE PISOLITE	Acacia inaequilatera over A. bivenosa over Triodia wiseana
WPI	TR026	254	Tp	ROBE PISOLITE	Grevillea wickhamii ssp. hispidula high open shrubland over Acacia atkinsiana and A. bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	CNW001	254	Qc	Colluvium	Triodia wiseana hummock grassland
WPI	CNW006	254	Qc	Colluvium	Triodia wiseana hummock grassland
EP00550AA	ZION042	254	Qa	Alluvium - unconsolidated	Open Woodland of Eucalyptus leucophloia subsp. leucophloia to 6m over Scattered Shrubs of Acacia bivenosa and Senna symonii over Hummock Grassland of Triodia wiseana

600-group unit 255.

Seven sites from Robe Pisolite in the API Project Area were assigned to this unit, which is therefore restricted to the western Pilbara. Unit 255 was recorded from four of the API sub-

areas, but as it is restricted to Robe Pisolite (see section 5.3 above) it has restricted occurrence (area). All but one of the sites has the geographically restricted species *Triodia* sp. Robe River in the hummock grass layer.

Extract from dendrogram from the regional analysis for unit 255.

WPI	CN002	255	Tp	ROBE PISOLITE	Acacia pruinocarpa shrubland over Petalostylis labicheoides low shrubland over Triodia wiseana and Triodia sp. Robe River hummock grassland
WPI	CN003	255	Tp	ROBE PISOLITE	Petalostylis labicheoides open shrubland over Acacia pruinocarpa, Acacia atkinsiana and Acacia bivenosa scattered low shrubland over Triodia wiseana and Triodia sp. Robe River hummock grassland
WPI	JW001	255	Tp	ROBE PISOLITE	Acacia pruinocarpa and Petalostylis labicheoides open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	CN004	255	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Triodia wiseana and Triodia. sp. Robe River hummock grassland
WPI	CN007	255	Tp	ROBE PISOLITE	Acacia pruinocarpa high open shrubland over Triodia sp. Robe River hummock grassland
WPI	KB046	255	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	UC001	255	Tp	ROBE PISOLITE	Acacia inaequilatera and A. citrinoviridis high open shrubland over Triodia wiseana open hummock grassland

600-group unit 256.

Seven sites on Robe Pisolite in the API Project Area were assigned to this unit, which is restricted to that survey area in the western Pilbara. It was recorded from five of the sub-areas in the API Project Area, but with only five sites is uncommon. Also see section 5.3 above.

Extract from dendrogram from the regional analysis for unit 256.

WPI	CN001	256	Tp	ROBE PISOLITE	Triodia sp. Robe River open hummock grassland
WPI	UCW005	256	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia maitlandii low open shrubland over Triodia wiseana hummock grassland
WPI	CP600	256	Qac	~~Alluvial - clay, silt~~ [Robe Pisolite]	Eucalyptus leucophloia subsp. leucophloia scattered low trees over Acacia pruinocarpa scattered tall shrubs over Triodia sp. Robe River very open hummock grassland
WPI	TR086	256	Tp	ROBE PISOLITE	Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	JW009	256	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	TR003	256	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia aff. aneura (narrow fine veined; site 1259) high open shrubland over A. pruinocarpa scattered shrubs over Triodia wiseana open hummock grassland
WPI	TR004r	256	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia pruinocarpa high open shrubland over Dodonaea pachyneura and Ptilotus obovatus ssp. obovatus scattered shrubs over Rhodanthe margarethae very open herbs over Eriachne mucronata very ope

600-group unit 257.

Seventeen sites from the API Project Area were assigned to this unit; most were recorded from Robe Pisolite. The unit has three distinct sub-groups and the last site somewhat dissimilar to the last of them. The unit is restricted to the wester Pilbara and with seventeen sites has more sites than most of the units from the API Project Area. However, as the Robe Pisolite had more sites recorded on it for its area, this unit still has somewhat restricted occurrence (area). Also see section 5.3 above. Most of the sites referred to unit 57 have the geographically restricted *Triodia* sp. Robe River (interesting, including the last site in the Table– which is not Robe Pisolite).

Extract from dendrogram from the regional analysis for unit 257.

WPI	CN006	257	Tp	ROBE PISOLITE	Triodia sp. Robe River open hummock grassland
WPI	JW002r	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia pruinocarpa high open shrubland over Triodia sp. Robe River and T. wiseana very open hummock grassland and Eriachne mucronata (typical form) open tussock grassland
WPI	CR001r	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia pruinocarpa high open shrubland over A. bivenosa open shrubland over Triodia sp. Robe River and T. wiseana open hummock grassland and Eriachne mucronata very open tussock grassland
WPI	FM020	257	Tp	ROBE PISOLITE	2008: Acacia atkinsiana open shrubland over Triodia sp. Robe River and T. wiseana open hummock grassland 2009: Acacia atkinsiana and Acacia pruinocarpa open heath over Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	JW003	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia pruinocarpa open shrubland over Triodia sp. Robe River and T. wiseana hummock grassland
WPI	JW004	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia bivenosa scattered shrubs over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	CR003	257	Tp	ROBE PISOLITE	Acacia bivenosa open shrubland over Dampiera candicans low scattered shrubs over Triodia sp. Robe River and T. wiseana hummock grassland
WPI	TsRR016	257	Tp	ROBE PISOLITE	Acacia atkinsiana open scrub over A. bivenosa low open shrubland over Triodia sp. Robe River open hummock grassland
WPI	CR008	257	Qc	Colluvium	Eucalyptus leucophloia ssp leucophloia and Corymbia hamersleyana low open woodland over Acacia ancistrocarpa open shrubland over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	CR012	257	Qc	~~Colluvium~~ [Robe Pisolite]	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia bivenosa and Petalostylis labicheoides open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	CR006	257	Tp	ROBE PISOLITE	Acacia bivenosa open shrubland over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	CR014	257	Qc	~~Colluvium~~ [Robe Pisolite]	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia pruinocarpa high open shrubland over A. bivenosa open shrubland over Triodia wiseana and open hummock grassland

WPI	CP199	257	Wm	MOUNT McGRATH FORMATION	Eucalyptus leucophloia sp. leucophloia low open woodland over Acacia ancistrocarpa, A. bivenosa and A. maitlandii open shrubland over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	JW005	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia bivenosa and Petalostylis labicheoides shrubland over Triodia wiseana hummock grassland
WPI	JW007	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Abutilon dioicum and Abutilon aff. dioicum open shrubland over Triodia sp. Robe River and Triodia wiseana hummock grassland
WPI	JW001r	257	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia atkinsiana high open shrubland over Petalostylis labicheoides shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	TR087	257	Tp	ROBE PISOLITE	Acacia tumida high shrubland over Petalostylis labicheoides open shrubland over Triodia wiseana open hummock grassland
WPI	CP474	257	PL Hb	BROCKMAN IRON FORMATION	Ficus brachypoda low open woodland over Triodia wiseana and T. sp. Robe River hummock grassland

600-group unit 258.

Only four sites from the API Project Area were assigned to this unit. Three of the sites were from colluvium and the other from the Duck Creek Dolomite. Unit 258 is restricted to the western Pilbara but was recorded form four of the API sub-areas, so it is uncommon, but not localised.

Extract from dendrogram from the regional analysis for unit 258.

WPI	ASN031	258	PLWd	DUCK CREEK DOLOMITE	Eucalyptus leucophloia scattered low trees over Ptilotus astrolasius and Corchorus walcottii low open shrubland over Triodia wiseana very open hummock grassland
WPI	BOR073	258	Qc	Colluvium	Eucalyptus leucophloia ssp. leucophloia over Acacia atkinsiana over Triodia epactia
WPI	BOR279	258	Qc	Colluvium	Scattered Corymbia hamersleyana and Acacia synchronicia over Triodia wiseana very open hummock grassland
WPI	JW006	258	Qc	Colluvium	Acacia bivenosa low open shrubland over Triodia wiseana hummock grassland

600-group unit 259.

Twenty-two sites were assigned to this unit, all but two from the Robe Pisolite and all but one from the API Project Area; the other one was from the Flora and vegetation survey of the Mesa J Extension area in the Robe River Valley. See above (section 5.30 for discussion of the conservation value of the Robe Pisolite. It is appropriate to note here that the unit clearly has significant variation within it (floristically as several sub-units, and in the dominant *Triodia*) and while it has many sites, these are from a geological unit with restricted area in the API Project Area.

Extract from dendrogram from the regional analysis for unit 259.

WPI	CP039	259	PLWd	DUCK CREEK DOLOMITE	Acacia inaequilatera scattered shrubs over A. bivenosa low scattered shrubs over Triodia wiseana open hummock grassland
WPI	KB045	259	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over Corchorus sidoides scattered low shrubs over Triodia sp. Robe River open hummock grassland
WPI	TsRR042	259	Tp	ROBE PISOLITE	Acacia pruinocarpa scattered tall shrubs over Triodia sp. Robe River and Triodia wiseana open hummock grassland
WPI	CR001	259	Qac	Alluvial - clay, silt	Acacia bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	FM001	259	Tp	ROBE PISOLITE	Acacia bivenosa and Petalostylis labicheoides scattered shrubs over Triodia wiseana hummock grassland
WPI	FM002	259	Tp	ROBE PISOLITE	Acacia bivenosa low scattered shrubs over Triodia sp. Robe River and T. wiseana hummock grassland
WPI	KB001	259	Tp	ROBE PISOLITE	Acacia synchronicia scattered tall shrubs over A. bivenosa scattered shrubs over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	KB009	259	Tp	ROBE PISOLITE	Petalostylis labicheoides and Acacia inaequilatera open shrubland over Triodia sp. Robe River and T. wiseana hummock grassland
WPI	KB042	259	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over Triodia sp. Robe River and T. wiseana very open hummock grassland
WPI	KB043	259	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over A. bivenosa and Petalostylis labicheoides open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	TR017	259	Tp	ROBE PISOLITE	Petalostylis labicheoides high shrubland over Grevillea wickhamii open shrubland over Triodia sp. Robe River and T. wiseana open hummock grassland
WPI	KB044	259	Tp	ROBE PISOLITE	Acacia inaequilatera and A. pruinocarpa high open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
215	MJ07	259	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over Triodia wiseana, Triodia sp. Robe River mid-dense hummock grassland.
WPI	CW025	259	Tp	ROBE PISOLITE	Mixed low scattered shrubs over Triodia wiseana hummock grassland
WPI	TR001	259	Qc	Colluvium	Acacia pruinocarpa open shrubland over Triodia wiseana open hummock grassland
WPI	TR018	259	Tp	ROBE PISOLITE	Triodia epactia open hummock grassland
WPI	TR015	259	Tp	ROBE PISOLITE	Acacia pruinocarpa open shrubland over Triodia wiseana open hummock grassland
WPI	TR022	259	Tp	ROBE PISOLITE	Acacia bivenosa scattered shrubs over Triodia wiseana very open hummock grassland
WPI	TR023	259	Tp	ROBE PISOLITE	Acacia atkinsiana and Petalostylis labicheoides high open shrubland over Triodia sp. Robe River and T. wiseana open hummock grassland
WPI	TR005	259	Tp	ROBE PISOLITE	Acacia pruinocarpa high open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	TR020	259	Tp	ROBE PISOLITE	Acacia bivenosa scattered shrubs over Triodia sp Robe River open hummock grassland
WPI	TsRR015	259	Tp	ROBE PISOLITE	Triodia sp. Robe River and T. wiseana hummock grassland

600-group unit 260.

Only three sites from the API Project Area were assigned to this unit, which is restricted to the western Pilbara and uncommon. Two of the three sites were recorded on Robe Pisolite (see section 5.3 above) so the unit has mostly been recorded on a geological type that has restricted occurrence in the API Project Area.

Extract from dendrogram from the regional analysis for unit 260.

WPI	BOR100	260	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia atkinsiana open shrubland over Acacia wanyu low open shrubland over Triodia wiseana and Triodia epactia hummock grassland
WPI	CE011	260	Tp	ROBE PISOLITE	Acacia atkinsiana low open shrubland over Triodia sp. Robe River open hummock grassland
WPI	FM021	260	Tp	ROBE PISOLITE	2008: Triodia sp. Robe River and Triodia wiseana open hummock grassland 2009: Triodia sp. Robe River and Triodia wiseana open hummock grassland

600-group unit 264.

Nine sites were assigned to this unit, all from the API Project Area and mostly from colluvium. Unit 264 from three of the API sub-areas, so it is restricted to the western Pilbara, but is not localised or uncommon .

Extract from dendrogram from the regional analysis for unit 264.

WPI	CEW001	264	Qc	Colluvium	Ptilotus astrolasius var. astrolasius open herbland over Triodia epactia open hummock grassland
WPI	CEW002	264	Qc	Colluvium	Corymbia hamersleyana low open woodland over mixed herbland
WPI	CEW003	264	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Tephrosia uniovulata and Cleome viscosa low open shrubland
WPI	TC066	264	Qc	Colluvium	Acacia inaequilatera scattered tall shrubs over Triodia wiseana hummock grassland
WPI	TC092	264	Qc	Colluvium	Corymbia hamersleyana over Ptilotus astrolasius low open heath
WPI	TC134	264	Qc	Colluvium	Acacia inaequilatera over Triodia epactia hummock grassland
WPI	CP050	264	Kny	YARRALOOLA CONGLOMERATE	Corymbia hamersleyana scattered low trees over over Acacia tumida var. pilbarensis high open shrubland over A. ancistrocarpa and A. atkinsiana open shrubland over Triodia wiseana and T. epactia open hummock grassland over Eragrostis aff. eriopoda (WAS sit
WPI	CP051	264	Qc	Colluvium	Corymbia candida ssp. candida scattered low trees over Acacia atkinsiana, A, ancistrocarpa and Grevillea wickhamii subsp. hispidula high open shrubland over Triodia epactia and T. wiseana hummock grassland
WPI	CP056	264	Qac	Alluvial -clay, silt	Corymbia hamersleyana low open woodland over mixed Acacia spp scattered shrubs over Triodia epactia open hummock grassland

					over Eragrostis aff. eriopoda (WAS site 963), Aristida holathera var. latifolia and Cenchrus ciliaris open tussock grassland

600-group unit 265.

Ten sites were assigned to this unit, all were from the API Project Area mostly from colluvium. This unit is restricted to the western Pilbara, but was recorded from for of the API sub-areas, so it is no localised and seems to be fairly common.

Extract from dendrogram from the regional analysis for unit 265.

WPI	CP030	265	Qc	Colluvium	Acacia xiphophylla and A. synchronicia high shrubland over Triodia epactia very open hummock grassland
WPI	CP033	265	Qa	Alluvium - unconsolidated	Acacia synchronicia high open shrubland over Triodia epactia open hummock grassland
WPI	CWW059	265	Qc	Colluvium	Acacia bivenosa and Acacia ancistrocarpa open scrub over Triodia epactia open hummock grassland
WPI	CR007r	265	Qc	Colluvium	Acacia synchronicia high open shrubland over Triodia wiseana very open hummock grassland
WPI	CR022	265	Qc	Colluvium	Acacia synchronicia high shrubland over Senna artemisioides ssp. oligophylla low open shrubland over Triodia epactia and T. wiseana very open hummock grassland
WPI	CP040	265	Qc	Colluvium	Acacia atkinsiana shrubland over Triodia wiseana and T. epactia open hummock grassland
WPI	CP041	265	Qp	Elluvim, colluvium, gilgais	Acacia trudgeniana high open shrubland over A. ancistrocarpa open shrubland over Cleome viscosa and Bonamia rosea low shrubland over Triodia epactia open hummock grassland
WPI	CP509	265	Qp	Elluvim, colluvium, gilgais	Corymbia candida low open woodland over mixed low scattered shrubs over mixed very open herbland
WPI	CR010	265	Tp	ROBE PISOLITE	2008: Corymbia hamersleyana scattered low trees over Acacia inaequilatera scattered shrubs over mixed scattered herbs 2009: Corymbia hamersleyana scattered trees over Acacia ancistrocarpa shrubland over Triodia epactia open hummock grassland
WPI	KBW005	265	Qc	Colluvium	Acacia synchronicia high shrubland over Triodia epactia hummock grassland

600-group unit 266.

Seven sites were assigned to this unit; all were from the API Project Area, with five recorded form Robe Pisolite or on colluvium derived at least partly from it (see section 5.3 above for discussion of the vegetation of this geological unit). Unit 266 is restricted to the western Pilbara, but was recorded from six of the API sub-areas, so it is not localised. However, the

Robe Pisolite has restricted occurrence (area) in the API Project Area and therefore it is likely that the area of this unit is not extensive.

Extract from dendrogram from the regional analysis for unit.

WPI	BOR277	266	Qc	Colluvium	
WPI	CW006	266	PLWd	~~DUCK CREEK DOLOMITE~~ [Robe Pisolite	Triodia wiseana hummock grassland
WPI	TC042	266	Tp	ROBE PISOLITE	Acacia arida high shrubland over Triodia wiseana open hummock grassland
WPI	KB006	266	Qc	Colluvium [adjacent to Robe Pisolite mesa]	Acacia xiphophylla high shrubland over Triodia wiseana open hummock grassland
WPI	UCW004	266	Tp	ROBE PISOLITE	Acacia inaequilatera and A. ancistrocarpa scattered shrubs over Acacia bivenosa and A. victoriae scattered low shrubs over Triodia epactia and T. wiseana hummock grassland
WPI	TC011	266	Wm	MOUNT McGRATH FORMATION	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Triodia wiseana open hummock grassland
WPI	TR067	266	Tp	ROBE PISOLITE	2009: Eucalyptus leucophloia scattered low trees over Acacia aneura high open woodland over A. pruinocarpa scattered tall shrubs over Triodia epactia and Triodia wiseana open hummock grassland

600-group unit 267.

Eleven sites from the API Project Area were assigned to this unit. All the sites were from Robe Pisolite or colluvium at least partly derived from it. This unit is restricted to the western Pilbara and was only recorded from two of the API sub-areas, so it is also at least somewhat localised. See section 5.3 above for discussion of the conservation value of the vegetation of the Robe Pisolite.

Extract from dendrogram from the regional analysis for unit 267.

WPI	CW010	267	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia citrinoviridis high shrubland over Triodia wiseana open hummock grassland
WPI	CW011	267	Tp	ROBE PISOLITE	Acacia tumida var. pilbarensis and Grevillea wickhamii ssp. hispidula open scrub over Triodia wiseana open hummock grassland over mixed very open herbland
WPI	CW026	267	Tp	ROBE PISOLITE	Acacia pruinocarpa, A. bivenosa and A. arida high shrubland over Triodia wiseana hummock grassland
WPI	CW028	267	Wa	~~ASHBURTON FN~~ Colluvium downslope from Robe Pisolite	Acacia arida scattered shrubs over Triodia wiseana open hummock grassland
WPI	CW0	267	Tp	ROBE	Acacia inaequilatera high open shrubland over A. arida open shrubland

	32			PISOLITE	over Triodia wiseana open hummock grassland
WPI	CW012	267	Tp	ROBE PISOLITE	Triodia wiseana open hummock grassland
WPI	CW016	267	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Acacia citrinoviridis high open shrubland over Triodia wiseana open hummock grassland
WPI	TR007	267	Tp	ROBE PISOLITE	Grevillea wickhamii ssp. hispidula high open shrubland over Acacia bivenosa and A. pruinocarpa open shrubland over Triodia wiseana very open hummock grassland
WPI	TR019	267	Tp	ROBE PISOLITE	Acacia aneura (narrow fine veined, site 1259) low open woodland over A. atkinsiana and Grevillea wickhamii ssp. hispidula high shrubland over Triodia pungens open hummock grassland
WPI	TR002	267	Tp	ROBE PISOLITE	Acacia pruinocarpa open shrubland over Triodia wiseana open hummock grassland
WPI	TR009r	267	Tp	ROBE PISOLITE	Acacia aneura (narrow, fine veined, site 1259) low woodland over Triodia wiseana open hummock grassland

600-group unit 268.

Six sites from three sub-areas of the API Project Area were assigned to this unit, which is restricted to the western Pilbara, is somewhat localised and uncommon. See section 5.3 above for discussion of the conservation value of the vegetation of the Robe Pisolite.

Extract from dendrogram from the regional analysis for unit 268.

WPI	CE003	268	Tp	ROBE PISOLITE	Acacia pruinocarpa, Acacia citrinoviridis high open shrubland over Triodia wiseana hummock grassland.
WPI	CE031	268	Tp	ROBE PISOLITE	Acacia pruinocarpa, Acacia citrinoviridis scattered tall shrubs over Triodia sp. Robe River very open hummock grassland
WPI	UC009	268	Tp	ROBE PISOLITE	Acacia inaequilatera, A. pruinocarpa open shrubland over mixed low open shrubland over Triodia sp. Robe River, T. wiseana very open hummock grassland
WPI	KB003	268	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Triodia wiseana closed hummock grassland
WPI	UC007	268	Tp	ROBE PISOLITE	Acacia inaequilatera high open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	UC008	268	Tp	ROBE PISOLITE	Acacia pruinocarpa and Eremophila fraseri ssp. fraseri open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland

600-group unit 269.

Eighteen sites from four sub-areas of the API Project Area were assigned to this unit, all but one site were either recorded from the Robe Pisolite or were on colluvium near to it. Unit 269 is restricted to the western Pilbara and almost entirely from the Robe Pisolite, which has restricted occurrence (area) in the API Project Area. The conservation value of the vegetation of the Robe Pisolite is discussed in section 5.3 (above).

Extract from dendrogram from the regional analysis for unit 269.

WPI	CE008	269	Tp	ROBE PISOLITE	Tephrosia uniovulata, Corchorus lasiocarpus low open shrubland
WPI	CE012	269	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered trees over Triodia sp. Robe River open hummock grassland
WPI	CE016	269	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered trees over Triodia sp. Robe River open hummock grassland
WPI	CE014	269	Tp	ROBE PISOLITE	Acacia inaequilatera high open shrubland over Triodia wiseana open hummock grassland
WPI	KB012	269	Tp	ROBE PISOLITE	Acacia citrinoviridis high open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	KB013	269	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Acacia citrinoviridis high open shrubland over Triodia wiseana and T. sp. Robe River open hummock grassland
WPI	CR018	269	Tp	ROBE PISOLITE	Acacia bivenosa low shrubland over Triodia wiseana open hummock grassland
WPI	KB005	269	Tp	ROBE PISOLITE	Acacia aff. aneura (narrow fine veined; site 1259) and A. inaequilatera scattered tall shrubs over Triodia wiseana hummock grassland
WPI	JW002	269	Tp	ROBE PISOLITE	Acacia inaequilatera and A. pruinocarpa high open shrubland over Eremophila fraseri ssp. fraseri open shrubland over Triodia wiseana open hummock grassland
WPI	JW011	269	Qc	Colluvium [derived from the Robe pisolite	Acacia bivenosa scattered shrubs over Triodia wiseana hummock grassland
WPI	KB015	269	Tp	ROBE PISOLITE	Acacia inaequilatera scattered tall shrubs over Triodia wiseana hummock grassland
WPI	KB014	269	Tp	ROBE PISOLITE	Acacia bivenosa shrubland over Triodia wiseana open hummock grassland
WPI	KB002	269	Tp	ROBE PISOLITE	Corymbia hamersleyana low open woodland over Acacia inaquilatera high open shrubland over Triodia epactia hummock grassland
WPI	KBW003	269	Qc	Colluvium [some Robe Pisolite]	Acacia ancistrocarpa high shrubland over Triodia epactia hummock grassland
WPI	TC006	269	Qc	Colluvium [away from Robe]	Acacia inaequilatera scattered tall shrubs over A. ancistrocarpa scattered shrubs over Triodia epactia very open hummock grassland
WPI	KB007	269	Tp	ROBE PISOLITE	Acacia pruinocarpa high open shrubland over Triodia wiseana hummock grassland
WPI	KB008	269	Tp	ROBE PISOLITE	Acacia pruinocarpa and A. inaequilatera high open shrubland over Acacia bivenosa open shrubland over Triodia wiseana open hummock grassland
WPI	KB016	269	Tp	ROBE PISOLITE	Acacia bivenosa high shrubland over Triodia wiseana hummock grassland

600-group unit 270.

Nine sites from four sub-areas of the API Project Area were assigned to this unit, with all either recorded from the Robe Pisolite or on colluvium derived from it. Unit 270 is restricted to the western Pilbara and is entirely from the Robe Pisolite and colluvium derived from it. As Robe Pisolite has restricted occurrence (area) in the API Project Area, Unit 270 is moderately

restricted in distribution and not common. The conservation value of the vegetation of the Robe Pisolite is discussed in section 5.3 (above).

Extract from dendrogram from the regional analysis for unit 270.

WPI	CE010	270	Tp	ROBE PISOLITE	Triodia wiseana and Triodia epactia very open hummock grassland and mixed shrub very open shrubland
WPI	CR002	270	Qc	Colluvium [of Robe Pisolite]	Corymbia hamersleyana low open woodland over Acacia tumida var. pilbarensis and Gossypium robinsonii open scrub over G. australe and Scaevola spinescens low open shrubland over Triodia epactia and T. wiseana very open hummock grassland
WPI	KB022	270	Qc	Colluvium [of Robe Pisolite]	Acacia bivenosa open scrub over Triodia epactia hummock grassland
WPI	KB010	270	Tp	ROBE PISOLITE	Acacia tumida var. pilbarensis high shrubland over A. bivenosa shrubland over Triodia wiseana and T. sp. Robe River hummock grassland
WPI	KB011	270	Tp	ROBE PISOLITE	Acacia bivenosa open scrub over Triodia epactia and T. wiseana open hummock grassland
WPI	KB017	270	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia scattered low trees over Petalostylis labicheoides and Acacia tumida var. pilbarensis open scrub over Triodia sp. Robe River very open hummock grassland
WPI	KB019	270	Tp	ROBE PISOLITE	Acacia tumida var. pilbarensis and Petalostylis labicheoides open scrub over Triodia wiseana and T. sp. Robe River very open hummock grassland
WPI	CW017r	270	Tp	ROBE PISOLITE	Acacia citrinoviridus shrubland over Triodia wiseana very open hummock grassland and Eriachne mucronata very open tussock grassland
WPI	KBW001	270	Tp	ROBE PISOLITE	Acacia citrinoviridis high open shrubland over A. bivenosa and A. inaequilatera shrubland over Triodia epactia hummock grassland

600-group unit 271.

Four sites from three sub-areas of the API Project Area were assigned to this unit, which is restricted to the western Pilbara and uncommon, although the relatively low sampling in the western Pilbara may make this uni appear less common than it actually is. Disturbance of this unit should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 270.

WPI	AD004	271	Wm	MOUNT McGRATH FORMATION	Owenia acidula low woodland over Acacia bivenosa, A. tumida var. pilbarensis, Vachellia farnesiana and Gossypium robinsonii high shrubland over Triodia epactia open hummock grassland
WPI	AS020	271	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia pyrifolia var. pyrifolia, A. bivenosa and Senna glutinosa ssp.glutinosa open shrubland over Corchorus laniflorus low open shrubland over Triodia wiseana and T. epactia hummock grassland
WPI	AS022	271	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa and A. bivenosa open shrubland over Triodia epactia very open hummock grassland
WPI	BOR1	271	Qac	Alluvial -clay, silt	API-3301 XXX low open woodland over Acacia

	15				atkinsiana high shrubland over Triodia epactia hummock grassland

600-group unit 272.

Four sites were assigned to this unit, three from the Robe Valley and one from the API Project Area. Unit 272 is moderately restricted in distribution and apparently uncommon.

Extract from dendrogram from the regional analysis for unit 272.

WPI	CP144	272	Qac	Alluvial -clay, silt	Acacia inaequilatera high open shrubland over Triodia epactia hummock grassland
215	MJ10	272	Qc	Colluvium	Corymbia hamersleyana low woodland over Acacia bivenosa, Grevillea pyramidalis high open shrubland over Triodia epactia hummock grassland.
215	MJ04	272	Tp	~~ROBE PISOLITE~~ [Colluvium, not derived from Robe Pisolite]	Corymbia hamersleyana low open woodland over Acacia bivenosa shrubland over Triodia wiseana mid-dense hummock grassland.
215	MJ06	272	Qc	Colluvium	Corymbia hamersleyana low woodland over Acacia bivenosa shrubland over Triodia epactia, T. wiseana mid-dense hummock grassland.
215	MJ09	272	Qc	Colluvium	Acacia ancistrocarpa, Grevillea wickhamii closed heath over Triodia wiseana, T. epactia mid-dense hummock grassland.

600-group unit 273.

Thirty-one sites were assigned to this unit, all from the API Project Area. Most of the sites were from colluvium or alluvium, but some were from the Duck Creek Dolomite, the Cheela Springs Basalt and the Mount McGrath Formation. Unit 273 is restricted to the Western Pilbara, but was recorded from a number of the sub-areas of the API Project Area and is apparently fairly common there.

Extract from dendrogram from the regional analysis for unit xx273xx.

WPI	AD023	273	PLWb	CHEELA SPRINGS BASALT	Corymbia hamersleyana scattered low trees over Acacia bivenosa and A. ancistrocarpa open heath over Triodia wiseana and T. epactia hummock grassland
WPI	CNW003	273	Qc	Colluvium	Acacia inaequilatera scattered shrubs over Triodia epactia hummock grassland
WPI	TC007	273	PLWb	CHEELA SPRINGS BASALT	Acacia inaequilatera open shrubland over Triodia wiseana open hummock grassland
WPI	UCW002	273	Qc	Colluvium	Acacia inaequilatera high open shrubland over Triodia epactia hummock grassland
WPI	CP185	273	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia ancistrocarpa open heath over Triodia epactia open hummock grassland
WPI	CP22	273	Qc	Colluvium	Acacia aneura var. intermedia scattered low trees over A. ancistrocarpa and A. bivenosa open

	7				shrubland over Triodia epactia hummock grassland
WPI	CR021	273	Qc	Colluvium	Acacia synchronicia and A. bivenosa scattered shrubs over Triodia wiseana hummock grassland
WPI	BOR091	273	PLWb	CHEELA SPRINGS BASALT	Acacia inaequilatera and Acacia synchronicia scattered shrubs over Acacia bivenosa and Acacia ancistrocarpa low scattered shrubs over Triodia wiseana open hummock grassland
WPI	TC103	273	Wm	MOUNT McGRATH FORMATION	Acacia bivenosa over Triodia epactia and Triodia wiseana
WPI	CWW055	273	Qc	Colluvium	Acacia bivenosa open shrubland over Triodia epactia open hummock grassland
WPI	CP140	273	Qac	Alluvial -clay, silt	Acacia bivenosa open shrubland over Triodia wiseana hummock grassland
WPI	CP217	273	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia synchronicia scattered tall shrubs over A. bivenosa scattered shrubs over Triodia wiseana hummock grassland
WPI	CP245	273	PLWd	DUCK CREEK DOLOMITE	Corymbia hamersleyana scattered low trees over Acacia inaequilatera scattered tall shrubs over A. bivenosa scattered shrubs over Ptilotus astrolasius var. astrolasius scattered low shrubs over Triodia wiseana open hummock grassland
WPI	CP176	273	Qc	Colluvium	Acacia inaequilatera scattered tall shrubs over Triodia wiseana open hummock grassland
WPI	CP243	273	PLWd	DUCK CREEK DOLOMITE	Corymbia hamersleyana scattered low trees over Acacia inaequilatera scattered tall shrubs over Ptilotus astrolasius var. astrolasius low scattered shrubs over Triodia wiseana open hummock grassland
WPI	CP142	273	Qac	Alluvial -clay, silt	Acacia inaequilatera, A. bivenosa, A. ancistrocarpa and A. synchronicia open shrubland over Triodia epactia and T. wiseana open hummock grassland
WPI	CP146	273	Qac	Alluvial -clay, silt	Acacia synchronicia open shrubland over Triodia wiseana very open hummock grassland
WPI	CP148	273	Qac	Alluvial -clay, silt	Acacia inaequilatera scattered shrubs over Triodia epactia and T. wiseana open hummock grassland
WPI	CP153	273	Pw	Shale, mudstone, sandstone, greywacke etc	Acacia inaequilatera high open shrubland over Triodia epactia hummock grassland
WPI	AD027	273	Qc	Colluvium	Acacia ancistrocarpa and A. atkinsiana high open shrubland over A. bivenosa and A. wanyu open shrubland over Triodia epactia hummock grassland
WPI	CP060	273	Qc	Colluvium	Acacia inaequilatera scattered tall shrubs over Ptilotus astrolasius var. astrolasius low open shrubland and Triodia epactia hummock grassland
WPI	CP132	273	Qac	Alluvial -clay, silt	Corymbia hamersleyana scattered low trees over Acacia inaequilatera and Grevillea wickhamii ssp. hispidula scattered tall shrubs over Acacia ancistrocarpa and A. trachycarpa scattered shrubs over Triodia epactia hummock grassland
WPI	CP156	273	Qac	Alluvial -clay, silt	Acacia inaequilatera high open shrubland, over A. ancistrocarpa open shrubland over Triodia epactia very open hummock grassland
WPI	CP229	273	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Grevillea wickhamii ssp. hispidula and Acacia ancistrocarpa scattered shrubs over Triodia epactia

					very open hummock grassland
WPI	AS025	273	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia trachycarpa and A. tumida high shrubland over A. atkinsiana open shrubland
WPI	CP134	273	Qac	Alluvial -clay, silt	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa scattered shrubs over Triodia epactia open hummock grassland
WPI	CP082	273	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa, A. sclerosperma ssp. sclerosperma, A. bivenosa and A. inaequilatera shrubland over Triodia epactia hummock grassland
WPI	CP492	273	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa open shrubland over Triodia wiseana hummock grassland
WPI	CP108	273	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia tumida var. pilbarensis high shrubland over Triodia wiseana very open hummock grassland
WPI	CP112	273	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia tumida var. pilbarensis high shrubland over Triodia wiseana very open hummock grassland
WPI	CP131	273	Qp	Elluvim, colluvium, gilgais	Corymbia hamersleyana scattered low trees over Acacia atkinsiana and A. tumida var. pilbarensis high shrubland over Triodia wiseana very open hummock grassland

600-group unit 274.

Fourteen sites were assigned to this unit, all from the API Project Area (from several of the sub-areas) and from a mixture of geological types. Unit 274 is restricted to the western Pilbara, but is fairly common there and not localised.

Extract from dendrogram from the regional analysis for unit 274.

WPI	ASA011	274	PLWd	DUCK CREEK DOLOMITE	Acacia ancistrocarpa scattered tall shrubs over Triodia wiseana open hummock grassland
WPI	CMP009	274	Wm	MOUNT McGRATH FORMATION	Ptilotus astrolasius low scattered shrubs over Triodia wiseana and T. epactia open hummock grassland
WPI	CP228	274	Qc	Colluvium	Acacia atkinsiana high shrubland over Triodia epactia open hummock grassland
WPI	CP236	274	Qp	Elluvim, colluvium, gilgais	Acacia atkinsiana open shrubland over Triodia wiseana open hummock grassland
WPI	BOR125	274	Qc	Colluvium	Acacia atkinsiana over Triodia epactia, Malvastrum americanum and API3314 Sida 2 tone leaves
WPI	CP234	274	Qp	Elluvim, colluvium, gilgais	Acacia atkinsiana high shrubland over Triodia wiseana and T. epactia hummock grassland
WPI	CP238	274	Qp	Elluvim, colluvium, gilgais	Corymbia hamersleyana low open woodland over Grevillea wickhamii ssp. hispidula scattered tall shrubs over Acacia ancistrocarpa scattered shrubs over Triodia epactia open hummock grassland over Aristida sp. (WPI-751) and Cenchrus ciliaris scattered tussoc
WPI	CP281	274	Kny	YARRALOOLA CONGLOMERATE	Corymbia candida ssp. candida and C. hamersleyana low open woodland over Acacia ancistrocarpa shrubland over Triodia

					wiseana hummock grassland
WPI	CP299	274	Kny	YARRALOOLA CONGLOMERATE	Corymbia hamersleyana low open woodland over Acacia ancistrocarpa and A. tumida var. pilbarensis high open shrubland over Triodia epactia very open hummock grassland over Eragrostis aff. eriopoda (WAS site 963) very open tussock grassland
WPI	CP317	274	Kny	YARRALOOLA CONGLOMERATE	Corymbia candida ssp. candida scattered low trees over Acacia inaequilatera scattered tall shrubs over A. ancistrocarpa open shrubland over Triodia epactia and T. wiseana very open hummock grassland
WPI	CW048	274	Tp	~~ROBE PISOLITE~~ [Colluvium near, but pale for this unit]	Acacia ancistrocarpa shrubland over Triodia wiseana and T. epactia open hummock grassland
WPI	KBW012	274	Qc	Colluvium	Acacia bivenosa high shrubland over Triodia epactia and Triodia wiseana hummock grassland
WPI	CP224	274	Qc	Colluvium	Corymbia candida subsp. candida low open woodland over Acacia ancistrocarpa open scrub over Triodia epactia hummock grassland
WPI	CP230	274	Qc	Colluvium	Corymbia candida subsp. candida scattered low trees over Acacia atkinsiana scattered shrubs over Triodia epactia open hummock grassland

600-group unit 275.

Six sites from three sub-areas of the API Project Area were assigned to this unit, five were recorded on alluvium, and the

other on colluvium.

Extract from dendrogram from the regional analysis for unit 275.

WPI	BOR098	275	Qc	Colluvium	Acacia inaequilatera scattered shrubs over mixed herbs
WPI	CR032	275	Qac	Alluvial -clay, silt	Corymbia hamersleyana low woodland over Acacia inaequilatera scattered tall shrubs over A. pyrifolia and Gossypium australe open shrubland over Cleome viscosa open herbland
WPI	TC139	275	Qac	Alluvial -clay, silt	Corymbia hamersleyana scattered low trees over Acacia pyrifolia and Grevillea pyramidalis high open shrubland over Triodia epactia very open hummock grassland
WPI	TC148	275	Qac	Alluvial -clay, silt	Acacia pyrifolia high shrubland over Grevillea pyramidalis open shrubland over Triodia epactia very open hummock grassland over Eragrostis eriopoda very open grassland
WPI	BOR106	275	Qac	Alluvial -clay, silt	Ptilotus astrolasius low open shrubland over Triodia epactia and Triodia wiseana very open hummock grassland
WPI	CR024	275	Qac	Alluvial -clay, silt	Corymbia hamersleyana low open woodland over Acacia inaequilatera and Grevillea pyramidalis high open shrubland over Triodia epactia hummock grassland

600-group unit 276.

Twenty-four sites from a number of the API Project Area sub-areas were assigned to this unit. Most were recorded from areas of colluvium, but some were from other rock types, including two associated with the Robe Pisolite (but on colluvium derived from it or on highly eroded areas). Unit 276 is restricted to the western Pilbara, but is not localised and appears to be relatively common.

Extract from dendrogram from the regional analysis for unit 276.

WPI	BOR150	276	Wm	MOUNT McGRATH FORMATION	Acacia inaequilatera scattered tall shrubs over Acacia ancistrocarpa open shrubland over Triodia epactia hummock grassland
WPI	TC043	276	Qc	Colluvium	Eucalyptus camaldulensis scattered low trees over Triodia epactia open hummock grassland
WPI	CR020	276	Pho	BOOLGEEDA IRON FORMATION	Acacia inaequilatera scattered tall shrubs over A. bivenosa open shrubland over Indigofera boviperda ssp. boviperda scattered herbs over Triodia epactia hummock grassland
WPI	JW008	276	Qc	Colluvium	Acacia inaequilatera scattered shrubs over Triodia epactia hummock grassland
WPI	KBW004	276	Qc	Colluvium	Acacia ancistrocarpa high open shrubland over Acacia bivenosa open shrubland over Triodia epactia hummock grassland
WPI	CP037	276	Qc	Colluvium	Corymbia hamersleyana low open woodland over Acacia bivenosa, A. ancistrocarpa and A. inaequilatera open shrubland over Triodia wiseana open hummock grassland
WPI	CR005	276	Qc	Colluvium	Acacia bivenosa shrubland over Triodia epactia closed hummock grassland
WPI	CR019	276	Tp	~~ROBE PISOLITE~~ Colluvium below Robe Pisolite	Corymbia hamersleyana low open woodland over Acacia bivenosa open shrubland over Indigofera boviperda ssp. boviperda low open shrubland over Triodia epactia and T. wiseana hummock grassland
WPI	CP032	276	Qac	Alluvial -clay, silt	Acacia inaequilatera high open shrubland over Triodia epactia hummock grassland
WPI	BOR151	276	Qc	Colluvium	Senna artemisioides subsp. oligophylla low shrubland over Triodia epactia open hummock grassland
WPI	BOR155	276	Qc	Colluvium	Senna artemisiodies subsp. oligophylla low scattered shrubland over Triodia epactia hummock to open hummock grassland
WPI	BOR153	276	Qc	Colluvium	Acacia inaequilatera scattered tall shrubs over Acacia ancistrocarpa and Acacia atkinsiana open shrubland over Triodia epactia open hummock grassland
WPI	BOR154	276	Qc	Colluvium	Corymbia hamersleyana over Acacia inaequilatera, Acacia ancistrocarpa and Acacia atkinsiana over Triodia epactia
WPI	CNW002	276	Qc	Colluvium	Acacia ancistrocarpa, Acacia atkinsiana and Acacia bivenosa open heath over Triodia epactia closed hummock grassland
WPI	BOR3	276	Tp	ROBE PISOLITE [but	Triodia epactia open hummock grassland

	02			eroded/colluvium]	
WPI	CEW 005	276	Qc	Colluvium	Acacia inaequilatera and Ptilotus astrolasius scattered shrubs over Triodia epactia very open hummock grassland
WPI	CMP001	276	Wm	MOUNT McGRATH FORMATION	Acacia synchronicia scattered tall shrubs over Triodia wiseana open hummock grassland
WPI	CNW 004	276	Qc	Colluvium	Triodia epactia open hummock grassland
WPI	BOR205	276	Qc	Colluvium	Corymbia hamersleyana low open woodland over Grevillea wickhamii and Acacia ancistrocarpa high shrubland over Triodia epactia hummock grassland
WPI	CR033	276	Qac	Alluvial -clay, silt	Corymbia hamersleyana scattered low trees over Acacia inaequilatera high open shrubland over Triodia epactia very open hummock grassland
WPI	BOR208	276	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Grevillea wickhamii, Acacia tumida, Acacia ancistrocarpa and Acacia atkinsiana shrubland over Triodia epactia open hummock grassland
WPI	KBW 010	276	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia tumida, and Acacia ancistrocarpa high open shrubland over Triodia epactia hummock grassland
WPI	KBW 002	276	Qc	Colluvium	Triodia epactia hummock grassland
WPI	TC009	276	Qc	Colluvium	Corymbia hamersleyana scattered low trees over Acacia wanyu, A. ancistrocarpa and A. bivenosa open shrubland over Triodia epactia open hummock grassland

600-group unit 295.

Three sites were allocated to this unit, one form the API Project Area and two from the Solomon Project in the Hamersley Range. Unit 295 is uncommon, but not restricted in distribution. Disturbance of the unit should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 295.

EP00550AA	VOK015	295	PLHb	BROCKMAN IRON FORMATION	Open Woodland of Eucalyptus leucophloia subsp. leucophloia and Corymbia hamersleyana to 10m over Open Shrubland of Senna glutinosa subsp. glutinosa to 2m over Mid-Dense Hummock Grassland of Triodia wiseana to 1.3m.
WPI	HAM 001	295	PLHb	BROCKMAN IRON FORMATION	Acacia inaequilatera open shrubland over Triodia wiseana hummock grassland
550AA	KR007	295	Czc	Colluvium	Scattered Low Trees of Eucalyptus leucophloia subps. Leucophloia to 7m over Mid-dense Hummock Grassland of Triodia wiseana to 1m

600-group unit 301.

Eight sites were assigned to this unit, five from the Solomon Project and three from the API Project Area. The sites are mostly gully or minor drainage sites, and this seems to be a case of

habitat type over-riding geology to a significant degree, although the two Robe Pisolite types from the API Project Area do form a subgroup. This unit is widespread, but not common. The conservation value of the vegetation of the Robe Pisolite in the API Project Area is discussed in section 5.3 above.

Extract from dendrogram from the regional analysis for unit 301.

550AA	06RAIL008	301	AHs	MT McCRAE SHALE & MT SYLVIA FM	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia to 5.5m over Tall Shrubland of Acacia acradenia, Acacia arida, Grevillea wickhamii subsp. macrodonta and Acacia bivenosa to 3.5m over Mid-Dense Hummock Grassland of Triodia wiseana to 1.6m.
550AA	06RAIL007a	301	AHs	MT McCRAE SHALE and MT SYLVIA FM	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia to 8m over Tall Open Scrub of Acacia aff. aneura (narrow fine veined; site 1259), Acacia bivenosa, Petalostylis labicheoides, Acacia maitlandii, Gossypium robinsonii and Acacia monticola to 4m
550AA	07RAIL038	301	Czc	Colluvium	Tall Shrubland to Tall Open Shrubland of Acacia bivenosa, Acacia inaequilatera and Acacia pruinocarpa to 6m over Mid-dense Hummock Grassland of Triodia wiseana to 1.4m
550AA	06RAIL010	301	Qa	Alluvium - unconsolidated	Low Open Woodland of Eucalyptus xerothermica to 8m over Tall Open Scrub of Acacia bivenosa, Grevillea wickhamii subsp. hispidula and Acacia pyrifolia var. pyrifolia to 4m over Mid-Dense Hummock Grassland of Triodia epactia (Form 4) to 1.4m over Low Open S
550AA	06RAIL011	301	AHs	MT McCRAE SHALE and MT SYLVIA FM	Open Woodland of Eucalyptus xerothermica to 15m over Low Woodland of Acacia citrinoviridis, Ehretia saligna var. saligna and Corymbia hamersleyana to 10m over Tall Open Shrubland of Gossypium robinsonii, Petalostylis labicheoides and Flueggea virosa subsp
WPI	CW018	301	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low woodland over Acacia citrinoviridis and A. tumida var. pilbarensis high shrubland over Triodia wiseana hummock grassland
WPI	TR024	301	Tp	ROBE PISOLITE	Corymbia hamersleyana low open woodland over Acacia adsurgens and Grevillea wickhamii ssp. hispidula high open shrubland over Acacia maitlandii and Senna artemisioides ssp. oligophylla shrubland over Triodia wiseana hummock grassland Gully;
WPI	TR021	301	Wm	MOUNT McGRATH FORMATION	Acacia citrinoviridis low open forest over Indigofera monophylla, Gossypium robinsonii and Senna glutinosa ssp. glutinosa open shrubland over mixed very open herbs over Triodia wiseana very open hummock grassland

600-group unit 304.

Six sites from the API Project Area were assigned to this Unit 304; all were recorded on Robe Pisolite (see section 5.3 for discussion of the vegetation of this geological unit). Unit 304 is was only recorded from two of the sub-areas of the API Project Area and is restricted to the wester Pilbara, not widespread and not common.

Extract from dendrogram from the regional analysis for unit 304.

WPI	TR006	303	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Grevillea wickhamii ssp. hispidula and Acacia pruinocarpa high shrubland over Abutilon dioicum open shrubland over Triodia wiseana very open hummock grassland and Eriachne tenuiculmis very ope
WPI	TR01	303	Tp	ROBE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia tumida

	1			PISOLITE	var. pilbarensis open scrub over Stylobasium spathulatum open shrubland over Triodia wiseana open hummock grassland
WPI	UC002	304	Tp	ROBE PISOLITE	Corymbia ferriticola low open woodland over Acacia citrinoviridis high shrubland over Eremophila latrobei ssp. latrobei and Dodonaea pachyneura open shrubland over Triodia sp. Robe River very open hummock grassland
WPI	UC006	304	Tp	ROBE PISOLITE	Acacia citrinoviridis and Stylobasium spathulatum high shrubland over Triodia sp. Robe River and T. epactia open hummock grassland
WPI	UC004	304	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia low open woodland over Acacia aff. aneura (narrow fine veined; site 1259), A. citrinoviridis and Grevillea berryana high shrubland over Triodia sp. Robe River and T. wiseana open hummock grassland
WPI	UC005	304	Tp	ROBE PISOLITE	Eucalyptus leucophloia ssp. leucophloia and Corymbia ferriticola ssp. ferriticola low open woodland over Acacia citrinoviridis high open shrubland over A. pruinocarpa open shrubland over Triodia sp. Robe River very open hummock grassland

600-group unit 305.

Only two sites from the API Project Area were assigned to this unit, both were from the same sub-area, the same geology (Mont McGrath Formation) and the same habitat (south-west facing outcrop near crest). Unit 305 is restricted to the western Pilbara, uncommon and localised, disturbance to it should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 305.

WPI	BOR266	305	Wm	MOUNT McGRATH FORMATION	Ficus brachypoda scattered low trees over Cymbopogon ambiguus and Eriachne mucronata scattered low shrubs over Triodia wiseana scattered hummocks
WPI	BOR271	305	Wm	MOUNT McGRATH FORMATION	Acacia pruinocarpa scattered tall shrubs over Triodia wiseana scattered hummock grasses over Cymbopogon ambiguus and Eriachne mucronata very open tussock grassland

600-group unit 306.

Only two sites, one from the API Project Area and one from the Solomon Project Area were assigned to this unit. This seems to be a case where two vegetation types with very different dominance have the most similar floristics to each other in the data set, but are really not that similar. The two sites should be treated as two separate units, that are both uncommon (further sampling is needed to ascertain how significant they are). Disturbance of the unit in the API project Area should be avoided, or minimised.

Extract from dendrogram from the regional analysis for unit 306.

EP00550AA	SERN078	306	PLHb	BROCKMAN IRON FORMATION	Low Open Woodland of Eucalyptus leucophloia subsp. leucophloia to 7m over Mid-dense Hummock

					Grassland of Triodia wiseana to 1m.
WPI	TR042	306	PLWb	CHEELA SPRINGS BASALT	Terminalia canescens low open woodland over Stylobasium spathulatum scattered shrubs

600-group unit 307.

This unit had only one site from the API Project Area assigned to it. Unit 307 is therefore, localised in distribution and apparently uncommon and disturbance of it should be avoided or minimised.

Extract from dendrogram from the regional analysis for unit 307.

WPI	CWW062	307	Wm	MOUNT McGRATH FORMATION	Acacia aneura (narrow, fine veined, site 1259) low woodland over Dodonaea coriacea open shrubland over Triodia wiseana hummock grassland

600-group unit 405.

Five sites were assigned to this unit, one from the API Project Area and four from the Cape Preston area. All were from eluvium or colluvium. This unit is restricted to the western Pilbara, but is not localised. It is probably poorly sampled, but may be uncommon. Disturbance should be minimised.

Extract from dendrogram from the regional analysis for unit 405.

WPI	CP505	405	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla open shrubland over Iseilema macratherum very open tussock grassland
CAP PRE	M003	405	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla open shrubland over scattered patches of *Cenchrus ciliaris and Eragrostis xerophila.
CAP PRE	M021	405	Qp	Elluvim, colluvium, gilgais	Eragrostis xerophila mid-dense tussock grassland with small patches of Eriachne benthamii (and other patches with Sida fibulifera or annual herbs).
CAP PRE	M027	405	Qc	Colluvium	Eriachne benthamii / Eragrostis xerophila mid-dense tussock grassland.
CAP PRE	M103	405	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla shrubland / tall shrubland over patches of Eragrostis xerophila mid-dense tussock grassland, patches of Triodia mid-dense hummock grassland and barer areas with herbs.

600-group unit 549.

Three sites were assigned to this unit, two from the API Project Area (these are ca. 200 metres apart) and one from the FMG 2006 survey in the eastern Pilbara. This unit is poorly sampled and needs further sampling to confirm its status, but on current knowledge is uncommon, but widespread. Disturbance to Unit 459 should be minimised, or avoided if possible.

Extract from dendrogram from the regional analysis for unit 549.

FMG -2006	P8R	549	AFtc	MADDINA BASALT	Acacia inaequilatera Tall Open Shrubland over a Tussock Grassland of Triodia epactia
WPI	TC142	549	Qc	Colluvium [downslope from Robe Pisolite]	Triodia epactia with scattered shrubs
WPI	TR104	549	Qc	Colluvium [downslope from Robe Pisolite]	Acacia atkinsiana over Senna glutinosa subsp. luersenii over Triodia epactia

600-group unit 550.

Two sites from one sub-area of the API Project Area were assigned to this unit. Unit 550 is localised and uncommon on the current data, but is likely to be poorly sampled. Disturbance of this unit should be minimised.

Extract from dendrogram from the regional analysis for unit 550.

WPI	TC010	550	Wm	MOUNT McGRATH FORMATION	Acacia synchronicia scattered shrubs over Triodia epactia open hummock grassland
WPI	TC135	550	Wm	MOUNT McGRATH FORMATION	Triodia epactia open hummock grassland

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7. REFERENCES

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Appendices

Appendix 1 Reconciliation of Species in Analysis

Fam	Name	Combined with
	Chara sp.	omitted
	Genus sp.	omitted
	Unknown	omitted
	Unknown sp. (inadequate material)	omitted
007	Cheilanthes sp.	omitted
007	Cheilanthes sp. (inadequate material)	omitted
031	? Bothriochloa	omitted
031	Amphipogon sericeus	Amphipogon sericeus (Hamersley form; MET 15,335)
031	Amphipogon sericeus (Hamersley form)	Amphipogon sericeus (Hamersley form; MET 15,335)
031	Amphipogon sericeus (Newman form BR2-21)	Amphipogon sericeus (Newman form; BR2-21)
031	Amphipogon sericeus (Newman form)	Amphipogon sericeus (Newman form; BR2-21)
031	Aristida holathera	Aristida holathera var. holathera
031	Aristida sp.	omitted
031	Aristida sp. (inadequate material)	omitted
031	Cenchrus setigerus	Cenchrus setiger
031	Cymbopogon ? ambiguus	Cymbopogon ambiguus
031	Cymbopogon ? bombycinus	Cymbopogon bombycinus
031	Cymbopogon ?obtectus	Cymbopogon obtectus
031	Cymbopogon sp.	omitted
031	Cymbopogon sp. (inadequate material)	omitted
031	Cyperochloa hirsuta	omitted
031	Digitaria sp.	omitted
031	Diplachne fusca (Entry error)	Leptochloa fusca subsp. fusca
031	Enneapogon caerulescens var. caerulescens	Enneapogon caerulescens
031	Enneapogon caerulescens var. occidentalis	Enneapogon caerulescens
031	Enneapogon sp.	omitted
031	Enneapogon sp. (inadequate material)	omitted
031	Eragrostis ? elongata	Eragrostis elongata
031	Eragrostis aff. xerophila	Eragrostis xerophila
031	Eragrostis sp.	omitted
031	Eragrostis sp. (inadequate material)	omitted
031	Eriachne aff. benthamii	Eriachne benthamii
031	Eriachne mucronata	Eriachne mucronata (typical form)
031	Eriachne mucronata (Arid Form)	Eriachne mucronata (arid form) (MET 12 736)
031	Eriachne pulchella subsp. dominii	Eriachne pulchella
031	Eriachne pulchella subsp. pulchella	Eriachne pulchella
031	Eriachne sp.	omitted
031	Eriachne sp. (inadequate material)	omitted
031	Iseilema sp.	omitted
031	Panicum effusum	Panicum effusum var. effusum
031	Panicum sp.	omitted
031	Paractaenum refractum	Urochloa piligera
031	Paspalidium sp.	omitted
031	Plectrachne sp. (MET 10,114)	Triodia aff. melvillei (MET 10, 114)
031	Poaceae sp. (CP19-3, WPI)	omitted
031	Poaceae sp. (inadequate material)	omitted
031	Setaria sp.	Setaria dielsii
031	Setaria sp. (inadequate material)	Setaria dielsii

Fam	Name	Combined with
031	Themeda aff. triandra (MET 16 046)	Themeda aff. triandra (MET 16,046)
031	Triodia aff. epactia coffey sterile	Triodia epactia
031	Triodia aff. lanigera (dwarf habit)	omitted
031	Triodia aff. longiceps	Triodia longiceps
031	Triodia aff. pungens	Triodia pungens
031	Triodia basedowii?	Triodia basedowii
031	Triodia epactia (Form 1)	Triodia epactia
031	Triodia epactia (Form 2)	Triodia epactia
031	Triodia epactia (Form 3)	Triodia epactia
031	Triodia epactia (Form 4)	Triodia epactia
031	Triodia epactia (Form 5)	Triodia epactia
031	Triodia sp.	omitted
031	Triodia sp. nov.	Triodia sp. Robe River
031	Urochloa gilesii subsp. gilesii (glabrous florets)	omitted
031	Urochloa gilesii subsp. occidentalis	Urochloa occidentalis var. occidentalis
031	Urochloa sp.	omitted
031	Urochloa sp. "glabrous apices"	omitted
031	Whiteochloa aff. airoides	Whiteochloa airoides
031	Whiteochloa cymbiformis	Whiteochloa airoides
032	Bulbostylis turbinata (form B; M1-16)	Bulbostylis turbinata
032	Cyperaceae sp.	omitted
032	Cyperaceae sp. (inadequate material)	omitted
032	Cyperus sp.	omitted
032	Fimbristylis ? depauperata	Fimbristylis depauperata
032	Fimbristylis sp.	omitted
087	Ficus aculeata var. indecora	Ficus opposita
087	Ficus opposita var. aculeata	Ficus opposita
087	Ficus opposita var. indecora	Ficus opposita
087	Ficus platypoda var. A	Ficus brachypoda
087	Ficus platypoda var. B	Ficus brachypoda
087	Ficus platypoda var. D	Ficus brachypoda
087	Ficus platypoda var. E	Ficus brachypoda
087	Ficus platypoda var. F	Ficus brachypoda
087	Ficus platypoda var. G	Ficus brachypoda
090	Grevillea sp.	omitted
090	Grevillea wickhamii subsp. ?	Grevillea wickhamii
090	Grevillea wickhamii subsp. aprica	Grevillea wickhamii
090	Grevillea wickhamii subsp. hispidula	Grevillea wickhamii
090	Grevillea wickhamii subsp. macrodonta	Grevillea wickhamii
090	Hakea lorea ssp. lorea	Hakea lorea subsp. lorea
092	?Santalum sp.	Santalum lanceolatum
092	Santalum sp.	Santalum lanceolatum
097	Amyema sp.	omitted
105	?Chenopodium gaudichaudianum	omitted
105	Chenopodium melanocarpum forma melanocarpum	Dysphania melanocarpa forma melanocarpa
105	Dysphania melanocarpa forma leucocarpa	Dysphania melanocarpa forma melanocarpa
105	Dysphania sp.	omitted
105	Enchylaena tomentosa x	omitted
105	Enchylaena tomentosa x Maireana georgei	omitted
105	Halosarcia ? halocnemoides subsp. tenuis	Halosarcia halocnemoides
105	Halosarcia ? pergranulata	Halosarcia pergranulata

Fam	Name	Combined with
105	Halosarcia ? pterigosperma	Halosarcia pterygosperma subsp. denticulata
105	Halosarcia halocnemoides subsp. catenulata	Halosarcia halocnemoides
105	Halosarcia halocnemoides subsp. tenuis	Halosarcia halocnemoides
105	Halosarcia pergranulata subsp. elongata	Halosarcia pergranulata
105	Halosarcia sp.	omitted
105	Maireana aff. georgei	Maireana georgei
105	Maireana planifolia x	Maireana planifolia x villosa
105	Maireana sp.	omitted
105	Maireana tomentosa	Maireana tomentosa subsp. tomentosa
105	Salsola kali	Salsola tragus
105	Salsola tragus subsp. grandiflora	Salsola tragus
105	Salsola tragus subsp. tragus	Salsola tragus
105	Sclerolaena bicornis	Sclerolaena bicornis var. bicornis
105	Sclerolaena sp.	omitted
105	Sclerolaena sp. (inadequate material)	omitted
105	Sclerolaena sp. nov. aff densiflora	Sclerolaena densiflora
106	? Gomphrena sp.	omitted
106	Alternanthera sp. (inadequate material)	omitted
106	Amaranthus ? interruptus	Amaranthus interruptus
106	Amaranthus sp.	omitted
106	Gomphrena canescens	Gomphrena canescens subsp. canescens
106	Gomphrena sp.	omitted
106	Gomphrena sp. (inadequate material)	omitted
106	Ptilotus aff. obovatus	Ptilotus obovatus
106	Ptilotus calostachyus	Ptilotus calostachyus var. calostachyus
106	Ptilotus incanus	Ptilotus incanus var. incanus
106	Ptilotus incanus var. elongatus	Ptilotus incanus var. incanus
106	Ptilotus murrayi	Ptilotus murrayi var. murrayi
106	Ptilotus obovatus var. obovatus	Ptilotus obovatus
106	Ptilotus schwartzii	Ptilotus schwartzii var. schwartzii
106	Ptilotus sp.	omitted
106	Ptilotus sp. (inadequate material)	omitted
106	Ptilotus sp. (WPI, CP50-23)	omitted
107	Boerhavia aff. coccinea	Boerhavia coccinea
107	Boerhavia coccinea (form B)	Boerhavia coccinea
107	Boerhavia sp.	Boerhavia coccinea
107	Boerhavia sp. (B82-6)	Boerhavia coccinea
107	Boerhavia sp. (inadequate material)	Boerhavia coccinea
107	Boerhavia type 1	Boerhavia coccinea
107	Boerhavia type 2	Boerhavia coccinea
110	Trianthema sp.	omitted
110	Trianthema triquetra	Trianthema triquetra var. triquetra
110A	Mollugo molluginea	Mollugo molluginis
111	Calandrinia ?quadrivalvis	Calandrinia quadrivalvis
111	Calandrinia ?stagnensis	Calandrinia stagnensis
111	Calandrinia sp.	omitted
111	Portulaca sp.	omitted
111	Portulaca sp. (inadequate material)	omitted
113	Polycarpaea longiflora (pale form)	Polycarpaea longiflora
113	Polycarpaea longiflora (red form)	Polycarpaea longiflora
113	Polycarpaea longiflora (White form, M13-7)	Polycarpaea longiflora

Fam	Name	Combined with
113	Polycarpaea sp.	omitted
137A	Cadaba capparoides	omitted
137A	Cleome uncifera	Cleome uncifera subsp. uncifera
138	Lepidium sp.	omitted
138	Stenopetalum sp.	omitted
152	Pittosporum phylliraeoides var. microcarpa	Pittosporum angustifolium
163	Acacia ? hilliana x stellaticeps (GLD(NIM)23.28)	omitted
163	Acacia ? lysiphloia x monticola (B.R. Maslin 2671)	omitted
163	Acacia aff. aneura (scythe-shaped; MET 15,743)	Acacia aneura var. intermedia
163	Acacia aff. inaequilatera (MET 15,011)	Acacia trudgeniana
163	Acacia ancistrocarpa x stellaticeps	omitted
163	Acacia ancistrocarpa x stellaticeps	omitted
163	Acacia ancistrocarpa x trachycarpa	omitted
163	Acacia aneura var. ?	omitted
163	Acacia atkinsiana X tenuissima	omitted
163	Acacia bivenosa x sclerosperma	omitted
163	Acacia colei x elachantha	omitted
163	Acacia coriacea	Acacia coriacea subsp. coriacea
163	Acacia elachantha (golden hairy variant)	Acacia elachantha
163	Acacia elachantha (golden hairy variant)	Acacia elachantha
163	Acacia elachantha (silvery hairy variant)	Acacia elachantha
163	Acacia eriopoda x monticola (B.R. Maslin 7322)	omitted
163	Acacia hamersleyensis	Acacia hamersleyensis (bushy form)
163	Acacia monticola x tumida var. pilbarensis	omitted
163	Acacia morrisonii	Acacia pyrifolia var. morrisonii
163	Acacia pyrifolia	Acacia pyrifolia var. pyrifolia
163	Acacia sericocarpa	Acacia sericophylla
163	Acacia sp.	omitted
163	Acacia sp. (inadequate material)	omitted
163	Acacia stenophylla entry error ??	Acacia stellaticeps
163	Acacia trachycarpa x tumida	omitted
163	Acacia trachycarpa x tumida var. pilbarensis	omitted
163	Acacia tumida subsp. ? pilbarensis x ?	omitted
163	Neptunia aff. dimorphantha (M27)	Neptunia dimorphantha
164	Cassia ? oligophylla x	omitted
164	Cassia ? oligophylla x glaucifolia	omitted
164	Cassia ?glaucifolia x aff. oligophylla (thinly sericeous)(FMR29-11)	omitted
164	Cassia aff. oligophylla (thinly sericeous) x helmsii	omitted
164	Cassia glaucifolia x ? (site 626)	omitted
164	Cassia glaucifolia x glutinosa	omitted
164	Cassia glutinosa x luerssenii	omitted
164	Cassia glutinosa x 'stricta'	omitted
164	Cassia hamersleyensis	Senna hamersleyensis
164	Cassia hamersleyensis x sp. Karajini (MET 10 392)	Senna hamersleyensis X sp. Karijini(M.E. Trudgen 10392) .
164	Cassia helmsii x	omitted
164	Cassia helmsii x 'stricta'	omitted
164	Cassia luerssenii x 'stricta'	omitted
164	Cassia oligophylla x	omitted
164	Cassia oligophylla x glutinosa (FMG116-02)	omitted
164	Cassia oligophylla x helmsii (FMR75-01)	omitted

Fam	Name	Combined with
164	Cassia pruinosa x ?glutinosa	omitted
164	Cassia pruinosa x luerssenii	omitted
164	Cassia sp. Karajini (MET 10,392)	Senna sp. Karijini (M.E. Trudgen 10392)
164	Cassia sp. West Angelas (MET 16,115)	Senna sp. West Angeles (M.E. Trudgen 16,115)
164	Senna artemisioides aff. subsp. oligophylla x helmsii	Senna artemisioides subsp. oligophylla x helmsii
164	Senna artemisioides subsp. ? oligophylla x	omitted
164	Senna artemisioides subsp. aff. oligophylla (thinly sericeous)	Senna artemisioides aff subsp oligophylla (thinly sericeous)
164	Senna artemisioides subsp. oligophylla x glutinosa	omitted
164	Senna artemisioides subsp. oligophylla x glutinosa	omitted
164	Senna glutinosa	Senna glutinosa subsp. glutinosa
164	Senna glutinosa subsp. glutinosa x luerssenii	omitted
164	Senna glutinosa subsp. glutinosa x stricta	omitted
164	Senna glutinosa subsp. luersenii x pruinosa	omitted
164	Senna glutinosa subsp. luersenii x stricta	omitted
164	Senna glutinosa subsp. x luerssenii	Senna glutinosa subsp. luerssenii
164	Senna sp.	omitted
164	Senna sp. (inadequate material)	omitted
165	? Glycine sp.	omitted
165	Crotalaria medicaginea (Burrup form; B65-11)	Crotalaria medicaginea
165	Crotalaria medicaginea (Cape Preston form; M63-12)	Crotalaria medicaginea
165	Crotalaria medicaginea var. neglecta	Crotalaria medicaginea
165	Crotalaria sp.	omitted
165	Crotalaria trifoliastrum	Crotalaria medicaginea
165	Cullen sp.	omitted
165	Desmodium sp.	omitted
165	Gompholobium aff. karajini	Gompholobium sp. Hamersley
165	Indigastrum parviflorum (Cape Preston form; M23-12)	Indigastrum parviflorum
165	Indigofera sp.	omitted
165	Indigofera sp. (HD19)	omitted
165	Indigofera sp. (inadequate material)	omitted
165	Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)	Indigofera monophylla (BRO 46-12)
165	Kennedia cf. prorepens (HD284-7)	Kennedia prorepens
165	Papillionaceae sp.	omitted
165	Rhynchosia minima var. aff. australis	Rhynchosia minima var. australis
165	Swainsona sp.	omitted
165	Tephrosia aff. densa	omitted
165	Tephrosia aff. supina	omitted
165	Tephrosia rosea	omitted
165	Tephrosia sp.	omitted
165	Tephrosia sp. (HD133)	omitted
165	Tephrosia sp. (inadequate material)	omitted
165	Tephrosia supina (06BP45-006)	omitted
165	Vigna sp.	omitted
165	Vigna sp. central (M.E. Trudgen 1626)	Vigna lanceolata var. latifolia
165	Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	Vigna lanceolata var. latifolia
165	Zornia sp.	omitted
167	Erodium cygnorum	Erodium cygnorum subsp. cygnorum
173	Tribulus sp.	omitted
173	Tribulus sp. (inadequate material)	omitted
173	Zygophyllum retivalve	Zygophyllum iodocarpum
173	Zygophyllum sp.	Zygophyllum iodocarpum

Fam	Name	Combined with
183	Polygala sp.	omitted
185	Adriana tomentosa	Adriana urticoides var. urticoides
185	Adriana tomentosa var. tomentosa	Adriana urticoides var. urticoides
185	Adriana urticoides var. hookeri	Adriana urticoides var. urticoides
185	Euphorbia aff. australis	omitted
185	Euphorbia aff. boophthona (large seed form)	Euphorbia boophthona (Large seed form)
185	Euphorbia aff. myrtoides	omitted
185	Euphorbia australis subsp. glaucescens (MS?)	omitted
185	Euphorbia biconvexa	Euphorbia coghlanii
185	Euphorbia sp.	omitted
185	Euphorbia sp. (inadequate material)	omitted
185	Euphorbia tannensis	omitted
185	Euphorbia tannensis subsp. eremophila	Euphorbia tannensis subsp. eremophila (Hamersley form)
185	Phyllanthus aridus	Phyllanthus exilis
185	Sauropus sp.	omitted
207	Alectryon oleifolius	Alectryon oleifolius subsp. oleifolius
220	Corchorus aff. lasiocarpus subsp. parvus	Corchorus lasiocarpus subsp. parvus
220	Corchorus aff. walcottii Michi	omitted
220	Corchorus incanus	Corchorus incanus subsp. incanus
220	Corchorus lasiocarpus var. lasiocarpus	Corchorus lasiocarpus subsp. lasiocarpus
220	Corchorus sidoides	omitted
220	Corchorus sp.	omitted
220	Corchorus sp. (inadequate material)	omitted
220	Triumfetta ? centralis	omitted
220	Triumfetta appendiculata (Burrup Form)	Triumfetta appendiculata
220	Triumfetta appendiculata (Mardie form)	Triumfetta appendiculata
220	Triumfetta appendiculata (Red Hill form)	Triumfetta appendiculata
220	Triumfetta cf. propinqua (B13-13)	omitted
220	Triumfetta sp.	omitted
220	Triumfetta sp. (inadequate material)	omitted
221	Abutilon aff. dioicum	Abutilon dioicum
221	Abutilon aff. fraseri (1)	Abutilon fraseri
221	Abutilon aff. fraseri (site 1212)	Abutilon fraseri
221	Abutilon aff. lepidium	omitted
221	Abutilon aff. lepidum (1)	Abutilon aff. lepidum (1) (MET 15 352)
221	Abutilon aff. lepidum (4)	Abutilon macrum
221	Abutilon otocarpum	Abutilon otocarpum (acute leaf form)
221	Abutilon oxycarpum	Abutilon oxycarpum subsp. prostratum
221	Abutilon sp.	omitted
221	Abutilon sp. (inadequate material)	omitted
221	Hibiscus aff. sturtii	omitted
221	Hibiscus sp.	omitted
221	Hibiscus sp. (inadequate material)	omitted
221	Hibiscus sturtii	Hibiscus sturtii var. campylochlamys
221	Hibiscus sturtii var. aff. grandiflorus	Hibiscus sturtii var. grandiflorus
221	Hibiscus sturtii var. aff. Platychlamys	omitted
221	Hibiscus sturtii var. platychlamys (MET 15067)	omitted
221	Melhania sp. Burrup wrong family #	Melhania sp. (Burrup)
221	Sida ? cardiophylla (juvenile)	omitted
221	Sida ? echinocarpa	omitted
221	Sida ? rohlenae	omitted

Fam	Name	Combined with
221	Sida aff. cardiophylla	omitted
221	Sida aff. clementii	omitted
221	Sida aff. excedentifolia (FML58-14A)	Sida excedentifolia
221	Sida aff. fibulifera	omitted
221	Sida aff. fibulifera	omitted
221	Sida aff. spiciforme panicles (FML46-13)	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/1990 PN
221	Sida atrovirens	Sida sp. dark green fruit (S. van Leeuwen 2260)
221	Sida sp.	omitted
221	Sida sp. (inadequate material)	omitted
221	Sida sp. (WPI, CR16-27)	omitted
221	Sida sp. Excedentifolia (J.L. Egan 1925)	Sida excedentifolia
221	Sida sp. Pilbara (A.A. Mitchell PRP 1543)	Sida pilbarensis (ferruginous form)
221	Sida sp. 'rugose'	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/1990 PN
221	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90) PN	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/1990 PN
221	Sida sp. Supplejack Station	Sida rhytidocarpa
221	Sida sp. Wittenoom (W.R. Barker 1962)	Sida arsiniata
221	Sida subarticulata	Sida sp. Articulation below (A.A. Mitchell PRP 1605)
223	Keraudrenia ?nephrosperma	Keraudrenia nephrosperma
223	Keraudrenia sp.	Keraudrenia velutina subsp. elliptica
223	Melhania sp.	omitted
273	Corymbia candida subsp. candida	Corymbia candida
273	Corymbia candida subsp. dipsodes	Corymbia candida
273	Corymbia ferriticola	Corymbia ferriticola subsp. ferriticola
273	Corymbia opaca	Corymbia hamersleyana
273	Corymbia sp.	omitted
273	Eucalyptus sp.	omitted
273	Eucalyptus sp. (WPI, UCW1-30)	omitted
273	Malleostemon hursthousei entry error	omitted
281	Trachymene aff. oleracea (B61)	Trachymene oleracea subsp. oleracea
303	Centaurium spicatum	Centaurium clementii
307	Bonamia sp.	omitted
307	Bonamia sp. (inadequate material)	omitted
307	Convolvulus ? clementii	Convolvulus angustissimus subsp. angustissimus
307	Convolvulus ? remotus	Convolvulus angustissimus subsp. angustissimus
307	Duperreya commixta	Duppereya commixta
307	Duperreya commixta	Duppereya commixta
307	Ipomoea sp.	omitted
307	Polymeria ? lanata	Polymeria lanata
307	Polymeria aff. ambigua	omitted
307	Polymeria aff. ambigua (MET 12302)	Polymeria aff. ambigua (MET 12, 302)
307	Polymeria ambigua/calycina	Polymeria aff. ambigua (PAN 26B-20)
307	Polymeria longifolia	omitted
307	Polymeria sp.	omitted
307	Porana commixta	Duppereya commixta
310	Ehretia ? (B23-22)	Ehretia saligna var. saligna
310	Heliotropium ? conocarpum	Heliotropium conocarpum
310	Heliotropium ? cunninghamii	Heliotropium cunninghamii
310	Heliotropium ? foliatum	Heliotropium pachyphyllum
310	Heliotropium sp.	omitted

Fam	Name	Combined with
310	Heliotropium sp. (inadequate material)	omitted
311	Clerodendrum sp.	Clerodendrum floribundum var. angustifolium
311	Clerodendrum tomentosum	Clerodendrum tomentosum var. lanceolatum
311A	Dicrastylis georgei	Dicrastylis cordifolia
313	Prostanthera campbellii	Prostanthera striatiflora
315	Nicotiana sp.	omitted
315	Nicotiana sp. (inadequate material)	omitted
315	Solanum sp.	omitted
315	Solanum sp. (inadequate material)	omitted
316	Peplidium sp.	Peplidium sp. E Evol. Fl. Fauna Arid Aust. (A.S. Weston 12768)
316	Stemodia sp.	Stemodia grossa
316	Stemodia sp. (inadequate material)	Stemodia grossa
318	Josephinia sp.	Josephinia sp. Marandoo (M.E. Trudgen 1554)
325	Rostellularia adscendens var. latifolia	Rostellularia adscendens var. clementii
326	Eremophila forrestii x latrobei	omitted
326	Eremophila fraseri subsp. parva	Eremophila fraseri subsp. fraseri
326	Eremophila latrobei	omitted
326	Eremophila sp.	omitted
326	Eremophila sp. 1 (poor specimen)	omitted
326	Eremophila sp. 2 (sterile)	omitted
326	Eremophila youngii x latrobei	omitted
331	Psydrax attenuata	Psydrax rigidula
337	Mukia aff. maderaspatana (1) (grey scabrid rounded)	Cucumis maderaspatanus
337	Mukia aff. maderaspatana (2) (grey scabrid serrate)	Cucumis maderaspatanus
337	Mukia aff. maderaspatana (3) (green scabrid rounded)	Cucumis maderaspatanus
337	Mukia aff. maderaspatana (4) (green not scabrid)	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. A	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. B	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. C	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. D	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. E	Cucumis maderaspatanus
337	Mukia aff. maderaspatana sp. F	Cucumis maderaspatanus
337	Mukia maderaspatana	Cucumis maderaspatanus
337	Trichosanthes cucumerina	Trichosanthes cucumerina var. cucumerina
339	Wahlenbergia queenslandica	Wahlenbergia tumidifructa
339	Wahlenbergia sp.	Wahlenbergia tumidifructa
341	Goodenia aff. cusackiana	Goodenia cusackiana
341	Goodenia aff. microptera	Goodenia microptera
341	Goodenia aff. muelleriana	Goodenia muelleriana
341	Goodenia sp.	omitted
341	Goodenia sp. (inadequate material)	omitted
341	Goodenia sp. (site 1205)	omitted
341	Goodenia sp. (site 92)	omitted
341	Goodeniaceae sp.	omitted
341	Scaevola sp.	omitted
341	Scaevola spinescens	Scaevola spinescens (broad form)
345	? Ixiolaena sp.	omitted
345	Asteraceae sp. (inadequate material)	omitted
345	Chrysocephalum apiculatum	Chrysocephalum aff. apiculatum
345	Chrysocephalum sp.	omitted
345	Flaveria australasica	Flaveria australasica subsp. australasica

Fam	Name	Combined with
345	Flaveria sp. Tom Price (M.E. Trudgen 11246)	Flaveria australasica subsp. gilgai
345	Lactuca saligna	Lactuca serriola
345	Pentalepis aff. trichodesmoides (M.E. Trudgen 15,170)	Pentalepis trichodesmoides
345	Pluchea sp.	omitted
345	Pseudognaphalium luteoalbum	Helichrysum luteoalbum
345	Pterocaulon ? sphaeranthoides x sphacelatum	Pterocaulon sphaeranthoides
345	Pterocaulon sp.	omitted
345	Pterocaulon sp. (inadequate material)	omitted
345	Pterocaulon sphaeranthoides x sphacelatum	Pterocaulon sphaeranthoides
345	Rutidosis helichrysoides	Rutidosis helichrysoides subsp. helichrysoides
345	Streptoglossa sp.	omitted
345	Streptoglossa sp. (inadequate material)	omitted
345	Vittadinia sp.	omitted
F	Podaxis pistillaris	omitted

***Appendix 2**: Dendrogram of Regional Classification*

Dendrogram showing the fusing of the sites.

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)
WAGEORIV	0001	1	1	1	1	1	14	Czc	Colluvium		Acacia ancistrocarpa scattered tall
WAGEORIV	0077	1	1	1	1	1	20	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low
WAHAMPAR	1157	1	1	1	1	1	16	Qa	Alluvium - unconsolidated		Acacia pyrifolia, Hakea suberea,
WAGEORIV	0124	1	1	1	1	1	9	AFhy	Lyre Creek Member HARDEY		Triodia wiseana hummock grassland.
WAMTHER	0573	1	1	1	1	1	17	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over
WAGEORIV	0007	1	1	1	1	2	17	Czc	Colluvium		Acacia aff. inaequilatera (MET
WAGEORIV	0008	1	1	1	1	2	25	Czc	Colluvium		Triodia wiseana hummock grassland.
WAGEORIV	0025	1	1	1	1	3	40	Qa	Alluvium - unconsolidated		Acacia inaequilatera high open
WAGEORIV	0100	1	1	1	1	3	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low
WAGEORIV	0130	1	1	1	1	3	23	AFhy	Lyre Creek Member HARDEY		Acacia aff. inaequilatera (MET
WAMTLEA	0401	1	1	1	1	3	26	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland
WAHAMPAR	1159	1	1	1	1	3	18	Qc	Colluvium		Acacia ancistrocarpa, Acacia pyrifolia
WAMTLEA	0384	1	1	1	1	4	24	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs
WAMTLEA	0403	1	1	1	1	4	20	Czc	Colluvium		Triodia wiseana hummock grassland.
WAMTHER	0435	1	1	1	1	4	18	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs
WAGEORIV	0064	1	1	1	2	5	18	Czc	Colluvium		Acacia aff. inaequilatera (MET
WAHAMPAR	1135	1	1	1	2	5	20	AFhy	Lyre Creek Member HARDEY		Triodia wiseana hummock grassland.
WAMTHER	0597	1	1	1	2	5	14	Qs	Eolian sand [siliceous]		Triodia wiseana hummock grassland.
WAMTHER	0598	1	1	1	2	5	9	Qs	Eolian sand [siliceous]		Triodia wiseana hummock grassland.
WAGEORIV	0032	1	1	2	3	6	14	Qa	Alluvium - unconsolidated		Corchorus sp. Millstream (A.S.
WAGEORIV	0568	1	1	2	3	6	15	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over
WAMTHER	0359A	1	1	2	3	6	12	AFt	TUMBIANA FORMATION		Triodia wiseana hummock grassland.
WAGEORIV	0137	1	1	2	3	7	16	AFhy	Lyre Creek Member HARDEY		Heliotropium cunninghamii low open
WAHAMPAR	1160	1	1	2	3	7	12	AFhy	Lyre Creek Member HARDEY		Triodia wiseana open hummock
WAGEORIV	0079	1	1	2	4	8	22	AFhy	Lyre Creek Member HARDEY		Triodia wiseana, Triodia pungens
WAGEORIV	0261	1	1	2	4	8	18	Czc	Colluvium		Eucalyptus leucophloia, Corymbia
WAMTHER	0356	1	1	2	4	8	14	AFk	KYLENA FORMATION or		Corymbia hamersleyana scattered low
WAMTHER	0244	1	1	2	4	8	20	AFhst	HARDEY FORMATION		Acacia pyrifolia scattered tall shrubs
WAGEORIV	0263	1	1	2	4	8	15	Czc	Colluvium		Triodia wiseana open hummock
WAGEORIV	0080	1	1	2	5	9	7	AFhy	Lyre Creek Member HARDEY		Triodia wiseana hummock grassland.
WAMTHER	0593	1	1	2	5	9	11	Qa	Alluvium - unconsolidated		Triodia wiseana hummock grassland.
WAGEORIV	0091	1	1	2	5	9	12	AFhy	Lyre Creek Member HARDEY		Triodia wiseana hummock grassland.
WAMTHER	0565	1	1	2	5	9	17	Czag	Alluvium		Triodia wiseana hummock grassland.
WAGEORIV	0084	1	1	2	5	10	21	Qa	Alluvium - unconsolidated		Acacia arida, Acacia pyrifolia
WAGEORIV	0093	1	1	2	5	10	18	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over
WAGEORIV	0089	1	1	2	5	10	24	AFhy	Lyre Creek Member HARDEY		Acacia arida, Acacia pyrifolia low
WAGEORIV	0085	1	1	2	5	10	21	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low
WAGEORIV	0570	1	1	2	5	10	17	Qs	Eolian sand [siliceous]		Acacia arida high open shrubland over
WAGEORIV	0011A	1	1	3	6	11	20	Czc	Colluvium		Grevillea pyramidalis, Acacia arida
WAHAMPAR	1133	1	1	3	6	11	11	AFhy	Lyre Creek Member HARDEY		Triodia pungens open hummock
WAGEORIV	0028	1	1	3	7	12	10	Czc	Colluvium		Corchorus sp. Millstream (A.S.
WAGEORIV	0082	1	1	3	7	12	9	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over
WAGEORIV	0135	1	1	3	7	12	13	AFhy	Lyre Creek Member HARDEY		Tephrosia densa low open shrubland
WAHAMPAR	1102	1	1	3	7	12	13	AFt	TUMBIANA FORMATION		Triodia wiseana open hummock
WAGEORIV	0044	1	1	3	7	12	9	Qa	Alluvium - unconsolidated		Acacia inaequilatera, Acacia
WAGEORIV	0127	1	1	3	7	12	12	Czc	Colluvium		Acacia inaequilatera scattered tall
WAGEORIV	0053	1	1	3	7	12	13	Czak	Alluvium		Triodia wiseana hummock grassland.
WAGEORIV	0057	1	1	3	7	12	14	AFhy	Lyre Creek Member HARDEY		Acacia arida scattered shrubs over
WAMTHER	0599	1	1	3	7	12	12	AFhst	HARDEY FORMATION		Grevillea pyramidalis scattered tall
WAGEORIV	0055	1	1	3	8	13	13	Czak	Alluvium		Acacia arida shrubland over Triodia
WAMTHER	0600	1	1	3	8	13	15	AFhy	Lyre Creek Member HARDEY		Acacia arida shrubland over Triodia
WAGEORIV	0113	1	1	3	8	14	9	AFt	TUMBIANA FORMATION		Low scattered herbland of Mollugo
WAMTHER	0323	1	1	3	8	14	9	AFhy	Lyre Creek Member HARDEY		Acacia arida shrubland over Triodia
WAMTHER	0333	1	1	3	8	14	13	d	Dolerite dykes		Acacia arida open heath over Triodia
WAGEORIV	0131	1	1	3	8	14	13	Czc	Colluvium		Triumfetta appendiculata scattered
WAMTHER	0594	1	1	3	8	14	15	Czc	Colluvium		Acacia arida shrubland over Triodia
WAGEORIV	0114	1	1	3	8	15	14	AFt	TUMBIANA FORMATION		Ficus platypoda var. platypoda
WAMTHER	0335	1	1	3	8	15	16	AFhy	Lyre Creek Member HARDEY		Tephrosia sp. B Kimberley Flora low
WAGEORIV	0035	1	1	4	9	16	14	Qa	Alluvium - unconsolidated		Acacia arida high shrubland over
WAGEORIV	0056	1	1	4	9	16	10	AFhy	Lyre Creek Member HARDEY		Corchorus sp. Millstream (A.S.
WAGEORIV	0060	1	1	4	9	16	8	AFk	KYLENA FORMATION or		Cullen lachnostachys, Corchorus sp.

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAGEORIV	0058	1	1	4	10	17	28	Czc	Colluvium		Acacia arida open shrubland over	65
WAGEORIV	0062	1	1	4	10	17	20	Czc	Colluvium		Corchorus laniflorus, Indigofera	66
WPI	TC015	1	1	4	10	17	25	PLWd	DUCK CREEK DOLOMITE		Stylobasium spathulatum high open	67
WAGEORIV	0073	1	1	4	10	18	35	AFhy	Lyre Creek Member HARDEY		Tephrosia rosea var. clementii, Acacia	68
WAGEORIV	0074	1	1	4	10	18	22	AFhy	Lyre Creek Member HARDEY		Acacia arida scattered shrubs over	69
WAGEORIV	0094	1	1	4	10	18	21	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over	70
WAMTHER	0572	1	1	4	10	18	17	Qa	Alluvium - unconsolidated		Acacia arida open shrubland over	71
WAGEORIV	0003	1	2	5	11	19	19	Czc	Colluvium		Acacia ancistrocarpa open scrub over	72
WAMTHER	0602	1	2	5	11	19	19	AFhst	HARDEY FORMATION		Acacia ancistrocarpa scattered tall	73
WAGEORIV	0004	1	2	5	11	19	21	Czc	Colluvium		Acacia ancistrocarpa scattered tall	74
WAGEORIV	0005	1	2	5	11	19	19	AFhy	Lyre Creek Member HARDEY		Acacia aff. inaequilatera (MET	75
WPI	CP016	1	2	5	11	20	40	AFk	KYLENA FORMATION or		Acacia ancistrocarpa high open	76
WPI	CP052	1	2	5	11	20	33	Qp	Elluvim, colluvium, gilgais		Acacia atkinsiana open shrubland over	77
WPI	CP018	1	2	5	11	20	30	Plk			Acacia synchronicia open shrubland	78
WPI	TC017	1	2	5	11	20	25	PLWb	CHEELA SPRINGS BASALT		Triodia wiseana open hummock	79
WAHAMPAR	1095	1	2	5	12	21	21	Czcb	Colluvium		Acacia ancistrocarpa high to open	80
WPI	TC012	1	2	5	12	21	29	PLWb	CHEELA SPRINGS BASALT		Acacia arida and Senna glutinosa ssp.	81
WPI	CP023	1	2	5	12	21	30	AHd	WITTENOOM FORMATION		Acacia bivenosa and Petalostylis	82
2491	FMG01	1	2	5	13	22	17	PLHj	WEELI WOLLI FORMATION		Acacia inaequilatera scattered tall	83
HARDAM	HD189	1	2	5	13	23	20	d	Dolerite dykes		Ipomoea costata scattered shrubs over	84
WAHAMPAR	1081	1	2	6	14	24	20	AFm	MADDINA FORMATION or		Acacia inaequilatera high open	85
WAHAMPAR	1083	1	2	6	14	24	21	AFm	MADDINA FORMATION or		Acacia inaequilatera scattered tall	86
WAHAMPAR	1088	1	2	6	14	24	16	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia open	87
WAHAMPAR	1155	1	2	6	14	25	23	Qa	Alluvium - unconsolidated		Acacia trachycarpa scattered tall	88
WAHAMPAR	1174	1	2	6	14	25	20	AFhst	HARDEY FORMATION		Triodia wiseana open hummock	89
WAMTLEA	0379	1	2	7	15	26	18	Czc	Colluvium		Acacia pyrifolia scattered tall shrubs	90
BURPEN	B071	1	2	7	15	26	16	AyG	GIDLEY GRANOPHYRE		Triodia wiseana (Burrup form),	91
FMG-2006	P8T	1	2	7	16	27	18	AFm	MADDINA FORMATION or		yellow flower Malv (P8T-01),	92
PPB	V	1	2	7	16	28	17				G.pyramidalis 1-2m +	93
WAGEORIV	0040	1	3	8	17	29	6	Qa	Alluvium - unconsolidated		Triodia wiseana hummock grassland.	94
WAMTHER	0564	1	3	8	17	29	8	AFhy	Lyre Creek Member HARDEY		Acacia arida open shrubland over	95
WAGEORIV	0070	1	3	8	17	30	11	Qab	Alluvium - unconsolidated & gilgai		Acacia bivenosa, Petalostylis	96
WAHAMPAR	1164	1	3	8	17	30	8	AFhy	Lyre Creek Member HARDEY		Acacia trachycarpa scattered shrubs	97
WAGEORIV	0071	1	3	8	17	30	15	Qa	Alluvium - unconsolidated		Acacia arida high shrubland over	98
WAHAMPAR	1121	1	3	8	17	31	23	AFk	KYLENA FORMATION or		Corymbia hamersleyana scattered low	99
WAHAMPAR	1148	1	3	8	17	31	17	AFhy	Lyre Creek Member HARDEY		Acacia trachycarpa, Acacia arida,	100
WAGEORIV	0125	1	3	9	18	32	11	AFhy	Lyre Creek Member HARDEY		Acacia pyrifolia scattered tall shrubs	101
WAMTLEA	0419	1	3	9	18	32	15	Czcb	Colluvium		Acacia pyrifolia scattered shrubs over	102
PPB	O	1	3	9	18	32	7				Vegetation description similar to	103
WAMTHER	0326	1	3	9	19	33	7	AFk	KYLENA FORMATION or		Triodia wiseana hummock grassland.	104
WAMTHER	0342	1	3	9	19	33	9	AFk	KYLENA FORMATION or		Indigofera monophylla (grey leaflet	105
WAMTHER	0357	1	3	9	19	33	9	AFk	KYLENA FORMATION or		Acacia aff. inaequilatera (MET	106
WAMTLEA	0410	1	3	9	19	33	9	AFm	MADDINA FORMATION or		Triodia wiseana hummock grassland.	107
WPI	CP145	1	3	9	19	33	12	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open	108
WAGEORIV	0066	1	3	10	20	34	15	Czc	Colluvium		Goodenia stobbsiana, Corchorus	109
WAHAMPAR	1180	1	3	10	20	34	14	AFhst	HARDEY FORMATION		Acacia maitlandii high shrubland over	110
WAHAMPAR	1182	1	3	10	20	34	16	AFhst	HARDEY FORMATION		Acacia ancistrocarpa open scrub over	111
WAMTHER	0243	1	3	10	20	35	32	AFhst	HARDEY FORMATION		Corymbia hamersleyana scattered low	112
WAHAMPAR	1139	1	3	10	20	35	38	AFhy	Lyre Creek Member HARDEY		Dampiera candicans, Corchorus	113
WAGEORIV	0283	1	3	10	21	36	13	AFm	MADDINA FORMATION or		Triodia wiseana hummock grassland.	114
WAGEORIV	0299	1	3	10	21	36	8	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	115
WAGEORIV	0295	1	3	10	21	36	9	AFm	MADDINA FORMATION or		Acacia tumida high open shrubland	116
WAGEORIV	0300	1	3	10	21	36	15	AFm	MADDINA FORMATION or		Acacia maitlandii shrubland over	117
WAGEORIV	0122	1	3	10	22	37	9	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	118
WAGEORIV	0095	1	3	11	23	38	6	AFhy	Lyre Creek Member HARDEY		Acacia bivenosa open shrubland over	119
WAMTHER	0350A	1	3	11	23	38	8	AFk	KYLENA FORMATION or		Eucalyptus leucophloia, Corymbia	120
WAHAMPAR	1105	1	3	11	23	38	12	AFt	TUMBIANA FORMATION		Corymbia hamersleyana low open	121
WAGEORIV	0133	1	3	11	23	38	13	Czc	Colluvium		Acacia ancistrocarpa, Cassia glutinosa	122
WAMTHER	0456	1	3	11	23	38	11	AFt	TUMBIANA FORMATION		Acacia monticola closed heath.	123
WAGEORIV	0132	1	3	11	24	39	7	Czc	Colluvium		Acacia ancistrocarpa open scrub over	124
WAMTLEA	0378	1	3	11	24	39	9	Czc	Colluvium		Acacia pyrifolia scattered tall shrubs	125
WAGEORIV	0289	1	3	11	24	39	12	AFm	MADDINA FORMATION or		Acacia pyrifolia and Grevillea	126
WAMTHER	0587	1	3	11	24	39	15	Qs	Eolian sand [siliceous]		Triodia wiseana hummock grassland.	127
WAMTLEA	0370	1	3	11	24	39	15	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	128
WAMTLEA	0420	1	3	11	24	39	17	Czcb	Colluvium		Acacia pyrifolia scattered tall shrubs	129

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAFORSLO	0256	1	3	11	24	40	22	Czc	Colluvium		Eucalyptus leucophloia scattered low	130
WAMTLEA	0395	1	3	11	24	40	27	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	131
WAMTLEA	0392	1	3	11	24	40	18	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	132
WAGEORIV	0296	1	3	11	25	41	9	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	133
WAMTLEA	0393	1	3	11	25	41	12	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland	134
WAMTLEA	0387	1	3	11	25	41	12	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	135
WAMTLEA	0386	1	3	11	25	41	21	AFm	MADDINA FORMATION or		Cassia glutinosa open shrubland over	136
CAPPRE	M018	1	3	11	25	41	18	PLHb	BROCKMAN IRON FORMATION		Occasional tall shrubs over 2-10%	137
WAMTHER	0432	1	3	11	25	42	11	AFm	MADDINA FORMATION or		Acacia pyrifolia high shrubland over	138
WAMTHER	0437	1	3	11	25	42	16	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland	139
WAGEORIV	0069	1	3	12	26	43	12	Qab	Alluvium - unconsolidated & gilgai		Acacia arida scattered shrubs over	140
WAMTHER	0318	1	3	12	26	43	13	AFhy	Lyre Creek Member HARDEY		Acacia arida shrubland over Triodia	141
WAHAMPAR	1131	1	3	12	26	43	13	AFhy	Lyre Creek Member HARDEY		Low scattered Corchorus lasiocarpus	142
WAMTHER	0352	1	3	12	26	43	10	AFk	KYLENA FORMATION or		Triodia wiseana hummock grassland.	143
WAMTLEA	0413	1	3	12	26	43	6	Czcb	Colluvium		Triodia wiseana hummock grassland.	144
WAMTLEA	0406	1	3	12	26	43	13	Czc	Colluvium		Triodia wiseana hummock grassland.	145
WAGEORIV	0111	1	3	12	26	44	11	AFt	TUMBIANA FORMATION		Triodia wiseana hummock grassland.	146
WAGEORIV	0302	1	3	12	26	44	12	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	147
WAGEORIV	0281	1	3	12	26	44	17	AFm	MADDINA FORMATION or		Triodia wiseana open hummock	148
WAGEORIV	0290	1	3	12	26	44	16	AFm	MADDINA FORMATION or		Indigofera monophylla (grey leaflet	149
WAGEORIV	0293	1	3	12	26	44	8	AFm	MADDINA FORMATION or		Indigofera monophylla (grey leaflet	150
WAGEORIV	0301	1	3	12	26	44	13	AFt	TUMBIANA FORMATION		Triodia wiseana hummock grassland.	151
WAGEORIV	0264	1	3	12	27	45	14	Czc	Colluvium		Acacia pyrifolia scattered tall shrubs	152
WAGEORIV	0268	1	3	12	27	45	18	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	153
WAGEORIV	0274	1	3	12	27	45	13	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	154
WAGEORIV	0266	1	3	12	27	45	19	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	155
WAGEORIV	0275	1	3	12	27	45	20	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	156
WAMTLEA	0382	1	3	12	27	45	28	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	157
WAGEORIV	0272	1	3	12	27	46	12	AFt	TUMBIANA FORMATION		Acacia pyrifolia scattered shrubs over	158
WAMTHER	0433	1	3	12	27	46	12	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland	159
WAHAMPAR	1178	1	3	12	27	46	8	AFhst	HARDEY FORMATION		Triodia wiseana open hummock	160
WAMTHER	0428	1	3	12	27	46	8	Czcb	Colluvium		Triodia wiseana hummock grassland.	161
WAMTHER	0440	1	3	12	27	46	15	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland	162
WAGEORIV	0246	1	4	13	28	47	30	Czc	Colluvium		Eucalyptus leucophloia scattered low	163
WAGEORIV	0249	1	4	13	28	47	35	Czc	Colluvium		Eucalyptus leucophloia scattered low	164
WAGEORIV	0247	1	4	13	28	47	30	Czc	Colluvium		Eucalyptus leucophloia scattered low	165
WAGEORIV	0259	1	4	13	28	47	22	Czc	Colluvium		Eucalyptus leucophloia scattered low	166
WAMTLEA	0400	1	4	13	28	47	21	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	167
WAMTLEA	0505	1	4	13	28	47	26	AFm	MADDINA FORMATION or		Cassia luerssenii low open shrubland	168
WAMTLEA	0539	1	4	13	28	47	29	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	169
WAMTLEA	0542	1	4	13	28	47	22	AFjsl	Mudstone, siltstone		Triodia wiseana open hummock	170
WAMTLEA	0540	1	4	13	28	47	21	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia low woodland	171
WAGEORIV	0298	1	4	13	29	48	23	AFm	MADDINA FORMATION or		Acacia pyrifolia high open shrubland	172
WAMTHER	0457	1	4	13	29	48	22	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	173
WAGEORIV	0304	1	4	13	29	48	18	Czc	Colluvium		Triodia wiseana, Triodia brizoides	174
WAGEORIV	0309	1	4	13	29	48	16	Czc	Colluvium		Acacia ancistrocarpa scattered shrubs	175
WAMTHER	0452	1	4	13	29	48	16	AFt	TUMBIANA FORMATION		Acacia pyrifolia scattered tall shrubs	176
WAMTLEA	0511	1	4	13	29	48	15	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	177
378	BUN56	1	4	13	29	48	26	Qc	Colluvium		Corymbia hamerslyana scattered low	178
378	BUN-MX	1	4	13	29	48	21	Qc	Colluvium		Corymbia hamersleyana scattered low	179
378	BUN63	1	4	13	29	48	19	Qac	Alluvial -clay, silt		Cassia prunocarpa, Acacia	180
WAMTHER	0341	1	5	14	30	49	18	d	Dolerite dykes		Eucalyptus leucophloia, Corymbia	181
WAFCBOR	1171	1	5	14	30	49	14	d	Dolerite dykes		Corymbia hamersleyana scattered low	182
WAMTHER	0351	1	5	14	30	50	19	AFk	KYLENA FORMATION or		Eucalyptus leucophloia scattered low	183
WAMTHER	0359	1	5	14	30	50	14	AFt	TUMBIANA FORMATION		Corymbia hamersleyana low open	184
WAMTHER	0449	1	5	14	30	50	20	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia low open	185
WAMTHER	0450	1	5	14	30	50	15	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia, Corymbia	186
WAMTHER	0451	1	5	14	30	50	16	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	187
WAMTHER	0454	1	5	14	31	51	19	AFt	TUMBIANA FORMATION		Acacia tumida open scrub over	188
WAHAMPAR	1092	1	5	14	31	51	16	AFt	TUMBIANA FORMATION		Corymbia hamersleyana low open	189
WAHAMPAR	1084	1	5	14	31	51	19	AFt	TUMBIANA FORMATION		Corymbia hamersleyana, Acacia	190
WAHAMPAR	1090	1	5	14	31	51	18	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia, Acacia	191
WAFCBOR	1063	1	5	14	31	51	19	Czc	Colluvium		Eucalyptus leucophloia, Corymbia	192
WAFCBOR	1163	1	5	14	31	52	32	PLHb	BROCKMAN IRON FORMATION		Corymbia hamersleyana, Eucalyptus	193
WAFCBOR	1165	1	5	14	31	52	33	PLHb	BROCKMAN IRON FORMATION		Corymbia hamersleyana scattered low	194

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAMTHER	0354	1	5	15	32	53	15	AFk	KYLENA FORMATION or		Grevillea pyramidalis open shrubland	195
WAMTHER	0368	1	5	15	32	53	24	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	196
WAMTHER	0363	1	5	15	32	53	14	AFt	TUMBIANA FORMATION		Cajanus cinereus open heath over	197
WAMTHER	0355	1	5	15	32	53	18	AFk	KYLENA FORMATION or		Acacia aff. inaequilatera (MET	198
WAMTHER	0362	1	5	15	32	53	12	AFt	TUMBIANA FORMATION		Triodia wiseana open hummock	199
WAMTHER	0366	1	5	15	32	53	10	AFt	TUMBIANA FORMATION		Acacia aff. inaequilatera (MET	200
WAMTHER	0365	1	5	15	32	54	18	AFt	TUMBIANA FORMATION		Triodia wiseana open hummock	201
WAMTHER	0455	1	5	15	32	54	30	AFt	TUMBIANA FORMATION		Acacia pyrifolia scattered tall shrubs	202
WAMTHER	0453	1	5	15	32	54	23	AFt	TUMBIANA FORMATION		Acacia pyrifolia high open shrubland	203
WAHAMPAR	1109	1	5	15	32	54	34	AFk	KYLENA FORMATION or		Corymbia hamersleyana, Hakea	204
WAMTHER	0367	1	5	15	32	54	28	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	205
WAMTHER	0445	1	5	15	32	54	20	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia low open	206
WAMTHER	0443	1	5	15	32	54	38	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia low open	207
WAMTHER	0444	1	5	15	32	54	27	AFt	TUMBIANA FORMATION		Triodia wiseana hummock grassland.	208
WAMTHER	0446	1	5	15	32	54	18	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia scattered low	209
WAMTHER	0447	1	5	15	32	54	15	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia low open	210
WAGEORIV	0002	2	6	16	33	55	13	Czc	Colluvium		Acacia ancistrocarpa, Corchorus	211
WAGEORIV	0107	2	6	16	33	55	10	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	212
WAGEORIV	0134	2	6	16	33	55	12	Czc	Colluvium		Grevillea pyramidalis scattered shrubs	213
WAGEORIV	0138	2	6	16	33	55	8	Czc	Colluvium		Corchorus laniflorus open shrubland	214
WAGEORIV	0013	2	6	16	33	56	13	Qab	Alluvium - unconsolidated & gilgai		Acacia inaequilatera high open	215
WAGEORIV	0099	2	6	16	33	56	6	Qa	Alluvium - unconsolidated		Tephrosia rosea var. clementii,	216
WAGEORIV	0014	2	6	16	33	56	12	Qab	Alluvium - unconsolidated & gilgai		Acacia inaequilatera scattered shrubs	217
WAGEORIV	0015	2	6	16	33	56	9	Qab	Alluvium - unconsolidated & gilgai		Triodia pungens hummock grassland.	218
WAGEORIV	0059	2	7	17	34	57	16	AFk	KYLENA FORMATION or		Cassia venusta scattered shrubs over	
WAGEORIV	0292	2	7	17	34	57	15	AFm	MADDINA FORMATION or		Indigofera monophylla (grey leaflet	220
WAHAMPAR	1100	2	7	17	34	57	15	AFt	TUMBIANA FORMATION		Pentalepis trichodesmoides, Cajanus	221
WAHAMPAR	1162	2	7	17	34	57	18	AFhy	Lyre Creek Member HARDEY		Gossypium australe high open	222
WAMTHER	0327	2	7	17	34	58	15	AFk	KYLENA FORMATION or		Cajanus cinereus shrubland over	223
WAMTHER	0329	2	7	17	34	58	13	AFk	KYLENA FORMATION or		Cajanus cinereus and Gossypium	224
WAMTHER	0339	2	7	17	34	58	14	AFk	KYLENA FORMATION or		Cajanus cinereus scattered low shrubs	225
WAHAMPAR	1112	2	7	17	34	58	7	AFk	KYLENA FORMATION or		Cajanus cinereus scattered low shrubs	226
WAGEORIV	0106A	2	7	17	35	59	7	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	227
WAGEORIV	0123	2	7	17	35	59	14	Qa	Alluvium - unconsolidated		Triodia wiseana hummock grassland.	228
WAMTHER	0336	2	7	17	35	59	8	d	Dolerite dykes		Acacia arida shrubland over Triodia	229
WAGEORIV	0112	2	7	17	35	59	11	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	230
WAGEORIV	0116	2	7	17	35	59	9	AFt	TUMBIANA FORMATION		Indigofera monophylla (grey leaflet	231
WAHAMPAR	1118	2	7	17	35	59	9	AFk	KYLENA FORMATION or		Corchorus laniflorus and Euphorbia	232
WAHAMPAR	1130	2	7	17	35	59	8	AFhy	Lyre Creek Member HARDEY		Grevillea wickhamii var. aprica and	233
WAHAMPAR	1122	2	7	17	35	59	8	AFk	KYLENA FORMATION or		Grevillea pyramidalis scattered low	234
WAHAMPAR	1120	2	7	17	35	59	9	AFk	KYLENA FORMATION or		Cajanus cinereus open shrubland over	235
WAHAMPAR	1126	2	7	17	35	59	10	PLWd	DUCK CREEK DOLOMITE		Triodia wiseana hummock grassland.	236
WAHAMPAR	1152	2	7	17	35	59	9	AFhy	Lyre Creek Member HARDEY		Gossypium australe high open	237
WAHAMPAR	1170	2	7	17	35	59	18	AFhst	HARDEY FORMATION		Triodia wiseana open to very open	238
WAGEORIV	0104	2	7	17	36	60	9	AFhy	Lyre Creek Member HARDEY		Cajanus cinereus, Gossypium australe	239
WAGEORIV	0303	2	7	17	36	60	16	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	240
WAHAMPAR	1086	2	7	17	36	60	20	AFt	TUMBIANA FORMATION		Corymbia hamersleyana, Acacia	241
WPI	UCW007	2	7	17	36	60	15	PLWq	BEASLEY RIVER QUARTZITE		Corymbia hamersleyana scattered low	242
WAMTHER	0331	2	7	17	36	61	9	AFk	KYLENA FORMATION or		Acacia acradenia scattered tall shrubs	243
WAGEORIV	0265	2	7	17	37	62	10	AFm	MADDINA FORMATION or		Acacia holosericea and Grevillea	244
WAHAMPAR	1094	2	7	17	37	62	25	AFt	TUMBIANA FORMATION		Brachychiton acuminatus scattered	245
WPI	CP119	2	7	17	37	63	11	PLHb	BROCKMAN IRON FORMATION		Terminalia supranitifolia scattered low	246
WAGEORIV	0103	2	8	18	38	64	8	Qa	Alluvium - unconsolidated		Triodia wiseana hummock grassland.	247
WAGEORIV	0115	2	8	18	38	64	13	AFt	TUMBIANA FORMATION		Acacia aff. inaequilatera (MET	248
WAGEORIV	0282	2	8	18	38	64	6	AFm	MADDINA FORMATION or		Acacia pyrifolia scattered tall shrubs	249
FMG-2006	P8T-T	2	8	18	38	64	6	AFm	MADDINA FORMATION or		1 - yellow flw MalvP8T-T-01, yellow	250
BURPEN	B172	2	8	19	39	65	9	AyGo	GIDLEY GRANOPHYRE		Ipomoea costata, Indigofera	251
BURPEN	B175	2	8	19	40	66	6	AyGo	GIDLEY GRANOPHYRE		Pittosporum phylliraeoides var.	252
WAGEORIV	0009	3	9	20	41	67	29	Czc	Colluvium		Acacia ancistrocarpa, Acacia arida,	253
WAGEORIV	0063	3	9	20	41	67	37	Czc	Colluvium		Acacia arida scattered shrubs over	254
WAGEORIV	0068	3	9	20	41	67	39	Czc	Colluvium		Terminalia canescens, Corymbia	255
WAGEORIV	0101	3	9	20	41	67	28	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	256
WAGEORIV	0102	3	9	20	41	67	41	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	257
WAGEORIV	0012	3	9	20	41	68	35	Czc	Colluvium		Corymbia hamersleyana scattered low	258
WAHAMPAR	1082	3	9	20	41	68	34	AFm	MADDINA FORMATION or		Corymbia hamersleyana low trees	259

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAGEORIV	0029	3	9	20	42	69	26	Czc	Colluvium		Acacia inaequilatera scattered shrubs	260
WAGEORIV	0038	3	9	20	42	69	28	Qa	Alluvium - unconsolidated		Acacia arida, Acacia trachycarpa high	261
WAGEORIV	0050	3	9	20	42	69	30	AFhy	Lyre Creek Member HARDEY		Acacia arida scattered shrubs over	262
WAGEORIV	0049	3	9	20	42	69	21	Qao	Alluvium - unconsolidated		Acacia arida shrubland over Cassia	263
WAGEORIV	0045	3	9	20	42	69	17	Qao	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	264
WAGEORIV	0033	3	9	20	42	70	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	265
WAGEORIV	0036	3	9	20	42	70	22	Qa	Alluvium - unconsolidated		Triodia wiseana, Triodia pungens,	266
WAGEORIV	0016	3	9	21	43	71	19	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	267
WAGEORIV	0022	3	9	21	43	71	20	Qa	Alluvium - unconsolidated		Cullen leucanthum, *Aerva javanica	268
WAGEORIV	0019	3	9	21	43	71	28	Qa	Alluvium - unconsolidated		Acacia trachycarpa high shrubland	269
WAGEORIV	0021	3	9	21	43	72	13	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	270
WAGEORIV	0023	3	9	21	43	72	17	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	271
WAGEORIV	0118	3	9	21	44	73	14	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	272
WAHAMPAR	1136	3	9	21	44	73	10	Qa	Alluvium - unconsolidated		Cajanus cinereus open scrub over	273
WAGEORIV	0141	3	9	21	44	73	26	Qa	Alluvium - unconsolidated		Terminalia canescens, Eucalyptus	274
WAGEORIV	0143	3	9	21	44	73	26	Czc	Colluvium		Terminalia canescens scattered low	275
WAGEORIV	0119	3	9	21	45	74	13	Qa	Alluvium - unconsolidated		Grevillea pyramidalis, Acacia	276
WAHAMPAR	1127A	3	9	21	45	74	22	Qa	Alluvium - unconsolidated		Grevillea pyramidalis, Hakea suberea	277
WAHAMPAR	1176	3	9	21	45	74	22	Qa	Alluvium - unconsolidated		Acacia trachycarpa, Acacia pyrifolia	278
WAMTHER	0241	3	9	21	45	75	27	Qa	Alluvium - unconsolidated		Eucalyptus victrix woodland over	279
WAHAMPAR	1134	3	9	21	45	75	20	Qa	Alluvium - unconsolidated		Grevillea pyramidalis scattered low	280
WAMTHER	0242	3	9	21	45	75	27	Qa	Alluvium - unconsolidated		Cassia notabilis, Corchorus sp.	281
WAMTHER	0574	3	9	21	45	75	31	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered trees over	282
WAHAMPAR	1125	3	9	21	45	75	34	Qa	Alluvium - unconsolidated		Acacia pyrifolia high shrubland with	283
WAGEORIV	0011	3	10	22	46	76	9	Czc	Colluvium		Triodia longiceps, Triodia pungens	284
WAMTHER	0240	3	10	22	46	77	15	Qa	Alluvium - unconsolidated		Triodia pungens hummock grassland.	285
WAGEORIV	0027	3	10	23	47	78	23	Czc	Colluvium		Corymbia hamersleyana scattered low	286
WAGEORIV	0039	3	10	23	47	78	14	Qa	Alluvium - unconsolidated		Acacia xiphophylla scattered tall	287
WAGEORIV	0041	3	10	23	47	78	17	Qa	Alluvium - unconsolidated		Acacia inaequilatera, Acacia pyrifolia	288
WAGEORIV	0042	3	10	23	48	79	13	Qa	Alluvium - unconsolidated		Cassia oligophylla scattered shrubs	289
WAGEORIV	0043	3	10	23	48	79	30	Qa	Alluvium - unconsolidated		Acacia inaequilatera, Grevillea	290
WAFCBOR	1066	3	10	23	48	79	25	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open	291
WAFCBOR	1181	3	10	23	48	79	25	Czc	Colluvium		Corymbia hamersleyana low open	292
WAGEORIV	0092	3	10	23	48	80	22	AFhy	Lyre Creek Member HARDEY		Acacia pyrifolia scattered tall shrubs	293
WAGEORIV	0307	3	10	23	48	80	26	Czc	Colluvium		Eucalyptus leucophloia, Corymbia	294
WAGEORIV	0109	3	11	24	49	81	19	AFt	TUMBIANA FORMATION		Flueggea virosa ssp. melanthesoides	295
WAMTLEA	0372	3	11	24	49	81	25	AFm	MADDINA FORMATION or		Acacia tumida high shrubland over	296
WAGEORIV	0284	3	11	24	49	81	21	AFm	MADDINA FORMATION or		Terminalia canescens scattered low	297
WAMTHER	0360	3	11	24	49	81	29	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	298
WAMTHER	0369	3	11	24	49	81	27	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	299
WAGEORIV	0270	3	11	24	49	82	25	AFm	MADDINA FORMATION or		Corymbia hamersleyana low open	300
WAHAMPAR	1113	3	11	24	49	82	18	AFk	KYLENA FORMATION or		Corymbia hamersleyana, Acacia	301
WAHAMPAR	1115	3	11	24	49	82	28	AFk	KYLENA FORMATION or		Acacia tumida low open woodland	302
WAMTHER	0458	3	11	24	49	83	36	AFt	TUMBIANA FORMATION		Acacia arida, Flueggea virosa ssp.	303
WAMTHER	0459	3	11	24	49	83	26	AFt	TUMBIANA FORMATION		Corymbia hamersleyana, Eucalyptus	304
WAHAMPAR	1097	3	11	24	49	83	43	AFt	TUMBIANA FORMATION		Terminalia canescens low open	305
WAHAMPAR	1101	3	11	24	49	83	28	AFt	TUMBIANA FORMATION		Corymbia hamersleyana scattered low	306
WAHAMPAR	1119	3	11	24	49	83	30	AFk	KYLENA FORMATION or		Eucalyptus victrix low woodland with	307
WAHAMPAR	1107	3	11	24	49	83	23	AFk	KYLENA FORMATION or		Acacia pyrifolia high open shrubland	308
WAHAMPAR	1099	3	11	24	49	83	25	AFt	TUMBIANA FORMATION		Acacia coriacea ssp. pendens low	309
WAHAMPAR	1117	3	11	24	49	83	32	AFk	KYLENA FORMATION or		Schoenus falcatus, Eriachne sp. aff.	310
WAHAMPAR	1129	3	11	24	50	84	32	AFhy	Lyre Creek Member HARDEY		Acacia arida high shrubland over	311
WAHAMPAR	1137	3	11	24	50	84	47	AFhy	Lyre Creek Member HARDEY		Corymbia hamersleyana scattered low	312
WAHAMPAR	1147	3	11	24	50	84	17	AFhy	Lyre Creek Member HARDEY		Acacia tumida low open forest over	313
WAGEORIV	0248	3	12	25	51	85	26	Czc	Colluvium		Eucalyptus leucophloia scattered low	314
WAMTLEA	0476	3	12	25	51	85	22	AHm	MARRA MAMBA IRON		Acacia ancistrocarpa open scrub over	315
WAMTLEA	0385	3	12	25	52	86	24	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	316
WAMTLEA	0396	3	12	25	52	86	24	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	317
WAMTHER	0436	3	12	25	52	86	21	AFm	MADDINA FORMATION or		Acacia tumida open scrub over	318
WAMTLEA	0402	3	12	25	52	87	24	AFm	MADDINA FORMATION or		Acacia tumida, Cajanus cinereus	319
WAMTLEA	0414	3	12	26	53	88	32	AFm	MADDINA FORMATION or		Acacia ancistrocarpa open scrub over	320
WAMTLEA	0423	3	12	26	53	88	27	Czcb	Colluvium		Acacia pyrifolia scattered tall shrubs	321
WAMTHER	0427	3	12	26	53	88	38	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	322
WAMTHER	0429	3	12	26	53	88	39	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	323
308	MATH21	3	12	26	54	89	53	AHd	WITTENOOM FORMATION		Corymbia candida subsp. candida tall	324

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
308	MEAS06	3	12	26	54	89	35	Qp	Elluvim, colluvium, gilgais		Acacia farnseana scattered tall shrubs	325
WAGEORIV	0010	4	13	27	55	90	21	Qab	Alluvium - unconsolidated & gilgai		Clerodendrum floribundum var.	326
WAHAMPAR	1114	4	13	27	55	90	17	AFk	KYLENA FORMATION or		Clerodendrum floribundum var.	327
WAMTHER	0348	4	13	27	55	90	14	AFk	KYLENA FORMATION or		Terminalia canescens low open	328
WAGEORIV	0061	4	13	27	55	90	19	AFk	KYLENA FORMATION or		Brachychiton acuminatus, Terminalia	329
WAMTHER	0338	4	13	27	55	91	13	AFk	KYLENA FORMATION or		Terminalia canescens low open	330
WAHAMPAR	1166	4	13	27	55	91	10	AFhy	Lyre Creek Member HARDEY		Terminalia canescens low open	331
WAGEORIV	0105	4	13	28	56	92	14	AFt	TUMBIANA FORMATION		Ficus platypoda var. platypoda	332
WAGEORIV	0106	4	13	28	56	92	18	AFt	TUMBIANA FORMATION		Terminalia canescens low open	333
WAGEORIV	0117	4	13	28	56	92	23	AFt	TUMBIANA FORMATION		Terminalia canescens scattered low	334
WAGEORIV	0129	4	13	28	56	92	26	Czc	Colluvium		Terminalia canescens low woodland	335
WAGEORIV	0273	4	13	28	57	93	31	AFm	MADDINA FORMATION or		Ventilago viminalis, Corymbia	336
WAGEORIV	0286	4	13	28	57	93	18	AFm	MADDINA FORMATION or		Grevillea pyramidalis, Acacia	337
WAGEORIV	0277	4	13	28	57	93	27	AFm	MADDINA FORMATION or		Acacia coriacea ssp. pendens, Hakea	338
WPI	CP038r	4	13	28	57	94	38	Qc	Colluvium		Terminalia canescens low open	339
FMG-2006	A5 Track	4	14	29	58	95	12					340
PPB	M	4	15	30	59	96	9				Grevillea pymmidata? Brachychiton	341
PPB	P	4	15	30	59	97	13				High open shrubland (A.pyrifolia/ A.	342
PPB	N2	4	15	30	60	98	8				Bp11 same vegetation type	343
PPB	Z	4	15	30	61	99	9				Y vegetation type is adjacent	344
WAGEORIV	0017	5	16	31	62	100	22	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	345
WAGEORIV	0020	5	16	31	62	100	42	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	346
WAGEORIV	0037	5	16	31	62	100	40	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	347
WAGEORIV	0075	5	16	31	62	100	66	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	348
WAGEORIV	0088	5	16	31	62	100	40	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	349
WAGEORIV	0569	5	16	31	62	100	47	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	350
WAGEORIV	0054	5	16	31	62	100	26	Czak	Alluvium		Terminalia canescens low woodland	351
WAGEORIV	0072	5	16	31	62	100	39	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	352
WAGEORIV	0076	5	16	31	62	100	26	AFhy	Lyre Creek Member HARDEY		Acacia pyrifolia open shrubland over	353
WAMTHER	0337	5	16	31	62	100	30	AFhy	Lyre Creek Member HARDEY		Terminalia canescens and Flueggea	354
WAGEORIV	0096	5	16	31	62	101	29	AFhy	Lyre Creek Member HARDEY		Eucalyptus camaldulensis var. obtusa	355
WAGEORIV	0136	5	16	31	62	101	14	AFhy	Lyre Creek Member HARDEY		Triodia wiseana scattered hummocks	356
WAGEORIV	0097	5	16	31	63	102	27	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open forest	357
WAGEORIV	0126	5	16	31	63	102	27	Qa	Alluvium - unconsolidated		Eucalyptus victrix low woodland over	358
WAGEORIV	0098	5	16	31	63	102	30	AFhy	Lyre Creek Member HARDEY		Eucalyptus victrix scattered low trees	359
WAHAMPAR	1085	5	16	31	63	103	25	AFm	MADDINA FORMATION or		Eucalyptus victrix and Terminalia	360
WAHAMPAR	1087	5	16	31	63	103	28	AFm	MADDINA FORMATION or		Terminalia canescens low open	361
WAMTHER	0245	5	16	31	63	104	40	Qa	Alluvium - unconsolidated		Melaleuca argentea, Eucalyptus	362
WAMTHER	0575B	5	16	31	63	104	39	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa,	363
WAHAMPAR	1127	5	16	31	63	104	53	Qa	Alluvium - unconsolidated		Eucalyptus victrix, Eucalyptus	364
WAHAMPAR	1161	5	16	31	63	104	49	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa,	365
WAHAMPAR	1153	5	16	31	63	104	65	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa,	366
WAGEORIV	0271	5	16	31	63	104	52	AFm	MADDINA FORMATION or		Eucalyptus camaldulensis var. obtusa	367
WAGEORIV	0287	5	16	31	63	104	40	AFm	MADDINA FORMATION or		Eucalyptus victrix, Eucalyptus	368
WAGEORIV	0285	5	16	31	63	104	34	AFm	MADDINA FORMATION or		Terminalia canescens, Erythrina	369
WAMTLEA	0373	5	16	31	63	104	24	AFm	MADDINA FORMATION or		Eucalyptus victrix low open woodland	370
WAHAMPAR	1123	5	16	31	63	104	35	PLWd	DUCK CREEK DOLOMITE		Eucalyptus victrix woodland over	371
WAHAMPAR	1103	5	16	31	63	104	36	AFt	TUMBIANA FORMATION		Eucalyptus victrix low open woodland	372
WAGEORIV	0110	5	16	31	64	105	24	AFt	TUMBIANA FORMATION		Eucalyptus victrix, Terminalia	373
WAHAMPAR	1141	5	16	31	64	105	19	AFhy	Lyre Creek Member HARDEY		Terminalia canescens, Acacia coriacea	374
CAPPRE	M006	5	17	32	65	106	36	Qac	Alluvial -clay, silt		Open Eucalyptus victrix over	375
CAPPRE	M059	5	17	32	65	106	48	PLHb	BROCKMAN IRON FORMATION		Eucalyptus victrix / E. camaldulensis	376
CAPPRE	M066	5	17	32	65	106	30	PLHb	BROCKMAN IRON FORMATION		Scattered Eucalyptus victrix over	377
CAPPRE	M084	5	17	32	65	106	34	Ag	Granite		Eucalyptus camaldulensis / E. victrix	378
CAPPRE	M099	5	17	32	65	106	33	Qac	Alluvial -clay, silt		Eucalyptus victrix open woodland to	379
CAPPRE	M101	5	17	32	65	106	44	Qac	Alluvial -clay, silt		Eucalyptus victrix low woodland to	380
CAPPRE	M124	5	17	32	65	106	36	Qr			Eucalyptus camaldulensis woodland	381
CAPPRE	M126	5	17	32	65	106	40	Qac	Alluvial -clay, silt		Melaleuca argentea / Eucalyptus	382
CAPPRE	M073	5	17	32	65	106	37	AFt	TUMBIANA FORMATION		Acacia ampliceps, A. coriacea high	383
06BP	12	5	18	33	66	107	24	AyG	GIDLEY GRANOPHYRE		Acacia coriacea subsp. coriacea low	384
BURPEN	B152	5	18	33	66	107	27	Qc	Colluvium		Eucalyptus victrix low open forest	385
BURPEN	B008	5	18	33	66	107	43	Qc	Colluvium		Terminalia canescens, (Eucalyptus	386
BURPEN	B015	5	18	33	66	107	22	AyG	GIDLEY GRANOPHYRE		Terminalia canescens, Eucalyptus	387
BURPEN	B020	5	18	33	66	107	34	AyG	GIDLEY GRANOPHYRE		Terminalia canescens low open forest	388
BURPEN	B167	5	18	33	66	107	30	Qc	Colluvium		Eucalyptus victrix low woodland over	389

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
BURPEN	B230	5	18	33	66	107	25	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix, (Terminalia	390
BURPEN	B237	5	18	33	66	107	32	Qc	Colluvium		Eucalyptus victrix low open forest	391
BURPEN	B007	5	18	33	66	107	35	Agr	Granitoid		Eucalyptus victrix scattered low trees	392
BURPEN	B040	5	18	33	66	107	39	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix low woodland over	393
BURPEN	B081	5	18	33	66	107	37	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix low open woodland	394
BURPEN	B193	5	18	33	66	107	39	AyGo	GIDLEY GRANOPHYRE		Eucalyptus victrix low open forest	395
BURPEN	B062	5	18	33	66	107	32	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix low open woodland	396
BURPEN	B017	5	18	33	66	107	35	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix low open woodland	397
BURPEN	B060	5	18	33	66	107	44	Qc	Colluvium		Eucalyptus victrix low open woodland	398
BURPEN	B036	5	18	33	66	107	21	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix, Brachychiton	399
BURPEN	B058	5	18	33	66	107	29	AyG	GIDLEY GRANOPHYRE		Terminalia canescens low open forest	400
BURPEN	B042	5	18	33	66	107	28	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix, (Brachychiton	401
WAGEORIV	0024	6	19	34	67	108	13	Qa	Alluvium - unconsolidated		Sesbania cannabina open shrubland	402
WAGEORIV	0030	6	19	35	68	109	11	Qa	Alluvium - unconsolidated		Terminalia canescens scattered low	403
WAMTLEA	0374	6	20	36	69	110	20	AFm	MADDINA FORMATION or		Eucalyptus victrix woodland over	404
WAHAMPAR	1151	6	20	36	69	110	13	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	405
WAHAMPAR	1145	6	20	37	70	111	15	AFhy	Lyre Creek Member HARDEY		Acacia bivenosa scattered tall shrubs	406
BURPEN	B233	6	20	37	70	111	19	AyGo	GIDLEY GRANOPHYRE		Cyperus vaginatus, Schoenus falcatus,	407
PPB	T	6	20	37	71	112	9				T3 Melaleuca/ Acacia ampliceps open	408
550AA	04RAIL128	6	20	38	72	113	21	Czk	Calcrete		Open Forest to Woodland of	409
550AA	RAILCRK02	6	20	38	72	113	18	Czk	Calcrete		Open Forest of Eucalyptus victrix to	410
550AA	08RAILCV01	6	20	38	73	114	14	Qa	Alluvium - unconsolidated		Woodland of Eucalyptus victrix and	411
WPI	CP157	6	20	39	74	115	11	Qc	Colluvium		Eucalyptus camaldulensis var. obtusa	412
WPI	HR011	6	20	39	75	116	11	Qc	Colluvium		Eucalyptus camaldulensis var. obtusa	413
WPI	TC054	6	20	39	75	116	14	Qc	Colluvium		Eucalyptus camaldulensis low open	414
PHQT	029	7	21	40	76	117	28	_A1f			Dolichandrone heterophylla over	415
PHQT	075	7	21	40	76	117	21	_A1f			Eucalyptus vitrix over Eucalyptus	416
PHQT	030	7	21	40	76	117	24	_A1f			Eucalyptus victrix over Acacia	417
PHQT	031	7	21	40	76	117	29	_A1f				418
PHQT	074	7	21	40	76	117	15				Melaleuca argentea, Acacia ampliceps	419
FMG-2006	P3D-Q1	7	21	40	76	118	20	A-	POOCATCHE MONZOGRANITE		Acacia trachycarpa Tall Shrubland	420
PHQT	081	7	21	40	76	119	28	_A1i			Melaleuca with Acacia trachycarpa	421
PHQT	087	7	21	40	76	119	30	_A1i			Eucalyptus victrix and Eucalyptus	422
2490	FMG25	7	21	40	76	119	38	_A1i			Melaleuca argentea, Eucalyptus	423
PHQT	115	7	21	41	77	120	28	_A1f			Corymbia smooth with Corymbia pale	424
HDRAIL	H092	7	21	41	77	120	32	_A1f			Corymbia flavescens scattered low	425
HDRAIL	H080	7	21	41	77	120	31	_A1f			Melaleuca argentea scattered low trees	426
HDRAIL	H090	7	21	41	77	120	56	_A1f			Corymbia hamersleyana low open	427
314	SPH-06	7	21	41	78	121	32	_A1f			Melaleuca argentea open woodland	428
314	SPH-10	7	21	41	78	121	26	_A1f			Scattered low trees of Melaleuca	429
FMG-2006	AC4-1	7	21	42	79	122	45	Agm	Monzogranite		Eucalyptus victrix Low Open	430
2490	FMG23	7	21	42	79	123	71	Agm	Monzogranite		Eucalyptus victrix, Erythrina	431
HDRAIL	H292	7	21	42	79	123	74	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees	432
2490	FMG26	7	21	42	79	123	52	_A1i			Eucalyptus victrix scattered low trees	433
2490	FMG80	7	21	42	79	123	95	Qeg			Acacia farnesiana, Acacia	434
2490	FMG76	7	21	42	79	123	45	Agm	Monzogranite		Corymbia hamersleyana scattered low	435
2490	FMG96	7	21	42	79	123	35	Qeg			Acacia trachycarpa tall open scrub	436
2490	FMG-BG	7	21	42	79	123	41	Qeg			Eucalyptus victrix scattered trees over	437
FMG-2006	Ac8-C111A	7	21	42	80	124	32	Agb	Gabbro.		Tall Open Shrubland dominated by	438
FMG-2006	Ac8-Ch111B	7	21	42	80	124	30	Agb	Gabbro.		Acacia eriopoda and Acacia tumida	439
HDRAIL	H070	7	21	42	80	124	41	A-	POOCATCHE MONZOGRANITE		Corymbia hamersleyana scattered low	440
FMG-2006	P3N-Q3	7	21	42	81	125	17	Agm	Monzogranite		Pluchea ferdinandi-muelleri and	441
FMG-2006	P4F-Q1	7	21	42	81	125	31	Agb	Gabbro.		Closed Hummock Grassland of	442
FMG-2006	P4F-Q3	7	21	42	81	125	21	Agb	Gabbro.		Keraudrenia nephrosperma and	443
550AA	10RAIL091	7	22	43	82	126	37	AFm	MADDINA FORMATION or		Open Forest of Eucalyptus	444
HDRAIL	H285	7	22	43	82	126	42	Czc	Colluvium		Acacia aneura, A. coriacea scattered	445
550AA	11RAIL104	7	22	43	82	127	26	AFtc	MADDINA BASALT		Low Woodland of Eucalyptus	446
HDRAIL	H211	7	22	43	82	127	44	Qa	Alluvium - unconsolidated		Cullen leucanthum closed scrub over	447
HDRAIL	H213	7	22	43	82	127	48	AFm	MADDINA FORMATION or		Eucalyptus camaldulensis open	448
550AA	11RAIL110	7	22	43	83	128	22	Pb			Woodland of Eucalyptus	449
550AA	12RAIL120b	7	22	43	83	128	29	Qa	Alluvium - unconsolidated		Low Open Forest of Melaleuca	450
HDRAIL	H062	7	22	43	83	128	43	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis scattered	451
HDRAIL	H143	7	22	43	83	128	43	Qa	Alluvium - unconsolidated		Eucalyptus victrix woodland over	452
HDRAIL	H064	7	22	43	83	128	33	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees	453
HDRAIL	H220	7	22	43	83	128	39	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	454

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	CP508	7	22	43	83	129	33	Qr			Eucalyptus camaldulensis var. obtusa	455
308	MATH14	7	22	43	83	129	42	Qr			Eucalyptus camaldulensis low open	456
308	MEAS08	7	22	43	83	129	59	Qac	Alluvial -clay, silt		Eucalyptus camaldulensis low open	457
FMG-2006	Ac1/Ac5-2	7	22	44	84	130	22	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa,	458
FMG-2006	Ac4-2	7	22	44	84	130	23	Agm	Monzogranite		Erythrina vespertilio, Eucalyptus	459
550AA	KR114	7	22	44	84	130	28	Kgmx			Tall Shrubland of Acacia ampliceps	460
550AA	12RAIL112	7	22	44	84	130	17	Agm	Monzogranite		Open Woodland of Eucalyptus	461
FMG-2006	Ac2-Ch870	7	22	44	84	130	13	Qeg			Eucalyptus camaldulensis var. obtusa	462
FMG-2006	AC5/6Ch870	7	22	44	84	130	24	Qa	Alluvium - unconsolidated		Acacia trachycarpa Low Open	463
550AA	12RAIL000	7	22	44	85	131	13	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia	464
550AA	12RAIL109	7	22	44	85	131	7	Agm	Monzogranite		Tall Open Scrub of Acacia	465
550AA	12RAIL999	7	22	44	85	131	7	Agm	Monzogranite		Woodland of Eucalyptus victrix to	466
WAMTHER	0565A	7	23	45	86	132	19	Czag	Alluvium		Corymbia hamersleyana low	467
271	BRO09	7	23	45	87	133	64	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees	468
271	BRO49	7	23	45	87	133	58	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	469
FMG-2006	P9 track 3	7	23	45	87	134	37					470
FMG-2006	Ac30Ch400	7	23	46	88	135	11	_A1f			Corymbia hamersleyana Low	471
2490	FMG34	7	23	46	88	136	27	_A1f			Triodia secunda, T. epactia mid-dense	472
HDRAIL	H124	7	23	46	88	136	27	_A1i			Eucalyptus victrix low open woodland	473
HDRAIL	H160	7	23	46	88	136	27	_A1f			Eucalyptus victrix low woodland over	474
HDRAIL	H125	7	23	46	88	136	31	_A1f			Acacia colei scattered shrubs over	475
WAGEORIV	0086	8	24	47	89	137	35	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open woodland	476
WAGEORIV	0087	8	24	47	89	137	26	Qa	Alluvium - unconsolidated		Eucalyptus victrix, Corymbia	477
WPI	CP013	8	24	47	89	138	43	Qc	Colluvium		Eucalyptus victrix scattered low trees	478
WPI	CP506	8	24	47	89	138	45	Qac	Alluvial -clay, silt		Eucalyptus vitrix low open woodland	479
WPI	CP507	8	24	47	89	138	22	Qac	Alluvial -clay, silt		Eucalyptus vitrix open woodland over	480
WPI	CP020	8	24	47	89	138	52	Qac	Alluvial -clay, silt		Eucalyptus camaldulensis var. obtusa	481
WPI	CP014	8	24	47	90	139	55	Qc	Colluvium		Acacia pyrifolia var. pyrifolia and A.	482
WPI	CP504	8	24	47	90	139	48	Qp	Elluvim, colluvium, gilgais		Acacia inaequilatera, A. coriacea	483
WPI	CP015	8	24	47	90	139	60	AFk	KYLENA FORMATION or		Corymbia hamersleyana scattered low	484
WPI	CP017	8	24	47	90	139	52	Plk			Acacia tumida var. pilbarensis closed	485
WPI	CP021	8	24	47	90	139	46	Qp	Elluvim, colluvium, gilgais		Acacia synchronicia scattered tall	486
WPI	CP019	8	24	47	90	139	47	Qac	Alluvial -clay, silt		Acacia bivenosa open scrub over	487
WPI	CP022	8	24	47	90	139	51	Pfp	PILLINGINI TUFF		Corymbia hamersleyana scattered low	488
WPI	CP053	8	24	47	91	140	30	Qc	Colluvium		Acacia xiphophylla high open	489
WPI	CP054	8	24	47	91	140	46	Qc	Colluvium		Acacia bivenosa high shrubland over	490
WPI	CP055	8	24	47	91	140	39	Kny	YARRALOOLA		Acacia aneura var. intermedia low	491
308	2MATC09	8	24	48	92	141	60	Qac	Alluvial -clay, silt		Corymbia hamersleyana scattered low	492
378	BUN66	8	24	48	92	141	56	Qc	Colluvium		Corymbia hamerslyana scattered low	493
301A	BUN11	8	24	48	92	141	48	Qc	Colluvium		Corymbia hamersleyana scattered low	494
378	BUN64	8	24	48	92	141	58	Qac	Alluvial -clay, silt		Corymbia hamerslyana low open	495
301A	BUN20	8	24	48	92	141	45	Qac	Alluvial -clay, silt		Acacia pyrifolia scattered shrubs over	496
378	BUN50	8	24	48	92	141	56	Qac	Alluvial -clay, silt		Corymbia hamerslyana scattered low	497
WPI	TC002	8	24	48	92	141	29	Qac	Alluvial -clay, silt		Acacia pyrifolia var. pyrifolia open	498
WPI	TC004	8	24	48	92	141	32	Qac	Alluvial -clay, silt		Acacia pyrifolia var. pyrifolia high	499
WPI	TC003	8	24	48	92	141	36	Qac	Alluvial -clay, silt		Eucalyptus victrix open woodland	500
308	MEAS01	8	24	48	92	142	73	PLHw	WOONGARRA RHYOLITE		Euclalyptus vitrix scattered low trees	501
308	MEAS04	8	24	48	92	142	60	Qc	Colluvium		Scattered Eucalyptus vitrix tall open	502
308	MEAS02	8	24	48	92	142	51	Qc	Colluvium		Eucalyptus vitrix scattered low trees	503
WPI	ASN020	8	24	49	93	143	29	Qc	Colluvium		Eucalyptus camaldulensis/victrix	504
WPI	BOR102	8	24	49	93	143	33	Qc	Colluvium		Corymbia hamersleyana low	505
WPI	CR016	8	24	49	93	143	38	Qc	Colluvium		Corymbia hamersleyana low open	506
215	MJ01	8	24	49	93	143	49	Qac	Alluvial -clay, silt		Corymbia candida subsp. candida low	507
378	BUN-MZ	8	24	49	93	143	37	Qac	Alluvial -clay, silt		Corymbia hamersleyana low open	508
WPI	CP036	8	24	49	93	143	54	Qac	Alluvial -clay, silt		Acacia spp., Hakea lorea ssp. lorea	509
WPI	TC001	8	24	49	93	143	35	QlC			Corymbia hamersleyana low open	510
WPI	TC005	8	24	49	93	143	51	Qac	Alluvial -clay, silt		Corymbia hamersleyana low open	511
WPI	KBW006	8	24	49	93	143	43	Qc	Colluvium		Corymbia hamersleyana low open	512
WPI	KBW007	8	24	49	93	143	45	Qc	Colluvium		Corymbia hamersleyana low open	513
WPI	CP042	8	24	49	93	143	74	Tp	ROBE PISOLITE		Eucalyptus camaldulensis var. obtusa	514
WPI	CR030	8	24	49	93	143	23	Qc	Colluvium		Eucalyptus leucophloia ssp.	515
WPI	CW013	8	24	49	93	144	64	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	516
WPI	CW014	8	24	49	93	144	50	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	517
WPI	CW019	8	24	49	93	144	56	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	518
WPI	CW030	8	24	49	93	144	52	Qc	Colluvium		Corymbia hamersleyana low open	519

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	CW034	8	24	49	93	144	38	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	520
WPI	TC013	8	24	49	93	144	46	Wm	MOUNT McGRATH		Acacia pyrifolia var. pyrifolia and A.	521
WPI	TC014	8	24	49	93	144	47	PLWb	CHEELA SPRINGS BASALT		Acacia citrinoviridis high shrubland	522
WPI	CWW051	8	24	49	93	144	30	Qc	Colluvium		Acacia citrinoviridis high shrubland	523
WPI	UCW001	8	24	49	93	144	31	Qc	Colluvium		Corymbia hamersleyana and	524
WAHAMPAR	1174A	8	25	50	94	145	11	AFhst	HARDEY FORMATION		Corymbia hamersleyana low	525
550AA	07RAIL045	8	25	50	94	145	16	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia	526
WPI	CP094	8	25	50	94	146	14	Qc	Colluvium		Corymbia candida ssp. candida low	527
WPI	CP162	8	25	50	94	146	12	Qp	Elluvim, colluvium, gilgais		Corymbia candida ssp.candida	528
WPI	CP531	8	25	50	94	146	13	Qp	Elluvim, colluvium, gilgais		Eucalyptus camaldulensis open forest	529
WPI	CP158	8	25	50	95	147	14	Qac	Alluvial -clay, silt		Eucalyptus camaldulensis var. obtusa	530
WPI	CP160	8	25	50	95	147	13	Qac	Alluvial -clay, silt		Acacia trachycarpa high shrubland	531
WPI	HR066	8	25	50	95	147	15	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	532
WPI	KB025	8	25	50	95	147	10	Qa	Alluvium - unconsolidated		Acacia trachycarpa and Grevillea	533
WPI	CP265	8	25	50	95	147	21	Qp	Elluvim, colluvium, gilgais		Eucalyptus camaldulensis var. obtusa	534
WPI	CP271	8	25	50	95	147	12	Qr			Eucalyptus camaldulensis var. obtusa	535
WPI	CP465	8	25	50	95	147	11	Qac	Alluvial -clay, silt		Acacia synchronicia open scrub over	536
WPI	BOR095	8	25	51	96	148	14	Qc	Colluvium		Eucalyptus victrix XXXX, Eucalyptus	537
WPI	TC033	8	25	51	96	148	11	Qc	Colluvium		Eucalyptus victrix over Acacia	538
WPI	TC039	8	25	51	96	148	14	Qc	Colluvium		Corymbia hamersleyana low open	539
WPI	TC036	8	25	51	96	148	12	Qc	Colluvium		Corymbia hamersleyana low open	540
WPI	TC128	8	25	51	96	149	18	Wm	MOUNT McGRATH		Acacia bivenosa shrubland over	541
WPI	TC133	8	25	51	96	149	17	Qc	Colluvium		Acacia pyrifolia high shrubland over	542
WPI	BOR111	8	25	51	96	150	16	Qac	Alluvial -clay, silt		Vachellia farnesiana, Acacia	543
WPI	TC032	8	25	51	96	150	11	Qc	Colluvium		Corymbia hamersleyana over	544
WPI	TC106	8	25	51	96	150	21	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	545
WPI	BOR117	8	25	51	97	151	27	Qc	Colluvium			546
WPI	CP034	8	25	51	97	152	25	Qa	Alluvium - unconsolidated		Acacia ancistrocarpa shrubland over	547
WPI	CP035	8	25	51	97	152	25	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open	548
WPI	CP135	8	25	52	98	153	12	Qc	Colluvium		Corymbia candida ssp. candida and C.	549
WPI	CP240	8	25	52	98	153	13	Qac	Alluvial -clay, silt		Corymbia hamersleyana and C.	550
WPI	CP373	8	25	52	98	153	18	Qc	Colluvium		Corymbia candida ssp. candida and C.	551
WPI	CP198	8	25	52	98	153	16	Kny	YARRALOOLA		Eucalyptus leucophloia ssp.	552
550AA	05RAIL031	8	26	53	99	154	18	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia tumida	553
550AA	08RAIL092	8	26	53	99	155	40	Qa	Alluvium - unconsolidated		Low Open Woodland of Acacia aff.	554
HDRAIL	H045	8	26	53	99	155	25	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered trees to	555
WPI	BOR152	8	26	53	99	155	30	Qc	Colluvium		Acacia citrinoviridus and Acacia	556
WPI	BOR247	8	26	53	99	155	29	Qc	Colluvium		Grevillea wickhamii and Acacia	557
378	BUN60	8	26	53	100	156	20	Q1			Eucalyptus victrix scattered trees over	558
550AA	KR001	8	26	53	100	157	27	PLHb	BROCKMAN IRON FORMATION		Woodland to Open Woodland of	559
EP00550AA	ZION005	8	26	53	100	157	23	Tp	ROBE PISOLITE		Shrubland of Tephrosea rosea var.	560
EP00550AA	ZION002	8	26	53	100	157	18	Tp	ROBE PISOLITE		Open Forest of Eucalyptus victrix to	561
EP00550AA	TRIN008	8	26	53	100	157	28	Qa	Alluvium - unconsolidated		Closed Forest of Eucalyptus	562
EP00550AA	ZION050	8	26	53	100	157	16	Tp	ROBE PISOLITE		Tall Open Forest of Eucalyptus	563
550AA	08RAIL096	8	26	53	101	158	34	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	564
301A	BUN05	8	26	53	101	159	31	Qac	Alluvial -clay, silt		Eucalyptus victrix open woodland	565
WPI	CP031	8	26	53	101	159	30	Qa	Alluvium - unconsolidated		Eucalyptus victrix woodland over	566
WPI	HR044	8	26	53	101	159	35	Qc	Colluvium		Eucalyptus victrix woodland over	567
WPI	KB021	8	26	53	101	159	55	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	568
WPI	TC008	8	26	53	101	159	29	Qc	Colluvium		Eucalyptus victrix woodland over	569
550AA	10RAIL092	9	27	54	102	160	16	AFm	MADDINA FORMATION or		Tall Open Shrubland of Acacia	570
BC	BCQ66	9	27	54	102	160	18	AFm	MADDINA FORMATION or		Acacia inaquilatera, Hakea lorea	571
BC	BCQ67	9	27	54	102	160	32	AFm	MADDINA FORMATION or		Grevillea pyramidalis subsp.	572
550AA	11RAIL102	9	27	54	102	160	28	AFtc	MADDINA BASALT		Low Woodland of Corymbia	573
550AA	KR124	9	27	54	102	160	10	Agm	Monzogranite		Tall Open Shrubland of Hakea lorea	574
BC	BCQ59	9	27	54	103	161	32	AFtc	MADDINA BASALT		Acacia inaequilatera, Grevillea	575
HDRAIL	H195	9	27	54	104	162	30	Qa	Alluvium - unconsolidated		Triodia wiseana mid-dense hummock	576
HDRAIL	H223	9	27	54	104	162	30	AFmk	Kuruna Member MADDINA		Acacia inaequilatera scattered tall	577
HDRAIL	H205	9	27	54	104	162	30	AFm	MADDINA FORMATION or		Acacia inaequilatera scattered tall	578
HDRAIL	H203	9	27	54	104	162	25	AFm	MADDINA FORMATION or		Corymbia hamersleyana scattered low	579
HDRAIL	H214	9	27	54	104	162	35	Agm	Monzogranite		Acacia coriacea, A. inaequilatera	580
HDRAIL	H200	9	27	54	104	163	42	AFtc	MADDINA BASALT		Acacia inaequilatera, Hakea lorea high	581
FMG-2006	P8O	9	27	54	104	163	20	Qa	Alluvium - unconsolidated		Acacia inaequilatera and Acacia	582
2490	FMG36	9	28	55	105	164	30	A-	MINNAMONICA		Acacia tumida, Flueggea virosa subsp.	583
HDRAIL	H072	9	28	55	105	164	37	A-	MINNAMONICA		Terminalia canescens scattered low	584

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
2490	FMG-BC	9	28	55	105	164	23	A-	MINNAMONICA		Terminalia canescens scattered low	585
2490	FMG-BA	9	28	55	105	164	26	A-ST-	Biotite monzogranite		Acacia coriacea, A. pruinocarpa, Ficus	586
HDRAIL	H273	9	28	55	105	164	29	Agm	Monzogranite		Ficus opposita, Mallotus nesophila	587
HDRAIL	H089	9	28	55	105	164	24	A-ST-	Biotite monzogranite		Mallotus nesophilus scattered low	588
2490	FMG90	9	28	56	106	165	54	Agm	Monzogranite		Acacia pyrifolia, A. coriacea, Atalaya	589
HDRAIL	H076	9	28	56	106	165	30	A-	MINNAMONICA		Cajanus cinereus open shrubland to	590
HDRAIL	H131	9	28	56	106	166	50	_A1f			Acacia tumida, A. colei, A.	591
HDRAIL	H133	9	28	56	106	166	57	_A1i			Acacia tumida, A. inaequilatera	592
HDRAIL	H134	9	28	56	106	166	41	_A1i			Grevillea wickhamii, Acacia	593
HDRAIL	H132	9	28	56	106	166	39	_A1f			Grevillea wickhamii, Acacia tumida	594
2490	FMG-MU	9	28	56	107	167	43	AgP	PORTREE GRANITOID		Various; Tripogon loliiformis annual	595
2490	FMG-RE	9	28	56	107	167	52	Agm	Monzogranite		Triodia epactia very open hummock	596
EP00550AA	ZION029	9	28	56	107	167	42	Tp	ROBE PISOLITE		Tall Open Shrubland of Gossypium	597
FMG-2006	P9D Access	9	28	56	108	168	41	Qc	Colluvium		n/a	598
WAMTROB	0951	10	29	57	109	169	17	Czc	Colluvium		Corymbia hamersleyana low open	599
FMG-2006	P9GtoP9Fj	10	29	57	109	169	25	Czr	Hematite on banded iron		Corymbia ?hamersleyana scattered	600
550AA	KR008	10	29	57	109	169	21	Czc	Colluvium		Low Open Woodland of Corymbia	601
550AA	02RAIL004	10	29	57	109	169	31	Czc	Colluvium		Low Open Forest of Corymbia	602
EP00550AA	INV035	10	29	57	109	170	25	AFj	JEERINAH FORMATION		Woodland of Eucalyptus victrix to	603
EP00550AA	SERN035	10	29	57	109	170	28	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	604
EP00550AA	SERN045	10	29	57	109	170	28	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	605
EP00550AA	SERN038	10	29	57	109	170	26	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	606
EP00550AA	SERN040	10	29	57	109	170	21	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	607
EP00550AA	VOQ28	10	29	57	109	170	12	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	608
EP00550AA	VOQ46	10	29	57	109	170	21	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	609
550AA	07RAIL036	10	29	57	110	171	52	Qa	Alluvium - unconsolidated		Scattered Low Trees of Eucalyptus	610
EP00550AA	FT01	10	29	57	110	171	51	Tp	ROBE PISOLITE		Open Shrubland of Acacia pyrifolia	611
EP00550AA	FT02	10	29	57	110	171	58	Tp	ROBE PISOLITE		Scattered Tall Shrubs of Gossypium	612
EP00550AA	VOQ100	10	29	57	110	171	41	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	613
EP00550AA	VOQ24	10	29	57	110	171	51	Czc	Colluvium		Open Woodland of Corymbia	614
EP00550AA	VOQ23	10	29	57	110	171	38	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	615
EP00550AA	VOQ27	10	29	57	110	171	45	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	616
EP00550AA	VOQ44	10	29	57	110	171	44	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	617
EP00550AA	VOQ45	10	29	57	110	171	47	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	618
EP00550AA	TRIN001	10	29	57	110	171	65	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	619
EP00550AA	TRIN003	10	29	57	110	171	50	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia	620
EP00550AA	VOK004	10	29	57	110	171	53	Qa	Alluvium - unconsolidated		Scattered Trees of Corymbia	621
EP00550AA	TRIN005	10	29	57	110	171	47	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	622
EP00550AA	TRIN003a	10	29	57	110	171	31	Qa	Alluvium - unconsolidated		Tall Shrubland of Acacia tumida var.	623
EP00550AA	VOK013	10	29	57	110	171	45	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia	624
EP00550AA	VOQ22	10	29	57	110	171	44	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	625
EP00550AA	CG002	10	29	57	110	171	35	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	626
EP00550AA	SERN037	10	29	57	110	171	48	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	627
EP00550AA	SERN103	10	29	57	110	171	43	Qa	Alluvium - unconsolidated		Scattered Low Shrubs of Tephrosia	628
EP00550AA	VOK029	10	29	57	110	171	47	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	629
EP00550AA	VOK023	10	29	57	110	171	45	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	630
EP00550AA	VOK026	10	29	57	110	171	54	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	631
EP00550AA	SERN003	10	29	57	110	171	38	Qa	Alluvium - unconsolidated		Woodland of Corymbia hamersleyana	632
EP00550AA	SERN004	10	29	57	110	171	36	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	633
EP00550AA	SERN016	10	29	57	110	171	44	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	634
EP00550AA	SERN111	10	29	57	110	171	46	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	635
EP00550AA	SERN104	10	29	57	110	171	48	Qa	Alluvium - unconsolidated		Scattered Trees of Corymbia	636
EP00550AA	SERN008	10	29	57	110	171	27	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	637
EP00550AA	SERN009	10	29	57	110	171	25	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	638
EP00550AA	SERN011	10	29	57	110	171	34	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	639
EP00550AA	SERN021	10	29	57	110	171	45	Qa	Alluvium - unconsolidated		Tall Shrubland of Acacia tumida var	640
EP00550AA	SERN074	10	29	57	110	171	32	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	641
550AA	07RAIL039	10	29	57	110	172	59	Qa	Alluvium - unconsolidated		Scattered Trees of Eucalyptus victrix	642
550AA	02RAIL007	10	29	57	110	172	42	PLHb	BROCKMAN IRON FORMATION		Open Forest of Eucalyptus victrix and	643
550AA	06RAIL002	10	29	58	111	173	39	Qs	Eolian sand [siliceous]		Scattered Low Trees of Corymbia	644
EP00550AA	VOQ101	10	29	58	111	173	38	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aneura var.	645
EP00550AA	VOQ016	10	29	58	111	173	25	Czc	Colluvium		Open Woodland of Eucalyptus	646
EP00550AA	VOQ014	10	29	58	111	173	31	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	647
EP00550AA	VOQ20	10	29	58	111	173	31	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	648
EP00550AA	SERN006	10	29	58	112	174	18	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	649

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
EP00550AA	SERN101	10	29	58	112	174	34	Czc	Colluvium		Low Open Woodland of Corymbia	650
EP00550AA	SERN017	10	29	58	112	174	44	Czc	Colluvium		Low Woodland of Corymbia	651
EP00550AA	SERN110	10	29	58	112	174	53	Qa	Alluvium - unconsolidated		Low Woodland of Corymbia	652
EP00550AA	SERN020	10	29	58	112	174	46	Czc	Colluvium		Scattered Low Trees of Corymbia	653
EP00550AA	VOK003	10	29	58	112	174	35	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	654
EP00550AA	VOK010	10	29	58	112	174	42	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	655
EP00550AA	VOQ010	10	29	58	112	174	36	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	656
EP00550AA	VOQ011	10	29	58	112	174	44	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	657
EP00550AA	SERN015	10	29	58	112	174	44	Qa	Alluvium - unconsolidated		Woodland of Eucalyptus xerothermica	658
EP00550AA	TRIN009	10	29	58	112	174	52	Qa	Alluvium - unconsolidated		OW of Corymbia hamersleyana to	659
EP00550AA	TRIN010	10	29	58	112	174	47	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia	660
EP00550AA	TRIN012	10	29	58	112	174	62	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	661
EP00550AA	TRIN014	10	29	58	112	174	46	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	662
EP00550AA	TRIN013	10	29	58	112	174	48	Czc	Colluvium		Low Open Woodland of Corymbia to	663
EP00550AA	SERN107	10	29	58	112	174	54	Qa	Alluvium - unconsolidated		Low Open Forest of Woodland of	664
EP00550AA	VOK020	10	29	58	112	174	53	Qa	Alluvium - unconsolidated		Woodland to Open Woodland of	665
EP00550AA	VOK022	10	29	58	112	174	59	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	666
EP00550AA	VOK017	10	29	58	112	174	55	Qc	Colluvium		Woodland to Open Woodland of	667
EP00550AA	VOK005	10	29	58	112	174	43	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	668
EP00550AA	ZION033	10	29	58	112	174	44	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	669
EP00550AA	TRIN004	10	29	58	112	175	24	Qc	Colluvium		Scattered Low Trees of Corymbia	670
WAFORSLO	0152	11	30	59	113	176	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	671
WAGEORIV	0184	11	30	59	113	176	17	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	672
WAGEORIV	0190	11	30	59	113	176	25	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica, Corymbia	673
WAGEORIV	0581	11	30	59	113	176	33	Czcf	Colluvium		Eucalyptus xerothermica, Corymbia	674
WAMTLEA	0477	11	30	59	113	176	17	AHm	MARRA MAMBA IRON		Acacia ancistrocarpa open shrubland	675
WAFORSLO	0159	11	30	59	113	176	18	AFjsl	Mudstone, siltstone		Corymbia hamersleyana scattered low	676
WAMTLEA	0538	11	30	59	113	176	23	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia low woodland	677
WAGEORIV	0203	11	30	59	113	176	35	AFjkdl	JEERINAH FORMATION		Eucalyptus xerothermica scattered low	678
WAFORSLO	0155	11	30	59	113	177	38	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered trees over	679
WAMTLEA	0552	11	30	59	113	177	54	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa,	680
WAFORSLO	0157	11	30	59	113	177	52	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	681
WAGEORIV	0184A	11	30	59	113	177	33	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	682
WAGEORIV	0188	11	30	59	113	177	32	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica, Eucalyptus	683
WAGEORIV	0198A	11	30	59	113	177	25	Qa	Alluvium - unconsolidated		Acacia ancistrocarpa open scrub over	684
WAGEORIV	0560	11	30	59	113	177	34	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia, Eucalyptus	685
WAGEORIV	0197	11	30	60	114	178	29	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica, Eucalyptus	686
WAGEORIV	0208	11	30	60	114	178	20	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	687
WAMTLEA	0397	11	30	61	115	179	30	AFm	MADDINA FORMATION or		Eucalyptus victrix open woodland	688
WAMTLEA	0483	11	30	61	115	179	27	AFm	MADDINA FORMATION or		Corymbia hamersleyana low	689
WAMTLEA	0514	11	30	61	115	179	22	Qa	Alluvium - unconsolidated		Acacia tumida, Grevillea wickhamii	690
WAMTLEA	0510	11	30	61	115	179	27	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa	691
WAMTLEA	0498	11	30	61	115	179	34	Qa	Alluvium - unconsolidated		River Bed; Eucalyptus victrix	692
WAMTLEA	0513	11	30	61	116	180	22	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica low	693
WAFCBOR	1173	11	30	61	116	180	29	Czc	Colluvium		Eucalyptus xerothermica low	694
WAFCBOR	1175	11	30	61	116	180	30	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open	695
CAPPRE	M004	12	31	62	117	181	36	Qp	Elluvim, colluvium, gilgais		Sparse Acacia bivenosa shrubland	696
CAPPRE	M007	12	31	62	117	181	58	Qac	Alluvial -clay, silt		Acacia xiphophylla open shrubland	697
CAPPRE	M081	12	31	62	117	181	49	Pfp	PILLINGINI TUFF		Scattered shrubs of Grevillea	698
CAPPRE	M094	12	31	62	117	181	45	AFm	MADDINA FORMATION or		Scattered Acacia bivenosa (with very	699
CAPPRE	M031	12	31	62	117	181	30	Qc	Colluvium		Scattered Acacia inaequilatera and A.	700
CAPPRE	M023	12	31	62	117	181	30	AFm	MADDINA FORMATION or		Triodia wiseana mid-dense hummock	701
CAPPRE	M079	12	31	62	117	181	50	AFk	KYLENA FORMATION or		Scattered Acacia inaequilatera / A.	702
CAPPRE	M088	12	31	62	117	181	34	AFk	KYLENA FORMATION or		Scattered Acacia ancistrocarpa tall	703
CAPPRE	M075	12	31	62	117	181	42	Ag	Granite		Fimbristylis dichotoma low very open	704
CAPPRE	M077	12	31	62	117	181	45	Ag	Granite		Acacia ancistrocarpa tall open	705
CAPPRE	M120	12	31	62	117	181	20	PLHb	BROCKMAN IRON FORMATION		Triodia wiseana hummock grassland	706
CAPPRE	M120A	12	31	62	117	181	33	PLHb	BROCKMAN IRON FORMATION		2-10% herbs and shrub seedlings.	707
CAPPRE	M030	12	31	62	117	182	35	Qs	Eolian sand [siliceous]		2-10% tall shrubs of Acacia bivenosa	708
CAPPRE	M040	12	31	62	117	182	32	AFt	TUMBIANA FORMATION		Scattered tall shrubs (primarily Acacia	709
CAPPRE	M044	12	31	62	117	182	36	Qc	Colluvium		Scattered tall shrubs (primarily Acacia	710
CAPPRE	M039	12	31	62	117	182	46	AFt	TUMBIANA FORMATION		Scattered Acacia coriacea over Acacia	711
CAPPRE	M071	12	31	62	117	182	44	AFm	MADDINA FORMATION or		Scattered tall shrubs of Acacia	712
CAPPRE	M098	12	31	62	117	182	47	AFt	TUMBIANA FORMATION		Scattered Acacia bivenosa tall shrubs	713
CAPPRE	M078	12	31	62	117	182	46	AFm	MADDINA FORMATION or		Acacia coriacea open shrubland over	714

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
CAPPRE	M080	12	31	62	117	182	38	AFm	MADDINA FORMATION or		Indigofera monophylla, Corchorus	715
CAPPRE	M076	12	31	62	117	182	39	AFm	MADDINA FORMATION or		Indigofera monophylla low open	716
CAPPRE	M087	12	31	62	117	182	37	Qhms	Coastal sand		Triodia wiseana mid-dense hummock	717
CAPPRE	M034	12	31	62	117	182	37	Qc	Colluvium		Scattered shrubs (primarily Acacia	718
CAPPRE	M035	12	31	62	117	182	35	AFkfd	KYLENA FORMATION		Triodia angusta mid-dense hummock	719
CAPPRE	M009	12	31	62	118	183	48	PLHb	BROCKMAN IRON FORMATION		Scattered low Corymbia hamersleyana	720
CAPPRE	M012	12	31	62	118	183	48	PLHb	BROCKMAN IRON FORMATION		Sparse low shrubs over sparse to open	721
CAPPRE	M019	12	31	62	118	183	71	PLHb	BROCKMAN IRON FORMATION		Scattered low mallees of Corymbia	722
CAPPRE	M049	12	31	62	118	183	60	PLHb	BROCKMAN IRON FORMATION		Acacia coriacea / A. elachantha /	723
CAPPRE	M090	12	31	62	118	183	46	AFk	KYLENA FORMATION or		Corymbia hamersleyana open low	724
CAPPRE	M015	12	31	62	118	183	30	PLHb	BROCKMAN IRON FORMATION		Corymbia hamersleyana low mallee	725
CAPPRE	M047	12	31	62	118	183	53	PLHb	BROCKMAN IRON FORMATION		Acacia coriacea tall open shrubland to	726
CAPPRE	M055	12	31	62	118	183	58	PLHb	BROCKMAN IRON FORMATION		Corymbia hamersleyana low open	727
CAPPRE	M095	12	31	62	118	183	48	PLHb	BROCKMAN IRON FORMATION		Scattered low mallees of Corymbia	728
CAPPRE	M107	12	31	62	118	183	44	PLHb	BROCKMAN IRON FORMATION		Corymbia hamersleyana low mallee	729
CAPPRE	M057	12	31	62	118	183	24	PLHb	BROCKMAN IRON FORMATION		Acacia monticola / Petalostylis	730
CAPPRE	M013	12	31	63	119	184	35	PLHb	BROCKMAN IRON FORMATION		Scattered Ficus platypoda and Acacia	731
CAPPRE	M041	12	31	63	119	184	32	Qc	Colluvium		Acacia coriacea / Flueggia virosa	732
CAPPRE	M051	12	31	63	119	184	38	PLHb	BROCKMAN IRON FORMATION		Acacia coriacea tall open shrubland	733
CAPPRE	M091	12	31	63	119	184	28	AFm	MADDINA FORMATION or		Scattered Acacia coriacea shrubs over	734
CAPPRE	M037	12	31	63	119	184	36	AFkfd	KYLENA FORMATION		Acacia coriacea open shrubland over	735
CAPPRE	M085	12	31	63	119	184	38	AFt	TUMBIANA FORMATION		Acacia coriacea tall open shrubland	736
CAPPRE	M037A	12	31	63	119	184	25	AFkfd	KYLENA FORMATION		See details for M037.	737
CAPPRE	M062	12	31	63	119	184	28	PLHb	BROCKMAN IRON FORMATION		Scattered tall shrubs over sparse	738
CAPPRE	M109	12	31	63	119	184	36	PLHb	BROCKMAN IRON FORMATION		Scattered Acacia coriacea, Ficus	739
CAPPRE	M005	12	31	64	120	185	50	Qac	Alluvial -clay, silt		Scattered patches of Corymbia	740
CAPPRE	M083	12	31	64	120	185	49	Qp	Elluvim, colluvium, gilgais		Scattered low trees of Eucalyptus	741
CAPPRE	M022	12	31	64	120	185	49	Qp	Elluvim, colluvium, gilgais		10-30% tall shrubs dominated by	742
CAPPRE	M029	12	31	64	120	185	49	Qs	Eolian sand [siliceous]		Eucalyptus victrix low open woodland	743
CAPPRE	M033	12	31	64	120	185	50	Qc	Colluvium		Acacia coriacea tall shrubland to low	744
CAPPRE	M043	12	31	64	120	185	54	Qao	Alluvium - unconsolidated		Eucalyptus victrix low woodland over	745
CAPPRE	M032	12	31	64	120	185	44	Qc	Colluvium		30-40% tall shrubs dominated by	746
CAPPRE	M045	12	31	64	120	185	64	Qac	Alluvial -clay, silt		Acacia coriacea tall shrubland over	747
CAPPRE	M089	12	31	64	120	185	34	AFm	MADDINA FORMATION or		Acacia coriacea tall shrubland over	748
CAPPRE	M025	12	31	64	120	185	45	Qp	Elluvim, colluvium, gilgais		Eucalyptus victrix woodland over	749
CAPPRE	M067	12	31	64	121	186	39	AFt	TUMBIANA FORMATION		Acacia ampliceps open shrubland.	750
CAPPRE	M093	12	31	64	121	186	29	AFm	MADDINA FORMATION or		Open tall shrubland of Acacia	751
CAPPRE	M014	12	32	65	122	187	21	PLHb	BROCKMAN IRON FORMATION		Sparse Acacia bivenosa tall shrubs	752
CAPPRE	M056	12	32	65	122	187	16	PLHb	BROCKMAN IRON FORMATION		Very scattered tall shrubs over Triodia	753
CAPPRE	M058	12	32	65	122	187	27	PLHb	BROCKMAN IRON FORMATION		Scattered Acacia bivenosa tall shrubs	754
CAPPRE	M118	12	32	65	122	187	19	PLHb	BROCKMAN IRON FORMATION		Scattered tall shrubs (mainly Senna	755
CAPPRE	M116	12	32	65	122	187	21	PLHb	BROCKMAN IRON FORMATION		Scattered Acacia bivenosa tall shrubs	756
CAPPRE	M060	12	32	65	122	187	15	PLHb	BROCKMAN IRON FORMATION		Scattered Senna glutinosa subsp.	757
CAPPRE	M104	12	32	65	122	187	15	PLHb	BROCKMAN IRON FORMATION		Scattered shrubs of Senna glutinosa	758
CAPPRE	M064	12	32	65	122	187	13	PLHb	BROCKMAN IRON FORMATION		Very scattered Acacia bivenosa tall	759
CAPPRE	M016	12	32	65	122	187	31	PLHb	BROCKMAN IRON FORMATION		Sparse tall shrubs dominated by	760
CAPPRE	M048	12	32	65	122	187	23	PLHb	BROCKMAN IRON FORMATION		Very scattered tall shrubs (primarily	761
CAPPRE	M046	12	32	65	122	187	37	Qac	Alluvial -clay, silt		Very occasional tall shrubs (primarily	762
CAPPRE	M052	12	32	65	122	187	36	PLHb	BROCKMAN IRON FORMATION		Acacia bivenosa open shrubland over	763
CAPPRE	M050	12	32	65	122	187	24	PLHb	BROCKMAN IRON FORMATION		Scattered tall shrubs (primarily Senna	764
WAFORSLO	0150	13	33	66	123	188	7	Czcf	Colluvium		Triodia pungens hummock grassland.	765
WAMTHER	0345	13	33	66	123	188	6	AFk	KYLENA FORMATION or		Eucalyptus leucophloia scattered low	766
WAMTLEA	0509	13	33	66	123	188	12	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	767
WPI	HR009	13	33	66	123	188	10	Qc	Colluvium		Corymbia candida ssp. candida low	768
WAGEORIV	0168	13	33	66	123	189	22	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	769
WAGEORIV	0171	13	33	66	123	189	14	Tp	ROBE PISOLITE		Eucalyptus leucophloia low woodland	770
WAGEORIV	0172	13	33	66	123	189	12	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	771
WAGEORIV	0317	13	33	66	123	189	17	Czrf	Ferricrete		Eucalyptus leucophloia low open	772
WAGEORIV	0195	13	33	66	123	189	13	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	773
WAGEORIV	0204	13	33	66	123	189	16	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia, Corymbia	774
WAGEORIV	0187	13	33	66	123	190	9	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia low open	775
WAGEORIV	0207	13	33	66	123	190	12	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia open	776
WAGEORIV	0210	13	33	66	123	190	20	AFjo	Woodiana Member JEERINAH		Eucalyptus leucophloia scattered low	777
WAGEORIV	0215	13	33	66	123	190	10	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	778
WAGEORIV	0251	13	33	67	124	191	15	Czrf	Ferricrete		Eucalyptus leucophloia scattered low	779

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAMTLEA	0391	13	33	67	124	191	10	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	780
WAGEORIV	0253	13	33	67	124	191	25	Czc	Colluvium		Eucalyptus leucophloia scattered low	781
WAGEORIV	0311	13	33	67	124	191	16	Czc	Colluvium		Eucalyptus leucophloia scattered low	782
WAMTLEA	0478	13	33	67	124	191	12	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	783
WAMTLEA	0480	13	33	67	124	191	17	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	784
WAGEORIV	0316	13	33	67	125	192	30	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low woodland	785
WAGEORIV	0466	13	33	67	125	192	19	Qs	Eolian sand [siliceous]		Corymbia hamersleyana scattered low	786
WAMTLEA	0467	13	33	67	125	192	26	Qwf	Alluvium/colluvium		Eucalyptus leucophloia, Corymbia	787
WAMTHER	0349	13	33	67	126	193	19	AFk	KYLENA FORMATION or		Eucalyptus victrix and Terminalia	788
WAMTLEA	0484	13	33	67	126	193	15	AFm	MADDINA FORMATION or		Corymbia hamersleyana low open	789
WAMTLEA	0496	13	33	67	126	193	19	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	790
WAMTLEA	0495	13	33	67	126	193	14	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	791
WAMTLEA	0522	13	33	67	126	193	8	AFjkdl	JEERINAH FORMATION		Acacia tumida, Acacia maitlandii	792
WAMTLEA	0508	13	33	67	126	193	23	Tp	ROBE PISOLITE		Acacia tumida, Acacia ancistrocarpa	793
WAGEORIV	0250	13	34	68	127	194	15	Czc	Colluvium		Eucalyptus leucophloia scattered low	794
WAMTLEA	0479	13	34	68	127	194	14	AFm	MADDINA FORMATION or		Eucalyptus leucophloia, Corymbia	795
WAACRD	1283	13	34	68	127	194	14	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low open	796
WAFCBOR	1060	13	34	68	127	195	15	AHs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia scattered low	797
WPI	CN005	13	34	68	127	195	11	Tp	ROBE PISOLITE		Triodia sp. Robe River and Triodia	798
232a	MESG11	13	34	68	127	195	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia scattered low	799
WAMTHER	0361	13	34	68	128	196	13	AFt	TUMBIANA FORMATION		Eucalyptus leucophloia scattered low	800
WAMTROB	1226	13	34	68	128	196	8	AHd	WITTENOOM FORMATION		Eucalyptus leucophloia low woodland	801
WAMTLEA	0486	13	34	68	128	196	10	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	802
WAMTLEA	0416	13	34	68	128	196	22	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	803
WACOOWES	0933	13	34	68	128	197	22	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	804
WASA	1008	13	34	68	128	197	20	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia low open	805
550AA	06RAIL013	13	34	69	129	198	13	Czc	Colluvium		Open Woodland of Eucalyptus	806
550AA	06RAILCV01	13	34	69	129	198	16	Czc	Colluvium		Scattered to Low Open Woodland of	807
EP00550AA	VOK001	13	34	69	129	199	8	Czc	Colluvium		Low Open Woodland to Scattered	808
EP00550AA	VOK006	13	34	69	129	199	12	Czc	Colluvium		Low Open Woodland to Scattered	809
271	BRO-MA	13	34	69	130	200	17	Czr	Hematite on banded iron		Acacia maitlandii (Acacia atkinsiana,	810
271	BRO-MB	13	34	69	130	200	18	Czr	Hematite on banded iron		Acacia atkinsiana shrubland over	811
271	BRO-ML	13	34	69	130	200	21	Czr	Hematite on banded iron		Acacia pruinocarpa tall open	812
WAGEORIV	0252	13	34	70	131	201	24	Czc	Colluvium		Eucalyptus leucophloia scattered low	813
BC	BCQ7	13	34	70	131	202	20	Czk	Calcrete		Eucalyptus leucophloia scattered low	814
WASA	0641	13	34	70	132	203	17	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low open	815
WAMTROB	1228	13	34	70	132	203	15	Czc	Colluvium		Acacia bivenosa open scrub over	816
WAMTROB	0953	13	34	70	132	203	21	Czc	Colluvium		Eucalyptus gamophylla, Corymbia	817
WAACRD	1291	13	34	70	132	203	13	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low open	818
550AA	06RAIL006	13	34	70	132	203	23	Czc	Colluvium		Low Open Woodland of Eucalyptus	819
WAFCBOR	1177	13	34	70	133	204	11	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia scattered low	820
WAHAMPAR	1183	13	34	70	133	204	17	Czc	Colluvium		Eucalyptus gamophylla scattered tall	821
WAFORSLO	0158	13	35	71	134	205	12	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	822
WAMTLEA	0523	13	35	71	134	205	13	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	823
WAMTLEA	0415	13	35	71	134	205	14	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	824
WPI	TC041	13	35	71	134	205	18	Pho	BOOLGEEDA IRON		Triodia wiseana and T. sp. Robe River	825
WPI	TRW001	13	35	71	134	205	19	Wm	MOUNT McGRATH		Eucalyptus leucophloia ssp.	826
WAFORSLO	0160	13	35	71	134	205	12	AFjsl	Mudstone, siltstone		Acacia atkinsiana high shrubland over	827
WAGEORIV	0205	13	35	71	134	205	12	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	828
WAGEORIV	0314	13	35	71	134	205	17	Czc	Colluvium		Acacia bivenosa low shrubland over	829
WAMTLEA	0544	13	35	71	134	205	16	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	830
WAMTLEA	0553	13	35	71	134	205	19	Qs	Eolian sand [siliceous]		Eucalyptus leucophloia scattered low	831
WAGEORIV	0191	13	35	71	134	205	10	Qa	Alluvium - unconsolidated		Triodia wiseana, Triodia longiceps	832
WAMTLEA	0473	13	35	71	134	205	9	AFjslg	JEERINAH FORMATION		Acacia bivenosa scattered low shrubs	833
WAGEORIV	0176	13	35	71	135	206	12	AFjsl	Mudstone, siltstone		Acacia ancistrocarpa, Acacia bivenosa	834
WAGEORIV	0585	13	35	71	135	206	8	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	835
WAMTLEA	0494	13	35	71	135	206	12	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	836
WAGEORIV	0177	13	35	71	135	206	8	AFjsl	Mudstone, siltstone		Acacia atkinsiana, Acacia	837
WAMTLEA	0472	13	35	71	135	206	8	AFjslg	JEERINAH FORMATION		Eucalyptus leucophloia low open	838
WAMTLEA	0491	13	35	71	135	206	11	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	839
WAGEORIV	0198B	13	35	71	135	206	8	Qa	Alluvium - unconsolidated		Acacia ancistrocarpa, Acacia bivenosa	840
WAGEORIV	0200	13	35	71	135	206	9	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	841
WAGEORIV	0212	13	35	71	135	206	15	AFjo	Woodiana Member JEERINAH		Eucalyptus leucophloia scattered low	842
WAMTLEA	0470	13	35	71	135	206	15	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	843
WAGEORIV	0559	13	35	71	135	206	15	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	844

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAGEORIV	0584	13	35	71	135	206	11	Qa	Alluvium - unconsolidated		Acacia ancistrocarpa shrubland over	845
WAMTLEA	0507	13	35	71	135	206	14	Tp	ROBE PISOLITE		Acacia pyrifolia scattered tall shrubs	846
WAGEORIV	0163	13	35	71	136	207	18	Tp	ROBE PISOLITE		Eucalyptus leucophloia scattered low	847
WAGEORIV	0312	13	35	71	136	207	17	Czrf	Ferricrete		Open scrub of Acacia atkinsiana,	848
WAGEORIV	0465	13	35	71	136	207	26	Qs	Eolian sand [siliceous]		Acacia atkinsiana, Acacia	849
WAGEORIV	0173	13	35	71	136	207	12	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	850
WAMTLEA	0468	13	35	71	136	207	13	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low woodland	851
WAMTLEA	0469	13	35	71	136	207	18	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	852
WAGEORIV	0175	13	35	71	136	207	9	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	853
WAGEORIV	0194	13	35	71	136	207	9	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	854
WAGEORIV	0199	13	35	71	136	207	8	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	855
WAMTLEA	0485	13	35	71	136	207	8	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	856
WAGEORIV	0558	13	35	71	136	207	13	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	857
WAGEORIV	0576A	13	35	71	136	207	12	AHm	MARRA MAMBA IRON		Corymbia hamersleyana scattered low	858
WAGEORIV	0576B	13	35	71	136	207	8	AHm	MARRA MAMBA IRON		Acacia maitlandii open shrubland over	859
WAGEORIV	0165	13	36	72	137	208	16	AFjsl	Mudstone, siltstone		Triodia brizoides, Triodia longiceps	860
WAGEORIV	0192	13	36	72	137	208	6	Qa	Alluvium - unconsolidated		Triodia brizoides, Triodia longiceps	861
WAMTLEA	0475	13	36	72	137	208	13	AFjslg	JEERINAH FORMATION		Triodia longiceps hummock	862
WAGEORIV	0166	13	36	72	137	209	10	AFjsl	Mudstone, siltstone		Triodia wiseana, Triodia longiceps,	863
WAGEORIV	0586	13	36	72	137	209	8	Qa	Alluvium - unconsolidated		Triodia wiseana, Triodia longiceps	864
WAGEORIV	0186	13	36	72	137	209	16	Qa	Alluvium - unconsolidated		Triodia brizoides, Triodia wiseana	865
WAMTLEA	0516	13	36	72	137	209	15	AFm	MADDINA FORMATION or		Eucalyptus leucophloia scattered low	866
WAFORSLO	0254	13	36	72	137	209	10	Czc	Colluvium		Triodia wiseana hummock grassland.	867
WAMTLEA	0547	13	36	72	137	209	12	AFjsl	Mudstone, siltstone		Acacia bivenosa scattered low shrubs	868
WAGEORIV	0209	13	36	72	137	209	9	Qa	Alluvium - unconsolidated		Acacia bivenosa, Cassia glutinosa	869
WAMTLEA	0527	13	36	72	137	209	13	Tp	ROBE PISOLITE		Acacia bivenosa scattered low shrubs	870
WAMTLEA	0535	13	36	72	137	209	12	AFjsl	Mudstone, siltstone		Acacia bivenosa scattered low shrubs	871
WAGEORIV	0211	13	36	72	137	209	18	AFjo	Woodiana Member JEERINAH		Acacia bivenosa scattered low shrubs	872
WAGEORIV	0196	13	36	72	138	210	14	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	873
WAMTLEA	0528	13	36	72	138	210	12	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia low open	874
WAMTLEA	0524	13	36	72	138	210	10	AFjo	Woodiana Member JEERINAH		Eucalyptus leucophloia low open	875
WAMTLEA	0525	13	36	72	138	210	11	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	876
WAMTLEA	0533	13	36	72	138	210	10	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia low woodland	877
WAMTLEA	0493	13	36	72	138	210	19	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	878
WAMTLEA	0519	13	36	72	138	210	15	AFjo	Woodiana Member JEERINAH		Eucalyptus leucophloia scattered low	879
WAMTLEA	0530	13	36	72	138	210	13	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia low open	880
WAGEORIV	0216	13	36	72	138	211	8	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	881
WAGEORIV	0310	13	36	72	138	211	9	Czrf	Ferricrete		Acacia bivenosa scattered shrubs over	882
WAFORSLO	0257	13	36	72	138	211	8	Czc	Colluvium		Eucalyptus leucophloia scattered low	883
WAMTLEA	0531	13	36	72	138	211	7	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	884
WAGEORIV	0305	13	36	72	138	211	16	Czc	Colluvium		Eucalyptus leucophloia scattered low	885
WAGEORIV	0164	14	37	73	139	212	10	Tp	ROBE PISOLITE		Acacia ancistrocarpa open heath over	886
BC	BCQ9	14	37	73	139	212	9	Tp	ROBE PISOLITE		Corymbia hamersleyana scattered low	887
BC	BCQ13	14	37	73	139	213	17	Tp	ROBE PISOLITE		Corymbia hamersleyana, Acacia	888
550AA	KR109	14	37	73	139	213	7	Agm	Monzogranite			889
550AA	KR121A	14	37	73	139	213	13	Agm	Monzogranite		Tall Open Scrub of Atalaya	890
550AA	11RAIL106A	14	37	74	140	214	13	Agm	Monzogranite		Tall Open Scrub of Acacia acradenia	891
550AA	11RAIL169	14	37	74	140	214	16	Qs	Eolian sand [siliceous]		Scattered Low Trees of Corymbia	892
550AA	11RAIL105	14	37	74	140	214	15	AFtc	MADDINA BASALT		Tall Open Shurbland of Acacia	893
PPB	F	14	37	74	140	215	16	Qc	Colluvium		Ipomoea costata/Grevillea	894
550AA	KR1003	14	37	74	141	216	16	Agm	Monzogranite		Scattered Shrubs of Acacia bivenosa,	895
550AA	KR115	14	37	74	141	216	17	Agm	Monzogranite		Scattered Shrubs of Acacia	896
FMG-2006	P7U	14	37	74	142	217	12	Agm	Monzogranite		Corymbia hamersleyana Low Open	897
550AA	12RAIL108	14	37	74	142	217	11	Agm	Monzogranite		Low Open Woodland of Corymbia	898
550AA	12RAIL104	14	37	74	142	217	17	Agm	Monzogranite		Scatterd Low Trees of Corymbia	899
550AA	12RAIL120a	14	37	74	142	218	11	Agm	Monzogranite		Tall Open Scrub of Acacia orthocarpa	900
550AA	12RAIL120C	14	37	74	142	218	6	Agm	Monzogranite		Tall Shrubland of Acacia orthocarpa	901
2490	FMG25F	14	37	75	143	219	13	Agm	Monzogranite		Acacia bivenosa scattered shrubs over	902
2490	FMG77	14	37	75	143	220	24	Agm	Monzogranite		Acacia bivenosa open shrubland over	903
550AA	12RAIL111	14	37	75	143	220	9	Agm	Monzogranite		Mid-dense Hummock Grassland of	904
550AA	12RAIL110	14	37	75	143	220	4	Agm	Monzogranite		Low Open Shurbaland of Acacia	905
HDRAIL	H106	14	37	76	144	221	29	_R2-k			Corymbia hamersleyana scattered low	906
HDRAIL	H180	14	37	76	144	221	22	A-	POOCATCHE MONZOGRANITE		Corymbia hamersleyana scattered low	907
HDRAIL	H181	14	37	76	144	221	22	A-ST-	Biotite monzogranite		Corymbia hamersleyana scattered low	908
HDRAIL	H207	14	37	76	145	222	37	Agm	Monzogranite		Corymbia hamersleyana scattered low	909

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
HDRAIL	H219	14	37	76	145	222	29	Amg			Corymbia hamersleyana scattered low	910
HDRAIL	H208	14	37	76	145	222	26	Qc	Colluvium		Corymbia hamersleyana scattered low	911
550AA	11RAIL1100	14	38	77	146	223	21	Plo			Woodland of Eucalyptus	912
550AA	11RL1100	14	38	77	146	223	21	Plo			Woodland of Eucalyptus	913
HDRAIL	H003	14	38	78	147	224	21	Qa	Alluvium - unconsolidated		Acacia victoriae scattered tall shrubs	914
HDRAIL	H209	14	38	78	147	225	28	Qc	Colluvium		Corymbia hamersleyana scattered	915
HDRAIL	H215	14	38	78	147	225	33	AFm	MADDINA FORMATION or		Acacia bivenosa, A. pyrifolia open to	916
WPI	CP510	14	38	79	148	226	12	Qb	Alluvium - unconsolidated		Acacia xiphophylla scattered tall	917
FMG-2006	P3JQ3	14	38	79	148	227	21	Agm	Monzogranite		Acacia bivenosa Shrubland over a	918
FMG-2006	P8C	14	38	79	148	227	10	Ab	Ultramafic schist		Acacia bivenosa and Acacia	919
FMG-2006	rE1	14	38	79	149	228	18	Agm	Monzogranite		Triodia blue (rE1-01) Hummock	920
FMG-2006	rF1	14	38	79	149	228	10	Qeg			Scattered Low Shrubs and Herbs over	921
WAGEORIV	0206	15	39	80	150	229	26	AFjkdl	JEERINAH FORMATION		Eucalyptus leucophloia low open	922
WAMTLEA	0541	15	39	80	150	229	32	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low woodland	923
WAMTLEA	0543	15	39	80	150	229	24	Qa	Alluvium - unconsolidated		Acacia atkinsiana, Acacia	924
WAMTHER	0545	15	39	80	150	229	20	AFjsl	Mudstone, siltstone		Eucalyptus leucophloia scattered low	925
WPI	BOR229	15	39	80	150	229	20	Wm	MOUNT McGRATH		Corymbia hamersleyana scattered low	926
308	2MATC08	15	39	80	150	229	33	Qc	Colluvium		Hakea chordophylla scattered shrubs	927
WPI	CMP006	15	39	80	150	229	13	Qc	Colluvium		Acacia bivenosa scattered shrubs over	928
WAGEORIV	0216A	15	39	80	151	230	17	Qao	Alluvium - unconsolidated		Acacia pyrifolia, Acacia	929
232a	MEA01	15	39	80	151	230	17	Tp	ROBE PISOLITE		Acacia atkinsiana, A. inaequilatera,	930
308	MATC03	15	39	80	151	230	11	Tp	ROBE PISOLITE		Acacia arida open heath over Triodia	931
232a	MEA18	15	39	80	151	230	8	Tp	ROBE PISOLITE		Acacia atkinsiana, A. arida tall	932
232a	MEA20	15	39	80	151	230	11	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	933
232a	MEA02	15	39	80	151	231	20	Tp	ROBE PISOLITE		Acacia atkinsiana open scrub over	934
232a	MEA17	15	39	80	151	231	22	Tp	ROBE PISOLITE		Acacia arida tall shrubland over	935
232a	MEA22	15	39	80	151	231	22	Tp	ROBE PISOLITE		Acacia pruinocarpa low open	936
232a	MEA09	15	39	80	151	231	10	Tp	ROBE PISOLITE		Acacia atkinsiana, A. arida open scrub	937
232a	MEA11	15	39	80	151	231	17	Tp	ROBE PISOLITE		Acacia arida (A. atkinsiana) open	938
232a	MEA12	15	39	80	151	231	9	Tp	ROBE PISOLITE		Acacia atkinsiana open scrub over	939
232a	MESG18	15	39	80	151	231	17	Qc	Colluvium		Acacia inaequilatera scattered tall	940
232a	MEA13	15	39	81	152	232	30	Tp	ROBE PISOLITE		Eucalyptus leucophloia scattered low	941
232a	MEA15	15	39	81	152	232	43	Tp	ROBE PISOLITE		Corymbia hamersleyana (Eucalyptus	942
232a	MEA19	15	39	81	152	232	23	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis,	943
232a	MEA14	15	39	81	152	233	20	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis	944
550AA	11RAIL106	15	40	82	153	234	10	Agm	Monzogranite		Low Woodland of Corymbia	945
HDRAIL	H236	15	40	82	153	234	13	Agm	Monzogranite		Acacia inaequilatera scattered tall	946
550AA	KR120	15	40	82	153	234	6	Agm	Monzogranite		Tall Open Shrubland of Acacia	947
550AA	KR121	15	40	82	153	234	10	Agm	Monzogranite		Tall Open Shrubland of Acacia	948
FMG-2006	P8K	15	40	82	153	234	9	AgSm	BAMBOO SPRINGS		Acacia bivenosa, Senna glutinosa	949
HDRAIL	H083	15	40	83	154	235	14	Qao	Alluvium - unconsolidated		Acacia acradenia, A. colei, A.	950
HDRAIL	H108	15	40	83	154	235	17	_C2-f			Acacia inaequilatera scattered tall	951
HDRAIL	H270	15	40	83	154	235	23	Agb	Gabbro.		Acacia ancistrocarpa open heath over	952
HDRAIL	H192	15	40	83	154	235	9	Qc	Colluvium		Cassia luerssenii scattered tall shrubs	953
HDRAIL	H217	15	40	83	154	235	9	Qc	Colluvium		Acacia acradenia scattered tall shrubs	954
HDRAIL	H218	15	40	83	154	236	11	Qc	Colluvium		Acacia inaequilatera scattered tall	955
550AA	12RAIL107	15	40	83	154	236	7	Qc	Colluvium		Tall Open Shrubland of Acacia	956
550AA	KR122	15	40	83	154	236	12	Agm	Monzogranite		Scattered Tall Trees of Acacia	957
HDRAIL	H168	15	40	83	155	237	8	ADm	MALLINA FORMATION		Acacia stellaticeps scattered low	958
HDRAIL	H170	15	40	83	155	237	10	_A1f			Triodia wiseana, T. epactia mid-dense	959
232a	MESG02	15	40	84	156	238	26	Tp	ROBE PISOLITE		Corymbia hamersleyana scattered low	960
232a	MESG20	15	40	84	156	238	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia, Corymbia	961
232a	MESG19	15	40	84	156	238	12	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis	962
232a	MESG24	15	40	84	156	238	14	Tp	ROBE PISOLITE		Acacia acradenia scattered tall shrubs	963
232a	MESG03	15	40	84	156	238	13	Tp	ROBE PISOLITE		Corymbia hamersleyana scattered low	964
232a	MESG09	15	40	84	156	238	14	Tp	ROBE PISOLITE		Corymbia hamersleyana scattered low	965
232a	MESG04	15	40	84	156	238	11	Tp	ROBE PISOLITE		Acacia acradenia open heath to low	966
232a	MESG16	15	40	84	156	238	10	Qc	Colluvium		Acacia atkinsiana tall open scrub over	967
WAGEORIV	0182	16	41	85	157	239	21	AFjsl	Mudstone, siltstone		Cassia glutinosa scattered shrubs over	968
WPI	ASN032	16	41	85	157	239	10	Qc	Colluvium		Eucalyptus leucophloia and Corymbia	969
WAMTLEA	0399	16	41	85	157	240	9	AFm	MADDINA FORMATION or		Acacia bivenosa low open shrubland	970
WPI	BOR199	16	41	85	157	240	12	Wm	MOUNT McGRATH			971
WPI	AD003	16	41	85	157	240	16	PLWb	CHEELA SPRINGS BASALT		Eucalyptus victrix low open forest	972
WASA	0818	16	41	85	158	241	18	Czc	Colluvium		Eucalyptus gamophylla low open	973
WPI	CP519	16	41	85	158	241	12	Qrg	Quartzofeldspathic sand		Acacia bivenosa open shrubland over	974

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	AD007	16	41	86	159	242	12	Tp	ROBE PISOLITE		Acacia xiphophylla open shrubland	975
WPI	CP193	16	41	86	159	242	13	Qc	Colluvium		Eucalyptus leucophloia ssp.	976
WPI	TRW002	16	41	86	159	242	18	Wm	MOUNT McGRATH		Triodia wiseana very open hummock	977
WPI	CW049	16	41	86	159	242	13	Tp	ROBE PISOLITE		Acacia xiphophylla high open	978
WPI	CP327	16	41	86	159	242	11	Kny	YARRALOOLA		Acacia bivenosa and A. atkinsiana	979
WPI	CP363	16	41	86	159	242	14	Kny	YARRALOOLA		Acacia xiphophylla high open	980
WPI	CP337	16	41	86	159	242	11	Qc	Colluvium		Acacia xiphophylla high open	981
WPI	ASN021	16	41	86	160	243	12	PLWd	DUCK CREEK DOLOMITE		Corymbia hamersleyana low scatterd	982
WPI	ASN022	16	41	86	160	243	12	Qc	Colluvium		Acacia wanyu open shrubland over	983
WPI	CP213	16	41	86	160	243	11	Cp			Acacia bivenosa open shrubland over	984
WPI	BOR-101	16	41	86	160	243	20	Qc	Colluvium		Acacia xiphophylla high open	985
WPI	BOR183	16	41	86	160	243	12	Qc	Colluvium		Acacia aneura (dead) over Acacia	986
WPI	CP088	16	41	86	160	243	15	Qc	Colluvium		Corymbia candida ssp. candida	987
WAFORSLO	0255	16	41	87	161	244	14	Czc	Colluvium		Acacia xiphophylla scattered tall	988
WAMTLEA	0521	16	41	87	161	244	8	AFjkdl	JEERINAH FORMATION		Acacia xiphophylla high shrubland	989
WPI	JW013	16	41	87	161	244	11	Qc	Colluvium		Acacia xiphophylla high shrubland	990
WAMTLEA	0418	16	41	87	161	244	6	AFm	MADDINA FORMATION or		Triodia wiseana hummock grassland.	991
WAFCBOR	1059	16	41	87	161	244	10	Qs	Eolian sand [siliceous]		Acacia xiphophylla high shrubland	992
WPI	AS023	16	41	87	161	244	7	Qc	Colluvium		Acacia xiphophylla low open	993
WPI	CP058	16	41	87	161	244	14	Qc	Colluvium		Acacia xiphophylla high shrubland	994
WAMTLEA	0471	16	41	87	162	245	8	AFjslg	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	995
WAMTHER	0595	16	41	87	162	245	6	Qs	Eolian sand [siliceous]		Triodia wiseana hummock grassland.	996
WAMTLEA	0487	17	42	88	163	246	10	AFm	MADDINA FORMATION or		Eucalyptus leucophloia low open	997
WPI	CW007	17	42	88	163	246	8	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	998
WPI	TR107	17	42	88	163	246	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia open	999
308	WAR03	17	42	88	163	246	11	Tp	ROBE PISOLITE		Eucalyptus leucophloia subsp.	1000
FMG-2006	P9GtoP9Fe	17	42	88	163	246	9	Qc	Colluvium		Eucalyptus leucophloia Low Open	1001
WPI	CW001	17	42	88	164	247	19	Tp	ROBE PISOLITE		Acacia arida shrubland over Triodia	1002
WPI	CW020	17	42	88	164	247	19	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1003
WPI	CW023	17	42	88	164	247	20	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1004
WPI	CW037	17	42	88	164	247	15	Tp	ROBE PISOLITE		Acacia arida and Tephrosia uniovulata	1005
WPI	TR016	17	42	88	164	247	27	Tp	ROBE PISOLITE		Acacia citrinoviridis high open	1006
WPI	CW002	17	42	88	164	247	9	Tp	ROBE PISOLITE		Acacia arida high open shrubland over	1007
WPI	CW008	17	42	88	164	247	10	Tp	ROBE PISOLITE		Acacia arida shrubland over Triodia	1008
WPI	CW004	17	42	88	164	247	13	Qc	Colluvium		Acacia ancistrocarpa open shrubland	1009
WPI	CW021	17	42	88	164	247	12	Tp	ROBE PISOLITE		Acacia arida and A. bivenosa	1010
WPI	CW003	17	42	88	164	247	10	Tp	ROBE PISOLITE		Acacia arida high shrubland over	1011
WPI	CW022	17	42	88	164	247	8	Tp	ROBE PISOLITE		Acacia arida shrubland over Triodia	1012
WPI	TR100	17	42	88	164	247	11	Tp	ROBE PISOLITE		Grevillea wickhamii scattered tall	1013
WPI	CW015	17	42	88	164	247	16	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis high	1014
WPI	CW080	17	42	88	164	247	13	Tp	ROBE PISOLITE		Corymbia hamersleyana scattered low	1015
WPI	CW024	17	42	88	164	247	13	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis open	1016
WPI	CW041	17	42	88	164	247	12	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1017
550AA	11RAIL1101	17	42	89	165	248	6	Plo			Open Heath of Acacia bivenosa,	1018
WPI	TR103	17	42	89	165	248	4	Wm	MOUNT McGRATH		Acacia bivenosa open shrubland over	1019
WPI	CP472	17	42	89	165	248	11	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia ssp.	1020
308	WAR07	17	42	89	165	248	11	Tp	ROBE PISOLITE		Acacia atkinsiana tall open shrubland	1021
WPI	AD001	17	42	89	165	248	14	PLWb	CHEELA SPRINGS BASALT		Acacia inaequilatera scattered tall	1022
WPI	AD005	17	42	89	165	248	12	PLWb	CHEELA SPRINGS BASALT		Acacia inaequilatera high open	1023
WPI	AD028	17	42	89	166	249	14	Qc	Colluvium		Acacia atkinsiana open shrubland over	1024
WPI	BOR222	17	42	89	166	249	17	Qac	Alluvial -clay, silt		Acacia tumida open scrub over Acacia	1025
WPI	CP205	17	42	89	166	249	14	Qc	Colluvium		Acacia inaequilatera and A.	1026
WPI	CP248	17	42	89	166	249	12	Kny	YARRALOOLA		Acacia bivenosa high open shrubland	1027
WPI	TC047	17	42	89	166	249	11	Qc	Colluvium		Acacia inaequilatera, Acacia	1028
WPI	AS021	17	42	89	166	249	11	Wm	MOUNT McGRATH		Acacia spp. low open shrubland over	1029
WPI	CP057	17	42	89	166	249	13	Qc	Colluvium		Acacia atkinsiana high shrubland over	1030
WPI	CP277	17	42	89	166	249	12	Qc	Colluvium		Acacia bivenosa open shrubland over	1031
WPI	CP295	17	42	89	166	249	12	Qc	Colluvium		Acacia bivenosa, A. ancistrocarpa and	1032
WPI	ASA016	17	42	89	166	249	14	Qc	Colluvium		Eucalyptus leucophloia over Acacia	1033
WPI	CP211	17	42	89	166	249	12	Cp			Acacia inaequilatera scattered tall	1034
WPI	TR025	17	42	89	166	249	9	Tp	ROBE PISOLITE		Acacia bivenosa, A. inaequilatera and	1035
WPI	ASN005	17	42	89	166	249	12	PLWd	DUCK CREEK DOLOMITE		Acacia ancistrocarpa low open	1036
WPI	CP173	17	42	89	166	249	11	Qc	Colluvium		Acacia ancistrocarpa, A.atkinsiana,	1037
WPI	ASA006	17	42	89	166	249	14	Tp	ROBE PISOLITE		Acacia wanyu, Acacia atkinsiana and	1038
308	MEAS24	17	42	89	166	249	9	Qp	Elluvim, colluvium, gilgais		Acacia bivenosa; (Acacia	1039

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	BOR218	17	42	89	166	249	19	Qc	Colluvium		Acacia inaequilatera and Acacia	1040
WPI	CMP002	17	42	89	166	249	17	Wm	MOUNT McGRATH		Senna glutinosa ssp. pruinosa and	1041
WPI	CNW007	17	42	89	166	249	15	Qc	Colluvium		Acacia bivenosa scattered shrubs over	1042
WPI	TsRR040	17	42	89	166	249	13	Tp	ROBE PISOLITE		Acacia bivenosa open shrubland over	1043
WPI	TsRR041	17	42	89	166	249	14	Tp	ROBE PISOLITE		Triodia sp. Robe River open	1044
WPI	CP287	17	42	89	166	249	11	Qc	Colluvium		Acacia tumida var. pilbarensis	1045
WPI	CP361	17	42	89	166	249	12	Kny	YARRALOOLA		Acacia bivenosa and A. atkinsiana	1046
WPI	TR010	17	42	89	166	249	12	Wm	MOUNT McGRATH		Acacia pruinocarpa high shrubland	1047
WPI	TR012	17	42	89	166	249	9	Tp	ROBE PISOLITE		Acacia inaequilatera high open	1048
WPI	BOR123	17	42	89	166	250	15	Qc	Colluvium		Acacia citrioniviridis, Grevillea	1049
WPI	CE005	17	42	89	166	250	15	Tp	ROBE PISOLITE		Acacia atkinsiana shrubland over	1050
WPI	CW009	17	42	89	166	250	21	Tp	ROBE PISOLITE		Acacia pruinocarpa high open	1051
WPI	TR008	17	42	89	166	250	16	Tp	ROBE PISOLITE		Grevillea wickhamii ssp. hispidula	1052
WPI	CE004	17	42	89	166	250	9	Tp	ROBE PISOLITE		Acacia bivenosa scattered shrubs over	1053
WPI	CR004	17	42	89	166	250	11	Qc	Colluvium		Acacia bivenosa shrubland over	1054
WPI	CE006	17	42	89	166	250	16	Tp	ROBE PISOLITE		Acacia ancistrocarpa scattered shrubs	1055
WPI	CE007	17	42	89	166	250	12	Tp	ROBE PISOLITE		Acacia ancistrocarpa, Acacia	1056
WPI	CE017	17	42	89	166	250	18	Tp	ROBE PISOLITE		2008: Acacia ancistrocarpa and	1057
WPI	CE009	17	42	89	166	250	22	Tp	ROBE PISOLITE		Acacia tumida closed heath over	1058
WPI	CE013	17	42	89	166	250	28	Tp	ROBE PISOLITE		Tephrosia uniovulata and Corchorus	1059
WPI	ASN-023	17	42	89	167	251	19	Qc	Colluvium		Acacia atkinsiana, Acacia bivenosa,	1060
WPI	CP124	17	42	89	167	251	13	Qac	Alluvial -clay, silt		Eucalyptus leucophloia ssp.	1061
WPI	CP305	17	42	89	167	251	14	Kny	YARRALOOLA		Acacia tumida var. pilbarensis, A.	1062
WPI	CP323	17	42	89	167	251	20	Kny	YARRALOOLA		Corymbia hamersleyana scattered low	1063
WPI	CP309	17	42	89	167	251	15	Kny	YARRALOOLA		Corymbia hamersleyana low open	1064
WPI	CP184	17	42	89	167	251	14	Kny	YARRALOOLA		Corymbia hamersleyana scattered low	1065
WPI	CW005	17	42	89	167	251	14	Qc	Colluvium		Acacia tumida var.pilbarensis open	1066
WPI	BOR285	17	42	89	167	251	12	Qc	Colluvium		Eucalyptus leucophloia subsp.	1067
WPI	BOR288	17	42	89	167	251	11	Qc	Colluvium		Acacia atkinsiana and Acacia	1068
WPI	CP171	17	42	89	167	251	11	Qc	Colluvium		Corymbia hamersleyana scattered low	1069
WPI	HR055	17	42	89	167	251	13	Qc	Colluvium		Acacia atkinsiana, A. bivenosa and A.	1070
EP00550AA	VOQ34	17	42	89	167	251	19	Qa	Alluvium - unconsolidated		Woodland of Corymbia hamersleyana	1071
WPI	BOR082	17	42	89	167	252	10	Qc	Colluvium		Triodia wiseana open hummock	1072
WPI	CP120	17	42	89	167	252	14	Qac	Alluvial -clay, silt		Corymbia hamersleyana and	1073
WPI	BOR248	17	42	89	167	252	17	Qc	Colluvium		Eucalyptus leucophloia subsp.	1074
WPI	CW051	17	42	89	167	252	22	Tp	ROBE PISOLITE		Acacia ancistrocarpa shrubland over	1075
WPI	AD002	17	42	90	168	253	11	Wm	MOUNT McGRATH		Eucalyptus leucophloia ssp.	1076
WPI	KB004	17	42	90	168	253	13	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1077
WPI	TsRR021	17	42	90	168	253	16	Qc	Colluvium		Acacia inaequilatera high open	1078
WPI	TR013	17	42	90	168	253	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1079
WPI	TsRR031	17	42	90	168	253	14	Tp	ROBE PISOLITE		Triodia sp. Robe River open	1080
WPI	TsRR020	17	42	90	168	253	14	Tp	ROBE PISOLITE		Eucalyptus leucophloia subsp.	1081
WPI	UC003	17	42	90	168	253	14	Tp	ROBE PISOLITE		Acacia pruinocarpa high open	1082
WPI	UC010	17	42	90	168	253	10	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1083
WPI	UC015	17	42	90	168	253	14	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1084
WPI	ASA005	17	42	90	169	254	15	Tp	ROBE PISOLITE		Acacia atkinsiana and Acacia	1085
WPI	TR031	17	42	90	169	254	16	PLWb	CHEELA SPRINGS BASALT		Eucalyptus leucophloia ssp.	1086
WPI	TR014	17	42	90	169	254	9	Tp	ROBE PISOLITE		Acacia pruinocarpa high shrubland	1087
WPI	TR070	17	42	90	169	254	12	Tp	ROBE PISOLITE		Acacia inaequilatera over A. bivenosa	1088
WPI	TR026	17	42	90	169	254	10	Tp	ROBE PISOLITE		Grevillea wickhamii ssp. hispidula	1089
WPI	CNW001	17	42	90	169	254	8	Qc	Colluvium		Triodia wiseana hummock grassland	1090
WPI	CNW006	17	42	90	169	254	9	Qc	Colluvium		Triodia wiseana hummock grassland	1091
EP00550AA	ZION042	17	42	90	169	254	7	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1092
WPI	CN002	17	42	90	169	255	11	Tp	ROBE PISOLITE		Acacia pruinocarpa shrubland over	1093
WPI	CN003	17	42	90	169	255	9	Tp	ROBE PISOLITE		Petalostylis labicheoides open	1094
WPI	JW001	17	42	90	169	255	13	Tp	ROBE PISOLITE		Acacia pruinocarpa and Petalostylis	1095
WPI	CN004	17	42	90	169	255	15	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1096
WPI	CN007	17	42	90	169	255	10	Tp	ROBE PISOLITE		Acacia pruinocarpa high open	1097
WPI	KB046	17	42	90	169	255	8	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1098
WPI	UC001	17	42	90	169	255	12	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1099
WPI	CN001	17	42	90	169	256	10	Tp	ROBE PISOLITE		Triodia sp. Robe River open	1100
WPI	UCW005	17	42	90	169	256	10	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1101
WPI	CP600	17	42	90	169	256	11	Qac	Alluvial -clay, silt		Eucalyptus leucophloia subsp.	1102
WPI	TR086	17	42	90	169	256	14	Tp	ROBE PISOLITE		Triodia sp. Robe River and Triodia	1103
WPI	JW009	17	42	90	169	256	15	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1104

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	TR003	17	42	90	169	256	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1105
WPI	TR004r	17	42	90	169	256	28	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1106
WPI	CN006	17	42	90	170	257	17	Tp	ROBE PISOLITE		Triodia sp. Robe River open	1107
WPI	JW002r	17	42	90	170	257	21	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1108
WPI	CR001r	17	42	90	170	257	27	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1109
WPI	FM020	17	42	90	170	257	11	Tp	ROBE PISOLITE		2008: Acacia atkinsiana open	1110
WPI	JW003	17	42	90	170	257	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1111
WPI	JW004	17	42	90	170	257	13	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1112
WPI	CR003	17	42	90	170	257	17	Tp	ROBE PISOLITE		Acacia bivenosa open shrubland over	1113
WPI	TsRR016	17	42	90	170	257	15	Tp	ROBE PISOLITE		Acacia atkinsiana open scrub over A.	1114
WPI	CR008	17	42	90	170	257	22	Qc	Colluvium		Eucalyptus leucophloia ssp	1115
WPI	CR012	17	42	90	170	257	23	Qc	Colluvium		Eucalyptus leucophloia ssp.	1116
WPI	CR006	17	42	90	170	257	24	Tp	ROBE PISOLITE		Acacia bivenosa open shrubland over	1117
WPI	CR014	17	42	90	170	257	29	Qc	Colluvium		Eucalyptus leucophloia ssp.	1118
WPI	CP199	17	42	90	170	257	13	Wm	MOUNT McGRATH		Eucalyptus leucophloia sp.	1119
WPI	JW005	17	42	90	170	257	20	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1120
WPI	JW007	17	42	90	170	257	18	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1121
WPI	JW001r	17	42	90	170	257	14	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1122
WPI	TR087	17	42	90	170	257	20	Tp	ROBE PISOLITE		Acacia tumida high shrubland over	1123
WPI	CP474	17	42	90	170	257	15	PLHb	BROCKMAN IRON FORMATION		Ficus brachypoda low open woodland	1124
WPI	ASN031	17	42	91	171	258	14	PLWd	DUCK CREEK DOLOMITE		Eucalyptus leucophloia scattered low	1125
WPI	BOR073	17	42	91	171	258	15	Qc	Colluvium		Eucalyptus leucophloia ssp.	1126
WPI	BOR279	17	42	91	171	258	19	Qc	Colluvium		Scattered Corymbia hamersleyana and	1127
WPI	JW006	17	42	91	171	258	16	Qc	Colluvium		Acacia bivenosa low open shrubland	1128
WPI	CP039	17	42	91	171	259	23	PLWd	DUCK CREEK DOLOMITE		Acacia inaequilatera scattered shrubs	1129
WPI	KB045	17	42	91	171	259	26	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1130
WPI	TsRR042	17	42	91	171	259	20	Tp	ROBE PISOLITE		Acacia pruinocarpa scattered tall	1131
WPI	CR001	17	42	91	171	259	34	Qac	Alluvial -clay, silt		Acacia bivenosa shrubland over	1132
WPI	FM001	17	42	91	171	259	26	Tp	ROBE PISOLITE		Acacia bivenosa and Petalostylis	1133
WPI	FM002	17	42	91	171	259	18	Tp	ROBE PISOLITE		Acacia bivenosa low scattered shrubs	1134
WPI	KB001	17	42	91	171	259	18	Tp	ROBE PISOLITE		Acacia synchronicia scattered tall	1135
WPI	KB009	17	42	91	171	259	28	Tp	ROBE PISOLITE		Petalostylis labicheoides and Acacia	1136
WPI	KB042	17	42	91	171	259	20	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1137
WPI	KB043	17	42	91	171	259	12	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1138
WPI	TR017	17	42	91	171	259	17	Tp	ROBE PISOLITE		Petalostylis labicheoides high	1139
WPI	KB044	17	42	91	171	259	13	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1140
215	MJ07	17	42	91	171	259	19	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1141
WPI	CW025	17	42	91	171	259	14	Tp	ROBE PISOLITE		Mixed low scattered shrubs over	1142
WPI	TR001	17	42	91	171	259	23	Qc	Colluvium		Acacia pruinocarpa open shrubland	1143
WPI	TR018	17	42	91	171	259	21	Tp	ROBE PISOLITE		Triodia epactia open hummock	1144
WPI	TR015	17	42	91	171	259	17	Tp	ROBE PISOLITE		Acacia pruinocarpa open shrubland	1145
WPI	TR022	17	42	91	171	259	22	Tp	ROBE PISOLITE		Acacia bivenosa scattered shrubs over	1146
WPI	TR023	17	42	91	171	259	27	Tp	ROBE PISOLITE		Acacia atkinsiana and Petalostylis	1147
WPI	TR005	17	42	91	171	259	14	Tp	ROBE PISOLITE		Acacia pruinocarpa high open	1148
WPI	TR020	17	42	91	171	259	19	Tp	ROBE PISOLITE		Acacia bivenosa scattered shrubs over	1149
WPI	TsRR015	17	42	91	171	259	13	Tp	ROBE PISOLITE		Triodia sp. Robe River and T. wiseana	1150
WPI	BOR100	17	42	91	172	260	20	Qc	Colluvium		Corymbia hamersleyana low open	1151
WPI	CE011	17	42	91	172	260	24	Tp	ROBE PISOLITE		Acacia atkinsiana low open shrubland	1152
WPI	FM021	17	42	91	172	260	15	Tp	ROBE PISOLITE		2008: Triodia sp. Robe River and	1153
308	2MATC05	18	43	92	173	261	40	Qc	Colluvium		Acacia inaequilatera tall open	1154
308	MATR20	18	43	92	173	261	44	Qc	Colluvium		Grevillea wickhamii subsp.	1155
308	MATH15	18	43	92	173	261	49	Qac	Alluvial -clay, silt		Hakea chordophylla, Acacia	1156
308	MATR11	18	43	92	173	261	44	Qc	Colluvium		Acacia inaequilatera scattered low	1157
232a	MESG14	18	43	92	173	261	37	Qc	Colluvium		Acacia bivenosa, A. inaequilatera	1158
232a	MEA23	18	43	92	173	261	25	Tp	ROBE PISOLITE		Acacia atkinsiana tall shrubland over	1159
308	WAR09	18	43	92	173	261	36	Qp	Elluvim, colluvium, gilgais		Acacia inaequilatera scattered tall	1160
308	MATH11	18	43	92	173	261	42	Qc	Colluvium		Acacia arida open heath over Triodia	1161
308	WAR04	18	43	92	173	261	15	Qp	Elluvim, colluvium, gilgais		Acacia bivenosa open shrubland over	1162
308	MEAS10	18	43	92	173	262	26	Qc	Colluvium		Corymbia (MEAS10-06) scattered	1163
308	MEAS11	18	43	92	173	262	39	Qc	Colluvium		Corymbia zygophylla scattered low	1164
301A	BUN08	18	43	92	174	263	51	Qc	Colluvium		Corymbia hamersleyana scattered low	1165
301A	BUN09	18	43	92	174	263	50	Qc	Colluvium		Hakea lorea, H. chordophylla	1166
301A	BUN15	18	43	92	174	263	41	Qc	Colluvium		Acacia inaequilatera, Hakea	1167
378	BUN73	18	43	92	174	263	53	Qc	Colluvium		Corymbia hamerslyana low open	1168
301A	BUN14	18	43	92	174	263	29	Qc	Colluvium		Corymbia hamersleyana scattered low	1169

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	CEW001	18	43	92	174	264	41	Qc	Colluvium		Ptilotus astrolasius var. astrolasius	1170
WPI	CEW002	18	43	92	174	264	50	Qc	Colluvium		Corymbia hamersleyana low open	1171
WPI	CEW003	18	43	92	174	264	44	Qc	Colluvium		Corymbia hamersleyana scattered low	1172
WPI	TC066	18	43	92	174	264	50	Qc	Colluvium		Acacia inaequilatera scattered tall	1173
WPI	TC092	18	43	92	174	264	28	Qc	Colluvium		Corymbia hamersleyana over Ptilotus	1174
WPI	TC134	18	43	92	174	264	30	Qc	Colluvium		Acacia inaequilatera over Triodia	1175
WPI	CP050	18	43	92	174	264	50	Kny	YARRALOOLA		Corymbia hamersleyana scattered low	1176
WPI	CP051	18	43	92	174	264	39	Qc	Colluvium		Corymbia candida ssp. candida	1177
WPI	CP056	18	43	92	174	264	61	Qac	Alluvial -clay, silt		Corymbia hamersleyana low open	1178
WPI	CP030	18	43	92	175	265	32	Qc	Colluvium		Acacia xiphophylla and A.	1179
WPI	CP033	18	43	92	175	265	29	Qa	Alluvium - unconsolidated		Acacia synchronicia high open	1180
WPI	CWW059	18	43	92	175	265	22	Qc	Colluvium		Acacia bivenosa and Acacia	1181
WPI	CR007r	18	43	92	175	265	36	Qc	Colluvium		Acacia synchronicia high open	1182
WPI	CR022	18	43	92	175	265	30	Qc	Colluvium		Acacia synchronicia high shrubland	1183
WPI	CP040	18	43	92	175	265	38	Qc	Colluvium		Acacia atkinsiana shrubland over	1184
WPI	CP041	18	43	92	175	265	57	Qp	Elluvim, colluvium, gilgais		Acacia trudgeniana high open	1185
WPI	CP509	18	43	92	175	265	28	Qp	Elluvim, colluvium, gilgais		Corymbia candida low open woodland	1186
WPI	CR010	18	43	92	175	265	43	Tp	ROBE PISOLITE		2008: Corymbia hamersleyana	1187
WPI	KBW005	18	43	92	175	265	27	Qc	Colluvium		Acacia synchronicia high shrubland	1188
WPI	BOR277	18	43	93	176	266	18	Qc	Colluvium			1189
WPI	CW006	18	43	93	176	266	23	PLWd	DUCK CREEK DOLOMITE		Triodia wiseana hummock grassland	1190
WPI	TC042	18	43	93	176	266	16	Tp	ROBE PISOLITE		Acacia arida high shrubland over	1191
WPI	KB006	18	43	93	176	266	23	Qc	Colluvium		Acacia xiphophylla high shrubland	1192
WPI	UCW004	18	43	93	176	266	18	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1193
WPI	TC011	18	43	93	176	266	19	Wm	MOUNT McGRATH		Eucalyptus leucophloia ssp.	1194
WPI	TR067	18	43	93	176	266	18	Tp	ROBE PISOLITE		2009: Eucalyptus leucophloia	1195
WPI	CW010	18	43	93	176	267	36	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1196
WPI	CW011	18	43	93	176	267	40	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis and	1197
WPI	CW026	18	43	93	176	267	29	Tp	ROBE PISOLITE		Acacia pruinocarpa, A. bivenosa and	1198
WPI	CW028	18	43	93	176	267	44	Wa	ASHBURTON FORMATION		Acacia arida scattered shrubs over	1199
WPI	CW032	18	43	93	176	267	30	Tp	ROBE PISOLITE		Acacia inaequilatera high open	1200
WPI	CW012	18	43	93	176	267	26	Tp	ROBE PISOLITE		Triodia wiseana open hummock	1201
WPI	CW016	18	43	93	176	267	26	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1202
WPI	TR007	18	43	93	176	267	26	Tp	ROBE PISOLITE		Grevillea wickhamii ssp. hispidula	1203
WPI	TR019	18	43	93	176	267	41	Tp	ROBE PISOLITE		Acacia aneura (narrow fine veined,	1204
WPI	TR002	18	43	93	176	267	39	Tp	ROBE PISOLITE		Acacia pruinocarpa open shrubland	1205
WPI	TR009r	18	43	93	176	267	31	Tp	ROBE PISOLITE		Acacia aneura (narrow, fine veined,	1206
WPI	CE003	18	43	93	177	268	12	Tp	ROBE PISOLITE		Acacia pruinocapa and Acacia	1207
WPI	CE031	18	43	93	177	268	21	Tp	ROBE PISOLITE		Acacia pruinocarpa and Acacia	1208
WPI	UC009	18	43	93	177	268	36	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1209
WPI	KB003	18	43	93	177	268	35	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1210
WPI	UC007	18	43	93	177	268	37	Tp	ROBE PISOLITE		Acacia inaequilatera high open	1211
WPI	UC008	18	43	93	177	268	25	Tp	ROBE PISOLITE		Acacia pruinocarpa and Eremophila	1212
WPI	CE008	18	43	93	178	269	29	Tp	ROBE PISOLITE		Tephrosia uniovulata and Corchorus	1213
WPI	CE012	18	43	93	178	269	51	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1214
WPI	CE016	18	43	93	178	269	34	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1215
WPI	CE014	18	43	93	178	269	39	Tp	ROBE PISOLITE		Acacia inaequilatera high open	1216
WPI	KB012	18	43	93	178	269	25	Tp	ROBE PISOLITE		Acacia citrinoviridis high open	1217
WPI	KB013	18	43	93	178	269	31	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1218
WPI	CR018	18	43	93	178	269	19	Tp	ROBE PISOLITE		Acacia bivenosa low shrubland over	1219
WPI	KB005	18	43	93	178	269	24	Tp	ROBE PISOLITE		Acacia aff. aneura (narrow fine	1220
WPI	JW002	18	43	93	178	269	18	Tp	ROBE PISOLITE		Acacia inaequilatera and A.	1221
WPI	JW011	18	43	93	178	269	23	Qc	Colluvium		Acacia bivenosa scattered shrubs over	1222
WPI	KB015	18	43	93	178	269	27	Tp	ROBE PISOLITE		Acacia inaequilatera scattered tall	1223
WPI	KB014	18	43	93	178	269	24	Tp	ROBE PISOLITE		Acacia bivenosa shrubland over	1224
WPI	KB002	18	43	93	178	269	46	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	1225
WPI	KBW003	18	43	93	178	269	32	Qc	Colluvium		Acacia ancistrocarpa high shrubland	1226
WPI	TC006	18	43	93	178	269	31	Qc	Colluvium		Acacia inaequilatera scattered tall	1227
WPI	KB007	18	43	93	178	269	38	Tp	ROBE PISOLITE		Acacia pruinocarpa high open	1228
WPI	KB008	18	43	93	178	269	37	Tp	ROBE PISOLITE		Acacia pruinocarpa and A.	1229
WPI	KB016	18	43	93	178	269	28	Tp	ROBE PISOLITE		Acacia bivenosa high shrubland over	1230
WPI	CE010	18	43	93	178	270	61	Tp	ROBE PISOLITE		Triodia wiseana and Triodia epactia	1231
WPI	CR002	18	43	93	178	270	62	Qc	Colluvium		Corymbia hamersleyana low open	1232
WPI	KB022	18	43	93	178	270	39	Qc	Colluvium		Acacia bivenosa open scrub over	1233
WPI	KB010	18	43	93	178	270	36	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis high	1234

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	KB011	18	43	93	178	270	51	Tp	ROBE PISOLITE		Acacia bivenosa open scrub over	1235
WPI	KB017	18	43	93	178	270	40	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1236
WPI	KB019	18	43	93	178	270	35	Tp	ROBE PISOLITE		Acacia tumida var. pilbarensis and	1237
WPI	CW017r	18	43	93	178	270	37	Tp	ROBE PISOLITE		Acacia citrinoviridus shrubland over	1238
WPI	KBW001	18	43	93	178	270	33	Tp	ROBE PISOLITE		Acacia citrinoviridis high open	1239
WPI	AD004	19	44	94	179	271	46	Wm	MOUNT McGRATH		Owenia acidula low woodland over	1240
WPI	AS020	19	44	94	179	271	20	Qc	Colluvium		Corymbia hamersleyana low open	1241
WPI	AS022	19	44	94	179	271	31	Qc	Colluvium		Corymbia hamersleyana low open	1242
WPI	BOR115	19	44	94	179	271	20	Qac	Alluvial -clay, silt		API-3301 XXX low open woodland	1243
WPI	CP144	19	44	94	179	272	15	Qac	Alluvial -clay, silt		Acacia inaequilatera high open	1244
215	MJ10	19	44	94	179	272	26	Qc	Colluvium		Corymbia hamersleyana low	1245
215	MJ04	19	44	94	179	272	18	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	1246
215	MJ06	19	44	94	179	272	15	Qc	Colluvium		Corymbia hamersleyana low	1247
215	MJ09	19	44	94	179	272	18	Qc	Colluvium		Acacia ancistrocarpa, Grevillea	1248
WPI	AD023	19	44	94	180	273	11	PLWb	CHEELA SPRINGS BASALT		Corymbia hamersleyana scattered low	1249
WPI	CNW003	19	44	94	180	273	15	Qc	Colluvium		Acacia inaequilatera scattered shrubs	1250
WPI	TC007	19	44	94	180	273	12	PLWb	CHEELA SPRINGS BASALT		Acacia inaequilatera open shrubland	1251
WPI	UCW002	19	44	94	180	273	11	Qc	Colluvium		Acacia inaequilatera high open	1252
WPI	CP185	19	44	94	180	273	12	Qc	Colluvium		Corymbia hamersleyana scattered low	1253
WPI	CP227	19	44	94	180	273	14	Qc	Colluvium		Acacia aneura var. intermedia	1254
WPI	CR021	19	44	94	180	273	11	Qc	Colluvium		Acacia synchronicia and A. bivenosa	1255
WPI	BOR091	19	44	94	180	273	11	PLWb	CHEELA SPRINGS BASALT		Acacia inaequilatera and Acacia	1256
WPI	TC103	19	44	94	180	273	13	Wm	MOUNT McGRATH		Acacia bivenosa over Triodia epactia	1257
WPI	CWW055	19	44	94	180	273	21	Qc	Colluvium		Acacia bivenosa open shrubland over	1258
WPI	CP140	19	44	94	180	273	12	Qac	Alluvial -clay, silt		Acacia bivenosa open shrubland over	1259
WPI	CP217	19	44	94	180	273	13	Qc	Colluvium		Corymbia hamersleyana low open	1260
WPI	CP245	19	44	94	180	273	14	PLWd	DUCK CREEK DOLOMITE		Corymbia hamersleyana scattered low	1261
WPI	CP176	19	44	94	180	273	14	Qc	Colluvium		Acacia inaequilatera scattered tall	1262
WPI	CP243	19	44	94	180	273	12	PLWd	DUCK CREEK DOLOMITE		Corymbia hamersleyana scattered low	1263
WPI	CP142	19	44	94	180	273	15	Qac	Alluvial -clay, silt		Acacia inaequilatera, A. bivenosa, A.	1264
WPI	CP146	19	44	94	180	273	11	Qac	Alluvial -clay, silt		Acacia synchronicia open shrubland	1265
WPI	CP148	19	44	94	180	273	12	Qac	Alluvial -clay, silt		Acacia inaequilatera scattered shrubs	1266
WPI	CP153	19	44	94	180	273	19	Pw	Shale, mudstone, sandstone,		Acacia inaequilatera high open	1267
WPI	AD027	19	44	94	180	273	15	Qc	Colluvium		Acacia ancistrocarpa and A.	1268
WPI	CP060	19	44	94	180	273	16	Qc	Colluvium		Acacia inaequilatera scattered tall	1269
WPI	CP132	19	44	94	180	273	17	Qac	Alluvial -clay, silt		Corymbia hamersleyana scattered low	1270
WPI	CP156	19	44	94	180	273	24	Qac	Alluvial -clay, silt		Acacia inaequilatera high open	1271
WPI	CP229	19	44	94	180	273	20	Qc	Colluvium		Corymbia hamersleyana scattered low	1272
WPI	AS025	19	44	94	180	273	11	Qc	Colluvium		Corymbia hamersleyana low open	1273
WPI	CP134	19	44	94	180	273	14	Qac	Alluvial -clay, silt		Corymbia hamersleyana low open	1274
WPI	CP082	19	44	94	180	273	15	Qc	Colluvium		Corymbia hamersleyana low open	1275
WPI	CP492	19	44	94	180	273	12	Qc	Colluvium		Corymbia hamersleyana low open	1276
WPI	CP108	19	44	94	180	273	11	Qc	Colluvium		Corymbia hamersleyana scattered low	1277
WPI	CP112	19	44	94	180	273	13	Qc	Colluvium		Corymbia hamersleyana scattered low	1278
WPI	CP131	19	44	94	180	273	13	Qp	Elluvim, colluvium, gilgais		Corymbia hamersleyana scattered low	1279
WPI	ASA011	19	44	94	180	274	15	PLWd	DUCK CREEK DOLOMITE		Acacia ancistrocarpa scattered tall	1280
WPI	CMP009	19	44	94	180	274	12	Wm	MOUNT McGRATH		Ptilotus astrolasius low scattered	1281
WPI	CP228	19	44	94	180	274	11	Qc	Colluvium		Acacia atkinsiana high shrubland over	1282
WPI	CP236	19	44	94	180	274	20	Qp	Elluvim, colluvium, gilgais		Acacia atkinsiana open shrubland over	1283
WPI	BOR125	19	44	94	180	274	13	Qc	Colluvium		Acacia atkinsiana over Triodia	1284
WPI	CP234	19	44	94	180	274	19	Qp	Elluvim, colluvium, gilgais		Acacia atkinsiana high shrubland over	1285
WPI	CP238	19	44	94	180	274	18	Qp	Elluvim, colluvium, gilgais		Corymbia hamersleyana low open	1286
WPI	CP281	19	44	94	180	274	18	Kny	YARRALOOLA		Corymbia candida ssp. candida and C.	1287
WPI	CP299	19	44	94	180	274	22	Kny	YARRALOOLA		Corymbia hamersleyana low open	1288
WPI	CP317	19	44	94	180	274	13	Kny	YARRALOOLA		Corymbia candida ssp. candida	1289
WPI	CW048	19	44	94	180	274	12	Tp	ROBE PISOLITE		Acacia ancistrocarpa shrubland over	1290
WPI	KBW012	19	44	94	180	274	11	Qc	Colluvium		Acacia bivenosa high shrubland over	1291
WPI	CP224	19	44	94	180	274	16	Qc	Colluvium		Corymbia candida subsp. candida low	1292
WPI	CP230	19	44	94	180	274	12	Qc	Colluvium		Corymbia candida subsp. candida	1293
WPI	BOR098	19	44	95	181	275	18	Qc	Colluvium		Acacia inaequilatera scattered shrubs	1294
WPI	CR032	19	44	95	181	275	15	Qac	Alluvial -clay, silt		Corymbia hamersleyana low	1295
WPI	TC139	19	44	95	181	275	18	Qac	Alluvial -clay, silt		Corymbia hamersleyana scattered low	1296
WPI	TC148	19	44	95	181	275	14	Qac	Alluvial -clay, silt		Acacia pyrifolia high shrubland over	1297
WPI	BOR106	19	44	95	181	275	10	Qac	Alluvial -clay, silt		Ptilotus astrolasius low open	1298
WPI	CR024	19	44	95	181	275	22	Qac	Alluvial -clay, silt		Corymbia hamersleyana low open	1299

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WPI	BOR150	19	44	95	182	276	18	Wm	MOUNT McGRATH		Acacia inaequilatera scattered tall	1300
WPI	TC043	19	44	95	182	276	19	Qc	Colluvium		Eucalyptus camaldulensis scattered	1301
WPI	CR020	19	44	95	182	276	25	Pho	BOOLGEEDA IRON		Acacia inaequilatera scattered tall	1302
WPI	JW008	19	44	95	182	276	15	Qc	Colluvium		Acacia inaequilatera scattered shrubs	1303
WPI	KBW004	19	44	95	182	276	25	Qc	Colluvium		Acacia ancistrocarpa high open	1304
WPI	CP037	19	44	95	182	276	19	Qc	Colluvium		Corymbia hamersleyana low open	1305
WPI	CR005	19	44	95	182	276	23	Qc	Colluvium		Acacia bivenosa shrubland over	1306
WPI	CR019	19	44	95	182	276	22	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	1307
WPI	CP032	19	44	95	182	276	18	Qac	Alluvial -clay, silt		Acacia inaequilatera high open	1308
WPI	BOR151	19	44	95	182	276	18	Qc	Colluvium		Senna artemisioides subsp.	1309
WPI	BOR155	19	44	95	182	276	14	Qc	Colluvium		Senna artemisiodies subsp.	1310
WPI	BOR153	19	44	95	182	276	12	Qc	Colluvium		Acacia inaequilatera scattered tall	1311
WPI	BOR154	19	44	95	182	276	17	Qc	Colluvium		Corymbia hamersleyana over Acacia	1312
WPI	CNW002	19	44	95	182	276	20	Qc	Colluvium		Acacia ancistrocarpa, Acacia	1313
WPI	BOR302	19	44	95	182	276	16	Tp	ROBE PISOLITE		Triodia epactia open hummock	1314
WPI	CEW005	19	44	95	182	276	15	Qc	Colluvium		Acacia inaequilatera and Ptilotus	1315
WPI	CMP001	19	44	95	182	276	26	Wm	MOUNT McGRATH		Acacia synchronicia scattered tall	1316
WPI	CNW004	19	44	95	182	276	19	Qc	Colluvium		Triodia epactia open hummock	1317
WPI	BOR205	19	44	95	182	276	17	Qc	Colluvium		Corymbia hamersleyana low open	1318
WPI	CR033	19	44	95	182	276	21	Qac	Alluvial -clay, silt		Corymbia hamersleyana scattered low	1319
WPI	BOR208	19	44	95	182	276	13	Qc	Colluvium		Corymbia hamersleyana scattered low	1320
WPI	KBW010	19	44	95	182	276	11	Qc	Colluvium		Corymbia hamersleyana scattered low	1321
WPI	KBW002	19	44	95	182	276	19	Qc	Colluvium		Triodia epactia hummock grassland	1322
WPI	TC009	19	44	95	182	276	27	Qc	Colluvium		Corymbia hamersleyana scattered low	1323
WAMTLEA	0489	20	45	96	183	277	8	AFm	MADDINA FORMATION or		Acacia hilliana low open shrubland	1324
550AA	KR002	20	45	96	183	277	10	PLHb	BROCKMAN IRON FORMATION		Scattered Low Trees of Corymbia	1325
WAMTLEA	0501	20	45	96	183	277	12	Tp	ROBE PISOLITE		Eucalyptus leucophloia scattered low	1326
EP00550AA	FT13	20	45	96	183	277	23	Czc	Colluvium		Scattered Low Trees of Corymbia	1327
EP00550AA	FT17	20	45	96	183	277	15	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1328
EP00550AA	FT05	20	45	96	183	277	12	Czc	Colluvium		Scattered Low Trees of Corymbia	1329
EP00550AA	FT12	20	45	96	183	277	12	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1330
EP00550AA	FT19	20	45	96	183	277	17	Tp	ROBE PISOLITE		Low Open Woodland of Corymbia	1331
EP00550AA	FT20	20	45	96	183	277	19	Tp	ROBE PISOLITE		Scattered Tall Shrubs of Hakea	1332
EP00550AA	FT18	20	45	96	183	277	9	Tp	ROBE PISOLITE		Scattered Hummock Grassess of	1333
WAFCBOR	1169	20	45	96	184	278	16	Czc	Colluvium		Corymbia deserticola, Corymbia	1334
EP00550AA	FT29	20	45	96	184	278	18	Czc	Colluvium		Scattered Low Trees of Corymbia	1335
EP00550AA	FT27	20	45	96	184	278	27	Czc	Colluvium		Low Open Woodland of Corymbia	1336
EP00550AA	FT36	20	45	96	184	278	22	Czc	Colluvium		Low Woodland of Eucalyptus	1337
EP00550AA	VOK025	20	45	96	184	278	25	Czc	Colluvium		Low Open Woodland of Eucalytpus	1338
EP00550AA	VOK028	20	45	96	184	278	23	Czc	Colluvium		Scattered Low Trees of Corymbia	1339
EP00550AA	VOK019	20	45	96	184	279	18	Czc	Colluvium		Open Woodland of Eucalyptus	1340
EP00550AA	VOQ017	20	45	96	184	279	23	Czc	Colluvium		Open Woodland of Eucalyptus	1341
EP00550AA	VOQ018	20	45	96	184	279	20	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1342
EP00550AA	VOQ47	20	45	96	184	279	11	Czc	Colluvium		Open Woodland of Corymbia	1343
EP00550AA	ZION009	20	45	96	184	279	9	Tp	ROBE PISOLITE		Low Open Forest of Eucalyptus	1344
EP00550AA	ZION027	20	45	96	184	279	13	Tp	ROBE PISOLITE		Low Open Woodland of Eucalyptus	1345
EP00550AA	ZION019	20	45	96	184	279	14	Tp	ROBE PISOLITE		Low Open Woodland to Scattered	1346
EP00550AA	ZION020	20	45	96	184	279	12	Tp	ROBE PISOLITE		Scattered Low Trees of Euccalyptus	1347
EP00550AA	ZION024	20	45	96	184	279	10	AHs	MOUNT McCRAE SHALE and		Low Woodland of Eucalyptus	1348
EP00550AA	FT07	20	45	96	185	280	20	Czc	Colluvium		Scattered Tall Shrubs of Petalostylis	1349
EP00550AA	ZION004	20	45	96	185	280	22	Czc	Colluvium		Low Open Forest of Eucalyptus	1350
EP00550AA	ZION022	20	45	96	185	280	15	Tp	ROBE PISOLITE		Scattered Low Trees of Corymbia	1351
EP00550AA	ZION015	20	45	96	185	280	20	Tp	ROBE PISOLITE		Scattered Trees of Eucalyptus	1352
EP00550AA	ZION025	20	45	96	185	280	16	Tp	ROBE PISOLITE		Low Open Woodland of Corymbia	1353
EP00550AA	ZION018	20	45	96	185	280	21	Tp	ROBE PISOLITE		Low Open Woodland of Eucalyptus	1354
EP00550AA	ZION012	20	45	96	185	280	15	Tp	ROBE PISOLITE		Low Woodland of Eucalyptus	1355
EP00550AA	ZION014	20	45	96	185	280	11	Tp	ROBE PISOLITE		Scattered Low Trees Corymbia	1356
EP00550AA	ZION017	20	45	96	185	280	15	Tp	ROBE PISOLITE		Scattered Trees of Corymbia	1357
EP00550AA	ZION030	20	45	96	185	280	20	Tp	ROBE PISOLITE		Low Open Woodland of Corymbia	1358
EP00550AA	FT11	20	45	96	185	280	13	Tp	ROBE PISOLITE		Scattered Corymbia hamersleyana to	1359
EP00550AA	FT25	20	45	96	185	280	18	Tp	ROBE PISOLITE		Low Open Woodland of Corymbia	1360
EP00550AA	FT31	20	45	96	185	280	16	Tp	ROBE PISOLITE		Scattered Low Trees of Eucalyptus	1361
EP00550AA	FT24	20	45	96	185	280	17	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Corymbia	1362
EP00550AA	ZION013	20	45	96	185	281	9	Tp	ROBE PISOLITE		Low Open Woodland of Eucalyptus	1363
EP00550AA	ZION023	20	45	96	185	281	8	Tp	ROBE PISOLITE		Scattered Low Trees of Corymbia	1364

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAFCBOR	1068	20	45	97	186	282	20	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia low open	1365
FMG-2006	P9GtoP9Fc	20	45	97	186	282	12	Qc	Colluvium		Acacia pruinocarpa and Hakea	1366
FMG-2006	P9GtoP9Fi	20	45	97	186	282	8				Hakea chordophylla and Acacia	1367
FMG-2006	P9GtoP9Fh	20	45	97	186	282	11	Qc	Colluvium		Corymbia hamersleyana and Hakea	1368
EP00550AA	FT33	20	45	97	186	282	14	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Corymbia	1369
EP00550AA	VOQ38	20	45	97	186	283	12	Czc	Colluvium		Scattered Low Trees of Corymbia	1370
EP00550AA	ZION026	20	45	97	186	283	19	Tp	ROBE PISOLITE		Tall Shrubland of Grevillea wickhamii	1371
EP00550AA	ZION028	20	45	97	186	283	25	Tp	ROBE PISOLITE		Low Open Woodland of Corymbia	1372
WAFCBOR	1069	20	45	98	187	284	13	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia low open	1373
EP00550AA	VOQ008	20	45	98	187	284	17	Czc	Colluvium		Open Woodland of Corymbia	1374
550AA	05RAIL032	20	45	98	187	284	10	Czc	Colluvium		Scattered Low Trees of Corymbia	1375
EP00550AA	VOK018	20	45	98	187	284	15	PLHb	BROCKMAN IRON FORMATION		Scattered Low Trees of Eucalyptus	1376
550AA	05RAIL033	20	45	98	187	284	14	Czc	Colluvium		Open Woodlans of "Eucalyptus	1377
EP00550AA	VOQ21	20	45	98	187	284	17	Czc	Colluvium		Scattered Low Trees of Corymbia	1378
550AA	KR004	20	45	98	187	284	22	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	1379
EP00550AA	VOQ013	20	45	98	187	285	12	Czc	Colluvium		Open Woodland of Eucalyptus	1380
EP00550AA	VOQ26	20	45	98	187	285	20	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Corymbia	1381
EP00550AA	VOQ30	20	45	98	187	285	11	Czc	Colluvium		Tall Open Shrubland of Hakea	1382
EP00550AA	VOQ39	20	45	98	187	285	16	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1383
EP00550AA	VOQ32	20	45	98	187	285	19	Czc	Colluvium		Low Open Woodland of Corymbia	1384
EP00550AA	VOQ43	20	45	98	187	285	22	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	1385
FMG-2006	P9 track 2	20	45	98	188	286	12					1386
WAFCBOR	1065	21	46	99	189	287	31	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia. Corymbia	1387
550AA	07RAIL048	21	46	99	189	287	37	Qs	Eolian sand [siliceous]		Open Woodland of Corymbia	1388
EP00550AA	SERN076	21	46	99	189	288	29	Czc	Colluvium		Low Open Woodland of Eucalyptus	1389
EP00550AA	SERN100	21	46	99	189	288	29	Czc	Colluvium		Scatttered Tall Shrubs of Acacia	1390
EP00550AA	SERN102	21	46	99	189	288	43	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1391
550AA	05RAIL034	21	46	100	190	289	24	Czc	Colluvium		Low Woodland of Eucalyptus	1392
EP00550AA	VOQ29	21	46	100	190	289	15	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1393
EP00550AA	VOK009	21	46	100	190	289	23	Czc	Colluvium		Open Woodland of Eucalyptus	1394
EP00550AA	TRIN011	21	46	100	190	290	13				Scattered Low Trees of Corymbia	1395
EP00550AA	TRIN011A	21	46	100	190	290	24	Qc	Colluvium		Low Woodland of Eucalyptus	1396
550AA	07RAIL035	21	46	100	191	291	21	AHd	WITTENOOM FORMATION		Low Open Woodland to Scattered	1397
EP00550AA	CG001	21	46	100	191	291	8	Czc	Colluvium		Low Open Woodland of Eucalyptus	1398
EP00550AA	CG004	21	46	100	191	291	20	Czc	Colluvium		Open Woodland of Eucalyptus	1399
EP00550AA	VOQ31	21	46	100	191	291	13	PLHb	BROCKMAN IRON FORMATION		Scattered Low Trees of Eucalyptus	1400
550AA	BD001	21	46	100	191	292	15	Czc	Colluvium		Open Woodland of Eucalyptus	1401
550AA	02RAIL001	21	46	100	191	292	12	PLHb	BROCKMAN IRON FORMATION		Tall Shrubland of Acacia monticola	1402
550AA	02RAIL003	21	46	100	191	292	17	Czc	Colluvium		Low Woodland of Eucalyptus	1403
550AA	KR006	21	46	100	191	292	15	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1404
550AA	02RAIL006	21	46	100	191	292	14	Czc	Colluvium		Tall Open Scrub of Acacia	1405
EP00550AA	SERN068	21	46	100	191	292	17	Czc	Colluvium		Low Open Woodland of Eucalyptus	1406
EP00550AA	SERN108	21	46	100	191	292	26	PLHb	BROCKMAN IRON FORMATION		Low Woodland of Corymbia	1407
EP00550AA	VOQ36	21	46	100	191	292	24	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Eucalyptus	1408
EP00550AA	ZION006	21	46	100	191	292	24	Tp	ROBE PISOLITE		Low Woodlland of Eucalyptus	1409
EP00550AA	CG005	21	46	100	192	293	18	Czc	Colluvium		Low Open Woodland of Eucalypus	1410
EP00550AA	SERN046	21	46	100	192	293	18	Czc	Colluvium		Low Open Woodland of Eucalyptus	1411
550AA	02RAIL008b	21	46	100	192	293	24	Czc	Colluvium		Open Woodland of Eucalyptus	1412
EP00550AA	SERN063	21	46	100	192	293	22	Czc	Colluvium		Open Woodland of Eucalyptus	1413
EP00550AA	SERN 101	21	46	100	192	293	29	Czc	Colluvium		Low Open Woodland of Corymbia	1414
EP00550AA	SERN018	21	46	100	192	293	34	Czc	Colluvium		Low Open Woodland of Eucalyptus	1415
EP00550AA	SERN026	21	46	100	192	293	28	Czc	Colluvium		Low Woodland of Corymbia	1416
EP00550AA	SERN028	21	46	100	192	293	36	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1417
EP00550AA	SERN043	21	46	100	192	293	31	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1418
EP00550AA	SERN031	21	46	100	192	293	40	Czc	Colluvium		Low Open Woodland of Eucalyptus	1419
EP00550AA	SERN042	21	46	100	192	293	20	Czc	Colluvium		Low Open Woodland of Corymbia	1420
EP00550AA	SERN112	21	46	100	192	293	37	Czc	Colluvium		Scatterd Low Trees of Corymbia	1421
550AA	06RAIL007	21	46	100	193	294	24	AHs	MOUNT McCRAE SHALE and		Low Open Woodland of EUC	1422
EP00550AA	ZION021	21	46	100	193	294	14	Tp	ROBE PISOLITE		Low Open Woodland of Eucalyptus	1423
EP00550AA	FT14	21	46	100	193	295	27	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1424
EP00550AA	SERN044	21	46	100	193	295	30	Czc	Colluvium		Low Open Woodland of Eucalyptus	1425
EP00550AA	VOK015	21	46	100	193	295	30	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Eucalyptus	1426
WPI	HAM001	21	46	100	193	295	17	PLHb	BROCKMAN IRON FORMATION		Acacia inaequilatera open shrubland	1427
550AA	KR007	21	46	100	193	295	20	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1428
EP00550AA	SERN019	21	46	100	193	296	21	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia tumida	1429

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
EP00550AA	SERN106	21	46	100	193	296	17	Czc	Colluvium		Scattered Low Trees of Corymbia	1430
EP00550AA	SERN-CV01	21	46	100	193	296	17	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Eucalyptus	1431
EP00550AA	VOK027	21	46	100	193	296	26	Czc	Colluvium		Low Open Woodland of Eucalyptus	1432
EP00550AA	TRIN015	21	46	100	193	296	29	Czc	Colluvium		Scatterd Low Trees of Eucalyptus	1433
EP00550AA	FT03	21	46	101	194	297	30	Czc	Colluvium		Tall Open Shrubland of Petalostylis	1434
EP00550AA	ZION008	21	46	101	194	297	35	Tp	ROBE PISOLITE		Low Open Woodland of Eucalyptus	1435
EP00550AA	FT15	21	46	101	194	297	36	Czc	Colluvium		Tall Open Shrubland of Petalostylis	1436
EP00550AA	FT22	21	46	101	194	297	32	PLHb	BROCKMAN IRON FORMATION		Scattered Low Trees of Eucalyptus	1437
EP00550AA	VOQ005	21	46	101	194	297	28	Czc	Colluvium		Open Woodland of Eucalyptus victirx	1438
EP00550AA	FT28	21	46	101	194	297	25				Scattered Low Trees of Corymbia	1439
EP00550AA	FT21	21	46	101	194	297	26	Tp	ROBE PISOLITE		Scattered Low Trees of Corymbia	1440
EP00550AA	ZION034	21	46	101	194	297	24	AHs	MOUNT McCRAE SHALE and		Open Woodland of Corymbia	1441
EP00550AA	ZION037	21	46	101	194	297	29	AHs	MOUNT McCRAE SHALE and		Open Woodland of Eucalyptus	1442
EP00550AA	SERN029	21	46	101	194	298	41	Czc	Colluvium		Low Woodland of Eucalyptus	1443
EP00550AA	VOK012	21	46	101	194	298	50	Czc	Colluvium		Low Open Woodland to Scattered	1444
EP00550AA	SERN109	21	46	101	194	298	47	Czc	Colluvium		Low Woodland of Corymbia	1445
EP00550AA	VOK021	21	46	101	194	298	45	Qc	Colluvium		Low Open Woodland of Eucalyptus	1446
EP00550AA	VOK002	21	46	101	194	298	29	Czc	Colluvium		Scattered Low Trees of Corymbia	1447
EP00550AA	VOK007	21	46	101	194	298	36	Czc	Colluvium		Woodland of Eucalyptus leucophloia	1448
EP00550AA	VOK011	21	46	101	194	298	42	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1449
550AA	02RAIL008a	21	46	101	194	299	32	Czc	Colluvium		Low Open Woodland of Corymbia	1450
EP00550AA	SERN025	21	46	101	194	299	45	Czc	Colluvium		Low Open Woodland of Corymbia	1451
EP00550AA	SERN082	21	46	101	194	299	34	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1452
EP00550AA	SERN012	21	46	101	194	299	23	Czc	Colluvium		Scattered Low Trees of Eucalyptus	1453
EP00550AA	SERN024	21	46	101	194	299	31	PLHb	BROCKMAN IRON FORMATION		Low Woodland of Eucalyptus	1454
EP00550AA	SERN022	21	46	101	194	299	37	Czc	Colluvium		Low Open Woodland of Eucalyptus	1455
EP00550AA	SERN081	21	46	101	194	299	52	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Eucalyptus	1456
EP00550AA	SERN105	21	46	101	194	299	30	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1457
EP00550AA	FT32	21	46	101	195	300	12	Czc	Colluvium		Scattred Low Trees of Corymbia	1458
EP00550AA	VOQ40	21	46	101	195	300	18	Czc	Colluvium		Low Open Woodland of Eucalyptus	1459
EP00550AA	TRIN002	21	46	101	195	300	22	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1460
EP00550AA	VOK008	21	46	101	195	300	24	Czc	Colluvium		Scattered Low Trees of Corymbia	1461
EP00550AA	ZION007	21	46	101	195	300	28	PLHb	BROCKMAN IRON FORMATION		Low Woodland of Corymbia	1462
EP00550AA	TRIN007	21	46	101	195	300	39	PLHb	BROCKMAN IRON FORMATION		Open Woodland of Eucalyptus	1463
550AA	06RAIL008	21	47	102	196	301	22	AHs	MOUNT McCRAE SHALE and		Low Open Woodland of Eucalyptus	1464
550AA	06RAIL007a	21	47	102	196	301	42	AHs	MOUNT McCRAE SHALE and		Low Open Woodland of Eucalyptus	1465
550AA	07RAIL038	21	47	102	196	301	22	Czc	Colluvium		Tall Shrubland to Tall Open	1466
550AA	06RAIL010	21	47	102	196	301	44	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1467
550AA	06RAIL011	21	47	102	196	301	56	AHs	MOUNT McCRAE SHALE and		Open Woodland of Eucalyptus	1468
WPI	CW018	21	47	102	196	301	28	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1469
WPI	TR024	21	47	102	196	301	46	Tp	ROBE PISOLITE		Drainage line; Corymbia	1470
WPI	TR021	21	47	102	196	301	51	Wm	MOUNT McGRATH		Acacia citrinoviridis low open forest	1471
308	MAT05	21	47	102	197	302	21	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia subsp.	1472
232a	MESG27	21	47	102	197	302	27	Pho	BOOLGEEDA IRON		Eucalyptus leucophloia scattered low	1473
WPI	TR006	21	47	102	198	303	22	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1474
WPI	TR011	21	47	102	198	303	28	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1475
WPI	UC002	21	47	102	199	304	30	Tp	ROBE PISOLITE		Corymbia ferriticola low open	1476
WPI	UC006	21	47	102	199	304	39	Tp	ROBE PISOLITE		Acacia citrinoviridis and Stylobasium	1477
WPI	UC004	21	47	102	199	304	17	Tp	ROBE PISOLITE		Eucalyptus leucophloia	1478
WPI	UC005	21	47	102	199	304	25	Tp	ROBE PISOLITE		Eucalyptus leucophloia ssp.	1479
WPI	BOR266	21	47	103	200	305	11	Wm	MOUNT McGRATH		API-7511 Ficus ? brachypoda XXXX	1480
WPI	BOR271	21	47	103	200	305	15	Wm	MOUNT McGRATH		Acacia pruinocarpa over API-7524	1481
EP00550AA	SERN078	21	47	103	200	306	16	PLHb	BROCKMAN IRON FORMATION		Low Open Woodland of Eucalyptus	1482
WPI	TR042	21	47	103	200	306	16	PLWb	CHEELA SPRINGS BASALT		Terminalia canescens low open	1483
WPI	CWW062	21	47	103	200	307	18	Wm	MOUNT McGRATH		Acacia aneura (narrow, fine veined,	1484
550AA	04RAIL017	22	48	104	201	308	43	Czc	Colluvium		Low Open Woodland of Eucalyptus	1485
550AA	06RAIL005	22	48	104	201	308	18	Czc	Colluvium		Low Woodland of Eucalyptus	1486
550AA	02RAIL020	22	48	104	201	308	28	Czc	Colluvium		Open Woodland of Eucalyptus	1487
550AA	06RAIL014	22	48	104	201	308	25	AHs	MOUNT McCRAE SHALE and		Low Open Woodland of Eucalyptus	1488
550AA	02RAIL019	22	48	104	201	308	37	Czc	Colluvium		Open Woodland of Eucalyptus	1489
EP00550AA	VOK024	22	48	104	201	308	31	Qc	Colluvium		Scattered Low Trees of Eucalyptus	1490
550AA	06RAIL004	22	48	104	202	309	18	Qs	Eolian sand [siliceous]		Low Open Woodland of Eucalyptus	1491
550AA	02RAIL016	22	48	104	202	309	36	Qs	Eolian sand [siliceous]		Low Woodland of Eucalyptus	1492
550AA	02RAIL017	22	48	104	202	309	22				Scattered Low Trees of Eucalyptus	1493
550AA	06RAIL001	22	48	104	203	310	39	Qs	Eolian sand [siliceous]		Low Woodland of Eucalyptus	1494

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
550AA	06RAIL012	22	48	104	203	310	35	Qs	Eolian sand [siliceous]		Low Open Woodland of Eucalyptus	1495
550AA	06RAIL017	22	48	104	203	310	27	Qa	Alluvium - unconsolidated		Low Woodland of Corymbia	1496
EP00550AA	VOQ009	22	48	104	203	310	42	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1497
550AA	06RAIL016	22	48	104	203	311	29	Czc	Colluvium		Low Open Woodland of Eucalyptus	1498
EP00550AA	VOQ42	22	48	104	203	311	31	Czc	Colluvium		Open Woodland of Eucalyptus	1499
550AA	06RAIL018	22	48	104	203	311	34	Qa	Alluvium - unconsolidated		Low Woodland of Eucalyptus	1500
EP00550AA	VOQ019	22	48	104	203	311	23	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1501
EP00550AA	VOQ015	22	48	104	203	311	21	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1502
EP00550AA	VOQ012	22	48	104	203	312	30	Qa	Alluvium - unconsolidated		Open Woodland of Eucalyptus	1503
EP00550AA	VOQ25	22	48	104	203	312	30	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	1504
550AA	04RAIL132	22	48	105	204	313	19	Czc	Colluvium		Scattered Low Trees of Corymbia	1505
EP00550AA	INV007	22	48	105	204	313	34	Czc	Colluvium		Low Open Woodland of Eucalyptus	1506
550AA	07RAIL041	22	48	105	204	313	18	Qs	Eolian sand [siliceous]		Open Woodland of Eucalyptus	1507
EP00550AA	INV053	22	48	105	204	313	28	Qc	Colluvium		Low Open Woodland of Eucalyptus	1508
EP00550AA	INV020	22	48	105	204	313	19	Czr	Hematite on banded iron		Low Open Woodland of Corymbia	1509
EP00550AA	INV044	22	48	105	204	313	19	Czr	Hematite on banded iron		Scattered Shrubs of Acacia atkinsiana	1510
550AA	08RAIL091	22	48	105	204	313	17	Czc	Colluvium		Scattered Low Trees of Corymbia	1511
EP00550AA	SERN047	22	48	105	204	313	15	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1512
EP00550AA	INV038	22	48	105	204	313	28	Qc	Colluvium		Low Open Woodland of Corymbia	1513
EP00550AA	INV041	22	48	105	204	313	22	Czr	Hematite on banded iron		Low Open Woodland of Corymbia	1514
EP00550AA	INV043	22	48	105	204	313	20	AFj	JEERINAH FORMATION		Scattered Low Trees of Eucalyptus	1515
EP00550AA	INV019a	22	48	105	205	314	16	AFj	JEERINAH FORMATION		Scattered Shrubs of Acacia atkinsiana,	1516
EP00550AA	INV046	22	48	105	205	314	12	Qc	Colluvium		Open Woodland of Eucalyptus	1517
EP00550AA	INV082	22	48	105	205	314	14	Czc	Colluvium		Scattere Low trees of Eucalyptus	1518
EP00550AA	INV047	22	48	105	205	315	24	Czr	Hematite on banded iron		Scattered Tall Shrubs of Acacia	1519
EP00550AA	INV100	22	48	105	205	315	14	Czr	Hematite on banded iron		Scattered Tall Shrubs of Acacia	1520
2491	FML60	22	48	105	206	316	15	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	1521
EP00550AA	INV013	22	48	105	206	317	18	Qc	Colluvium		Open Shrubland of Acacia atkinsiana	1522
EP00550AA	INV066	22	48	105	206	317	21	Czr	Hematite on banded iron		Scattered Low Trees of Eucalyptus	1523
EP00550AA	INV015	22	48	105	206	317	45	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia	1524
EP00550AA	INV061	22	48	105	206	317	23	Qc	Colluvium		Tall Open Shrubland of Acacia	1525
550AA	06RAIL009	22	48	106	207	318	22	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1526
EP00550AA	ZION039	22	48	106	207	318	18	Qa	Alluvium - unconsolidated		Low Woodland of Eucalyptus	1527
EP00550AA	ZION010	22	48	106	207	318	23	Tp	ROBE PISOLITE		Low Woodland of Corymbia	1528
BC	BCQ25	22	48	106	207	318	20	Qa	Alluvium - unconsolidated		Acacia inaequilatera scattered tall	1529
550AA	07RAIL037	22	48	106	207	319	18	Czc	Colluvium		Low Open Woodland to Scattered	1530
550AA	07RAILCV01	22	48	106	207	319	23	Czc	Colluvium		Low Open Woodland to Scattered	1531
EP00550AA	ZION011	22	48	106	207	319	12	Tp	ROBE PISOLITE		Low Woodland of Eucalyptus	1532
550AA	07RAIL040	22	48	106	207	319	22	Qs	Eolian sand [siliceous]		Open Woodland of Corymbia	1533
550AA	07RAIL042	22	48	106	207	319	16	Qs	Eolian sand [siliceous]		Tall Open Shrubland of Acacia aff.	1534
FMG-2006	P9GtoP9Fg	22	48	106	208	320	9	Qc	Colluvium		Grevillea wickhamii (=f) Tall Open	1535
BC	BCQ11	22	48	106	208	320	16	Tp	ROBE PISOLITE		Corymbia hamersleyana low open	1536
FMG-2006	P9GtoP9Fp	22	48	106	208	320	15	Qc	Colluvium		Eucalyptus leucophloia scattered low	1537
FMG-2006	P9GtoP9Fq	22	48	106	208	320	20	Qc	Colluvium		Eucalyptus leucophloia scattered low	1538
550AA	04RAIL121	23	49	107	209	321	46	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	1539
EP00550AA	SERN007	23	49	107	209	321	26	Qa	Alluvium - unconsolidated		Open Woodland of Corymia	1540
EP00550AA	SERN023	23	49	107	209	321	42	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	1541
550AA	BD002	23	49	107	209	321	27	Czc	Colluvium		Low Woodland of Corymbia	1542
EP00550AA	SERN030	23	49	107	209	321	31	Qa	Alluvium - unconsolidated		Low Open Forest of Eucalyptus	1543
EP00550AA	SERN032	23	49	107	209	321	31	Czc	Colluvium		Low Open Forest of Eucalyptus	1544
EP00550AA	SERN033	23	49	107	209	321	29	Czc	Colluvium		Low Woodland of Corymbia	1545
EP00550AA	SERN010	23	49	107	209	321	31	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1546
550AA	02RAIL002	23	49	107	209	321	42	Czc	Colluvium		Low Open Forest of Corymbia	1547
EP00550AA	SERN027	23	49	107	209	321	44	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia	1548
EP00550AA	SERN049	23	49	107	209	321	29	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1549
EP00550AA	SERN039	23	49	107	209	321	33	Czc	Colluvium		Low Woodland of Eucalyptus	1550
EP00550AA	CG003	23	49	107	209	321	28	Czc	Colluvium		Open Woodland of Corymbia	1551
EP00550AA	SERN013	23	49	107	209	321	29	Qa	Alluvium - unconsolidated		Open Woodland of Corymbia	1552
EP00550AA	SERN-CV02	23	49	107	209	321	34	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1553
EP00550AA	SERN056	23	49	107	209	321	41	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	1554
EP00550AA	SERN080	23	49	107	209	321	39	Qa	Alluvium - unconsolidated		Low Woodland of Eucalyptus	1555
EP00550AA	SERN036	23	49	107	209	321	35	d	Dolerite dykes		Low Open Forest of Eucalyptus	1556
EP00550AA	VOK030	23	49	107	209	321	32	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus	1557
550AA	BD003	23	49	107	209	321	18	Czc	Colluvium		Low Woodland of Corymbia	1558
EP00550AA	SERN001	23	49	107	209	321	17	Czc	Colluvium		Open Woodland of Corymbia	1559

Appendix 2 cont

Group level

Dendrogram

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Vegetation (truncated)	
550AA	BD004	23	49	107	209	321	26	Czc	Colluvium	Low Open Woodland of Corymbia	1560
EP00550AA	VOQ33	23	49	107	209	321	31	Czc	Colluvium	Low Open Woodland of Corymbia	1561
EP00550AA	BD005	23	49	107	209	321	29	Czc	Colluvium	Low Woodland of Corymbia	1562
550AA	KR009	23	49	107	209	321	29	Czc	Colluvium	Scattered Low Shrubs of Acacia	1563
550AA	02RAIL005	23	49	107	209	321	23	Czc	Colluvium	Low Woodland of Eucalyptus	1564
EP00550AA	ZION040	23	49	107	209	321	28	Qa	Alluvium - unconsolidated	Low Open Woodland of Eucalyptus	1565
550AA	KR010	23	49	107	209	321	24	Qa	Alluvium - unconsolidated	Scattered Low Trees of Eucalyptus	1566
550AA	02RAIL009	23	49	107	209	321	22	Qs	Eolian sand [siliceous]	Low Open Woodland of Eucalyptus	1567
EP00550AA	SERN002	23	49	107	209	321	17	Czc	Colluvium	Low Open Woodland of Corymbia	1568
EP00550AA	SERN050	23	49	107	209	322	36	Qa	Alluvium - unconsolidated	Low Open Woodland of Eucalyptus	1569
EP00550AA	SERN079	23	49	107	209	322	41	Qa	Alluvium - unconsolidated	Open Low Woodland of Corymbia	1570
550AA	06RAIL015	23	49	107	209	323	29	Qs	Eolian sand [siliceous]	Low Woodland of Eucalyptus	1571
550AA	02RAIL014	23	49	107	209	323	42	Czc	Colluvium	Low Open Woodland of Eucalyptus	1572
550AA	KR005	23	49	107	209	323	39	PLHb	BROCKMAN IRON FORMATION	Scattered Lowl Trees Of Corymbia	1573
EP00550AA	ZION045	23	49	107	209	323	24	Qa	Alluvium - unconsolidated	Woodland of Eucalyptus gamophylla	1574
EP00550AA	VOK016	23	49	107	209	323	30	Czc	Colluvium	Scattered Low Trees of Eucalyptus	1575
EP00550AA	ZION003	23	49	107	209	323	42	Tp	ROBE PISOLITE	Low Woodland of Corymbia	1576
EP00550AA	ZION041	23	49	107	209	323	48	Qa	Alluvium - unconsolidated	Low Open Forest of Eucalyptus	1577
550AA	PLDK02	23	49	107	210	324	5	Czc	Colluvium	Low Woodland of Corymbia	1578
550AA	02RAIL010	23	49	107	210	324	18	Qs	Eolian sand [siliceous]	Woodland of Eucalyptus gamophylla	1579
EP00550AA	SERN005	23	49	107	210	324	26	Qa	Alluvium - unconsolidated	Open Woodland of Corymbia	1580
550AA	02RAIL011	23	49	107	210	324	20	Qs	Eolian sand [siliceous]	Woodland of Eucalyptus gamophylla	1581
EP00550AA	ZION001	23	49	107	210	324	22	Qa	Alluvium - unconsolidated	Corymbia hamersleyana and	1582
PHQT	021	24	50	108	211	325	22	_A1f		Acacia stellaticeps, Corchorus xxxxxx	1583
PHQT	026	24	50	108	211	325	20	_A1f		Acacia stellaticeps (QT26-03) and	1584
PHQT	027	24	50	108	211	325	19	_A1f		Hakea lorea ssp. lorea over Acacia	1585
PHQT	050	24	50	108	211	325	21	Qhms	Coastal sand	Acacia colei var. colei over Acacia	1586
PHQT	032	24	50	108	211	325	19	_A1f			1587
PHQT	025	24	50	108	211	325	20	_A1f		Acacia stellaticeps over Aristida tall	1588
PHQT	034	24	50	108	211	325	17	_A1f		Acacia stellaticeps over Triodia and	1589
PHQT	024	24	50	108	211	325	17	_A1f		Mixed Trioidia over mixed grasses!	1590
PHQT	043	24	50	108	211	325	13	_A1f		Acacia stellaticeps (QT43-01) over	1591
PHQT	090	24	50	108	211	325	16	_A1i		Acacia inaequilatera over Acacia	1592
PHQT	051	24	50	108	211	325	14	Qhms	Coastal sand	Pluchea tetranthera over Triodia	1593
PHQT	055	24	50	108	211	325	20	Qaoc	Alluvium - unconsolidated &	Hakea lorea ssp. lorea (QT55-01) over	1594
PHQT	033	24	50	108	211	325	12	_A1f		Acacia stellaticepsxxxxxx and	1595
PHQT	035	24	50	108	211	325	11	_A1f		Triodia grey xxxxxx with Triodia	1596
PHQT	037	24	50	108	211	325	11	_A1f		Acacia stellaticeps over xxxxxx mixed	1597
PHQT	041	24	50	108	211	325	13	_A1f		Acacia colei var. colei over Acacia	1598
PHQT	076	24	50	108	211	325	12	_A1f		Acacia stellaticeps and Pluchea	1599
PHQT	036	24	50	108	211	325	11	_A1f			1600
PHQT	078	24	50	108	211	325	9	_A1i		Eucalyptus xxxxxxx over Acacia	1601
PHQT	045	24	50	108	211	325	14	_A1f		Carissa lanceolata over Acacia	1602
PHQT	056	24	50	108	211	325	13	Qaoc	Alluvium - unconsolidated &	Acacia colei var. colei over Acacia	1603
PHQT	048	24	50	108	211	325	11	Qaoc	Alluvium - unconsolidated &	Acacia colei var. colei over Hakea	1604
PHQT	086	24	50	108	211	325	13	_A1i		Acacia stellaticeps and Pluchea	1605
PHQT	096	24	50	108	211	325	10	_A1i		Acacia stellaticeps and Pluchea	1606
PHQT	044	24	50	108	211	325	17	_A1f		Acacia colei var. colei over Acacia	1607
PHQT	060	24	50	108	211	325	11	Qaoc	Alluvium - unconsolidated &	Acacia stellaticeps over Triodia	1608
PHQT	072	24	50	108	211	325	20	_A1f		Hakea lorea ssp. lorea over Acacia	1609
PHQT	057	24	50	108	211	325	19	Qaoc	Alluvium - unconsolidated &	Acacia colei var. colei over Acacia	1610
PHQT	038	24	50	108	212	326	9	_A1f			1611
PHQT	049	24	50	108	212	326	8	Qhms	Coastal sand	Acacia colei var. colei over Panicum	1612
PHQT	QTR1	24	50	108	212	326	15				1613
PHQT	098	24	50	108	212	327	13	_A1i		Corymbia flavescens over Hakea lorea	1614
FMG-2006	P2CQ2	24	50	108	212	327	9	_A1f		Acacia stellaticeps Low shrubland	1615
FMG-2006	P2N	24	50	108	212	327	7	A-	MINNAMONICA	Triodia epactia and Triodia lanigera	1616
PHQT	028	24	50	108	213	328	19	_A1f		Eucalyptus long wide green xxxxxx	1617
PHQT	059	24	50	108	213	328	19	Qaoc	Alluvium - unconsolidated &	Carissa lanceolata and Acacia colei	1618
PHQT	061	24	50	108	213	328	15	Qaoc	Alluvium - unconsolidated &	Carissa lanceolata (QT61-01) ver	1619
PHQT	077	24	50	108	213	328	24	_A1i		Hakea lorea ssp. lorea and Eucalyptus	1620
PHQT	080	24	50	108	213	328	20	_A1i		Corymbia flavescens and Acacia colei	1621
PHQT	053	24	50	108	213	328	23	_A1f		Owenia reticulata over Acacia colei	1622
PHQT	091	24	50	108	213	328	17	_A1i		Acacia tumida var. pilbarensis over	1623
PHQT	092	24	50	108	213	328	25	_A1i		Eucalyptus victrix over Acacia tumida	1624

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
PHQT	063	24	50	108	213	328	21	_A1f			Corymbia flavescens over Acacia	1625
PHQT	079	24	50	108	213	328	23	_A1i			Acacia coriacea subsp. coriacea over	1626
PHQT	066	24	50	108	213	328	14	_A1f			Acacia colei var. colei over Corymbia	1627
PHQT	085	24	50	108	213	328	23	_A1i			Corymbia deserticola over Acacia	1628
PHQT	062	24	50	108	213	328	8	_A1f			Eucalyptus bright green xxxxxxx	1629
PHQT	065	24	50	108	213	328	10	_A1i			Triodia grassland. Acacia colei var.	1630
PHQT	067	24	50	108	213	328	16	_A1i			Eucalyptus (QT67-01) and Corymbia	1631
PHQT	058	24	50	108	213	329	11	Qaoc	Alluvium - unconsolidated &			1632
PHQT	069	24	50	108	213	329	26	_A1i			Corymbia flavescens with Acacia	1633
PHQT	070	24	50	108	213	329	27	_A1i			Eucalyptus victrix with Eucalyptus	1634
PHQT	054	25	51	109	214	330	17	_A1f			Acacia coriacea subsp. sericophylla	1635
PHQT	064	25	51	109	214	330	19	_A1i			Acacia tumida var. pilbarensis and	1636
PHQT	094	25	51	109	214	330	17	_A1i			Acacia coriacea subsp. coriacea over	1637
PHQT	095	25	51	109	214	330	22	_A1i			Acacia inaequilatera and Acacia	1638
PHQT	099	25	51	109	214	330	16				Owenia reticulata (QTOP-17) over	1639
PHQT	073	25	51	109	214	330	22	_A1f			Dolichandrone heterophylla over lorea	1640
PHQT	088	25	51	109	214	330	28	_A1i			Corymbia zygophylla and Corymbia	1641
PHQT	089	25	51	109	214	330	18	_A1i			Acacia stellaticeps over Triodia	1642
PHQT	102	25	51	109	214	330	19	_A1i			Acacia coriacea subsp. coriacea over	1643
PHQT	103	25	51	109	214	330	19	_A1i			Acacia colei var. colei over Acacia	1644
PHQT	097	25	51	109	214	331	14	_A1i			Acacia tumida var. pilbarensis over	1645
PHQT	100	25	51	109	214	331	21	_A1i			Weird tree xxxxx over Acacia	1646
PHQT	104	25	51	109	214	331	22	_A1i			Carissa lanceolata over Acacia tumida	1647
PHQT	120	25	51	109	214	331	29	_A1f			Corymbia flavescens over Corymbia	1648
PHQT	116	25	51	109	214	331	14	_A1f			Acacia inaequilatera over Acacia	1649
PHQT	119	25	51	109	214	331	14				Acacia inaequilatera over Acacia	1650
PHQT	105	25	51	109	214	331	17	_A1f			Acacia colei var. colei, Acacia	1651
PHQT	118	25	51	109	214	331	19	_A1f			Acacia ancistrocarpa (QT118-01) and	1652
PHQT	123	25	51	109	214	331	22	_A1f			Acacia inaequilatera and Acacia	1653
PHQT	125	25	51	109	214	331	20	_A1f			Acacia stellaticeps, Acacia tumida	1654
PHQT	121	25	51	109	214	331	25	_A1f			Corymbia zygophylla over Acacia	1655
PHQT	124	25	51	109	214	331	24	_A1f			Corymbia zygophylla over Acacia	1656
PHQT	126	25	51	109	214	331	25	_A1f			Acacia colei var. colei with Acacia	1657
PHQT	122	25	51	109	214	331	27	_A1f			Corymbia zygophylla over Acacia	1658
PHQT	101	25	51	109	214	331	17				Grevillea xxxxxx over Acacia tumida	1659
FMG-2006	AP11C290Q1	25	51	109	215	332	9	_A1f			Acacia tumida subsp. ? pilbarensis x ?	1660
FMG-2006	APS6C250Q2	25	51	109	215	332	16	_A1f			Acacia stellaticeps Low Shrubland	1661
FMG-2006	P1E-G1	25	51	109	215	332	15	_A1f			Acacia tumida subsp. ? pilbarensis x	1662
FMG-2006	Apt11-c260	25	51	109	215	332	13	_A1f			Acacia stellaticeps Open Heath over a	1663
PHQT	106	25	52	110	216	333	10	_A1i			Acacia inaequilatera over Acacia	1664
PHQT	107	25	52	110	216	333	14	_A1f			Acacia inaequilatera over Acacia	1665
PHQT	110	25	52	110	216	333	12	_A1f			Acacia inaequilatera over Acacia	1666
PHQT	108	25	52	110	216	333	12	_A1i			Eucalyptus xxxxx over Acacia	1667
PHQT	109	25	52	110	216	333	11	_A1i			Acacia inaequilatera over Acacia	1668
FMG-2006	N	25	52	110	216	333	9	AgP	PORTREE GRANITOID		Acacia bivenosa Low Open Shrubland	1669
FMG-2006	P8L	25	52	110	216	333	11	Cza	Alluvium		Acacia ancistrocarpa Tall Open Scrub	1670
PHQT	111	25	52	110	216	333	12	_A1f			Acacia inaequilatera over Acacia	1671
FMG-2006	P4B-Q2	25	52	110	216	333	13	Qeg			Acacia ancistrocarpa Shrubland with	1672
FMG-2006	O	25	52	110	217	334	12	AgP	PORTREE GRANITOID		Acacia maitlandii and Hakea lorea	1673
FMG-2006	P	25	52	110	217	334	20	AgP	PORTREE GRANITOID		Acacia inaequilatera Scattered Tall	1674
FMG-2006	P3RQ2	25	52	110	217	334	12	Qeg			Acacia acradenia and Acacia	1675
FMG-2006	P4A-Q1	25	52	110	217	334	12	Qeg			Acacia ancistrocarpa Tall Shrubland	1676
PHQT	112	25	52	111	218	335	21	_A1f			Pluchea tetranthera and Acacia	1677
PHQT	113	25	52	111	218	335	27	_A1f			Corymbia zygophylla over Acacia	1678
PHQT	114	25	52	111	218	335	21	_A1f			Acacia ancistrocarpa and Acacia	1679
PHQT	117	25	52	111	219	336	17	_A1f			Acacia tumida var. pilbarensis, Acacia	1680
FMG-2006	P2B2-Q1	25	52	111	219	336	9	A-	Ultramafic schist		Acacia inaequilatera Open Shrubland	1681
HDRAIL	H166	25	52	111	219	336	15	A-	Metagabbro		Acacia inaequilatera scattered tall	1682
2490	FMG33	25	52	111	219	336	14	A-	Ultramafic schist		Acacia colei scattered tall shrubs over	1683
HDRAIL	H107	25	52	111	219	336	10	_C2-f			Triodia epactia, T. longiceps	1684
FMG-2006	P1F-Q2	25	52	111	219	336	14	_A1f			Acacia colei var. colei and Acacia	1685
FMG-2006	P2C	25	52	111	219	336	20	_A1f			Corymbia hamersleyana Low	1686
FMG-2006	P2L	25	52	111	219	336	19	_R1-g-			Acacia inaequilatera and Acacia colei	1687
FMG-2006	Apt14-c310	25	52	111	219	336	16	A-cib-	Unassigned		Acacia inaequilatera Tall Open	1688
2490	FMG99	26	53	112	220	337	47	AgP	PORTREE GRANITOID		Pluchea tetranthera low open	1689

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
HDRAIL	H075	26	53	112	220	337	42	_R1-g-			Acacia inaequilatera scattered tall	1690
HDRAIL	H288	26	53	112	220	337	50	Agm	Monzogranite		Acacia orthocarpa open scrub over	1691
HDRAIL	H101	26	53	112	220	337	44	Agm	Monzogranite		Acacia inaequilatera scattered tall	1692
HDRAIL	H141	26	53	112	220	337	41	Agm	Monzogranite		Acacia inaequilatera scattered tall	1693
HDRAIL	H117	26	53	112	220	337	45	_A1f			Corymbia candida scattered low	1694
HDRAIL	H118	26	53	112	220	337	30	_A1i			Acacia inaequilatera, A. ancistrocarpa,	1695
HDRAIL	H119	26	53	112	220	337	43	_A1i			Corymbia hamersleyana scattered low	1696
HDRAIL	H126	26	53	112	220	337	33	_A1f			Acacia tumida, A. inaequilatera	1697
HDRAIL	H121	26	53	112	220	337	61	_A1i			Acacia inaequilatera, A. ancistrocarpa,	1698
HDRAIL	H122	26	53	112	220	337	39	_A1i			Acacia inaequilatera, A. ancistrocarpa	1699
HDRAIL	H123	26	53	112	220	337	50	_A1i			Corymbia hamersleyana scattered low	1700
HDRAIL	H069	26	53	112	220	338	34	A-	MINNAMONICA		Acacia orthocarpa high shrubland	1701
HDRAIL	H251	26	53	112	220	338	41	Agm	Monzogranite		Acacia inaequilatera scattered tall	1702
HDRAIL	H249	26	53	112	220	339	28	Qeg			Acacia maitlandii open scrub over	1703
HDRAIL	H250	26	53	112	220	339	16	Qa	Alluvium - unconsolidated		Acacia maitlandii, A. inaequilatera	1704
FMG-2006	S5	26	53	112	220	339	31	AgP	PORTREE GRANITOID		Acacia inaequilatera Shrubland over	1705
HDRAIL	H067	26	53	112	221	340	22	A-	MINNAMONICA		Indigofera monophylla, Acacia	1706
HDRAIL	H071	26	53	112	221	340	30	A-	MINNAMONICA		Acacia pyrifolia scattered shrubs over	1707
HDRAIL	H078	26	53	112	221	340	34	_A1f			Triodia secunda, T. epactia hummock	1708
HDRAIL	H103	26	53	112	221	341	42	_A1i			Acacia stellaticeps shrubland to open	1709
HDRAIL	H135	26	53	112	221	341	34	_A1i			Acacia stellaticeps low shrubland over	1710
HDRAIL	H068	26	53	112	221	342	31	A-	MINNAMONICA		Acacia tumida closed scrub over	1711
HDRAIL	H073	26	53	112	221	342	34	A-	MINNAMONICA		Acacia inaequilatera, A. ancistrocarpa	1712
HDRAIL	H077	26	53	112	221	342	33	_A1c			Melaleuca argentea, Eucalyptus	1713
HDRAIL	H237	26	53	112	221	343	53	Qeg			Acacia tumida, A. colei open scrub	1714
HDRAIL	H240	26	53	112	221	343	41	AgP	PORTREE GRANITOID		Corymbia hamersleyana scattered low	1715
HDRAIL	H254	26	53	112	221	343	46	Qeg			Acacia ancistrocarpa open scrub over	1716
HDRAIL	H263	26	53	112	221	343	52	Agm	Monzogranite		Corymbia hamersleyana scattered low	1717
HDRAIL	H274	26	53	112	221	343	28	Agm	Monzogranite		Corymbia hamersleyana scattered low	1718
FMG-2006	T2	26	53	112	221	343	41	Agm	Monzogranite		Acacia bivenosa, Acacia colei var.	1719
HDRAIL	H085	26	53	112	222	344	33	_A1f			Triodia lanigera, T. epactia mid-dense	1720
HDRAIL	H086	26	53	112	222	345	32	_A1f			Corymbia hamersleyana scattered low	1722
HDRAIL	H184	26	53	112	222	345	27	_A1f			Acacia inaequilatera, A. colei	1723
HDRAIL	H091	26	53	112	222	345	27	_A1i			Acacia colei scattered tall shrubs over	1724
HDRAIL	H114	26	53	112	222	345	40	_A1i			Eucalyptus victrix low open woodland	1725
HDRAIL	H115	26	53	112	222	345	48	_A1f			Corymbia candida scattered low trees	1726
HDRAIL	H155	26	53	112	222	345	33	_A1f			Acacia colei, A. inaequilatera, A.	1727
HDRAIL	H157	26	53	112	222	345	30	_A1f			Corymbia candida scattered low trees	1728
HDRAIL	H167	26	53	112	222	345	34	AHs	MOUNT McCRAE SHALE and		Acacia inaequilatera high open	1729
HDRAIL	H169	26	53	112	222	345	31	_A1f			Acacia ancistrocarpa, A. inaequilatera	1730
HDRAIL	H171	26	53	112	222	345	41	_A1i			Acacia inaequilatera, A. colei, Cullen	1731
HDRAIL	H173	26	53	112	222	345	28	_A1f			Acacia colei, A. inaequilatera	1732
HDRAIL	H183	26	53	112	222	345	44	_A1f			Acacia colei high shrubland over	1733
HDRAIL	H185	26	53	112	222	345	33	_A1f			Acacia inaequilatera scattered tall	1734
HDRAIL	H111	26	53	112	223	346	48	_A1f			Grevillea pyramidalis scattered low	1735
HDRAIL	H112	26	53	112	223	346	39	_A1f			Melaleuca lasiandra scattered tall	1736
HDRAIL	H113	26	53	112	223	346	32	_A1i			Acacia stellaticeps low shrubland to	1737
HDRAIL	H153	26	53	112	223	346	31	_A1f			Acacia stellaticeps low open	1738
HDRAIL	H127	26	53	112	223	346	43	_A1c			Corymbia candida scattered low trees	1739
HDRAIL	H129	26	53	112	223	346	38	_A1f			Corymbia deserticola scattered low	1740
HDRAIL	H161	26	53	112	223	346	40	_A1f			Corymbia zygophylla scattered low	1741
HDRAIL	H136	26	53	112	223	346	45	_A1f			Owenia reticulata, Corymbia	1742
HDRAIL	H163	26	53	112	223	346	41	_A1f			Acacia tumida, A. inaequilatera, A.	1743
HDRAIL	H165	26	53	112	223	346	45	_A1f			Owenia reticulata scattered low trees	1744
HDRAIL	H137	26	53	112	223	346	35	_A1f			Dolichandrone heterophylla scattered	1745
HDRAIL	H128	26	53	112	223	346	32	_A1f			Acacia inaequilatera scattered tall	1746
HDRAIL	H130	26	53	112	223	346	38	_A1f			Acacia inaequilatera, A. coriacea	1747
HDRAIL	H182	26	53	112	223	346	39	A-ST-	Biotite monzogranite		Corymbia hamersleyana scattered low	1748
HDRAIL	H105	26	54	113	224	347	30	_A1i			Acacia stellaticeps low open	1749
314	SPH-04	26	54	113	224	347	19	_A1f			Acacia stellaticeps very open low	1750
HDRAIL	H109	26	54	113	224	347	23	_A1f			Corymbia hamersleyana scattered low	1751
HDRAIL	H156	26	54	113	224	348	23	_A1f			Acacia colei scattered tall shrubs	1752
HDRAIL	H158	26	54	113	224	348	32	_A1f			Acacia colei scattered tall shrubs over	1753
314	SPH-01	26	54	113	224	348	26	_A1f			Acacia stellaticeps low open heath	1754

Appendix 2 cont

Group level

Dendrogram

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
314	SPH-17	26	54	113	224	348	24	_A1f			Acacia stellaticeps low open	1755
314	SPH-07	26	54	113	224	348	22	_A1f			Acacia stellaticeps low shrubland over	1756
314	SPH-08	26	54	113	224	348	23	_A1f			Acacia stellaticeps low shrubland over	1757
314	SPH-09	26	54	113	224	348	31	_A1f			Acacia colei var. colei tall open	1758
314	SPH-20	26	54	113	224	348	37	_A1f			Acacia inaequilatera scattered small	1759
HDRAIL	H210	26	54	113	225	349	15	Qa	Alluvium - unconsolidated		Atalaya hemiglauca low woodland	1760
CAPPRE	M063	26	54	113	225	349	23	Qhms	Coastal sand		Scattered Acacia coriacea / Atriplex	1761
314	SPH-05	26	54	113	226	350	26	_A1f			Acacia stellaticeps low shrubland over	1762
314	SPH-11	26	54	113	226	350	32	_A1f			Sporobolus virginicus tussock	1763
314	SPH-15	26	54	113	226	350	36	_A1f			Mosaic of Triodia epactia and Triodia	1764
314	SPH-21	26	54	113	226	350	39	_A1f			Scattered trees (juveniles and dead	1765
314	SPH-16	26	54	113	226	350	39	_A1f			Moderately dense Triodia epactia	1766
314	SPH-18	26	54	113	226	350	40	_A1f			Acacia colei (dead mature and	1767
PHQT	068	27	55	114	227	351	10	_A1i			Triodia secunda and Triodia epactia	1768
HDRAIL	H154	27	55	114	227	351	11	_A1i			Triodia epactia, T. secunda mid-dense	1769
HDRAIL	H082	27	55	114	227	351	8	_A1f			Triodia secunda, T. epactia dense	1770
PHQT	071	27	55	114	227	351	7	_A1i			Triodia grassland.	1771
PHQT	083	27	55	114	227	351	5	_A1i			Pluchea ferdinandi-muelleri over	1772
HDRAIL	H074	27	55	115	228	352	18	A-	MINNAMONICA		Triodia secunda, T. epactia mid-dense	1773
FMG-2006	rD	27	55	115	228	352	15	Agm	Monzogranite		Triodia secunda and Triodia longiceps	1774
HDRAIL	H120	27	55	115	228	353	7	_A1i			Triodia secunda, T. epactia mid-dense	1775
FMG-2006	P2E	27	55	115	228	353	9	_A1f			Triodia longiceps and Triodia secunda	1776
FMG-2006	P2F	27	55	115	228	353	10	_A1f			Triodia angusta and Triodia secunda	1777
FMG-2006	Ar1-Ch110a	28	56	116	229	354	24	Agb	Gabbro.		Acacia maitlandii Open Shrubland	1778
FMG-2006	S3-2	28	56	116	229	354	9				Grevillea pyramidalis subsp.	1779
HDRAIL	H063	28	56	117	230	355	36	Qa	Alluvium - unconsolidated		Acacia orthocarpa, A. maitlandii	1780
FMG-2006	P8P	28	56	117	230	355	23	AgSm	BAMBOO SPRINGS		Acacia pyrifolia Tall Open Shrubland	1781
FMG-2006	P3J-Q2	28	56	117	231	356	21	Agm	Monzogranite		Low Shrubland of Keraudrenia	1782
FMG-2006	P4AQ3	28	56	117	231	356	22	Qeg			Acacia acradenia, Acacia	1783
FMG-2006	P4B-Q1	28	56	117	232	357	16	Qeg			Mid Dense Hummock Grassland	1784
FMG-2006	P4CQ1	28	56	117	232	358	19	Qeg			Mid Dense Hummock Grassland of	1785
FMG-2006	P9R	28	56	117	232	359	20	AHm	MARRA MAMBA IRON		Acacia inaequilatera Tall Shrubland	1786
FMG-2006	Ar1Ch110b	28	57	118	233	360	14	Agb	Gabbro.		Acacia orthocarpa and Acacia	1787
FMG-2006	P7O	28	57	118	233	360	13	Agm	Monzogranite		Corymbia hamersleyana Low Open	1788
2490	FMG57	28	57	118	233	360	22	Agm	Monzogranite		Corymbia hamersleyana scattered low	1789
2490	FMG75	28	57	118	233	360	20	Agm	Monzogranite		Acacia inaequilatera scattered tall	1790
FMG-2006	P4L	28	57	118	233	360	13	Agb	Gabbro.		Acacia orthocarpa Closed Heath over	1791
FMG-2006	P7P	28	57	118	233	360	10	Agm	Monzogranite		acacia thin (01) Tall Shrubland over	1792
FMG-2006	rI	28	57	118	233	360	16	Qeg			Acacia bivenosa and Acacia	1793
2490	FMG-BB	28	57	118	233	361	13	A-	MINNAMONICA		Tripogon loliiformis, Fimbristylis	1794
FMG-2006	P7A	28	57	118	234	362	29	Agm	Monzogranite		Corymbia ? hamersleyana Low Open	1795
FMG-2006	rA	28	57	118	234	362	15	Agm	Monzogranite		Corymbia (rA-01) Scattered low trees	1796
FMG-2006	P7B	28	57	118	234	362	23	Agm	Monzogranite		Corymbia hamersleyana Low Open	1797
FMG-2006	P7H	28	57	118	234	362	18	Agm	Monzogranite		Corymbia hamersleyana Low Open	1798
FMG-2006	P7E	28	57	118	234	362	17	Agm	Monzogranite		Acacia bivenosa Open Shrubland over	1799
FMG-2006	P7K	28	57	118	234	362	20	Agm	Monzogranite		Acacia orthocarpa Open Heath to	1800
2490	FMG102	28	57	118	235	363	35	AgYa	TAMBOURAH GRANODIORITE		Acacia inaequilatea scattered tall	1801
2490	FMG89	28	57	118	235	363	26	Agl	Metamorphosed leucogranite		Acacia stellaticeps, A. bivenosa low	1802
2490	FMG27	28	57	118	235	363	33	_A1f			Acacia tumida, (A. inaequilatera) tall	1803
2490	FMG79	28	57	118	235	364	32	Agm	Monzogranite		Corymbia hamersleyana scattered low	1804
HDRAIL	H174	28	57	118	235	364	41	Agm	Monzogranite		Acacia orthocarpa, A. maitlandii high	1805
HDRAIL	H216	28	57	118	236	365	17	Agm	Monzogranite		Acacia orthocarpa, Cassia spp. high	1806
HDRAIL	H235	28	57	118	236	365	20	Agm	Monzogranite		Acacia orthocarpa high shrubland	1807
HDRAIL	H241	28	57	118	236	365	16	Qeg			Acacia orthocarpa open scrub over	1808
2490	FMG101	28	57	119	237	366	50	AgYa	TAMBOURAH GRANODIORITE		Hakea lorea scattered low trees over	1809
2490	FMG56	28	57	119	237	366	41	Agm	Monzogranite		Acacia inaequilatera scattered tall	1810
FMG-2006	P8W	28	57	119	237	366	23	AgSm	BAMBOO SPRINGS		Hakea lorea ssp. lorea Tall Open	1811
FMG-2006	P7N	28	57	119	237	367	29	Agm	Monzogranite		Corymbia hamersleyana Low Open	1812
FMG-2006	T1	28	57	119	237	367	21	Agm	Monzogranite		Corymbia hamersleyana Scattered low	1813
FMG-2006	P8M	28	57	119	237	367	25	Czc	Colluvium		Acacia bivenosa and Acacia pyrifolia	1814
FMG-2006	P8Q	28	57	119	237	367	32	AgSm	BAMBOO SPRINGS		Acacia pyrifolia Open Shrubland with	1815
2490	FMG94	28	57	119	238	368	35	Qeg			Corymbia hamersleyana scattered	1816
FMG-2006	P7S	28	57	119	238	368	29	Agm	Monzogranite		Corymbia hamersleyana Low Open	1817
FMG-2006	P7T	28	57	119	238	368	26	Agm	Monzogranite		Corymbia hamersleyana and	1818
FMG-2006	P7W	28	57	119	238	368	27	Agm	Monzogranite		Corymbia hamersleyana Low Open	1819

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
FMG-2006	P7V	28	57	119	238	368	35	Agm	Monzogranite		Corymbia hamersleyana Low Open	1820
2490	FMG105	28	58	120	239	369	34	Agb	Gabbro.		Pluchea ferdinandi-muelleri, Acacia	1821
FMG-2006	P4E-Q2	28	58	120	239	369	27	Agb	Gabbro.		Open Hummock Grassland of Triodia	1822
FMG-2006	T1-2	28	58	120	239	369	12	Agm	Monzogranite		Triodia lanigera Mid-Dense	1823
FMG-2006	MT5	28	58	120	240	370	18	Qeg			Acacia orthocarpa Shrubland with	1824
FMG-2006	Q	28	58	120	240	370	11	AgP	PORTREE GRANITOID		acacia fine (Q-01) Tall Open Scrub	1825
FMG-2006	P3G	28	58	120	240	370	22	Agm	Monzogranite		Triodia lanigera and Triodia epactia	1826
FMG-2006	P3FQ1	28	58	120	240	370	22	Agm	Monzogranite		Acacia orthocarpa Open Shrubland	1827
FMG-2006	RK	28	58	120	240	370	15	Qeg			Grevillea wickhamii, Acacia (sp. 17)	1828
FMG-2006	P3O-Q2	28	58	120	240	371	19	Agm	Monzogranite		Mid dense Hummock Grassland of	1829
FMG-2006	P4M-Q2	28	58	120	240	371	19	Agb	Gabbro.		Mid Dense Hummock Grassland of	1830
FMG-2006	P4Q-Q3	28	58	120	240	371	15	AgC	CHERRATTA GRANITOID		Acacia orthocarpa Tall Shrubland	1831
FMG-2006	P4I-Q1	28	58	120	240	371	20	Agb	Gabbro.		Mid Dense Hummock Grassland of	1832
FMG-2006	P4J	28	58	120	240	371	18	Agb	Gabbro.		Mid Dense Hummock Grassland of	1833
FMG-2006	P3A-Q1	28	58	120	240	372	22	A-	MINNAMONICA		Triodia epactia and Triodia secunda	1834
FMG-2006	P8B	28	58	120	240	372	31	AgYa	TAMBOURAH GRANODIORITE		Acacia maitlandii and Acacia tumida	1835
FMG-2006	P4EQ1	28	58	120	240	372	29	Agb	Gabbro.		Acacia maitlandii and Acacia	1836
FMG-2006	Ar1-Ch106	28	58	120	240	372	22	Agb	Gabbro.		Acacia orthocarpa dominated Tall	1837
FMG-2006	P4I-Q2	28	58	120	240	372	23	Agb	Gabbro.		Acacia tumida var. pilbarensis Low	1838
FMG-2006	P4K-Q1	28	58	120	240	372	20	Agb	Gabbro.		Acacia orthocarpa Tall Open	1839
FMG-2006	P4M-Q1	28	58	120	240	372	23	Agb	Gabbro.		Acacia orthocarpa Open Shrubland	1840
FMG-2006	Apt5Ch116	28	58	120	240	372	21	Agb	Gabbro.		Triodia epactia and Triodia angusta	1841
FMG-2006	P4F-Q2	28	58	120	241	373	30	Agb	Gabbro.		Mid dense Hummock Grassland of	1842
FMG-2006	P4Q-Q1	28	58	120	241	373	28	AgC	CHERRATTA GRANITOID		Eucalyptus vitrix Low Open	1843
FMG-2006	S1	28	58	120	241	373	15	AgP	PORTREE GRANITOID		Acacia inaequilatera Tall Open	1844
FMG-2006	S3	28	58	120	241	373	24	AgP	PORTREE GRANITOID		Corymbia (sp. 14) Scattered trees over	1845
FMG-2006	R	28	58	120	241	374	26	AgP	PORTREE GRANITOID		Acacia inaequilatera Tall Shrubland	1846
2490	FMG39	28	58	121	242	375	25	Qc	Colluvium		Sclerolaena hostilis, Pluchea	1847
FMG-2006	P4N-Q1	28	58	121	242	375	16	AgC	CHERRATTA GRANITOID		Hummock Grassland Triodia angusta	1848
FMG-2006	P4Q-Q2	28	58	121	242	375	17	AgC	CHERRATTA GRANITOID		Mid Dense Hummock Grassland of	1849
FMG-2006	MT1-01	28	58	121	242	376	12	Qeg			Triodia angusta Hummock Grassland	1850
FMG-2006	P3D-Q2	28	58	121	243	377	20	A-	POOCATCHE MONZOGRANITE		Hummock Grassland P3DQ2-01,	1851
FMG-2006	P3N-Q1	28	58	121	243	377	28	Agm	Monzogranite		Acacia stellaticeps Open Shrubland	1852
FMG-2006	P3O-Q3	28	58	121	243	377	36	Agm	Monzogranite		Sp3.1, Acacia stellaticeps, Grevillea	1853
FMG-2006	P7G	28	58	122	244	378	22	Agm	Monzogranite		Acacia pyrifolia Tall Open Shrubland	1854
FMG-2006	APT1CH103	28	58	122	244	378	15	Qeg			Triodia epactia and Triodia schinzii	1855
2491	FMG03	29	59	123	245	379	36	Czc	Colluvium		Corymbia hamersleyana scattered low	1856
2490	FMG46	29	59	123	245	379	46	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica, Corymbia	1857
2491	FMG07	29	59	123	245	379	41	Czc	Colluvium		Corymbia hamersleyana, Acacia	1858
2490	FMG68	29	59	123	245	379	43	Qs	Eolian sand [siliceous]		Corymbia hamersleyana scattered low	1859
2491	FML01	29	59	123	246	380	50	Qs	Eolian sand [siliceous]		Corymbia hamersleyana low open	1860
2491	FMN-MA	29	59	123	246	380	36	Qs	Eolian sand [siliceous]		Acacia coriacea scattered tall shrubs	1861
2491	FMR09	29	59	123	246	380	33	Qs	Eolian sand [siliceous]		Acacia coriacea tall open shrubland	1862
2491	FML-MA	29	59	123	246	380	31	Qs	Eolian sand [siliceous]		Eucalyptus socialis, Corymbia	1863
2491	FML-MB	29	59	123	246	380	40	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla scattered low	1864
2491	FMN02	29	59	123	246	380	47	Qs	Eolian sand [siliceous]		Corymbia hamersleyana scattered low	1865
2491	FMN24	29	59	123	246	380	60	Qs	Eolian sand [siliceous]		Acacia inaequilatera, Grevillea	1866
2491	FMG113	29	59	124	247	381	37	Czc	Colluvium		Grevillea wickhamii, Hakea	1867
2491	FMG118	29	59	124	247	381	41	Czc	Colluvium		Eucalyptus gamophylla scattered low	1868
2491	FMG-RBC	29	59	124	247	382	15	PLHb	BROCKMAN IRON FORMATION			1869
HDRAIL	H015	29	59	124	248	383	33	Qs	Eolian sand [siliceous]		Hakea chordophylla scattered tall	1870
HDRAIL	H025	29	59	124	248	383	39	Qs	Eolian sand [siliceous]		Acacia inaequilatera, Hakea	1871
HDRAIL	H024	29	59	124	248	383	35	Qs	Eolian sand [siliceous]		Hakea chordophylla, Acacia	1872
HDRAIL	H028	29	59	124	248	383	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana, Hakea	1873
HDRAIL	H017	29	59	124	248	383	25	Qs	Eolian sand [siliceous]		Hakea chordophylla, Acacia	1874
HDRAIL	H023	29	59	124	248	383	22	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla low open	1875
HDRAIL	H031	29	59	124	248	383	37	Qa	Alluvium - unconsolidated		Eucalyptus gamophylla low open	1876
HDRAIL	H054	29	59	124	248	383	27	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla scattered low	1877
HDRAIL	H053	29	59	124	248	383	42	Czc	Colluvium		Acacia tumida closed scrub over	1878
HDRAIL	H033	29	59	124	248	383	28	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla scattered low	1879
HDRAIL	H039	29	59	124	248	383	26	Qs	Eolian sand [siliceous]		Petalostylis cassioides high open	1880
HDRAIL	H036	29	59	124	248	383	36	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla scattered low	1881
HDRAIL	H042	29	59	124	248	383	30	Qs	Eolian sand [siliceous]		Corymbia hamersleyana scattered low	1882
HDRAIL	H016	29	59	124	249	384	34	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	1883
HDRAIL	H035	29	59	124	249	384	48	Qa	Alluvium - unconsolidated		Gossypium robinsonii, Grevillea	1884

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
HDRAIL	H034	29	59	124	249	384	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	1885
HDRAIL	H029	29	59	124	249	384	45	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	1886
HDRAIL	H030	29	59	124	249	384	44	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	1887
HDRAIL	H026	29	59	124	249	384	51	Qs	Eolian sand [siliceous]		Acacia tumida, Gossypium robinsonii	1888
HDRAIL	H040	29	59	124	249	384	34	Qs	Eolian sand [siliceous]		Corymbia hamersleyana, Eucalyptus	1889
HDRAIL	H046	29	59	124	249	384	50	Qs	Eolian sand [siliceous]		Acacia tumida, A. citrinoviridis high	1890
HDRAIL	H032	29	59	124	249	384	37	Qs	Eolian sand [siliceous]		Corymbia hamersleyana (none in	1891
HDRAIL	H041	29	59	124	249	384	29	Qs	Eolian sand [siliceous]		Hakea chordophylla scattered tall	1892
HDRAIL	H044	29	59	124	250	385	26	PLHb	BROCKMAN IRON FORMATION		Atalaya hemiglauca (none in plot),	1893
HDRAIL	H047	29	59	124	250	385	21	Qs	Eolian sand [siliceous]		Acacia dictyophleba scattered tall	1894
2491	FMG-RBB	30	60	125	251	386	17	Czc	Colluvium			1895
HDRAIL	H252	30	60	125	251	386	13	Agm	Monzogranite		Corymbia hamersleyana scattered low	1896
2491	FMR07	30	60	125	251	387	18	Qs	Eolian sand [siliceous]		Hakea lorea subsp. lorea scattered low	1897
FMG-2006	P4D-Q1	30	60	125	251	388	8	Qeg			Acacia ancistrocarpa Tall Open Scrub	1898
FMG-2006	P4D-Q2	30	60	125	251	388	16	Qeg			Acacia ancistrocarpa Tall Open	1899
HDRAIL	H065	30	60	125	252	389	32	Qc	Colluvium		Acacia ancistrocarpa scattered shrubs	1900
HDRAIL	H144	30	60	125	252	389	22	Agm	Monzogranite		Acacia ancistrocarpa open heath over	1901
HDRAIL	H093	30	60	125	252	389	18	Qa	Alluvium - unconsolidated		Acacia ancistrocarpa high shrubland	1902
HDRAIL	H100	30	60	125	252	389	19	Qc	Colluvium		Acacia ancistrocarpa open shrubland	1903
HDRAIL	H178	30	60	125	252	389	25	Agm	Monzogranite		Acacia ancistrocarpa, A. acradenia	1904
HDRAIL	H097	30	60	125	252	389	26	Qc	Colluvium		Acacia inaequilatera, Grevillea	1905
HDRAIL	H066	30	60	125	252	389	30	Qc	Colluvium		Acacia tumida closed scrub over	1906
HDRAIL	H095	30	60	125	252	389	42	Qc	Colluvium		Corymbia semiclara low open	1907
HDRAIL	H096	30	60	125	252	389	31	Qc	Colluvium		Corymbia semiclara low open	1908
PHQT	001	31	61	126	253	390	15	_B2b-			Santalum over Ptilotus exaltatus and	1909
314	SubBP-01	31	61	126	253	391	26	_B1b			Acacia bivenosa open shrubland over	1910
314	SubBP-02	31	61	126	253	391	34	_A1f			Acacia orthocarpa open shrubland	1911
PHQT	016	31	61	126	254	392	20	_Tf			Acacia bivenosa over Hakea lorea ssp.	1912
PHQT	039	31	61	126	254	392	25	_A1f			Acacia bivenosa and Acacia colei var.	1913
PHQT	002	31	61	127	255	393	10	_B2b-				1914
PHQT	007	31	61	127	255	393	10	_B2b-			Cormybia xxxxxx and Acacia	1915
PHQT	003	31	61	127	255	393	9	_B2b-			Trichodesma zeylanicum var.	1916
PHQT	005	31	61	127	255	393	9	_B2b-			Acacia bivenosa over Crotalaria	1917
PHQT	004	31	61	127	255	393	13	_B2b-				1918
PHQT	009	31	61	127	255	393	24	_B2b-				1919
PHQT	010	31	61	127	255	393	16	_B2b-			Acacia bivenosa and Acacia bivenosa	1920
BURPEN	B077	31	62	128	256	394	14	AyG	GIDLEY GRANOPHYRE		Acacia bivenosa, Acacia coriacea	1921
CAPPRE	M068	31	62	128	256	394	14	Qhms	Coastal sand		Acacia bivenosa open shrubland over	1922
CAPPRE	M070	31	62	128	256	394	16	Qhms	Coastal sand		Acacia coriacea shrubland over	1923
CAPPRE	M072	31	62	128	256	394	21	Qhms	Coastal sand		Acacia coriacea, A. bivenosa open	1924
CAPPRE	M100	31	62	128	256	394	33	Ocean	Ocean		Acacia coriacea, A. bivenosa	1925
BURPEN	B159	31	62	129	257	395	13	AyG	GIDLEY GRANOPHYRE		Adriana urticoides low shrubland over	1926
FMG-2006	P9F	31	62	129	258	396	10				Triodia longiceps Hummock	1927
WAFORSLO	0144	32	63	130	259	397	45	Czcf	Colluvium		Rhynchosia cf. minima low open	1928
WAMTLEA	0546	32	63	130	259	397	22	Qa	Alluvium - unconsolidated		Acacia xiphophylla scattered tall	1929
WAMTLEA	0549	32	63	130	259	397	32	AFjsl	Mudstone, siltstone		Acacia xiphophylla high shrubland	1930
WAFCBOR	1036	32	63	130	259	397	51	Qs	Eolian sand [siliceous]		Acacia xiphophylla, Acacia aff.	1931
WAFORSLO	0154	32	63	130	260	398	19	Qa	Alluvium - unconsolidated		Acacia xiphophylla scattered tall	1932
WAGEORIV	0189	32	63	130	260	398	19	AFjsl	Mudstone, siltstone		Acacia xiphophylla high shrubland	1933
WAGEORIV	0202	32	63	130	260	398	30	AFjkdl	JEERINAH FORMATION		Acacia xiphophylla high shrubland	1934
WAMTLEA	0551A	32	63	130	260	398	16	AFjslg	JEERINAH FORMATION		Acacia ancistrocarpa scattered shrubs	1935
WAMTLEA	0417	32	63	131	261	399	21	AFm	MADDINA FORMATION or		Acacia xiphophylla high shrubland	1936
EP00550AA	INV101	32	63	131	261	399	17	Qa	Alluvium - unconsolidated		Tall Shrubland of Acacia xiphophylla	1937
WAMTHER	0589	32	63	131	261	400	21	Qs	Eolian sand [siliceous]		Acacia xiphophylla high shrubland	1938
WAMTHER	0596	32	63	131	261	400	10	Qs	Eolian sand [siliceous]		Neptunia dimorphantha and Sida	1939
550AA	04RAIL016	32	63	132	262	401	31	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia	1940
2490	FMG-KF	32	63	132	262	401	33	AFm	MADDINA FORMATION or		Acacia xiphophylla open scrub over	1941
CAPPRE	M024	32	63	132	262	402	28	Qp	Elluvim, colluvium, gilgais		2-10% Acacia xiphophylla over 30-	1942
CAPPRE	M028	32	63	132	262	402	22	Qs	Eolian sand [siliceous]		Scattered Acacia xiphophylla low	1943
CAPPRE	M008	32	63	132	263	403	45	Qac	Alluvial -clay, silt		Sparse Acacia xiphophylla tall shrubs	1944
CAPPRE	M054	32	63	132	263	403	42	Qp	Elluvim, colluvium, gilgais		Acacia xiphophylla open shrubland	1945
CAPPRE	M110	32	63	132	263	403	32	Qr			Acacia xiphophylla open shrubland	1946
CAPPRE	M092	32	63	132	263	403	39	Pfp	PILLINGINI TUFF		Acacia xiphophylla shrubland over	1947
CAPPRE	M096	32	63	132	263	403	24	Qp	Elluvim, colluvium, gilgais		Acacia xiphophylla shrubland over	1948
HDRAIL	H004	32	63	133	264	404	47	Qs	Eolian sand [siliceous]		Acacia citrinoviridis, A. aneura open	1949

Appendix 2 cont

Group level

Dendrogram

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Vegetation (truncated)	
HDRAIL	H058	32	63	133	264	404	50	Qs	Eolian sand [siliceous]	Acacia aneura open scrub over	1950
HDRAIL	H005	32	63	133	264	404	39	Qs	Eolian sand [siliceous]	Acacia aneura high open shrubland	1951
HDRAIL	H138	32	63	133	264	404	38	Qs	Eolian sand [siliceous]	Acacia xiphophylla open scrub over	1952
HDRAIL	H139	32	63	133	264	404	34	Qc	Colluvium	Acacia xiphophylla high open	1953
WPI	CP505	32	63	134	265	405	33	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla open shrubland	1954
CAPPRE	M003	32	63	134	265	405	52	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla open shrubland	1955
CAPPRE	M021	32	63	134	265	405	36	Qp	Elluvim, colluvium, gilgais	Eragrostis xerophila mid-dense	1956
CAPPRE	M027	32	63	134	265	405	45	Qc	Colluvium	Eriachne benthamii / Eragrostis	1957
CAPPRE	M103	32	63	134	265	405	54	Qp	Elluvim, colluvium, gilgais	Acacia xiphophylla shrubland / tall	1958
2491	FMR04	32	63	134	266	406	32			Acacia synchronicia, A. farnesiana	1959
2491	FMR12	32	63	134	266	406	35	Qa	Alluvium - unconsolidated	Eragrostis setifolia closed tussock	1960
WAEIMIWE	1042B	32	64	135	267	407	13	Qa	Alluvium - unconsolidated	Eriachne pulchella ssp. dominii,	1961
EP00550AA	INV032	32	64	135	267	407	20	Qa	Alluvium - unconsolidated	Tall Shrubland of Acacia aneura var.	1962
339	DamFS-39	32	64	135	267	408	20	Qao	Alluvium - unconsolidated	Hummock grassland of Triodia	1963
HDRAIL	H231	32	64	135	268	409	24	Qeg		Acacia victoriae scattered tall shrubs	1964
WAMTROB	1194A	32	64	136	269	410	12	Qa	Alluvium - unconsolidated	Eucalyptus xerothermica open	1965
339	DAMF20	32	65	137	270	411	15	Qao	Alluvium - unconsolidated	Low open to closed heath of the	1966
339	DAMF22	32	65	137	271	412	20	Qac	Alluvial -clay, silt	Open heath of Aeschynomene indica	1967
CAPPRE	M028B	32	65	138	272	413	18	Qs	Eolian sand [siliceous]	Open herbs dominated by Sclerolaena	1968
CAPPRE	M082	32	65	138	273	414	18	Qao	Alluvium - unconsolidated	Triodia angusta hummock grassland	1969
CAPPRE	M102	32	65	138	273	414	15	AFm	MADDINA FORMATION or	Xerochloa imberbis grassland.	1970
CAPPRE	M108	32	65	138	273	415	11	Qac	Alluvial -clay, silt	*Prosopis pallida hybrid open scrub	1971
339	DAMF01	33	66	139	274	416	90	Qs	Eolian sand [siliceous]	Shrubland of Acacia bivenosa over	1972
339	DAMF05	33	66	139	274	416	83	Qs	Eolian sand [siliceous]	Open to tall open shrubland of Acacia	1973
339	DAMF07	33	66	139	274	416	65	Qs	Eolian sand [siliceous]	Low open woodland of Acacia	1974
339	DAMF08	33	66	139	274	416	73	Qs	Eolian sand [siliceous]	Shrubland of Acacia stellaticeps over	1975
339	DAMF02	33	66	139	274	416	64	Qs	Eolian sand [siliceous]	An open tussock grassland of mixed	1976
339	DamFS-32	33	66	139	274	416	47	Qa	Alluvium - unconsolidated	Tall open shrubland of Hakea	1977
339	DAMF10	33	66	139	274	416	32	Qs	Eolian sand [siliceous]	Tussock to open tussock grassland of	1978
339	DAMF18	33	66	139	274	416	30	Qs	Eolian sand [siliceous]	Very open herbland of Streptoglossa	1979
339	DAMF11	33	66	139	274	416	42	Qs	Eolian sand [siliceous]	Hummock grassland of Triodia	1980
339	DamFS-35	33	66	139	274	416	44	Qs	Eolian sand [siliceous]	Tussock grassland of Eragrostis	1981
339	DAMF12	33	66	139	274	416	50	AgDm	DAMPIER GRANITOID	Very open herbland of Ptilotus	1982
339	DAMF13	33	66	139	274	416	60	AgDm	DAMPIER GRANITOID	Low open shrubland of Diplopeltis	1983
339	DAMF03	33	66	139	274	416	66	Qs	Eolian sand [siliceous]	An open shrubland of mixed Acacia	1984
339	DAMF09	33	66	139	274	416	66	Qs	Eolian sand [siliceous]	A shrubland of Acacia xiphophylla	1985
339	DAMF19	33	66	139	275	417	70	Qa	Alluvium - unconsolidated	Low woodland of Acacia coriacea	1986
339	DAMF21	33	66	139	275	417	73	Qao	Alluvium - unconsolidated	Open heath of Crotalaria	1987
339	DamFS-26	33	66	139	275	417	58	Qao	Alluvium - unconsolidated	Open heath of Acacia stellaticeps over	1988
339	DAMF04	33	66	139	276	418	66	AgDm	DAMPIER GRANITOID	Low open shrubland of Acacia	1989
339	DAMF15	33	66	139	276	418	44	Qc	Colluvium	Closed hummock grassland of Triodia	1990
339	DAMF06	33	66	139	276	418	42	AgDm	DAMPIER GRANITOID	Low shrubland of halophytic species,	1991
339	DamFS-30	33	66	139	276	418	25	Qhms	Coastal sand	Low open shrubland of Indigofera	1992
339	DamFS-33	33	66	139	276	418	26	Qhms	Coastal sand	Low open shrubland of Indigofera	1993
339	DAMF14	33	66	139	276	419	59	Qhms	Coastal sand	Low shrubland of Indigofera linifolia,	1994
339	DamFS-24	33	66	139	276	419	30	Qhms	Coastal sand	Open tussock grassland of *Cenchrus	1995
339	DamFS-34	33	66	139	276	419	30	Qao	Alluvium - unconsolidated	Low shrubland of Indigofera trita over	1996
339	DamFS-40	33	66	139	276	419	34	Qhms	Coastal sand	Hummock grassland of Triodia	1997
339	DamFS-25	33	66	139	276	419	30	Qao	Alluvium - unconsolidated	Low open shrubland of Indigofera	1998
339	DamFS-31	33	66	139	276	419	31	Qao	Alluvium - unconsolidated	Open tussock grassland of Eragrostis	1999
339	DamFS-36	33	66	139	276	419	40	AgDm	DAMPIER GRANITOID	Low to low open shrubland of	2000
WAHAMSTN	0219	34	67	140	277	420	43	Qa	Alluvium - unconsolidated	Acacia aneura var. ?aneura/intermedia	2001
WAHAMSTN	0228	34	67	140	277	420	47	Qa	Alluvium - unconsolidated	Acacia aneura var. ?aneura/intermedia	2002
WAHAMSTN	0234	34	67	140	277	420	39	Qa	Alluvium - unconsolidated	Eucalyptus victrix low open woodland	2003
WAHAMSTN	0235	34	67	140	277	420	59	Qa	Alluvium - unconsolidated	Eucalyptus victrix, Eucalyptus	2004
WAFCBOR	1029	34	67	140	277	420	32	Qs	Eolian sand [siliceous]	Acacia aneura var. aff. longicarpa	2005
WAHAMSTN	0231	34	67	140	277	420	46	AFr	MOUNT ROE BASALT	Eucalyptus victrix low woodland over	2006
WAHAMSTN	0232	34	67	140	277	420	37			Eucalyptus victrix scattered low trees	2007
WAHAMSTN	0233	34	67	140	277	420	35	Qa	Alluvium - unconsolidated	Eucalyptus victrix low open woodland	2008
WASA	0710	34	67	140	278	421	26	Qa	Alluvium - unconsolidated	Eucalyptus socialis low open	2009
WAEIMIWE	1047	34	67	140	278	422	33	Qa	Alluvium - unconsolidated	Corymbia hamersleyana low open	2010
550AA	04RAIL030	34	67	140	278	422	51	PLHb	BROCKMAN IRON FORMATION	Low Open Woodland of Eucalyptus	2011
550AA	10RAIL088	34	67	141	279	423	35	Czc	Colluvium	Scattered Tall Shrubs of Hakea lorea	2012
550AA	08RAIL087	34	67	141	279	423	27	Qa	Alluvium - unconsolidated	Scattered Tall Shrubs of Acacia	2013
550AA	08RAIL088	34	67	141	279	423	50	Qa	Alluvium - unconsolidated	Tall Shrubland of Hakea lorea subsp.	2014

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)
550AA	07RAIL044	34	67	141	279	423	22	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia
550AA	08RAIL047	34	67	141	279	423	18	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aff. aneura
2490	FMG-BE	34	67	141	279	424	32	Qac	Alluvial -clay, silt		Acacia aneura low open forest over
EP00550AA	INV014	34	67	141	279	425	30	Qa	Alluvium - unconsolidated		Tall Shrubland of Acacia aneura var.
EP00550AA	INV055	34	67	141	279	425	27	Qa	Alluvium - unconsolidated		Low Open Woodland of Acacia
EP00550AA	INV064	34	67	141	279	425	30	Qa	Alluvium - unconsolidated		Tall Shrubland of Acacia
EP00550AA	INV056	34	67	141	279	425	29	Qa	Alluvium - unconsolidated		Low Open Forest of Acacia aff.
EP00550AA	INV022	34	67	141	279	425	32	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aneura var.
EP00550AA	INV019	34	67	141	279	425	21	Qa	Alluvium - unconsolidated		Tall Open Shrubland Acacia
550AA	04RAIL124	34	67	141	280	426	25	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus
550AA	06RAIL003	34	67	141	280	426	22	Qs	Eolian sand [siliceous]		Open Forest of Acacia aneura var.
550AA	07RAIL043	34	67	141	280	426	23	Qa	Alluvium - unconsolidated		Tall Closed Scrub of Acacia aff.
550AA	08RAIL086	34	67	141	280	426	36	Qa	Alluvium - unconsolidated		Low Open Forest to Low Woodland
550AA	04RAIL025	34	67	142	281	427	50	Qs	Eolian sand [siliceous]		Tall Open Scrub of Acacia aneura var.
2490	FMG42	34	67	142	281	427	45	Qs	Eolian sand [siliceous]		Acacia aneura, A. pruinocarpa tall
EP00550AA	INV009	34	67	142	281	427	37	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aneura var.
EP00550AA	INV008	34	67	142	281	427	60	Qa	Alluvium - unconsolidated		Scattered Trees of Corymbia candida
EP00550AA	INV010	34	67	142	281	427	46	Qa	Alluvium - unconsolidated		Low Open Woodland of Corymbia
550AA	05RAIL035	34	67	142	281	427	48	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia anuera var.
550AA	08RAIL099	34	67	142	281	427	27	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aff. aneura
EP00550AA	VOQ35	34	67	142	281	427	38	AFk	KYLENA FORMATION or		Tall Open Scrub of Acacia aneura var.
EP00550AA	INV011	34	67	142	281	427	43	Qa	Alluvium - unconsolidated		Woodland of Acacia aneura var.
EP00550AA	INV029	34	67	142	281	427	23	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aneura var.
EP00550AA	INV063	34	67	142	281	427	28	Qa	Alluvium - unconsolidated		Low Open Forest of Corymbia
550AA	07RAIL046	34	67	142	281	428	34	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia aff.
550AA	08RAIL089	34	67	142	281	428	37	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia
550AA	08RAIL100	34	67	142	281	428	42	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Acacia
550AA	08RAIL090	34	67	142	281	428	35	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus
550AA	08RAIL098	34	67	142	281	428	51	Qa	Alluvium - unconsolidated		Low Open Woodland of Eucalyptus
WAHAMSTN	0238	34	68	143	282	429	67	AgYel	ELLAWARRINA		Eucalyptus victrix open woodland
2491	FML27	34	68	143	282	430	40	Qa	Alluvium - unconsolidated		Eucalyptus victrix open forest over
2491	FMR02	34	68	143	282	430	59	Qa	Alluvium - unconsolidated		Eucalyptus victrix, E. camaldulensis
2491	FMR13	34	68	143	282	430	40	Qs	Eolian sand [siliceous]		Acacia aneura low open forest over
2491	FMR32	34	68	143	282	430	72	Qa	Alluvium - unconsolidated		Acacia aneura low open forest over
2491	FMR35	34	68	143	282	430	84	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open woodland
EP00550AA	INV012	34	68	143	282	431	27	Qa	Alluvium - unconsolidated		Low Wooodland of Eucalyptus victrix
EP00550AA	INV065	34	68	143	282	431	33	Qa	Alluvium - unconsolidated		Open Forest of Eucalyptus victrix and
WAFCBOR	1064	34	68	143	283	432	15	Qa	Alluvium - unconsolidated		Eucalyptus camaldulensis var. obtusa
2491	FMR40	34	68	143	283	432	31	Qs	Eolian sand [siliceous]		Eucalyptus victrix open woodland
2491	FMC01	34	69	144	284	433	45	Qs	Eolian sand [siliceous]		Triodia aff. basedowii closed
2491	FMR39	34	69	144	284	433	45	Qs	Eolian sand [siliceous]		Acacia aneura, A. paraneura scattered
2491	FMR17	34	69	144	284	433	71	Qs	Eolian sand [siliceous]		Acacia aneura low closed forest over
2491	FMR43	34	69	144	284	433	82	Qa	Alluvium - unconsolidated		Acacia aneura low forest over
2491	FML40	34	69	144	284	433	48	Qa	Alluvium - unconsolidated		Acacia aneura tall shrubland over
2491	FML41	34	69	144	284	433	31	Qs	Eolian sand [siliceous]		Ptilotus exaltatus, Trichodesma
2491	FML47	34	69	144	284	433	46	Qe			Acacia aneura scattered low trees over
2491	FMR42	34	69	144	284	433	47	Qs	Eolian sand [siliceous]		Aristida contorta closed annual
HDRAIL	H001	34	69	144	284	433	40	Qc	Colluvium		Acacia aneura, A. xiphophylla
2491	FML10	34	69	144	285	434	67	Qs	Eolian sand [siliceous]		Acacia aneura (FML10-1), A.
2491	FML11	34	69	144	285	434	59	Qs	Eolian sand [siliceous]		Acacia catenulata (A. aneura, A.
2491	FMN31	34	69	144	285	434	76	Qa	Alluvium - unconsolidated		Acacia catenulata, A. aneura low
2491	FMN32	34	69	144	285	434	68	Qs	Eolian sand [siliceous]		Acacia aneura, A. catenulata low
2491	FMN01	34	69	144	285	434	34	Qs	Eolian sand [siliceous]		Acacia catenulata, A. aneura low
2491	FML37	34	69	144	285	435	51	Qr			Acacia aneura low woodland over
2491	FMR64	34	69	144	285	435	54	Qs	Eolian sand [siliceous]		Acacia aneura low open forest over
2491	FMR21	34	69	144	285	435	42	Qs	Eolian sand [siliceous]		Acacia aneura low open forest over
2491	FML48	34	69	144	285	435	60	Qa	Alluvium - unconsolidated		Acacia aneura, A. ayersiana low open
2491	FMR23	34	69	144	285	435	51	Qs	Eolian sand [siliceous]		Acacia aneura low closed forest over
2491	FMR06	34	69	144	285	435	57	Qr			Acacia aneura 6-1 low woodland over
2491	FMN16	34	69	145	286	436	21	Qs	Eolian sand [siliceous]		Fimbristylis dichotoma sedgeland and
WAHAMSTN	0220	35	70	146	287	437	31	Qa	Alluvium - unconsolidated		Astrebla elymoides, Aristida latifolia,
WAHAMSTN	0221	35	70	146	287	437	21	Qa	Alluvium - unconsolidated		Acacia synchronicia scattered tall
WAHAMSTN	0229	35	70	146	287	437	27	Qa	Alluvium - unconsolidated		Astrebla elymoides, Chrysopogon
WAHAMSTN	0223	35	70	146	287	437	14	Qa	Alluvium - unconsolidated		Acacia synchronicia high open
WAHAMSTN	0224	35	70	146	287	437	16	Qa	Alluvium - unconsolidated		Aristida latifolia, Chrysopogon fallax,

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAHAMSTN	0222	35	70	146	287	437	8	Qa	Alluvium - unconsolidated		Astrebla elymoides, Aristida latifolia,	2080
WAHAMSTN	0225	35	70	146	287	437	10	Qa	Alluvium - unconsolidated		Astrebla elymoides, Themeda sp.	2081
550AA	02RAIL015	35	70	146	288	438	18	Qa	Alluvium - unconsolidated		Tall Open Shrubland of Hakea lorea	2082
WAEIMIWE	1040	35	70	147	289	439	40	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	2083
WAEIMIWE	1041	35	70	147	289	439	36	Qa	Alluvium - unconsolidated		Acacia farnesiana high open	2084
WAFCBOR	1048	35	70	147	289	440	25	Qa	Alluvium - unconsolidated		Hakea suberea, Acacia pruinocarpa,	2085
WAFCBOR	1052	35	70	147	289	440	30	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica low open	2086
WAFCBOR	1053	35	70	147	289	440	21	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	2087
WAFCBOR	1054	35	70	147	289	440	14	Qa	Alluvium - unconsolidated		Acacia aneura var. aff. longicarpa	2088
WAEIMIWE	1042A	35	70	147	290	441	30	Qa	Alluvium - unconsolidated		Astrebla elymoides, Aristida latifolia	2089
WAEIMIWE	1042C	35	70	147	290	441	22	Qa	Alluvium - unconsolidated		Acacia aneura var. longicarpa high	2090
WAEIMIWE	1044B	35	70	147	291	442	8	Qa	Alluvium - unconsolidated		Themeda sp. Hamersley Station (MET	2091
WAFCBOR	1056	35	70	147	291	442	11	Qa	Alluvium - unconsolidated		Eucalyptus victrix low woodland over	2092
WAHAMSTN	0226	36	71	148	292	443	21	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees	2093
HDRAIL	H049	36	71	148	292	444	11	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees	2094
WAMTROB	1197	36	71	148	293	445	14	Czc	Colluvium		Eucalyptus victrix open forest over	2095
WAMTROB	1199	36	71	148	293	445	22	Qs	Eolian sand [siliceous]		Eucalyptus victrix scattered low trees	2096
WAMTROB	1204	36	71	148	293	446	14	Qs	Eolian sand [siliceous]		Eucalyptus victrix open woodland	2097
WAMTROB	1216	36	71	149	294	447	6	Qa	Alluvium - unconsolidated		Eucalyptus victrix, Acacia aneura var.	2098
WASA	0802	36	72	150	295	448	36	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2099
WAMTROB	1193	36	72	150	295	448	23	AFl	Metagabbro		Acacia aneura var. ?aneura, Acacia	2100
WAMTROB	1198	36	72	150	295	448	28	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2101
WACOOWES	0937	36	72	150	296	449	48	Qs	Eolian sand [siliceous]		Eucalyptus victrix scattered low trees	2102
WAMTROB	1203	36	72	150	296	449	30	Qs	Eolian sand [siliceous]		Acacia aff. aneura (subterete, long;	2103
WAMTROB	1212	36	72	150	296	449	37	Qs	Eolian sand [siliceous]		Eucalyptus victrix, Acacia aneura	2104
WAMTROB	1205	36	72	150	296	449	22	Qs	Eolian sand [siliceous]		Acacia aff. aneura (subterete, long;	2105
WAMTROB	1214	36	72	150	296	449	28	Qs	Eolian sand [siliceous]		Acacia aneura var. longicarpa	2106
WAHAMSTN	0237	37	73	151	297	450	54	AgYel	ELLAWARRINA		Acacia aneura var. ? open scrub over	2107
WAFCBOR	1032	37	73	151	297	450	44	Czk	Calcrete		Acacia aneura var. aff. longicarpa	2108
WAMTROB	0980	37	73	151	297	450	56	Qs	Eolian sand [siliceous]		Acacia aff. aneura (grey, flat, recurved	2109
WAMTROB	0984	37	73	151	297	450	67	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2110
WAMTROB	0987	37	73	151	297	450	47	Qa	Alluvium - unconsolidated		Acacia aneura var. ?aneura, Acacia	2111
WAMTROB	0988	37	73	151	297	450	36	Qa	Alluvium - unconsolidated		Acacia aneura var. ?aneura open scrub	2112
WASA	0755	37	73	151	298	451	66	Qa	Alluvium - unconsolidated		Acacia aneura var. longicarpa high	2113
WASA	0763	37	73	151	298	451	52	Qa	Alluvium - unconsolidated		Acacia aneura var. longicarpa, Acacia	2114
WASA	0876	37	73	151	298	451	83	Qa	Alluvium - unconsolidated		Acacia aff. aneura (grey, flat, recurved	2115
WASA	0845	37	73	151	298	451	42	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	2116
WASA	0873	37	73	151	298	451	48	AHm	MARRA MAMBA IRON		Eucalyptus xerothermica scattered low	2117
WASA	0758	37	73	151	298	451	55	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica low open	2118
WASA	0816	37	73	151	298	451	78	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered trees over	2119
WASA	0852	37	73	151	298	451	66	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica, Acacia	2120
WASA	0881	37	73	151	298	451	88	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica low	2121
WASA	0885	37	73	151	298	451	55	Czc	Colluvium		Eucalyptus leucophloia scattered low	2122
WASA	0796	37	73	151	298	451	31	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2123
WACOOWES	0942	37	73	151	298	452	67	Qs	Eolian sand [siliceous]		Eucalyptus victrix scattered low trees	2124
WAMTROB	1194	37	73	151	298	452	46	Qa	Alluvium - unconsolidated		Eucalyptus victrix, Eucalyptus	2125
WAMTROB	1189	37	73	151	298	452	56	Qa	Alluvium - unconsolidated		Acacia pruinocarpa, Acacia aff.	2126
WAFCBOR	1025	37	73	151	298	452	50	Qa	Alluvium - unconsolidated		Eucalyptus victrix open woodland	2127
WAFCBOR	1037	37	73	151	298	452	36	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica low open	2128
WASA	0653	37	73	152	299	453	47	Qa	Alluvium - unconsolidated		Corymbia semiclara, Eucalyptus	2129
WASA	0658	37	73	152	299	453	41	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2130
WASA	0663	37	73	152	299	453	50	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2131
WASA	0666	37	73	152	299	453	46	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2132
WASA	0668	37	73	152	299	453	75	Qa	Alluvium - unconsolidated		Acacia aff. aneura (grey, flat, recurved	2133
WASA	0961	37	73	152	299	454	51	AHm	MARRA MAMBA IRON		Corymbia hamersleyana low open	2134
WASA	0998	37	73	152	299	454	34	Czc	Colluvium		Eucalyptus xerothermica scattered low	2135
WASA	0667	37	73	152	300	455	16	Qa	Alluvium - unconsolidated		Aristida contorta annual grassland	2136
WACOOWES	0921	37	73	152	300	455	20	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2137
WASA	0770	37	73	152	300	455	26	Qs	Eolian sand [siliceous]		Acacia aneura var. ?aneura, Acacia	2138
WACOOWES	0920	37	73	152	300	455	36	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2139
WAMTROB	0976	37	73	152	300	455	41	Czc	Colluvium		Acacia aneura var. aff. longicarpa	2140
WACOOWES	0923	37	73	152	300	455	28	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2141
WACOOWES	0925	37	73	152	300	455	32	Czc	Colluvium		Acacia aneura var. aff. longicarpa	2142
WASA	0771	37	73	152	301	456	38	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2143
WACOOWES	0892	37	73	152	301	456	54	Qs	Eolian sand [siliceous]		Acacia aneura var. (green, flat; MET	2144

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WACOOWES	0893	37	73	152	301	456	35	Qa	Alluvium - unconsolidated		Acacia aneura var. (green, flat; MET	2145
WASA	1019	37	73	152	301	456	29	Qs	Eolian sand [siliceous]		Acacia aneura var. longicarpa high	2146
WACOOWES	0889	37	73	152	301	456	44	AHm	MARRA MAMBA IRON		Acacia aneura var. (green, flat; MET	2147
WACOOWES	0908	37	73	152	301	456	41	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2148
WACOOWES	0911	37	73	152	301	456	56	AHm	MARRA MAMBA IRON		Acacia aff. aneura (narrow, green;	2149
WAMTROB	1219	37	73	152	301	456	46	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2150
WAMTROB	1201	37	73	152	301	456	47	Czc	Colluvium		Eucalyptus xerothermica scattered low	2151
WAMTROB	1213	37	73	152	301	456	41	Czc	Colluvium		Acacia aff. aneura (narrow, green;	2152
WACOOWES	0912	37	73	152	301	456	32	Qs	Eolian sand [siliceous]		Acacia aneura (flat, curved; MET	2153
WAMTROB	1191	37	73	152	301	456	30	Qs	Eolian sand [siliceous]		Acacia pruinocarpa low open	2154
WACOOWES	0926	37	73	152	301	456	41	Czc	Colluvium		Acacia aneura var. aff. longicarpa	2155
WAMTROB	0972	37	73	152	301	456	57	Czc	Colluvium		Eucalyptus xerothermica low open	2156
WASA	1018	37	73	152	301	456	47	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2157
WACOOWES	0943	37	73	152	301	456	53	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2158
WAMTROB	0986	37	73	152	301	456	45	Qs	Eolian sand [siliceous]		Acacia aneura (grey bushy form; MET	2159
WAMTROB	0954	37	73	152	301	456	44	Czc	Colluvium		Acacia aneura var. aff. longicarpa	2160
WAFCBOR	1024	37	73	152	301	456	48	Qa	Alluvium - unconsolidated		Acacia aneura var. aff. longicarpa	2161
WAACRD	1284	37	73	152	301	456	53	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	2162
WACOOWES	0922	37	73	152	301	456	25	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2163
WASA	1001	37	73	152	301	456	17	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	2164
WAGEORIV	0034	38	74	153	302	457	19	Qab	Alluvium - unconsolidated & gilgai		Triodia wiseana open hummock	2165
WAMTHER	0601	38	74	153	302	457	17	AFhy	Lyre Creek Member HARDEY		Sida fibulifera and Crotalaria	2166
WAMTHER	0597A	38	74	153	302	457	21	Qs	Eolian sand [siliceous]		Sida fibulifera scattered low shrubs	2167
WAGEORIV	0081C	38	74	153	303	458	7	Qa	Alluvium - unconsolidated		Sida fibulifera low open shrubland.	2168
WAMTHER	0566B	38	74	153	303	458	7	Czag	Alluvium		Triodia wiseana hummock grassland.	2169
WAMTHER	0564A	38	74	153	303	459	6	AFhy	Lyre Creek Member HARDEY		Sida fibulifera scattered low shrubs	2170
WAMTHER	0564C	38	74	153	303	459	8	AFhy	Lyre Creek Member HARDEY		Sida fibulifera low open shrubland	2171
WAMTHER	0566A	38	74	153	303	459	11	Czag	Alluvium		Sida fibulifera low shrubland over	2172
WAMTHER	0566C	38	74	153	303	459	8	Czag	Alluvium		Sida fibulifera low open heath.	2173
WAGEORIV	0570B	38	74	153	303	459	16	Qs	Eolian sand [siliceous]		Brachyachne convergens open	2174
WAGEORIV	0081B	38	74	153	304	460	12	AFhy	Lyre Creek Member HARDEY		Sida fibulifera, Crotalaria	2175
WAMTHER	0461	38	74	153	304	460	8	AFm	MADDINA FORMATION or		Streptoglossa bubakii open herbland.	2176
WAGEORIV	0193B	38	74	153	304	460	15	AFjsl	Mudstone, siltstone		Streptoglossa bubakii, Stemodia kingii	2177
WAGEORIV	0276A	38	74	153	304	460	7	Czcb	Colluvium		Brachyachne convergens tussock	2178
WAMTHER	0462	38	74	153	304	460	10	Czcb	Colluvium		Streptoglossa bubakii open herbland.	2179
WAMTLEA	0390	38	74	153	304	461	5	Czc	Colluvium		Cassia oligophylla shrubland over	2180
WAGEORIV	0189B	38	74	153	305	462	13	AFjsl	Mudstone, siltstone		Rhynchosia cf. minima scattered low	2181
WAGEORIV	0570A	38	74	153	305	462	16	Qs	Eolian sand [siliceous]		Streptoglossa bubakii very open	2182
WAMTHER	0588	38	74	153	305	462	23	Qs	Eolian sand [siliceous]		Acacia pyrifolia high open shrubland	2183
WAHAMPAR	1089	38	74	153	305	463	40	Czcb	Colluvium		Acacia inaequilatera scattered tall	2184
WAGEORIV	0276	38	74	153	305	464	20	AFm	MADDINA FORMATION or		Rhynchosia sp. Chichester (MET	2185
WAMTLEA	0375	38	74	153	305	464	14	AFm	MADDINA FORMATION or		Triodia wiseana hummock grassland.	2186
WAFORSLO	0144E	38	75	154	306	465	9	Czcf	Colluvium		Neptunia monosperma and	2187
BC	BCQ71	38	75	154	306	465	15	AFm	MADDINA FORMATION or		Senna artemisioides subsp. helmsii	2188
WAGEORIV	0193C	38	75	154	306	466	12	AFjsl	Mudstone, siltstone		Eriachne benthamii tussock grassland.	2189
WAMTHER	0595A	38	75	154	307	467	12	Qs	Eolian sand [siliceous]		Sida fibulifera low shrubland.	2190
CAPPRE	M002B	38	75	154	307	467	12	Qp	Elluvim, colluvium, gilgais		Sida aff. fibulifera low shrubland.	2191
CAPPRE	M001	38	75	154	307	468	14	Qp	Elluvim, colluvium, gilgais		Eriachne benthamii / Eragrostis	2192
CAPPRE	M002A	38	75	154	307	468	9	Qp	Elluvim, colluvium, gilgais		Eragrostis xerophila tussock	2193
WAMTLEA	0388	38	75	155	308	469	4	Czc	Colluvium		Rhynchosia sp. Chichester (MET	2194
550AA	10RAIL086	38	76	156	309	470	17	Czc	Colluvium		Tussock Grassland of Eriachne	2195
550AA	KR1002	38	76	156	309	470	7	Czc	Colluvium		Open Tussock Grassland of Astrebla	2196
550AA	10RAIL087	38	76	156	309	470	19	Czc	Colluvium		Open Tussock Grassland of Astrebla	2197
550AA	10RAIL090	38	76	156	309	470	16	Czc	Colluvium		Tall Shrubland of Acacia xiphophylla	2198
550AA	10RAIL089	38	76	156	310	471	40	Czc	Colluvium		Tall Open Shrubland of Acacia aneura	2199
550AA	KR1000	38	76	156	310	471	41	AFm	MADDINA FORMATION or		Tall Open Shrubland of Acacia aneura	2200
HDRAIL	H206	38	76	156	310	471	30	AFm	MADDINA FORMATION or		Acacia victoriae, Dichrostachys	2201
2490	FMG20f	38	76	156	311	472	13	AFm	MADDINA FORMATION or		Mixed herbland	2202
2490	FMG59	38	76	157	312	473	29	Czc	Colluvium		Vigna sp. Central (M.E. Trudgen	2203
2490	FMG71	38	76	157	312	473	33	Czc	Colluvium		Astrebla pectinata, A. elymoides open	2204
HDRAIL	H269	38	76	157	312	473	28	Czc	Colluvium		Mosaic: Acacia victoriae scattered	2205
HDRAIL	H284	38	76	157	312	473	37	AFm	MADDINA FORMATION or		Sida aff. fibulifera scattered low	2206
HDRAIL	H194	38	76	157	312	474	28	Qb	Alluvium - unconsolidated		Acacia victoriae high shrubland over	2207
HDRAIL	H230	38	76	157	312	474	32	Qb	Alluvium - unconsolidated		Acacia victoriae open shrubland over	2208
HDRAIL	H228	38	76	157	312	474	34	Qc	Colluvium		Triodia wiseana mid-dense hummock	2209

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)
WAFORSLO	0161B	38	77	158	313	475	17	AFjsl	Mudstone, siltstone		Rhynchosia sp. Chichester (MET
WAGEORIV	0580A	38	77	158	313	475	14	Qs	Eolian sand [siliceous]		Iseilema aff. fragile annual grassland
WAMTLEA	0474A	38	77	158	313	475	17	AHm	MARRA MAMBA IRON		Eriachne benthamii tussock grassland.
WAMTLEA	0380	38	77	158	313	475	15	Czc	Colluvium		Eriachne benthamii, Bothriochloa
WAMTLEA	0536	38	77	158	313	475	20	AFjsl	Mudstone, siltstone		Eriachne benthamii tussock grassland.
WAMTLEA	0377	38	77	158	313	476	17	Czc	Colluvium		Rhynchosia sp. Chichester (MET
WAEIMIWE	1042E	38	77	158	313	476	14	Qa	Alluvium - unconsolidated		Acacia farnesiana scattered shrubs to
WAFORSLO	0161C	38	78	159	314	477	5	AFjsl	Mudstone, siltstone		Eriachne benthamii tussock grassland.
WAMTHER	0597B	38	78	159	315	478	4	Qs	Eolian sand [siliceous]		Eriachne benthamii tussock grassland.
2490	FMG-MB	38	78	159	316	479	10	_A1f			Patches of Eriachne benthamii closed
WAMTHER	0595C	38	78	160	317	480	5	Qs	Eolian sand [siliceous]		Neptunia dimorphantha low open
WAMTHER	0598A	38	78	160	317	480	6	Qs	Eolian sand [siliceous]		Sida fibulifera scattered low shrubs
WAHAMSTN	0236	39	79	161	318	481	26	Qa	Alluvium - unconsolidated		Astrebla elymoides open tussock
WAMTROB	0989	39	79	161	318	481	35	Qs	Eolian sand [siliceous]		Panicum laevinode, Brachyachne
WASA	0239	39	79	161	318	481	44	Fl			Sida fibulifera scattered low shrubs
WASA	0756	39	79	161	318	481	51	Qa	Alluvium - unconsolidated		Astrebla pectinata, Themeda sp.
WASA	0854	39	79	161	318	481	34	Qs	Eolian sand [siliceous]		Sida fibulifera scattered low shrubs
WASA	0843	39	79	161	318	481	39	d	Dolerite dykes		Cassia oligophylla scattered low
WASA	0857	39	79	161	318	481	35	Qs	Eolian sand [siliceous]		Themeda sp. Hamersley Station (MET
WASA	0669	39	79	161	318	481	50	Qa	Alluvium - unconsolidated		Acacia aneura (flat, curved; MET
WASA	0672	39	79	161	318	481	58	Qa	Alluvium - unconsolidated		Acacia aneura (flat, curved; MET
WASA	0670	39	79	161	318	481	23	Qa	Alluvium - unconsolidated		Tephrosia supina and Rhynchosia cf.
WAMTLEA	0371	39	80	162	319	482	14	AFm	MADDINA FORMATION or		Rhynchosia sp. Chichester (MET
WAMTLEA	0376	39	80	162	319	482	13	Czcb	Colluvium		Neptunia dimorphantha low open
WAMTLEA	0404A	39	80	162	319	482	16	Czcb	Colluvium		Rhynchosia sp. Chichester (MET
WAMTLEA	0405	39	80	162	319	482	17	Czcb	Colluvium		Rhynchosia sp. Barowanna Hill (MET
WAMTLEA	0404C	39	80	162	319	482	18	Czcb	Colluvium		Rhynchosia sp. Chichester (MET
WAMTHER	0425A	39	80	162	319	482	15	Czcb	Colluvium		Rhynchosia sp. Barowanna Hill (MET
WAMTHER	0430	39	80	162	319	482	15	Czcb	Colluvium		Aristida latifolia open tussock
WAMTLEA	0412	39	80	162	319	482	23	Czcb	Colluvium		Rhynchosia sp. Barowanna Hill (MET
WAMTHER	0424	39	80	162	319	482	22	Czcb	Colluvium		Neptunia dimorphantha and Sida
WAMTLEA	0422	39	80	162	319	482	18	Czcb	Colluvium		Neptunia dimorphantha, Sida
WAMTLEA	0411A	39	80	162	319	482	15	AFm	MADDINA FORMATION or		Rhynchosia sp. Chichester (MET
WAMTLEA	0404D	39	80	162	319	482	27	Czcb	Colluvium		Sida fibulifera low shrubland over
WAMTLEA	0407	39	80	162	319	482	23	Czc	Colluvium		Rhynchosia sp. Barowanna Hill (MET
WAMTHER	0604	39	80	162	319	482	30	Czcb	Colluvium		Rhynchosia sp. Chichester (MET
WAMTLEA	0408	39	80	162	319	482	22	Czc	Colluvium		Sida fibulifera low open shrubland to
WAMTHER	0425B	39	80	162	319	483	16	Czcb	Colluvium		Rhynchosia sp. Barowanna Hill (MET
WAHAMPAR	1091	39	80	162	319	483	25	Czcb	Colluvium		Aristida latifolia very open tussock
WAHAMPAR	1093	39	80	162	319	483	25	Czcb	Colluvium		Annual herbland dominated by
WAMTHER	0441	39	80	162	319	483	13	Czcb	Colluvium		Neptunia dimorphantha and Sida
WAMTHER	0442	39	80	162	319	483	18	AFm	MADDINA FORMATION or		Neptunia dimorphantha low open
WAMTHER	0431	39	80	162	319	483	13	Czcb	Colluvium		Rhynchosia sp. Chichester (MET
WAMTHER	0463	39	80	162	319	483	18	Czcb	Colluvium		Streptoglossa bubakii very open
PHQT	006	40	81	163	320	484	15	_Tm			Mangrove over xxxxxx mixed
PHQT	018	40	81	163	320	484	12	_Tf			
PHQT	015	40	81	163	320	484	6	_Tf			Broccolli red xxxxx and mixed
HDRAIL	H150	40	81	163	320	484	13	_A1f			Halosarcia halocnemoides subsp.
CAPPRE	M036	40	81	163	320	484	14	Qc	Colluvium		Samphire.
CAPPRE	M074	40	81	163	320	484	13	Qhm	Marine mud & silt		Samphire.
314	SPH-03	40	81	163	320	484	8	_A1f			Samphire shrubland: Halosarcia indica
314	SPH-12	40	81	163	320	484	7	_A1f			Dense Halosarcia pergranulata subsp.
PPB	W	40	81	163	320	484	8				
314	SPH-13	40	81	163	321	485	3	_A1f			Halosarcia indica subsp. leiostachya
339	DAMF16	40	81	164	322	486	11	Qhms	Coastal sand		Low open heath of the halophytic
339	DAMF17	40	81	164	322	486	18	Qhms	Coastal sand		Low open heath of the halophytic
339	DamFS-29	40	81	164	322	486	12	Qhms	Coastal sand		Low open shrubland of the halophytic
CAPPRE	M061	40	81	164	322	486	19	Qhms	Coastal sand		Frankenia / Lawrencia / Dissocarpus /
2490	FMG16	40	81	164	323	487	19	Qa	Alluvium - unconsolidated		Halosarcia indica subsp. leiostachya,
314	SPH-02	40	81	165	324	488	26	_A1f			Trianthema turgidifolia low open
314	SPH-14	40	81	165	324	488	23	_A1f			Triodia secunda mid-dense hummock
314	SPH-19	40	81	165	324	488	17	_A1f			Samphire low shrubland of Halosarcia
314	SPH-22	40	81	165	324	488	16	_A1f			Closed hummock grassland of Triodia
PHQT	012	41	82	166	325	489	2				Dark green and light Avicennia
PHQT	014	41	82	166	325	489	2	_Tf			Light green mangrove xxxxxx.

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Vegetation (truncated)
PHQT	013	41	82	166	325	490	4	_Tf		Avicennia marina over bally Brocolli
PHQT	040	41	82	166	325	490	2	_Tf		Light green mangrove xxxxxx over
CAPPRE	M113	41	82	166	325	490	8	Qac	Alluvial -clay, silt	Avicennia marina tall open shrubland
WAFORSLO	0149	42	83	167	326	491	22	Czcf	Colluvium	Acacia synchronicia scattered tall
WASA	0754A	42	83	167	326	491	16	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia scattered low
2491	FMG119	42	83	167	326	491	20	PLHj	WEELI WOLLI FORMATION	Acacia pruinocarpa (Eucalyptus
WAMTROB	1236	42	83	167	327	492	22	AHd	WITTENOOM FORMATION	Eucalyptus leucophloia, Acacia
WAMTROB	0968	42	83	167	328	493	10	PLHb	BROCKMAN IRON FORMATION	Eucalyptus leucophloia scattered low
271	BRO-MK	42	83	167	328	493	25	Czc	Colluvium	Corymbia hamersleyana scattered low
WASA	0635	42	83	167	329	494	34	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low woodland
WASA	0637	42	83	167	329	494	37	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low open
WASA	0702	42	83	167	329	494	23	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low woodland
WASA	0869	42	83	167	329	494	28	Fjb		Eucalyptus leucophloia low open
WAMTROB	0978	42	83	167	329	494	26	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low open
WACOOWES	0939	42	83	167	329	495	24	Qs	Eolian sand [siliceous]	Eucalyptus leucophloia low open
WAMTROB	0965	42	83	167	329	495	39	Czc	Colluvium	Eucalyptus leucophloia low open
WAMTROB	1186	42	83	167	329	496	25	Qa	Alluvium - unconsolidated	Eucalyptus leucophloia low open
WAMTROB	1188	42	83	167	329	496	23	Czc	Colluvium	Eucalyptus leucophloia, Corymbia
WASA	1237	42	83	167	329	496	33	Czc	Colluvium	Corymbia deserticola, Corymbia
WASA	0689	42	83	167	330	497	33	Czc	Colluvium	Eucalyptus leucophloia low open
WAFCBOR	1179	42	83	167	330	497	26	PLHb	BROCKMAN IRON FORMATION	Corymbia ferriticola ssp. ferriticola,
WASA	0651	42	83	167	331	498	10	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia scattered low
WAMTROB	1222	42	83	167	331	498	8	Czc	Colluvium	Acacia aff. aneura (narrow, green;
WASA	0701	42	83	167	331	499	24	Qs	Eolian sand [siliceous]	Eucalyptus leucophloia low woodland
WASA	0733	42	83	167	331	499	30	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low woodland
WASA	0737	42	83	167	331	499	17	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low open
WACOOWES	0948	42	83	167	331	499	17	AHs	MOUNT McCRAE SHALE and	Eucalyptus leucophloia low open
WASA	0606	42	83	168	332	500	31	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0613	42	83	168	332	500	26	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0675	42	83	168	332	500	32	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0616	42	83	168	332	500	23	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0676	42	83	168	332	500	31	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0607	42	83	168	332	500	26	B		Eucalyptus leucophloia, Corymbia
WASA	0619	42	83	168	332	500	26	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0610	42	83	168	332	500	29	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low woodland
WASA	0618	42	83	168	332	500	31	AHm	MARRA MAMBA IRON	Corymbia ferriticola ssp. ferriticola,
WASA	0677	42	83	168	332	500	49	AHm	MARRA MAMBA IRON	Corymbia hamersleyana, Eucalyptus
WASA	0617	42	83	168	332	500	29	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0611	42	83	168	332	501	29	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia low open
WASA	0612	42	83	168	332	501	25	AHm	MARRA MAMBA IRON	Hibiscus haynaldii high shrubland
WASA	0678	42	83	168	332	501	19	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0623	42	84	169	333	502	40	Czc	Colluvium	Corymbia hamersleyana low open
WASA	1004	42	84	169	333	502	36	Czc	Colluvium	Corymbia hamersleyana, Corymbia
WASA	0703	42	84	169	333	502	32	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WASA	0704	42	84	169	333	502	29	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Corymbia
WACOOWES	0949	42	84	169	333	502	19	Czc	Colluvium	Eucalyptus leucophloia, Corymbia
WASA	0654	42	84	169	333	502	33	Qa	Alluvium - unconsolidated	Corymbia semiclara woodland over
WASA	0650	42	84	169	333	503	34	Qa	Alluvium - unconsolidated	Eucalyptus gamophylla, Eucalyptus
WACOOWES	0931	42	84	169	333	503	37	Qa	Alluvium - unconsolidated	Acacia aneura var. longicarpa, Acacia
WASA	0725	42	84	169	333	503	19	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia, Eucalyptus
WASA	0734	42	84	169	333	503	29	AHm	MARRA MAMBA IRON	Eucalyptus leucophloia scattered low
WASA	0746	42	84	169	333	503	36	AHm	MARRA MAMBA IRON	Acacia pruinocarpa, Eucalyptus
WASA	0726	42	84	169	333	503	17	AHm	MARRA MAMBA IRON	Eucalyptus gamophylla scattered low
WASA	0628	42	84	169	334	504	107	Qa	Alluvium - unconsolidated	Corymbia hamersleyana scattered low
WASA	0751	42	84	169	334	504	71	AHm	MARRA MAMBA IRON	Corymbia hamersleyana, Eucalyptus
WASA	0752	42	84	169	334	504	60	AHm	MARRA MAMBA IRON	Eucalyptus xerothermica, Corymbia
WASA	0629	42	84	169	334	504	47	Czc	Colluvium	Eucalyptus gamophylla scattered low
WASA	0632	42	84	169	334	504	49	Qa	Alluvium - unconsolidated	Corymbia hamersleyana open
WASA	0819B	42	84	169	334	504	46	Czc	Colluvium	Acacia aff. aneura (scythe-shaped;
WAMTROB	0973	42	84	169	334	504	56	Czc	Colluvium	Corymbia hamersleyana, Eucalyptus
WAMTROB	1187	42	84	169	334	504	36	Qa	Alluvium - unconsolidated	Corymbia hamersleyana, Eucalyptus
WAMTROB	1209	42	84	169	334	504	54	Czc	Colluvium	Corymbia hamersleyana open
WAMTROB	0950	42	84	169	334	504	39	Qa	Alluvium - unconsolidated	Corymbia hamersleyana, Eucalyptus
WASA	1006	42	84	169	334	504	25	Czr	Hematite on banded iron	Eucalyptus trivalvis, Eucalyptus
WASA	0689A	42	85	170	335	505	11	Czc	Colluvium	Eucalyptus leucophloia low woodland

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WACOOWES	0916	42	85	170	336	506	21	Czc	Colluvium		Eucalyptus striaticalyx low woodland	2340
WACOOWES	0918	42	85	170	336	506	34	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	2341
WACOOWES	0917	42	85	170	336	506	23	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	2342
WASA	0959	42	85	170	336	507	16	AHm	MARRA MAMBA IRON		Scaevola acacioides low open	2343
WASA	1266	42	85	170	336	507	22	hs	MOUNT McCRAE SHALE and		Acacia aff. aneura (narrow, green;	2344
WASA	0855	42	85	170	337	508	28	Qs	Eolian sand [siliceous]		Acacia aneura var. longicarpa high	2345
550AA	KR1001	42	85	170	337	508	34	Qc	Colluvium		Open forest of Acacia xiphophylla and	2346
WAMTROB	1240	42	85	170	338	509	24	Czc	Colluvium		Acacia aneura var. ?aneura/intermedia	2347
WAMTROB	1242	42	85	170	338	509	24	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia scattered low	2348
WASA	0690	42	85	171	339	510	40	Czc	Colluvium		Acacia aneura var. longicarpa high	2349
WASA	0695	42	85	171	339	510	45	Fjb			Eucalyptus leucophloia, Corymbia	2350
WASA	0707	42	85	171	339	510	48	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2351
WASA	0705	42	85	171	339	510	63	AHm	MARRA MAMBA IRON		Acacia aff. catenulata, Acacia aneura	2352
WASA	0958	42	85	171	339	510	43	AHm	MARRA MAMBA IRON		Acacia aff. aneura (grey, flat, recurved	2353
WASA	0748	42	85	171	339	510	42	AHm	MARRA MAMBA IRON		Corymbia ferriticola ssp. ferriticola	2354
WASA	0749	42	85	171	339	510	31	AHm	MARRA MAMBA IRON		Acacia aff. catenulata open scrub over	2355
WASA	0754	42	85	171	339	510	51	AHm	MARRA MAMBA IRON		Acacia aff. catenulata, Acacia	2356
WACOOWES	0901	42	85	171	339	510	53	Czc	Colluvium		Acacia aff. aneura (grey, flat, recurved	2357
WAMTROB	0979	42	85	171	339	510	34	Czc	Colluvium		Eucalyptus leucophloia, Corymbia	2358
WACOOWES	0934	42	85	171	339	510	32	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low woodland	2359
WASA	0700	42	85	171	340	511	32	Fjb			Eucalyptus leucophloia, Corymbia	2360
WASA	0860	42	85	171	340	511	39	d	Dolerite dykes		Corymbia hamersleyana scattered low	2361
WASA	1007	42	85	171	340	512	47	PLHb	BROCKMAN IRON FORMATION		Corymbia ferriticola ssp. ferriticola	2362
WASA	1009	42	85	171	340	512	55	Czc	Colluvium		Acacia pruinocarpa, Acacia aneura	2363
WASA	1015	42	85	171	340	512	39	Czc	Colluvium		Acacia citrinoviridis high shrubland	2364
WASA	0800A	42	86	172	341	513	43	hs	MOUNT McCRAE SHALE and		Grevillea berryana, Acacia aff.	2365
WASA	0807	42	86	172	341	513	16	hs	MOUNT McCRAE SHALE and		Acacia aff. ayersiana (MET 16,088),	2366
WASA	0821	42	86	172	341	514	24	Czc	Colluvium		Acacia aff. catenulata low open	2367
WASA	0806	42	86	172	342	515	10	hs	MOUNT McCRAE SHALE and		Acacia bivenosa high shrubland over	2368
WASA	0810	42	86	172	342	516	19	hs	MOUNT McCRAE SHALE and		Acacia aff. ayersiana (MET 16,088)	2369
WASA	0810A	42	86	172	342	516	18	hs	MOUNT McCRAE SHALE and		Acacia pruinocarpa scattered low trees	2370
WASA	0809	42	86	172	343	517	13	hs	MOUNT McCRAE SHALE and		Scaevola acacioides, Ptilotus	2371
WASA	0811	42	86	172	343	517	17	hs	MOUNT McCRAE SHALE and		Astrotricha hamptonii high open	2372
WASA	0605	43	87	173	344	518	36	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2373
WASA	0608	43	87	173	344	518	28	Czc	Colluvium		Eucalyptus leucophloia scattered low	2374
WASA	1005	43	87	173	344	518	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2375
WASA	0614	43	87	173	344	518	41	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2376
WASA	0615	43	87	173	344	518	25	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2377
WASA	0620	43	87	173	344	518	33	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2378
WASA	0727A	43	87	173	344	518	23	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2379
WASA	0729	43	87	173	344	518	24	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2380
WASA	0743	43	87	173	344	518	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2381
WASA	0745	43	87	173	344	518	35	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Eucalyptus	2382
WASA	0624	43	87	173	344	519	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2383
WASA	0638	43	87	173	344	519	29	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2384
WASA	0639	43	87	173	344	519	27	Czc	Colluvium		Eucalyptus leucophloia, Corymbia	2385
WASA	0625	43	87	173	344	519	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2386
WASA	0731	43	87	173	344	519	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2387
WASA	0713	43	87	173	344	519	24	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2388
WASA	0747	43	87	173	344	519	24	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low woodland	2389
WASA	0753	43	87	173	344	519	35	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2390
WASA	0741	43	87	173	344	519	26	B			Corymbia hamersleyana, Eucalyptus	2391
WASA	0750	43	87	173	344	519	35	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia	2392
WASA	0621	43	87	173	344	520	27	Czc	Colluvium		Eucalyptus leucophloia scattered low	2393
WASA	0633	43	87	173	344	520	18	Qa	Alluvium - unconsolidated		Triodia aff. basedowii open hummock	2394
WASA	0712	43	87	173	344	520	64	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2395
WASA	0714	43	87	173	344	520	45	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2396
WASA	0716	43	87	173	344	520	36	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Eucalyptus	2397
WASA	0720	43	87	173	344	520	20	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2398
WASA	0721	43	87	173	344	520	28	AHm	MARRA MAMBA IRON		Eucalyptus gamophylla low open	2399
WASA	0732	43	87	173	344	520	32	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Eucalyptus	2400
WASA	0735	43	87	173	344	520	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2401
WASA	0634	43	87	173	344	520	39	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2402
WASA	0649	43	87	173	344	520	35	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2403
WASA	0879	43	87	173	344	520	33	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2404

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WASA	0708	43	87	173	344	520	46	AgC	CHERRATTA GRANITOID		Eucalyptus leucophloia low woodland	2405
WASA	0680	43	87	173	344	520	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2406
WASA	0693	43	87	173	344	520	37	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia scattered low	2407
WASA	0694	43	87	173	344	520	37	AgC	CHERRATTA GRANITOID		Eucalyptus leucophloia low woodland	2408
WASA	0686	43	87	173	344	520	30	Czc	Colluvium		Eucalyptus gamophylla low open	2409
WAACRD	1289	43	87	173	344	520	31	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low open	2410
WASA	0691	43	87	173	344	520	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2411
WASA	0692	43	87	173	344	520	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2412
WASA	0636	43	87	173	344	520	36	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2413
WASA	0640	43	87	173	344	520	25	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2414
WASA	0740	43	87	173	344	520	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2415
WASA	0880	43	87	173	344	520	23	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2416
WASA	0609	43	87	174	345	521	31	Czc	Colluvium		Eucalyptus leucophloia, Eucalyptus	2417
WASA	0995	43	87	174	345	521	28	Czc	Colluvium		Eucalyptus gamophylla low open	2418
WAACRD	1292	43	87	174	345	521	33	AHm	MARRA MAMBA IRON		Eucalyptus gamophylla, Eucalyptus	2419
WAMTROB	0977	43	87	174	345	521	31	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla low open	2420
WAMTROB	0952	43	87	174	345	521	24	Czc	Colluvium		Eucalyptus leucophloia, Eucalyptus	2421
WAMTROB	1234	43	87	174	345	521	37	Czc	Colluvium		Eucalyptus leucophloia scattered low	2422
WAACRD	1282	43	87	174	345	521	37	Qa	Alluvium - unconsolidated		Corymbia deserticola, Eucalyptus	2423
WASA	0622	43	87	174	345	521	53	Czc	Colluvium		Acacia aff. aneura (narrow, green	2424
WASA	1011	43	87	174	345	521	30	Qa	Alluvium - unconsolidated		Corymbia deserticola low open	2425
WACOOWES	0894	43	87	174	345	521	28	AHm	MARRA MAMBA IRON		Eucalyptus gamophylla scattered low	2426
WACOOWES	0945	43	87	174	345	521	34	AHs	MOUNT McCRAE SHALE and		Eucalyptus gamophylla low open	2427
WASA	0688	43	87	174	346	522	22	Czc	Colluvium		Hakea chordophylla high open	2428
WAMTROB	0969	43	87	174	346	522	24	Czc	Colluvium		Eucalyptus leucophloia low open	2429
WASA	0964	43	87	174	346	522	26	Fjb			Acacia pyrifolia, Cassia pruinosa open	2430
WASA	1013	43	87	174	346	522	34	Czc	Colluvium		Corymbia deserticola scattered low	2431
WASA	1261	43	87	174	346	522	21	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered trees	2432
WASA	0723	43	87	174	347	523	12	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Eucalyptus	2433
WACOOWES	0898	43	87	174	347	523	15	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2434
WACOOWES	0897	43	87	174	347	523	34	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2435
WASA	0957	43	87	174	347	523	29	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2436
WACOOWES	0932	43	87	174	347	523	31	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia, Eucalyptus	2437
WACOOWES	0935	43	87	174	347	523	28	hs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	2438
WASA	0814	43	87	174	348	524	22	Czc	Colluvium		Corymbia deserticola scattered low	2439
WAACRD	1285	43	87	174	348	524	14	Qa	Alluvium - unconsolidated		Acacia pruinocarpa, Acacia aff.	2440
WASA	0878	43	87	174	348	524	17	AHm	MARRA MAMBA IRON		Acacia pruinocarpa, Acacia aneura	2441
WASA	1010	43	87	174	348	524	21	Czc	Colluvium		Acacia inaequilatera, Acacia	2442
WACOOWES	0947	43	87	174	348	525	13	AHs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	2443
WASA	1003	43	87	174	348	525	29	Czc	Colluvium		Corymbia deserticola, Eucalyptus	2444
550AA	08RAIL093	44	88	175	349	526	14	Czr	Hematite on banded iron		Scatetred Low Trees of Corymbia	2445
BC	BCQ69	44	88	175	349	526	22	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia subsp	2446
BC	BCQ70	44	88	175	349	526	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia subsp	2447
EP00550AA	INV034	44	88	175	349	526	18	AFj	JEERINAH FORMATION		Scattered Low Trees of Eucalyptus	2448
EP00550AA	INV037	44	88	175	349	526	17	AFj	JEERINAH FORMATION		Scattered Shrubs of Acacia maitlandii	2449
EP00550AA	INV083	44	88	175	349	526	13	AHm	MARRA MAMBA IRON		Scattered Low Trees of Eucalyptus	2450
FMG-2006	P9GtoP9Fb	44	88	175	350	527	11	Qc	Colluvium		Acacia aneura Scattered Tall Shrubs	2451
FMG-2006	P9G	44	88	175	350	527	22	Czr	Hematite on banded iron		Acacia pruinocarpa Tall Open	2452
2491	FMR68	44	88	175	350	527	21	Czr	Hematite on banded iron		Hakea chordophylla, Acacia	2453
2491	FMR74	44	88	175	350	527	23	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Hakea	2454
FMG-2006	P9GtoP9Fk	44	88	175	350	527	22	Czr	Hematite on banded iron		Eucalyptus leucophloia scattered low	2455
FMG-2006	P9GtoP9FL	44	88	175	350	527	23	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Hakea	2456
FMG-2006	P9H	44	88	175	350	527	26	AHm	MARRA MAMBA IRON		Corymbia hamersleyana Low Open	2457
FMG-2006	P9GtoP9Fm	44	88	175	350	527	13	AHm	MARRA MAMBA IRON		*Gompholobium* karijini and Goodenia	2458
FMG-2006	P9GtoP9Fn	44	88	175	351	528	16	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2459
2491	FMG112	44	88	175	351	528	30	PLHj	WEELI WOLLI FORMATION		Corymbia hamersleyana, Hakea	2460
2491	FMG114	44	88	175	351	528	29	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia scattered low	2461
2491	FMG122	44	88	175	351	528	31	PLHj	WEELI WOLLI FORMATION		Eucalyptus leucophloia scattered low	2462
2491	FMG127	44	88	175	351	528	25	PLHj	WEELI WOLLI FORMATION			2463
2491	FMG129	44	88	175	351	528	19	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia scattered low	2464
2491	FMG116	44	88	175	351	529	29	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia scattered low	2465
HDRAIL	H038	44	88	175	351	529	27	Czr	Hematite on banded iron		Eucalyptus leucophloia low woodland	2466
HDRAIL	H037	44	88	175	351	529	15	Czr	Hematite on banded iron		Triodia aff. basedowii mid-dense to	2467
HDRAIL	H043	44	88	175	351	529	27	PLHb	BROCKMAN IRON FORMATION		Triodia aff. basedowii mid-dense	2468
WAFORSLO	0153	45	89	176	352	530	15	Qa	Alluvium - unconsolidated		Triodia wiseana open hummock	2469

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WAMTHER	0448	45	89	176	352	530	10	AFt	TUMBIANA FORMATION		Triodia pungens hummock grassland.	2470
WAGEORIV	0181	45	89	176	352	530	11	AFjsl	Mudstone, siltstone		Triodia pungens very open hummock	2471
WACOOWES	0924	45	89	176	352	530	16	Qs	Eolian sand [siliceous]		Acacia pruinocarpa high open	2472
WAMTROB	1232	45	89	177	353	531	7				Acacia aff. catenulata. low closed	2473
EP00550AA	INV018	45	89	177	354	532	11	Qa	Alluvium - unconsolidated		Tall Open Scrub of Acacia aff. aneura	2474
WASA	0813	45	90	178	355	533	16	PLHb	BROCKMAN IRON FORMATION		Acacia bivenosa scattered shrubs over	2475
HDRAIL	H060	45	90	178	355	534	9	Qa	Alluvium - unconsolidated		Triodia aff. basedowii dense	2476
WASA	0872	45	90	179	356	535	10	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2477
WAMTROB	1023	45	90	179	356	535	20	Qs	Eolian sand [siliceous]		Eucalyptus leucophloia low open	2478
WAMTROB	1190	45	90	179	356	536	18	Qa	Alluvium - unconsolidated		Hakea suberea low open woodland	2479
WASA	0627	45	91	180	357	537	14	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2480
2490	FMG98	45	91	180	357	537	27	AFj	JEERINAH FORMATION		Eucalyptus leucophloia scattered low	2481
2491	FML52	45	91	180	358	538	23	Td			Eucalyptus leucophloia low open	2482
2491	FML55	45	91	180	358	538	25	Td			Acacia ayersiana, A. paraneura low	2483
FMG-2006	P9GtoP9Fa	45	91	180	359	539	13	Qc	Colluvium		Acacia aneuraand Acacia pruinocarpa	2484
FMG-2006	P9GtoP9Fd	45	91	180	359	539	6	Qc	Colluvium		Eucalyptus leucophloia Low Open	2485
FMG-2006	P9GtoP9Ff	45	91	180	359	539	12	Qc	Colluvium		Eucalyptus leucophloia Low Open	2486
WAMTROB	1210	45	91	181	360	540	22	AHm	MARRA MAMBA IRON		Acacia pruinocarpa, Acacia aff.	2487
2491	FML53	45	91	181	360	540	14	Td			Grevillea berryana scattered tall	2488
WAMTROB	1211	45	91	181	361	541	22	Czc	Colluvium		Corymbia deserticola scattered low	2489
BC	BCQ35	45	92	182	362	542	11	Czk	Calcrete		Acacia aff. aneura (narrow fine	2490
BC	BCQ37	45	92	182	362	542	14	Czk	Calcrete		Acacia aff. aneura (narrow fine	2491
BC	BCQ38	45	92	182	362	542	29	AFm	MADDINA FORMATION or		Acacia pruinocarpa scattered low trees	2492
EP00550AA	INV016	45	92	183	363	543	14	Qa	Alluvium - unconsolidated		Low Open Forest of Acacia aff.	2493
EP00550AA	INV031	45	92	183	364	544	16	Qa	Alluvium - unconsolidated		Scattered Low Trees of Corymbia	2494
EP00550AA	INV039	45	92	183	364	545	34	Czc	Colluvium		Tall Open Scrub of Acacia aff. aneura	2495
EP00550AA	INV051	45	92	183	364	545	23	Qa	Alluvium - unconsolidated		Low Woodland of Acacia aff. aneura	2496
2490	FMG14	45	93	184	365	546	29	Qc	Colluvium		Senna glutinosa subsp. x luerssenii,	2497
FMG-2006	rH	45	93	184	365	546	26	Qeg			Scattered herbs, grasses and sedges	2498
2491	FML03	45	93	184	365	546	26	Fjr			Triodia longiceps, T. brizoides closed	2499
2491	FML51	45	93	184	365	546	32	Qr			Acacia aneura, A. paraneura scattered	2500
2491	FML54	45	93	184	365	546	24	Td			Acacia aneura scattered low trees over	2501
2490	FMG38	45	93	185	366	547	41	Qc	Colluvium		Acacia sclerosperma, Melaleuca	2502
2491	FMN33	45	93	185	366	547	47	Qc	Colluvium		Acacia synchronicia, A. bivenosa, A.	2503
2490	FMG60	45	93	185	367	548	23	Czk	Calcrete		Corchorus sidoides subsp. sidoides	2504
FMG-2006	P8R	45	94	186	368	549	19	AFtc	MADDINA BASALT		Acacia inaequilatera Tall Open	2505
WPI	TC142	45	94	186	368	549	11	Qc	Colluvium		Triodia epactia with scattered shrubs	2506
WPI	TR104	45	94	186	368	549	11	Qc	Colluvium		Acacia atkinsiana over Senna	2507
WPI	TC010	45	94	186	369	550	11	Wm	MOUNT McGRATH		Acacia synchronicia scattered shrubs	2508
WPI	TC135	45	94	186	369	550	12	Wm	MOUNT McGRATH		Triodia epactia open hummock	2509
WAHAMSTN	0217	46	95	187	370	551	81	Qs	Eolian sand [siliceous]		Acacia aneura var.	2510
WAHAMSTN	0218	46	95	187	370	551	55	Qs	Eolian sand [siliceous]		Acacia aneura var.	2511
WAHAMSTN	0230	46	95	187	370	552	30	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica scattered low	2512
WAFCBOR	1030	46	95	187	370	552	33	Czk	Calcrete		Acacia aneura var. aff. longicarpa	2513
WAFCBOR	1027	46	95	187	370	552	42	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low	2514
WAFCBOR	1031	46	95	187	370	552	42	Qs	Eolian sand [siliceous]		Corymbia deserticola, Eucalyptus	2515
WAFCBOR	1033	46	95	187	370	552	29	Czk	Calcrete		Corymbia deserticola scattered low	2516
WAFCBOR	1026	46	95	187	370	552	40	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low	2517
WAFCBOR	1035	46	95	187	370	552	30	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low	2518
WAFCBOR	1034	46	95	187	370	552	50	Qs	Eolian sand [siliceous]		Acacia aneura (grey bushy form; MET	2519
WAFCBOR	1028	46	95	187	370	552	33	Qs	Eolian sand [siliceous]		Acacia pruinocarpa, Acacia aneura	2520
WAFCBOR	1039	46	95	187	370	552	41	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low	2521
WAFCBOR	1051	46	95	187	370	552	32	Qs	Eolian sand [siliceous]		Acacia aneura var. longicarpa, Acacia	2522
WAFCBOR	1057	46	95	187	370	553	19	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica low open	2523
WAFCBOR	1061	46	95	187	370	554	25	Qs	Eolian sand [siliceous]		Corymbia hamersleyana scattered low	2524
WASA	0681	46	95	188	371	555	32	AHm	MARRA MAMBA IRON		Acacia aff. aneura (grey, flat, recurved	2525
WASA	0682	46	95	188	371	555	34	AHm	MARRA MAMBA IRON		Acacia pyrifolia, Acacia pruinocarpa,	2526
WASA	0864	46	95	188	371	555	32	AHm	MARRA MAMBA IRON		Acacia bivenosa, Cassia luerssenii	2527
WASA	0849	46	95	188	371	555	34	d	Dolerite dykes		Acacia bivenosa, Cassia luerssenii	2528
WASA	0861	46	95	188	371	555	37	d	Dolerite dykes		Eucalyptus leucophloia low woodland	2529
WACOOWES	0946	46	95	188	371	555	31	AHs	MOUNT McCRAE SHALE and		Eucalyptus leucophloia low open	2530
WASA	0956	46	95	188	371	555	20	Czc	Colluvium		Cassia luerssenii scattered shrubs over	2531
WASA	0799	46	95	188	371	556	29	d	Dolerite dykes		Acacia pyrifolia, Cassia pruinosa	2532
WASA	0847	46	95	188	371	556	16	d	Dolerite dykes		Acacia pyrifolia, Acacia bivenosa	2533
WASA	0859	46	95	188	371	556	20	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2534

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Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WASA	0862	46	95	188	371	556	21	d	Dolerite dykes		Corymbia hamersleyana low open	2535
WASA	0848	46	95	188	371	556	33	d	Dolerite dykes		Acacia pyrifolia high open shrubland	2536
WASA	0696	46	95	188	372	557	25	Fjb			Eucalyptus leucophloia, Corymbia	2537
WASA	0841	46	95	188	372	557	35	d	Dolerite dykes		Corymbia hamersleyana scattered low	2538
WASA	0800	46	95	188	372	557	43	d	Dolerite dykes		Corymbia hamersleyana low	2539
WASA	0697	46	95	188	372	557	42	Fjb			Eucalyptus gamophylla, Corymbia	2540
WASA	0706	46	95	188	372	557	29	Czc	Colluvium		Eucalyptus leucophloia scattered low	2541
WASA	0698	46	95	188	372	558	33	AgC	CHERRATTA GRANITOID		Corymbia hamersleyana scattered low	2542
WASA	0699	46	95	188	372	558	28	Fjb			Corymbia hamersleyana scattered low	2543
WASA	0744	46	95	188	372	558	31	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2544
WASA	0709	46	95	189	373	559	54	Czc	Colluvium		Acacia aff. aneura (narrow, green;	2545
WASA	0863	46	95	189	373	559	55	Fjb			Acacia aneura (grey bushy form; MET	2546
WAMTROB	0990	46	95	189	373	559	53	Qs	Eolian sand [siliceous]		Acacia pruinocarpa, Acacia aneura	2547
WAMTROB	0994	46	95	189	373	559	45	Qs	Eolian sand [siliceous]		Acacia aneura (grey bushy form; MET	2548
WAMTROB	0991	46	95	189	373	559	43	d	Dolerite dykes		Acacia maitlandii scattered shrubs	2549
WASA	0844	46	95	189	373	559	60	d	Dolerite dykes		Eucalyptus xerothermica scattered low	2550
WASA	0846	46	95	189	373	559	44	d	Dolerite dykes		Acacia aneura var. longicarpa, Acacia	2551
WAMTROB	1223	46	95	189	373	559	60	Czc	Colluvium		Acacia aneura var. longicarpa low	2552
WASA	0858	46	95	189	373	559	58	Qs	Eolian sand [siliceous]		Acacia aneura var. longicarpa, Acacia	2553
WASA	0963	46	95	189	373	559	65	d	Dolerite dykes		Acacia stowardii, Acacia aff. aneura	2554
WASA	0840	46	95	189	373	560	34	d	Dolerite dykes		Acacia aneura var. longicarpa, Acacia	2555
WAMTROB	0982	46	95	189	373	560	36	d	Dolerite dykes		Acacia aneura var. ?aneura, Acacia	2556
WAMTROB	0983	46	95	189	373	560	50	d	Dolerite dykes		Corymbia hamersleyana, Eucalyptus	2557
WASA	0797	46	95	189	374	561	27	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, fine	2558
WASA	0798	46	95	189	374	561	35	d	Dolerite dykes		Acacia stowardii (linear form) high	2559
WACOOWES	0938	47	96	190	375	562	23	Qs	Eolian sand [siliceous]		Eucalyptus leucophloia low open	2560
WAFCBOR	1058	47	96	190	375	562	19	Qs	Eolian sand [siliceous]		Eucalyptus leucophloia low open	2561
2491	FMC-MA	47	96	190	375	563	22	AFj	JEERINAH FORMATION		Eucalyptus leucophloia low open	2562
FMG-2006	P9GT	47	96	190	375	563	25	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia subsp.	2563
FMG-2006	7_5_06	47	96	190	376	564	36					2564
FMG-2006	P9GtoP9Fo	47	96	190	376	564	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2565
FMG-2006	P9E	47	96	190	376	564	45	Qc	Colluvium		Eucalyptus leucophloia subsp.	2566
FMG-2006	P9J	47	96	190	376	564	33	Qa	Alluvium - unconsolidated		Corymbia hamersleyana Low Open	2567
FMG-2006	P9P	47	96	190	376	564	37	Czr	Hematite on banded iron		Grevillea wickhamii Tall Shrubland	2568
271	BRO02	47	96	191	377	565	42	Czc	Colluvium		Acacia inaequilatera, Acacia	2569
271	BRO15	47	96	191	377	565	55	Czc	Colluvium		Eucalyptus leucophloia subsp.	2570
271	BRO29	47	96	191	377	565	40	Czr	Hematite on banded iron		Eucalyptus leucophloia subsp.	2571
271	BRO30	47	96	191	377	565	56	Qc	Colluvium		Acacia atkinsiana, Acaacia exilis tall	2572
271	BRO28	47	96	191	377	565	94	Czc	Colluvium		Acacia aff. aneura (narrow fine	2573
271	BRO47	47	96	191	377	565	78	Tp	ROBE PISOLITE		Acacia stowardii, Acacia aff. aneura	2574
271	BRO42	47	96	191	377	565	54	AFj	JEERINAH FORMATION		Cassia pruinosa, Cassia luerssenii,	2575
271	BRO31	47	96	191	377	565	63	Qc	Colluvium		Eucalyptus leucophloia subsp.	2576
271	BRO36	47	96	191	377	565	54	Qs	Eolian sand [siliceous]		Eucalyptus gamophylla,	2577
271	BRO41	47	96	191	377	565	65	Qs	Eolian sand [siliceous]		Corymbia hamersleyana, Eucalyptus	2578
271	BRO12	47	96	191	377	565	71	Czc	Colluvium		Eucalyptus leucophloia subsp.	2579
271	BRO-MC	47	96	191	377	565	51	PLHb	BROCKMAN IRON FORMATION		Eucalyptus leucophloia subsp.	2580
2491	FMC04	47	96	192	378	566	26	Czr	Hematite on banded iron		Acacia aneura scattered tall shrubs	2581
2491	FMC06	47	96	192	378	566	30	Czc	Colluvium		Acacia aneura, Grevillea berryana	2582
2491	FMC18	47	96	192	378	567	51	Qc	Colluvium		Acacia aneura low open forest over	2583
2491	FML49	47	96	192	378	567	41	Td			Acacia aneura, A. paraneura scattered	2584
2491	FML43	47	96	192	378	567	59	Qs	Eolian sand [siliceous]		Acacia aneura high open shrubland to	2585
2491	FML45	47	96	192	378	567	56	Td			Acacia pruinocarpa scattered low trees	2586
2491	FML32	47	96	192	378	567	38				Corymbia hamersleyana scattered low	2587
2491	FML31	47	96	192	378	567	57	AHm	MARRA MAMBA IRON		Acacia aneura scattered tall shrubs	2588
2491	FML50	47	96	192	378	567	47	Qs	Eolian sand [siliceous]		Acacia pruinocarpa scattered low trees	2589
2491	FMR24	47	96	192	378	567	41	Qr			Acacia aneura, A. pruinocarpa	2590
2491	FML44	47	96	192	378	567	46	Tc			Acacia aneura, A. pruinocarpa low	2591
2491	FML56	47	96	192	378	567	56	Td			Acacia aneura, Grevillea wickhamii	2592
2491	FML46	47	96	192	378	567	66	Qa	Alluvium - unconsolidated		Acacia aneura, A. pruinocarpa low	2593
2491	FML57	47	96	192	378	567	43	Td			Acacia pruinocarpa, A. aneura,	2594
2491	FML58	47	96	192	378	567	44	Td			Acacia aneura scattered low trees to	2595
2491	FML59	47	96	192	378	567	37	Td			Acacia aneura scattered tall shrubs	2596
2491	FMN-MB	47	96	192	378	567	40	Qc	Colluvium		Acacia aneura tall open shrubland	2597
FMG-2006	P9B	47	96	192	379	568	33	Qc	Colluvium		Eucalytpus leucophloia subsp.	2598
FMG-2006	P9S	47	96	192	379	568	33	AHm	MARRA MAMBA IRON		Acacia aneura var. pilbarana Tall	2599

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)
FMG-2006	P9D	47	96	192	379	568	43	Qc	Colluvium		Acacia ayersiana, Acacia pruinocarpa
FMG-2006	P9M	47	96	192	379	568	60	Qs	Eolian sand [siliceous]		Acacia aneura var. intermedia and
FMG-2006	P9N	47	96	192	379	568	50	Qs	Eolian sand [siliceous]		Acacia aneura var. conifera with
FMG-2006	P9O	47	96	192	379	568	34	Qs	Eolian sand [siliceous]		Acacia aneura var. intermedia and
2491	FMC-MB	47	96	193	380	569	30	AHm	MARRA MAMBA IRON		Grevillea wickhamii tall open
2491	FML38	47	96	193	380	569	36	Qe			Grevillea wickhamii tall shrubland
2491	FML61	47	96	193	380	569	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered trees
2491	FML42	47	96	193	380	569	31	AHm	MARRA MAMBA IRON		Acacia aneura, Hakea lorea subsp.
2491	FML-RA	47	96	193	380	569	32				Grevillea wickhamii, Acacia arida
FMG-2006	P9L	47	96	193	380	569	32	Qs	Eolian sand [siliceous]		Acacia aneura var. intermedia Tall
FMG-2006	P9Q	47	96	193	380	569	34	Qs	Eolian sand [siliceous]		Acacia inaequilatera and Acacia
2491	FML13	47	96	193	380	570	60	Qc	Colluvium		Grevillea wickhamii tall open scrub
2491	FML34	47	96	193	380	570	52				Acacia tumida closed heath
2491	FMN25	47	96	193	380	570	55				Grevillea wickhamii, Acacia
FMG-2006	P9 Track 4	47	96	193	381	571	49				
271	BRO06	47	97	194	382	572	49	Czc	Colluvium		Petalostylis labicheoides, Grevillea
271	BRO38	47	97	194	382	572	105	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open
271	BRO40	47	97	194	382	572	85	Qs	Eolian sand [siliceous]		Corymbia hamersleyana low
271	BRO46	47	97	194	382	572	76	Qa	Alluvium - unconsolidated		Petalostylis labicheoides and Acacia
2491	FMC13	47	97	194	382	572	53	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia, Corymbia
2490	FMG72	47	97	194	382	572	51	AHm	MARRA MAMBA IRON		Corymbia hamersleyana scattered low
2491	FMR70	47	97	194	382	572	32	Qc	Colluvium		Corymbia spp. scattered low trees
HDRAIL	H261	47	97	194	382	572	39	Qa	Alluvium - unconsolidated		Corymbia candida scattered trees over
232a	MEA04	47	97	194	383	573	48	Qc	Colluvium		Eucalyptus leucophloia low woodland
FMG-2006	P9G(2)	47	97	194	383	573	41	Qc	Colluvium		Corymbia aspera Low Open
FMG-2006	P9C	47	97	194	383	574	36	Qa	Alluvium - unconsolidated		Eucalyptus victrix and Corymbia sp.
FMG-2006	P9C-2	47	97	194	383	574	45	Qc	Colluvium		Eucalyptus victrix Low Woodland
FMG-2006	P9U	47	97	194	383	574	52	Czr	Hematite on banded iron		Eucalyptus leucophloia subsp.
2491	FMC11	47	97	194	384	575	52	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open woodland
2491	FMR60	47	97	194	384	575	52	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees
HDRAIL	H050	47	97	194	384	575	45	Qa	Alluvium - unconsolidated		Eucalyptus victrix woodland over
HDRAIL	H051	47	97	194	384	575	51	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees
2491	FML35	47	97	194	384	575	72	Td			Acacia aneura low woodland to low
2491	FMR58	47	97	194	384	575	61	Qs	Eolian sand [siliceous]		Acacia aneura (A. pruinocarpa) low
2491	FMR62	47	97	194	384	575	60	Qa	Alluvium - unconsolidated		Acacia aneura low forest over Psydrax
2491	FMR77	47	97	194	384	575	73	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low
2491	FMR57	47	97	194	384	575	81	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open woodland
2491	FMR-MN	47	97	194	384	575	64	Qa	Alluvium - unconsolidated		Eucalyptus victrix low open woodland
HDRAIL	H257	47	97	194	384	575	68	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered low trees
HDRAIL	H002	47	97	195	385	576	34	Qc	Colluvium		Acacia pruinocarpa, A. aneura high
HDRAIL	H006	47	97	195	385	576	49	Qc	Colluvium		Acacia acradenia, A. aneura high
HDRAIL	H244	47	97	195	385	576	48	Qs	Eolian sand [siliceous]		Acacia aneura low woodland over
HDRAIL	H255	47	97	195	385	576	48	Qa	Alluvium - unconsolidated		Eucalyptus victrix scattered trees
HDRAIL	H009	47	97	195	386	577	34	Qs	Eolian sand [siliceous]		Acacia ancistrocarpa open shrubland
HDRAIL	H019	47	97	195	386	577	40	Qs	Eolian sand [siliceous]		Acacia aneura, Hakea lorea scattered
HDRAIL	H013	47	97	195	386	577	49	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low
HDRAIL	H018	47	97	195	386	577	42	Qs	Eolian sand [siliceous]		Acacia aneura scattered low trees and
HDRAIL	H012	47	97	195	386	577	63	Qs	Eolian sand [siliceous]		Acacia aneura low open woodland
HDRAIL	H021	47	97	195	386	577	46	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low
HDRAIL	H056	47	97	195	386	577	48	Qs	Eolian sand [siliceous]		Acacia pruinocarpa, A. aneura high
HDRAIL	H020	47	97	195	386	577	23	Qs	Eolian sand [siliceous]		Acacia aneura, A. pruinocarpa closed
HDRAIL	H055	47	97	195	386	577	43	Qs	Eolian sand [siliceous]		Acacia aneura, A. pruinocarpa closed
WASA	0626	48	98	196	387	578	29	AHm	MARRA MAMBA IRON		Acacia aneura (grey bushy form; MET
WASA	0648	48	98	196	387	578	35	AHm	MARRA MAMBA IRON		Acacia aneura var. longicarpa, Acacia
WASA	0630	48	98	196	387	578	28	Qa	Alluvium - unconsolidated		Corymbia hamersleyana low open
WASA	0646	48	98	196	387	578	35	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;
WASA	0647	48	98	196	387	578	24	AHm	MARRA MAMBA IRON		Acacia rhodophloia, Acacia aneura
WASA	0652	48	98	196	387	578	25	AHm	MARRA MAMBA IRON		Acacia aneura var. longicarpa, Acacia
WASA	0871	48	98	196	387	578	33	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low
WASA	0875	48	98	196	387	578	22	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low
WASA	0883	48	98	196	387	578	22	Qa	Alluvium - unconsolidated		Acacia rhodophloia, Acacia aneura
WACOOWES	0905	48	98	196	387	578	25	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low
WACOOWES	0906	48	98	196	387	578	27	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open
WACOOWES	0915	48	98	196	387	578	21	Czc	Colluvium		Acacia aneura var. longicarpa, Acacia
WASA	1002	48	98	196	387	578	31	Qa	Alluvium - unconsolidated		Eucalyptus trivalvis, Acacia aff.

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WASA	0661	48	98	196	387	579	23	Qa	Alluvium - unconsolidated		Acacia aff. aneura (grey, flat, recurved	2665
WASA	0673	48	98	196	387	579	33	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2666
WASA	0665	48	98	196	387	579	18	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2667
WASA	0679	48	98	196	387	579	26	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia low open	2668
WAMTROB	1206	48	98	196	387	579	15	Czc	Colluvium		Eucalyptus leucophloia, Acacia aff.	2669
WASA	0882	48	98	196	387	579	15	Qa	Alluvium - unconsolidated		Acacia aneura (grey bushy form; MET	2670
WASA	1235	48	98	196	387	579	23	Fr			Corymbia deserticola, Acacia aff.	2671
WASA	0719	48	98	196	387	579	19	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2672
WASA	0722	48	98	196	387	579	18	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2673
WASA	1249	48	98	196	387	580	21	Czc	Colluvium		Eucalyptus leucophloia, Acacia	2674
WASA	1270	48	98	196	387	580	20	Czc	Colluvium		Eucalyptus leucophloia, Acacia aff.	2675
WASA	0659	48	98	196	388	581	35	AHm	MARRA MAMBA IRON		Corymbia ferriticola ssp. ferriticola	2676
WASA	0662	48	98	196	388	581	28	Qa	Alluvium - unconsolidated		Acacia aff. aneura (grey, flat, recurved	2677
WASA	1016	48	98	196	388	581	29	PLHb	BROCKMAN IRON FORMATION		Acacia rhodophloia, Acacia aneura	2678
WACOOWES	0928	48	98	196	388	582	31	Czc	Colluvium		Eucalyptus leucophloia low open	2679
WAMTROB	1200	48	98	196	388	582	33	Czc	Colluvium		Acacia aff. aneura (narrow, green;	2680
WASA	0642	48	98	197	389	583	42	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2681
WASA	0655	48	98	197	389	583	37	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2682
WASA	0656	48	98	197	389	583	35	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2683
WASA	0683	48	98	197	389	583	48	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2684
WASA	0684	48	98	197	389	583	41	Qa	Alluvium - unconsolidated		Eucalyptus leucophloia, Corymbia	2685
WASA	0962	48	98	197	389	583	35	Qa	Alluvium - unconsolidated		Corymbia deserticola scattered low	2686
WASA	0884	48	98	197	389	583	35	Czc	Colluvium		Acacia aneura (grey bushy form; MET	2687
WASA	0960	48	98	197	389	583	45	Qa	Alluvium - unconsolidated		Acacia aneura (grey bushy form; MET	2688
WASA	0644	48	98	197	389	583	30	Qa	Alluvium - unconsolidated		Acacia aneura (grey bushy form; MET	2689
WASA	1017	48	98	197	389	583	42	Qa	Alluvium - unconsolidated		Acacia ayersiana, Acacia aneura (grey	2690
WASA	1231	48	98	197	389	583	54	Fr			Acacia rhodophloia, Acacia ayersiana,	2691
WASA	1257	48	98	197	389	583	57	Qa	Alluvium - unconsolidated		Corymbia deserticola, Eucalyptus	2692
WASA	1241	48	98	197	389	583	32	Czc	Colluvium		Acacia aff. aneura (narrow, green;	2693
WASA	0761	48	98	197	389	583	36	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2694
WASA	0762	48	98	197	389	583	31	Qs	Eolian sand [siliceous]		Acacia aff. catenulata, Acacia aff.	2695
WASA	0767A	48	98	197	389	583	40	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2696
WASA	0772	48	98	197	389	583	35	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2697
WASA	1229	48	98	197	389	583	37	Qa	Alluvium - unconsolidated		Acacia aff. ayersiana (narrow form;	2698
WACOOWES	0904	48	98	197	389	583	39	Czc	Colluvium		Acacia aff. catenulata, Acacia aff.	2699
WACOOWES	0909	48	98	197	389	583	40	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2700
WACOOWES	0919	48	98	197	389	583	52	Qa	Alluvium - unconsolidated		Acacia aff. catenulata, Acacia aneura	2701
WASA	1227	48	98	197	389	583	59	Fr			Acacia ayersiana, Acacia aff.	2702
WASA	1259	48	98	197	389	583	48	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2703
WASA	0767	48	98	197	389	584	51	Qs	Eolian sand [siliceous]		Acacia aff. catenulata, Grevillea	2704
WACOOWES	0890	48	98	197	389	584	32	AHm	MARRA MAMBA IRON		Acacia aneura var. longicarpa, Acacia	2705
WACOOWES	0891	48	98	197	389	584	35	Qa	Alluvium - unconsolidated		Acacia aff. catenulata, Acacia aneura	2706
WACOOWES	0896	48	98	197	389	584	32	AHm	MARRA MAMBA IRON		Acacia aff. aneura (narrow, green;	2707
WACOOWES	0913	48	98	197	389	584	28	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2708
WACOOWES	0914	48	98	197	389	584	36	Qa	Alluvium - unconsolidated		Acacia aff. catenulata, Acacia aff.	2709
WACOOWES	0927	48	98	197	389	584	30	Qs	Eolian sand [siliceous]		Acacia aneura var. aff. longicarpa	2710
WACOOWES	0940	48	98	197	389	584	38	Qs	Eolian sand [siliceous]		Acacia stowardii, Acacia minyura,	2711
WACOOWES	0941	48	98	197	389	584	40	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2712
WAMTROB	0970	48	98	197	389	584	21	Qs	Eolian sand [siliceous]		Corymbia deserticola scattered low	2713
WASA	0877	48	98	197	389	584	35	Czc	Colluvium		Acacia aff. aneura (scythe-shaped;	2714
WASA	0997	48	98	197	389	584	35	Czc	Colluvium		Acacia aneura (grey bushy form; MET	2715
WAMTROB	0974	48	98	197	389	584	43	Czc	Colluvium		Acacia aneura var. longicarpa, Acacia	2716
WAMTROB	0975	48	98	197	389	584	41	Czc	Colluvium		Corymbia deserticola low open	2717
WASA	1014	48	98	197	389	584	35	Czc	Colluvium		Eucalyptus gamophylla low woodland	2718
WAACRD	1288	48	98	197	389	584	45	Czc	Colluvium		Acacia aff. aneura (scythe-shaped;	2719
WACOOWES	0929	48	98	197	389	584	43	Czc	Colluvium		Corymbia deserticola low open	2720
WACOOWES	0930	48	98	197	389	584	42	Qa	Alluvium - unconsolidated		Corymbia deserticola low open	2721
WASA	0999	48	98	197	389	584	51	Qa	Alluvium - unconsolidated		Corymbia deserticola scattered low	2722
WASA	1000	48	98	197	389	584	54	Qa	Alluvium - unconsolidated		Corymbia deserticola scattered low	2723
WASA	1255	48	98	197	389	584	58	Qa	Alluvium - unconsolidated		Corymbia deserticola, Acacia aneura	2724
WAMTROB	0981	48	98	197	389	584	61	Qs	Eolian sand [siliceous]		Eucalyptus xerothermica scattered low	2725
WAMTROB	1230	48	98	197	389	584	53	Czc	Colluvium		Acacia aneura var. longicarpa low	2726
WASA	1251	48	98	197	389	584	65	Qs	Eolian sand [siliceous]		Acacia aneura var. (green, flat; MET	2727
WASA	1253	48	98	197	389	584	63	Qs	Eolian sand [siliceous]		Acacia aff. catenulata, Acacia aff.	2728
WASA	0657	48	98	197	390	585	46	Qa	Alluvium - unconsolidated		Corymbia hamersleyana scattered low	2729

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
WASA	0685	48	98	197	390	585	37	Czc	Colluvium		Corymbia hamersleyana, Eucalyptus	2730
WASA	0899	48	98	197	390	585	40	hs	MOUNT McCRAE SHALE and		Acacia aneura var. longicarpa	2731
WASA	0738	48	98	197	390	585	28	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2732
WACOOWES	0895	48	98	197	390	585	36	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia low open	2733
WAMTROB	1218	48	98	197	390	585	31	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2734
WASA	0739	48	98	197	390	585	26	AHm	MARRA MAMBA IRON		Eucalyptus leucophloia scattered low	2735
WASA	0718	48	98	197	390	585	27	AHm	MARRA MAMBA IRON		Acacia aff. catenulata, Acacia	2736
WASA	0955	48	98	197	390	585	23	Czc	Colluvium		Cassia luerssenii, Acacia bivenosa	2737
WASA	0664	48	98	197	390	586	35	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2738
WASA	0900	48	98	197	390	586	50	Czc	Colluvium		Acacia aneura (grey bushy form; MET	2739
WASA	1225	48	98	197	390	586	46	Fr			Acacia aneura var. longicarpa, Acacia	2740
WACOOWES	0902	48	98	197	390	586	47	Qs	Eolian sand [siliceous]		Acacia aneura (grey bushy form; MET	2741
WASA	1239	48	98	197	390	586	43	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2742
WAACRD	1287	48	98	197	390	586	41	Czc	Colluvium		Acacia aff. aneura (scythe-shaped;	2743
WAACRD	1290	48	98	197	390	586	42	Qa	Alluvium - unconsolidated		Acacia aneura var. (green, flat; MET	2744
WASA	0715	48	98	197	390	586	51	Czc	Colluvium		Eucalyptus leucophloia scattered low	2745
WASA	0870	48	98	197	390	586	40	Fjb			Acacia aneura var.	2746
WASA	0850	48	98	197	390	586	51	Qs	Eolian sand [siliceous]		Acacia aff. aneura (scythe-shaped;	2747
WASA	0851	48	98	197	390	586	65	Fjb			Acacia aneura var. longicarpa, Acacia	2748
WACOOWES	0903	48	98	197	390	586	50	Czc	Colluvium		Eucalyptus leucophloia scattered low	2749
WACOOWES	0907	48	98	197	390	586	72	Czc	Colluvium		Eucalyptus striaticalyx scattered low	2750
WASA	0724	48	98	197	391	587	39	AHm	MARRA MAMBA IRON		Eucalyptus trivalvis low open	2751
WASA	0794	48	98	197	391	587	27	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2752
WAMTROB	1196	48	98	197	391	587	33	Czc	Colluvium		Acacia pruinocarpa, Acacia aff.	2753
WAMTROB	1220	48	98	197	391	587	20	Czc	Colluvium		Acacia aff. ayersiana (narrow form;	2754
WAMTROB	1185	48	98	197	392	588	38	Czc	Colluvium		Eucalyptus xerothermica scattered low	2755
WAMTROB	1215	48	98	197	392	588	39	Czc	Colluvium		Acacia aff. aneura (narrow, green;	2756
WAMTROB	1221	48	98	197	392	588	32	Qa	Alluvium - unconsolidated		Corymbia deserticola, Eucalyptus	2757
WASA	0645	48	98	197	393	589	25	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica, Corymbia	2758
WASA	0674	48	98	197	393	589	24	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica scattered low	2759
WASA	1245	48	98	197	393	589	19	Qs	Eolian sand [siliceous]		Acacia aff. aneura (subterete, long;	2760
WASA	0815	48	98	197	393	590	14	Qa	Alluvium - unconsolidated		Acacia aneura var.? low open forest	2761
WACOOWES	0910	48	98	197	393	590	23	Czc	Colluvium		Acacia aff. catenulata, Acacia aff.	2762
WAACRD	1293	48	98	197	393	590	27	AHm	MARRA MAMBA IRON		Corymbia deserticola low open	2763
WAACRD	1281	48	98	197	393	590	24	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2764
WAACRD	1286	48	98	197	393	590	21	Qa	Alluvium - unconsolidated		Eucalyptus xerothermica, Corymbia	2765
WAMTROB	0971	48	98	197	393	590	31	AHs	MOUNT McCRAE SHALE and		Eucalyptus xerothermica scattered low	2766
WASA	1020	48	98	197	393	590	34	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2767
WASA	1021	48	98	197	393	590	32	Qa	Alluvium - unconsolidated		Acacia aff. aneura (scythe-shaped;	2768
WASA	0763A	48	98	197	394	591	25	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2769
WASA	1247	48	98	197	394	591	28	Qs	Eolian sand [siliceous]		Acacia aff. aneura (narrow, green;	2770
WASA	0795	48	98	197	394	591	40	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, fine	2771
WASA	1280	48	98	197	394	591	17	Qa	Alluvium - unconsolidated		Acacia aff. aneura (narrow, green;	2772
06BP	23	49	99	198	395	592	31	Qc	Colluvium		Terminalia canescens low woodland	2773
BURPEN	B047	49	99	198	395	592	24	AyGo	GIDLEY GRANOPHYRE		Corymbia hamersleyana low open	2774
BURPEN	B092	49	99	198	395	592	31	AgDm	DAMPIER GRANITOID		Corymbia hamersleyana scattered low	2775
BURPEN	B068	49	99	198	395	592	19	AyG	GIDLEY GRANOPHYRE		Acacia pyrifolia subsp. pyrifolia	2776
BURPEN	B069	49	99	198	395	592	27	AyG	GIDLEY GRANOPHYRE		Acacia pyrifolia subsp. pyrifolia,	2777
BURPEN	B096	49	99	198	395	592	29	AgDm	DAMPIER GRANITOID		Acacia coriacea subsp. coriacea high	2778
BURPEN	B033	49	99	198	395	593	22	AyG	GIDLEY GRANOPHYRE		Grevillea pyramidalis subsp.	2779
BURPEN	B045	49	99	198	395	593	42	AyGo	GIDLEY GRANOPHYRE		Acacia coriacea subsp. coriacea,	2780
BURPEN	B157	49	99	198	395	593	34	AyG	GIDLEY GRANOPHYRE		Acacia colei var. colei, Cullen	2781
BURPEN	B051	49	99	198	395	593	31	AyGo	GIDLEY GRANOPHYRE		Indigofera monophylla (Burrup form)	2782
BURPEN	B218	49	99	198	395	593	26	AyG	GIDLEY GRANOPHYRE		Grevillea pyramidalis subsp.	2783
BURPEN	B004	49	99	198	396	594	40	AyG	GIDLEY GRANOPHYRE		Ehretia saligna var. saligna, Corymbia	2784
BURPEN	B166	49	99	198	396	594	43	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana scattered low	2785
BURPEN	B013	49	99	198	396	594	33	AyG	GIDLEY GRANOPHYRE		Dichrostachys spicata open shrubland	2786
BURPEN	B005	49	99	198	396	594	54	AyGo	GIDLEY GRANOPHYRE		Eucalyptus victrix scattered low trees	2787
BURPEN	B064	49	99	198	396	594	40	Ocean	Ocean		Terminalia supranitifolia scattered tall	2788
BURPEN	B169	49	99	198	396	594	51	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus, Acacia	2789
BURPEN	B009	49	99	198	396	594	49	Qc	Colluvium		Acacia orthocarpa open shrubland	2790
BURPEN	B011	49	99	198	396	594	53	Qc	Colluvium		Grevillea pyramidalis subsp.	2791
BURPEN	B053	49	99	198	396	594	49	Qc	Colluvium		Acacia inaequilatera, Hakea	2792
BURPEN	B185	49	99	198	396	594	52	Qc	Colluvium		Acacia bivenosa, (Hakea chordophylla	2793
BURPEN	B054	49	99	198	396	594	58	Qc	Colluvium		Corymbia hamersleyana, Ehretia	2794

Appendix 2 cont

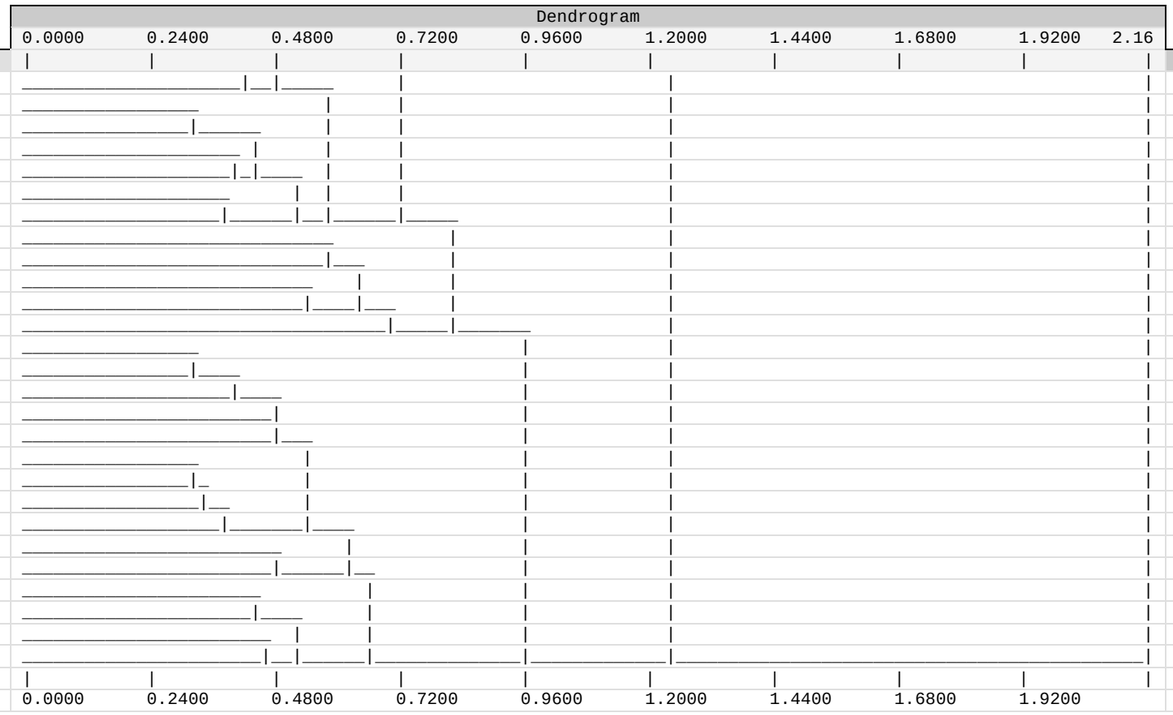
Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram 0.0000 0.2400 0.4800 0.7200 0.9600 1.2000 1.4400 1.6800 1.9200 2.16	Vegetation (truncated)	
BURPEN	B029	49	99	198	396	594	62	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana low open	2795
BURPEN	B181	49	99	198	396	594	63	Qc	Colluvium		Eucalyptus victrix low woodland over	2796
BURPEN	B151	49	99	198	396	594	40	Qc	Colluvium		Corymbia hamersleyana low	2797
BURPEN	B019	49	99	198	396	594	57	Qc	Colluvium		Corymbia hamersleyana low open	2798
BURPEN	B083	49	99	198	396	594	45	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana scattered low	2799
BURPEN	B067	49	99	198	396	594	44	Qc	Colluvium		Eucalyptus victrix scattered low trees	2800
BURPEN	B191	49	99	198	396	594	47	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana scattered low	2801
BURPEN	B234	49	99	198	396	594	33	AyG	GIDLEY GRANOPHYRE		Grevillea pyramidalis subsp.	2802
BURPEN	B024	49	99	198	396	594	41	AyG	GIDLEY GRANOPHYRE		Acacia inaequilatera, Acacia bivenosa	2803
BURPEN	B041	49	99	198	396	594	31	AyG	GIDLEY GRANOPHYRE		Indigofera monophylla (Burrup form)	2804
BURPEN	B030	49	99	198	396	594	36	AyG	GIDLEY GRANOPHYRE		Acacia inaequilatera scattered tall	2805
BURPEN	B073	49	99	198	396	594	44	AyG	GIDLEY GRANOPHYRE		Tephrosia rosea var. clementii,	2806
BURPEN	B076	49	99	198	396	594	37	AyG	GIDLEY GRANOPHYRE		Indigofera monophylla (Burrup form),	2807
BURPEN	B194	49	99	198	396	594	41	AyGo	GIDLEY GRANOPHYRE		Corymbia hamersleyana low mallee	2808
BURPEN	B196	49	99	198	396	594	37	AyGo	GIDLEY GRANOPHYRE		Eucalyptus xerothermica low mallee	2809
BURPEN	B235	49	99	198	396	594	49	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana,	2810
BURPEN	B022	49	99	198	396	595	35	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana scattered low	2811
BURPEN	B025	49	99	198	396	595	43	AyG	GIDLEY GRANOPHYRE		Acacia bivenosa, Grevillea	2812
BURPEN	B216	49	99	198	396	595	34	AyG	GIDLEY GRANOPHYRE		Grevillea pyramidalis subsp.	2813
BURPEN	B217	49	99	198	396	595	26	AyG	GIDLEY GRANOPHYRE		Grevillea pryamidalis subsp.	2814
BURPEN	B219	49	99	198	396	595	35	AyG	GIDLEY GRANOPHYRE		Ipomoea costata, (Acacia colei var.	2815
BURPEN	B057	49	99	198	396	595	22	AyG	GIDLEY GRANOPHYRE		Acacia elachantha, Grevillea	2816
BURPEN	B027	49	99	198	396	595	30	AyG	GIDLEY GRANOPHYRE		Indigofera monophylla (Burrup form)	2817
BURPEN	B048	49	99	198	396	595	43	AyG	GIDLEY GRANOPHYRE		Ipomoea costata open shrubland over	2818
BURPEN	B070	49	99	198	396	595	29	AyG	GIDLEY GRANOPHYRE		Ipomoea costata scattered tall shrubs	2819
339	BP-DAM-01	49	99	198	396	595	48	AyG	GIDLEY GRANOPHYRE		Scattered shrubs of Cajanus cinereus	2820
BURPEN	B043	49	99	198	396	595	25	AyG	GIDLEY GRANOPHYRE		Acacia colei shrubland over	2821
BURPEN	B065	49	99	198	396	595	27	AyGo	GIDLEY GRANOPHYRE		Acacia bivenosa scattered talls shrubs	2822
KARHIL	KA205	49	99	198	396	595	30	ARr	REGAL FORMATION		Acacia pyrifolia subsp. pyrifolia	2823
BURPEN	B034	49	99	198	397	596	28	AyGo	GIDLEY GRANOPHYRE		Acacia bivenosa tall scattered shrubs	2824
BURPEN	B239b	49	99	198	397	596	24	Qc	Colluvium		Acacia bivenosa shrubland over	2825
BURPEN	B236	49	99	198	397	596	30	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana scattered low	2826
BURPEN	B239a	49	99	198	397	596	21	Qc	Colluvium		Acacia bivenosa open shrubland over	2827
BURPEN	B063	49	99	198	397	596	23	Ocean	Ocean		Acacia bivenosa, Acacia coriacea	2828
BURPEN	B002	50	100	199	398	597	34	AyG	GIDLEY GRANOPHYRE		Ehretia saligna var. saligna,	2829
BURPEN	B035	50	100	199	398	597	26	AyGo	GIDLEY GRANOPHYRE		[Inadequate data recorded for a	2830
BURPEN	B038	50	100	199	398	597	21	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus,	2831
BURPEN	B164	50	100	199	398	597	30	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus,	2832
BURPEN	B171	50	100	199	398	597	19	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus low open	2833
BURPEN	B173	50	100	199	398	597	29	AyGo	GIDLEY GRANOPHYRE		Inadequate data recorded for a	2834
BURPEN	B080	50	100	199	398	597	29	AgDm	DAMPIER GRANITOID		Inadequate data recorded for a	2835
BURPEN	B160	50	100	199	398	597	23	AyG	GIDLEY GRANOPHYRE		Ficus virens var. sublanceolata, Ficus	2836
BURPEN	B003	50	100	199	398	597	38	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana low open	2837
BURPEN	B018	50	100	199	398	597	43	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus scattered	2838
BURPEN	B010	50	100	199	398	597	36	Qc	Colluvium		Clerodendrum tomentosum,	2839
BURPEN	B061	50	100	199	398	597	39	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus, Ehretia	2840
BURPEN	B014	50	100	199	398	597	27	AyG	GIDLEY GRANOPHYRE		Dichrostachys spicata, Flueggia virosa	2841
BURPEN	B023	50	100	199	398	597	22	AyG	GIDLEY GRANOPHYRE		Ehretia saligna var. saligna,	2842
BURPEN	B232	50	100	199	398	597	27	AyGo	GIDLEY GRANOPHYRE		Eucalyptus xerothermica,	2843
BURPEN	B238	50	100	199	398	597	37	AyG	GIDLEY GRANOPHYRE		Eucalyptus victrix, Brachychiton	2844
BURPEN	B021	50	100	199	398	597	29	AyG	GIDLEY GRANOPHYRE		Terminalia canescens, Brachychiton	2845
BURPEN	B050	50	100	199	398	597	29	AyG	GIDLEY GRANOPHYRE		Brachychiton sccuminata, Ficus	2846
BURPEN	B072	50	100	199	398	597	25	AyG	GIDLEY GRANOPHYRE		Inadequate data recorded for a	2847
BURPEN	B026	50	100	199	398	597	26	AyG	GIDLEY GRANOPHYRE		Ficus platypoda var. G, Brachychiton	2848
BURPEN	B039	50	100	199	398	597	37	AyG	GIDLEY GRANOPHYRE		Cajanus cinereus, Tephrosia sp. B.	2849
BURPEN	B163	50	100	199	398	597	31	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus, Terminalia	2850
BURPEN	B031	50	100	199	398	597	38	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus scattered	2851
BURPEN	B192	50	100	199	398	597	36	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus, Terminalia	2852
BURPEN	B046	50	100	199	398	597	46	Qc	Colluvium		Ficus platypoda var. D, Ficus virens	2853
BURPEN	B066	50	100	199	398	597	40	AyGo	GIDLEY GRANOPHYRE		Ehretia saligna var. saligna,	2854
BURPEN	B082	50	100	199	398	597	44	AyG	GIDLEY GRANOPHYRE		Terminalia canescens high open	2855
BURPEN	B052	50	100	199	398	597	31	AyGo	GIDLEY GRANOPHYRE		Brachychiton acuminatus, Acacia	2856
BURPEN	B055	50	100	199	398	598	43	Qc	Colluvium		Terminalia canescens, Corymbia	2857
BURPEN	B056	50	100	199	398	598	39	Qc	Colluvium		Terminalia canescens low open forest	2858
BURPEN	B182	50	100	199	398	598	36	AyG	GIDLEY GRANOPHYRE		Corymbia hamersleyana, Terminalia	2859

Appendix 2 cont

Group level

PROJ	SITE	50	100	200	400	600	#	Geol	Name (truncated)	Dendrogram	Vegetation (truncated)
BURPEN	B183	50	100	199	398	598	29	AyG	GIDLEY GRANOPHYRE		Ehretia saligna var. saligna,
BURPEN	B079	50	100	199	398	598	45	Qhm	Marine mud & silt		Corymbia hamersleyana scattered low
BURPEN	B084	50	100	199	398	598	43	Qhm	Marine mud & silt		Brachychiton acuminatus, Corymbia
BURPEN	B085	50	100	199	398	598	39	AgDm	DAMPIER GRANITOID		Corymbia hamersleyana scattered low
BURPEN	B093	50	100	199	398	598	27	AgDm	DAMPIER GRANITOID		Terminalia canescens, (Ehretia saligna
BURPEN	B090	50	100	199	398	598	59	AgDm	DAMPIER GRANITOID		Ficus platypoda var. E, Flueggea
BURPEN	B091	50	100	199	398	598	50	AgDm	DAMPIER GRANITOID		Acacia coriacea subsp. coriacea,
BURPEN	B028	50	100	199	399	599	25	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus scattered
BURPEN	B049	50	100	199	399	599	13	AyG	GIDLEY GRANOPHYRE		Brachychiton acuminatus scattered
BURPEN	B074	50	100	199	399	599	16	AyG	GIDLEY GRANOPHYRE		Brachychiton accuminata, Termianlia
BURPEN	B155	50	100	199	399	599	10				Inadequate data recorded for a
PPB	I	50	100	199	399	599	17				Scattered Eucalyptus victrix (7%)
HARDAM	HD177	50	100	200	400	600	26	water			Inadequate data recorded for a
HARDAM	HD209	50	100	200	400	600	24	Pdc			Inadequate data recorded for a
HAMIR	HR202	50	100	200	400	600	32	Pdc			Terminalia supranitifolia, Ehretia
HARDAM	HD188	50	100	200	400	600	23	water			Ipomoea costata, Dichrostachys
HARDAM	HD180	50	100	200	400	600	28	d	Dolerite dykes		Inadequate data recorded for a
HARDAM	HD207	50	100	200	400	600	22	Pdc			Inadequate detail recorded for a
HAMIR	HR201	50	100	200	400	600	25	Pdc			Terminalia canescens scattered low
HAMIR	HR203	50	100	200	400	600	22	Pdc			Brachychiton acuminatus scattered
HARDAM	HD208	50	100	200	400	600	18	Pdc			Inadequate data recorded for a
KARHIL	KH210	50	100	200	400	600	32				Flueggea virosa subsp.
KARHIL	KH212	50	100	200	400	600	25	ARr	REGAL FORMATION		Inadequate detail recorded for a
HARDAM	HD190	50	100	200	400	600	27	d	Dolerite dykes		Terminalia canescens low woodland
HARDAM	HD200	50	100	200	400	600	19	d	Dolerite dykes		Grevillea pyramidalis subsp.
HARDAM	HD191	50	100	200	400	600	13	d	Dolerite dykes		Terminalia canescens low open
HARDAM	HD206	50	100	200	400	600	24	Czc	Colluvium		Inadequate detail recorded for a



Appendix 3 *Geology units by projects*

cnew	name	06BP	HAMIR	KARHIL	HARDAM	PPB	BURPEN	215	301A	378	308	232a	2490	FMG-2006	HDRAIL	2491	271	550AA	EP00550AA	BC	API	314	PHQT	339	CAPPRE	WAFORSLO	WAGEORIV	WAMTLEA	WAHAMPAR	WAMTHER	WAACRD	WACOOWES	WAMTROB	WASA	WAEIMIWE	WAHAMSTN	WAFCBOR
				1		9	1							8		5		1	2				6											1			1	
_A1c															2																							
_A1f													3	10	38							23	48															
_A1i													2		17								33															
_B1b																						1																
_B2b-k-k																							8															
_C2-f															2																							
_R1-g-pg														1	1																							
_R2-k															1																							
_Tf																							6															
_Tm																							1															
Ab	Ultramafic schist													1																								
A-cib-P	Unassigned													1																								
ADm	MALLINA FORMATION														1																							
AFhst	HARDEY FORMATION																												6	4							
AFhy	Lyre Creek Member HARDEY FORMATION																										27		16	10							
AFj	JEERINAH FORMATION												1			1	1		5																			
AFjkdl	JEERINAH FORMATION																										8	7									
AFjo	Woodiana Member JEERINAH FORMATION																										3	2									
AFjsl	Mudstone, siltstone																									5	19	10		1							
AFjslg	JEERINAH FORMATION																											5									
AFk	KYLENA FORMATION or KYLENA BASALT																		1		2				3		3		12	17							
AFkfd	KYLENA FORMATION																								3												
AFl	Metagabbro																																1				
AFm	MADDINA FORMATION or MADDINA BASALT												2	2	6			3		4					10		26	46	5	10							
AFmk	Kuruna Member MADDINA FORMATION or MADDINA BASALT														1																						
AFr	MOUNT ROE BASALT																																			1	
AFt	TUMBIANA FORMATION																								6		17		13	27							
AFtc	MADDINA BASALT													1	1			3		1																	
Ag	Granite																								3												
Agb	Gabbro.												1	18	1																						
AgC	CHERRATTA GRANITOID COMPLEX													4																				3			
AgDm	DAMPIER GRANITOID COMPLEX						7																	5													
Agl	Metamorphosed leucogranite												1																								
Agm	Monzogranite												10	30	16			19																			
AgP	PORTREE GRANITOID COMPLEX												2	8	1																						
Agr	Granitoid						1																														
AgSm	BAMBOO SPRINGS MONZOGRANITE Shaw Granitoid Complex													4																							
AgYa	TAMBOURAH GRANODIORITE YULE GRANITOID COMPLEX												2	1																							
AgYel	ELLAWARRINA MONZOGRANITE YULE GRANITOID COMPLEX																																			2	
AHd	WITTENOOM FORMATION										1							1			1													2			
AHm	MARRA MAMBA IRON FORMATION												1	8		7			1	2							2	6			2	10	2	94			
AHs	MOUNT McCRAE SHALE and MOUNT SYLVIA FM														1			5	3													4	1				1
Amg															1																						
A-mog-P	Metagabbro														1																						
A-murs-P	Ultramafic schist												1	1																							
ARr	REGAL FORMATION			2																																	
A-SRmi-gmp	MINNAMONICA MONZOGRANITE												3	2	8																						
A-SRpo-gmv	POOCATCHE MONZOGRANITE													2	2																						
A-ST-gmp	Biotite monzogranite												1		3																						
AyG	GIDLEY GRANOPHYRE	1					63																	1													
AyGo	GIDLEY GRANOPHYRE						22																														
B																																			2	
Cp																					2																
Cza	Alluvium													1																							
Czag	Alluvium																													5							

cnew	name	06BP	HAMIR	KARHIL	HARDAM	PPB	BURPEN	215	301A	378	308	232a	2490	FMG-2006	HDRAIL	2491	271	550AA	EP00550AA	BC	API	314	PHQT	339	CAPPRE	WAFORSLO	WAGEORIV	WAMTLEA	WAHAMPAR	WAMTHER	WAACRD	WACOOWES	WAMTROB	WASA	WAEIMIWE	WAHAMSTN	WAFCBOR
Czak	Alluvium																										3										
Czc	Colluvium				1								2	1	3	6	6	39	77							4	44	10	1	1	2	12	30	40			4
Czcb	Colluvium																										1	11	4	10							
Czcf	Colluvium																									4	1										
Czk	Calcrete												1					2		3																		3
Czr	Hematite on banded iron													5	2	2	4	1	6															1			
Czrf	Ferricrete																										4										
d	Dolerite dykes				5														1											3			3	15			1
Fjb																																	10			
Fjr																1																					
Fl																																	1			
Fr																																	4			
hs	MOUNT McCRAE SHALE and MOUNT SYLVIA FM																															5	1	9			
Kgmx																		1																			
Kny	YARRALOOLA CONGLOMERATE																				14																
Ocean	Ocean						2																		1												
Pb																		1																			
Pdc			3		3																																
Pfp	PILLINGINI TUFF																				1				2												
Pho	BOOLGEEDA IRON FORMATION											1									2																
PLHb	BROCKMAN IRON FORMATION										1				2	4	1	6	21		4				31					1			1	4			6
PLHj	WEELI WOLLI FORMATION															5																					
PLHw	WOONGARRA RHYOLITE										1																										
Plk																					2															
Plo																		3																			
PLWb	CHEELA SPRINGS BASALT																				11																
PLWd	DUCK CREEK DOLOMITE																				9								2								
PLWq	BEASLEY RIVER QUARTZITE																				1																
Pw	Shale, mudstone, sandstone, greywacke etc																				1																
Q1										1																											
Qa	Alluvium - unconsolidated												1	5	27	16	4	32	106	1	9			2		5	65	8	11	8	9	9	13	71	8	14	11
Qab	Alluvium - unconsolidated & gilgai																										7									
Qac	Alluvial -clay, silt							1	2	4	3		1								36			1	11												
Qao	Alluvium - unconsolidated														1									7	2		3										
Qaoc	Alluvium - unconsolidated & claypans																						8														
Qb	Alluvium - unconsolidated														2						1																
Qc	Colluvium	1				1	20	3	5	4	9	4	3	16	16	5	2	2	10		139			1	8				1								
Qe																2																					
Qeg													4	16	5																						
Qhm	Marine mud & silt						2																		1												
Qhms	Coastal sand																						3	8	6												
QlC																					1																
Qp	Elluvim, colluvium, gilgais										4										13				13												
Qr											1					4					2				2												
Qrg	Quartzofeldspathic sand																				1																
Qs	Eolian sand [siliceous]												3	5	30	26	3	16						11	4		6	1		12		17	18	17		3	15
Qwf	Alluvium/colluvium																											1									
Tc																1																					
Td																11																					
Tp	ROBE PISOLITE							2			3	22					1		35	3	150						3	4								
Wa	ASHBURTON FORMATION																				1																
water					2																																
Wm	MOUNT McGRATH FORMATION																				24																
		2	3	3	11	10	118	6	7	9	23	27	45	151	192	96	22	135	268	14	427	24	113	36	106	18	242	111	71	109	13	57	73	271	8	21	41

Appendix 4 *Dendrogram of Robe Pisolite Classification*

PROJ	SITE	gp15	gp30	gp60	gp90	geo	Dendrogram 0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	HABITAT (truncated)
WAGEORIV	0216A	1	1	1	1	Qao		Next to the Roebourne, Wittenoom road. 4.4 km east of Hamersley
232a	MEA01	1	1	1	1	Tp		Mesa crest - very gently sloping, west facing
308	MATC03	1	1	1	1	Tp		Gentle north-facing slope of low rise
232a	MEA18	1	1	1	1	Tp		Mesa crest (flat to sloping very gently WNW)
232a	MEA20	1	1	1	1	Tp		Mesa crest (flat to very gently sloping SW)
308	WAR07	1	1	1	1	Tp		Flat surface of very gently undulating to flat low ridge
232a	MEA02	1	1	2	2	Tp		Mesa crest (very gently sloping, east facing slope, sloping
232a	MEA17	1	1	2	2	Tp		Mesa crest (flat area)
232a	MEA22	1	1	2	2	Tp		Mesa crest (gentle slope SE)
232a	MEA09	1	1	2	3	Tp		Mesa crest; flat to very gently sloping (NW)
232a	MEA11	1	1	2	3	Tp		Mesa crest (flat to very gently NW sloping)
232a	MEA12	1	1	2	3	Tp		Mesa crest (flat)
232a	MEA23	1	1	2	3	Tp		Mesa crest
232a	MESG18	1	1	2	4	Qg		Low stony plain (very gradually sloping footslopes of range of
232a	MEA13	1	2	3	5	Tp		Mesa crest (very gentle S-facing slope, immediately adjacent to
232a	MEA15	1	2	3	5	Tp		Banks of creek in a gorge
232a	MEA19	1	2	3	5	Tp		Flowline (sandy gravelly creek bed ¬5 m wide in a broad gully,
232a	MEA14	1	2	4	6	Tp		Crest and upper slopes of small red sand dune (oriented N-S and
232a	MESG02	2	3	5	7	Tp		Broad gully
232a	MESG20	2	3	5	7	Tp		Flowline through stony footslope
232a	MESG19	2	3	5	7	Tp		Mesa crest (very gently NW slope; adjacent to breakaway)
232a	MESG24	2	3	5	7	Tp		Lower to mid-slope of colluvial spur (moderate slope, N-facing)
232a	MESG03	2	3	5	7	Tp		Narrow gully
232a	MESG09	2	3	5	7	Tp		Narrow rocky creek bed
232a	MESG04	2	3	5	7	Tp		Mesa crest
232a	MESG16	2	3	5	8	Qg		Mesa crest
WPI	AD007	3	4	6	9	Tp		Midslope of low rolling hills
WAMTLEA	0487	4	5	7	10	AFm		Mid-lower slope.
WPI	CW007	4	5	7	10	Tp		West facing upper to mid slope of small gully (heading south)
WPI	TR107	4	5	7	10	Tp		Gully
308	WAR03	4	5	7	10	Tp		Gentle east-facing lower slope of low ridge (adjacent to broad
FMG-2006	P9GtoP9Fe	4	5	7	11	Qc		Narrow north-south trending flowline, moderate to gentle slopes
BC	BCQ4	4	5	8	12	Robe		Crest and upper slopes of low ridge.
EP00550AA	ZION042	4	5	8	12	Qa		Steep hillside slope facing North
EP00550AA	ZION021	4	5	8	12	Czp		Undulating small hills - Sloping up to the east
EP00550AA	ZION013	4	5	9	13	Czp		sloping to west minor hill, outcroipping ironstone
EP00550AA	ZION023	4	5	9	13	Czp		Mesa top sloping east
WPI	CE005	5	6	10	14	Tp		Mesa top
WPI	TR023	5	6	10	14	Tp		Mesa top
WPI	CW009	5	6	10	14	Tp		Top of mesa on a very slight slope
WPI	CW048	5	6	10	14	Tp		
WPI	CW001	5	6	11	15	Tp		Crest/flat of mesa
WPI	CW020	5	6	11	15	Tp		Rocky debris slope just below the mesa top, on the upper to mid
WPI	CW023	5	6	11	15	Tp		Upper to mid slope of mesa, facing southwest onto a water way
WPI	CW037	5	6	11	15	Tp		Mesa crest, undulating slopes with numerous drainage lines
WPI	TR016	5	6	11	15	Tp		Mesa crest
WPI	CW002	5	6	11	15	Tp		Acacia shrubland on mesa top, mid to upper slope
WPI	CW008	5	6	11	15	Tp		East facing mid slope of the mesa
WPI	CW004	5	6	11	15	Qc		Narrow mesa top/crest
WPI	CW021	5	6	11	15	Tp		Top of mesa at northwest end
WPI	CW003	5	6	11	15	Tp		East facing slope of mesa crest
WPI	CW022	5	6	11	15	Tp		Mesa top/crest
WPI	TR100	5	6	11	15	Tp		Mesa top
WPI	CW015	5	6	11	15	Tp		On a short steep slope descending from near the mesa top to the
WPI	CW080	5	6	11	15	Tp		Creekline on low mesa with small hills
WPI	CW024	5	6	11	15	Tp		Shallow drainage on the flat of the mesa top
WPI	CW041	5	6	11	15	Tp		Gully
WPI	AD002	6	7	12	16	Wm		Low hill side
WPI	CNW001	6	7	12	16	Qc		On the lower slope of medium sized hills
WPI	CNW006	6	7	12	16	Qc		Debris slope
WPI	KB004	6	7	12	16	Tp		Midslope
BC	BCQ8	6	7	12	17	Robe		Steep, west-facing mid and upper slope of ridge.
WPI	CW049	6	7	12	17	Tp		

PROJ	SITE	gp15	gp30	gp60	gp90	geo	Dendrogram	HABITAT (truncated)
							0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	
WPI	CE004	6	7	12	17	Tp		Top slope of rounded mesa top
WPI	CN005	6	7	12	18	Tp		Mesa crest
232a	MESG11	6	7	12	18	Tp		Low ridge on edge of mesa
WPI	ASN031	6	7	13	19	Wd		
WPI	BOR073	6	7	13	19	Qg		Pediment
WPI	TsRR021	6	7	13	19	Qc		Slope of a low hill
WPI	BOR302	6	7	14	20	Tp		Low rolling hills and pediment of mesa
WPI	CP039	6	7	14	20	Pwd		Open rocky scree slope and pediment
WPI	CR019	6	7	14	21	Tp		Minor drainage line on flat, within bottom third of landform
WPI	BOR277	6	7	15	22	Qc		
WPI	CW006	6	7	15	23	Wd		South west facing upper slope of mesa
WPI	TC042	6	7	15	23	Tp		Low rocky hills
WPI	TR031	6	7	15	23	Wb		Mesa top
WPI	KB006	6	7	15	23	Qc		Pediment
WPI	UCW004	6	7	15	23	Tp		Plain
WPI	TC011	6	7	15	23	Wm		South facing hill slope
WPI	TR067	6	7	15	23	Tp		Mesa top
WPI	ASA005	6	8	16	24	Tp		
WPI	ASA006	6	8	16	24	Tp		Plain
WPI	FM002	6	8	16	24	Tp		Top/crest and upper slope
WPI	TsRR040	6	8	16	24	Tp		Mesa slope
WPI	TsRR041	6	8	16	24	Tp		Mesa top
WPI	TR013	6	8	16	24	Tp		Gentle sloping crest of mesa
WPI	TsRR031	6	8	16	24	Tp		Crest of low rollling hills
WPI	TsRR020	6	8	16	24	Tp		Upper slope of hill
WPI	CE006	6	8	16	25	Tp		Top slope of mesa
WPI	CE007	6	8	16	25	Tp		Mesa top
WPI	CE017	6	8	16	25	Tp		Mesa top
WPI	CE009	6	8	16	25	Tp		Gully on mesa
WPI	CE013	6	8	16	25	Tp		Mesa top
WPI	CR001	6	8	17	26	Ql		Flat crest of mesa
WPI	FM001	6	8	17	26	Tp		Minor drainage line
WPI	KB001	6	8	17	26	Tp		Mesa top/crest
WPI	KB009	6	8	17	26	Tp		Mesa slope
WPI	KB042	6	8	17	26	Tp		Mesa top
WPI	FM021	6	8	17	26	Tp		Upper slope of the mesa top
WPI	KB043	6	8	17	26	Tp		Mesa top
WPI	TR017	6	8	17	26	Tp		Midslope/hill of low rolling internal drainage basin on mesa
WPI	KB044	6	8	17	26	Tp		Mesa top
215	MJ07	6	8	17	26	Tp		Crest of low stony rise
WPI	BOR279	6	8	18	27	Qc		Burnt pediment
WPI	JW006	6	8	18	27	Qg		Mesa slope
WPI	TR008	6	8	18	27	Tp		Mesa crest
WPI	TR025	6	8	18	27	Tp		Mid slope of mesa
WPI	TR012	6	8	18	27	Tp		Mesa crest
WPI	CW025	6	8	18	28	Tp		North west facing mesa slope on north east edge of mesa, above
WPI	KB045	6	8	18	29	Tp		Mesa top
WPI	TsRR042	6	8	18	29	Tp		
WPI	TR001	6	8	18	29	Qc		Mesa top/crest
WPI	TR018	6	8	18	29	Tp		Drainage on mesa slope
WPI	TR015	6	8	18	29	Tp		Rocky crest on mesa top
WPI	TR022	6	8	18	29	Tp		Drainage basin on crest edge of mesa
WPI	TR005	6	8	18	29	Tp		Upper slope
WPI	TR020	6	8	18	29	Tp		Upper slope/crest of internal drainage basin
WPI	TsRR015	6	8	18	29	Tp		Mesa top
WPI	BOR100	6	9	19	30	Qc		Drainage line/floodplain
WPI	CE011	6	9	19	30	Tp		Breakaway on northern side of mesa
WPI	CN001	6	10	20	31	Tp		Flat mesa top
WPI	UCW005	6	10	20	31	Tp		Hill crest
WPI	CP600	6	10	20	31	Ql		Mesa free face
WPI	TR086	6	10	20	31	Tp		Mesa top
WPI	JW009	6	10	20	31	Tp		Mid to lower mesa debris slope
WPI	TR003	6	10	20	31	Tp		Mesa top/edge
WPI	TR004r	6	10	20	31	Tp		Rock face community on upper slope/breakaway
WPI	CN002	6	10	21	32	Tp		Shallow gully
WPI	CN003	6	10	21	32	Tp		Mesa top/crest
WPI	JW001	6	10	21	32	Tp		Mesa top/crest

PROJ	SITE	gp15	gp30	gp60	gp90	geo	Dendrogram 0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	HABITAT (truncated)
WPI	CN004	6	10	21	32	Tp		Debris slope/mesa slope
WPI	CN007	6	10	21	32	Tp		Flat top of mesa
WPI	KB046	6	10	21	32	Tp		Mesa top/crest
WPI	UC001	6	10	21	32	Tp		Mesa crest
WPI	TR014	6	10	21	32	Tp		Mesa crest
WPI	TR070	6	10	21	32	Tp		Mesa top
WPI	TR026	6	10	21	32	Tp		Mesa crest
WPI	UC003	6	10	21	33	Tp		Mesa crest
WPI	UC010	6	10	21	33	Tp		Upper slope/flat top/crest
WPI	UC015	6	10	21	33	Tp		Mesa top
WPI	CN006	6	10	22	34	Tp		Sloping mesa top
WPI	JW002r	6	10	22	34	Tp		Free face and debris slope
WPI	CR001r	6	10	22	34	Tp		Southwest facing break away (free face)
WPI	FM020	6	10	22	34	Tp		Minor drainage line on mesa crest
WPI	JW003	6	10	22	34	Tp		Flat top/crest of Jewel mesa, on the eastern end
WPI	JW004	6	10	22	34	Tp		Upper slope
WPI	CR003	6	10	22	34	Tp		Upper slope of mesa with a north facing slight slope
WPI	TsRR016	6	10	22	34	Tp		Mesa top
WPI	CR008	6	10	22	34	Qg		Southwest facing creekline in between Cochrane and Farnum mesa
WPI	CR012	6	10	22	34	Qg		South southeast facing upper slope of mesa from a rounded crest
WPI	CR006	6	10	22	34	Tp		South face of upper most debris slope, immedietly below the
WPI	CR014	6	10	22	34	Qg		Upper slope, near to the top of the mesa on a southwest facing
WPI	CP199	6	10	22	35	Wm		Valley, dissected by an incised drainage line
WPI	JW005	6	10	22	35	Tp		Drainage in gully on pediment/debris slope
WPI	JW007	6	10	22	35	Tp		Drainage gully on mesa debris slope
WPI	JW001r	6	10	22	35	Tp		Mesa free face
WPI	TR087	6	10	22	35	Tp		Gully
WPI	CP474	6	10	22	36	Phb		Base of gorge
WPI	CE003	7	11	23	37	Tp		Mesa top
WPI	CE031	7	11	23	38	Tp		Mesa free face
WPI	UC009	7	11	23	38	Tp		Wide flat crest on mesa top
WPI	KB003	7	11	23	38	Tp		Upper slope
WPI	UC007	7	11	23	38	Tp		Flat top/crest of mesa
WPI	UC008	7	11	23	38	Tp		Crest/flat top of mesa
WPI	CE008	7	11	24	39	Tp		Top of mesa
WPI	CE012	7	11	24	39	Tp		Gully on mesa side/top
WPI	CE016	7	11	24	39	Tp		Mesa slope - debris slope
WPI	CE014	7	11	24	39	Tp		Top slope of mesa
WPI	KB012	7	11	24	39	Tp		Mesa crest
WPI	KB013	7	11	24	39	Tp		Upper debris slope
WPI	CR018	7	11	25	40	Tp		Flat pediment
WPI	KB005	7	11	25	40	Tp		Mesa crest
WPI	JW002	7	11	25	40	Tp		Mesa crest/flat top
WPI	JW011	7	11	25	40	Qg		Alluvial plain/pediment
WPI	KB015	7	11	25	40	Tp		Mesa crest
WPI	KB014	7	11	25	40	Tp		Mesa crest
WPI	KB002	7	11	25	40	Tp		Valley
WPI	KBW003	7	11	25	40	Qc		Flat
WPI	TC006	7	11	25	40	Qc		Alluvial plain
WPI	KB007	7	11	25	40	Tp		Mesa crest
WPI	KB008	7	11	25	40	Tp		Crest/flat mesa top
WPI	KB016	7	11	25	40	Tp		Mesa crest with gentle slope
WPI	CW010	7	12	26	41	Tp		Minor drainage on mesa top
WPI	CW011	7	12	26	41	Tp		Crest of mesa with a slight slope down towards access track and
WPI	CW026	7	12	26	41	Tp		The lower slope of the mesa top, west of the crest, on a flat,
WPI	CW028	7	12	26	41	Wa		South west lower foot slope
WPI	CW032	7	12	26	41	Tp		Rocky mid slope, over a gully, with a north and north-east
WPI	CW051	7	12	26	41	Tp		
WPI	CW012	7	12	26	42	Tp		Mesa top/crest
WPI	CW016	7	12	26	42	Tp		On the upper slope at the head of a gully, below a breakaway on
WPI	TR007	7	12	26	42	Tp		Mesa crest
WPI	TR019	7	12	26	42	Tp		Minor drainage
WPI	TR002	7	12	26	42	Tp		Flat top, crest of mesa
WPI	TR009r	7	12	26	42	Tp		Mesa slope
WPI	TR006	7	12	27	43	Tp		Gully of mesa
WPI	TR011	7	12	27	43	Tp		Minor drainage lline on mesa crest
WPI	CE010	7	13	28	44	Tp		Drainage line on top of mesa

PROJ	SITE	gp15	gp30	gp60	gp90	geo	Dendrogram	HABITAT (truncated)
							0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	
WPI	CR002	7	13	28	44	Qg		Creekline/drainage line on a flat/alluvial/pediment
WPI	KB022	7	13	28	44	Qc		Pediment
WPI	KB010	7	13	28	44	Tp		Mesa mid slope
WPI	KB011	7	13	28	44	Tp		Flat at mesa perimeter
WPI	KB017	7	13	28	44	Tp		Dissected drainage on the mid slope off the edge of the mesa
WPI	KB019	7	13	28	44	Tp		Mesa crest
WPI	CW017r	7	13	28	45	Tp		Breakaway/freeface on the south side of a mesa
WPI	KBW001	7	13	28	45	Tp		Mesa top/crest
WPI	CW013	7	13	29	46	Tp		Flat valley floor in upper section of valley within mesa
WPI	CW014	7	13	29	46	Tp		Gully (dissected drainage) approximately 5-10 m wide and 6 m
WPI	CW019	7	13	29	46	Tp		A drainage line on valley floor between two sections of the
WPI	CW034	7	13	29	46	Tp		A wide dissected drainage or gully on the flat
WPI	CW018	7	13	29	47	Tp		Gully (dissected drainage) running south west between two parts
WPI	TR024	7	13	29	47	Tp		Minor drainage line on upper slope of mesa
WPI	CP042	7	14	30	48	Tp		Woodland in drainage line
WPI	CR010	7	14	30	48	Tp		Broad drainage on flat plain
BC	BCQ1	8	15	31	49	Robe		High level plain with cracking clays.
BC	BCQ6	8	15	31	49	Robe		Flat creek flood banks and west-facing, gently sloping lower
BC	BCQ3	8	15	32	50	Robe		Lower slope, colluvial, medium steep, eastnortheast aspect.
BC	BCQ54	8	15	32	50	Robe		Upper slope to crest of broad low ridge
BC	BCQ7	8	15	32	51	Czk		Flood plain adjacent to creek, a tiny bit of end of lower
BC	BCQ10	8	16	33	52	Robe		Gentle, northeast-facing slope on broad, flat ridge crest.
BC	BCQ2	8	16	33	52	Robe		Rocky creek bed.
BC	BCQ11	8	16	33	52	Czp		Shallow flowline in a near level/gently undulating plain (mesa
BC	BCQ14	8	16	33	52	Robe		Creekbed and banks of narrow, stoney creek on gentle,
215	MJ04	8	16	34	53	Tp		Low stony rise adjacent to flowlines (crossed by numerous
EP00550AA	ZION010	8	16	34	53	Czp		hill top sloping
BC	BCQ12	8	17	35	54	Robe		Crest of flat topped mesa.
BC	BCQ9	8	17	35	54	Czp		Moderately steep, upper to mid slope of mesa (Coongan north)
BC	BCQ22	8	17	36	55	Robe		Moderately steep, southeast-facing mid to upper slope of ridge.
BC	BCQ55	8	17	36	55	Robe		Lower slopes around a shallow drainage line.
BC	BCQ16	8	17	37	56	Robe		Crest and upper slopes of ridge.
BC	BCQ21	8	17	37	56	Robe		Gentle to moderately steep, mostly easterly facing hillslope of
BC	BCQ25	8	17	37	56	Qa		Moderate to steep, north facing mid to lower slope.
BC	BCQ26	8	17	37	56	Robe		Steep, south-facing mid and upper slope of ridge.
BC	BCQ17	8	17	37	57	Robe		Gentle, south facing slope of low ridge.
BC	BCQ50	8	17	37	57	Robe		North-facing mid slope of low broad hill.
BC	BCQ5	8	17	38	58	Robe		Southeast facing, very gently inclined ridge crest.
BC	BCQ15	9	18	39	59	Robe		Near level plain on mesa top.
BC	BCQ28	9	18	39	59	Robe		Very gently sloping, east-facing approximately 'flat' crest of
BC	BCQ30	9	18	40	60	Robe		Flat, broad ridge (mesa) top.
BC	BCQ44	9	18	40	60	Robe		Steep southeast-facing slope of mesa (below breakaway).
BC	BCQ31	9	18	40	61	Robe		Lower gentle slope, northerly aspect.
BC	BCQ33	9	19	41	62	Robe		Upper to mid-slope, medium steep, westerly aspect.
BC	BCQ52	9	19	42	63	Robe		Flat ridge top/plateau.
BC	BCQ27	9	20	43	64	Robe		Breakaway and very steep upper slope, south facing of ironstone
BC	BCQ38	9	20	43	64	AFm		Vertical rocky breakaway at top of ridge slope, east-facing.
BC	BCQ37	9	20	43	65	Czk		Very steep, west-facing breakaway on high mesa ridge
BC	BCQ35	9	21	44	66	Czk		+/- flat hilltop, narrow "mesa".
BC	BCQ56	9	21	44	66	Robe		Very gently undulating crest of high 'flat-topped' ridge
WPI	UC002	10	22	45	67	Tp		Creek line
WPI	UC006	10	22	45	67	Tp		Valley floor
WPI	UC004	10	22	45	68	Tp		Upper slope of mesa
WPI	UC005	10	22	45	68	Tp		Rocky mid slope on mesa
BC	BCQ13	11	23	46	69	Czp		Creek bed.
BC	BCQ20	11	24	47	70	Robe		Gravelly, sandy bed of moderate size creek (not including loamy
BC	BCQ29	11	24	47	70	Robe		River bed and banks.
BC	BCQ42	11	24	47	70	Kylena		Stoney, sandy creek bed channels and low sandy drifts in
BC	BCQ39	11	24	47	71	Tumbiana		Depression/flowline in gently undulating plain, very gentle
BC	BCQ41	11	24	47	71	Robe		Banks of minor creek line on edge of plain (valley floor).
BC	BCQ43	11	24	48	72	Kylena		Broad flood bank, flat 200m east of major creek.
BC	BCQ18	12	25	49	73	Robe		Broad shallow flow line, very gently, east-facing slope.
BC	BCQ47	12	25	49	73	Robe		Level plain, long way from hills.
271	BRO47	12	25	50	74	Czp		Crest of low stony rise
EP00550AA	FT01	12	26	51	75	Czp		flow lines/valley floor/major flood plain plus some upper slope
EP00550AA	FT02	12	26	51	75	Czp		Upper bank/part flow line of major flood plain
EP00550AA	ZION029	12	26	51	75	Czp		Minor drainage line running N-S

PROJ	SITE	gp15	gp30	gp60	gp90	geo	Dendrogram	HABITAT (truncated)
							0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	
BC	BCQ34	13	27	52	76	Robe		Gentle, northwest-facing slope of colluvial spur.
BC	BCQ48	13	27	52	76	colluv		Gentle, east-facing slope of side of upper part of colluvial
BC	BCQ46	13	27	53	77	colluv		Gentle, north-facing 'flat' on valley floor (near head of
BC	BCQ49	13	27	53	77	Robe		Very gently undulating plain.
378	BUN60	14	28	54	78	Q1		Pebbly, cobbly scoured river bed. Very, very gentle west facing
550AA	KR001	14	28	55	79	PLHb		Major drainage
EP00550AA	ZION005	14	28	55	79	Czp		Major drainage line runnning E-W
EP00550AA	ZION002	14	28	55	79	Czp		Major drainage line, creek bed
EP00550AA	TRIN008	14	28	55	80	Qa		major drainage line E-W
EP00550AA	ZION050	14	28	55	80	Czp		Major Drainage line, Creek with flowing water N-S
WAMTLEA	0489	15	29	56	81	AFm		Flat topped hill.
550AA	KR002	15	29	56	81	PLHb		Hillslope, gently sloping eastward
WAMTLEA	0501	15	29	56	82	Eer		Flat-gently sloping hilltop.
EP00550AA	FT13	15	29	56	82	Czc		minor creekline/ slight gully running north to south
EP00550AA	FT17	15	29	56	82	Czc		hilltop to upperslope
EP00550AA	FT05	15	29	56	82	Czc		hilltop and midslpoe
EP00550AA	FT12	15	29	56	82	Czc		midslope hill
EP00550AA	FT19	15	29	56	82	Czp		lower slope next to major gully (cliff0
EP00550AA	FT20	15	29	56	82	Czp		mid slope next ot gully
EP00550AA	FT18	15	29	56	82	Czp		side of hill next to gully/rivine (cliff)
WAFCBOR	1169	15	30	57	83	Czc		Long south-west trending colluvial spur.
EP00550AA	FT29	15	30	57	83	Czc		slight hill midslope - bottom of major range
EP00550AA	FT27	15	30	57	84	Czc		lower slope gully with flowline (1.5-2.0m wide). Site includes
EP00550AA	FT36	15	30	57	84	Czc		FLAT DAMP AREA
EP00550AA	ZION006	15	30	57	84	Czp		undulating sloping NE minor drainage thorugh
EP00550AA	VOK025	15	30	57	84	Czc		Gully/flowline within a small valley
EP00550AA	VOK028	15	30	57	84	Czc		Ridge top running east-west
EP00550AA	FT21	15	30	58	85	Czp		STEEP GULLY WITH FLOW LINE INBETWEEN MODERATELY STEEP HIILS
EP00550AA	VOK019	15	30	58	85	Czc		Small gully/flowline off the northern ranges.
EP00550AA	VOQ018	15	30	58	85	Qa		Hillside, steep upper slope with small gully
EP00550AA	VOQ017	15	30	58	85	Czc		Gully, moderately sloping south east
EP00550AA	ZION003	15	30	58	86	Czp		undulating levee vegetation south of major drainage line
EP00550AA	ZION008	15	30	58	86	Czp		running north the slopes E-W-S
EP00550AA	FT07	15	30	59	87	Czc		upslope from gully running N-S
EP00550AA	ZION004	15	30	59	87	Czc		small hill/outcropping ironstone sloping ssw
EP00550AA	ZION022	15	30	59	87	Czp		Wide gully/drainage line running north-south
EP00550AA	ZION015	15	30	59	87	Czp		Gully/flowline running east-west
EP00550AA	ZION025	15	30	59	87	Czp		Gully running north-south
EP00550AA	ZION018	15	30	59	87	Czp		Gully running east-west
EP00550AA	ZION012	15	30	59	87	Czp		same as previous
EP00550AA	ZION014	15	30	59	87	Czp		Flat hilltop with a very gently slope to the south upwards
EP00550AA	ZION017	15	30	59	87	Czp		Small gully/flowline
EP00550AA	ZION030	15	30	59	87	Czp		flat on small rise above valley
EP00550AA	FT11	15	30	59	88	Czp		ridge next to breakaway
EP00550AA	FT25	15	30	59	88	Czp		upper slope of hill
EP00550AA	FT31	15	30	59	88	Czp		upper slope inbetween ridge and steep gully to north
EP00550AA	FT24	15	30	59	88	PLHb		upper slope/sloping west and south into the start of a gully
EP00550AA	ZION026	15	30	59	88	Czp		flat area/plain on summit/hill gelty sloping E
EP00550AA	ZION028	15	30	59	88	Czp		Gently sloping south/relatively flat plain before rising into a
EP00550AA	VOQ47	15	30	60	89	Czc		Mid to upper slope of low rise in valley floor
EP00550AA	ZION009	15	30	60	89	Czp		gently sloping north
EP00550AA	ZION027	15	30	60	89	Czp		Steep Slope sloping South
EP00550AA	ZION019	15	30	60	89	Czp		Hill slope, sloping to the east
EP00550AA	ZION020	15	30	60	89	Czp		Gently sloping hillsides, sloping up to the east
EP00550AA	ZION024	15	30	60	89	AHs		mid summit, top of hill sloping south
EP00550AA	ZION011	15	30	60	90	Czp		Gently sloping North mid height flat before sloping to major
							0.1580 0.3049 0.4518 0.5987 0.7456 0.8924 1.0393 1.1862 1.3331 1.48	

Appendix 5. Main Species by 60-group classification of Robe Pisolite data set.

Appendix 6: Cross tabulation of Species by Sites in the API Project

Only sites from API study. Values are % of sites containing each species of the number of sites from API in classification 200 group. M sites are # sites which are Mesas.
Only species which occurred in >55% of sites in at least 1 group are shown.

NAME	gp50	gp100	gp200	gp400	4	5	9	17	28	39	43	47	48	49	50	51	52	53	66	68	71	79	80	85	86	87	88	89	90	91	92	93	94	95	100	102	103	134	186
				M sites										7	1			1		1					1	1	18	16	36	21	3	44	2	7		9	1		1
				# sites	1	6	1	2	1	3	1	14	3	19	10	12	4	6	1	1	2	1	2	4	13	3	18	54	48	28	19	51	50	30	1	9	4	1	4
				gp50	1	1	1	2	4	6	7	8	8	8	8	8	8	8	13	13	13	14	15	16	16	16	17	17	17	17	18	18	19	19	21	21	21	32	45
				gp100	1	2	3	7	13	20	22	24	24	24	25	25	25	26	33	34	35	38	39	41	41	41	42	42	42	42	43	43	44	44	46	47	47	63	94
Trianthema aff. triquetra (M3.35)	4	8	12	18								7														33					11							100	25
Sida pilbarensis (green form)	4	8	12	18		17	100					7		5														2		4	5		16	3					
Indigofera boviperda subsp. boviperda	4	8	12	18						33				37														2		4	47	6	2	63					
Euphorbia sp. (B170-4)	4	8	12	18		17					100	7		5																7	16	4		3					
Tephrosia aff. clementii (8) (HD106)	4	8	12	19		50						7																										100	
Solanum aff. phlomoides	4	8	12	21																								2	10			4			100	11			
Eremophila latrobei subsp. latrobei	4	8	12	21																									4			2				67			
Corchorus aff. parviflorus (JW011-11)	4	8	12	21									100	21				17										4	4	18		35	4						
Triodia sp. Robe River	4	8	12	21				50												100	100						6	20	81	64	5	31			100	44			
Tephrosia uniovulata	4	8	12	21		33						14		11											15		89	28	4	50	53	35	32	20		22			
Euphorbia sp. (M80-1)	4	8	14	27					100																				2									100	
Argemone ochroleuca subsp. ochroleuca	5	10	16	30							100		33		10			50																					
Acacia farnesiana	6	13	21	38						67		21		37	20	8						100		25	8							2	10						
Sida aff. fibulifera (B64-13B)	6	13	21	40									33	5																	5		4					100	
Tribulus occidentalis	6	13	21	40									67					17													5			3					
Yakirra australiensis var. australiensis	9	19	38	70		17						14	67									100									11								
Corchorus incanus subsp. incanus	9	19	38	70		50				33		43				17	25					100						2	6	4	5	8	10						
Goodenia lamprosperma	9	19	40	76							100	7		5		8		33																					
Eriochloa pseudoacrotricha	10	21	47	94							100																												
Helichrysum luteoalbum	11	22	49	98							100																												
Cyperus difformis	11	22	50	101							100	7						17																					
Typha domingensis	11	22	50	101							100																												
Melaleuca argentea	12	23	51	104							100																												
Passiflora foetida var. hispida	13	25	55	113					100																														
Iseilema macratherum	20	35	72	140																																		100	
Operculina aequisepala	20	35	72	141					100			7																											
Panicum laevinode	20	35	72	141																																		100	
Sida spinosa	20	35	72	141								14		5																								100	
Eragrostis xerophila	20	35	72	141																																		100	
Boerhavia paludosa	20	35	72	141																																		100	
Ptilotus carinatus	20	35	72	141																																		100	
Streptoglossa liatroides	22	41	84	163																																		100	
Citrullus colocynthis	23	44	90	172							100																												
Portulaca conspicua	27	50	101	190																																		100	
Abutilon aff. dioicum (HD72-14)	29	56	108	202					100																				2							11			
Paspalidium tabulatum (Whim Creek form)	29	56	108	202					100																											11	25		
Trichosanthes cucumerina var. cucumerina	29	56	108	202					100																														
Indigofera rugosa	31	59	113	208	100																									4			4						
Corchorus laniflorus	31	59	113	208	100	50				33		29		16	10	8		17							8		6	11	17	14	21	14	10	17		11			
Tribulus platypterus	31	59	113	208	100																																		
Ptilotus incanus var. incanus	31	59	113	208	100													17											4			10							
Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	31	59	114	213					100	67		21				8		17															2						
Flueggea virosa subsp. melanthesoides	31	59	114	213					100			14						17																		11			
Grevillea pyramidalis subsp. leucadendron	31	59	114	213			100					43	100	21	20	42					50							4	4	4	16		12	13					
Terminalia canescens	31	59	114	213	100				100			7																	2								25		
Stylobasium spathulatum	31	59	114	213	100					33			67	47	10	58		50									6	7	2		11		10	10		44	25		75
Pentalepis trichodesmoides	31	59	114	213									67					50												4	5	2		10					
Flaveria australasica subsp. australasica	32	60	115	214	100						100			11																		2				33		100	
Ipomoea muelleri	32	60	115	214								14	67	32	10	17		67													21	2		3					
Cenchrus setiger	32	60	115	214								7	67	11		8																						100	
Vigna lanceolata var. lanceolata	32	60	115	214							100	7		16				17																					
Stemodia grossa	32	60	115	214			100			33	100			16	10	17		67						25					2	7	5	2		3					
Pluchea rubelliflora	32	60	115	214							100	7																											

				M sites										7	1			1		1					1	1	18	16	36	21	3	44	2	7		9	1		1
				# sites	1	6	1	2	1	3	1	14	3	19	10	12	4	6	1	1	2	1	2	4	13	3	18	54	48	28	19	51	50	30	1	9	4	1	4
				gp50	1	1	1	2	4	6	7	8	8	8	8	8	8	8	13	13	13	14	15	16	16	16	17	17	17	17	18	18	19	19	21	21	21	32	45
				gp100	1	2	3	7	13	20	22	24	24	24	25	25	25	26	33	34	35	38	39	41	41	41	42	42	42	42	43	43	44	44	46	47	47	63	94
NAME	gp50	gp100	gp200	gp400	4	5	9	17	28	39	43	47	48	49	50	51	52	53	66	68	71	79	80	85	86	87	88	89	90	91	92	93	94	95	100	102	103	134	186
Eucalyptus victrix	32	60	115	214								29	33	5		25		67						25															
Acacia trachycarpa	32	60	115	214		17	100				100	50	67	37	70	17	75											2	2		11		16	7					
Cyperus bifax	32	60	115	217							100	7																											
Cyperus vaginatus	32	60	115	217						67	100	7		5		8		50						25															
Sesbania cannabina	32	60	115	217							100	21																											
Melaleuca glomerata	32	60	115	217						67	100	7			10			17																					
Eucalyptus camaldulensis var. obtusa	32	60	115	217						100	100	7		5	90			17																					
Ammannia auriculata	32	60	115	218							100							17																					
Cullen lachnostachys	32	60	116	221								7	67	5	10																5			7					
Heliotropium crispatum	32	60	116	222	100				100					5																						11		100	
Corchorus crozophorifolius	33	62	121	230	100											8		33											4			2				22	25		
Alternanthera nana	33	62	121	230								29	33	89		33		33												4	16	8	2				50		
Tephrosia rosea var. glabrior	33	62	121	230								7	100	32	30	33	25	33													5		6	10		22			
Amaranthus undulatus	33	62	121	230					100			21																	2			2							
Eremophila longifolia	33	62	121	232						33			33	26	20	17	25	17	100						8			2			32	8	18	13		11			
Themeda triandra	33	62	121	233			100					14		26		8		33						25					2			4	2			33	25		
Acacia citrinoviridis	33	62	121	233						33				37	20	33	25	50	100								28	4	10			29	2	3	100	78			
Gossypium robinsonii	33	62	121	233						67	100	21	33	74	20	75	50	83						50			22	6	15		11	16	8	3		56			
Jasminum didymum subsp. lineare	33	62	121	233				50	100	33		14		63	10	8	25	33	100						8			7	38	4	16	37	16	27		67			
Clerodendrum floribundum var. angustifolium	33	62	121	233				50	100					5		8													6			4	2	3		22			
Abutilon dioicum	33	62	121	233		17			100				33	5		8													10			4				44	50		
Cucumis maderaspatanus	33	63	122	234						33		29	67	58	40	17		67						25		33		2	4	4		29	4		100	11	50		
Boerhavia coccinea	33	63	122	234					100			36	100	26				17											4		32	6	2	3					
Cleome viscosa	33	63	122	234	100	83			100		100	64	100	95	20	17	25	100			50								6	11	84	47	10	40		33	25	100	
Euphorbia coghlanii	33	63	122	234						33		50		89	20	17															16	10	2			22			
Evolvulus alsinoides var. villosicalyx	33	63	122	234								50		74		8												2		7	37	8	4			11		100	
Pterocaulon sphaeranthoides	33	63	122	234							100	7		53	10	50		67										2	2	4	16	31		3					
Rhynchosia minima var. australis	33	63	122	234		17						36		53		33		17						100							37	10	2	13		11		100	
Phyllanthus maderaspatensis	33	63	122	234		17					100	36		16	10			83													11	4		3		11			
Cenchrus ciliaris	33	63	122	234						33	100	93	67	53	50	42	75	67				100						4		4	16	2	16	10					
Indigofera colutea	33	63	122	234								29	100	11		17															16	2		3					
Acacia pyrifolia var. pyrifolia	33	63	122	234		17				67		71	100	63	70	67	75	100						25			6		2	4	26	2	8	20					
Hybanthus aurantiacus	33	63	122	234								71	33	26		25		50										2			11	2	2			22			
Cymbopogon ambiguus	33	63	122	234		17		50	100			14		21	10	25	25	83						75				2	21	7	5	24	10		100	89	75		
Gomphrena cunninghamii	33	63	122	234	100	83			100			71		16				33											13	7	32	22				11	75		
Polycarpaea longiflora	33	63	122	234	100	83			100			57		16			25	17			50			25				7	2		16	18	2	7	100	56	100		
Trichodesma zeylanicum var. zeylanicum	33	63	122	234	100	83	100		100			86	33	47		33	25	33						25			6	17	23	61	47	80	16	7		67			
Trachymene oleracea subsp. oleracea	33	63	122	234		67					100	29		11				67									6			11		22				56	25		
Pterocaulon sphacelatum	33	63	122	234								7		5	10	17		67											4	7	11	14		3		22	25		
Abutilon fraseri	33	63	122	235					100																	33													
Streptoglossa decurrens	33	63	122	235	100	17						21	33	5		8											11	2	4	18	16	8	2	3		33			25
Eriachne benthamii	33	63	123	236								14																										100	
Malvastrum americanum	33	63	123	237						33		21		79	10	42		17													11	4	10	7		11		100	
Sporobolus australasicus	33	63	123	237		33			100			86	100	63		8		33				100									47	8	4	3				100	
Portulaca oleracea	33	63	123	237		50						57	100	37		8					50				8	33		2		4	68	4		3				100	25
Salsola tragus	33	63	123	237	100	17						36				8															32	4	10	3			25		
Cucumis melo subsp. agrestis	33	63	123	237							100	36		5															2		11	4				22			
Dactyloctenium radulans	33	63	123	239								43	67	11																								100	
Indigofera linifolia	33	63	123	239								71		11										25														100	
Sida arsiniata	33	63	124	240								21	33	21														4	4		68	18	4	40					
Abutilon trudgenii	33	63	124	240		17			100			21		5		8									8						47	20	2	7					
Amaranthus cuspidifolius	33	63	124	240							100	14	33	37				67								33			4		42	16	4			11	25		
Leptopus decaisnei var. orbicularis	33	63	124	240	100							64	33	53																	11	6				33			
Trianthema pilosa	33	63	124	240									67	5																	21			7					
Tribulus hirsutus	33	63	124	240		50			100			7																			5	2							
Corymbia candida	33	63	124	241										5	50		100		100						8						11		10						
Indigofera monophylla (BRO 46-12)	33	63	124	242		17			100			21						33									6	2		4						22			
Solanum gabrielae	34	64	125	245					100																							2							
Euphorbia tannensis subsp. eremophila (Burrup form)	34	64	125	246		17					100																												
Triumfetta clementii	34	64	125	246		83			100			79		26			25	17						25		33		9		4	32	37	4	3		11			
Gossypium australe (Whim Creek form)	35	67	132	254					100																					4									

				M sites										7	1			1		1					1	1	18	16	36	21	3	44	2	7		9	1		1
				# sites	1	6	1	2	1	3	1	14	3	19	10	12	4	6	1	1	2	1	2	4	13	3	18	54	48	28	19	51	50	30	1	9	4	1	4
				gp50	1	1	1	2	4	6	7	8	8	8	8	8	8	8	13	13	13	14	15	16	16	16	17	17	17	17	18	18	19	19	21	21	21	32	45
				gp100	1	2	3	7	13	20	22	24	24	24	25	25	25	26	33	34	35	38	39	41	41	41	42	42	42	42	43	43	44	44	46	47	47	63	94
NAME	gp50	gp100	gp200	gp400	4	5	9	17	28	39	43	47	48	49	50	51	52	53	66	68	71	79	80	85	86	87	88	89	90	91	92	93	94	95	100	102	103	134	186
Sida pilbarensis (ferruginous form)	35	67	133	258												8					100				8		28	7	8	71	16	20		10	100				
Dodonaea coriacea	35	67	133	258																100			50		15		11	9	15	25		10	6	3	100		25		
Acacia atkinsiana	35	67	133	258		17						7		26	20		25				50		100		31			61	40	29	32	6	50	37		11			25
Senna glutinosa subsp. glutinosa	35	67	133	258	100	67			100			43		5	10		25				50		50	25	38	33	72	61	77	43	11	75	28	17	100	67	100		25
Eriachne mucronata (typical form)	35	67	133	258	100									11		8		17		100				25	8		6	6	27	14		20		3	100	78	50		
Goodenia stobbsiana	35	67	133	258		17				33				5							50						6	6	4	21		10			100				
Eucalyptus leucophloia subsp. leucophloia	35	67	133	258										11			25		100		100			25	8		56	19	79	25	11	35	2	3	100	89	25		25
Ptilotus calostachyus var. calostachyus	35	67	133	258		33						7		21				17		100	100		100		23	33	61	59	42	86	32	55	8	17		22	50		
Senna glutinosa subsp. pruinosa	35	67	133	258		50		50				21		5						100			50	25	15		22	37	33	39	11	53	10	13	100	22	25		25
Gossypium australe (Burrup Peninsula form)	35	67	133	259			100		100			29	100	79	80	75		67						25			22	24	23	25	79	65	56	97		22			
Acacia ancistrocarpa	35	67	133	259		83	100	50		33		50		68	30	67	25		100	100			100	50	46		67	96	33	61	89	41	88	73		11			
Ptilotus astrolasius var. astrolasius	35	67	133	259		17	100					14	100	68	10	8		33			100		100		23		56	43	48	93	89	76	60	90		33			25
Acacia inaequilatera	35	67	133	259		33			100			36		37	10	25									15		11	59	40	50	74	57	78	73	100	11			50
Grevillea wickhamii	35	67	133	259				100				14	33	11	20	25	25	33					50		8		33	33	23	18	32	25	32	27		56			
Acacia tumida var. pilbarensis	35	67	133	259								21		53		25	100	67						25			61	41	4	4	16	22	32	10		44			
Triodia wiseana	35	67	133	259	100	100		100	100	33		79		42	20	8	75	33		100	100	100	100	100	100	100	100	98	98	96	47	92	68	20	100	100	100		
Acacia bivenosa	35	67	133	259		33		50	100	33		93		89	20	33	75	33	100	100	50	100	100	100	92	67	83	94	81	96	74	88	88	43		78			50
Senna artemisioides subsp. oligophylla	35	67	133	259		33						43		79	60	8	50	17				100		25			39	4	15	21	68	55	66	50		44		100	25
Corymbia hamersleyana	35	67	133	259	100	17	100	50				21	33	84	10	42	100			100			50	25	46		6	17	15	14	63	20	62	67	100	11			
Hakea lorea subsp. lorea	35	67	133	259		17	100	50				21	33	21	40	8						100			8			15	2	21	47	18	50	63		11			25
Acacia arida	35	67	133	259	100	50		50				29		11													100	7	2			18	2			11			
Petalostylis labicheoides	35	67	133	259		17						7		21	20		75								8		78	11	25	32	5	22	4			33			
Acacia synchronicia	35	67	133	259		33						43		21	30	17				100	100			25	100	100	11	26	27	50	42	39	64	37	100		25		75
Euphorbia australis	35	67	133	259		33						7	67	26		25							50				6	4		7	26	47	10	3					
Solanum diversiflorum	35	67	133	259		33			100			64		37		33		17			50		50		8	33		9	2	21	63	71	12	47		11			
Oldenlandia crouchiana	35	67	133	259		83			100			21		11															2		5	12							
Aristida holathera var. holathera	35	67	133	259					100					5				17													11	2	2	3					
Bulbostylis barbata	35	67	133	259		67				33		36	100	21				17												4	26	14		23					
Senna notabilis	35	67	133	259		17						43	33	37	10			33					100					6	10	36	47	55	2	30		33	25		
Mollugo molluginis	35	67	133	259		17						7	33	26							100		50					6	2		42	4		20					
Triodia epactia	35	67	133	259								29	100	84	90	83		100						25	31		11	30	2	14	95	33	72	100		33			100
Polycarpaea holtzei	35	67	133	259		67						14									100							6				12							
Haloragis gossei var. gossei	36	68	134	260	100																		50					4		4		6							
Ptilotus auriculifolius	36	68	134	260	100	83						21		5													6		2		11	16							
Dysphania rhadinostachya subsp. rhadinostachya	36	68	134	260		33			100			7	33	68		8		33			50		50					2	19	25	58	69	4	7		33	25		
Acacia adsurgens	36	68	134	261															100										2							11			
Solanum sturtianum	36	68	134	261	100									21		17											6	4	4	4	5	14	2			22			25
Senna glutinosa subsp. luerssenii	36	68	134	262		50						21									50			25	23	100	6	9	19	39	16	51	8	20		22			50
Acacia pruinocarpa	36	68	134	262												8				100					8		17	7	60	29		41				56	25		
Triodia pungens	36	68	134	262			100												100													4							
Ptilotus obovatus	36	68	134	262								7		37		8													6	7	5	25	2			33	75		25
Solanum lasiophyllum	36	68	134	262		17		100				50		16									50		31		17	15	17	14	21	49	8	7		11			100
Ptilotus exaltatus var. exaltatus	36	68	134	262		17						79		32	20								50		38		11	15	6	43	37	37	6	7		11	25	100	50
Brachyachne prostrata	37	71	145	288								7		5											8	67													
Sclerolaena densiflora	37	71	145	288																			50			33		4	2		16			3				100	50
Acacia xiphophylla	37	71	145	288								21		5								100		50	69	100		2			11	6	2	7				100	
Dysphania melanocarpa forma melanocarpa	39	78	155	306							100			37																						11			
Setaria dielsii	39	78	155	306								7		21																								100	
Dichanthium sericeum subsp. humilius	39	79	156	311								7		5								100																100	
Enneapogon caerulescens	39	79	157	314	100							21		21																4	16	10	2			11		100	
Ptilotus aervoides	39	79	157	314		50						7		5																	11	4		3				100	
Heliotropium inexplicitum	39	79	157	316																												2						100	
Eragrostis tenellula	39	82	162	328							100																					2							
Centipeda minima subsp. macrocephala	39	82	162	328							100			5																									
Senna artemisioides subsp. helmsii	40	83	164	331		17								5	10				100								6	4				10				11			
Dysphania kalpari	40	83	164	331							100			5							50											2		3					
Ptilotus helipteroides var. helipteroides	40	83	164	331		33						43										100																	
Cheilanthes austrotenuifolia	50	100	198	396					100																				2			2							

Appendix 7 Main Species in 600-group classification which were present in API

all = % of sites from the regional study that species was present.
Species displayed are those >50% in either **all** or **API**.

API = % of sites from the API study that species was present
A # = # of sites from the API study that species was present

200	600	NAME	all	API	A #
4	17	Cleome viscosa	100	100	1
4	17	Triodia wiseana	100	100	1
4	17	Ptilotus incanus var. incanus	100	100	1
4	17	Tribulus platypterus	100	100	1
4	17	Trichodesma zeylanicum var. zeylanicum	100	100	1
4	17	Indigofera rugosa	100	100	1
4	17	Acacia arida	67	100	1
4	17	Polycarpaea longiflora	67	100	1
4	17	Oldenlandia sp. Mt Montagu (MET 15,027)	67		
4	17	Hibiscus aff. coatesii (MET 15 305)	67		
4	17	Gomphrena cunninghamii	67	100	1
4	17	Senna notabilis	67		
4	17	Cullen lachnostachys	67		
4	17	Ptilotus auriculifolius	67	100	1
4	17	Corymbia hamersleyana	67	100	1
4	17	Tephrosia supina	67		
4	17	Crotalaria novae-hollandiae subsp. novae-hollandiae	67		
4	17	Corchorus laniflorus	67	100	1
4	17	Abutilon dioicum	67		
4	17	Solanum horridum	67		
4	17	Eriachne mucronata (typical form)	33	100	1
4	17	Streptoglossa decurrens	33	100	1
4	17	Solanum sturtianum	33	100	1
4	17	Stylobasium spathulatum	33	100	1
4	17	Senna glutinosa subsp. glutinosa	33	100	1
4	17	Enneapogon caerulescens	33	100	1
4	17	Salsola tragus	33	100	1
4	17	Terminalia canescens	33	100	1
4	17	Flaveria australasica subsp. australasica	33	100	1
4	17	Corchorus crozophorifolius	33	100	1
4	17	Leptopus decaisnei var. orbicularis	33	100	1
4	17	Heliotropium crispatum	33	100	1
4	17	Haloragis gossei var. gossei	33	100	1

200	600	NAME	all	API	A #
5	20	Cleome viscosa	100	100	4
5	20	Gomphrena cunninghamii	100	100	4
5	20	Polycarpaea longiflora	100	100	4
5	20	Polycarpaea holtzei	100	100	4
5	20	Trichodesma zeylanicum var. zeylanicum	100	100	4
5	20	Oldenlandia crouchiana	100	100	4
5	20	Triodia wiseana	100	100	4
5	20	Portulaca oleracea	75	75	3
5	20	Acacia ancistrocarpa	75	75	3
5	20	Ptilotus auriculifolius	75	75	3
5	20	Triumfetta clementii	75	75	3
5	20	Heliotropium heteranthum	75	75	3
5	20	Bulbostylis barbata	75	75	3
5	20	Corchorus laniflorus	75	75	3
5	20	Iseilema dolichotrichum	75	75	3
5	20	Tephrosia aff. clementii (8) (HD106)	75	75	3
5	20	Eriachne pulchella	75	75	3
5	20	Tribulus hirsutus	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
5	21	Triumfetta clementii	100	100	2
5	21	Senna glutinosa subsp. pruinosa	100	100	2
5	21	Triodia wiseana	100	100	2
5	21	Euphorbia australis	100	100	2
5	21	Acacia ancistrocarpa	100	100	2
5	21	Ptilotus auriculifolius	67	100	2
5	21	Cymbopogon ambiguus	67	50	1
5	21	Sida aff. echinocarpa (MET 15,350)	67	50	1
5	21	Bulbostylis barbata	67	50	1
5	21	Acacia arida	67	100	2
5	21	Hakea lorea subsp. lorea	67	50	1
5	21	Acacia inaequilatera	67	50	1
5	21	Trachymene oleracea subsp. oleracea	67	100	2

5	21	Tribulus suberosus	67	50	1
5	21	Corymbia hamersleyana	67	50	1
5	21	Senna glutinosa subsp. glutinosa	67	100	2
5	21	Tephrosia uniovulata	67	100	2
5	21	Dysphania rhadinostachya subsp. rhadinostachya	67	50	1
5	21	Indigofera monophylla (grey leaflet form)	67	50	1
5	21	Senna glutinosa subsp. luerssenii	67	50	1
200	**600**	**NAME**	**all**	**API**	**A #**
9	33	Grevillea pyramidalis subsp. leucadendron	100	100	1
9	33	Trichodesma zeylanicum var. zeylanicum	100	100	1
9	33	Triodia wiseana	80		
9	33	Corymbia hamersleyana	80	100	1
9	33	Themeda triandra	40	100	1
9	33	Acacia ancistrocarpa	40	100	1
9	33	Acacia trachycarpa	20	100	1
9	33	Sida pilbarensis (green form)	20	100	1
9	33	Gossypium australe (Burrup Peninsula form)	20	100	1
9	33	Stemodia grossa	20	100	1
9	33	Hakea lorea subsp. lorea	20	100	1
9	33	Ptilotus astrolasius var. astrolasius	20	100	1
9	33	Triodia pungens	20	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
17	60	Triodia wiseana	100	100	1
17	60	Solanum horridum	100	100	1
17	60	Solanum lasiophyllum	100	100	1
17	60	Corymbia hamersleyana	75	100	1
17	60	Grevillea pyramidalis subsp. leucadendron	75		
17	60	Corchorus laniflorus	75		
17	60	Hakea lorea subsp. lorea	75	100	1
17	60	Senna glutinosa subsp. pruinosa	50	100	1
17	60	Hibiscus aff. coatesii (site 751)	50	100	1
17	60	Acacia bivenosa	25	100	1
17	60	Jasminum didymum subsp. lineare	25	100	1
17	60	Grevillea wickhamii	25	100	1
17	60	Acacia maitlandii	25	100	1
17	60	Dampiera candicans	25	100	1
17	60	Keraudrenia nephrosperma	25	100	1
17	60	Acacia ancistrocarpa	25	100	1
17	60	Triodia sp. Robe River	25	100	1

200	**600**	**NAME**	**all**	**API**	**A #**
17	63	Cyperus cunninghamii subsp. cunninghamii	100	100	1
17	63	Triumfetta appendiculata	100	100	1
17	63	Corchorus parviflorus	100	100	1
17	63	Triodia wiseana	100	100	1
17	63	Terminalia supranitifolia	100	100	1
17	63	Acacia arida	100	100	1
17	63	Clerodendrum floribundum var. angustifolium	100	100	1
17	63	Clerodendrum tomentosum var. lanceolatum	100	100	1
17	63	Cymbopogon ambiguus	100	100	1
17	63	Solanum lasiophyllum	100	100	1
17	63	Grevillea wickhamii	100	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
28	94	Abutilon fraseri	100	100	1
28	94	Terminalia canescens	100	100	1
28	94	Boerhavia coccinea	100	100	1
28	94	Operculina aequisepala	100	100	1
28	94	Solanum diversiflorum	100	100	1
28	94	Gomphrena cunninghamii	100	100	1
28	94	Acacia bivenosa	100	100	1
28	94	Jasminum didymum subsp. lineare	100	100	1
28	94	Cymbopogon ambiguus	100	100	1
28	94	Heliotropium crispatum	100	100	1
28	94	Polycarpaea longiflora	100	100	1
28	94	Dysphania rhadinostachya subsp. rhadinostachya	100	100	1
28	94	Oldenlandia crouchiana	100	100	1
28	94	Sporobolus australasicus	100	100	1
28	94	Trichodesma zeylanicum var. zeylanicum	100	100	1
28	94	Triodia wiseana	100	100	1
28	94	Flueggea virosa subsp. melanthesoides	100	100	1
28	94	Gossypium australe (Whim Creek form)	100	100	1
28	94	Trichosanthes cucumerina var. cucumerina	100	100	1
28	94	Euphorbia sp. (M80-1)	100	100	1
28	94	Gossypium australe (Burrup Peninsula form)	100	100	1
28	94	Passiflora foetida var. hispida	100	100	1
28	94	Senna glutinosa subsp. glutinosa	100	100	1
28	94	Cheilanthes austrotenuifolia	100	100	1
28	94	Abutilon trudgenii	100	100	1
28	94	Paspalidium tabulatum (Whim Creek form)	100	100	1
28	94	Tribulus hirsutus	100	100	1

28	94	Abutilon aff. dioicum (HD72-14)	100	100	1
28	94	Clerodendrum floribundum var. angustifolium	100	100	1
28	94	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	100	100	1
28	94	Aristida holathera var. holathera	100	100	1
28	94	Indigofera monophylla (BRO 46-12)	100	100	1
28	94	Solanum gabrielae	100	100	1
28	94	Triumfetta clementii	100	100	1
28	94	Cleome viscosa	100	100	1
28	94	Amaranthus undulatus	100	100	1
28	94	Abutilon dioicum	100	100	1
28	94	Acacia inaequilatera	100	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
39	115	Acacia farnesiana	100	100	1
39	115	Jasminum didymum subsp. lineare	100	100	1
39	115	Eremophila longifolia	100	100	1
39	115	Corchorus parviflorus	100	100	1
39	115	Cenchrus ciliaris	100	100	1
39	115	Bulbostylis barbata	100	100	1
39	115	Euphorbia coghlanii	100	100	1
39	115	Waltheria indica	100	100	1
39	115	Gossypium robinsonii	100	100	1
39	115	Eucalyptus camaldulensis var. obtusa	100	100	1
39	115	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	100	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
39	116	Cyperus vaginatus	100	100	2
39	116	Acacia pyrifolia var. pyrifolia	100	100	2
39	116	Eucalyptus camaldulensis var. obtusa	100	100	2
39	116	Melaleuca glomerata	100	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
43	129	Goodenia lamprosperma	100	100	1
43	129	Phyllanthus maderaspatensis	100	100	1
43	129	Stemodia grossa	100	100	1
43	129	Cleome viscosa	100	100	1
43	129	Cyperus vaginatus	100	100	1
43	129	Pluchea rubelliflora	100	100	1
43	129	Acacia trachycarpa	100	100	1
43	129	Sesbania cannabina	100	100	1
43	129	Melaleuca glomerata	100	100	1
43	129	Pterocaulon sphaeranthoides	100	100	1

43	129	Dysphania melanocarpa forma melanocarpa	100	100	1
43	129	Eucalyptus camaldulensis var. obtusa	100	100	1
43	129	Eragrostis tenellula	67	100	1
43	129	Cenchrus ciliaris	67	100	1
43	129	Dysphania rhadinostachya subsp. rhadinostachya	67		
43	129	Gossypium robinsonii	67	100	1
43	129	Hybanthus aurantiacus	67		
43	129	Cyperus difformis	67	100	1
43	129	Bulbostylis barbata	67		
43	129	Vigna lanceolata var. lanceolata	67	100	1
43	129	Petalostylis labicheoides	67		
43	129	Euphorbia coghlanii	67		
43	129	Cyperus bifax	67	100	1
43	129	Argemone ochroleuca subsp. ochroleuca	67	100	1
43	129	Triodia epactia	67		
43	129	Citrullus colocynthis	67	100	1
43	129	Trachymene oleracea subsp. oleracea	67	100	1
43	129	Amaranthus undulatus	67		
43	129	Melaleuca argentea	33	100	1
43	129	Ammannia auriculata	33	100	1
43	129	Eriochloa pseudoacrotricha	33	100	1
43	129	Helichrysum luteoalbum	33	100	1
43	129	Cucumis melo subsp. agrestis	33	100	1
43	129	Typha domingensis	33	100	1
43	129	Dysphania kalpari	33	100	1
43	129	Amaranthus cuspidifolius	33	100	1
43	129	Euphorbia tannensis subsp. eremophila (Burrup form)	33	100	1
43	129	Euphorbia sp. (B170-4)	33	100	1
43	129	Flaveria australasica subsp. australasica	33	100	1
43	129	Centipeda minima subsp. macrocephala	33	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
47	138	Acacia bivenosa	100	100	4
47	138	Hybanthus aurantiacus	100	100	4
47	138	Indigofera linifolia	100	100	4
47	138	Leptopus decaisnei var. orbicularis	100	100	4
47	138	Acacia pyrifolia var. pyrifolia	100	100	4
47	138	Tephrosia rosea var. clementii	100	100	4
47	138	Eucalyptus victrix	100	100	4
47	138	Cenchrus ciliaris	100	100	4
47	138	Triumfetta appendiculata	75	75	3

47	138	Cleome viscosa	75	75	3
47	138	Sporobolus australasicus	75	75	3
47	138	Indigofera monophylla	75	75	3
47	138	Solanum diversiflorum	75	75	3
47	138	Polycarpaea longiflora	75	75	3
47	138	Trichodesma zeylanicum var. zeylanicum	75	75	3
47	138	Acacia trachycarpa	75	75	3
47	138	Grevillea pyramidalis subsp. leucadendron	75	75	3
47	138	Triumfetta clementii	75	75	3
47	138	Gomphrena cunninghamii	75	75	3
47	138	Sesbania cannabina	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
47	139	Triodia wiseana	100	100	7
47	139	Cenchrus ciliaris	100	100	7
47	139	Acacia bivenosa	100	100	7
47	139	Ptilotus exaltatus var. exaltatus	100	100	7
47	139	Sporobolus australasicus	100	100	7
47	139	Gomphrena cunninghamii	100	100	7
47	139	Cleome viscosa	85	85	6
47	139	Acacia pyrifolia var. pyrifolia	85	85	6
47	139	Indigofera linifolia	85	85	6
47	139	Trichodesma zeylanicum var. zeylanicum	85	85	6
47	139	Euphorbia coghlanii	85	85	6
47	139	Hibiscus sturtii var. platychlamys	85	85	6
47	139	Dactyloctenium radulans	71	71	5
47	139	Acacia ancistrocarpa	71	71	5
47	139	Polycarpaea longiflora	71	71	5
47	139	Portulaca oleracea	71	71	5
47	139	Evolvulus alsinoides var. villosicalyx	71	71	5
47	139	Triumfetta clementii	71	71	5
47	139	Solanum lasiophyllum	71	71	5
47	139	Tephrosia aff. supina (MET 12,357)	71	71	5
47	139	Ptilotus helipteroides var. helipteroides	71	71	5
47	139	Senna notabilis	71	71	5
47	139	Gomphrena affinis subsp. pilbarensis	57	57	4
47	139	Indigofera monophylla	57	57	4
47	139	Acacia trachycarpa	57	57	4
47	139	Goodenia microptera	57	57	4
47	139	Corchorus incanus subsp. incanus	57	57	4
47	139	Senna artemisioides subsp. oligophylla	57	57	4
47	139	Corchorus laniflorus	57	57	4
47	139	Acacia inaequilatera	57	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
47	140	Triumfetta clementii	100	100	3
47	140	Eriachne pulchella	100	100	3
47	140	Scaevola spinescens (broad form)	100	100	3
47	140	Senna glutinosa subsp. glutinosa	100	100	3
47	140	Trichodesma zeylanicum var. zeylanicum	100	100	3
47	140	Salsola tragus	100	100	3
47	140	Cassytha capillaris	100	100	3
47	140	Hybanthus aurantiacus	100	100	3
47	140	Solanum diversiflorum	100	100	3
47	140	Ptilotus exaltatus var. exaltatus	100	100	3
47	140	Aristida contorta	100	100	3
47	140	Triodia wiseana	100	100	3
47	140	Indigofera monophylla (BRO 46-12)	100	100	3
47	140	Sclerolaena diacantha	67	67	2
47	140	Bulbostylis barbata	67	67	2
47	140	Rhynchosia minima var. australis	67	67	2
47	140	Acacia xiphophylla	67	67	2
47	140	Sporobolus australasicus	67	67	2
47	140	Acacia bivenosa	67	67	2
47	140	Digitaria brownii	67	67	2
47	140	Yakirra australiensis var. australiensis	67	67	2
47	140	Eremophila forrestii subsp. forrestii	67	67	2
47	140	Acacia synchronicia	67	67	2
47	140	Trachymene oleracea subsp. oleracea	67	67	2
47	140	Leptopus decaisnei var. orbicularis	67	67	2
47	140	Euphorbia boophthona	67	67	2
47	140	Hibiscus burtonii	67	67	2
47	140	Evolvulus alsinoides var. decumbens	67	67	2
47	140	Cymbopogon ambiguus	67	67	2
47	140	Cenchrus ciliaris	67	67	2
200	**600**	**NAME**	**all**	**API**	**A #**
48	141	Triodia epactia	100	100	3
48	141	Grevillea pyramidalis subsp. leucadendron	100	100	3
48	141	Gossypium australe (Burrup Peninsula form)	100	100	3
48	141	Cleome viscosa	100	100	3
48	141	Tephrosia rosea var. glabrior	88	100	3
48	141	Bulbostylis barbata	88	100	3

48	141	Cenchrus ciliaris	88	67	2
48	141	Acacia pyrifolia var. pyrifolia	88	100	3
48	141	Boerhavia coccinea	88	100	3
48	141	Cenchrus setiger	88	67	2
48	141	Indigofera colutea	88	100	3
48	141	Corymbia hamersleyana	77	33	1
48	141	Dysphania rhadinostachya subsp. rhadinostachya	77	33	1
48	141	Senna notabilis	77	33	1
48	141	Sporobolus australasicus	77	100	3
48	141	Portulaca oleracea	67	100	3
48	141	Hybanthus aurantiacus	67	33	1
48	141	Ptilotus astrolasius var. astrolasius	67	100	3
48	141	Pentalepis trichodesmoides	67	67	2
48	141	Cucumis maderaspatanus	67	67	2
48	141	Sida arsiniata	55	33	1
48	141	Acacia trachycarpa	55	67	2
48	141	Stylobasium spathulatum	55	67	2
48	141	Ipomoea muelleri	55	67	2
48	141	Pterocaulon sphaeranthoides	55		
48	141	Gossypium robinsonii	55	33	1
48	141	Bonamia media var. villosa	55	33	1
48	141	Corchorus sidoides subsp. sidoides	55		
48	141	Hakea lorea subsp. lorea	55	33	1
48	141	Leptopus decaisnei var. orbicularis	55	33	1
48	141	Cullen lachnostachys	44	67	2
48	141	Euphorbia australis	44	67	2
48	141	Corchorus aff. parviflorus (JW011-11)	33	100	3
48	141	Yakirra australiensis var. australiensis	22	67	2
48	141	Tribulus occidentalis	22	67	2
48	141	Dactyloctenium radulans	22	67	2
48	141	Trianthema pilosa	22	67	2

200	**600**	**NAME**	**all**	**API**	**A #**
49	143	Cleome viscosa	99	100	10
49	143	Gossypium australe (Burrup Peninsula form)	99	100	10
49	143	Triodia epactia	91	90	9
49	143	Corymbia hamersleyana	91	90	9
49	143	Alternanthera nana	91	90	9
49	143	Malvastrum americanum	91	90	9
49	143	Acacia bivenosa	83	80	8
49	143	Euphorbia coghlanii	83	90	9
49	143	Acacia trachycarpa	75	70	7
49	143	Rhynchosia minima var. australis	75	70	7
49	143	Acacia pyrifolia var. pyrifolia	75	70	7
49	143	Ptilotus astrolasius var. astrolasius	67	70	7
49	143	Chrysopogon fallax	67	70	7
49	143	Sporobolus australasicus	67	70	7
49	143	Senna artemisioides subsp. oligophylla	67	70	7
49	143	Jasminum didymum subsp. lineare	67	60	6
49	143	Evolvulus alsinoides var. villosicalyx	67	70	7
49	143	Gossypium robinsonii	67	60	6
49	143	Waltheria indica	67	70	7
49	143	Acacia inaequilatera	58	60	6
49	143	Acacia ancistrocarpa	58	60	6
49	143	Goodenia forrestii	58	60	6
49	143	Indigofera boviperda subsp. boviperda	58	70	7
49	143	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/1990 PN	50	60	6
49	143	Indigofera monophylla	50	60	6

200	**600**	**NAME**	**all**	**API**	**A #**
49	144	Trichodesma zeylanicum var. zeylanicum	100	100	9
49	144	Acacia bivenosa	100	100	9
49	144	Dysphania rhadinostachya subsp. rhadinostachya	100	100	9
49	144	Alternanthera nana	88	88	8
49	144	Cleome viscosa	88	88	8
49	144	Senna artemisioides subsp. oligophylla	88	88	8
49	144	Gossypium robinsonii	88	88	8
49	144	Euphorbia coghlanii	88	88	8
49	144	Evolvulus alsinoides var. villosicalyx	77	77	7
49	144	Triodia epactia	77	77	7
49	144	Acacia tumida var. pilbarensis	77	77	7
49	144	Corymbia hamersleyana	77	77	7
49	144	Acacia ancistrocarpa	77	77	7
49	144	Acacia citrinoviridis	77	77	7
49	144	Stylobasium spathulatum	67	67	6
49	144	Streptoglossa bubakii	67	67	6
49	144	Solanum diversiflorum	67	67	6
49	144	Malvastrum americanum	67	67	6
49	144	Ptilotus astrolasius var. astrolasius	67	67	6
49	144	Jasminum didymum subsp. lineare	67	67	6
49	144	Crotalaria medicaginea	67	67	6
49	144	Cucumis maderaspatanus	67	67	6

49	144	Cenchrus ciliaris	67	67	6
49	144	Pterocaulon sphaeranthoides	55	55	5
49	144	Dysphania melanocarpa forma melanocarpa	55	55	5
49	144	Acacia pyrifolia var. pyrifolia	55	55	5
49	144	Ptilotus exaltatus var. exaltatus	55	55	5
49	144	Goodenia forrestii	55	55	5
49	144	Ptilotus obovatus	55	55	5
49	144	Gossypium australe (Burrup Peninsula form)	55	55	5
49	144	Ptilotus fusiformis var. fusiformis	55	55	5
49	144	Sporobolus australasicus	55	55	5
49	144	Amaranthus cuspidifolius	55	55	5
49	144	Mollugo molluginis	55	55	5
49	144	Leptopus decaisnei var. orbicularis	55	55	5
200	**600**	**NAME**	**all**	**API**	**A #**
50	146	Cucumis maderaspatanus	100	100	3
50	146	Corymbia candida	100	100	3
50	146	Triodia epactia	100	100	3
50	146	Senna artemisioides subsp. oligophylla	100	100	3
50	146	Acacia bivenosa	67	67	2
50	146	Hakea lorea subsp. lorea	67	67	2
50	146	Acacia ancistrocarpa	67	67	2
50	146	Eucalyptus camaldulensis var. obtusa	67	67	2
50	146	Gossypium australe (Burrup Peninsula form)	67	67	2
50	146	Acacia atkinsiana	67	67	2
50	146	Ptilotus exaltatus var. exaltatus	67	67	2
200	**600**	**NAME**	**all**	**API**	**A #**
50	147	Acacia pyrifolia var. pyrifolia	100	100	7
50	147	Eucalyptus camaldulensis var. obtusa	100	100	7
50	147	Gossypium australe (Burrup Peninsula form)	85	85	6
50	147	Acacia trachycarpa	85	85	6
50	147	Triodia epactia	85	85	6
50	147	Cenchrus ciliaris	71	71	5
200	**600**	**NAME**	**all**	**API**	**A #**
51	148	Acacia citrinoviridis	100	100	4
51	148	Gossypium robinsonii	100	100	4
51	148	Gossypium australe (Burrup Peninsula form)	75	75	3
51	148	Corymbia hamersleyana	75	75	3
51	148	Triodia epactia	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
51	149	Triodia epactia	100	100	2
51	149	Acacia bivenosa	100	100	2
51	149	Acacia ancistrocarpa	100	100	2
51	149	Stylobasium spathulatum	100	100	2
51	149	Pterocaulon sphaeranthoides	100	100	2
51	149	Solanum diversiflorum	100	100	2
51	149	Gossypium robinsonii	100	100	2
51	150	Triodia epactia	100	100	3
51	150	Tephrosia rosea var. glabrior	100	100	3
51	150	Acacia pyrifolia var. pyrifolia	100	100	3
51	150	Pterocaulon sphaeranthoides	100	100	3
51	150	Grevillea pyramidalis subsp. leucadendron	100	100	3
51	150	Alternanthera nana	67	67	2
51	150	Malvastrum americanum	67	67	2
51	150	Acacia inaequilatera	67	67	2
51	150	Acacia tumida var. pilbarensis	67	67	2
51	150	Gossypium australe (Burrup Peninsula form)	67	67	2
51	150	Acacia ancistrocarpa	67	67	2
200	**600**	**NAME**	**all**	**API**	**A #**
51	151	Acacia tumida var. pilbarensis	100	100	1
51	151	Hybanthus aurantiacus	100	100	1
51	151	Waltheria indica	100	100	1
51	151	Abutilon trudgenii	100	100	1
51	151	Corchorus sidoides subsp. sidoides	100	100	1
51	151	Indigofera colutea	100	100	1
51	151	Grevillea wickhamii	100	100	1
51	151	Alternanthera nana	100	100	1
51	151	Ptilotus obovatus	100	100	1
51	151	Grevillea pyramidalis subsp. leucadendron	100	100	1
51	151	Stylobasium spathulatum	100	100	1
51	151	Clerodendrum floribundum var. angustifolium	100	100	1
51	151	Corymbia ferriticola subsp. ferriticola	100	100	1
51	151	Acacia pyrifolia var. pyrifolia	100	100	1
51	151	Boerhavia gardneri	100	100	1
51	151	Ipomoea muelleri	100	100	1
51	151	Gossypium australe (Burrup Peninsula form)	100	100	1
51	151	Cenchrus ciliaris	100	100	1
51	151	Abutilon aff. lepidum (1) (MET 15 352)	100	100	1
51	151	Eriachne mucronata (typical form)	100	100	1
51	151	Trichodesma zeylanicum var. zeylanicum	100	100	1

51	151	Pterocaulon sphacelatum	100	100	1
51	151	Goodenia forrestii	100	100	1
51	151	Eremophila longifolia	100	100	1
51	151	Solanum diversiflorum	100	100	1
51	151	Solanum sturtianum	100	100	1
51	151	Gossypium robinsonii	100	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
51	152	Rhynchosia minima var. australis	100	100	2
51	152	Euphorbia australis	100	100	2
51	152	Trichodesma zeylanicum var. zeylanicum	100	100	2
51	152	Acacia ancistrocarpa	100	100	2
51	152	Gossypium australe (Burrup Peninsula form)	100	100	2
51	152	Corchorus incanus subsp. incanus	100	100	2
51	152	Euphorbia boophthona (Large seed form)	100	100	2
51	152	Triodia epactia	100	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
52	153	Corymbia hamersleyana	100	100	4
52	153	Acacia tumida var. pilbarensis	100	100	4
52	153	Corymbia candida	100	100	4
52	153	Acacia trachycarpa	75	75	3
52	153	Acacia bivenosa	75	75	3
52	153	Acacia pyrifolia var. pyrifolia	75	75	3
52	153	Cenchrus ciliaris	75	75	3
52	153	Petalostylis labicheoides	75	75	3
52	153	Triodia wiseana	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
53	155	Cleome viscosa	100	100	2
53	155	Acacia tumida var. pilbarensis	100	100	2
53	155	Themeda triandra	100	100	2
53	155	Cenchrus ciliaris	75	50	1
53	155	Acacia bivenosa	75	50	1
53	155	Phyllanthus maderaspatensis	75	100	2
53	155	Grevillea wickhamii	75	100	2
53	155	Gossypium australe (Burrup Peninsula form)	75	100	2
53	155	Acacia pyrifolia var. pyrifolia	75	100	2
53	155	Tephrosia rosea var. glabrior	75	50	1
53	155	Triodia epactia	75	100	2
53	155	Pterocaulon sphaeranthoides	75	50	1
53	155	Trichodesma zeylanicum var. zeylanicum	75	50	1
53	155	Rhynchosia minima var. australis	75	50	1
53	155	Stylobasium spathulatum	50	100	2
53	155	Cymbopogon ambiguus	50	100	2
53	155	Sida rohlenae subsp. rohlenae	50	100	2
53	155	Ptilotus astrolasius var. astrolasius	50	100	2
53	155	Gossypium robinsonii	50	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
53	159	Stemodia grossa	100	100	4
53	159	Triodia epactia	100	100	4
53	159	Eucalyptus victrix	100	100	4
53	159	Acacia pyrifolia var. pyrifolia	100	100	4
53	159	Cleome viscosa	100	100	4
53	159	Ipomoea muelleri	100	100	4
53	159	Phyllanthus maderaspatensis	80	75	3
53	159	Cenchrus ciliaris	80	75	3
53	159	Amaranthus cuspidifolius	80	100	4
53	159	Pterocaulon sphaeranthoides	80	75	3
53	159	Cyperus vaginatus	80	75	3
53	159	Argemone ochroleuca subsp. ochroleuca	80	75	3
53	159	Trachymene oleracea subsp. oleracea	80	100	4
53	159	Pluchea dentex	80	75	3
53	159	Gomphrena cunninghamii	60	50	2
53	159	Hybanthus aurantiacus	60	75	3
53	159	Cucumis maderaspatanus	60	75	3
53	159	Indigofera monophylla (BRO 46-12)	60	50	2
53	159	Gossypium robinsonii	60	75	3
53	159	Cymbopogon ambiguus	60	75	3
53	159	Pterocaulon sphacelatum	60	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
67	188	Acacia bivenosa	100	100	1
67	188	Triodia pungens	100	100	1
67	188	Cassia glutinosa	75		
67	188	Eucalyptus leucophloia subsp. leucophloia	75	100	1
67	188	Acacia ancistrocarpa	50	100	1
67	188	Jasminum didymum subsp. lineare	50	100	1
67	188	Acacia citrinoviridis	25	100	1
67	188	Eremophila longifolia	25	100	1
67	188	Corymbia candida	25	100	1
67	188	Senna artemisioides subsp. helmsii	25	100	1
67	188	Acacia adsurgens	25	100	1

200	600	NAME	all	API	A #
68	195	Ptilotus calostachyus var. calostachyus	100	100	1
68	195	Senna glutinosa subsp. pruinosa	100	100	1
68	195	Triodia wiseana	100	100	1
68	195	Dodonaea coriacea	67	100	1
68	195	Cassia glutinosa	67		
68	195	Acacia pruinocarpa	67	100	1
68	195	Acacia ancistrocarpa	67	100	1
68	195	Acacia bivenosa	67	100	1
68	195	Eriachne mucronata (typical form)	67	100	1
68	195	Triodia sp. Robe River	67	100	1
68	195	Eucalyptus leucophloia subsp. leucophloia	67		
68	195	Acacia synchronicia	67	100	1
68	195	Cassytha capillaris	67		
68	195	Corymbia hamersleyana	33	100	1

200	600	NAME	all	API	A #
71	205	Eucalyptus leucophloia subsp. leucophloia	99	100	2
71	205	Eriachne pulchella	91	50	1
71	205	Triodia wiseana	91	100	2
71	205	Ptilotus calostachyus var. calostachyus	83	100	2
71	205	Acacia bivenosa	83	50	1
71	205	Mollugo molluginis	67	100	2
71	205	Ptilotus astrolasius var. astrolasius	67	100	2
71	205	Acacia synchronicia	33	100	2
71	205	Polycarpaea holtzei	25	100	2
71	205	Triodia sp. Robe River	16	100	2
71	205	Sida pilbarensis (ferruginous form)	16	100	2

200	600	NAME	all	API	A #
79	226	Sporobolus australasicus	100	100	1
79	226	Hakea lorea subsp. lorea	100	100	1
79	226	Acacia bivenosa	100	100	1
79	226	Acacia xiphophylla	100	100	1
79	226	Cenchrus ciliaris	100	100	1
79	226	Dichanthium sericeum subsp. humilius	100	100	1
79	226	Acacia farnesiana	100	100	1
79	226	Triodia wiseana	100	100	1
79	226	Senna artemisioides subsp. oligophylla	100	100	1
79	226	Ptilotus helipteroides var. helipteroides	100	100	1
79	226	Yakirra australiensis var. australiensis	100	100	1

79	226	Corchorus incanus subsp. incanus	100	100	1

200	600	NAME	all	API	A #
80	229	Acacia atkinsiana	100	100	2
80	229	Acacia bivenosa	100	100	2
80	229	Acacia ancistrocarpa	100	100	2
80	229	Senna notabilis	85	100	2
80	229	Triodia wiseana	71	100	2
80	229	Solanum diversiflorum	71	50	1
80	229	Goodenia microptera	71	50	1
80	229	Corchorus sidoides subsp. sidoides	57		
80	229	Eucalyptus leucophloia subsp. leucophloia	57		
80	229	Ptilotus astrolasius var. astrolasius	57	100	2
80	229	Sida cardiophylla	57		
80	229	Paraneurachne muelleri	57	50	1
80	229	Haloragis gossei var. gossei	57	50	1
80	229	Dodonaea coriacea	57	50	1
80	229	Indigofera monophylla (grey/green leaflet form)	57		
80	229	Ptilotus calostachyus var. calostachyus	57	100	2

200	600	NAME	all	API	A #
85	239	Themeda triandra	100	100	1
85	239	Acacia xiphophylla	100	100	1
85	239	Acacia bivenosa	100	100	1
85	239	Corymbia hamersleyana	100	100	1
85	239	Cymbopogon ambiguus	100	100	1
85	239	Rhynchosia minima var. australis	100	100	1
85	239	Gossypium robinsonii	50	100	1
85	239	Eucalyptus leucophloia subsp. leucophloia	50	100	1
85	239	Acacia tumida var. pilbarensis	50	100	1
85	239	Triodia wiseana	50	100	1

200	600	NAME	all	API	A #
85	240	Rhynchosia minima var. australis	100	100	2
85	240	Acacia bivenosa	100	100	2
85	240	Acacia ancistrocarpa	100	100	2
85	240	Triodia wiseana	100	100	2
85	240	Senna glutinosa subsp. luerssenii	67	50	1
85	240	Eriachne mucronata (typical form)	67	50	1
85	240	Acacia synchronicia	67	50	1
85	240	Cymbopogon ambiguus	67	100	2

200	600	NAME	all	API	A #

85	241	Duppereya commixta	100	100	1
85	241	Trichodesma zeylanicum var. zeylanicum	100	100	1
85	241	Chrysopogon fallax	100	100	1
85	241	Aristida contorta	100	100	1
85	241	Acacia bivenosa	100	100	1
85	241	Rhynchosia minima var. australis	50	100	1
85	241	Triodia wiseana	50	100	1
85	241	Acacia pyrifolia var. pyrifolia	50	100	1
85	241	Scaevola spinescens (broad form)	50	100	1
85	241	Senna glutinosa subsp. pruinosa	50	100	1
85	241	Acacia xiphophylla	50	100	1
85	241	Senna artemisioides subsp. oligophylla	50	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
86	242	Acacia synchronicia	100	100	7
86	242	Triodia wiseana	100	100	7
86	242	Acacia xiphophylla	85	85	6
86	242	Acacia bivenosa	85	85	6
86	242	Senna glutinosa subsp. glutinosa	71	71	5
86	242	Acacia atkinsiana	57	57	4
86	242	Maireana georgei	57	57	4
86	242	Ptilotus exaltatus var. exaltatus	57	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
86	243	Triodia wiseana	100	100	6
86	243	Acacia bivenosa	100	100	6
86	243	Acacia synchronicia	100	100	6
86	243	Corymbia hamersleyana	83	83	5
86	243	Triodia epactia	67	67	4
86	243	Acacia wanyu	67	67	4
200	**600**	**NAME**	**all**	**API**	**A #**
87	244	Acacia xiphophylla	85	100	3
87	244	Triodia wiseana	85	100	3
87	244	Senna glutinosa subsp. luerssenii	85	100	3
87	244	Brachyachne prostrata	85	67	2
87	244	Acacia synchronicia	71	100	3
87	244	Eriachne pulchella	57	33	1
87	244	Ptilotus calostachyus var. calostachyus	57	33	1
87	244	Acacia bivenosa	28	67	2
200	**600**	**NAME**	**all**	**API**	**A #**
88	246	Acacia tumida var. pilbarensis	100	100	2
88	246	Eucalyptus leucophloia subsp. leucophloia	100	100	2
88	246	Triodia wiseana	80	100	2
88	246	Acacia arida	80	100	2
88	246	Acacia bivenosa	80	100	2
88	246	Goodenia stobbsiana	60	50	1
88	246	Grevillea wickhamii	60	50	1
88	246	Senna glutinosa subsp. glutinosa	40	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
88	247	Acacia arida	100	100	16
88	247	Tephrosia uniovulata	100	100	16
88	247	Triodia wiseana	100	100	16
88	247	Petalostylis labicheoides	81	81	13
88	247	Acacia bivenosa	81	81	13
88	247	Acacia ancistrocarpa	75	75	12
88	247	Senna glutinosa subsp. glutinosa	68	68	11
88	247	Ptilotus calostachyus var. calostachyus	68	68	11
88	247	Ptilotus astrolasius var. astrolasius	62	62	10
88	247	Acacia tumida var. pilbarensis	56	56	9
200	**600**	**NAME**	**all**	**API**	**A #**
89	248	Triodia wiseana	100	100	4
89	248	Acacia bivenosa	100	100	4
89	248	Acacia inaequilatera	100	100	4
89	248	Acacia ancistrocarpa	83	100	4
89	248	Indigofera monophylla	67	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
89	249	Triodia wiseana	100	100	24
89	249	Acacia bivenosa	100	100	24
89	249	Acacia ancistrocarpa	92	95	23
89	249	Acacia inaequilatera	80	83	20
89	249	Ptilotus calostachyus var. calostachyus	80	79	19
89	249	Acacia atkinsiana	76	75	18
89	249	Senna glutinosa subsp. glutinosa	64	67	16
89	249	Senna glutinosa subsp. pruinosa	56	58	14
89	249	Acacia synchronicia	52	49	12
200	**600**	**NAME**	**all**	**API**	**A #**
89	250	Acacia bivenosa	100	100	11
89	250	Acacia ancistrocarpa	100	100	11
89	250	Triodia wiseana	100	100	11
89	250	Senna glutinosa subsp. glutinosa	72	72	8

89	250	Tephrosia uniovulata	72	72	8
89	250	Acacia tumida var. pilbarensis	63	63	7
89	250	Triodia sp. Robe River	63	63	7
89	250	Grevillea wickhamii	63	63	7
89	250	Gossypium australe (Burrup Peninsula form)	54	54	6
89	250	Acacia atkinsiana	54	54	6
89	250	Ptilotus calostachyus var. calostachyus	54	54	6
89	250	Indigofera monophylla (grey/green leaflet form)	54	54	6
200	**600**	**NAME**	**all**	**API**	**A #**
89	251	Triodia wiseana	91	90	10
89	251	Acacia bivenosa	91	100	11
89	251	Acacia ancistrocarpa	91	90	10
89	251	Acacia tumida var. pilbarensis	75	72	8
89	251	Acacia atkinsiana	75	81	9
89	251	Corymbia hamersleyana	67	63	7
89	251	Bonamia rosea	58	54	6
89	251	Grevillea wickhamii	58	54	6
89	251	Triodia epactia	50	54	6
200	**600**	**NAME**	**all**	**API**	**A #**
89	252	Ptilotus astrolasius var. astrolasius	100	100	4
89	252	Acacia ancistrocarpa	100	100	4
89	252	Indigofera monophylla	100	100	4
89	252	Triodia wiseana	100	100	4
89	252	Senna glutinosa subsp. glutinosa	100	100	4
89	252	Eucalyptus leucophloia subsp. leucophloia	75	75	3
89	252	Ptilotus calostachyus var. calostachyus	75	75	3
89	252	Triodia epactia	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
90	253	Senna glutinosa subsp. luerssenii	88	88	8
90	253	Triodia sp. Robe River	88	88	8
90	253	Triodia wiseana	88	88	8
90	253	Eucalyptus leucophloia subsp. leucophloia	77	77	7
90	253	Acacia inaequilatera	77	77	7
90	253	Senna glutinosa subsp. glutinosa	67	67	6
90	253	Ptilotus calostachyus var. calostachyus	67	67	6
90	253	Senna glutinosa subsp. pruinosa	55	55	5
90	253	Grevillea wickhamii	55	55	5
90	253	Acacia bivenosa	55	55	5
200	**600**	**NAME**	**all**	**API**	**A #**

90	254	Triodia wiseana	100	100	7
90	254	Acacia bivenosa	100	100	7
90	254	Senna glutinosa subsp. glutinosa	100	100	7
90	254	Eucalyptus leucophloia subsp. leucophloia	87	85	6
90	254	Senna glutinosa subsp. pruinosa	75	85	6
90	254	Grevillea wickhamii	50	57	4
90	254	Acacia pruinocarpa	50	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
90	255	Acacia bivenosa	100	100	7
90	255	Acacia pruinocarpa	100	100	7
90	255	Triodia wiseana	100	100	7
90	255	Triodia sp. Robe River	100	100	7
90	255	Acacia ancistrocarpa	71	71	5
90	255	Acacia atkinsiana	71	71	5
90	255	Petalostylis labicheoides	57	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
90	256	Eucalyptus leucophloia subsp. leucophloia	100	100	7
90	256	Triodia wiseana	100	100	7
90	256	Acacia pruinocarpa	100	100	7
90	256	Triodia sp. Robe River	85	85	6
90	256	Eriachne mucronata (typical form)	71	71	5
90	256	Acacia bivenosa	71	71	5
90	256	Senna glutinosa subsp. glutinosa	71	71	5
90	256	Cymbopogon ambiguus	71	71	5
90	256	Solanum lasiophyllum	57	57	4
90	256	Corchorus laniflorus	57	57	4
90	256	Ptilotus astrolasius var. astrolasius	57	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
90	257	Triodia sp. Robe River	100	100	18
90	257	Triodia wiseana	100	100	18
90	257	Eucalyptus leucophloia subsp. leucophloia	94	94	17
90	257	Senna glutinosa subsp. glutinosa	88	88	16
90	257	Acacia bivenosa	83	83	15
90	257	Jasminum didymum subsp. lineare	77	77	14
90	257	Ptilotus astrolasius var. astrolasius	67	67	12
90	257	Ptilotus calostachyus var. calostachyus	61	61	11
90	257	Acacia atkinsiana	55	55	10
90	257	Gossypium australe (Burrup Peninsula form)	55	55	10
200	**600**	**NAME**	**all**	**API**	**A #**

91	258	Ptilotus calostachyus var. calostachyus	100	100	4
91	258	Acacia bivenosa	100	100	4
91	258	Ptilotus astrolasius var. astrolasius	100	100	4
91	258	Corchorus laniflorus	75	75	3
91	258	Ptilotus exaltatus var. exaltatus	75	75	3
91	258	Acacia synchronicia	75	75	3
91	258	Triodia wiseana	75	75	3
91	258	Senna glutinosa subsp. pruinosa	75	75	3

200	600	NAME	all	API	A #
91	259	Acacia bivenosa	100	99	21
91	259	Triodia wiseana	100	99	21
91	259	Ptilotus astrolasius var. astrolasius	90	90	19
91	259	Ptilotus calostachyus var. calostachyus	81	85	18
91	259	Sida pilbarensis (ferruginous form)	81	80	17
91	259	Triodia sp. Robe River	77	76	16
91	259	Acacia ancistrocarpa	68	71	15
91	259	Trichodesma zeylanicum var. zeylanicum	68	67	14
91	259	Tephrosia uniovulata	63	67	14
91	259	Acacia inaequilatera	59	57	12
91	259	Senna glutinosa subsp. glutinosa	50	52	11

200	600	NAME	all	API	A #
91	260	Triodia wiseana	100	100	3
91	260	Ptilotus astrolasius var. astrolasius	100	100	3
91	260	Trichodesma zeylanicum var. zeylanicum	100	100	3
91	260	Corchorus lasiocarpus subsp. parvus	100	100	3
91	260	Acacia atkinsiana	67	67	2
91	260	Triodia sp. Robe River	67	67	2
91	260	Sida aff. pilbarensis (EOB46-01B)	67	67	2
91	260	Dodonaea coriacea	67	67	2
91	260	Keraudrenia velutina subsp. elliptica	67	67	2
91	260	Evolvulus alsinoides var. villosicalyx	67	67	2
91	260	Goodenia stobbsiana	67	67	2
91	260	Goodenia microptera	67	67	2
91	260	Bonamia media var. villosa	67	67	2
91	260	Ptilotus calostachyus var. calostachyus	67	67	2
91	260	Acacia bivenosa	67	67	2

200	600	NAME	all	API	A #
92	264	Tephrosia uniovulata	100	100	9
92	264	Goodenia microptera	100	100	9
92	264	Acacia ancistrocarpa	100	100	9
92	264	Ptilotus astrolasius var. astrolasius	100	100	9
92	264	Triodia epactia	88	88	8
92	264	Solanum diversiflorum	88	88	8
92	264	Trichodesma zeylanicum var. zeylanicum	88	88	8
92	264	Corymbia hamersleyana	88	88	8
92	264	Acacia inaequilatera	67	67	6
92	264	Acacia bivenosa	67	67	6
92	264	Mollugo molluginis	67	67	6
92	264	Bonamia rosea	67	67	6
92	264	Gossypium australe (Burrup Peninsula form)	67	67	6
92	264	Cleome viscosa	67	67	6
92	264	Senna artemisioides subsp. oligophylla	67	67	6
92	264	Sida aff. echinocarpa (MET 15,350)	67	67	6
92	264	Indigofera monophylla	67	67	6
92	264	Sida arsiniata	67	67	6
92	264	Grevillea wickhamii	55	55	5
92	264	Triodia wiseana	55	55	5
92	264	Dysphania rhadinostachya subsp. rhadinostachya	55	55	5
92	264	Rhynchosia minima var. australis	55	55	5
92	264	Ptilotus axillaris	55	55	5
92	264	Indigofera boviperda subsp. boviperda	55	55	5

200	600	NAME	all	API	A #
92	265	Cleome viscosa	100	100	10
92	265	Triodia epactia	100	100	10
92	265	Portulaca oleracea	90	90	9
92	265	Gossypium australe (Burrup Peninsula form)	90	90	9
92	265	Acacia bivenosa	80	80	8
92	265	Acacia ancistrocarpa	80	80	8
92	265	Ptilotus astrolasius var. astrolasius	80	80	8
92	265	Acacia inaequilatera	80	80	8
92	265	Sida arsiniata	70	70	7
92	265	Senna artemisioides subsp. oligophylla	70	70	7
92	265	Acacia synchronicia	70	70	7
92	265	Abutilon trudgenii	70	70	7
92	265	Senna notabilis	60	60	6
92	265	Sporobolus australasicus	60	60	6
92	265	Euphorbia boophthona (Large seed form)	60	60	6
92	265	Streptoglossa bubakii	60	60	6
92	265	Dysphania rhadinostachya subsp. rhadinostachya	60	60	6

200	600	NAME	all	API	A #
93	266	Triodia wiseana	100	100	7
93	266	Tribulus suberosus	100	100	7
93	266	Acacia bivenosa	85	85	6
93	266	Senna glutinosa subsp. pruinosa	85	85	6
93	266	Senna artemisioides subsp. oligophylla	85	85	6
93	266	Senna glutinosa subsp. glutinosa	85	85	6
93	266	Solanum lasiophyllum	71	71	5
93	266	Acacia synchronicia	71	71	5
93	266	Solanum diversiflorum	57	57	4
93	266	Euphorbia australis	57	57	4
93	266	Gossypium australe (Burrup Peninsula form)	57	57	4
200	**600**	**NAME**	**all**	**API**	**A #**
93	267	Triodia wiseana	100	100	11
93	267	Trichodesma zeylanicum var. zeylanicum	100	100	11
93	267	Ptilotus astrolasius var. astrolasius	90	90	10
93	267	Acacia bivenosa	90	90	10
93	267	Solanum lasiophyllum	90	90	10
93	267	Ptilotus calostachyus var. calostachyus	81	81	9
93	267	Senna artemisioides subsp. oligophylla	72	72	8
93	267	Ptilotus exaltatus var. exaltatus	72	72	8
93	267	Tephrosia uniovulata	72	72	8
93	267	Acacia pruinocarpa	72	72	8
93	267	Senna glutinosa subsp. luerssenii	63	63	7
93	267	Solanum diversiflorum	63	63	7
93	267	Acacia arida	63	63	7
93	267	Senna glutinosa subsp. glutinosa	63	63	7
93	267	Acacia ancistrocarpa	54	54	6
93	267	Ptilotus obovatus	54	54	6
93	267	Senna artemisioides subsp. oligophylla x helmsii	54	54	6
93	267	Corchorus aff. parviflorus (JW011-11)	54	54	6
93	267	Dysphania rhadinostachya subsp. rhadinostachya	54	54	6
93	267	Senna notabilis	54	54	6
93	267	Tribulus suberosus	54	54	6
93	267	Euphorbia australis	54	54	6
93	267	Solanum sturtianum	54	54	6
200	**600**	**NAME**	**all**	**API**	**A #**
93	268	Eremophila fraseri subsp. fraseri	100	100	6
93	268	Triodia wiseana	100	100	6
93	268	Ptilotus astrolasius var. astrolasius	100	100	6
93	268	Acacia citrinoviridis	83	83	5
93	268	Acacia pruinocarpa	83	83	5
93	268	Triodia sp. Robe River	83	83	5
93	268	Gossypium australe (Burrup Peninsula form)	83	83	5
93	268	Senna glutinosa subsp. glutinosa	83	83	5
93	268	Corchorus sidoides subsp. sidoides	83	83	5
93	268	Solanum lasiophyllum	83	83	5
93	268	Acacia ancistrocarpa	67	67	4
93	268	Acacia inaequilatera	67	67	4
93	268	Ptilotus calostachyus var. calostachyus	67	67	4
93	268	Senna notabilis	67	67	4
200	**600**	**NAME**	**all**	**API**	**A #**
93	269	Dysphania rhadinostachya subsp. rhadinostachya	100	100	18
93	269	Acacia bivenosa	100	100	18
93	269	Ptilotus astrolasius var. astrolasius	88	88	16
93	269	Trichodesma zeylanicum var. zeylanicum	88	88	16
93	269	Solanum diversiflorum	88	88	16
93	269	Triodia wiseana	83	83	15
93	269	Cleome viscosa	83	83	15
93	269	Acacia inaequilatera	77	77	14
93	269	Senna notabilis	72	72	13
93	269	Senna glutinosa subsp. glutinosa	67	67	12
93	269	Ptilotus fusiformis var. fusiformis	67	67	12
93	269	Gossypium australe (Burrup Peninsula form)	67	67	12
93	269	Senna glutinosa subsp. pruinosa	61	61	11
93	269	Ptilotus calostachyus var. calostachyus	61	61	11
93	269	Senna glutinosa subsp. luerssenii	61	61	11
93	269	Solanum horridum	55	55	10
93	269	Sida aff. echinocarpa (MET 15,350)	55	55	10
200	**600**	**NAME**	**all**	**API**	**A #**
93	270	Trichodesma zeylanicum var. zeylanicum	100	100	9
93	270	Acacia tumida var. pilbarensis	88	88	8
93	270	Acacia bivenosa	88	88	8
93	270	Cleome viscosa	88	88	8
93	270	Gossypium australe (Burrup Peninsula form)	88	88	8
93	270	Dysphania rhadinostachya subsp. rhadinostachya	88	88	8
93	270	Senna glutinosa subsp. glutinosa	88	88	8
93	270	Triodia wiseana	88	88	8
93	270	Solanum diversiflorum	77	77	7

93	270	Paspalidium clementii	77	77	7
93	270	Gossypium robinsonii	77	77	7
93	270	Jasminum didymum subsp. lineare	77	77	7
93	270	Cymbopogon ambiguus	67	67	6
93	270	Pterocaulon sphaeranthoides	67	67	6
93	270	Acacia inaequilatera	67	67	6
93	270	Trachymene oleracea subsp. oleracea	67	67	6
93	270	Senna artemisioides subsp. oligophylla	67	67	6
93	270	Triodia epactia	67	67	6
93	270	Ptilotus astrolasius var. astrolasius	67	67	6
93	270	Corchorus sidoides subsp. sidoides	55	55	5
93	270	Senna notabilis	55	55	5
93	270	Tephrosia uniovulata	55	55	5
93	270	Triumfetta clementii	55	55	5
93	270	Hibiscus sturtii var. grandiflorus	55	55	5
93	270	Amaranthus cuspidifolius	55	55	5
93	270	Euphorbia australis	55	55	5
93	270	Solanum horridum	55	55	5
200	**600**	**NAME**	**all**	**API**	**A #**
94	271	Acacia bivenosa	100	100	4
94	271	Triodia epactia	100	100	4
94	271	Acacia ancistrocarpa	100	100	4
94	271	Senna artemisioides subsp. oligophylla	100	100	4
94	271	Acacia synchronicia	100	100	4
94	271	Jasminum didymum subsp. lineare	100	100	4
94	271	Triodia wiseana	75	75	3
94	271	Acacia atkinsiana	75	75	3
94	271	Corchorus laniflorus	75	75	3
94	271	Malvastrum americanum	75	75	3
94	271	Senna glutinosa subsp. glutinosa	75	75	3
94	271	Euphorbia australis	75	75	3
94	271	Corymbia hamersleyana	75	75	3
94	271	Eremophila longifolia	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
94	272	Jasminum didymum subsp. lineare	100	100	1
94	272	Triodia epactia	100	100	1
94	272	Grevillea pyramidalis subsp. leucadendron	100	100	1
94	272	Stylobasium spathulatum	80		
94	272	Acacia inaequilatera	80	100	1
94	272	Acacia ancistrocarpa	80	100	1

94	272	Triodia wiseana	80		
94	272	Scaevola spinescens (broad form)	80	100	1
94	272	Acacia bivenosa	80		
94	272	Corymbia hamersleyana	80		
94	272	Acacia pyrifolia var. pyrifolia	80	100	1
94	272	Eremophila longifolia	60	100	1
94	272	Grevillea wickhamii	60		
94	272	Cassia glutinosa	60		
94	272	Ptilotus astrolasius var. astrolasius	40	100	1
94	272	Senna artemisioides subsp. oligophylla	40	100	1
94	272	Acacia trachycarpa	40	100	1
94	272	Acacia synchronicia	40	100	1
94	272	Tephrosia rosea var. glabrior	40	100	1
94	272	Gossypium australe (Burrup Peninsula form)	40	100	1
94	272	Corchorus parviflorus	20	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
94	273	Acacia inaequilatera	90	90	28
94	273	Acacia bivenosa	90	90	28
94	273	Acacia ancistrocarpa	83	83	26
94	273	Gossypium australe (Burrup Peninsula form)	80	80	25
94	273	Acacia synchronicia	70	70	22
94	273	Corymbia hamersleyana	64	64	20
94	273	Triodia wiseana	64	64	20
94	273	Ptilotus astrolasius var. astrolasius	61	61	19
94	273	Hakea lorea subsp. lorea	58	58	18
94	273	Triodia epactia	58	58	18
94	273	Senna artemisioides subsp. oligophylla	54	54	17
200	**600**	**NAME**	**all**	**API**	**A #**
94	274	Acacia ancistrocarpa	92	92	13
94	274	Triodia epactia	92	92	13
94	274	Acacia bivenosa	85	85	12
94	274	Senna artemisioides subsp. oligophylla	78	78	11
94	274	Triodia wiseana	78	78	11
94	274	Acacia atkinsiana	78	78	11
94	274	Ptilotus astrolasius var. astrolasius	64	64	9
94	274	Tephrosia uniovulata	57	57	8
94	274	Corymbia hamersleyana	57	57	8
94	274	Acacia inaequilatera	57	57	8
200	**600**	**NAME**	**all**	**API**	**A #**

95	275	Gossypium australe (Burrup Peninsula form)	100	100	6
95	275	Triodia epactia	100	100	6
95	275	Ptilotus astrolasius var. astrolasius	100	100	6
95	275	Acacia pyrifolia var. pyrifolia	100	100	6
95	275	Bulbostylis barbata	83	83	5
95	275	Hakea lorea subsp. lorea	83	83	5
95	275	Cleome viscosa	67	67	4
95	275	Grevillea pyramidalis subsp. leucadendron	67	67	4
95	275	Corymbia hamersleyana	67	67	4
95	275	Boerhavia gardneri	67	67	4
200	**600**	**NAME**	**all**	**API**	**A #**
95	276	Triodia epactia	100	100	24
95	276	Gossypium australe (Burrup Peninsula form)	95	95	23
95	276	Ptilotus astrolasius var. astrolasius	87	87	21
95	276	Acacia ancistrocarpa	83	83	20
95	276	Acacia inaequilatera	79	79	19
95	276	Indigofera boviperda subsp. boviperda	70	70	17
95	276	Corymbia hamersleyana	67	67	16
95	276	Senna artemisioides subsp. oligophylla	62	62	15
95	276	Hakea lorea subsp. lorea	58	58	14
95	276	Acacia bivenosa	54	54	13
200	**600**	**NAME**	**all**	**API**	**A #**
100	295	Triodia wiseana	100	100	1
100	295	Eucalyptus leucophloia subsp. leucophloia	100	100	1
100	295	Senna glutinosa subsp. glutinosa	100	100	1
100	295	Eriachne mucronata (typical form)	100	100	1
100	295	Goodenia stobbsiana	80	100	1
100	295	Cymbopogon ambiguus	80	100	1
100	295	Corymbia hamersleyana	80	100	1
100	295	Polycarpaea longiflora	80	100	1
100	295	Eriachne pulchella	60		
100	295	Gossypium australe (Burrup Peninsula form)	60		
100	295	Acacia monticola	60		
100	295	Ptilotus calostachyus var. calostachyus	60		
100	295	Jasminum didymum subsp. lineare	60		
100	295	Acacia elachantha	60		
100	295	Dodonaea coriacea	60	100	1
100	295	Acacia inaequilatera	40	100	1
100	295	Cucumis maderaspatanus	40	100	1
100	295	Senna glutinosa subsp. pruinosa	40	100	1
100	295	Sida pilbarensis (ferruginous form)	40	100	1
100	295	Solanum aff. phlomoides	20	100	1
100	295	Triodia sp. Robe River	20	100	1
100	295	Acacia synchronicia	20	100	1
100	295	Acacia citrinoviridis	20	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
102	301	Acacia citrinoviridis	100	100	3
102	301	Jasminum didymum subsp. lineare	100	100	3
102	301	Acacia bivenosa	100	100	3
102	301	Acacia pruinocarpa	87	67	2
102	301	Senna glutinosa subsp. glutinosa	87	100	3
102	301	Gossypium robinsonii	87	100	3
102	301	Triodia wiseana	87	100	3
102	301	Grevillea wickhamii	87	67	2
102	301	Eriachne mucronata (typical form)	87	100	3
102	301	Eucalyptus leucophloia subsp. leucophloia	75	67	2
102	301	Petalostylis labicheoides	75	100	3
102	301	Cymbopogon ambiguus	75	100	3
102	301	Ptilotus obovatus	75	67	2
102	301	Cleome viscosa	62	67	2
102	301	Abutilon dioicum	62	67	2
102	301	Senna glutinosa subsp. pruinosa	62	67	2
102	301	Trachymene oleracea subsp. oleracea	50	100	3
102	301	Leptopus decaisnei var. orbicularis	50	100	3
102	301	Triodia epactia	50	67	2
102	301	Euphorbia coghlanii	50	67	2
102	301	Duppereya commixta	50	67	2
102	301	Senna artemisioides subsp. oligophylla	50	67	2
102	301	Trichodesma zeylanicum var. zeylanicum	37	100	3
102	301	Crotalaria medicaginea	37	100	3
102	301	Hybanthus aurantiacus	37	67	2
102	301	Streptoglossa decurrens	37	100	3
102	301	Flaveria australasica subsp. australasica	25	67	2
102	301	Ptilotus astrolasius var. astrolasius	25	67	2
102	301	Corchorus crozophorifolius	25	67	2
102	301	Gossypium australe (Burrup Peninsula form)	25	67	2
102	301	Indigofera monophylla	25	67	2
200	**600**	**NAME**	**all**	**API**	**A #**
102	303	Senna notabilis	100	100	2
102	303	Stylobasium spathulatum	100	100	2

102	303	Acacia bivenosa	100	100	2
102	303	Grevillea wickhamii	100	100	2
102	303	Triodia wiseana	100	100	2
102	303	Cymbopogon ambiguus	100	100	2
102	303	Eucalyptus leucophloia subsp. leucophloia	100	100	2
102	303	Solanum sturtianum	100	100	2
102	303	Trichodesma zeylanicum var. zeylanicum	100	100	2
102	303	Trachymene oleracea subsp. oleracea	100	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
102	304	Triodia sp. Robe River	100	100	4
102	304	Polycarpaea longiflora	100	100	4
102	304	Triodia wiseana	100	100	4
102	304	Acacia citrinoviridis	100	100	4
102	304	Eucalyptus leucophloia subsp. leucophloia	100	100	4
102	304	Eremophila latrobei subsp. latrobei	100	100	4
102	304	Eriachne mucronata (typical form)	75	75	3
102	304	Cymbopogon ambiguus	75	75	3
102	304	Senna glutinosa subsp. glutinosa	75	75	3
102	304	Grevillea berryana	75	75	3
102	304	Acacia aneura (narrow, fine veined, site 1259)	75	75	3
200	**600**	**NAME**	**all**	**API**	**A #**
103	305	Eriachne mucronata (typical form)	100	100	2
103	305	Ptilotus calostachyus var. calostachyus	100	100	2
103	305	Cyperus cunninghamii subsp. cunninghamii	100	100	2
103	305	Triodia wiseana	100	100	2
103	305	Cymbopogon ambiguus	100	100	2
103	305	Alternanthera nana	100	100	2
103	305	Polycarpaea longiflora	100	100	2
103	305	Gomphrena cunninghamii	100	100	2
103	305	Hibiscus goldsworthii	100	100	2
103	305	Senna glutinosa subsp. glutinosa	100	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
103	306	Cymbopogon ambiguus	100	100	1
103	306	Eucalyptus leucophloia subsp. leucophloia	100	100	1
103	306	Polycarpaea longiflora	100	100	1
103	306	Ptilotus obovatus	100	100	1
103	306	Abutilon dioicum	100	100	1
103	306	Triodia wiseana	100	100	1
103	306	Senna glutinosa subsp. glutinosa	100	100	1

103	306	Solanum horridum	50	100	1
103	306	Stylobasium spathulatum	50	100	1
103	306	Cucumis maderaspatanus	50	100	1
103	306	Pterocaulon sphacelatum	50	100	1
103	306	Terminalia canescens	50	100	1
103	306	Acacia synchronicia	50	100	1
103	306	Corchorus crozophorifolius	50	100	1
103	306	Paspalidium tabulatum (Whim Creek form)	50	100	1
103	306	Senna notabilis	50	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
103	307	Themeda triandra	100	100	1
103	307	Cleome viscosa	100	100	1
103	307	Dodonaea coriacea	100	100	1
103	307	Acacia aneura (narrow, fine veined, site 1259)	100	100	1
103	307	Hibiscus coatesii	100	100	1
103	307	Trachymene oleracea subsp. oleracea	100	100	1
103	307	Polycarpaea longiflora	100	100	1
103	307	Ptilotus obovatus	100	100	1
103	307	Ptilotus exaltatus var. exaltatus	100	100	1
103	307	Dysphania rhadinostachya subsp. rhadinostachya	100	100	1
103	307	Triodia wiseana	100	100	1
103	307	Cucumis maderaspatanus	100	100	1
103	307	Amaranthus cuspidifolius	100	100	1
103	307	Senna glutinosa subsp. glutinosa	100	100	1
103	307	Senna glutinosa subsp. pruinosa	100	100	1
103	307	Salsola tragus	100	100	1
103	307	Gomphrena cunninghamii	100	100	1
103	307	Maireana tomentosa subsp. tomentosa	100	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
134	405	Eriachne benthamii	100	100	1
134	405	Enneapogon caerulescens	100	100	1
134	405	Rhynchosia minima var. australis	100	100	1
134	405	Eragrostis xerophila	100	100	1
134	405	Sporobolus australasicus	100	100	1
134	405	Streptoglossa liatroides	80	100	1
134	405	Malvastrum americanum	80	100	1
134	405	Boerhavia paludosa	80	100	1
134	405	Neptunia dimorphantha	80		
134	405	Dichanthium sericeum subsp. humilius	80	100	1
134	405	Cleome viscosa	80	100	1

134	405	Ptilotus aervoides	80	100	1
134	405	Solanum horridum	80		
134	405	Acacia xiphophylla	60	100	1
134	405	Dactyloctenium radulans	60	100	1
134	405	Ptilotus carinatus	60	100	1
134	405	Evolvulus alsinoides var. villosicalyx	60	100	1
134	405	Ptilotus exaltatus var. exaltatus	60	100	1
134	405	Indigastrum parviflorum	60		
134	405	Euphorbia aff. drummondii (MET 15,211)	60		
134	405	Stemodia kingii	60		
134	405	Cenchrus ciliaris	60		
134	405	Indigofera linifolia	60	100	1
134	405	Indigofera trita	60		
134	405	Phyllanthus maderaspatensis	60		
134	405	Heliotropium inexplicitum	60	100	1
134	405	Portulaca oleracea	40	100	1
134	405	Sida spinosa	40	100	1
134	405	Trianthema aff. triquetra (M3.35)	40	100	1
134	405	Cenchrus setiger	40	100	1
134	405	Sida aff. fibulifera (B64-13B)	20	100	1
134	405	Euphorbia sp. (M80-1)	20	100	1
134	405	Setaria dielsii	20	100	1
134	405	Iseilema macratherum	20	100	1
134	405	Senna artemisioides subsp. oligophylla	20	100	1
134	405	Panicum laevinode	20	100	1
134	405	Tephrosia aff. clementii (8) (HD106)	20	100	1
134	405	Portulaca conspicua	20	100	1
134	405	Sclerolaena densiflora	20	100	1
134	405	Flaveria australasica subsp. australasica	20	100	1
134	405	Heliotropium crispatum	20	100	1
200	**600**	**NAME**	**all**	**API**	**A #**
186	549	Acacia inaequilatera	100	100	2
186	549	Solanum lasiophyllum	100	100	2
186	549	Senna glutinosa subsp. luerssenii	100	100	2
186	549	Triodia epactia	100	100	2
186	549	Hakea lorea subsp. lorea	67	50	1
186	549	Goodenia microptera	67	50	1
186	549	Ptilotus astrolasius var. astrolasius	67	50	1
186	549	Stylobasium spathulatum	67	100	2
200	**600**	**NAME**	**all**	**API**	**A #**
186	550	Triodia epactia	100	100	2
186	550	Eremophila cuneifolia	100	100	2
186	550	Acacia synchronicia	100	100	2
186	550	Solanum lasiophyllum	100	100	2
186	550	Sclerolaena densiflora	100	100	2

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	0055	0055	0055	BC	BC	BC	BC	378	550A	0055	0055	0055	0055	MTL	550A	MTL	0055	0055	0055	0055	0055	0055	0055	FCB	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	KR00	ON0	ON0	IN0	ON0	489	KR00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79	80	80	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp	Qa	Czp	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czp	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R																																																						
.ID	NAME	species	gp30	gp60	.gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
4	Acacia aneura (narrow, fine veined, site 1259)	-90164	1	1	1																																																																								
5	Eremophila latrobei subsp. latrobei	17576	1	1	1																																																																									
6	Solanum aff. phlomoides	-90156	1	1	1																																																																									
7	Sarcostemma viminale subsp. australe	13006	1	1	1		1	1	1																																																																	
8	Indigofera monophylla (BRO 46-12)	-11070	1	1	1	1	1	1	1																																																																
9	Indigofera monophylla (Cape Preston form)	-2467	1	1	1			1																																																																		
10	Euphorbia wheeleri	4650	1	1	1			1																																																																	
11	Hibiscus aff. coatesii (MET 16,542)	-10188	1	1	1		1																																																																		
12	Abutilon aff. dioicum (HD72-14)	-2592	1	1	1		1																																																																		
13	Cyperus cunninghamii subsp. cunninghamii	12811	1	1	1		1																																																																		
14	Grevillea berryana	1963	1	1	1		1																																												1																							
15	Dodonaea pachyneura	4772	1	1	1																																																																					
16	Hibiscus gardneri	17349	1	1	1	1																					1																																																
17	Corymbia ferriticola subsp. ferriticola	17079	1	1	1	1		1	1																																																																
18	Aristida burbidgeae	204	1	1	2	1			1																																																																
19	Acacia adsurgens	3205	1	1	2	1			1																																																																
20	Corchorus crozophorifolius	13560	1	1	2	1			1																																														1																				
21	Hibiscus aff. coatesii (MET 15 305)	-159	1	2	3																																																																					
22	Cheilanthes austrotenuifolia	31	1	2	3																																																																					
23	Nicotiana benthamiana	6971	1	2	3																										1																																											
24	Rhodanthe margarethae	13310	1	2	3																																																																					
25	Cheilanthes brownii	32	1	2	3																																																																					
26	Lobelia heterophylla	7403	1	2	3																																																																					
27	Sida aff. fibulifera (Site 203)	-2267	1	3	4																																																																				
28	Senna venusta	12319	1	3	4	1																																																																					
29	Ficus brachypoda	19648	1	3	4																																																																					
30	Dicladanthera forrestii	7164	1	3	4																																																																					
31	Sida excedentifolia	16930	1	3	4																																																																					
32	Capparis spinosa var. nummularia	11670	1	3	4																								1																																													
33	Corchorus sidoides subsp. aff. vermicularis (GLD NIM17-16)	-30015	1	4	5																																																																					
34	Tephrosia aff. densa (B17)	-2275	1	4	5																																																																					
35	Hibiscus aff. coatesii (site 693)	-161	1	4	5											1															1																																												
36	Euphorbia sp. (M80-1)	-2576	1	5	6																																																																						
37	Heliotropium ovalifolium	6713	1	5	6																																																																						
38	Euphorbia sp. (BPBS10-50)	-2557	1	5	6																																																																						
39	Streptoglossa tenuiflora	8241	1	5	6																																																																						
40	Tephrosia clementii	4263	1	5	6																																																																						
41	Solanum gabrielae	7009	1	5	6																																																																						
42	Synaptantha tillaeacea var. tillaeacea	13339	1	5	6																																																																						
43	Tripogon loliiformis	705	1	5	6																																																																						
44	Acacia aneura var. aneura	12957	1	5	6																																																																						
45	Hibiscus aff. sturtii (site 1209)	-169	1	5	7																																																																						
46	Swainsona formosa	12356	1	5	7																																																																						
47	Heliotropium inexplicitum	17307	1	5	7																																																																						
48	Sida clementii	4972	1	5	7																																																																						
49	Hibiscus aff. coatsii (site 1446)	-80131	2	6	8																																																																						
50	Hibiscus aff. coatesii (MET 15 012)	-158	2	6	8																																																																						
51	Carissa lanceolata	6567	2	6	8																																																																						
52	Acacia aneura	3217	2	6	8																																																																						
53	Acacia eriopoda	3326	2	6	8																																																																						
54	Gompholobium karijini	-2746	2	6	8																																																																						
55	Tephrosia sp. Pilbara Ranges (S. van Leeuwen 4246)	20316	2	6	8																																																																						
56	Ptilotus rotundifolius	2755	2	6	8																																																																						
57	Acacia arrecta	3224	2	6	8																													1																																												
58	Velleia connata	7654	2	6	8																																																										1												
59	Hibiscus aff. coatesii (site 751)	-164	2	6	8																																																																							1
60	Acacia ptychophylla	3501	2	6	8																																																																						
61	Acacia orthocarpa	3471	2	6	8																																						1																																			
62	Diplatia grandibractea	2395	2	6	8																																																																						
63	Lepidium pholidogynum	3038	2	6	8																																																																						
64	Terminalia canescens	5300	2	6	8																																																																						
65	Yakirra australiensis var. australiensis	11894	2	6	8																																																																						
66	Sida sp. Shovelanna Hill (S. van Leeuwen 3842)	20253	2	6	8																																																																						
67	Tephrosia aff. densa (HD31-4)	-2509	2	6	8																																																																						
68	Schizachyrium fragile	599	2	6	8																																														1																											
69	Hibiscus aff. coatesii (site 664)	-160	2	6	8																																															1																									
70	Acacia hamersleyensis (spindly form)	-42	2	6	8																																																																						
71	Acacia retivenea subsp. clandestina	15215	2	6	8																																																															1							
72	Melhania sp. (CH15-39)	-10191	2	6	8																						1																																1																			
73	Tephrosia aff. rosea (HD292-37)	-2511	2	6	8																																																					1																			
74	Tephrosia aff. clementii (11)	-2499	2	6	8																																																				1																				
75	Ptilotus mollis	2744	2	6	8																																																																						
76	Senna sericea	19347	2	6	8																																																																						
77	Goodenia cusackiana	12517	2	6	8																																																																						
78	Heliotropium glanduliferum	17305	2	6	8																																																																						
79	Eucalyptus socialis subsp. eucentrica	19576	2	6	8																																																																						
80	Hibiscus sturtii var. truncatus	11893	2	6	8																														1																																										
81	Acacia coriacea subsp. coriacea	13500	2	6	8																																																																						
82	Sida aff. fibulifera (oblong; MET 15 220)	-246	2	6	8																																																																						
83	Abutilon oxycarpum subsp. prostratum	16918	2	6	8																																																																						
84	Sclerolaena densiflora	2607	2	6	8																																																																						
85	Eragrostis desertorum	377	2	6	8																																																																						
86	Heliotropium chrysocarpum	17301	2	6	8																																																																						
87	Euphorbia sp. (B170-4)	-10189	2	6	8																																																																						
88	Ptilotus roei	2754	2	6	8																																																																						
89	Boerhavia gardneri	2772	2	6	8																																																																						
90	Indigofera rugosa	3985	2	6	8																																																																						
91	Acacia wanyu	3598	2	6	8																																																																						
92	Isotropis atropurpurea	3989	2	6	8																																																																						
93	Hibiscus goldsworthii	4930	2	6	8																																																																						
94	Bonamia pannosa	6608	2	6	8																																																																						
95	Corchorus tectus	17661	2	6	8																																																																						

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

.ID	NAME	species	gp30	gp60	gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	0055	0055	0055	BC	BC	BC	BC	378	50A	0055	0055	0055	0055	MTL	50A	MTL	0055	0055	0055	0055	0055	0055	0055	FCB	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	R00	ON0	ON0	IN0	ON0	489	R00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79	80	80	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp	Qa	Czp	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czp	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R																																																				
96	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	17768	2	6	8																																																																											
97	Amaranthus aff. pallidiflorus (D89)	-2491	2	6	8																																																																											
98	Polygala aff. isingii	-219	2	6	8																																																																											
99	Eriachne helmsii	411	2	6	8																																																																											
100	Trianthema pilosa	2829	2	6	8																																																																											
101	Corchorus aff. walcotti (K.J. Atkins 570)	-109	2	6	9																																																																											
102	Lepidium pedicellosum	3035	2	6	9																																																																											
103	Maireana georgei	2544	2	6	9																																																																											
104	Sclerolaena eriacantha	2611	2	6	9																																																																											
105	Maireana tomentosa subsp. tomentosa	11662	2	6	9																																																																											
106	Eremophila cuneifolia	7192	2	6	9																																																																											
107	Maireana melanocoma	2551	2	6	9																																																																											
108	Acacia xiphophylla	3606	2	6	9																																																																											
109	Senna stricta	18445	2	6	9																																																																											
110	Abutilon aff. doicum (HD72-14)	-10029	2	6	10																																																																											
111	Amaranthus aff. interruptus (MET 16,114)	-2489	2	6	10																																																																											
112	Tribulus astrocarpus	4374	2	6	10																																																																											
113	Amphipogon sericeus (Newman form; BR2-21)	-2745	2	6	10																																																																											
114	Fimbristylis dichotoma	851	2	6	10																																																																											
115	Iseilema dolichotrichum	458	2	6	10																																																																											
116	Indigofera monophylla (FMR35-01)	-11057	2	7	11																			1																																																					
117	Senna symonii	18450	2	7	11			1																1																																																					
118	Capparis umbonata	2982	2	7	11																			1																																																				
119	Eremophila latrobei subsp. glabra	17169	2	7	11					1																																																																						
120	Pluchea ferdinandi-muelleri	17816	2	7	11																																																																											
121	Salsola tragus	18599	2	7	11																																											1																														
122	Tephrosia aff. uniovulata (HD76)	-2510	2	7	11																																																																											
123	Maireana villosa	2571	2	7	11								1																																																																
124	Eriachne lanata	13660	2	7	11																																																																											
125	Dodonaea petiolaris	4773	2	7	11																																																																											
126	Acacia kempeana (2)	-44	2	8	12																																																																											
127	Triodia basedowii	680	2	8	12																																																																											
128	Anthobolus leptomerioides	2333	2	8	12				1																																																																						
129	Trianthema glossostigma	2826	2	8	12																																																																											
130	Eremophila latrobei subsp. filiformis	17597	2	8	12																																																																											
131	Glinus oppositifolius	2836	2	9	13																																																																											
132	Euphorbia careyi	9048	2	9	13																																																																											
133	Phyllanthus exilis	14462	2	9	13																																																																											
134	Argemone ochroleuca subsp. ochroleuca	17797	2	9	13																						1																																																							
135	Melaleuca argentea	5875	2	9	13																						1																																																							
136	Conyza bonariensis	7939	2	9	13																						1																																																							
137	Indigofera fractiflexa	17961	2	9	13																						1																																																							
138	Themeda sp. Mt Barricade (M.E. Trudgen 2471)	17819	2	9	13																							1				1																																																
139	Crotalaria novae-hollandiae subsp. novae-hollandiae	11231	2	9	13																											1																																															
140	Sida sp. Articulation below (A.A. Mitchell PRP 1605)	-50445	3	10	14																									1																																																		
141	Tephrosia spechtii	13924	3	10	14																							1																														1																	
142	Clerodendrum floribundum var. angustifolium	13692	3	10	14																										1																																																	
143	Hakea chordophylla	2138	3	10	14	1																																		1					1			1		1					1		1												1									
144	Grevillea pyramidalis subsp. leucadendron	19570	3	10	14	1												1				1																									1	1							1	1	1	1			1						1											
145	Acacia tenuissima	3573	3	10	14	1			1																											1																				1		1	1	1	1		1						1	1								
146	Triodia aff. melvillei (MET 10, 114)	-50418	3	10	14																1																	1	1		1		1	1										1															1									
147	Acacia hilliana	3370	3	10	14											1				1																1				1										1																												
148	Calytrix carinata	5446	3	10	14													1																													1			1			1	1											1													
149	Gompholobium sp. Hamersley	-50405	3	10	14																												1		1	1	1	1	1	1	1	1		1	1																																	
150	Acacia adoxa var. adoxa	11215	3	10	14																												1	1		1	1	1	1	1	1	1			1			1	1									1	1													1	1	1	1	1	1	
151	Eucalyptus gamophylla	5655	3	10	14																																					1			1															1															1	1		
152	Mirbelia viminalis	4105	3	10	14																															1	1	1	1	1	1	1		1	1	1		1	1	1	1	1	1		1		1		1	1	1	1	1	1	1		1		1			1	1	1	1	1	1	
153	Scaevola aff. browniana	-11037	3	10	14																													1		1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1			1			1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	
154	Waltheria virgata	5107	3	10	14																																						1	1	1	1	1	1			1		1									1	1	1	1								1		1	1		1
155	Dodonaea lanceolata var. lanceolata	11406	3	10	14																												1	1										1	1	1			1	1									1																1	1	1	
156	Santalum lanceolatum	2357	3	10	14																																				1																1							1	1	1								1				
157	Acacia monticola	3447	3	10	14																															1			1																					1				1	1		1	1										
158	Acacia dictyophleba	3300	3	10	14																																								1	1								1					1	1	1																	
159	Fimbristylis simulans	12159	3	10	14																							1																						1					1				1	1	1		1	1			1			1								
160	Corymbia deserticola subsp. deserticola	17083	3	10	14																	1																							1	1	1	1	1	1	1	1	1				1							1												1	1	
161	Amphipogon sericeus (Hammersley form; MET 15,335)	-11067	3	10	14																																										1	1		1				1																								
162	Goodenia triodiophila	7558	3	10	14																																											1	1		1																											
163	Codonocarpus cotinifolius	2778	3	10	14																																						1	1				1	1				1																									
164	Cassia glutinosa	3637	3	10	14														1																					1	1	1			1	1	1																				1	1	1									
165	Euphorbia australis (mid-green form)	-140	3	10	14														1																	1	1		1			1			1	1										1															1							
166	Sida cardiophylla	4971	3	10	14														1																																			1						1			1		1										1	1		
167	Lysiana casuarinae	2396	3	10	14														1																																																											
168	Cassytha capillaris	2949	3	10	14																																																																										
169	Acacia acradenia	3198	3	10	14																																																																										
170	Solanum ellipticum	7006	3	10	14																																																								1																	
171	Keraudrenia velutina subsp. elliptica	19636	3	10	14																																													1														1												1		
172	Bonamia rosea	6609	3	10	14																																																							1				1	1													
173	Euphorbia sp. (PAN5-15)	-2605	4	11	15																																																		1						1									1								
174	Triumfetta maconochieana	14942	4	11	15																																			1	1			1		1									1																							
175	Indigofera aff. monophylla (HD195-15)	-2492	4	11	16																																											1						1											1													
176	Tephrosia rosea var. glabrior	17789	4	11	16																																																		1																							
177	Ehretia saligna var. saligna	14301	4	11	16																										1																								1																							
178	Cymbopogon procerus	282	4	11	16															1	1							1	1		1														1		1			1				1	1		1																					1
179	Eriachne ciliata	404	4	12	17	1	1													1	1						1	1	1	1	1	1																						1																								
180	Iseilema membranaceum	464	4	12	17																1							1																																		1																
181	Cleome uncifera subsp. uncifera	-30008	5	13	18							1								1									1		1																								1																							
182	Corynotheca pungens	1286	5	13	18																	1																																													1											
183	Grevillea eriostachya	2001	5	13	18																	1																																																								
184	Ptilotus arthrolasius	2695	5	13	18																																																																										
185	Bonamia linearis	6605	5	13	18																																																																										
186	Acacia elachantha	16174	5	13	18																																																																										
187	Hibiscus aff. platychlamys (FMG88-08)	-2702	5	13	18																																																																											

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

.ID	NAME	species	gp30	gp60	gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	0055	0055	0055	BC	BC	BC	BC	378	550A	0055	0055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	R00	ON0	ON0
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R				
188	Triumfetta chaetocarpa	4875	5	13	18																									
189	Heliotropium transforme	17031	5	13	18																									
190	Hibiscus aff. platychlamys (site 1139)	-167	5	13	18																									
191	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)	15947	5	13	18																									
192	Triodia schinzii	17873	5	13	18																									
193	Eragrostis eriopoda	380	5	13	18																									
194	Polymeria sp. (site 1365)	-10133	6	14	19																									
195	Ptilotus gaudichaudii var. gaudichaudii	11577	6	14	19																									
196	Tribulus macrocarpus	4379	6	14	19																									
197	Solanum aff. gabrielae	-90157	7	15	20																									
198	Ptilotus incanus var. incanus	11436	7	15	20																									
199	Sida arsiniata	-50395	7	15	20																									
200	Ptilotus axillaris	2699	7	15	20				1																					
201	Corchorus aff. parviflorus (JW011-11)	-90155	7	15	20																									
202	Solanum diversiflorum	7002	7	15	20														1											
203	Euphorbia australis	4617	7	15	20																									
204	Triumfetta clementii	14694	7	15	20																									
205	Sida aff. echinocarpa (MET 15,350)	-239	7	15	20																									
206	Gossypium australe (Burrup Peninsula form)	-2265	7	15	20											1														
207	Trichodesma zeylanicum var. zeylanicum	11750	7	15	20																									
208	Senna notabilis	12312	7	15	20												1						1							
209	Dysphania rhadinostachya subsp. rhadinostachya	11890	7	15	20									1					1		1									
210	Ptilotus fusiformis var. fusiformis	11770	7	15	20		1							1	1				1	1	1		1				1		1	
211	Sida aff. pilbarensis (EOB46-01B)	-90054	7	15	20								1	1	1		1	1	1			1		1		1				
212	Indigofera monophylla (grey/green leaflet form)	-175	7	15	20				1						1		1		1											
213	Goodenia microptera	7526	7	15	20														1	1	1	1								
214	Ptilotus clementii	2711	7	15	20																									
215	Ptilotus obovatus	2747	7	15	20																									
216	Streptoglossa decurrens	8237	7	15	20												1	1	1											
217	Triodia sp. Robe River	-90000	7	15	20																									
218	Acacia inaequilatera	3377	7	15	20														1											
219	Senna glutinosa subsp. pruinosa	12309	7	15	20														1											
220	Sida pilbarensis (ferruginous form)	-11122	7	15	20	1	1	1	1																					
221	Tephrosia uniovulata	4286	7	15	20		1																							
222	Corchorus sidoides subsp. sidoides	18415	7	15	20																									
223	Triodia wiseana	704	7	15	20												1													
224	Eucalyptus leucophloia subsp. leucophloia	18088	7	15	20		1																							
225	Acacia ancistrocarpa	3214	7	15	20	1	1																							
226	Acacia bivenosa	3241	7	15	20	1	1	1	1											1	1	1	1					1	1	1
227	Senna glutinosa subsp. glutinosa	12307	7	15	20	1	1	1	1										1											
228	Ptilotus calostachyus var. calostachyus	11580	7	15	20					1							1		1											
229	Ptilotus astrolasius var. astrolasius	11996	7	15	20		1		1					1					1							1		1	1	
230	Acacia pruinocarpa	3500	7	15	20	1	1	1							1	1	1						1	1						
231	Acacia atkinsiana	3228	7	15	20												1	1	1			1								
232	Dodonaea coriacea	4759	7	15	20												1													
233	Senna glutinosa subsp. luerssenii	-30024	7	15	20		1		1										1			1								
234	Tribulus suberosus	18072	7	15	20														1											
235	Acacia synchronicia	13070	7	15	20																									
236	Solanum lasiophyllum	7018	7	15	20		1	1											1				1	1						
237	Ptilotus exaltatus var. exaltatus	11225	7	15	20																		1	1						
238	Acacia citrinoviridis	3260	7	15	20																					1				
239	Eremophila fraseri subsp. fraseri	16696	7	15	20														1				1		1					
240	Corchorus laniflorus	13659	7	15	20												1	1		1			1		1				1	
241	Eriachne mucronata (typical form)	-134	7	15	20	1	1	1	1													1								
242	Cymbopogon ambiguus	279	7	15	20			1																						
243	Gossypium robinsonii	4918	7	15	20		1																							
244	Hibiscus sturtii var. campylochlamys	11651	7	15	20	1	1		1				1							1		1						1		
245	Jasminum didymum subsp. lineare	12059	7	15	20	1	1		1	1			1		1	1	1		1		1	1	1							1
246	Senna artemisioides subsp. oligophylla	12280	7	15	20	1	1										1			1	1	1					1	1		1
247	Hakea lorea subsp. lorea	19137	7	15	20	1											1	1												
248	Eriachne pulchella	417	7	15	20	1	1										1				1									
249	Bonamia media var. villosa	17514	7	15	20		1		1								1													
250	Grevillea wickhamii	2121	7	15	20		1																							
251	Petalostylis labicheoides	3675	7	15	20						1							1	1	1		1	1	1						
252	Acacia tumida var. pilbarensis	20319	7	15	20										1								1	1					1	
253	Acacia arida	3223	7	15	20		1			1					1			1		1	1	1						1		
254	Corymbia hamersleyana	17093	7	15	20																1							1	1	
255	Dampiera candicans	7424	7	15	20	1	1										1	1		1	1	1						1	1	1
256	Corchorus lasiocarpus subsp. parvus	18408	7	15	20															1	1	1						1		
257	Goodenia stobbsiana	10982	7	15	20					1							1			1	1									
258	Keraudrenia nephrosperma	5024	7	15	20																	1								
259	Cucumis maderaspatanus	-80133	7	15	21															1	1	1					1			1
260	Cleome viscosa	2988	7	15	21												1	1	1			1								
261	Pterocaulon sphaeranthoides	8193	7	15	21								1				1	1				1								
262	Trachymene oleracea subsp. oleracea	19043	7	15	21						1	1	1	1		1		1	1	1		1				1			1	
263	Paspalidium clementii	518	7	15	21				1		1	1	1	1	1	1	1			1	1			1	1	1	1	1	1	1
264	Gomphrena cunninghamii	2680	7	15	21						1		1		1			1	1				1				1	1		
265	Polycarpaea longiflora	2903	7	15	21									1	1				1			1	1				1	1		1
266	Senna artemisioides subsp. oligophylla x helmsii	-10008	7	15	21				1						1		1	1		1	1									
267	Indigofera monophylla	3982	7	15	21									1	1		1		1	1	1	1							1	1
268	Triodia epactia	13131	7	15	21	1	1	1	1		1		1				1		1	1	1	1					1	1		
269	Corchorus parviflorus	4862	7	15	21		1							1		1					1					1				
270	Solanum horridum	7014	7	15	21	1							1		1		1	1												
271	Acacia pyrifolia var. pyrifolia	-80098	7	15	21		1			1	1		1	1	1	1	1	1	1					1		1		1		
272	Hybanthus aurantiacus	5215	7	15	21						1			1		1	1	1					1		1					
273	Mollugo molluginis	2843	7	15	21									1	1	1	1	1					1		1	1				
274	Duppereya commixta	-2772	7	15	21					1	1		1	1		1	1			1	1							1	1	1
275	Paraneurachne muelleri	515	7	15	21						1	1	1			1	1			1	1	1					1	1	1	
276	Themeda triandra	673	7	15	21												1			1	1	1		1						
277	Acacia maitlandii	3434	7	15	21	1	1									1	1		1											
278	Abutilon dioicum	19589	7	15	21												1	1	1	1										
279	Bulbostylis barbata	750	7	15	21	1	1			1							1													

.ID	NAME	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
	PROJ	0055	0055	MTL	550A	MTL	0055	0055	0055	0055	0055	0055	0055	FCB	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
	SITE	IN0	ON0	489	R00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0
	gp15	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	gp30	28	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30
	gp60	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58
	gp90	80	80	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86
	geo	Qa	Czp	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czp	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp
188	Triumfetta chaetocarpa																									
189	Heliotropium transforme																									
190	Hibiscus aff. platychlamys (site 1139)																									
191	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)																									
192	Triodia schinzii																									
193	Eragrostis eriopoda																									
194	Polymeria sp. (site 1365)																									
195	Ptilotus gaudichaudii var. gaudichaudii																									
196	Tribulus macrocarpus																									
197	Solanum aff. gabrielae																									
198	Ptilotus incanus var. incanus																									
199	Sida arsiniata																									
200	Ptilotus axillaris																									
201	Corchorus aff. parviflorus (JW011-11)																									
202	Solanum diversiflorum																									
203	Euphorbia australis																									
204	Triumfetta clementii																									
205	Sida aff. echinocarpa (MET 15,350)																						1	1		
206	Gossypium australe (Burrup Peninsula form)																									
207	Trichodesma zeylanicum var. zeylanicum																									
208	Senna notabilis																									
209	Dysphania rhadinostachya subsp. rhadinostachya	1																					1		1	
210	Ptilotus fusiformis var. fusiformis		1											1											1	
211	Sida aff. pilbarensis (EOB46-01B)		1											1												
212	Indigofera monophylla (grey/green leaflet form)																									
213	Goodenia microptera																									
214	Ptilotus clementii																									
215	Ptilotus obovatus																									
216	Streptoglossa decurrens																									
217	Triodia sp. Robe River																									
218	Acacia inaequilatera																									
219	Senna glutinosa subsp. pruinosa																									
220	Sida pilbarensis (ferruginous form)																									
221	Tephrosia uniovulata								1																	
222	Corchorus sidoides subsp. sidoides																			1						
223	Triodia wiseana																									
224	Eucalyptus leucophloia subsp. leucophloia																									
225	Acacia ancistrocarpa																									
226	Acacia bivenosa				1		1	1	1	1	1	1		1	1	1	1		1	1	1	1	1	1	1	1
227	Senna glutinosa subsp. glutinosa					1		1		1		1		1				1	1	1	1	1	1	1	1	1
228	Ptilotus calostachyus var. calostachyus					1																				
229	Ptilotus astrolasius var. astrolasius		1																						1	1
230	Acacia pruinocarpa							1	1						1			1	1	1	1				1	
231	Acacia atkinsiana			1	1	1	1	1				1		1	1		1	1	1	1					1	1
232	Dodonaea coriacea											1		1	1	1		1	1	1				1	1	
233	Senna glutinosa subsp. luerssenii													1	1											
234	Tribulus suberosus														1		1			1						
235	Acacia synchronicia			1																			1			
236	Solanum lasiophyllum					1																				
237	Ptilotus exaltatus var. exaltatus																									
238	Acacia citrinoviridis																									
239	Eremophila fraseri subsp. fraseri																									
240	Corchorus laniflorus													1												
241	Eriachne mucronata (typical form)																									
242	Cymbopogon ambiguus																									
243	Gossypium robinsonii																									
244	Hibiscus sturtii var. campylochlamys																			1			1		1	1
245	Jasminum didymum subsp. lineare																									1
246	Senna artemisioides subsp. oligophylla	1	1													1							1			1
247	Hakea lorea subsp. lorea						1									1	1	1	1	1	1					
248	Eriachne pulchella										1				1		1	1	1		1			1	1	
249	Bonamia media var. villosa														1	1							1		1	1
250	Grevillea wickhamii															1	1					1		1		
251	Petalostylis labicheoides			1	1	1	1													1						
252	Acacia tumida var. pilbarensis			1					1		1	1								1					1	
253	Acacia arida						1		1	1	1	1						1			1	1	1	1	1	1
254	Corymbia hamersleyana					1	1	1								1	1	1							1	1
255	Dampiera candicans	1	1			1	1	1			1	1			1	1	1	1	1	1			1	1	1	1
256	Corchorus lasiocarpus subsp. parvus						1					1				1					1				1	1
257	Goodenia stobbsiana				1	1	1	1	1		1		1	1	1	1	1	1	1		1	1	1	1	1	1
258	Keraudrenia nephrosperma				1					1	1	1	1					1			1	1	1		1	1
259	Cucumis maderaspatanus						1				1					1			1		1	1			1	1
260	Cleome viscosa			1	1	1	1	1	1	1	1	1				1		1	1	1					1	
261	Pterocaulon sphaeranthoides																							1		
262	Trachymene oleracea subsp. oleracea	1																								
263	Paspalidium clementii																									1
264	Gomphrena cunninghamii	1	1																							
265	Polycarpaea longiflora																									
266	Senna artemisioides subsp. oligophylla x helmsii																									
267	Indigofera monophylla																									1
268	Triodia epactia							1																		
269	Corchorus parviflorus																1	1								1
270	Solanum horridum																									
271	Acacia pyrifolia var. pyrifolia																1	1							1	
272	Hybanthus aurantiacus																									
273	Mollugo molluginis																	1								
274	Duppereya commixta	1	1			1	1	1								1					1	1	1		1	
275	Paraneurachne muelleri																		1	1						1
276	Themeda triandra						1					1					1			1						
277	Acacia maitlandii																									1
278	Abutilon dioicum																				1	1				1
279	Bulbostylis barbata																						1		1	1

.ID	NAME	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
	PROJ	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
	SITE	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
	gp15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
	gp30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	gp60	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
	gp90	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
	geo	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
188	Triumfetta chaetocarpa																							
189	Heliotropium transforme																							
190	Hibiscus aff. platychlamys (site 1139)																							
191	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)																							
192	Triodia schinzii																							
193	Eragrostis eriopoda																							
194	Polymeria sp. (site 1365)																							
195	Ptilotus gaudichaudii var. gaudichaudii																							
196	Tribulus macrocarpus																							
197	Solanum aff. gabrielae																							
198	Ptilotus incanus var. incanus																							
199	Sida arsiniata																							
200	Ptilotus axillaris																							
201	Corchorus aff. parviflorus (JW011-11)																							
202	Solanum diversiflorum																							
203	Euphorbia australis																							
204	Triumfetta clementii																							
205	Sida aff. echinocarpa (MET 15,350)		1																					
206	Gossypium australe (Burrup Peninsula form)																							
207	Trichodesma zeylanicum var. zeylanicum																							
208	Senna notabilis																							
209	Dysphania rhadinostachya subsp. rhadinostachya																							
210	Ptilotus fusiformis var. fusiformis																							
211	Sida aff. pilbarensis (EOB46-01B)		1																					
212	Indigofera monophylla (grey/green leaflet form)																							
213	Goodenia microptera	1																						
214	Ptilotus clementii																							
215	Ptilotus obovatus																							
216	Streptoglossa decurrens																							
217	Triodia sp. Robe River																							
218	Acacia inaequilatera																							
219	Senna glutinosa subsp. pruinosa																							
220	Sida pilbarensis (ferruginous form)																							
221	Tephrosia uniovulata																							
222	Corchorus sidoides subsp. sidoides																							
223	Triodia wiseana							1									1							
224	Eucalyptus leucophloia subsp. leucophloia																							
225	Acacia ancistrocarpa																							
226	Acacia bivenosa	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
227	Senna glutinosa subsp. glutinosa		1		1		1					1		1	1	1	1	1		1	1	1	1	1
228	Ptilotus calostachyus var. calostachyus																							
229	Ptilotus astrolasius var. astrolasius																		1		1			1
230	Acacia pruinocarpa			1										1										
231	Acacia atkinsiana															1	1			1	1			1
232	Dodonaea coriacea	1	1														1							
233	Senna glutinosa subsp. luerssenii						1									1	1							
234	Tribulus suberosus							1			1					1	1			1				1
235	Acacia synchronicia																1							
236	Solanum lasiophyllum																							
237	Ptilotus exaltatus var. exaltatus																							
238	Acacia citrinoviridis																							
239	Eremophila fraseri subsp. fraseri																							
240	Corchorus laniflorus																							
241	Eriachne mucronata (typical form)																							
242	Cymbopogon ambiguus																							
243	Gossypium robinsonii																							
244	Hibiscus sturtii var. campylochlamys	1	1		1		1											1					1	
245	Jasminum didymum subsp. lineare						1		1						1		1	1						
246	Senna artemisioides subsp. oligophylla						1	1																1
247	Hakea lorea subsp. lorea													1			1							
248	Eriachne pulchella	1		1	1	1		1			1		1		1	1	1							
249	Bonamia media var. villosa															1								
250	Grevillea wickhamii											1						1	1					1
251	Petalostylis labicheoides	1	1				1					1			1	1	1							
252	Acacia tumida var. pilbarensis											1	1	1										
253	Acacia arida	1	1	1	1	1	1			1	1		1	1	1	1		1	1	1		1		1
254	Corymbia hamersleyana	1	1	1	1	1	1	1	1	1	1		1	1						1	1			
255	Dampiera candicans	1	1	1	1	1	1	1		1						1								
256	Corchorus lasiocarpus subsp. parvus	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1			1	1		1	
257	Goodenia stobbsiana	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1
258	Keraudrenia nephrosperma	1	1					1			1	1	1	1	1		1							
259	Cucumis maderaspatanus	1	1	1	1	1		1				1	1	1	1	1	1	1		1				
260	Cleome viscosa		1	1							1						1							
261	Pterocaulon sphaeranthoides										1	1				1	1							
262	Trachymene oleracea subsp. oleracea																							
263	Paspalidium clementii																							
264	Gomphrena cunninghamii			1																				
265	Polycarpaea longiflora																							
266	Senna artemisioides subsp. oligophylla x helmsii						1																	
267	Indigofera monophylla																							
268	Triodia epactia																							
269	Corchorus parviflorus																							
270	Solanum horridum																							
271	Acacia pyrifolia var. pyrifolia																							
272	Hybanthus aurantiacus																							
273	Mollugo molluginis																							
274	Duppereya commixta										1													
275	Paraneurachne muelleri																							
276	Themeda triandra																1							
277	Acacia maitlandii												1											
278	Abutilon dioicum										1													
279	Bulbostylis barbata																							

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

.ID	NAME	species	gp30	gp60	.gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277
		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	055	055	055	BC	BC	BC	BC	378	550A	055	055	055	055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	R00	ON0	ON0	IN0	ON0
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14	14	14
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28	28	28
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55	55	55
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79	80	80
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp	Qa	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R						
280	Polycarpaea holtzei	2901	7	15	21														1			1						1	1			
281	Indigofera monophylla (OR89-01)	-90153	8	16	22		1												1			1										
282	Corchorus incanus subsp. incanus	-11114	8	16	22								1	1					1	1	1	1										
283	Senna artemisioides subsp. helmsii	12279	8	16	22													1	1	1		1										
284	Sida echinocarpa	4976	8	16	22																											
285	Triodia pungens	696	8	16	22																											
286	Hibiscus sturtii var. aff. campylochlamys (MET 15,957)	-295	8	16	22																											
287	Triumfetta aff. chaetocarpa (Panorama form)	-2610	8	16	23																											
288	Hibiscus aff. coatesii (site 733)	-163	8	16	23																											
289	Euphorbia boophthona	4620	8	16	23																											
290	Solanum sturtianum	7036	8	16	23																											
291	Pterocaulon serrulatum	8191	8	16	23																											
292	Abutilon aff. lepidum (1) (MET 15 352)	-4	8	16	23																											
293	Marsdenia australis	12949	8	17	24																											
294	Corchorus aff. parviflorus	-50408	8	18	25																											
295	Euphorbia boophthona (Large seed form)	-2469	8	18	25		1																									
296	Streptoglossa bubakii	8235	8	18	25																											
297	Amaranthus cuspidifolius	2660	8	18	25																											
298	Indigofera monophylla (grey leaflet form)	-174	8	18	25																											
299	Pterocaulon sphacelatum	8192	8	18	25												1								1	1						
300	Hibiscus sturtii var. grandiflorus	11385	8	18	25									1																		
301	Abutilon trudgenii	16916	8	18	25		1																									
302	Haloragis gossei var. gossei	-40011	8	18	26		1											1														
303	Heliotropium heteranthum	6712	8	18	26									1				1	1													
304	Oldenlandia crouchiana	7338	8	18	26												1	1														
305	Euphorbia tannensis subsp. eremophila (Hamersley form)	-10142	8	18	27																	1										
306	Waltheria indica	5106	8	18	27																											
307	Scaevola spinescens (broad form)	-2586	8	18	27														1													
308	Indigofera monophylla (small calyx form)	-2493	8	18	27																1											
309	Clerodendrum tomentosum var. lanceolatum	13689	8	18	27																1										1	
310	Enneapogon caerulescens	357	8	19	28												1															
311	Ptilotus auriculifolius	2698	8	19	28																											
312	Portulaca oleracea	2884	8	19	29	1																										
313	Goodenia forrestii	7509	8	19	29									1	1		1		1					1								
314	Hibiscus burtonii	4924	8	19	30									1	1		1		1													
315	Polycarpaea corymbosa var. corymbosa	12075	8	19	30												1		1													
316	Flaveria australasica subsp. australasica	-50429	9	20	31														1													
317	Malvastrum americanum	4962	9	20	31												1	1	1													
318	Ipomoea muelleri	6633	9	20	31												1		1													
319	Stylobasium spathulatum	3182	9	21	32						1			1																		
320	Cucumis melo subsp. agrestis	12039	9	21	32						1	1		1		1										1						
321	Acacia colei var. colei	17013	9	21	32						1		1		1																1	
322	Eucalyptus camaldulensis var. obtusa	15441	9	21	33	1	1																									
323	Rhynchosia minima var. australis	-10198	9	22	34																1											
324	Cenchrus ciliaris	258	9	22	34	1							1		1																	
325	Phyllanthus maderaspatensis	4680	9	22	34																							1			1	1
326	Alternanthera nana	2651	9	22	34		1			1	1	1	1	1	1						1		1	1	1	1					1	
327	Euphorbia coghlanii	4623	9	22	34					1	1	1	1	1	1	1	1			1	1					1						1
328	Crotalaria medicaginea	3783	9	22	34							1		1	1	1				1	1	1			1	1		1	1	1	1	
329	Leptopus decaisnei var. orbicularis	13725	9	22	34						1	1					1			1	1										1	
330	Eragrostis cumingii	375	9	22	34						1	1			1		1			1	1	1				1					1	
331	Sporobolus australasicus	629	9	22	34						1			1						1	1	1			1						1	
332	Evolvulus alsinoides var. villosicalyx	11200	9	22	34									1	1					1												
333	Solanum phlomoides	7029	9	22	34						1	1		1				1	1	1	1	1										
334	Boerhavia coccinea	2770	9	22	34									1	1		1	1	1	1	1		1	1	1	1						
335	Sida rohlenae subsp. rohlenae	18149	9	22	34				1					1	1		1	1	1	1		1		1	1	1						
336	Gossypium australe (Whim Creek form)	-2266	9	23	35				1					1	1	1	1	1						1	1	1	1					
337	Acacia trachycarpa	3579	9	23	35						1			1	1		1			1	1											
338	Corchorus lasiocarpus subsp. lasiocarpus	18409	9	23	35			1	1				1	1	1					1	1				1							
339	Enneapogon polyphyllus	365	9	23	35								1		1	1																
340	Aristida contorta	207	9	23	36								1		1	1											1					
341	Hibiscus sturtii var. platychlamys	11477	9	23	36								1	1	1	1		1	1		1			1					1			
342	Triodia longiceps	690	9	23	36										1				1			1										
343	Eremophila longifolia	7234	9	23	36										1		1		1				1	1	1							
344	Senna sp. Port Hedland (SPB 20-09-05B)	-90150	10	24	37												1	1					1	1	1							
345	Cyperus iria	798	10	24	37					1				1				1								1						
346	Hibiscus leptocladus	4933	10	24	37					1							1									1						
347	Triumfetta johnstonii	4878	10	24	37																											
348	Pentalepis trichodesmoides	13494	10	24	37																											
349	Hibiscus brachychlaenus	4922	10	24	38																											
350	Indigofera boviperda subsp. boviperda	17113	10	24	38																											
351	Eragrostis aff. eriopoda (WAS site 963)	-11043	11	25	39																											
352	Cymbopogon obtectus	281	11	25	39																											
353	Triumfetta aff. chaetocarpa (PAN3/4)	-2609	12	26	40																											
354	Euphorbia schultzii	4642	12	26	40																											
355	Bergia pedicellaris	5184	12	26	40																											
356	Acacia victoriae	3595	12	26	41																											
357	Heliotropium cunninghamii	6706	12	26	41																											
358	Eulalia aurea	11011	12	26	41																											
359	Senna artemisioides aff subsp oligophylla (thinly sericeous)	-11007	13	27	42																											
360	Scaevola amblyanthera var. centralis	13178	13	27	42																										1	
361	Aristida ingrata	213	13	27	42																									1	1	1
362	Sida arenicola	4966	13	27	42												1									1						
363	Melhania oblongifolia	5051	13	27	42												1															
364	Eragrostis minor	389	13	28	43												1															
365	Abutilon fraseri	4891	13	28	43												1															
366	Chrysopogon fallax	273	13	29	44											1	1	1														
367	Abutilon cunninghamii	9080	13	29	44												1															
368	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/1990 PN	16932	13	30	45												1															
369	Digitaria brownii	310	13	31	46												1															
370	Aristida holathera var. latifolia	11193	13	31	47												1															
371	Sida sp. verrucose glands (F.H. Mollemans 2423)	16948	13	31	47												1															

.ID	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
PROJ	MTL	550A	MTL	055	055	055	055	055	055	055	FCB	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055	055
SITE	489	R00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
gp15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
gp30	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
gp60	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
gp90	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
geo	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czc	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
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Appendix 5. Main species by 60-group classification of Robe Pisolite data set

		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	0055	0055	0055	BC	BC	BC	BC	378	550A	0055	0055	0055	0055	MTL	550A	MTL	0055	0055	0055	0055	0055	0055	0055	FCB	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	R00	ON0	ON0	IN0	ON0	489	R00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79	80	80	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp	Qa	Czp	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czp	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R																																																					
.ID	NAME	species	gp30	gp60	.gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
372	Acacia stowardii (linear form)	-53	14	32	48												1				1																																															1											
373	Rhyncharrhena linearis	6599	14	32	48													1		1	1	1																											1			1		1	1																	1							
374	Eragrostis leptocarpa	388	14	32	48												1	1		1	1																																1	1																								
375	Pluchea tetranthera	8170	14	32	48												|1|																																																												
376	Enchylaena tomentosa var. tomentosa	12064	14	32	49												|1|																																																												
377	Hibiscus aff. coatesii	-157	15	33	50						1							1																																																												
378	Maireana planifolia	2556	15	33	50						1							1																																																												
379	Ptilotus polystachyus var. polystachyus	17657	15	33	50												|1|																																																												
380	Acacia aff. aneura (narrow fine veined; site 1259)	-18	15	33	50														1																																																											
381	Eriachne aristidea	400	15	33	50														1																																																											
382	Cheilanthes sieberi subsp. sieberi	12818	15	33	50														1																																																											
383	Aristida holathera var. holathera	12063	15	33	51			1											1							1																																																				
384	Phyllanthus erwinii	17626	15	33	51														1			1																																																							
385	Dysphania kalpari	2502	15	34	52			1											1			1																																																							
386	Sida sp. dark green fruit (S. van Leeuwen 2260)	19712	15	34	52														1																														1																													
387	Acacia tetragonophylla	3577	15	34	52														1																																	1																											
388	Acacia marramamba	3435	15	34	52														1																																																											
389	Eremophila forrestii subsp. forrestii	15052	15	34	52														1																																																											
390	Wahlenbergia tumidifructa	7393	15	34	52														1																																																											
391	Sida pilbarensis (green form)	-90105	16	35	53														1																																									1																			
392	Heliotropium crispatum	6705	16	35	53														1																																																											
393	Vigna lanceolata var. latifolia	-306	16	36	54														1												1																																																
394	Oldenlandia sp. 'gilgai'	-200	16	36	54																				1																																																					
395	Brachyachne convergens	241	16	36	54																				1																																																					
396	Eriachne obtusa	414	16	36	54																				1																																																					
397	Desmodium muelleri	3856	16	36	54																				1																																																					
398	Corchorus tridens	4865	16	36	54																				1																																																					
399	Swainsona sp. Hamersley Station (A.A. Mitchell 196)	17030	16	36	54																				1																																																					
400	Cullen graveolens	17436	16	36	54																				1																																																					
401	Senna hamersleyensis	18451	16	36	54																				1																																																					
402	Abutilon otocarpum (acute leaf form)	-10192	17	37	55																				1																																																					
403	Chloris pectinata	269	17	38	56																				1																																																					
404	Dichanthium sericeum subsp. humilius	13741	17	38	56																				1																																																					
405	Sida aff. fibulifera 'var. L'	-243	18	39	57													1	1						1	1																																																						
406	Aristida latifolia	215	18	39	57						1							1							1	1																																																			
407	Triodia brizoides	681	18	39	57													1					1		1	1																																																			
408	Sclerolaena costata	2604	18	39	57																		1	1	1	1																																																			
409	Sclerolaena cornishiana	2603	18	39	57																		1	1	1	1																																																			
410	Goodenia muelleriana	12552	18	39	57																		1	1	1																																																					
411	Eragrostis xerophila	399	18	40	58																	|1|																																																								
412	Eriachne benthamii	403	18	40	58													1						1																																																							
413	Senna sp. Karijini (M.E. Trudgen 10392)	18595	18	40	58													1					1	1		1																	1																																					
414	Iseilema eremaeum	459	18	40	58																					1																																																				
415	Panicum laevinode	505	18	40	58																					1																																																				
416	Desmodium campylocaulon	3852	18	40	58																					1																																																				
417	Hibiscus brachysiphonius	4923	18	40	58																					1																																																				
418	Crotalaria dissitiflora subsp. benthamiana	19378	18	40	58																				1	1																																																				
419	Neptunia dimorphantha	3614	18	40	58																				1	1																																																				
420	Acacia pyrifolia var. morrisonii	-90056	19	41	59																				1	1																																																				
421	Amaranthus mitchellii	2666	19	41	59																				1	1																																																				
422	Cullen martinii	17116	19	41	59																				1	1																																																				
423	Acacia kempeana (1)	-43	19	41	60																																																																							
424	Ptilotus macrocephalus	2741	19	41	60																																																																								
425	Nicotiana occidentalis subsp. occidentalis	11856	19	41	60																																																																								
426	Glycine canescens	3938	19	41	60																																																																								
427	Sida aff. fibulifera (MET Site 1346)	-10009	19	42	61																																																																								
428	Polymeria ambigua	6653	19	42	61																																																																								
429	Dysphania melanocarpa forma melanocarpa	-50427	20	43	62							1																																																																		
430	Sida aff. fibulifera (FMG 125-20)	-30026	20	43	62																																																																								
431	Ptilotus appendiculatus var. appendiculatus	11701	20	43	62																																																																								
432	Acacia farnesiana	3333	20	43	62																																																																								
433	Sida aff. fibulifera (B64-13B)	-2268	20	44	63																																																																								
434	Cullen pogonocarpum	17120	20	44	64																																																																								
435	Marsilea hirsuta	76	21	45	65																																																																								
436	Rostellularia adscendens var. clementii	12088	21	45	65									1			1																																																											
437	Boerhavia burbidgeana	2769	21	45	65													1																																																												
438	Echinochloa colona	328	21	45	65							1																																																																
439	Setaria dielsii	606	21	45	65							1																																																																
440	Polymeria aff. ambigua (MET 12, 302)	-50423	22	46	66											1																																																												
441	Perotis rara	546	22	46	66						1																																																																			
442	Pluchea squarrosa	8169	22	46	66						1																																																																			
443	Cyperus hesperius	12808	22	46	66															1	1									1																																																	
444	Rulingia luteiflora	5063	22	46	66															1	1	1																																																								
445	Amaranthus undulatus	20018	22	46	66															1	1										1	1																																													
446	Acrachne racemosa	172	22	46	66															1	1																																																									
447	Cynanchum floribundum	6584	22	46	66															1	1																																																										
448	Bidens bipinnata	7854	22	46	67															1	1																																																										
449	Euphorbia sp. (site 1089)	-142	22	46	68														|1|																																																										
450	Ipomoea polymorpha	6637	22	46	68														|1|																																																										
451	Evolvulus alsinoides var. decumbens	11416	22	46	68															1	1		1																																																								
452	Gomphrena affinis subsp. pilbarensis	18361	22	46	68															|1|																																																									
453	Abutilon aff. lepidium (Hilltops)	-80127	23	47	69																1																																																									
454	Boerhavia paludosa	2773	23	47	69															|1|																																																									
455	Swainsona stenodonta	4244	23	47	69															|1|																																																									
456	Cullen stipulaceum	15714	23	47	69									1	1								1																																																							
457	Indigofera linifolia	3980	23	47	69									1	1										1																																																				
458	Aerva javanica	2646	23	47	69									1	1																																																														
459	Polymeria aff. ambigua (PAN 26B-20)	-2624	23	48	70									1	1			1																																																											
460	Alysicarpus muelleri	17147	23	48	70									1	1						1																																																								
461	Dichanthium sericeum subsp. sericeum	11964	23	48	70									1	1																																																														
462	Tephrosia aff. supina (HD205-10)	-2507	23	48	71										1																																																															
463	Setaria verticillata	613	23	48	71						1					1								1																																																							

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

		PROJ				WPI	WPI	WPI	WPI	BC	BC	BC	BC	BC	BC	BC	BC	BC	271	0055	0055	0055	BC	BC	BC	BC	378	50A	0055	0055	0055	0055	MTL	50A	MTL	0055	0055	0055	0055	0055	0055	0055	FCB	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055	0055
		SITE				UC00	JC00	JC00	JC00	CQ1	CQ2	CQ2	CQ4	CQ3	CQ4	CQ4	CQ1	CQ4	RO4	FT01	FT02	ON0	CQ3	CQ4	CQ4	CQ4	UN6	R00	ON0	ON0	IN0	ON0	489	R00	501	FT13	FT17	FT05	FT12	FT19	FT20	FT18	###	FT29	FT27	FT36	ON0	OK02	OK02	FT21	OK01	OQ01	OQ01	ON0	ON0	FT07	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	ON0	FT11	FT25	FT31	FT24	ON0	ON0	OQ4	ON0	ON0	ON0	ON0	ON0	ON01
		gp15				10	10	10	10	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
		gp30				22	22	22	22	23	24	24	24	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	28	28	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
		gp60				45	45	45	45	46	47	47	47	47	47	48	49	49	50	51	51	51	52	52	53	53	54	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	58	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	60	60	60	60
		gp90				67	67	68	68	69	70	70	70	71	71	72	73	73	74	75	75	75	76	76	77	77	78	79	79	79	80	80	81	81	82	82	82	82	82	82	82	82	83	83	84	84	84	84	84	85	85	85	85	86	86	87	87	87	87	87	87	87	87	87	87	88	88	88	88	88	88	89	89	89	89	89	89	90
		geo				Tp	Tp	Tp	Tp	Czp									Czp	Czp	Czp	Czp					Q1	PLHb	Czp	Czp	Qa	Czp	AFm	PLHb	Eer	Czc	Czc	Czc	Czc	Czp	Czp	Czp	Czc	Czc	Czc	Czc	Czp	Czc	Czc	Czp	Czc	Qa	Czc	Czp	Czp	Czc	Czc	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	Czp	PLHb	Czp	Czp	Czc	Czp	Czp	Czp	Czp	AHs	Czp
		g								R	R	R	Ky	Tum	R	Ky	R	R					R	c	c	R																																																			
.ID	NAME	species	gp30	gp60	.gp90	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323
464	Tephrosia supina	4285	23	48	71										1					1																																																									
465	Indigastrum parviflorum	14587	23	48	71										1																																																													
466	Vachellia farnesiana	-50270	24	49	72										1																																																													
467	Ptilotus gomphrenoides var. gomphrenoides	11236	24	49	72										1																																																													
468	Euphorbia sp. (FMLMC-10)	-2692	24	49	73										1									1																																																				
469	Indigofera trita	3987	24	49	73					1	1	1			1										1	1																																																		
470	Cyperus vaginatus	818	24	49	73						1				1										1	1																																																		
471	Cullen leucanthum	17118	24	49	73						1		1	1	1		1							1																																																			
472	Pluchea rubelliflora	8168	24	49	73						1		1	1	1								1		1																																																		
473	Cenchrus setiger	10924	24	49	73						1	1	1	1	1																1																																													
474	Dactyloctenium radulans	290	24	49	74						1	1		1	1	1																																																													
475	Trianthema triquetra var. triquetra	11843	24	49	74						1	1	1	1													1																																																		
476	Amaranthus aff. pallidiflorus (WC148-11)	-2490	24	50	75						1	1	1	1	1																																																													
477	Digitaria ctenantha	313	24	50	75						1			1						1																																																								
478	Eragrostis tenellula	398	24	51	76						1			1																																																													
479	Typha domingensis	98	25	52	77						1		1				1																																																											
480	Chloris pumilio	270	25	52	77						1				1		1																																																											
481	Acacia ampliceps	3209	25	52	77						1	1		1					1						1																																																				
482	Ptilotus aervoides	2690	25	52	78						1	1																				1																																												
483	Enneapogon lindleyanus	360	26	53	79						1																																																																	
484	Flueggea virosa subsp. melanthesoides	12013	26	53	79						1																																																																	
485	Achyranthes aspera	2645	26	53	79						1																																																																	
486	Atalaya hemiglauca	4740	26	53	79					1			1								1																																																							
487	Acacia coriacea subsp. pendens	13502	26	53	79					1		1	1			1					1																																																								
488	Eriachne tenuiculmis	421	26	53	80							1			1	1							1																																																					
489	Stemodia grossa	7098	26	53	80					1		1	1		1	1																																																													
490	Eucalyptus victrix	14548	26	53	80					1		1	1		1																																																													
491	Pluchea dentex	8167	26	53	80								1		1													1	1	1	1																									1																							
492	Melaleuca glomerata	5915	26	54	81						1	1	1	1	1						1						1	1	1	1	1	1																																															
493	Melaleuca linophylla	5933	26	54	81						1	1	1		1												1		1	1																																																	
494	Enneapogon intermedius	12746	26	54	82								1				1											1	1	1																																																
495	Sida aff. fibulifera (HD200-6)	-10187	27	55	83								1																																																																	
496	Abutilon macrum	4898	27	55	83							1	1																																																																	
497	Indigofera monophylla (small leaflet form)	-176	27	56	84										1																																																														
498	Indigofera colutea	3973	27	56	85								1												1																																																					
499	Tribulus hirsutus	4377	27	56	86								1				1								1																																																					
500	Euphorbia aff. australis (B191)	-2550	27	57	87								1																																																																
501	Tephrosia aff. clementii (12) (HD1-32)	-2497	27	57	87								1																																																																
502	Polymeria aff. calycina	-220	27	57	87								1																																																																
503	Zaleya galericulata	2834	27	57	87								1																																																																	
504	Amaranthus aff. pallidiflorus (WAS1127)	-2487	28	58	88								1																																																																	
505	Eriachne aff. festucacea	-135	28	58	88								1																																																																	
506	Commelina ensifolia	1165	28	58	88								1																																																																	
507	Sesbania cannabina	4196	28	58	88						1																																																																			
508	Ammannia baccifera	5277	28	58	88						1																																																																			
509	Plumbago zeylanica	6491	28	58	88						1																																																																			
510	Sonchus oleraceus	8231	28	58	88						1																																																																			
511	Schoenoplectus subulatus	16257	28	58	88						1																																																																			
512	Bothriochloa bladhii subsp. bladhii	16329	28	58	88						1																																																																			
513	Euphorbia aff. australis var. 1 (MET 12 337)	-292	29	59	89						1																																																																				
514	Cassia oligophylla x helmsii	-91	29	59	89						1																																																																			
515	Acacia aff. aneura (grey flat recurved tips; MET 15,828	-17	29	59	89						1																																																																				
516	Amyema fitzgeraldii	2372	29	59	89													1																																																												
517	Acacia ayersiana	3232	29	59	89													1																																																												
518	Acacia stowardii	3561	29	59	89													1																																																												
519	Eremophila exilifolia	7205	29	59	89													1																																																												
520	Vittadinia arida	8259	29	59	89													1																																																												
521	Vittadinia virgata	8274	29	59	89													1																																																												
522	Ptilotus helipteroides var. helipteroides	12062	29	59	89													1																																																												
523	Ptilotus schwartzii var. schwartzii	15855	29	59	89													1																																																												
524	Senna glaucifolia	18449	29	59	89													1																																																												
525	Calandrinia ptychosperma	2864	30	60	90													1																																																												
526	Acacia ligulata	3419	30	60	90													1																																																												
527	Euphorbia hirta	4629	30	60	90													1																																																												
528	Abutilon amplum	4886	30	60	90																																																																										
529	Goodenia lamprosperma	7521	30	60	90																																																																										
530	Goodenia nuda	7530	30	60	90																																																																										
531	Blumea tenella	7866	30	60	90																																																																										
532	Vigna lanceolata var. lanceolata	11576	30	60	90																																																																										
533	Acacia sclerosperma subsp. sclerosperma	13078	30	60	90																																																																										
534	Eragrostis exigua	16731	30	60	90																																																																										
535	Corymbia candida	16783	30	60	90																																																																										
536	Pluchea dunlopii	17817	30	60	90																																																																										
537	Centipeda minima subsp. macrocephala	19762	30	60	90																																																																										
538	Convolvulus angustissimus subsp. angustissimus	19881	30	60	90																																																																										

Appendix 5. Main species by 60-group classification of Robe Pisolite data set

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Appendix 10 Areas of Impact of Vegetation Types of the Study Area

Resource Area (Mesa)

Veg Code	Vegetation type	Total Study Area (Ha)	Cochrane & Farnum Impact Area (Ha)	Cochrane & Farnum % Impact	Jewell Impact Area (Ha)	Jewell % Impact	Kens Bore Impact Area (Ha)	Kens Bore % Impact	Cardo North Impact Area (Ha)	Cardo North % Impact	Cardo East Impact Area (Ha)	Cardo East % Impact	Upper Cane Impact Area (Ha)	Upper Cane % Impact	Trinity Impact Area (Ha)	Trinity % Impact	Catho Well Impact Area (Ha)	Catho Well % Impact
A1a	AtrApyTeCEc	77.22																
A3a	CcChAcolAaTe	56.19																
A3b	ChAaAbAsTe	31.82																
A3c	ChAaAtrTe/g	44.26																
A3d	ChAbAcApyTeTw	70.61																
A5c	EcEvSTg	23.40																
A5d	EvAbGOrOaTeTw	13.48																
A5e	EvApyTe	153.66																
A5f	EvMlMgTe/h	37.67																
C1a	AatkAbTeTw	77.82																
C2b	AiAaPTaTe	112.37																
C2c	AiAaTe	44.04															0.03	0.07
C3a	AsTe	56.66					0.60	1.06										
C3b	ChAsTe	16.93																
C4a	AsAbTe	43.25																
C6a	AsAxTe	98.23																
C6c	ChAsAaAxTe	52.31																
C7a	AiTe	506.42			0.05	0.01					6.20	1.22						
C7b	ApyGpTe	63.65																
I1c	ChAaAbTe	18.21																
I1e	ElAbAaTe	38.27																
I1f	GOrAaAbTeTw	8.00																
I2a	ApyAbTe	5.04																
I2c	ApyAcGOrTe	46.59																
I2d	ChApyAtrTe/h	54.38																
I2e	ChApyTe	59.68																
I2f	EvChApyGOrTe/g	31.57																
I3a	AcAbERlSTYsTe	77.96																
I3c	ChAaTe	411.18																
I3f	ElChAtTeTw	86.94																
I5a	CcAadAcAaAbTp	29.58																
I5d	ChAaAbTeTw	97.42	0.54	0.55														
I5e	ChAatkAbTw	1.76																
I5f	ChAcolAbGOrTe	21.04																
I5g	ChAiAaTe	10.25																
I5h	ChAtAatkAaTw	72.55																
I5j	ChAtAcAaTe	127.92															2.80	2.19
I5k	ChAtGOrTwTe	2.79																
I5l	ChGOrAbTw	1.27																
I5m	ChSTYsERlm	1.05																
I5n	ElAaAbTwTsprr	8.18																
I5o	ElChAaAatkTeTw	34.05																
I5p	ElChAbTwTe	51.54	0.03	0.06														
I6c	EcGOrTEspbCEc	1.65																
I6d	ElChAtTw	6.42																
I6e	EvChAatkAtAwAbGOaTe	25.32																
P1a	AatkAbAaTw	300.74																
P1b	AatkAbAwTw	55.31																
P1c	ChAatkAbTwTe	321.11																
P2b	AaTeTw	124.21																
P2c	AmAaTwTsprr	1.28																
P2d	ChAaTwTe	112.19																
P2f	ChAiAbTw	122.58																
P2g	ChAsAaTwTe	56.07																
P3a	AsERcTw	14.21																
P3c	AsAbTwTe	28.82					0.89	3.09										
P4a	AiAaTw	25.20																
P4b	ChAaTw	88.48									5.45	6.16						
P5d	AxTw	681.60	3.05	0.45			4.73	0.69			5.81	0.85	0.03	0.00	0.05	0.01	0.18	0.03
P5e	AxTwTe	405.12																
P6a	AiAbTe	244.34							0.04	0.02								
P6b	AiAtTe	189.61					0.03	0.02										
P6c	ChAaAiTe	5.18																
P6d	ChAbAaTe	135.96					6.96	5.12										
P6e	ChAiAbTe	1694.44					38.30	2.26										
P6f	ChApyGpTe	325.21											0.02	0.01				
P6g	ChAwTe	85.10																
P6h	ChTe/h (burnt)	15.06																
P6i	Te	93.11																
S1a	AbAatkTw	13.05																
S1b	AbAatkTwTe	99.56																
S1c	GwAbAatkTw	17.85													16.20	90.75		
S2b	AcAbTeTw	8.01					3.74	46.71										
S3a	AiApTw	100.60																
S3b	ApAarTw	13.53															8.72	64.45
S3c	ApAbTw	102.26													16.70	16.33		
S3d	ApAiERfTw	7.25			7.25	100.00												
S3e	ApGwAarTw	28.25													26.30	93.11		
S3f	ApTw	88.27					18.28	20.71							3.96	4.49		
S4b	AarTw	788.55													3.11	0.39	348.61	44.21
S4c	AbAaPlTw	81.14																
S4d	AbAaTe	96.96																
S4e	AcAbGOrTw	21.11					0.58	2.75										
S4f	AcApTw	14.34																
S4g	AcSTYsTsprrTe	0.83											0.82	98.63				
S4h	AcTwTe	6.32																
S4i	AiApTwTsprr/h	17.69											17.31	97.86				
S4k	AtGwTw	3.43															1.12	32.68
S4l	AtPlTwTsprr	30.32					24.94	82.26										
S4m	GwAbTw	5.65													4.25	75.25		
S4n	GwPlAbTsprrTw	9.94																
S5b	AatkAbTwTsprr	114.11									65.29	57.22						
S5c	AbDAcTsprrTw	1.99	0.52	26.18														
S5d	AbTwTsprr	192.51	109.49	56.87					0.69	0.36								
S5e	AcApAiTwTsprr	22.78											17.65	77.49				
S5f	AiAbTwTsprr	183.12					175.63	95.91										
S5g	AiAcTwTsprr	39.98											38.85	97.16				
S5h	AiPlTsprrTw	32.70					30.99	94.76										
S5i	ApAbTwTsprr	28.58							6.69	23.41								
S5j	ApTsprrTw	50.97			8.09	15.87			23.78	46.65								
S5k	ApERfTwTsprr	32.38									11.32	34.95	19.80	61.14				
S5l	CfAcERlaTsprr	2.14											1.63	76.30				
S6a	AsTw	48.32																
S7c	AbSsspTw	881.91	9.24	1.05			6.80	0.77	1.81	0.21			0.55	0.06			0.72	
S7d	AbTw	373.90	7.03	1.88	5.88	1.57	8.32	2.23										
S7e	AiAbTw	48.47					11.93	24.61										
S7f	AiAmAbTw	14.86																
S7g	AiAsTw	46.27																
S7h	AiTEspbTw	0.66																
S7i	AiTw	1962.23											1.62	0.08			2.57	0.13
S7j	ChAbTw	0.46																
S7k	ChAmTw	0.60																
S7l	ChGwAiAbTw	13.64																
S7n	Tw	827.21					5.10	0.62			4.61	0.56	0.50	0.06				
S8a	AaneDOcTw	2.03																
S8b	AaneERlalTw	3.63																
S8c	AaneGwAatkTe	2.01																
S9a	AaDAcTw	71.29															2.67	3.75
S10a	ElAaneAcGbTsprrTw	5.37											4.14	77.07				
S10b	ElAatkAbTsprrTw	211.62																
S10c	ElAbTsprrTw	59.18																
S10d	ElAbTwTsprr	35.10	12.37	35.24														
S10e	ElAcAiTwTsprr	37.92											3.19	8.41				
S10f	ElAcTsprr	16.74					0.49	2.90					10.64	63.55				
S10g	ElAcTwTsprr	5.98					5.64	94.28										
S10h	ElAmTwTsprr	6.20											2.56	41.29				
S10i	ElApTsprrTw	44.37	3.93	8.86	26.73	60.24									3.65	8.23		
S10j	ElApTwTsprrERlm	70.74	2.91	4.11	3.45	4.88	16.53	23.37							2.67	3.77		
S10k	ElAtTsprr	32.06									23.78	74.17						
S10l	ElPlAaTsprrTw	22.02																
S10m	ElPlTsprrTw	8.37	0.96	11.47	5.37	64.18												
S10n	ElTsprrTw	82.96			4.84	5.83	12.50	15.07	4.79	5.77			0.23	0.28				
S11a	ElAaAbTw	64.85															26.73	41.22
S11b	ElAaneApTw	36.25									7.46	20.58			4.16	11.48		
S11c	ElAarAbTw	50.64															13.98	27.60
S11d	ElAbAsTw	91.77			3.59	3.91									0.98	1.07		
S11e	ElAbTw	588.32					0.60	0.10					0.08	0.01	1.78	0.30		
S11f	ElAcTw	60.27															37.57	62.33
S11g	ElAptTw	18.28																
S11h	ElApTw	281.40													39.34	13.98		
S11i	ElAtAarTw	12.74															3.38	26.53
S11j	ElAtTw	30.68																
S11k	ElChAbTw	130.26																
S11l	ElGwApTwERlt	5.30													2.49	46.94		
S11m	ElTw	10.23					6.79	66.37										
S12a	AbTe	25.95					8.25	31.79										
S12b	Tsprr	3.47					1.60	46.24										
S12c	Tsprr (burnt)	47.20									45.02	95.39						
S13a	TERcAcTw	0.92																
S13b	TERcTw	63.93																
S14a	AbTeTw	38.65																
S14b	AiAbTwTe	167.84					104.31	62.15										
S14c	AiERfTwTe	42.57																
S14d	AxAbTwTe	478.72													1.42	0.30		
Total Number Veg Types impacted per component			11		9		25		6		9		17		15		13	
Total Impact Area per Component (Ha)			129.90		21.27		337.82		33.01		98.68		98.78		70.57		364.75	
Total Number of Veg types Impacted		134																
Number of Veg types NOT impacted		20																
Number of Veg types per component impacted by >50%			1		3		6		0		3		8		3		2	
Number of Veg types per component impacted by >75%			0		1		4		0		1		6		2		0	
Number of Veg types per component impacted by >99%			0		1		0		0		0		0		0		0	

Waste Dumps / ROM

Veg Code	Cochrane Impact Area (Ha)	Cochrane % Impact	Jewell Impact Area (Ha)	Jewell % Impact	Kens Bore Impact Area (Ha)	Kens Bore % Impact	Cardo North Impact Area (Ha)	Cardo North % Impact	Cardo East Impact Area (Ha)	Cardo East % Impact	Upper Cane Impact Area (Ha)	Upper Cane % Impact	Trinity Impact Area (Ha)	Trinity % Impact	Catho Well Impact Area (Ha)	Catho Well % Impact
A1a					12.77	16.54										
A3a																
A3b					15.11	47.48										
A3c																
A3d																
A5c																
A5d																
A5e					16.25	10.58										
A5f																
C1a							0.24	0.31								
C2b																
C2c											4.15	9.43			36.19	82.17
C3a					9.15	16.15									30.71	54.20
C3b																
C4a					12.22	28.24					7.37	17.04			22.81	52.73
C6a																
C6c																
C7a			33.89	6.69	6.70	1.32			116.03	22.91						
C7b																
I1c															4.52	24.83
I1e															0.12	0.31
I1f																
I2a																
I2c															5.25	11.27
I2d	5.46	10.04														
I2e																
I2f																
I3a															5.91	7.58
I3c					12.01	2.92									8.29	2.02
I3f																
I5a																
I5d	7.83	8.04														
I5e																
I5f					6.92	32.88										
I5g																
I5h																
I5j															0.93	0.73
I5k	1.37	49.04														
I5l																
I5m																
I5n																
I5o																
I5p	5.80	11.25														
I6c																
I6d																
I6e																
P1a																
P1b																
P1c																
P2b					10.78	8.68										
P2c											1.15	90.17				
P2d																
P2f																
P2g																
P3a																
P3c	2.04	7.06													0.15	0.52
P4a																
P4b									30.94	34.97						
P5d	4.64	0.68			47.92	7.03			39.71	5.83			8.16	1.20	53.94	7.91
P5e							5.89	1.45	4.48	1.11	0.81	0.20			22.48	5.55
P6a	28.55	11.68					21.73	8.89								
P6b					74.32	39.20										
P6c																
P6d					53.50	39.35										
P6e	8.80	0.52	0.18	0.01	83.70	4.94	12.78	0.75								
P6f											4.29	1.32				
P6g																
P6h																
P6i																
S1a																
S1b																
S1c																
S2b																
S3a																
S3b															4.02	29.71
S3c																
S3d																
S3e																
S3f					0.02	0.02										
S4b															22.99	2.92
S4c																
S4d															39.98	41.23
S4e																
S4f																
S4g																
S4h																
S4i																
S4k															0.16	4.67
S4l																
S4m																
S4n																
S5b									0.13	0.11						
S5c																
S5d	2.21	1.15			8.46	4.40										
S5e																
S5f																
S5g																
S5h					0.51	1.57										
S5i							1.90	6.65								
S5j							0.61	1.20								
S5k																
S5l																
S6a																
S7c	34.71	3.94	15.38	1.74	0.25	0.03					2.00	0.23			25.06	2.84
S7d	6.86	1.83			13.82	3.70			3.66	0.98					19.79	5.29
S7e					0.24	0.50										
S7f																
S7g																
S7h																
S7i					2.71	0.14					9.91	0.51				
S7j																
S7k											0.60	100.00				
S7l																
S7n	24.27	2.93			3.22	0.39	11.22	1.36			16.52	2.00	0.03	0.00	6.09	0.74
S8a															0.0400	1.97
S8b																
S8c																
S9a															0.81	1.14
S10a																
S10b																
S10c																
S10d	1.27	3.62														
S10e																
S10f																
S10g																
S10h											1.47	23.71				
S10i																
S10j			0.16	0.23									0.01	0.01		
S10k																
S10l																
S10m	0.36	4.30														
S10n					1.27	1.53	0.20	0.24								
S11a															4.63	7.14
S11b									0.91	2.51						
S11c																
S11d			3.75	4.09									3.81	4.15	1.86	2.03
S11e					48.49	8.24			13.60	2.31	11.65	1.98				
S11f																
S11g																
S11h																
S11i																
S11j																
S11k	5.78	4.44														
S11l																
S11m																
S12a					4.45	17.15										
S12b																
S12c									0.07	0.15						
S13a																
S13b																
S14a																
S14b					18.11	10.79										
S14c																
S14d													42.58	8.90	9.23	1.93
Total Number Veg Types impacted per component	15		5		25		8		9		11		5		24	
Total Impact Area per Component (Ha)	132.54		49.45		362.70		54.37		194.95		46.80		8.19		309.43	
Number of Veg types per component impacted by >50%	0		0		0		0		0		2		0		3	
Number of Veg types per component impacted by >75%	0		0		0		0		0		2		0		1	
Number of Veg types per component impacted by >99%	0		0		0		0		0		1		0		0	

Gas Pipeline / Transport Corridor / Other

Veg Code	Gas Pipeline Impact Area (Ha)	Gas Pipeline % Impact	Transport Corridor Impact Area (Ha)	Transport Corridor % Impact	Other Impact Area (Ha)	Other % Impact	Number of Impact Areas Veg type is found in	Cumulative % Impact over Resource Areas (mesas) only	Cumilative % Impact over entire Mine Area
A1a							1	0.00	16.54
A3a			3.43	6.10			1	0.00	6.10
A3b							1	0.00	47.48
A3c			12.65	28.58			1	0.00	28.58
A3d			5.87	8.31			1	0.00	8.31
A5c			2.99	12.78			1	0.00	12.78
A5d					0.17	1.26	1	0.00	1.26
A5e			32.32	21.03	3.54	2.30	3	0.00	33.91
A5f			3.16	8.39			1	0.00	8.39
C1a	6.92	8.89	11.79	15.15	1.50	1.93	4	0.00	26.28
C2b			11.61	10.33			1	0.00	10.33
C2c					0.80	1.82	4	0.07	93.48
C3a							3	1.06	71.41
C3b			9.03	53.34			1	0.00	53.34
C4a							3	0.00	98.01
C6a			9.85	10.03			1	0.00	10.03
C6c			19.46	37.20			1	0.00	37.20
C7a			89.68	17.71	59.05	11.66	7	1.23	61.53
C7b			7.65	12.02	0.94	1.48	2	0.00	13.50
I1c					7.73	42.46	2	0.00	67.29
I1e			1.01	2.64			2	0.00	2.95
I1f					2.80	35.02	1	0.00	35.02
I2a			3.19	63.34	1.38	27.40	2	0.00	90.74
I2c			3.01	6.46			2	0.00	17.73
I2d			2.49	4.58	16.82	30.93	3	0.00	45.55
I2e			12.28	20.58	2.92	4.89	2	0.00	25.47
I2f			5.31	16.82	6.56	20.78	2	0.00	37.60
I3a			39.06	50.10	16.41	21.05	3	0.00	78.73
I3c			74.52	18.12	29.66	7.21	4	0.00	30.27
I3f			5.60	6.44			1	0.00	6.44
I5a			5.74	19.40			1	0.00	19.40
I5d			19.89	20.42	4.79	4.92	4	0.55	33.92
I5e							0	0.00	0.00
I5f							1	0.00	32.88
I5g			2.19	21.36	0.36	3.51	2	0.00	24.87
I5h			16.72	23.05			1	0.00	23.05
I5j					6.77	5.29	3	2.19	8.21
I5k							1	0.00	49.04
I5l							0	0.00	0.00
I5m			0.31	29.91			1	0.00	29.91
I5n			4.41	53.91			1	0.00	53.91
I5o			3.38	9.93	2.67	7.84	2	0.00	17.77
I5p			25.03	48.57			3	0.06	59.88
I6c			0.68	41.21			1	0.00	41.21
I6d							0	0.00	0.00
I6e							0	0.00	0.00
P1a			46.08	15.32	5.10	1.70	2	0.00	17.02
P1b			4.59	8.30			1	0.00	8.30
P1c			54.59	17.00			1	0.00	17.00
P2b			17.04	13.72	3.40	2.74	3	0.00	25.13
P2c							1	0.00	90.17
P2d			26.68	23.78			1	0.00	23.78
P2f			49.23	40.16	2.78	2.27	2	0.00	42.43
P2g			16.02	28.57			1	0.00	28.57
P3a			3.49	24.58			1	0.00	24.58
P3c			0.47	1.63	0.18	0.62	5	3.09	12.93
P4a			3.02	11.98			1	0.00	11.98
P4b			4.81	5.44	2.91	3.29	4	6.16	49.85
P5d			34.29	5.03	34.24	5.02	13	2.03	34.73
P5e	3.40	0.84	48.67	12.01	0.35	0.09	7	0.00	21.25
P6a			31.32	12.82	2.07	0.85	5	0.02	34.26
P6b			44.49	23.46	51.52	27.17	4	0.02	89.85
P6c			1.21	23.35			1	0.00	23.35
P6d			0.25	0.18	26.00	19.12	4	5.12	63.78
P6e			203.66	12.02	48.51	2.86	7	2.26	23.37
P6f			43.82	13.47	54.03	16.61	4	0.01	31.41
P6g			15.94	18.73			1	0.00	18.73
P6h							0	0.00	0.00
P6i			15.10	16.22	25.52	27.41	2	0.00	43.63
S1a			3.93	30.12			1	0.00	30.12
S1b			7.84	7.87			1	0.00	7.87
S1c							1	90.75	90.75
S2b			2.15	26.86			2	46.71	73.57
S3a							0	0.00	0.00
S3b							2	64.45	94.15
S3c							1	16.33	16.33
S3d							1	100.00	100.00
S3e					0.46	1.63	2	93.11	94.73
S3f					2.28	2.58	4	25.20	27.80
S4b			16.39	2.08	74.54	9.45	5	44.60	59.05
S4c							0	0.00	0.00
S4d			11.49	11.85	2.19	2.26	3	0.00	55.34
S4e			1.68	7.96			2	2.75	10.71
S4f							0	0.00	0.00
S4g							1	98.63	98.63
S4h							0	0.00	0.00
S4i							1	97.86	97.86
S4k					0.20	5.84	3	32.68	43.18
S4l							1	82.26	82.26
S4m							1	75.25	75.25
S4n							0	0.00	0.00
S5b							2	57.22	57.33
S5c							1	26.18	26.18
S5d			0.12	0.06	1.50	0.78	6	57.23	63.62
S5e					1.24	5.44	2	77.49	82.94
S5f					0.02	0.01	2	95.91	95.92
S5g							1	97.16	97.16
S5h					0.65	1.99	3	94.76	98.32
S5i			0.05	0.17	0.41	1.43	4	23.41	31.67
S5j					3.22	6.32	4	62.53	70.04
S5k					0.27	0.83	3	96.09	96.93
S5l					0.14	6.55	2	76.30	82.85
S6a			1.47	3.04			1	0.00	3.04
S7c			18.94	2.15	37.79	4.29	12	2.09	17.30
S7d			25.64	6.86	32.53	8.70	9	5.68	33.04
S7e			6.31	13.02	0.93	1.92	4	24.61	40.05
S7f							0	0.00	0.00
S7g			21.72	46.94	4.91	10.61	2	0.00	57.55
S7h							0	0.00	0.00
S7i	0.26	0.01	282.37	14.39	266.87	13.60	7	0.21	28.86
S7j					0.46	99.76	1	0.00	99.76
S7k							1	0.00	100.00
S7l							0	0.00	0.00
S7n			49.19	5.95	40.03	4.84	11	1.23	19.44
S8a							1	0.00	1.97
S8b							0	0.00	0.00
S8c							0	0.00	0.00
S9a							2	3.75	4.88
S10a					0.03	0.56	2	77.07	77.63
S10b			17.74	8.38			1	0.00	8.38
S10c							0	0.00	0.00
S10d					1.19	3.39	3	35.24	42.25
S10e							1	8.41	8.41
S10f					0.44	2.63	3	66.45	69.08
S10g					0.35	5.85	2	94.28	100.13
S10h							2	41.29	65.00
S10i			0.02	0.05	0.28	0.63	5	77.33	78.00
S10j			0.01	0.01	0.65	0.92	8	36.13	37.31
S10k							1	74.17	74.17
S10l							0	0.00	0.00
S10m					0.14	1.67	4	75.65	81.63
S10n					2.91	3.51	7	26.95	32.24
S11a							2	41.22	48.36
S11b					0.26	0.72	4	32.06	35.29
S11c					1.09	2.15	2	27.60	29.76
S11d			0.56	0.61	0.45	0.49	7	4.98	16.35
S11e			25.25	4.29	16.07	2.73	8	0.42	19.98
S11f					0.19	0.32	2	62.33	62.65
S11g			9.06	49.55			1	0.00	49.55
S11h					0.58	0.21	2	13.98	14.19
S11i					0.49	3.85	2	26.53	30.37
S11j							0	0.00	0.00
S11k			0.24	0.18	0.13	0.10	3	0.00	4.72
S11l							1	46.94	46.94
S11m			0.20	1.96			2	66.37	68.33
S12a			1.04	4.01	3.65	14.06	4	31.79	67.00
S12b			0.23	6.63			2	46.24	52.88
S12c					0.07	0.15	3	95.39	95.68
S13a							0	0.00	0.00
S13b			12.69	19.85			1	0.00	19.85
S14a							0	0.00	0.00
S14b					10.57	6.30	3	62.15	79.24
S14c			6.27	14.73			1	0.00	14.73
S14d			0.47	0.10	17.90	3.74	5	0.30	14.96
Total Number Veg Types impacted per component	3		80		71				
Total Impact Area per Component (Ha)	10.58		1554.95		892.12				
Number of Veg types per component impacted by >50%	0		3		1			27	49
Number of Veg types per component impacted by >75%	0		0		1			18	27
Number of Veg types per component impacted by >99%	0		0		1			1	4

Appendix 11 Vascular Flora Recorded in the Study Area

FAMILY		SPECIES
Adiantaceae		
		Cheilanthes austrotenuifolia
		Cheilanthes brownii
		Cheilanthes lasiophylla
		Cheilanthes sieberi ssp. *sieberi*
		Cheilanthes sp. (inadequate material)
Marsileaceae		
		Marsilea drummondii
Poaceae		
		Amphipogon sericeus
		Amphipogon sericeus (Newman form BR2-21)
		Aristida burbidgeae
		Aristida contorta
		Aristida holathera var. *holathera*
		Aristida holathera var. *latifolia*
		Aristida ingrata
		Aristida sp. (inadequate material)
		Brachyachne prostrata
	*	*Cenchrus ciliaris*
	*	*Cenchrus setiger*
		Chrysopogon fallax
		Cymbopogon ambiguus
		Cymbopogon obtectus
		Cymbopogon procerus
		Cymbopogon sp. (inadequate material)
		Dactyloctenium radulans
		Enneapogon caerulescens var. *caerulescens*
		Enneapogon intermedius
		Enneapogon lindleyanus
		Enneapogon polyphyllus
		Enneapogon sp. (inadequate material)
		Eragrostis aff. *eriopoda* (WAS site 963)
		Eragrostis cumingii
		Eragrostis dielsii
		Eragrostis laniflora
		Eragrostis sp. (inadequate material)
		Eragrostis tenellula
		Eriachne aristidea
		Eriachne helmsii
		Eriachne mucronata
		Eriachne mucronata (typical form)
		Eriachne obtusa
		Eriachne pulchella ssp. *dominii*
		Eriachne pulchella ssp. *pulchella*
		Eriachne sp. (inadequate material)
		Eriachne tenuiculmis
		Eulalia aurea
		Iseilema dolichotrichum
		Iseilema membranaceum
		Paraneurachne muelleri
		Paspalidium clementii
		Paspalidium rarum
		Paspalidium tabulatum (Whim Creek form)
		Perotis rara

FAMILY		SPECIES
		Poaceae sp. (inadequate material)
		Setaria dielsii
		Setaria sp. (inadequate material)
	*	*Setaria verticillata*
		Sporobolus australasicus
		Themeda triandra
		Triodia epactia
		Triodia pungens
		Triodia sp. (inadequate material)
		Triodia sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
		Triodia wiseana
		Tripogon loliiformis
		Yakirra australiensis var. *australiensis*
Cyperaceae		
		Bulbostylis barbata
		Cyperaceae sp. (inadequate material)
		Cyperus cunninghamii ssp. *cunninghamii*
		Cyperus difformis
		Cyperus hesperius
		Cyperus iria
		Cyperus vaginatus
		Fimbristylis dichotoma
Moraceae		
		Ficus aculeata var. *indecora*
		Ficus brachypoda
		Ficus platypoda
		Ficus sp. (inadequate material)
Proteaceae		
		Grevillea berryana
		Grevillea pyramidalis ssp. *leucadendron*
		Grevillea wickhamii
		Grevillea wickhamii ssp. *aprica*
		Grevillea wickhamii ssp. *hispidula*
		Grevillea wickhamii ssp. *macrodonta*
		Hakea lorea ssp. *lorea*
Loranthaceae		
		Amyema preissii
		Amyema sanguinea var. *sanguinea*
		Diplatia grandibractea
		Lysiana casuarinae
Chenopodiaceae		
		Dysphania kalpari
		Dysphania melanocarpa forma *leucocarpa*
		Dysphania rhadinostachya ssp. *rhadinostachya*
		Enchylaena tomentosa var. *tomentosa*
		Maireana aff. *georgei*
		Maireana georgei
		Maireana melanocoma
		Maireana planifolia
		Maireana sp. (inadequate material)
		Maireana tomentosa ssp. *tomentosa*
		Maireana trichoptera
		Rhagodia eremaea
		Salsola tragus
		Salsola tragus ssp. *tragus*
		Sclerolaena costata

FAMILY	SPECIES
	Sclerolaena cuneata
	Sclerolaena densiflora
	Sclerolaena diacantha
	Sclerolaena eriacantha
	Sclerolaena sp. (inadequate material)
Amaranthaceae	
	Achyranthes aspera
	Alternanthera nana
	Alternanthera sp. (inadequate material)
	Amaranthus aff. *pallidiflorus* (D89)
	Amaranthus cuspidifolius
	Amaranthus interruptus
	Amaranthus sp. (inadequate material)
	Amaranthus undulatus
	Gomphrena affinis ssp. *pilbarensis*
	Gomphrena canescens
	Gomphrena cunninghamii
	Gomphrena kanisii
	Gomphrena sp. (inadequate material)
	Ptilotus aervoides
	Ptilotus appendiculatus var. *appendiculatus*
	Ptilotus astrolasius var. *astrolasius*
	Ptilotus auriculifolius
	Ptilotus axillaris
	Ptilotus calostachyus var. *calostachyus*
	Ptilotus clementii
	Ptilotus exaltatus var. *exaltatus*
	Ptilotus fusiformis var. *fusiformis*
	Ptilotus gaudichaudii var. *gaudichaudii*
	Ptilotus gomphrenoides var. *gomphrenoides*
	Ptilotus incanus var. *elongatus*
	Ptilotus incanus var. *incanus*
	Ptilotus macrocephalus
	Ptilotus obovatus var. *obovatus*
	Ptilotus polystachyus var. *polystachyus*
	Ptilotus roei
	Ptilotus sp. (inadequate material)
Nyctaginaceae	
	Boerhavia coccinea
	Boerhavia gardneri
	Boerhavia sp. (inadequate material)
	Commicarpus australis
Gyrostemonaceae	
	Codonocarpus cotinifolius
Aizoaceae	
	Trianthema aff. *triquetra* (M3.35)
	Trianthema glossostigma
	Trianthema oxycalyptra var. *oxycalyptra*
	Trianthema pilosa
	Trianthema triquetra
	Trianthema turgidifolia
Molluginaceae	
	Mollugo molluginea
Portulacaceae	
	Calandrinia ptychosperma
	* *Portulaca oleracea*

FAMILY		SPECIES
		Portulaca sp. (inadequate material)
Caryophyllaceae		
		Polycarpaea corymbosa var. *corymbosa*
		Polycarpaea holtzei
		Polycarpaea longiflora
		Polycarpaea longiflora (red form)
		Polycarpaea longiflora (White form, M13-7)
Menispermaceae		
		Tinospora smilacina
Lauraceae		
		Cassytha capillaris
Papaveraceae		
	*	*Argemone ochroleuca* ssp. *ochroleuca*
Capparaceae		
		Capparis spinosa var. *nummularia*
		Capparis umbonata
		Cleome viscosa
Brassicaceae		
		Lepidium muelleri-ferdinandii
		Lepidium pedicellosum
		Lepidium pholidogynum
		Lepidium platypetalum
Surianaceae		
		Stylobasium spathulatum
Mimosaceae		
		Acacia adsurgens
		Acacia aff. *aneura* (narrow fine veined; site 1259)
		Acacia ampliceps
		Acacia ancistrocarpa
		Acacia aneura (narrow, fine veined, site 1259)
		Acacia aneura var. *aneura*
		Acacia aneura var. *intermedia*
		Acacia aneura var. *pilbarana*
		Acacia arida
		Acacia atkinsiana
		Acacia bivenosa
		Acacia citrinoviridis
		Acacia colei var. *colei*
		Acacia elachantha
		Acacia elachantha (silvery hairy variant)
		Acacia inaequilatera
		Acacia kempeana (1)
		Acacia maitlandii
		Acacia monticola
		Acacia orthocarpa
		Acacia pruinocarpa
		Acacia ptychophylla
		Acacia ptychophylla x *ancistrocarpa*
		Acacia pyrifolia var. *morrisonii*
		Acacia pyrifolia var. *pyrifolia*
		Acacia sclerosperma ssp. *sclerosperma*
		Acacia sericophylla
		Acacia sp. (inadequate material)
		Acacia stowardii
		Acacia synchronicia
		Acacia tenuissima

FAMILY	SPECIES
	Acacia trachycarpa
	Acacia trachycarpa x *tumida* var. *pilbarensis*
	Acacia tumida var. *pilbarensis*
	Acacia victoriae
	Acacia wanyu
	Acacia xiphophylla
	* *Vachellia farnesiana*
Caesalpiniaceae	
	Petalostylis labicheoides
	Senna artemisioides aff. ssp. *oligophylla* (thinly sericeous)
	Senna artemisioides aff. ssp. *oligophylla* x *helmsii*
	Senna artemisioides ssp. *helmsii*
	Senna artemisioides ssp. *oligophylla*
	Senna artemisioides ssp. *oligophylla* x *glutinosa*
	Senna artemisioides ssp. *oligophylla* x *helmsii*
	Senna glutinosa
	Senna glutinosa ssp. *glutinosa*
	Senna glutinosa ssp. *glutinosa* x *luerssenii*
	Senna glutinosa ssp. *luerssenii*
	Senna glutinosa ssp. *pruinosa*
	Senna glutinosa ssp. x *luerssenii*
	Senna notabilis
	Senna sp. (inadequate material)
	Senna sp. Port Hedland (SPB 20-09-05B)
	Senna stricta
	Senna venusta
Papilionaceae	
	Alysicarpus muelleri
	Crotalaria medicaginea (Burrup form; B65-11)
	Crotalaria medicaginea var. *neglecta*
	Cullen lachnostachys
	Cullen leucochaites
	Cullen martinii
	Cullen pogonocarpum
	Erythrina vespertilio
	Glycine canescens
	Indigofera boviperda ssp. *boviperda*
	Indigofera colutea
	Indigofera linifolia
	Indigofera monophylla
	Indigofera monophylla (Burrup form)
	Indigofera monophylla (Cape Preston form)
	Indigofera monophylla (grey leaflet form)
	Indigofera monophylla (grey/green leaflet form)
	Indigofera monophylla (small calyx form)
	Indigofera rugosa
	Indigofera sp. (inadequate material)
	Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301)
	Isotropis atropurpurea
	Rhynchosia bungarensis
	Rhynchosia minima var. *australis*
	Swainsona canescens
	Swainsona formosa
	Tephrosia aff. *densa* (B17)
	Tephrosia aff. *supina* (06BP45-006)

FAMILY	SPECIES
	Tephrosia aff. *supina* (MET 12,357)
	Tephrosia clementii
	Tephrosia rosea var. *glabrior*
	Tephrosia sp. (inadequate material)
	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)
	Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)
	Tephrosia spechtii
	Tephrosia supina (06BP45-006)
	Tephrosia uniovulata
	Vigna lanceolata var. *lanceolata*
Zygophyllaceae	
	Tribulus astrocarpus
	Tribulus hirsutus
	Tribulus macrocarpus
	Tribulus occidentalis
	Tribulus platypterus
	Tribulus sp. (inadequate material)
	Tribulus suberosus
Meliaceae	
	Owenia acidula
Euphorbiaceae	
	Adriana urticoides var. *urticoides*
	Euphorbia australis
	Euphorbia biconvexa
	Euphorbia boophthona
	Euphorbia boophthona (Large seed form)
	Euphorbia coghlanii
	Euphorbia schultzii
	Euphorbia sp. (B170-4)
	Euphorbia sp. (BPBS10-50)
	Euphorbia sp. (inadequate material)
	Euphorbia sp. (M80-1)
	Euphorbia sp. (site 1089)
	Euphorbia tannensis
	Euphorbia tannensis ssp. *eremophila* (Hamersley form)
	Euphorbia wheeleri
	Flueggea virosa ssp. *melanthesoides*
	Leptopus decaisnei var. *orbicularis*
	Phyllanthus erwinii
	Phyllanthus maderaspatensis
Sapindaceae	
	Alectryon oleifolius ssp. *oleifolius*
	Dodonaea coriacea
	Dodonaea pachyneura
	Dodonaea petiolaris
Tiliaceae	
	Corchorus aff. *parviflorus*
	Corchorus aff. *parviflorus* (JW011-11)
	Corchorus aff. *walcotti* (K.J. Atkins 570)
	Corchorus crozophorifolius
	Corchorus incanus ssp. *incanus*
	Corchorus laniflorus
	Corchorus lasiocarpus ssp. *parvus*
	Corchorus parviflorus
	Corchorus sidoides ssp. aff. *vermicularis* (GLD NIM17-16)
	Corchorus sidoides ssp. *sidoides*

FAMILY	SPECIES
	Corchorus sp. (inadequate material)
	Triumfetta aff. *chaetocarpa* (denser indumentum)
	Triumfetta aff. *chaetocarpa* (PAN3/4)
	Triumfetta aff. *chaetocarpa* (Panorama form)
	Triumfetta appendiculata
	Triumfetta appendiculata (Burrup form)
	Triumfetta appendiculata (Mardie form)
	Triumfetta chaetocarpa
	Triumfetta chaetocarpa (Panorama Form)
	Triumfetta clementii
	Triumfetta johnstonii
	Triumfetta maconochieana
	Triumfetta sp. (inadequate material)
Malvaceae	
	Abutilon aff. *dioicum* (HD72-14)
	Abutilon aff. *lepidum* (1) (MET 15 352)
	Abutilon amplum
	Abutilon cunninghamii
	Abutilon dioicum
	Abutilon lepidum
	Abutilon otocarpum
	Abutilon sp. (inadequate material)
	Abutilon trudgenii MS
	Gossypium australe (Burrup Peninsula form)
	Gossypium australe (Whim Creek form)
	Gossypium robinsonii
	Hibiscus aff. *coatesii* (MET 15 305)
	Hibiscus aff. *coatesii* (MET 16,542)
	Hibiscus aff. *coatesii* (site 693)
	Hibiscus aff. *coatesii* (site 733)
	Hibiscus aff. *coatesii* (site 751)
	Hibiscus aff. *sturtii* (site 1209)
	Hibiscus austrinus var. *austrinus*
	Hibiscus brachychlaenus
	Hibiscus burtonii
	Hibiscus coatesii
	Hibiscus gardneri
	Hibiscus goldsworthii
	Hibiscus leptocladus
	Hibiscus sp. (inadequate material)
	Hibiscus sturtii
	Hibiscus sturtii var. aff. *campylochlamys* (MET 15,957)
	Hibiscus sturtii var. aff. *grandiflorus*
	Hibiscus sturtii var. *campylochlamys*
	Hibiscus sturtii var. *grandiflorus*
	Hibiscus sturtii var. *platychlamys*
	* *Malvastrum americanum*
	Sida aff. *clementii*
	Sida aff. *echinocarpa* (MET 15,350)
	Sida aff. *fibulifera*
	Sida aff. *fibulifera* (B181-5B)
	Sida aff. *fibulifera* (B64-13B)
	Sida aff. *fibulifera* (FMG 125-20)
	Sida aff. *fibulifera* (HD200-6)
	Sida aff. *fibulifera* (MET Site 1346)
	Sida aff. *fibulifera* 'var. L'

FAMILY	SPECIES
	Sida aff. *pilbarensis* (EOB46-01B)
	Sida aff. *spiciforme panicles* (FML46-13)
	Sida arsiniata
	Sida cardiophylla
	Sida clementii
	Sida echinocarpa
	Sida pilbarensis
	Sida pilbarensis (ferruginous form)
	Sida pilbarensis (green form)
	Sida rohlenae ssp. *rohlenae*
	Sida sp. (inadequate material)
	Sida sp. Articulation below (A.A. Mitchell PRP 1605)
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)
	Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)
	Sida sp. verrucose glands (F.H. Mollemans 2423)
	Sida spinosa
	Sida subarticulata
Sterculiaceae	
	Keraudrenia nephrosperma
	Keraudrenia velutina ssp. *elliptica*
	Melhania sp. (Burrup)
	Melhania sp. (CH15-39)
	Melhania sp. Turee Creek (MJ1-35)
	Waltheria indica
	Waltheria virgata
Elatinaceae	
	Bergia pedicellaris
Violaceae	
	Hybanthus aurantiacus
Lythraceae	
	Ammannia auriculata
Combretaceae	
	Terminalia canescens
Myrtaceae	
	Corymbia candida ssp. *candida*
	Corymbia ferriticola ssp. *ferriticola*
	Corymbia hamersleyana
	Eucalyptus camaldulensis var. *obtusa*
	Eucalyptus leucophloia ssp. *leucophloia*
	Eucalyptus sp. (inadequate material)
	Eucalyptus victrix
	Melaleuca glomerata
	Melaleuca linophylla
Haloragaceae	
	Haloragis gossei var. *gossei*
Apiaceae	
	Trachymene oleracea ssp. *oleracea*
Oleaceae	
	Jasminum didymum ssp. *lineare*
Asclepiadaceae	
	Marsdenia australis
	Sarcostemma viminale ssp. *australe*
Convolvulaceae	
	Bonamia media var. *villosa*
	Bonamia pannosa
	Bonamia rosea

FAMILY	SPECIES
	Bonamia sp. (inadequate material)
	Duperreya commixta
	Evolvulus alsinoides var. *decumbens*
	Evolvulus alsinoides var. *villosicalyx*
	Ipomoea muelleri
	Ipomoea polymorpha
	Polymeria aff. *ambigua*
	Polymeria aff. *ambigua* (PAN 26B-20)
	Polymeria ambigua
	Polymeria sp. (site 1365)
Boraginaceae	
	Ehretia saligna var. *saligna*
	Heliotropium crispatum
	Heliotropium cunninghamii
	Heliotropium heteranthum
	Heliotropium inexplicitum
	Heliotropium ovalifolium
	Heliotropium sp. (inadequate material)
	Trichodesma zeylanicum var. *zeylanicum*
Verbenaceae	
	Clerodendrum floribundum var. *angustifolium*
	Clerodendrum tomentosum var. *lanceolatum*
Solanaceae	
	Nicotiana benthamiana
	Nicotiana occidentalis ssp. *occidentalis*
	Nicotiana sp. (inadequate material)
	Solanum aff. *gabrielae*
	Solanum aff. *phlomoides*
	Solanum diversiflorum
	Solanum ellipticum
	Solanum horridum
	Solanum lasiophyllum
	Solanum phlomoides
	Solanum sp. (inadequate material)
	Solanum sturtianum
Scrophulariaceae	
	Peplidium aithocheilum
	Stemodia grossa
	Stemodia sp. (inadequate material)
	Stemodia viscosa
Acanthaceae	
	Dicladanthera forrestii
Myoporaceae	
	Eremophila cuneifolia
	Eremophila forrestii ssp. *forrestii*
	Eremophila forrestii x *latrobei*
	Eremophila fraseri ssp. *fraseri*
	Eremophila latrobei ssp. *glabra*
	Eremophila latrobei ssp. *latrobei*
	Eremophila longifolia
	Eremophila sp. (inadequate material)
	Eremophila youngii x *latrobei*
Rubiaceae	
	Oldenlandia crouchiana
	Synaptantha tillaeacea var. *tillaeacea*
Cucurbitaceae	

FAMILY		SPECIES
		Cucumis maderaspatanus
	*	*Cucumis melo* ssp. *agrestis*
Campanulaceae		
		Wahlenbergia tumidifructa
Lobeliaceae		
		Lobelia heterophylla
Goodeniaceae		
		Dampiera candicans
		Goodenia cusackiana
		Goodenia forrestii
		Goodenia lamprosperma
		Goodenia microptera
		Goodenia sp. (inadequate material)
		Goodenia stobbsiana
		Scaevola spinescens (broad form)
		Velleia connata
Asteraceae		
		Asteraceae sp. (inadequate material)
	*	*Bidens bipinnata*
		Calocephalus knappii
		Calocephalus sp. Pilbara-Desert (M.E. Trudgen 11454)
		Centipeda minima ssp. *macrocephala*
		Flaveria australasica ssp. *australasica*
		Pentalepis trichodesmoides
		Pluchea dentex
		Pluchea ferdinandi-muelleri
		Pluchea squarrosa
		Pluchea tetranthera
		Pterocaulon serrulatum
		Pterocaulon sp. (inadequate material)
		Pterocaulon sphacelatum
		Pterocaulon sphaeranthoides
		Rhodanthe margarethae
		Rutidosis helichrysoides
	*	*Sonchus oleraceus*
		Streptoglossa bubakii
		Streptoglossa decurrens
		Streptoglossa sp. (inadequate material)
		Streptoglossa tenuiflora

Appendix 12 Locations and Descriptions of the three varieties of Mulga *(Acacia aneura*)

Species	Site	Habitat	Easting mE	Northing mE
Acacia aneura (narrow, fine veined, site 1259)	AS1/2-010	Low hills	409613	7562490
	AS5/6-005		412603	7543465
	AS5/6-008		411347	7544701
	ASN021	Low rolling hills	413907	7548406
	CE002	Mesa crest	420318	7544849
	CE004	Top slope of rounded mesa top	420383	7544872
	CE020	Mesa top	419553	7545278
	CE029	Mesa top	421778	7545635
	CEW007	Top of calcrete ridge	421484	7544608
	CWW053	Plain with minor drainage lines	423609	7524681
	CWW062		425863	7522438
	KB, PFS-041	Mesa top	415681	7561869
	HR036		427016	7538151
	TC038		422911	7544847
	TR003	Mesa top/edge	432724	7529701
	TR009r	Mesa slope	432176	7528655
	TR019	Minor drainage	429703	7523032
	TR027	Ridge	432993	7528380
	TR029	Mesa top	432785	7529698
	TR062	Mesa slope	432393	7528631
	TR067	Mesa top	433517	7529604
	TR074	Mesa top	434820	7530453
	TR084	Plain adjacent to mesa	434592	7531430
	UC004	Upper slope of mesa	424599	7545328
	UC005	Rocky mid slope on mesa	424361	7545484
	UC006	Valley floor	424416	7545539
	UC025	Mesa	424628	7545375
	UC026	East facing slope of mesa	424541	7545510
	UC030	Mesa	423429	7545281
	TC147		429101	7529252
	TRW003	Drainage line	430066	7527961
	TRW004	Stony plain	430610	7527003
Acacia aneura var. *aneura*	UC008	Crest/flat top of mesa	423305	7545276
Acacia aneura var. *conifera*	IF6/07, TL010	Low rise	417561	7554213
Acacia aneura var. *intermedia*	IF11/7, IN005	Plain and low rolling hills	417331	7553518

Species	Site	Habitat	Easting mE	Northing mE
	IF11/7, IN006	Plain	417114	7553651
	TC, CP137		412866	7561855
	TC, CP137		412966	7564145
Acacia aneura var. *pilbarana*	KB, PFS-110	Mesa top	418474	7558428
	TC, WPI-479		417138	7553656
	TRW, API-7017		429992	7527921

Appendix 13 Locations of *Triodia* sp. Robe River within the study area (M.E. Trudgen *et al.* MET 12,367)

Site	Type	Cover	Easting	Northing	Vegetation
AD002	quadrat	2%	417146	7552304	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland
AD020	vegetation description		416769	7553002	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia bivenosa* and *A. ancistrocarpa* over *Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
AD021	relevé	17%	416724	7553094	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
API-1167	specimen collection		412232	7555854	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
API7035	Specimen collection	15%	412045	7549865	*Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367)
ASN010	relevé	+	412177	7550307	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
ASN011	vegetation description	20%	412166	7550144	*Acacia xiphophylla* low woodland over *Triodia wiseana* scattered hummock grasses
ASN036	vegetation description	<2%	412134	7550681	*Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) open hummock grassland
CE001	vegetation description		421928	7545726	
CE004	quadrat	10%	420383	7544872	*Acacia bivenosa* scattered shrubs over *Triodia wiseana* and *Triodia* sp. Robe River (M.E. Trudgen *et al.* MET 12,367) hummock grassland
CE006	quadrat	+	420151	7545200	*Acacia ancistrocarpa* scattered shrubs over *Triodia wiseana* hummock grassland
CE007	quadrat	5%	419561	7545234	*Acacia ancistrocarpa, A. atkinsiana* and *A. bivenosa* low open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CE008	quadrat	OUT	420361	7545739	*Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low open shrubland
CE009	quadrat	4%	419555	7545170	*Acacia tumida* var. *pilbarensis* closed *heath* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CE011	quadrat	19%	419663	7545572	*Acacia atkinsiana* low open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CE012	quadrat	15%	421156	7545447	*Eucalyptus leucophloia* ssp. *leucophloia*

Site	Type	Cover	Easting	Northing	Vegetation
					scattered trees over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CE013	quadrat	+	420067	7545588	*Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low open shrubland
CE014	quadrat	+	421501	7545508	*Acacia inaequilatera* high open shrubland over *Triodia wiseana* open hummock grassland
CE016	quadrat	20%	421309	7545299	*Eucalyptus leucophloia* ssp. *leucophloia* scattered trees over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CE017	relevé	1%	419355	7545295	*Acacia ancistrocarpa* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
CE019	relevé	+	419554	7545051	*Acacia tumida* var. *pilbarensis* closed scrub
CE021	relevé	9%	419658	7545485	*Acacia atkinsiana* and *A. bivenosa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CE022	vegetation description		419656	7545527	*Acacia atkinsiana* shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CE024	relevé	5%	419924	7545234	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CE025	vegetation description		419968	7544749	*Corchorus lasiocarpus* ssp. *parvus* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
CE026	relevé	8%	420623	7544732	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CE027	relevé	+	420349	7545677	*Tephrosia uniovulata* and *Corchorus lasiocarpus* ssp. *parvus* low shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* scattered hummock grasses
CE030	relevé	+	421386	7545647	*Ptilotus astrolasius* var. *astrolasius* low open shrubland over *Triodia wiseana* very open hummock grassland
CE031	quadrat	5%	421873	7545787	*Acacia pruinocarpa* and *A. citrinoviridis* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CEW007	specimen collection	+	421484	7544608	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia wiseana* very open hummock grassland
CMP018	relevé	15%	412239	7555857	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
CMP022	vegetation description		411462	7554750	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
CN001	quadrat	20%	420674	7551509	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CN002	quadrat	9%	420104	7551352	*Acacia pruinocarpa* shrubland over *Petalostylis labicheoides* low shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CN003	quadrat	15%	418877	7550198	*Petalostylis labicheoides* open shrubland over *Acacia pruinocarpa, A. atkinsiana* and *A. bivenosa* scattered low shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CN004	quadrat	20%	419060	7550617	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CN005	quadrat	11%	418925	7549756	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
CN005	quadrat	25%	418925	7549756	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
CN006	quadrat	11%	420948	7551817	*Acacia bivenosa* low shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CN006	quadrat		420948	7551817	*Acacia bivenosa* low shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CN007	quadrat	45%	419228	7550804	*Acacia pruinocarpa* high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CN009	relevé	12%	419139	7550774	*Acacia pruinocarpa* high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CN010	relevé		420912	7551771	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CP167	vegetation description	1%	410238	7573736	*Acacia pruinocarpa* over *A. bivenosa* over *Triodia wiseana* hummock grassland
CP195	relevé		415681	7556526	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
CP197	relevé	23%	415622	7556750	*Acacia ancistrocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CP199	relevé	8%	415556	7556877	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia ancistrocarpa, A. bivenosa* and *A. maitl*and*ii* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock

Site	Type	Cover	Easting	Northing	Vegetation
					grassland
CP600	relevé	7%	410230	7573689	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
CR001	quadrat	1%	410012	7576496	*Acacia bivenosa* shrubland over *Triodia wiseana* hummock grassland
CR001r	quadrat	10%	411202	7576330	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland and *Eriachne mucronata* very open tussock grassland
CR003	quadrat	22%	412105	7575788	*Acacia bivenosa* open shrubland over *Dampiera c*and*icans* low shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
CR004	quadrat	23%	411548	7576547	*Acacia bivenosa* shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
CR006	quadrat	15%	411191	7576317	*Acacia bivenosa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CR008	quadrat	10%	410777	7576093	*Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia ancistrocarpa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
CR010	quadrat	+	409883	7576229	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* shrubland over *Triodia epactia* open hummock grassland
CR012	quadrat	15%	411306	7575959	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
CR014	quadrat	1%	412187	7576649	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* high open shrubland over *A. bivenosa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
FM001	quadrat	1%	410030	7575466	*Acacia bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* hummock grassland
FM002	quadrat	28%	410030	7575954	*Acacia bivenosa* low scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
FM020	quadrat	14%	410043	7574465	*Acacia atkinsiana* and *Acacia pruinocarpa* open heath over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
FM021	quadrat	12%	410039	7574695	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
HAM001	quadrat	1%	429656	7553683	*Acacia inaequilatera* open shrubland over *Triodia wiseana* hummock grassland
HR075	relevé	12%	420221	7559152	*Acacia citrinoviridis* and *A. inaequilatera* high open shrubland over *Eremophila fraseri* scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
JW001	quadrat	4%	410446	7574104	*Acacia pruinocarpa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
JW001r	quadrat	6%	410857	7574037	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia atkinsiana* high shrubland over *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
JW002r	quadrat	3%	411472	7574036	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* very open hummock grassland and *Eriachne mucronata* (typical form) open tussock grassland
JW003	quadrat	16%	411681	7574154	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
JW004	quadrat	15%	412021	7574135	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia bivenosa* scattered shrubs over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
JW005	quadrat	+	410624	7574432	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* and *Petalostylis labicheoides* shrubland over *Triodia wiseana* hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
JW007	quadrat	22%	410768	7574220	*Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Abutilon* aff. *dioicum* (HD72-14) high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
KB001	quadrat	13%	416807	7560766	*Acacia synchronicia* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
KB004	quadrat	35%	416821	7561278	*Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
KB008	quadrat	+	418330	7559280	*Acacia pruinocarpa* and *A. inaequilatera* high open shrubland over *Acacia bivenosa* open shrubland over *Triodia wiseana* open hummock grassland
KB009	quadrat	32%	417016	7560156	*Petalostylis labicheoides* and *Acacia inaequilatera* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
KB010	quadrat	9%	418591	7558861	*Acacia tumida* var. *pilbarensis* high shrubland over *A. bivenosa* shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
KB010	quadrat	11%	418591	7558861	*Acacia tumida* var. *pilbarensis* high shrubland over *A. bivenosa* shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
KB011	quadrat	1%	418458	7558953	*Acacia bivenosa* open scrub over *Triodia epactia* and *T. wiseana* open hummock grassland
KB012	quadrat	2%	418858	7558873	*Acacia citrinoviridis* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
KB013	quadrat	8%	418772	7558843	*Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Acacia citrinoviridis* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
KB017	quadrat	5%	418410	7558857	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Petalostylis labicheoides* and *Acacia tumida* var. *pilbarensis* open scrub over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
KB019	quadrat	2%	418420	7558798	*Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* open scrub over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*

Site	Type	Cover	Easting	Northing	Vegetation
					very open hummock grassland
KB026	vegetation description		416950	7560126	*Petalostylis labicheoides* scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
KB027	vegetation description		417135	7560001	Free face: *Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia hamersleyana* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Triodia wiseana* Mid/Debris slope*: Acacia inaequilatera* and *Acacia bivenosa* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Triodia wiseana* Pediment: *Acacia bivenosa* and *A. synchronicia* over *Triodia wiseana* Plain*: Corymbia hamersleyana* over *Acacia ancistrocarpa* and *A. synchronicia* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Triodia wiseana*
KB039	vegetation description		420226	7557884	
KB042	relevé	6%	420440	7557618	*Acacia inaequilatera* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* very open hummock grassland
KB043	relevé	14%	417091	7561001	*Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
KB044	relevé	10%	416336	7561657	*Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
KB045	quadrat	11%	420470	7557686	*Acacia inaequilatera* scattered tall shrubs over *Corchorus* aff. *Parviflorus* (JWO11-11) scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
KB046	quadrat	16%	416314	7561755	*Acacia inaequilatera* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
PFS-001	Priority flora search		410243	7576336	*Scattered* shrubs over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* closed hummock grassland
PFS-002	priority flora search	30%	410401	7576263	*Scattered* shrubs over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* closed hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
PFS-003	priority flora search	30%	410390	7576239	Open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* closed hummock grassland
PFS-006	priority flora search		411274	7576171	*Eucalyptus* sp. and *Acacia pruinocarpa* scattered low trees over *Triodia wiseana* and *T.* sp. Robe River very open hummock grassland
PFS-008	priority flora search		411386	7576303	*Acacia pruinocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
PFS-009	priority flora search		411334	7576265	*Acacia pruinocarpa* and *A. bivenosa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
PFS-012	priority flora search		411095	7576026	*Petalostylis labicheoides* and *Acacia bivenosa* low shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
PFS-030	priority flora search		410533	7573887	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
PFS-033	priority flora search	2-10 %	410778	7573690	*Eriachne* sp., *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
PFS-036	priority flora search	2-10 %	411943	7573871	*Senna glutinosa* ssp. *glutinosa* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland with *Eriachne* sp. and *Cymbopogon ambiguus* very open tussock grassland
PFS-099	priority flora search		417081	7560508	*Triodia wiseana* and *T.* sp. Robe River
PFS-127	priority flora search	30-70 %	412138	7575573	*Acacia bivenosa* scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
PFS-128	priority flora search	10-30%	412167	7575572	
PFS-129	priority flora search	30-70 %	412022	7575604	*Acacia inaequilatera* scattered tall shrubs over *Acacia bivenosa* scattered low shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
PFS-145	priority flora search		410597	7573909	*Petalostylis labicheoides* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
PFS-148	priority flora search		411946	7573894	*Eucalyptus leucophloia* ssp. *leucophloia* over *Senna glutinosa* ssp. *glutinosa* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
PFS-167	priority flora search	2-10 %	418935	7558019	*Acacia tumida* var. *pilbarensis* over *Petalostylis labicheoides* over *Triodia sp. Robe River (M.E. Trudgen et al. MET*

Site	Type	Cover	Easting	Northing	Vegetation
					12,367)
PFS-180	priority flora search		410638	7576222	
PFS-211	priority flora search		420245	7557891	*Corchorus sidoides* ssp. *sidoides* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
PFS-212	priority flora search		420233	7557975	*Corchorus sidoides* ssp. *sidoides* low open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
PFS-250	priority flora search		419276	7557609	*Ehretia saligna* var. *saligna* scattered shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* very open hummock grassland
PFS-254	priority flora search		420465	7557522	*Corchorus sidoides* ssp. *sidoides* low open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
PFS-255	priority flora search		420439	7557295	*Ficus sp.* low open woodland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
PFS-267	priority flora search		422183	7557237	*Acacia inaequilatera* and *Petalostylis labicheoides* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* grassland
PFS-272	priority flora search		425532	7545808	*Eucalyptus* sp. scattered trees over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
PFS-273	priority flora search		425532	7545808	*Eucalyptus* sp. scattered trees over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
PFS-325	priority flora search		419576	7558279	*Acacia inaequilatera* over *Grevillea wickhamii* and *Acacia tumida* var. *pilbarensis* over *Tephrosia uniovulata* and *Acacia ancistrocarpa* over *Cenchrus setiger* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TC027	vegetation description	9%	412883	7574254	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TC041	quadrat		412840	7574065	*Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TR003	quadrat	+	432724	7529701	*Eucalyptus leucophloia* ssp. *leucophloia* and *Acacia aneura (narrow fine veined; site 1259)* low open woodland over *A. pruinocarpa* scattered shrubs over *Triodia wiseana* open hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
TR004r	quadrat	+	432368	7529457	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia pruinocarpa* high open shrubland over *Dodonaea pachyneura* and *Ptilotus obovatus* var. *obovatus* scattered shrubs over *Triodia wiseana* very open hummock grassland over *Eriachne mucronata* very open tussock grassland over *Rhodanthe margarethae* very open herbs
TR005	quadrat	9%	432615	7529523	*Acacia pruinocarpa* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TR013	quadrat	+	429947	7526340	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia bivenosa* open shrubland over *Triodia wiseana* hummock grassland
TR015	quadrat	+	430037	7525978	*Acacia pruinocarpa* open shrubland over *Triodia wiseana* open hummock grassland
TR017	quadrat	15%	429188	7524300	*Petalostylis labicheoides* high shrubland over *Grevillea wickhamii subsp. hispidula* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
TR020	quadrat	12%	428972	7525190	*Acacia bivenosa* scattered shrubs over *Triodia sp Robe River* open hummock grassland
TR023	quadrat	14%	429618	7522924	*Acacia atkinsiana* and *Petalostylis labicheoides* high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
TR028	specimen collection		434422	7531010	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR029	vegetation description		432785	7529698	*Acacia aneura* over *Acacia pruinocarpa* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR033	vegetation description		430427	7521962	*Eucalyptus leucophloia spp. leucophloia* over *Acacia citrinoviridis* and *A. tumida* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR034	vegetation description		430614	7522486	*Acacia citrinoviridis* over *Triodia wiseana*
TR038	vegetation description		429782	7523346	*Eucalyptus leucophloia* ssp. *leucophloia* over *Grevillia wickhamii* and *Acacia tumida* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR039	vegetation description		429886	7523514	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis* and *Grevillea wickhamii* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*

Site	Type	Cover	Easting	Northing	Vegetation
TR040	vegetation description		428360	7523315	Slopes: *Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis, A. tumida* var. *pilbarensis, Petalostylis labicheoides* and *Gossypium robinsonii* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* Gully: *Corymbia hamersleyana* over *Acacia citrinoviridis, A. tumida* var. *pilbarensis, Petalostylis labicheoides* and *Gossypium robinsonii*
TR043	vegetation description	+	428982	7524196	*Acacia bivenosa, Petalostylis labicheoides* and *Acacia ancistrocarpa* over *Triodia wiseana*
TR045	vegetation description		428363	7524786	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia tumida* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
TR046	vegetation description	+	428181	7525228	*Acacia bivenosa, A. citrinoviridis* and *Gossypium robinsonii* over *Triodia wiseana*
TR047	vegetation description		429222	7525077	*Acacia pruinocarpa* over *Triodia wiseana*
TR049	vegetation description		430168	7526389	*Acacia pruinocarpa* over *A. bivenosa* over *Triodia wiseana*
TR063	vegetation description	+	432150	7529341	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *A. bivenosa* over *Triodia wiseana*
TR064	vegetation description		432296	7529452	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *A. bivenosa* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR065	vegetation description		432570	7529522	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *A. bivenosa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
TR080	vegetation description		434410	7530858	*Eucalyptus leucophloia* ssp. *leucophloia* over *Petalostylis labicheoides* over *Triodia wiseana*
TR086	quadrat	1%	434554	7530961	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Triodia wiseana* open hummock grassland
TR087	quadrat	19%	429756	7523423	*Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* high shrubland over *Triodia wiseana* open hummock grassland
TR100	quadrat	13%	429876	7523499	*Grevillea wickhamii* scattered tall shrubs over *Acacia bivenosa* shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Triodia wiseana* open hummock grassland
TRW001	quadrat	7%	428433	7526137	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia atkinsiana* and *A. bivenosa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* very open hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
TsRR015	quadrat	29%	409516	7574260	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* hummock grassland
TsRR016	quadrat	17%	409576	7573697	*Acacia atkinsiana* open scrub over *A. bivenosa* low open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TsRR020	quadrat	9%	423417	7547893	*Eucalyptus leucophloia* ssp. *leucophloia* low woodland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
TsRR021	quadrat	33%	423712	7547521	*Acacia inaequilatera* high open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
TsRR031	quadrat	20%	423340	7548108	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TsRR040	quadrat	29%	417427	7544777	*Acacia bivenosa* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TsRR041	quadrat	22%	417821	7545002	*Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
TsRR042	quadrat	19%	418526	7547501	*Acacia pruinocarpa* scattered tall shrubs over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
UC001	quadrat	2%	424929	7545815	*Acacia inaequilatera* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* open hummock grassland
UC002	quadrat	12%	424959	7545706	*Corymbia ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* and *Dodonaea pachyneura* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
UC002	quadrat	8%	424959	7545706	*Corymbia ferriticola* low open woodland over *Acacia citrinoviridis* high shrubland over *Eremophila latrobei* ssp. *latrobei* and *Dodonaea pachyneura* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
UC003	quadrat	1%	425692	7546040	*Acacia pruinocarpa* high open shrubland over *Triodia wiseana* hummock grassland
UC004	quadrat	12%	424599	7545328	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Acacia* aff. aneura (narrow fine veined; site 1259), *A. citrinoviridis* and *Grevillea berryana* high shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* open hummock grassland
UC005	quadrat	8%	424361	7545484	*Eucalyptus leucophloia* ssp. *leucophloia* and *Corymbia ferriticola* low open woodland over *Acacia citrinoviridis* high open shrubland over *A. pruinocarpa* open shrubland over *Triodia sp. Robe River*

Site	Type	Cover	Easting	Northing	Vegetation
					(M.E. Trudgen et al. MET 12,367) very open hummock grassland
UC006	quadrat	15%	424416	7545539	*Acacia citrinoviridis* and *Stylobasium spathulatum* high shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. epactia* open hummock grassland
UC007	quadrat	5%	423671	7545340	*Acacia inaequilatera* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
UC008	quadrat	5%	423305	7545276	*Acacia pruinocarpa* and *Eremophila fraseri* ssp. *fraseri* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* open hummock grassland
UC009	quadrat	3%	424259	7545493	*Acacia inaequilatera* and *A. pruinocarpa* open shrubland over *Corchorus sidoides subsp. sidoides* and *Ptilotus astrolasius* var. *astrolasius* low shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana* very open hummock grassland
UC010	quadrat	3%	424624	7546238	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia inaequilatera* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland
UC011	vegetation description		425537	7546006	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
UC012	vegetation description		425394	7545814	*Acacia inaequilatera, A. citrinoviridis* and *A. pruinocarpa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC013	vegetation description		424772	7545708	*Acacia pruinocarpa* and *A. inaequilatera* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC016	relevé	8%	424881	7545584	*Acacia inaequilatera* and *A. pruinocarpa* high open shrubland over *A. citrinoviridis* open shrubland over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
UC017	vegetation description		425725	7546123	*Acacia pruinocarpa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC018	vegetation description		425725	7546123	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* and *A. citrinoviridis* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*

Site	Type	Cover	Easting	Northing	Vegetation
UC019	vegetation description		425725	7546123	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia pruinocarpa* and *A. citrinoviridis* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC020	vegetation description		425411	7545812	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis* and *A. pruinocarpa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *Acacia inaequilatera* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC021	vegetation description		425313	7545813	*Acacia citrinoviridis* over *A. inaequilatera* over *A. pruinocarpa* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
UC022	vegetation description		425147	7545542	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia pruinocarpa* over *A. citrinoviridis* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
UC023	vegetation description		424623	7546203	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis* over *Triodia wiseana with Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367) in gully*
UC024	vegetation description		424677	7545799	*Acacia inaequilatera* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana*
UC025	vegetation description		424628	7545375	*Acacia aneura* over *Grevillea berryana* over *Eremophila fraseri* ssp. *fraseri* over *Acacia citrinoviridis* over *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* and *T. wiseana.*
UC027	vegetation description		424541	7545510	*Eucalyptus leucophloia* ssp. *leucophloia* over *Acacia citrinoviridis* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC029	vegetation description		422805	7545748	*Acacia pruinocarpa* over *A. citrinoviridis* over *Eremophila fraseri* ssp. *fraseri* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC030	vegetation description		423429	7545281	*Acacia aneura* over *Grevillea berryana* over *Eremophila fraseri* ssp. *fraseri* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)*
UC031	vegetation description		423689	7545289	*Corymbia hamersleyana* over *Acacia inaequilatera* over *A. ancistrocarpa* over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367) with Acacia ancistrocarpa in drainage lines*
UC032	vegetation description		424092	7545685	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* hummock grassland

Site	Type	Cover	Easting	Northing	Vegetation
UCW005	quadrat	+	424043	7546004	*Eucalyptus leucophloia* ssp. *leucophloia* scattered low trees over *Acacia maitlandii* low open shrubland over *Triodia wiseana* hummock grassland
UCW006	relevé	<2%	423938	7546006	*Eucalyptus leucophloia* ssp. *leucophloia* low open woodland over *Triodia wiseana* open hummock grassland
UCW007	relevé	+	423963	7545934	*Corymbia hamersleyana* scattered low trees over *Triodia wiseana* open hummock grassland
UCW008	relevé	2%	424050	7545859	*Acacia maitlandii* high open shrubland over *A. ancistrocarpa* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland
UCW009	relevé	3%	424097	7545896	*Acacia maitlandii* open shrubland over *Triodia wiseana* and *Triodia sp. Robe River (M.E. Trudgen et al. MET 12,367)* very open hummock grassland and *Eriachne mucronata* very open tussock grassland
WP-091			410303	7576469	
WPI-469	specimen collection		415955	7556078	

Appendix 14 Locations of Introduced Species from the Study Area

Argemone ochroleuca* ssp. *ochroleuca

Easting	Northing	Date	Cover	Habitat
423043	7547408	25/11/07	+	Drainage line
420398	7555855	25/11/07		Drainage line
427118	7535685	5/07/08		River
421471	7557075	5/08/08	2%	Large river bed (and banks) immediately south of mesa
421471	7557075	16/06/07	1%	Large river bed (and banks) immediately south of mesa
412312	7578300	6/08/08	OUT	Riverbed, floodplain
427245	7535609	7/08/08	+	River bed
412396	7578285	6/08/08	+	Stony river

Cenchrus ciliaris

Easting	Northing	Date	Cover	Habitat
412839	7561195	17/10/07	+	Creek/ drainage line
412915	7562863	3/07/08	+	Alluvial flood plain
408380	7578535	20/06/08	+	Wide drainage line on an alluvial plain at the base of a
417763	7554974	21/10/07	+	North-east side of an alluvial plain, drainage basin,
411738	7572390	18/10/07	2%	Creek line
409979	7577724	21/06/08	+	Broad alluvial plain
425470	7520470	20/07/08	+	Flat valley floor in upper section of valley within mesa. Mesa slopes down to quadrat on 3 sides
425105	7521689	19/07/08	+	Gully (dissected drainage) approximately 5-10 m wide
425126	7521181	6/08/07	+	A drainage line on valley floor between two sections of
423800	7522729	22/07/08	+	Drainage line, on the plain
423800	7522729	7/08/07	+	Drainage line, on the plain
423537	7523510	18/07/08	68%	A wide dissected drainage or gully on the flat
423537	7523510	8/08/07	80%	A wide dissected drainage or gully on the flat
426527	7525580	24/11/07		Creek line
426034	7536246	24/11/07	2%	
427118	7535685	5/07/08		River
412312	7578300	6/08/08	1%	Riverbed, floodplain
410675	7579044	6/08/08	+	Flat Alluvial plain. Bottom third of the landform element
427245	7535609	7/08/08	+	River bed
427190	7536768	7/08/08	+	Alluvial plain with numerous drainage line
427459	7526182	7/08/08	20%	Floodplain, riverbed
409333	7578108	4/07/08		

Cenchrus setiger

Easting	Northing	Date	Cover	Habitat
411365	7578501	6/08/08	+	Alluvial plain. Flat and on the bottom third of the
410675	7579044	6/08/08	+	Flat Alluvial plain. Bottom third of the landform element
411358	7577160	6/08/08	+	Minor drainage area

Cucumis melo* ssp. *agrestis

Easting	Northin	Date	Cover	Habitat
424333	7522418	19/07/08	+	Gully (dissected drainage) running SW between two parts of the mesa
410768	7574220	19/06/08	+	Dissected drainage (gully/gorge) on the north debris slope of Jewell mesa
418805	7558461	06/07/08	+	Mesa crest
420073	7559158	06/08/08	+	Mesa top (crest)
430717	7527446	17/07/08	+	Gully of mesa

Malvastrum americanum

Easting	Northing	Date	Cover	Habitat
416420	7551794	08/08/08	+	Bank of drainage line on alluvial plain
416263	7545540	17/06/07	+	Flat
416186	7545356	17/06/07		Creek line
408650	7562862	26/09/08	+	Flat
408395	7562816	25/09/08	+	Low white hills and flat areas
420492	7545473	28/08/08	+	Drainage line on top of mesa
408380	7578535	20/06/08	+	Wide drainage line on an alluvial plain at the base of a
408380	7578535	20/06/08	+	Wide drainage line on an alluvial plain at the base of a
417946	7554956	21/10/07	+	Large river in alluvial plain
409883	7576229	19/06/08	+	Flat broad drainage plain, recently burnt
410810	7575500	19/06/08	+	Large drainage line on a flat alluvial plain
410810	7575500	23/05/07	+	Large drainage line on a flat alluvial plain
412240	7576508	21/06/08	+	Creek line
425470	7520470	05/08/07	+	Flat valley floor in upper section of valley within mesa
425470	7520470	20/07/08	+	Flat valley floor in upper section of valley within mesa
423800	7522729	07/08/07	+	Drainage line, on the plain
423800	7522729	22/07/08	1%	Drainage line, on the plain
423537	7523510	18/07/08	1%	A wide dissected drainage or gully on the flat
422575	7523971	25/09/08	+	Drainage line
425344	7522716	24/09/08	+	Incised drainage line
426003	7522102	25/09/08	+	Flood plain/drainage line between surrounding mesas, outcropping crests and knolls
417912	7552843	25/11/07	+	Alluvial plain
416775	7561128	04/07/08	+	Low wide valley, between two sections of mesa
415408	7561386	01/09/08	+	Creekline on a plain
417934	7552365	17/06/07	+	Drainage line
418332	7554071	18/06/07	+	Crest of a low hill
409871	7577485	06/08/08	+	Minor drainage line on plain
411358	7577160	06/08/08	+	Minor drainage area
427459	7526182	07/08/08	+	Floodplain, riverbed
427411	7522688	07/08/08	+	Minor drainage line
417968	7554950	18/06/07	+	
430449	7522109	26/11/07	+	Shrubby, rocky gully
430449	7522109	21/07/08	1%	Shrubby, rocky gully

Setaria verticillata

Easting	Northing	Date	Cover	Habitat
416420	7551794	08/08/08	+	Bank of drainage line on alluvial plain
408380	7578535	20/06/08	+	Wide drainage line on an alluvial plain at the base of a
421471	7557075	16/06/07	+	Large river bed (and its banks) immediately south of mesa
411358	7577160	06/08/08	+	Minor drainage area
427459	7526182	07/08/08	+	Floodplain, riverbed
421471	7557075	05/08/08	+	Large river bed (and its banks) immediately south of mesa

Vachellia farnesiana

Easting	Northing	Date	Cover	Habitat
417643	7552194	08/08/08	+	Creek line confluence in low rolling hills
416420	7551794	08/08/08	2%	Bank of drainage line on alluvial plain
416263	7545540	17/06/07	+	Flat
408650	7562862	26/09/08	+	Flat
409326	7562452	25/09/08	+	
399628	7551425	24/09/08	+	
399588	7551786	24/09/08	+	
403257	7546938	24/09/08	+	
405053	7545819	24/09/08	+	
420492	7545473	28/08/08	+	Drainage line on top of mesa
417301	7554758	21/10/07	1%	Alluvial plain
409094	7577932	23/10/07	+	Low rocky rise
412018	7572185	18/10/07	+	Incised drainage line
411738	7572390	18/10/07	+	Creek line
412966	7564145	22/10/07	+	
410810	7575500	19/06/08	+	Large drainage line on a flat alluvial plain
410810	7575500	23/05/07	+	Large drainage line on a flat alluvial plain
423537	7523510	08/08/07	1%	A wide dissected drainage or gully on the flat
423537	7523510	18/07/08	+	A wide dissected drainage or gully on the flat
422662	7524106	25/09/08	+	Creek between two parts of mesa
426017	7536107	24/11/07		Stony riverbed
416559	7551885	25/11/07		Plain with creek and drainage line adjacent
417912	7552843	25/11/07		Alluvial plain
414972	7562021	14/06/07		Gully
415408	7561386	01/09/08	+	Creek line on a plain
417934	7552365	17/06/07	1%	Drainage line
417664	7552326	17/06/07	+	Dissected drainage line between low undulating hills
418332	7554071	18/06/07	1%	Crest of a low hill
411358	7577160	06/08/08	+	Minor drainage area
427459	7526182	07/08/08	+	Floodplain, riverbed
417968	7554950	18/06/07	+	
409387	7576687	18/10/07	+	Alluvial plain, drainage between two mesas