Nullagine Iron Ore Joint Venture Project Extension Level 2 Flora and Vegetation Survey

Plantecology CONSULTING

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Executive Summary

Plantecology Consulting was commissioned by BC Iron Limited (BCI) to undertake a Level 2 flora and vegetation survey at the Nullagine Project mining operations, located approximately 30 kilometres southwest of Nullagine. The purpose of the survey was to provide baseline floristic and vegetation information to support a Mining Proposal to the Department of Mines and Petroleum (DMP) for a proposed extension of mining at the Nullagine Iron Ore Joint Venture Operations.

The vegetation of the BC Iron Nullagine Project was originally surveyed and mapped by Astron between May and October 2008. That survey found no Threatened Ecological Communities (TECs), but one (Vegetation type PC1b) was considered to be part of the Priority Ecological Community "Plant Assemblages of the Wona Land System". Eight Priority Flora species were recorded, six of which remain listed as Priority Flora. The current survey was designed to extend the previous mapping in three areas: Bonnie East, Coongan and Warrigal.

The field survey was conducted in two site visits, the first between 24th April and 2nd May 2012, and the second between the 14th and 21st September 2012. A Priority Flora search was also undertaken in April 2013. The surveys included sampling the vegetation from 58 relevés and 49 mapping points (unbound plots). Unsupervised classification (cluster analysis) was used to assign associations to the Astron classification. The identified plant associations were then mapped on aerial photography interpreted at 1:1500 and drawn at scales between 1:15 000 and 1:17 500. The vegetation maps are presented in Figures 5 - 10.

A total of 280 native and fourteen introduced taxa were recorded during the survey, representing 138 genera from 52 families. The dominant families containing mostly native taxa were Fabaceae (57 native taxa, 1 weed taxon), Poaceae (44 native taxa, 4 weed taxa) and Malvaceae (32 native taxa, 1 weed taxon).

No Threatened Flora listed under the Western Australian *Wildlife Conservation Act 1950* were recorded during the survey, nor were any recorded that are listed pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* No Priority Flora as listed by the Department of Environment and Conservation (DEC) were recorded during the survey.

Twelve associations were defined from the analysis, none of which were determined to be TECs. Areas of cracking clays in the survey area are part of the Wona Land System, which supports four PECs in the Pilbara. The only extensive areas of cracking clays in the current survey were in the Bonnie East sub-area that supports Association PC1b. However, it is unlikely that Association PC1b is a PEC, as neither *Eragrostis xerophila* nor any *Astrebla* species (the main dominant species of two of the communities) were recorded within this community. Association PC1b is also not a grassless plain and contains a significant shrub layer, and so does not correspond to the Priority 1 "Cracking clays of the Chichester and Mungaroona Range".

Fourteen weed species were recorded in the survey area, one of which requires urgent attention in the form of an eradication program (including searching for any other populations in the locality). Calotropis (*Calotropis procera*) is a declared weed under the *Biosecurity and Agriculture Management Act 2007.* This weed reduces grazing and can be poisonous to stock and humans, and early intervention would prevent its spread.

Table of Contents

List of Figures

List of Tables

Appendices

1 Introduction

Plantecology Consulting was commissioned by BC Iron Limited (BCI) to undertake a Level 2 flora and vegetation survey at the Nullagine Iron Ore Project (NIOP), located approximately 30 kilometres southwest of Nullagine (Figure 1). The total area to be surveyed was approximately 1972 ha and was an extension of a previous survey undertaken by Astron Environmental Services (2009). The survey area comprised three separate sub-areas, one each at the Coongan, Bonnie East and Warrigal prospects.

1.1 Purpose

The purpose of the survey was to provide baseline floristic and vegetation information to support a Mining Proposal to the Department of Mines and Petroleum (DMP) for a proposed extension of mining at the Nullagine Iron Ore Joint Venture Operations.

The objectives of the survey were to:

- Undertake a Level 2 flora and vegetation survey in accordance with the EPA's Guidance Statement 51.
- Undertake a desktop review by examining other local flora and vegetation reports and undertaking a DEC NatureMap search;
- Identify the plant associations present and assign them to the Astron (2009) classification.
- Identify the locations of any Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs);
- Extend the mapping of the plant associations from that of Astron (2009) and assess the condition of each association;
- Map any areas of land degradation;
- Undertake a systematic search for all vascular flora present;
- Record the locations and numbers present of any Threatened Flora and Priority Flora; and
- Record the locations and numbers present of any introduced species.

1.2 Location and Tenure

The survey area is located on Bonnie Downs Station to the southwest of Nullagine. All three sub-areas are to the west of the Marble Bar Road, with the Coongan prospect straddling Hillside Road. Bonnie East and Warrigal are northeast of Coongan (Figure 1). Bonnie East is the largest of the three sub-areas, accounting for two-thirds of the area to be surveyed (Table 1).

Table 1: Area and proportion of each survey sub-area.

Survey Sub-area	Area (ha)	Area (%)
Bonnie East	1313.41	66.60
Coongan	120.71	6.12
Warrigal	538.04	27.28
Total	**1972.16**	**100.00**

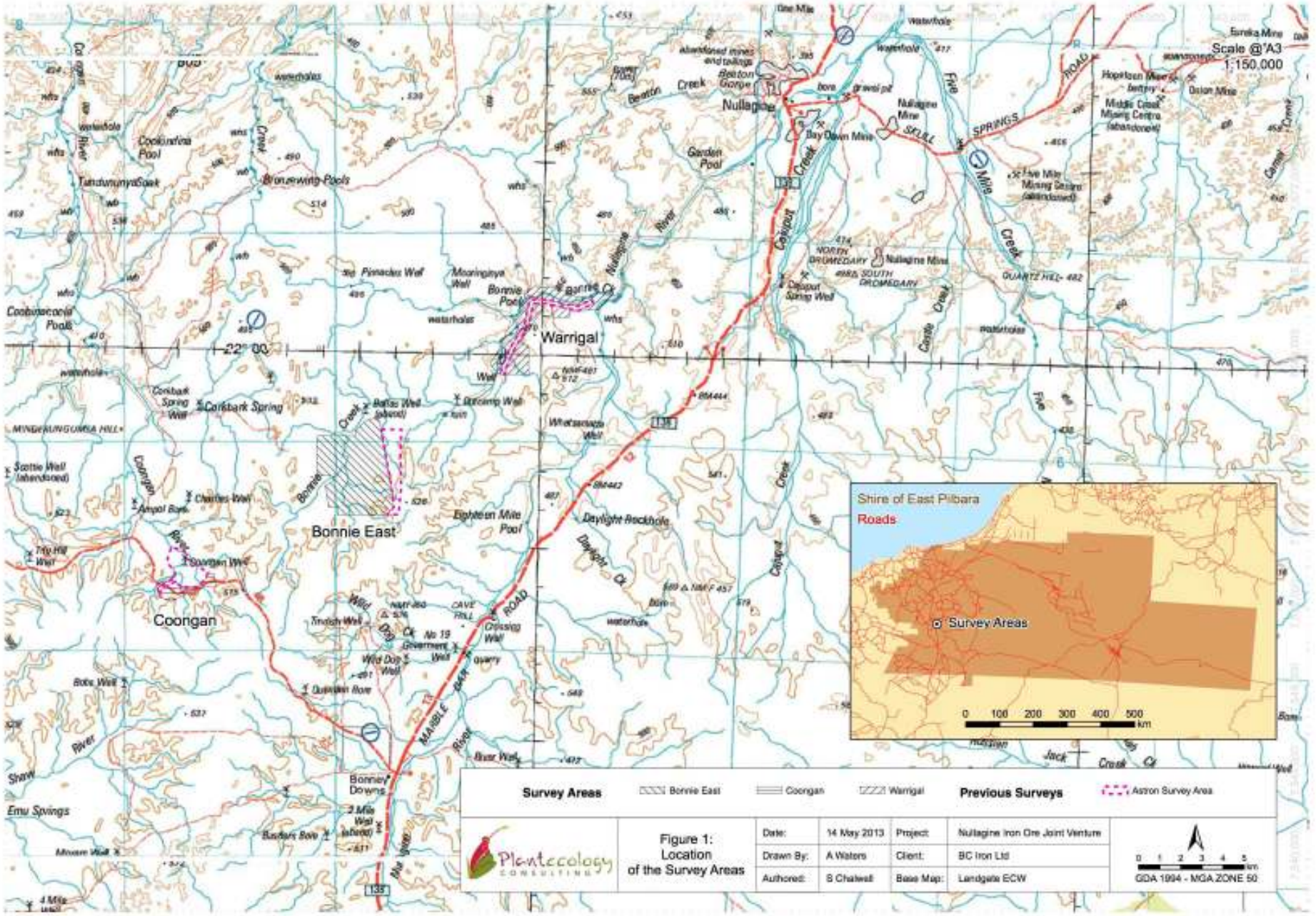


Figure 1: Location of the Nullagine Iron Ore Joint Venture extension vegetation survey areas

1.3 Previous surveys

The vegetation of the BC Iron Nullagine Project was originally surveyed and mapped by Astron between May and October 2008 (Astron 2009). The survey area included potential resource areas, haul roads, borrow pits and areas for camps and processing plants. A total of 462 taxa of vascular plants was recorded from 59 vegetation types. None of the vegetation types was found to be a Threatened Ecological Community (TEC), but one (Vegetation type PC1b) was considered to be part of a Priority Ecological Community (PEC) "Plant Assemblages of the Wona Land System".

Eight Priority Flora species were recorded. These included one P1 species (*Stemodia* sp. Battle Hill (A.L. Payne 1006)); one P2 species (*Vigna* sp. Central (M. E. Trudgen 1626)); five P3 species (*Amaranthus cuspidifolius, Atriplex flabelliformis, Flaveria australasica* var. *gilgai, Swainsona* sp. Hamersley Station (A.A. Mitchell 196) and *Iotasperma sessilifolium*) and one P4 species (*Ptilotus mollis*). Of these, *Amaranthus cuspidifolius* and *Flaveria australasica* var. *gilgai* (now *Flaveria* sp. Tom Price) are no longer considered Priority Flora.

In March 2011, botanists from Cardno conducted a Priority Flora search of proposed infrastructure areas of the cracking clay communities, focusing on the four ephemeral species *Stemodia* sp. Battle Hill, *Vigna* sp. Central, *Swainsona* sp. Hamersley Station and *Iotasperma sessilifolium.* No populations of Priority Flora were found in that study.

1.4 Existing Environment

The survey area is located on the Chichester Plateau, a narrow area that forms a watershed between creeks and rivers flowing north to the coast and the creeklines flowing south to the Fortescue River (Astron 2009). The vegetation of the Chichester Plateau is dominated by species of spinifex (*Triodia* spp.), often with *Triodia wiseana* in association with *Eucalyptus leucophloia* on the steeper slopes, and *Acacia* spp. and *Triodia pungens* on gentler slopes (Beard 1990). The existing vegetation is mainly native with some areas of introduced grasses (mostly *Cenchrus ciliaris*) adjacent to the larger drainage lines.

The survey area includes sections of the ephemeral Bonnie Creek and its tributaries, which itself is a tributary of the Nullagine River. The Coongan survey area includes short sections of the Coongan Creek system, which drains to the northwest. Groundwater within the survey area is mostly in fractured rock aquifers, with some chemically deposited aquifers (Johnson 2004). Recharge is episodic and groundwater storage is generally low as it is contained within areas of secondary porosity of the rock (Johnson 2004).

1.5 Biogeographical Location

Under the Interim Biogeographical Regionalisation of Australia ('IBRA'), the Pilbara has been divided into four IBRA subregions (May and McKenzie 2002). The vegetation survey area is contained within the Pilbara 1 – Chichester Subregion described by Kendrick and McKenzie (2002) as:

> "the northern section of the Pilbara Craton. Undulating Archaean granite and basalt plains include significant areas of basaltic ranges. Plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens)* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges. The climate is semi-desert-tropical and receives 300mm of rainfall annually. Drainage occurs to the north via

numerous rivers (e.g. De Grey, Oakover, Nullagine, Shaw, Yule, Sherlock). Subregional area is 9,044,560ha."

1.6 Climate

The Nullagine Iron Ore Project experiences a semi-arid to semi-tropical climate, influenced by summer sub-tropical rainfall events and cyclones with a prolonged winter dry season. Most occurs generally between December and March with occasional major deluge events occurring from cyclones during this period. Scattered thunderstorms provide the majority of non-cyclonic rain. Maximum temperatures are often greater than 40°C for extended periods during summer and can be above 30°C in the winter months (Figure 2). Climate data for Nullagine (BOM Station No 4027) is presented in Figure 2. The Nullagine station closed in 2004 and so rainfall data from Marble Bar (BOM station No 4106) and climate data from Marble Bar Comparison (BOM station No 4020) are also shown.

Seasonality can have a large bearing on the effectiveness of a vegetation survey. Rainfall for the 12-month period leading up to the April 2012 survey was around the annual average, but January and March were well above average. The total rainfall is therefore not considered as being a survey constraint and the above average rainfall in March resulted in an extended wet season. This extended the flowering period of some species, but others may have responded to the January events and completed flowering before the field survey. The March rainfall prevented access to the site until late April 2012. The only rainfall recorded in the area between the two site visits was 5 mm that fell in June.

1.7 Land Systems

The Pilbara Region has been mapped by the Department of Agriculture and Food Western Australia ('DAFWA') into 102 land systems based on geology, topography and soils (Van Vreeswyk *et al.* 2004). Three land systems occur within the survey area: the Rocklea, Wona and Robe (Figure 2). Information on these land systems in relation to the survey area is provided in Table 2. The Rocklea and Robe Land Systems occur within all three sub-areas but the Wona Land System is only found in the Bonnie East sub-area (Figure 2).

The Rocklea Land System occurs extensively throughout the Pilbara, the Wona Land System is common within the Chichester Ranges, but the Robe Land System is more restricted in its distribution (Van Vreeswyk *et al*. 2004). The Rocklea and Robe Land Systems support mainly hard spinifex hummock grasslands, which are preferentially grazed by stock and are therefore not usually subject to land degradation. The Wona Land System, however, supports tussock grasses and herbs that are highly preferred by stock and is susceptible to degrading processes.

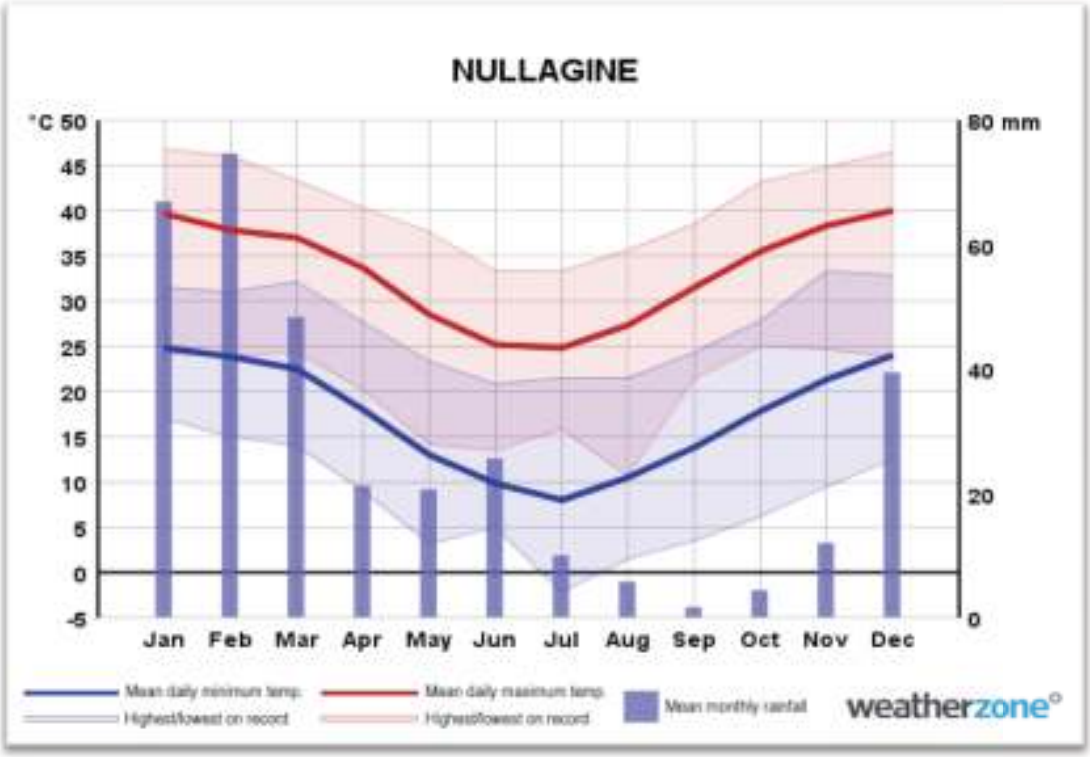
1.8 Vegetation Associations

The vegetation of Western Australia has been mapped at a scale of 1:250 000 (Shepherd *et al*. 2002). Two vegetation associations mapped at this scale occur within the survey area: Chichester Plateau 173 and Abydos Plain – Chichester 173 (Figure 4). Chichester Plateau 173 is extensive within the Pilbara with an area over 1 124 000 ha remaining (Government of Western Australia 2011). This is 99.9% of its estimated original extent and 11.65% of this association is protected within conservation reserves. Similarly, Abydos Plain-Chichester 173 still retains over 99% of its original extent and covers an area in excess of 618 000 ha. However, no area of this association is protected within conservation reserves.

1.9 Soils

The soils of the minor and major channels of the River Land System are mainly River Bed soils, while the flood plains and lower terraces are mostly comprised of red/brown non-cracking clays and red loamy earths (Van Vreeswyk *et al*. 2004). Upper terraces and sand sheets are mostly red deep sands. The Robe and Rocklea Land Systems are mainly comprised of stony soils and shallow loams or gravels. Red shallow loams and calcareous loams occur on lower slopes and red earthy loams are found in drainage lines. The Wona Land System is mainly stony gilgai upland plains and the soils are self-mulching cracking clays with some deep red/brown non-cracking clay. The non-cracking clays extend to the gently inclined stony plains and slopes, which also contain some red earthy loams. The soils of the narrow drainage lines of the Wona Land System are mainly red deep sandy duplex soils, red shallow loams and shallow red/brown non-cracking clays. (Van Vreeswyk *et al*. 2004)

a)



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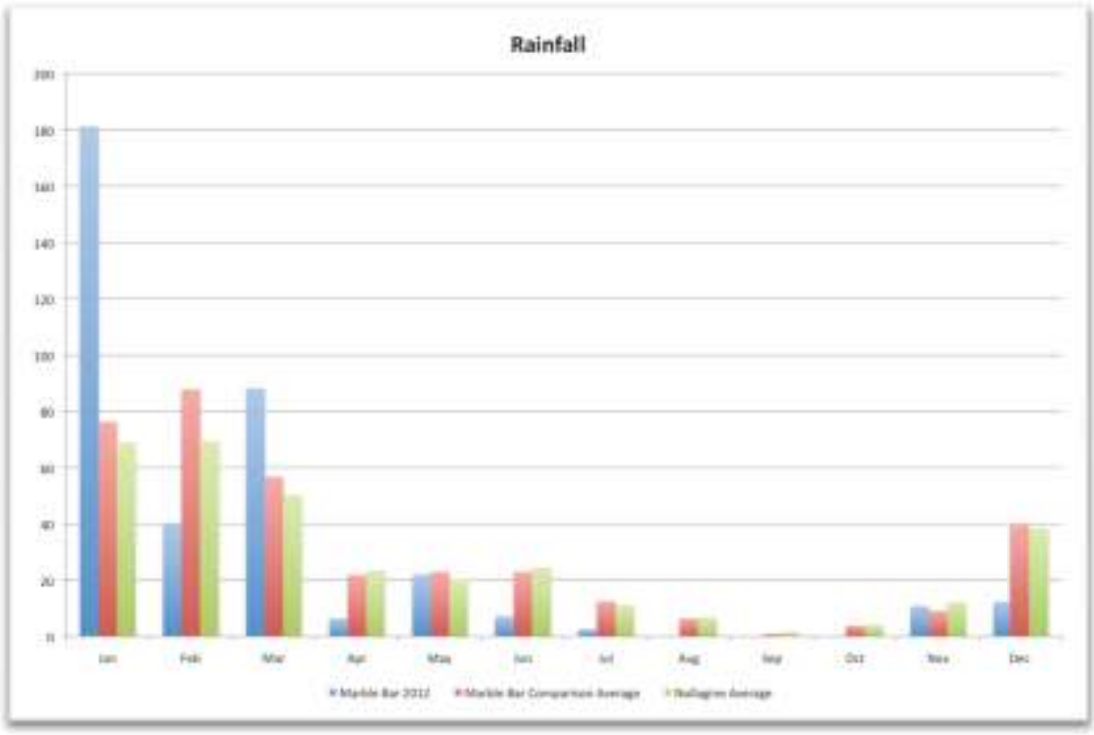

Figure 2: Climate information for (a) Nullagine (BOM station 4027) (The Weather Co. 2012) and (b) mean rainfall for Marble Bar Comparison and Nullagine and monthly rainfall for Marble Bar for the 12 months prior to the survey.

Table 2: Land Systems of the Survey Area

Land System	Description	Area (ha) of Land Systems in each sub-area	
Rocklea	Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands.	Coongan	138.99
		Bonnie East	897.41
		Warrigal	326.50
Robe	Low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands.	Coongan	1.89
		Bonnie East	185.52
		Warrigal	300.14
Wona	Basalt upland gilgai plains supporting tussock grasslands and minor hard spinifex grasslands.	Bonnie East	159.54

1.10 Conservation Significant Flora

Under the *Wildlife Conservation Act 1950* ('*WC Act*'), the Minister for the Environment produces a gazetted '*Wildlife Conservation (Rare Flora) Notice*' that lists Threatened (or Declared Rare) Flora under two Schedules; extant and presumed extinct. The DEC also produces a list of Priority Flora that have not been assigned statutory protection under the *WC Act* but may be under some degree of threat. The DEC recognises five Priority Flora levels. The definitions for each category of Threatened and Priority Flora are shown in Table 3.

A search of the DEC's databases of Threatened and Priority Flora found ten taxa with the potential to occur within the survey area (Table 4). Of these, only one, *Ptilotus mollis,* has been previously recorded at the BC Iron Nullagine Project. The other Priority Flora recorded by Astron (2009) - *Stemodia* sp. Battle Hill (A.L. Payne 1006)), *Vigna* sp. Central (M. E. Trudgen 1626), *Atriplex flabelliformis, Swainsona* sp. Hamersley Station (A.A. Mitchell 196) and *Iotasperma sessilifolium*) – were not included in the search results.

Table 3: Definitions for categories of Threatened and Priority Flora

Category	DEC Definition
Schedule 1—Extant Flora **T: Threatened Flora (Declared Rare Flora – Extant)**	Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such (Schedule 1 under the *Wildlife Conservation Act 1950*). Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List criteria: ■ CR: Critically Endangered – considered to be facing an extremely high risk of extinction in the wild ■ EN: Endangered – considered to be facing a very high risk of extinction in the wild ■ VU: Vulnerable – considered to be facing a high risk of extinction in the wild
Schedule 2—Extinct Flora **X: Presumed Extinct Flora (Declared Rare Flora - Extinct)**	Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such (Schedule 2 under the *Wildlife Conservation Act 1950*).
P1: Priority One: Poorly Known	Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
P2: Priority One: Poorly Known	Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
P3: Priority One: Poorly Known	Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.

Category	DEC Definition
P4: Priority Four: Rare, Near Threatened and other species in need of monitoring	**a.** Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. **b.** Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. **c.** Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
P5: Priority Five: Conservation Dependent Species	**P5: Priority Five - Conservation Dependent Species**:- Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Table 4: Threatened and Priority Flora potentially occurring within the survey area.

Taxa	DEC Rating	Known Habitat Types (FloraBase 2012)	Likely occurrence in survey areas
Acacia aphanoclada	P1	Skeletal stony soils	Possible
Acacia cyperophylla var. *omearana*	P1	Stony, gritty alluvium of drainage lines	Possible
Acacia fecunda	P3	Quartzite gibbers. Shallow creeks and drainage lines	Possible
Acacia levata	P3	Sand or sandy loam over granite. Hillsides	Unlikely
Acacia sp. Nullagine (B.R. Maslin 4955)	P1	Rocky clay. Low lying areas between hills	Unlikely
Atriplex spinulosa	P1	-	Unlikely
Goodenia sp. East Pilbara (A.A. Mitchell PRP 727)	P3	Red brown soils. Calcrete pebbles. Low undulating plains and swampy plains	Possible
Indigofera ixocarpa	P2	Skeletal soils over massive ironstone	Possible
Ptilotus mollis	P4	Stony hills and screes	Likely
Tribulus minutus	P1	-	Unlikely

1.11 Conservation Significant Communities

The DEC defines an ecological community as "a naturally occurring assemblage that occurs in a particular type of habitat" (DEC 2010). A Threatened Ecological Community (TEC) is one that has declined in area or was originally limited in distribution. Uncommon ecological communities that do not strictly meet TEC defined criteria, or are inadequately defined, are listed by the DEC as a Priority Ecological Community (PEC). Definitions of the categories of Threatened and Priority Ecological Communities are given in Table 5.

A search of the DEC's database of Threatened and Priority Ecological Communities found two PECs that have been recorded within 10 km of the survey area. They were:

- The 'Priority 1' ecological community - 'Fortescue Marsh (Marsh Land System)'; and
- The 'Priority 3' ecological community – 'Stony saline clay plains of the Mosquito Land System'.

Neither of these communities was recorded by Astron (2009) in the previous survey, nor are they likely to occur within the current survey area. The survey area does not include any part of either the Fortescue Marshes or the Mosquito Land System. The database search did not produce any results relating to PECs of the Wona Land System. As described above, Astron recorded one vegetation type that may have potentially been part of the "Plant Assemblages of the Wona Land System". Since that survey, the classification of the Wona Land System plant communities has been refined, and there are now four communities within the land system that have PEC status:

- Cracking clays of the Chichester and Mungaroona Range. This grassless plain of stony gibber community occurs on the tablelands with very little vegetative cover during the dry season, however during the wet a suite of ephemerals/annuals and short-lived perennials emerge, many of which are poorly known and range-end taxa. Priority 1;
- Annual Sorghum grasslands on self-mulching clays. This community appears very rare and restricted to the Pannawonica-Robe valley end of Chichester Range. Priority 1;
- Mitchell grass plains (Astrebla spp.) on gilgai. Priority 3(iii); and
- Mitchell grass and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai (typical type, heavily grazed. Priority 3 (iii).

Of these four, the Mitchell grass and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai is the most likely to be represented on the cracking clays within the survey area. However, it must be noted that the previous survey did not record any of the usually dominant Mitchell grass (*Astrebla* spp.) and it may be that the vegetation units on cracking clays within the survey do not correspond to the PECs listed above.

Table 5: Categories and definitions of Threatened and Priority Ecological Communities (DEC 2012)

Category	DEC definition
PD: Presumed Destroyed	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.
Critically Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.
Vulnerable	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.
Priority 1	Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist.
Priority 2	Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation.

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

1.12 EPBC Act search

As well as protection under State legislation, selected flora species and ecological communities are also afforded statutory protection at a Federal level pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act provides for the protection of TECs, which are listed under section 181 of the Act, and are defined as "Critically Endangered", "Endangered" or "Vulnerable" under Section 182. Species of flora may also be listed pursuant to Schedule 1 of the EPBC Act. Definitions of these categories are shown in Table 6. Any action likely to have a significant impact on a species listed under the EPBC Act requires approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

A search of the Department for Sustainability, Environment, Water, Population and Communities (DSEWPC) database on matters of national environmental significance was conducted on the 19th April 2012. The area searched comprised a rectangle between 21.965˚ S and 22.14556˚ S, and 119.78˚ E and 120.03389˚ E, with a 10 km buffer. The full results of the search are presented in Appendix H.

No plant taxa of national significance were identified as potentially occurring within the search area. No TECs were identified as potentially occurring within the search area. Of the four invasive species listed, one was a plant: Buffel Grass (*Cenchrus ciliaris*), which is a perennial tussock grass of seasonally wet areas including drainage lines floodplains and black cracking clays.

Table 6: Categories of protection for species and communities listed under the EPBC Act.

EPBC Act Category	DSEWPC Definition
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:
	(a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
	(b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered	A native species is eligible to be included in the endangered category at a particular time if, at that time
	(a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable	A native species is eligible to be included in the vulnerable category at a particular time if, at that time:
	(a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation dependent	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.

2 Methods

2.1 Field Survey

2.1.1 Post Wet Season Field Survey

The wet season field survey was conducted by experienced botanists from Plantecology Consulting between 24th April and 2nd May 2012. The field survey was undertaken using a standard phytosociological approach in accordance with Environmental Protection Authority 's (EPA) Guidance Statement No. 51 – *Terrestrial flora and vegetation survey environmental impact assessment in Western Australia* (2004). The site was traversed by vehicle where roads provided access and by foot where vehicular access was not possible.

A detailed survey of the vegetation was undertaken at 45 relevés (quadrats), selected to adequately sample each plant community observed or where a change in soil type or topography was observed. Relevés were positioned to sample a representative and homogeneous (i.e. not located in transitional areas between communities) area of each community. As the main objective of the survey was to extend the vegetation mapping of Astron (2009), a relevé was placed within selected communities that had been previously mapped and were adjacent to the survey area. This data provided contemporaneous reference points for the assignment of plant communities to the previous classification of Astron (2009). It was considered important to collect new data from the previously mapped areas as parts of the current survey area had been subjected to fire in the interim. The two datasets were unlikely, therefore, to be directly comparable in any updated analysis.

The appropriate size of the relevés was determined by using the minimal area approach (Minnesota Department of Natural Resources 2007; Hnatiuk *et al.* 2008; Kent 2012). The vegetation was divided into three broad physiognomic classes:

- Riparian woodlands of broad drainage channels;
- Riparian shrublands of minor drainage channels; and
- Hummock grasslands.

For each vegetation class an initial area was surveyed, the number of new species was recorded and then the area successively doubled until few additional species were being recorded. This procedure was followed for the first three sampling plots in each vegetation class, with a mean species richness calculated for each area sampled. A species-area curve was then constructed for each class and the appropriate relevé size for each vegetation class was taken as being slightly beyond where each curve levelled off (Appendix G), as larger quadrats are generally better for surveys than smaller ones (McCune and Grace 2002; Archaux *et al.* 2007). The determined relevé size for each vegetation class is shown in Table 7.

Table 7: Relevé size for each vegetation class within the survey area

Vegetation Class	Initial Plot Size (m^2)	Determined Appropriate Relevé Size (m^2)
Riparian woodland	100	800
Riparian shrubland	40	400
Hummock grassland	100	3600

The location of each corner of a relevé was recorded with a hand-held GPS unit and a photograph taken looking inward to the quadrat. All vascular plant species were recorded and an estimate of the Foliage Projective Cover (FPC) percentage was made for each species. In addition, opportunistic plant taxa that were observed, but not located at a particular survey location, were also recorded throughout the course of the survey.

Environmental data recorded at each relevé included topographic position, aspect, slope, soil colour and texture class, rock outcropping, litter cover as well as the degree of disturbance and an estimate of the time since the last fire event. The condition of the vegetation of the site was assessed to update the previous surveys and assist in determining the conservation values of the site. The vegetation condition was rated according to Trudgen (2007), a vegetation condition scale commonly used in the Pilbara Region. The categories are listed and defined in Table 8. Data on the vegetation structure was also recorded and included the height of the three main strata and the dominant species within each stratum.

In addition to the relevés, the vegetation was further sampled using mapping points (unbound plots) at 48 selected sites. The mapping points were used to rapidly ground-truth the aerial photography interpretation and provide information on the extent and condition of the plant communities. At each mapping point, the same environmental and vegetation structure data described above was recorded and a search made for any Priority or Threatened flora. Any previously unrecorded flora were noted and collected.

Table 8: Vegetation Condition Scale (Trudgen 2007)

Code	Vegetation Condition Definition
E	Excellent: Pristine or nearly so, no obvious signs of damage caused by the activities of European man.
VG	Very Good: Some relatively slight signs of damage caused by the activities of European man, e.g. some signs of damage to tree trunks caused by repeated fire and the presence of some relatively non-aggressive weeds.
G	Good: More obvious signs of damage caused by the activities of European man, including some obvious impact on the vegetation structure such as caused by low levels of grazing or by selective logging. Weeds as above, possibly plus some more aggressive ones.
P	Poor: Still retains basic vegetation structure or ability to regenerate to it after very obvious impacts of activities of European man such as grazing or partial clearing (chaining) or very frequent fires. Weeds as above, probably plus some more aggressive ones.
VP	Very Poor: Severely impacted by grazing, fire, clearing or a combination of these activities. Scope for some regeneration but, not to a state approaching good condition without intensive management. Usually with a number of weed species including aggressive species.
D	Completely Degraded: Areas that are completely or almost completely without native species in the structure of their vegetation, e.g. areas that are cleared or "parkland cleared" with their flora comprising weed or crop species with isolated native trees or shrubs.

All plant specimens collected during the field survey were dried, pressed and then sorted in accordance with requirements of the Western Australian Herbarium. Identification of specimens occurred through comparison with named material and through the use of taxonomic keys. A total botanical collection was made for all taxa encountered during the survey with reference specimens matched in a field herbarium. All specimens were forwarded to a Pilbara specialist taxonomist (Sharnya Thomson) for determination. Taxonomic determinations were made using reference material at the Western Australian State Herbarium. Taxa names utilise the current terminologies from FloraBase (2012). Family names utilise the revised phylogeny of the Angiosperm Phylogeny Group - APGIII (FloraBase 2012).

2.1.2 Dry Season Survey

A second site visit was conducted between the 14th and 21st September 2012, in order to provide sampling from multiple seasons as required for a Level 2 survey under Guidance Statement 51. The original 45 relevés were sampled again, with an additional 13 plots established after analysing for the adequacy of surveying in each community.

2.1.3 Priority Flora Search

The first site visits did not record any Priority Flora within the survey area (see Section 3.1.2). The previous survey by Astron (2009) recorded a number of Priority Flora, including *Swainsona* sp. Hamersley Station (P3) (now *Swainsona thompsoniana*), *Stemodia* sp. Battle Hill (P1), *Iotasperma sessilifolium* (P3) and *Vigna* sp. Central (P2). Potential habitat for these species occurs on the cracking clays in Bonnie East (Community PC1b). It was therefore decided to conduct a targeted search for these, or any other Priority Flora, that may occur within the cracking clays of the Bonnie East sub-area.

Prior to visiting the site, a literature search was undertaken for information relating to the identification of the target species. The WA Herbarium was visited and specimens inspected to familiarise the field team with each species.

A search of Community PC1b within the Bonnie East sub-area was then undertaken between the 11th and 16th April 2013. This timing was considered appropriate as the area had received extensive rains in the preceding 4-6 weeks. The target area was traversed by three experienced botanists in parallel transects spaced approximately 20 m apart. The five sampling plots located within Community PC1b (Sites 50, 51, 52, 107 and 109) were also resampled.

2.2 Data analysis and Classification

Plant associations were identified from the relevé floristic data. Only relevés that had been visited in both seasons were used in the analysis. Where taxonomy was uncertain for some collections, taxa were grouped together (e.g. *Senna symonii x ?* was grouped with *Senna symonii*). As the FPC for each species is an estimate and often varies between recorders, each species score was converted to a ranking using a modified Braun-Blanquet value (Kent 2012), where 1=<1% FPC; 2=1-5%; 3=6-25%; 4=26-50%; 5=51-75%; and 6=76-100%. As this converts the original values to ordinal values and most distance measures for community data only work with interval data, the data were then transformed by dividing each score by the maximum possible value (i.e. 6) to obtain values between 0 and 1 (Rezankova 2009). It is recognized that this assumes the same distances between categories, but this method often produces the most interpretable results from relatively homogenous datasets.

An exploratory data analyis approach was used to identify plant associations and assign them to the Astron classification scheme. The data were treated in one of three ways:

1. to binary (presence/absence) data, both with and without Beals' smoothing;
2. species that were recorded from only one sampling plot (singletons) were excluded from the analysis; or
3. no further transformation was undertaken.

The dataset was then clustered using various space-conserving hierarchical techniques within the analysis package PC-ORD (McCune and Mefford 2006). The techniques explored included the Sorenson distance measure with either flexible UPGMA (beta = -0.25) or Group Average fusion method, and the Relative Euclidean distance measure with Ward's linkage method. The most readily interpretable result was given by the

latter technique applied to the data matrix with no further transformation (i.e. singletons included). The Relative Euclidean distance measure applies a general standardization to the data and emphasizes relative abundance (McCune and Grace 2002) and is more sensitive to the qualitative aspects of the data than the Euclidean distance measure (van Tongeren 1995) while limiting the loss of quantitative information. This distance measure often works well in disturbed habitats where the absolute difference in abundance measures is of secondary importance. Additionally, using only qualitative (presence/absence) data often results in an excessive loss of information from relatively homogenous datasets and is more suited to heterogeneous datasets from larger scale studies.

The resulting dendrogram was scaled using Wishart's objective function and pruned with about 60% of information remaining (Appendix E). The level of pruning was chosen as it produced the most consistent assignment of groups to the Astron classification. The names, description and codes used are those of Astron (2009). Where groups could not be assigned to an association from clustering with a reference site, the descriptions from the previous survey were examined to allocate groups. The vegetation structural classification follows that of Specht (1970) with modification by Aplin and Trudgen (1998) (Table 9).

Table 9: Vegetation Classifications for the Pilbara based on Specht (1970) with modification by Aplin (1979)

Life form	**Canopy Cover**				
Height Class	100 - 70%	70 - 30%	30 - 10%	10 - 2%	< 2%
Trees > 30m	High Closed Forest	High Open Forest	High Woodland	High Open Woodland	Scattered Tall Trees
Trees 10-30m	Closed Forest	Open Forest	Woodland	Open Woodland	Scattered Trees
Trees < 10m	Low Closed Woodland	Low Open Forest	Low Woodland	Low Open Woodland	Scattered Low Trees
Mallee	Closed Mallee	Mallee	Open Mallee	Very Open Mallee	Scattered Mallees
Shrubs > 2m	Closed Scrub	Open Scrub	High Shrubland	High Open Shrubland	Scattered Tall Shrubs
Shrubs 1-2m	Closed Heath	Open Heath	Shrubland	Open Shrubland	Scattered Shrubs
Shrubs < 1m	Low Closed Heath	Low Open Heath	Low Shrubland	Low Open Shrubland	Low Scattered Shrubs
Hummock Grass	Closed Hummock Grassland	Hummock Grassland	Open Hummock Grassland	Very Open Hummock Grassland	Scattered Hummock Grass
Tussock Grass	Closed Tussock Grassland	Tussock Grassland	Open Tussock Grassland	Very Open Tussock Grassland	Scattered Tussock Grass
Bunch Grass	Closed Bunch Grassland	Bunch Grassland	Open Bunch Grassland	Very Open Bunch Grassland	Scattered Bunch Grass
Sedges	Closed Sedges	Sedges	Open Sedges	Very Open Sedges	Scattered Sedges
Herbs	Closed Herbs	Herbs	Open Herbs	Very Open Herbs	Scattered Herbs

2.3 Vegetation mapping

The identified plant associations were then mapped on aerial photography interpreted at 1:1500 and drawn at scales between 1:15 000 and 1:17 500. The vegetation and condition maps are presented in Figures 5 - 10.

2.4 Study Limitations and Survey Effort

Various factors can limit the effectiveness of a vegetation survey. Pursuant *to EPA Guidance Statement 51* (EPA 2004), these factors have been identified and their potential impact on the effectiveness of the survey has been assessed (Table 10).

There were no factors identified that were considered as being major impediments the effectiveness of the vegetation survey.

Table 10: Potential limitations affecting the vegetation survey

Potential limitations	Constraint	Comment
Competency and experience of the botanists undertaking the survey	No	The survey was undertaken by botanists with a comprehensive knowledge of Pilbara vegetation. All botanists have at least 5 years experience in vegetation surveys in Western Australia.
Seasonality	No	Rainfall was well above average for January and March 2012. Rainfall is therefore not considered as being a major survey constraint. However, it was noted that most *Triodia* species had completed flowering before the survey could be undertaken, probably due to the January rainfall.
Adequate ground coverage and intensity of survey effort	No	The 1972 ha survey area was traversed on mainly foot. It is considered the 58 relevés and 49 mapping points provided adequate ground coverage (18.43 ha / relevé or mapping point).
Proportion of Flora identified	No	Between 77% and 87% of the estimated total flora were recorded (See Appendix F)
Burn Cycle	Some constraint	Parts of the survey area had been burnt between 2 and 5 years previously and were still in a recovery phase. Floristic diversity does not appear to have been affected by the burn cycle, although detectability may have been affected.
Resources	No	Adequate resources were available to conduct the survey.
Access restrictions	No	All areas were accessible by vehicle or foot.

3 Results

3.1 Flora

3.1.1 Floristic Summary

A total of 280 native and 14 introduced taxa were recorded during the survey, representing 138 genera from 52 families. The dominant families containing mostly native taxa were Fabaceae (57 native taxa, 1 weed taxon), Poaceae (44 native taxa, 4 weed taxa) and Malvaceae (32 native taxa, 1 weed taxon). The most common genera were *Acacia* spp. (20 taxa), *Senna* spp. (12 taxa) and *Ptilotus* sp. (10 taxa). For a complete species list and the individual site data refer to Appendix A and Appendix C, respectively. The individual mapping point data is presented in Appendix D.

3.1.2 Threatened and Priority Flora

No Threatened Flora listed under the Western Australian *WC Act* were recorded during the survey, nor were any recorded that are listed pursuant to the Commonwealth *EPBC Act.*

No Priority Flora as listed by the DEC were recorded during the 2012 survey of the extension area, nor were any recorded from the targeted search of the PC1b community within the Bonnie East sub-area.

3.2 Vegetation

3.2.1 Assignment of Plant Associations

The cluster analysis assigned the plant associations of the current survey to the existing classification of Astron (2009). The results from the analysis are summarised in a dendrogram, which is presented in Appendix E. Twelve associations were defined from the analysis and have been mapped in Figures 3 – 5 and are described in Table 11. In addition, three associations (D2a, D3a and D8a4) were mapped as extending from previously surveyed area at Warrigal but were not sampled due to their limited areal extent.

The first group in the dendrogram is Association H1a and was recorded from seven relevés (Sites 1, 13, 19, 49, 56, 116 and 118). Association H1a occurs on the ridges and upper slopes of hills and mesas in all three sub-areas but is particularly prevalent at Bonnie East and Warrigal. *Triodia epactia* is the most abundant species and there is usually an overstorey of scattered shrubs and trees consisting of species such as *Corymbia hamersleyana, Acacia pruinocarpa, Senna glutinosa* subsp. *glutinosa* and *Grevillea wickhamii.* The grass species *Eriachne lanata* is also common.

The second group in the dendrogram is Association H9a, which was recorded at six relevés (Sites 48, 53, 108, 114, 117 and the H9a reference site). Association H9a is the most extensive association in the survey area, occupying much of the broad rolling plains between hills and the drainage areas. *Triodia epactia* is the most abundant species, and an overstorey of scattered *Acacia inaequilatera* is often present.

Site 110 was the only example of Association H9a4 recorded in the survey. In the Astron (2009) survey, this association was considered to be a sub-association of Association H9a, which is confirmed in this survey as it joins the H9a before the fusion with the H3a sites in the dendrogram. Community H9a4 is dominated by a dense overstorey of *Acacia monticola* with sparse shrubs and hummock grasses, and was recorded from a shallow drainage line on a ridge and a breakaway, both in the Bonnie East sub-area.

monticola with sparse shrubs and hummock grasses, and was recorded from a shallow drainage line on a ridge and a breakaway, both in the Bonnie East sub-area.

Association H3a was recorded from Site 105 and the H3a reference site. This association occurs on ridges in the southwestern part of the Coongan sub-area and is a hummock grassland of *Triodia epactia* with *Goodenia stobbsiana* also being common.

Association H10a occurs on the lower slopes and plains in the Coongan and Bonnie East sub-areas. This association was recorded at five relevés (Sites 2, 4, 9, 111 and the reference site H10a). Association H10a is an open hummock grassland of *Triodia epactia* with scattered shrubs. *Aristida contorta, Gompholobium cunninghamii* and *Solanum horridum* are also common. Sites 2, 4 and 9 are split in the dendrogram from Sites H10a and 111, due to the minor presence of *Triodia brizoides* at the latter sites.

Association D8b occurs in the southwestern part of the Coongan sub-area and adjacent to drainage lines in the Bonnie East area. It was recorded from Sites 5, 57, 58 and the D8b reference site. The reference site for PC1b also fused with this group, but this is likely due to the mosaic nature of the cracking clay communities (Astron 2009) which makes it difficult to position relevés such that they sample homogeneous vegetation. Association D8b is a *Triodia longiceps* hummock grassland and shows signs of being preferentially grazed.

Association H9b occurs on calcrete soils in the Coongan and Bonnie East sub-areas. The most abundant species recorded was *Triodia wiseana* with *Eucalyptus leucophloia* subsp. *leucophloia* and *Acacia hilliana* being common. This association was recorded at six relevés (Sites 3, 12, 14, 55, 113 and H9b).

Association H3e occurs in the Coongan and Bonnie East sub-areas and was described from three relevés (Sites 6, 54 and the reference site H3e). Association H3e is a mixed hummock grassland of *Triodia brizoides* and *Triodia longiceps*.

The classification of the clay and drainage areas revealed inconsistencies with the previous survey. Cutting the dendrogram with 60% of information remaining produced results similar to the previous classification of Astron for the hummock grasslands, but divided the groups in the wetter areas. As this survey is to extend the mapping of the adjacent areas surveyed by Astron, the groups have been determined on the basis of producing the most consistent mapping across the two surveys.

Association D6a is the most extensive community of the drainage lines in the Bonnie East sub-area, being recorded at eight relevés (Sites 10, 11, 17, 104, 106, 112, 115 and the references D6a) and was the most species rich in the survey area with 121 taxa. The dominant tree species recorded was usually *Eucalyptus victrix,* although *Corymbia hamersleyana* was often present. *Acacia coriacea* subsp. *pendens* occurred often as a sub-dominant and *Acacia pyrifolia* was the most common shrub species. The most commonly occurring grass species was the introduced **Cenchrus ciliaris.*

Association PC1b is found on the cracking clays in the Bonnie East sub-area, being recorded at five relevés (Sites 50, 51, 52, 107 and 109). The introduced shrub **Vachellia farnesiana* was the most common shrub and the introduced grasses **Cenchrus ciliaris* and **Cenchrus setiger* were also common. Common native herbs recorded included *Ptilotus gomphrenoides*, *Oldenlandia crouchiana* and *Vigna* sp. Hamersley Clay. The two relevés sampled in this community that were used in the analysis show no relationship to the PC1 reference site. *Triodia longiceps* was recorded as the most dominant grass species at PC1 but was not present at either Site 107 or 109. Similarly, *Acacia bivenosa* and *Acacia synchronicia* were not recorded at Sites 107 and 109 but were present at PC1.

Table 11: Plant associations recorded form the survey area (Codes and descriptions from Astron 2009).

Association Code	Community Description	Survey Sub-Area	Area (ha)	Total Area (ha)
H1a	*Corymbia hamersleyana* scattered low trees over mixed *Acacia* spp. scattered shrubs to shrubland over *Triodia epactia* hummock grassland	Coongan	3.54	472.0
		Bonnie East	319.28	
		Warrigal	149.17	
H3a	*Eucalyptus leucophloia* scattered low trees over mixed *Acacia* spp. scattered shrubs to shrubland over *Triodia epactia* hummock grassland	Coongan	0.35	41.84
		Bonnie East	41.49	
H3e	*Eucalyptus leucophloia* scattered low trees over mixed *Senna* spp. scattered shrubs over *Triodia brizoides* hummock grassland	Coongan	22.03	56.69
		Bonnie East	34.66	
H9a	Mixed *Acacia* spp. scattered shrubs to shrubland over *Triodia epactia* hummock grassland	Coongan	17.81	833.36
		Bonnie East	479.38	
		Warrigal	366.17	
H9a4	*Acacia monticola, A. ancistrocarpa* and *Grevillea wickhamii* scattered tall shrubs over *Triodia epactia* hummock grassland	Bonnie East	1.51	1.51
H9b	Mixed *Acacia* spp. scattered shrubs to shrubland over *Triodia wiseana* hummock grassland	Coongan	1.49	84.12
		Bonnie East	58.03	
		Warrigal	24.60	
H10a	Mixed *Senna* spp. scattered shrubs over *Triodia epactia* open hummock grassland	Coongan	20.73	109.17
		Bonnie East	88.44	
D2a	*Corymbia hamersleyana* scattered low trees to low woodland over mixed *Acacia* spp. Scattered shrubs to shrubland over mixed *Triodia epactia* hummock / **Cenchrus* spp. Tussock grassland	Coongan	1.29	7.69
		Bonnie East	2.77	
		Warrigal	5.58	
D2b	*Corymbia hamersleyana* scattered low trees over mixed *Acacia* spp. shrubland over mixed *Triodia epactia* hummock / *Paraneurachne muelleri* tussock grassland	Warrigal	2.43	2.43
D3a	*Corymbia hamersleyana* scattered trees over scattered mixed shrubs over mixed *Cymbopogon ambiguous* tussock grassland / *Cyperus vaginatus* sedgeland	Coongan	1.33	1.33
D4a	*Eucalyptus camaldulensis* woodland over mixed shrubland over mixed **Cynodon dactylon* grassland / *Typha domingensis* sedgeland	Coongan	0.92	85.84
		Bonnie East	12.81	
		Warrigal	84.92	
D6a	*Eucalyptus victrix* woodland over *Melaleuca* spp. high shrubland over mixed *Triodia epactia* hummock grassland / **Cenchrus* spp. tussock grassland / *Cyperus vaginatus* sedgeland	Coongan	1.86	104.52
		Bonnie East	63.10	
		Warrigal	24.7	

Association Code	Community Description	Survey Sub-Area	Area (ha)	Total Area (ha)
D8a4	*Acacia tumida* and *Grevillea wickamii* closed scrub over *Corchorus lasiocarpus* subsp. *lasiocarpus* and *Indigofera monophylla* scattered low shrubs over *Triodia epactia* hummock grassland	Warrigal	1.39	1.39
D8b	Mixed *Acacia* spp. shrubland over *Triodia longiceps* hummock grassland	Coongan	54.03	84.73
		Bonnie East	30.70	
PC1b	Mixed low shrubs over *Ptilotus gomphrenoides* herbland and mixed *Panicum laevinode* open tussock grassland	Bonnie East	126.37	126.37

The remaining communities are all associated with drainage lines. Associations D8a4, D2a and D2b occur in limited areas in the Coongan and Warrigal sub-areas along minor drainage lines. Their extent was mapped through aerial interpretation and extending the previous mapping. None of these associations were sampled during the current survey. Association D3a was recorded from two relevés (Sites 102 and 103) in the Coongan sub-area. The overstorey of this community is scattered trees to open woodland of *Corymbia hamersleyana* and *Eucalyptus victrix* with a grassy understorey of *Themeda triandra, Eriachne benthamii* and *Cymbopogon ambiguus* on broad rocky drainage channels.

The final group in the dendrogram, Association D4a, was recorded from eight relevés (Sites 7, 8, 15, 16, 18, 46, 47 and 101) and occurs in a small area of the Coongan sub-area but is the most extensive riparian vegetation in the Warrigal sub-area. The overstorey is a mix of *Eucalyptus camaldulensis* subsp. *obtusa* and *Eucalyptus victrix* with *Melaleuca linophylla* and *Melaleuca glomerata* common in the mid-storey. **Cenchrus ciliaris* and **Cenchrus setiger* are the dominant grasses whilst the sedge *Cyperus vaginatus* was common to all sites. In addition to the **Cenchrus* spp., **Vachellia farnesiana* and **Malvastrum americanum* were other common introduced species in Association D4a.

3.2.2 Threatened and Priority Ecological Communities

No TECs were determined to be present within the survey area. None of the associations identified in the survey match the description of the two PECs from the database searches:

- The 'Priority 1' ecological community - 'Fortescue Marsh (Marsh Land System)'; and
- The 'Priority 3' ecological community – 'Stony saline clay plains of the Mosquito Land System'.

Association PC1b shares some affinity to the Priority 3 Mitchell grass (*Astrebla* spp. and Roebourne Plain grass (*Eragrostis xerophila*) plain on gilgai, but no *Astrebla* species nor *Eragrostis xerophila* were recorded from any of the relevés within the association.

3.2.3 Vegetation Condition

The condition of the vegetation ranged from Very Poor to Very Good. No area was regarded as Excellent as it was considered that all vegetation types have been affected to some degree since European settlement. Most of the degradation was observed to be due to grazing, with heavy weed infestation and alteration to the vegetation structure wherever there was heavy cattle traffic. Weed infestation and cattle grazing was most evident along drainage lines and on the cracking clays where Association PC1b occurs.

compared to adjacent hummock grasslands and other native grasses and herbs such as *Aristida contorta* were more prominent.

At Bonnie East, the most degraded areas were along the drainage lines, especially Association D6a, and Association PC1b on the cracking clays. **Cenchrus ciliaris* and **Cenchrus setiger* often occurred in high densities in the riparian and floodplain vegetation and had significantly impacted the vegetation structure. **Vachellia farnesiana* was the dominant shrub in Association PC1b, which showed signs of being preferentially grazed by cattle.

The Warrigal sub-area was mostly rated as Very Good, with the weed infestations again restricted to the riparian vegetation, whch was rated as either Good or Poor. Similar to the other sub-areas, **Cenchrus ciliaris* was the main weed along he drainage lines.

Much of the Coongan sub-area and part of Warrigal has been subjected to fire within the previous 2 -4 years prior to the survey. Although a temporary alteration to the vegetation structure was evident, these areas recorded only a very minor presence of weed species and were mainly rated as Very Good.

Table 12: Summary of the extent for each condition rating

Condition Rating	Survey Sub-area							
	Bonnie East		Coongan		Warrigal		Total	
	Area (ha)	% area	Area (ha)	% area	Area (ha)	% area	Area (ha)	% area
VP	23.06	1.85	0.00	0.00	0.00	0.00	23.06	1.15
P	210.79	16.96	15.80	11.21	45.32	7.23	271.91	13.52
G	47.34	3.81	74.77	53.07	40.53	6.46	162.64	8.09
VG	962.03	77.38	50.32	35.72	541.15	86.31	1553.50	77.25
E	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1243.21	100.00	140.89	100.00	627.00	100.00	2011.09	100.00

3.2.4 Weeds

Fourteen weed species were recorded in the survey area, and their extents in the Pilbara bioregion are shown in Figure 11. The weeds are grouped into five categories for management/monitoring onsite, as listed in Appendix I.

The fourteen weeds recorded are:

- **Calotropis procera*;
- **Argemone ochroleuca* subsp. *ochroleuca;*
- **Cenchrus ciliaris;*
- **Cenchrus setiger;*
- **Cynodon dactylon;*
- **Setaria verticillata;*
- **Vachellia farnesiana;*
- **Malvastrum americanum;*
- **Aerva javanica;*
- **Portulaca oleracea;*

- **Malvastrum americanum;*
- **Aerva javanica;*
- **Portulaca oleracea;*
- **Citrullus colocynthis;*
- **Cucumis melo* subsp. *agrestis;*
- **Flaveria trinervia;* and
- **Bidens bipinnata.*

**Cenchrus ciliaris* (Buffel Grass) was identified as an Invasive Species in the search of the DSEWPC database and is the main weed species in the survey area. As described above, **Cenchrus ciliaris* was often the dominant grass species in riparian vegetation. **Vachellia farnesiana* was common in disturbed areas, especially on cracking clays. **Malvastrum americanum* was common in low numbers at many sites along drainage lines. **Calotropis procera* was recorded in a small area within the cracking clays at Bonnie East (see Figure 8). A total of 125 plants was recorded. **Argemone ochroleuca* subsp. *ochroleuca* (Mexican Poppy) was recorded from the Warrigal sub-area in Community D4a.

4 Discussion

No Threatened or Priority Flora as defined by the DEC were recorded during the survey of the extension area nor the targeted search at Bonnie East. Of the six taxa recorded in the previous survey by Astron (2009) that still retain Priority status, four were found on cracking clays. The only extensive areas of cracking clays in the current survey were in the Bonnie East sub-area that supports Association PC1b. The five relevés and one mapping point established within PC1b, along with the intensive search in April 2013, should provide sufficient sampling of the species richness of the association. The locations recorded by Astron for the Priority Flora were also checked and, aside from a population of *Ptilotus mollis*, none of the Priority Flora recorded by Astron could be re-located.

The survey area received good rains in both January and March 2012 prior to the post-wet season field survey and it may be that many annual species had responded to the earlier rainfall events and completed the reproductive stage of their life-cycle before the initial fieldwork took place. In that case, ephemeral and herbaceous Priority Flora such as *Swainsona thompsoniana* and *Iotasperma sessilifolium* may not have been observable. In 2013, significant rainfall events were recorded in January and the end of February and it would be expected that some of the originally recorded populations would have been observable if present. It is probable, therefore, that there are no populations of Priority Flora occurring within the survey area. The cracking clay areas may have been impacted by a period of drought in 2009/2010, particularly as such areas experience high grazing pressures. Therefore, the previously recorded populations may not have survived this period.

Ptilotus mollis was found in six areas by Astron (2009) and often occurred in large numbers. The species is, therefore, readily observable where it occurs. It is usually found on hill slopes and would most likely occur in Association H1a if present. As no populations were recorded in the current survey, it is unlikely to occur within the survey area.

All the associations identified in the current survey could be assigned to vegetation types of the previous classification by Astron (2009). However, there were some discontinuities between the cluster analysis of the current dataset and the Astron classification. This is to be expected as the two surveys were conducted four years apart and over different, albeit adjacent, areas. The two survey areas are quite different in size and include a different number of vegetation types. Any disturbances such as fire in the survey area in the intervening period will also affect the analysis groupings. For example, the cluster analysis indicates that Association D6a is comprised of two or three groups, depending on where the dendrogram is cut. Similarly, D4a has been split into two groups, with the Warrigal sites forming a separate cluster to those of the Warrigal and Bonnie East areas. This may be due to the Warrigal sites being less disturbed than the others.

The inclusion of Site 111 in Community H10a is somewhat anomalous. Site 111 was the only site where *Acacia aptaneura* (mulga) was recorded and was the dominant overstorey species at this site. The soil was also different to other sites from the community, containing a high proportion of quartz gravel. From the community descriptions in the Astron (2009) report, this site has similarities with Community H8a - *Acacia aneura* and *A. pruinocarpa* low woodland over mixed *Eremophila* shrubland over *Triodia pungens* hummock grassland, but the understorey of this site shares many

species with the other sites of Community H10a and the dominant hummock grass is *Triodia epactia*.

Most of the vegetation within the survey site was rated as being in Very Good condition, with usually only minor infestations of weeds and little alteration to vegetation structure. Association Pc1b and the riparian areas, however, are preferentially grazed by cattle and were the most affected by the presence of **Cenchrus ciliaris.* This species, which occurs in seasonally damp areas along drainage lines, in floodplains and on cracking clays is now considered to have become naturalised in the rangelands and is not actively controlled. However, the species is highly invasive and can significantly alter the structure of a community through competition with native species and promotion of changes in the fire regime. Therefore, wherever possible, future mining activities should be conducted so as to minimise the spread of the species.

One weed in the survey area requires urgent attention in the form of an eradication program (including searching for any other populations in the locality). Calotropis (*Calotropis procera*) is a declared weed under the *Biosecurity and Agriculture Management Act 2007.* This weed reduces grazing and can be poisonous to stock and man (Vreeswyk *et al.* 2004). It was not recorded in the Pilbara prior to 2004 and currently only infests limited areas along the De Grey River system where it subject to active control (Keighery, 2010).

This weed can spread rapidly as it:

- flowers throughout the year, with fruits setting 2-3 months after flowering (Forster, 1992)
- plants can live for up to 12 years, with the potential to produce thousand of seeds every year (CABI, 2013)
- seeds are dispersed by wind (seeds may be moved several hundred metres in gentle breezes), animals and water (the seed floats) (CABI, 2013)
- 98% of seeds can germinate within 7-64 days of sowing (Francis, 2002)
- plants can reach 1 m in height in the first year after sprouting has been recorded (Francis, 2002)
- regrow from the root system in favourable conditions even if the aboveground plant has disappeared (CABI, 2013)

The eradication program should be formalised in a document specifying the type and frequency of control measures, along with monitoring techniques, and supported by a documented surveillance program for early detection of significant weeds at high-risk sites within the tenement.

Whilst the Wona Land System supports four PECs in the Pilbara, it is unlikely that Association PC1b is itself a PEC. Neither *Eragrostis xerophila* nor any *Astrebla* species were recorded within Association PC1b making it unlikely to be either of the Priority 3 communities described in Section1.10. Association PC1b is also not a grassless plain and contains a significant shrub layer, and so does not correspond to the Priority 1 “Cracking clays of the Chichester and Mungaroona Range”. If the conservation status of PC1b requires clarification, then data from a survey conducted earlier in the wet season would be required.

5 Conclusion

The Level 2 flora and vegetation survey for the NOIP extension found no Threatened or Priority Flora. No communities of conservation status pursuant to either Federal or State legislation could be definitively identified. Whilst it is considered unlikely that Association PC1b is a PEC, additional data may be required to clarify its status.

Most of the vegetation within the survey site was rated as being in Very Good condition, with usually only minor infestations of weeds and little alteration to vegetation structure. Association Pc1b and the riparian areas, however, are preferentially grazed by cattle and were the most affected by the presence of **Cenchrus ciliaris.* An infestation of the declared plant **Calotropis procera* was recorded in Bonnie East and early intervention would prevent its spread.

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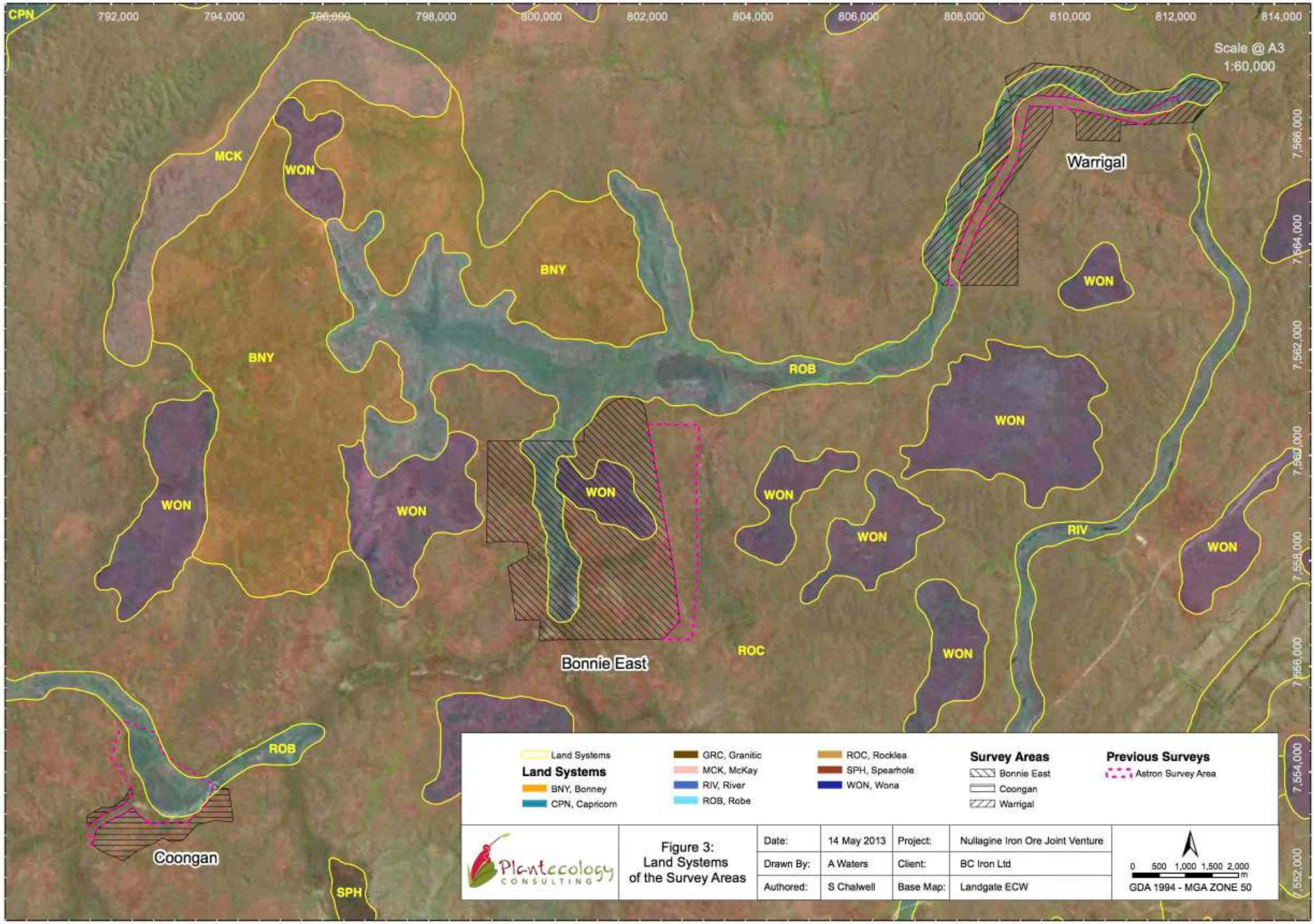
7 Figures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RIV
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WON
ROC
Bonnie East
ROB
Coongan
SPH
Land Systems
Land Systems
BNY, Bonney
CPN, Capricorn
GRC, Granitic
MCK, McKay
RIV, River
ROB, Robe
ROC, Rocklea
SPH, Spearhole
WON, Wona
Survey Areas
Bonnie East
Coongan
Warrigal
Previous Surveys
Astron Survey Area
Plantecology CONSULTING
Figure 3:
Land Systems
of the Survey Areas
Date:
14 May 2013
Project:
Nullagine Iron Ore Joint Venture
Drawn By:
A Waters
Client:
BC Iron Ltd
Authored:
S Chalwell
Base Map:
Landgate ECW
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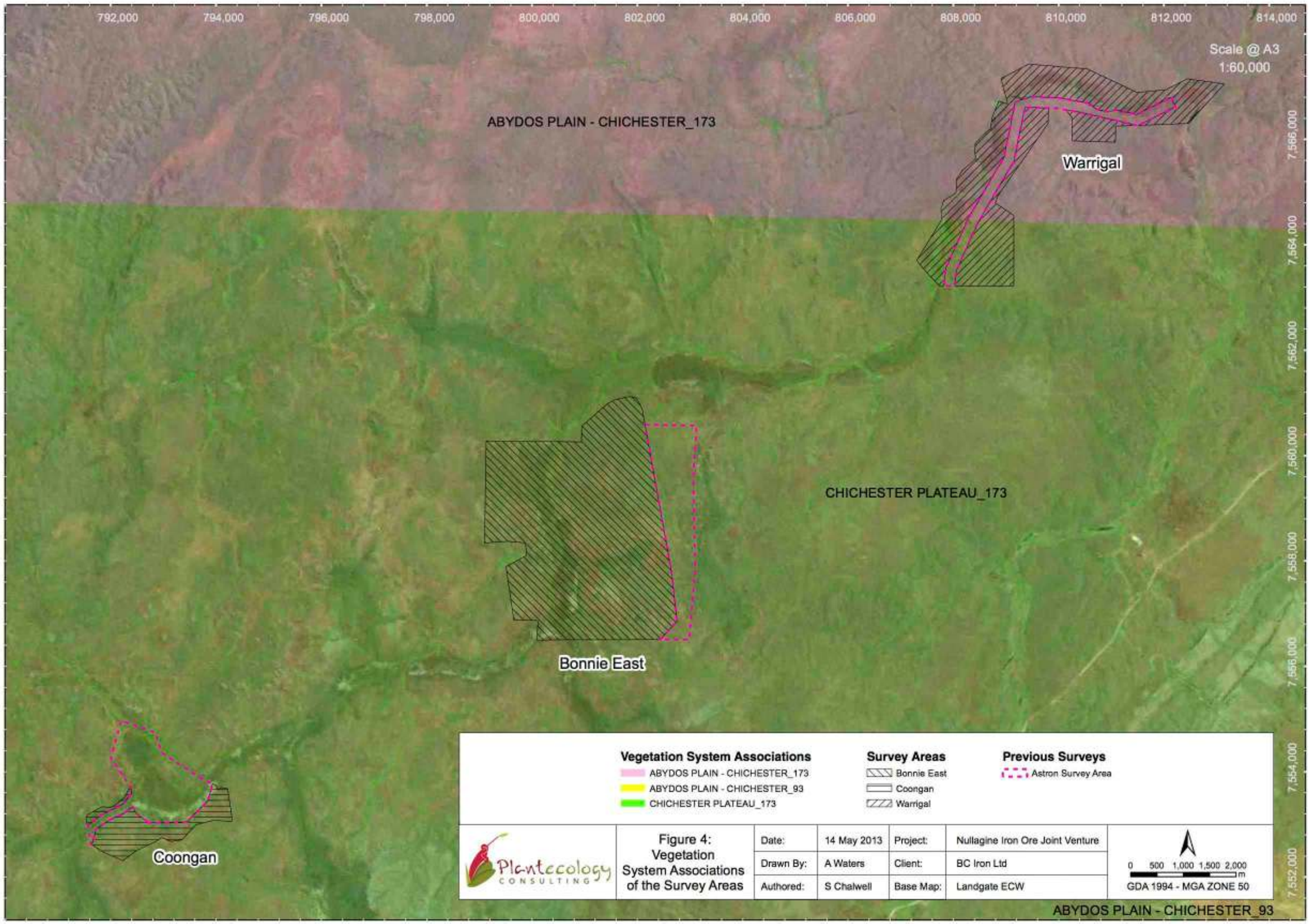
GDA 1994 - MGA ZONE 50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ABYDOS PLAIN - CHICHESTER_173
Warrigal
CHICHESTER PLATEAU_173
Bonnie East
Coongan
ABYDOS PLAIN - CHICHESTER_93
Vegetation System Associations
ABYDOS PLAIN - CHICHESTER_173
ABYDOS PLAIN - CHICHESTER_93
CHICHESTER PLATEAU_173
Survey Areas
Bonnie East
Coongan
Warrigal
Previous Surveys
Astron Survey Area
Plantecology CONSULTING
Figure 4: Vegetation System Associations of the Survey Areas
Date: 14 May 2013
Drawn By: A Waters
Authored: S Chalwell
Project: Nullagine Iron Ore Joint Venture
Client: BC Iron Ltd
Base Map: Landgate ECW
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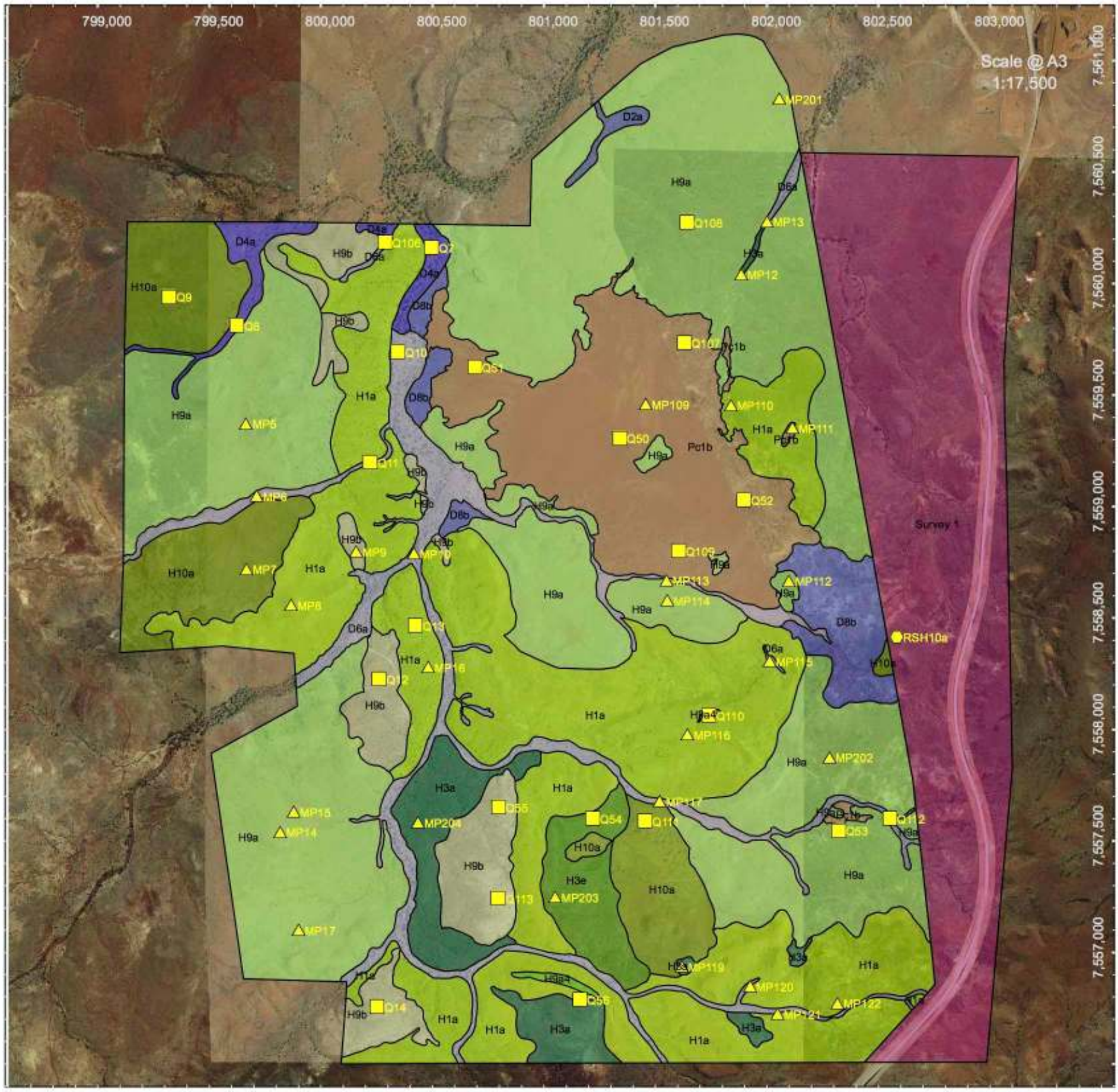

Survey Sites

- Mapping Point
- Quadrat
- Reference Site

Previous Surveys

- Astron Survey Area

Plant Communities (Coongan, Bonnie East and Warrigal Areas)

Triodia grasslands

- H1a, Corymbia hamersleyana trees over mixed Acacia shrubs over Triodia epactia hummock grasses
- H3a, Eucalyptus leucophloia trees over mixed Acacia shrubs over Triodia epactia hummock grasses
- H3e, Eucalyptus leucophloia trees over mixed Senna shrubs over Triodia brizoides hummock grasses
- H9a, Mixed Acacia shrubs over Triodia epactia hummock grasses
- H9a4, Acacia monticola, A. ancistrocarpa and Grevillea wickhamii shrubs over Triodia epactia hummock grasses
- H9b, Mixed Acacia shrubs over Triodia wiseana hummock grasses
- H10a, Mixed Senna shrubs over Triodia epactia hummock grasses

Cracking Clays

- Pc1b, Mixed shrubs over Ptilotus gomphrenoides herbs and mixed Panicum laevinode tussock grasses

Drainage Lines and Floodplains

- D2a, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / *Cenchrus spp. tussock grasses
- D4a, Eucalyptus camaldulensis trees over mixed shrubs over mixed *Cynodon dactylon grasses / Typha domingensis sedges
- D6a, Eucalyptus victrix trees over Melaleuca shrubs over Triodia epactia hummock grasses / *Cenchrus spp. tussock grasses / Cyperus vaginatus sedges
- D3a, Corymbia hamersleyana trees over mixed shrubs over mixed Cymbopogon ambiguus tussock grasses / Cyperus vaginatus sedges
- D8A4, Acacia tumida, Grevillea wickhamii, Corchorus lasiocarpus and Indigofera monophylla shrubs over Triodia epactia hummock grasses
- D2b, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / Paraneurachne muelleri tussock grasses
- D8b, Mixed Acacia shrubs over Triodia longiceps hummock grasses

Plantecology CONSULTING

Figure 5: Plant Communities of the Bonnie East Area

Date:	14 May 2013	Project:	Nullagine Iron Ore Joint Venture
Drawn By:	A Waters	Client:	BC Iron Ltd
Authored:	S Chalwell	Base Map:	Landgate ECW

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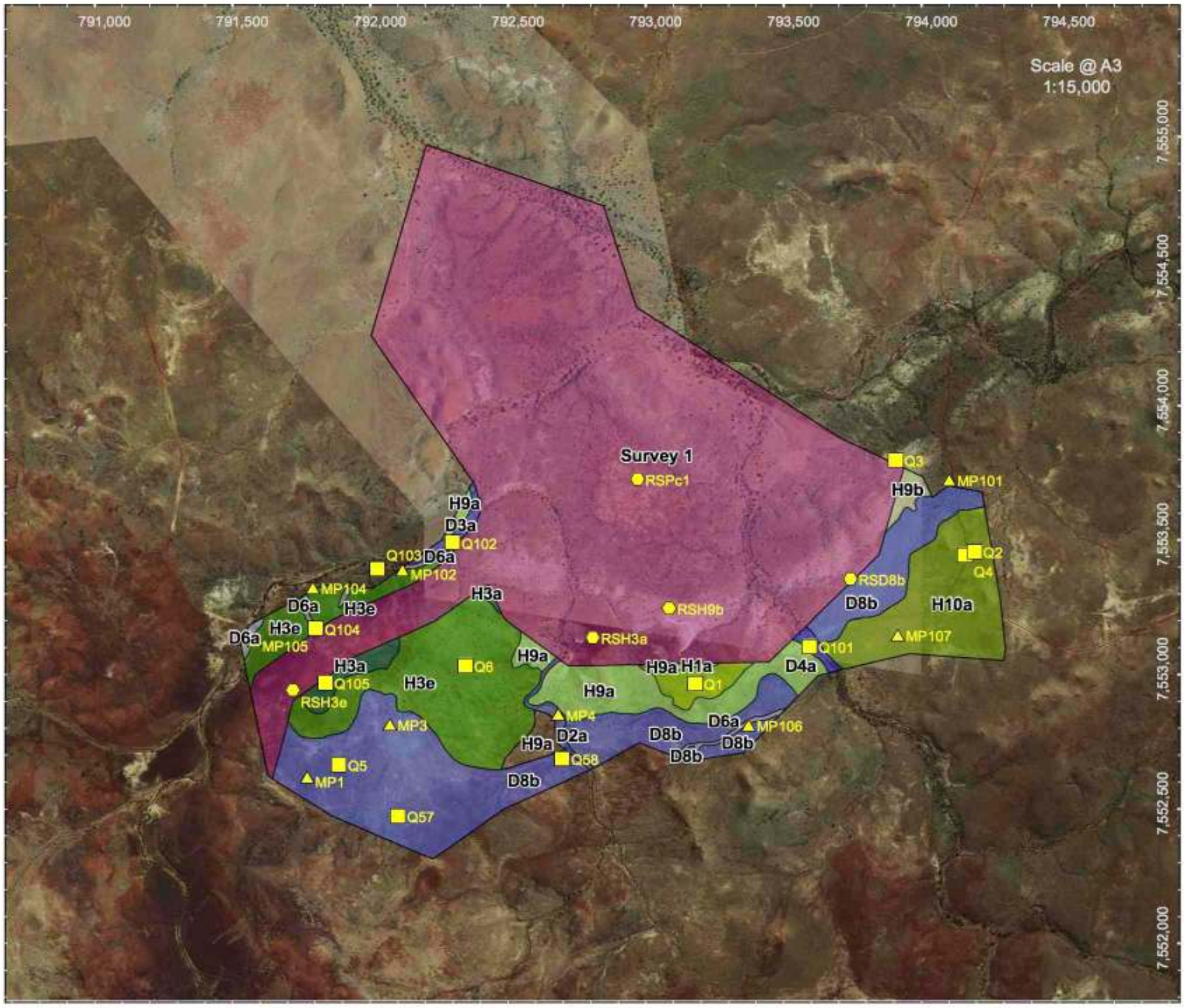

Survey Sites

- Mapping Point
- Quadrat
- Reference Site

Previous Surveys

- Astron Survey Area

Plant Communities (Coongan, Bonnie East and Warrigal Areas)

Triodia grasslands

- H1a, Corymbia hamersleyana trees over mixed Acacia shrubs over Triodia epactia hummock grasses
- H3a, Eucalyptus leucophloia trees over mixed Acacia shrubs over Triodia epactia hummock grasses
- H3e, Eucalyptus leucophloia trees over mixed Senna shrubs over Triodia brizoides hummock grasses
- H9a, Mixed Acacia shrubs over Triodia epactia hummock grasses
- H9a4, Acacia monticola, A. ancistrocarpa and Grevillea wickhamii shrubs over Triodia epactia hummock grasses
- H9b, Mixed Acacia shrubs over Triodia wiseana hummock grasses
- H10a, Mixed Senna shrubs over Triodia epactia hummock grasses

Cracking Clays

- Pc1b, Mixed shrubs over Ptilotus gomphrenoides herbs and mixed Panicum laevinode tussock grasses

Drainage Lines and Floodplains

- D2a, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / *Cenchrus spp. tussock grasses
- D4a, Eucalyptus camaldulensis trees over mixed shrubs over mixed *Cynodon dactylon grasses / Typha domingensis sedges
- D6a, Eucalyptus victrix trees over Melaleuca shrubs over Triodia epactia hummock grasses / *Cenchrus spp. tussock grasses / Cyperus vaginatus sedges
- D3a, Corymbia hamersleyana trees over mixed shrubs over mixed Cymbopogon ambiguus tussock grasses / Cyperus vaginatus sedges
- D8A4, Acacia tumida, Grevillea wickhamii, Corchorus lasiocarpus and Indigofera monophylla shrubs over Triodia epactia hummock grasses
- D2b, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / Paraneurachne muelleri tussock grasses
- D8b, Mixed Acacia shrubs over Triodia longiceps hummock grasses

Plantecology CONSULTING

Figure 6:
Plant Communities of the Coongan Area

Date:	14 May 2013	Project:	Nullagine Iron Ore Joint Venture
Drawn By:	A Waters	Client:	BC Iron Ltd
Authored:	S Chalwell	Base Map:	Landgate ECW

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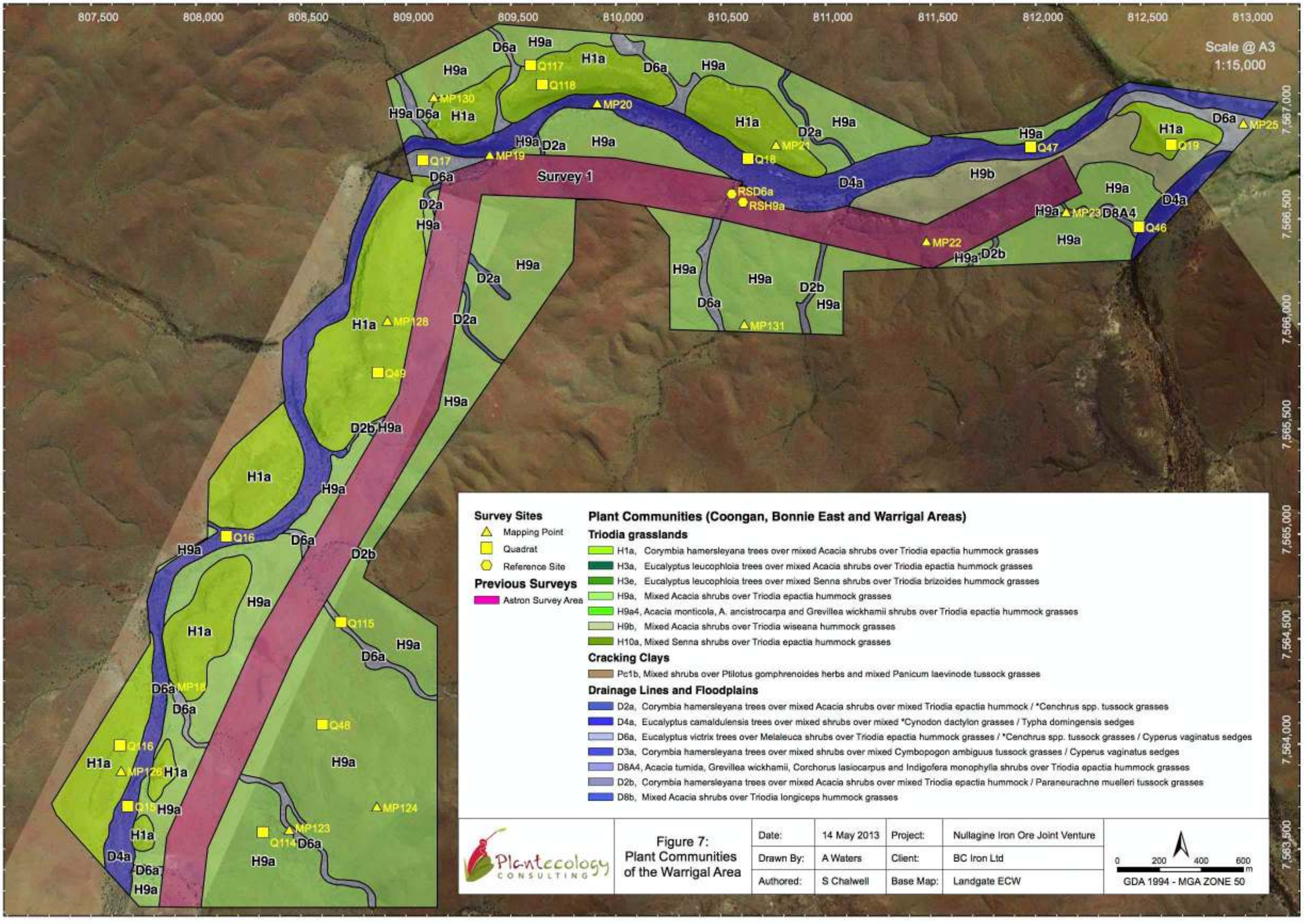
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MP131
Q16
Q115
MP18
Q48
Q116
MP126
Q15
MP124
MP123
Q114
Survey Sites
Mapping Point
Quadrat
Reference Site
Previous Surveys
Astron Survey Area
Plant Communities (Coongan, Bonnie East and Warrigal Areas)
Triodia grasslands
H1a, Corymbia hamersleyana trees over mixed Acacia shrubs over Triodia epactia hummock grasses
H3a, Eucalyptus leucophloia trees over mixed Acacia shrubs over Triodia epactia hummock grasses
H3e, Eucalyptus leucophloia trees over mixed Senna shrubs over Triodia brizoides hummock grasses
H9a, Mixed Acacia shrubs over Triodia epactia hummock grasses
H9a4, Acacia monticola, A. ancistrocarpa and Grevillea wickhamii shrubs over Triodia epactia hummock grasses
H9b, Mixed Acacia shrubs over Triodia wiseana hummock grasses
H10a, Mixed Senna shrubs over Triodia epactia hummock grasses
Cracking Clays
Pc1b, Mixed shrubs over Ptilotus gomphrenoides herbs and mixed Panicum laevinode tussock grasses
Drainage Lines and Floodplains
D2a, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / *Cenchrus spp. tussock grasses
D4a, Eucalyptus camaldulensis trees over mixed shrubs over mixed *Cynodon dactylon grasses / Typha domingensis sedges
D6a, Eucalyptus victrix trees over Melaleuca shrubs over Triodia epactia hummock grasses / *Cenchrus spp. tussock grasses / Cyperus vaginatus sedges
D3a, Corymbia hamersleyana trees over mixed shrubs over mixed Cymbopogon ambiguus tussock grasses / Cyperus vaginatus sedges
D8A4, Acacia tumida, Grevillea wickhamii, Corchorus lasiocarpus and Indigofera monophylla shrubs over Triodia epactia hummock grasses
D2b, Corymbia hamersleyana trees over mixed Acacia shrubs over mixed Triodia epactia hummock / Paraneurachne muelleri tussock grasses
D8b, Mixed Acacia shrubs over Triodia longiceps hummock grasses
Plantecology CONSULTING
Figure 7:
Plant Communities
of the Warrigal Area
Date: 14 May 2013
Drawn By: A Waters
Authored: S Chalwell
Project: Nullagine Iron Ore Joint Venture
Client: BC Iron Ltd
Base Map: Landgate ECW
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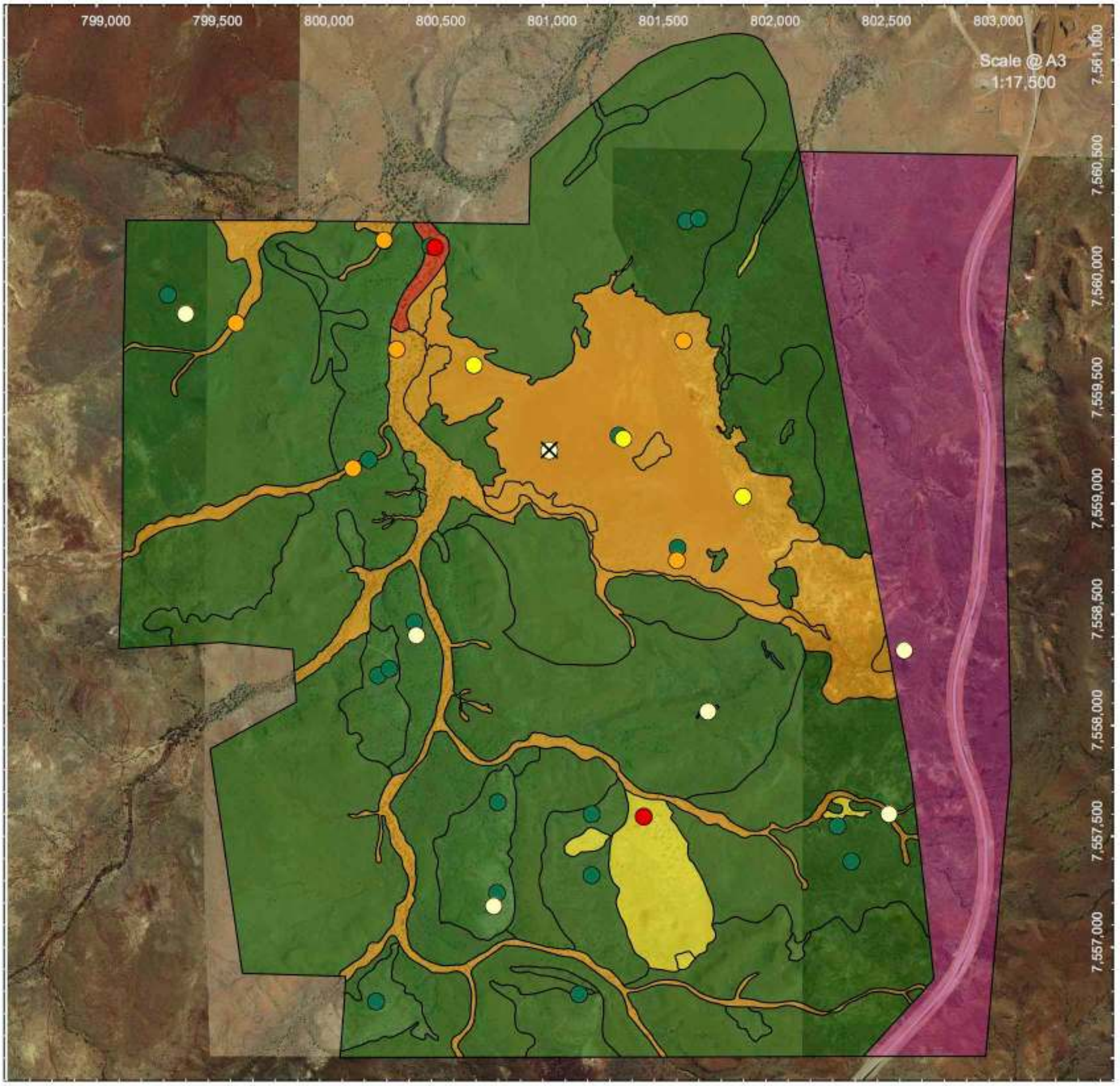

Total Weed Cover in Quadrats

- 0%
- 0.1 - 1%
- 1.1 - 5 %
- 5.1 - 25 %
- > 25 %

Declared Weeds

- Calotropis procera

Vegetation Condition

- Very Good
- Good
- Poor
- Very Poor

Previous Surveys

- Astron Survey Area

Plantecology CONSULTING

Figure 8: Vegetation Condition in the Bonnie East Area

Date:	14 May 2013	Project:	Nullagine Iron Ore Joint Venture
Drawn By:	A Waters	Client:	BC Iron Ltd
Authored:	S Chalwell	Base Map:	Landgate ECW

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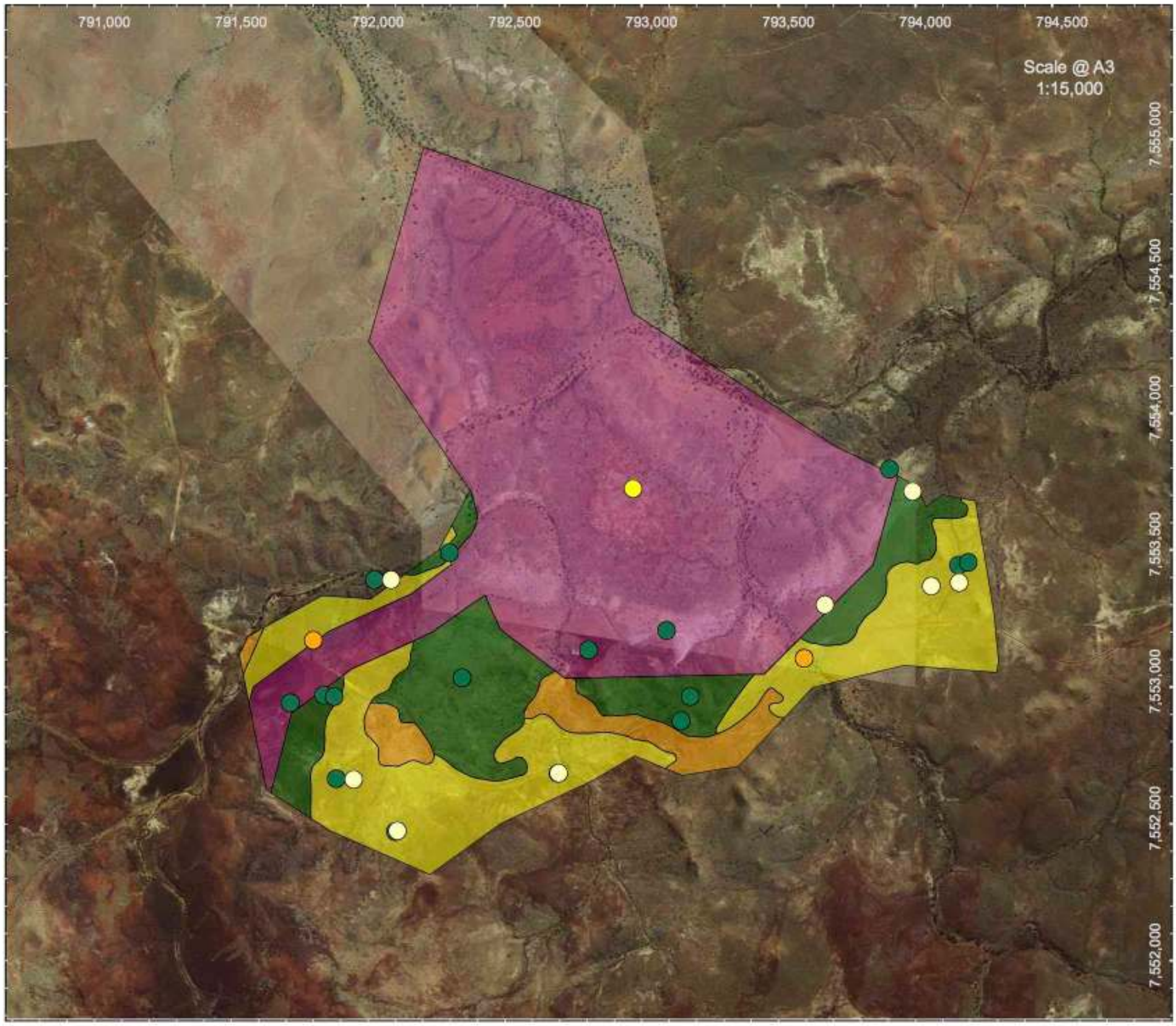

Total Weed Cover in Quadrats

- 0%
- 0.1 - 1%
- 1.1 - 5 %
- 5.1 - 25 %
- > 25 %

Vegetation Condition

- Very Good
- Good
- Poor
- Very Poor

Previous Surveys

- Astron Survey Area

Plantecology CONSULTING

Figure 9: Vegetation Condition in the Coongan Area

Date:	14 May 2013	Project:	Nullagine Iron Ore Joint Venture
Drawn By:	A Waters	Client:	BC Iron Ltd
Authored:	S Chalwell	Base Map:	Landgate ECW

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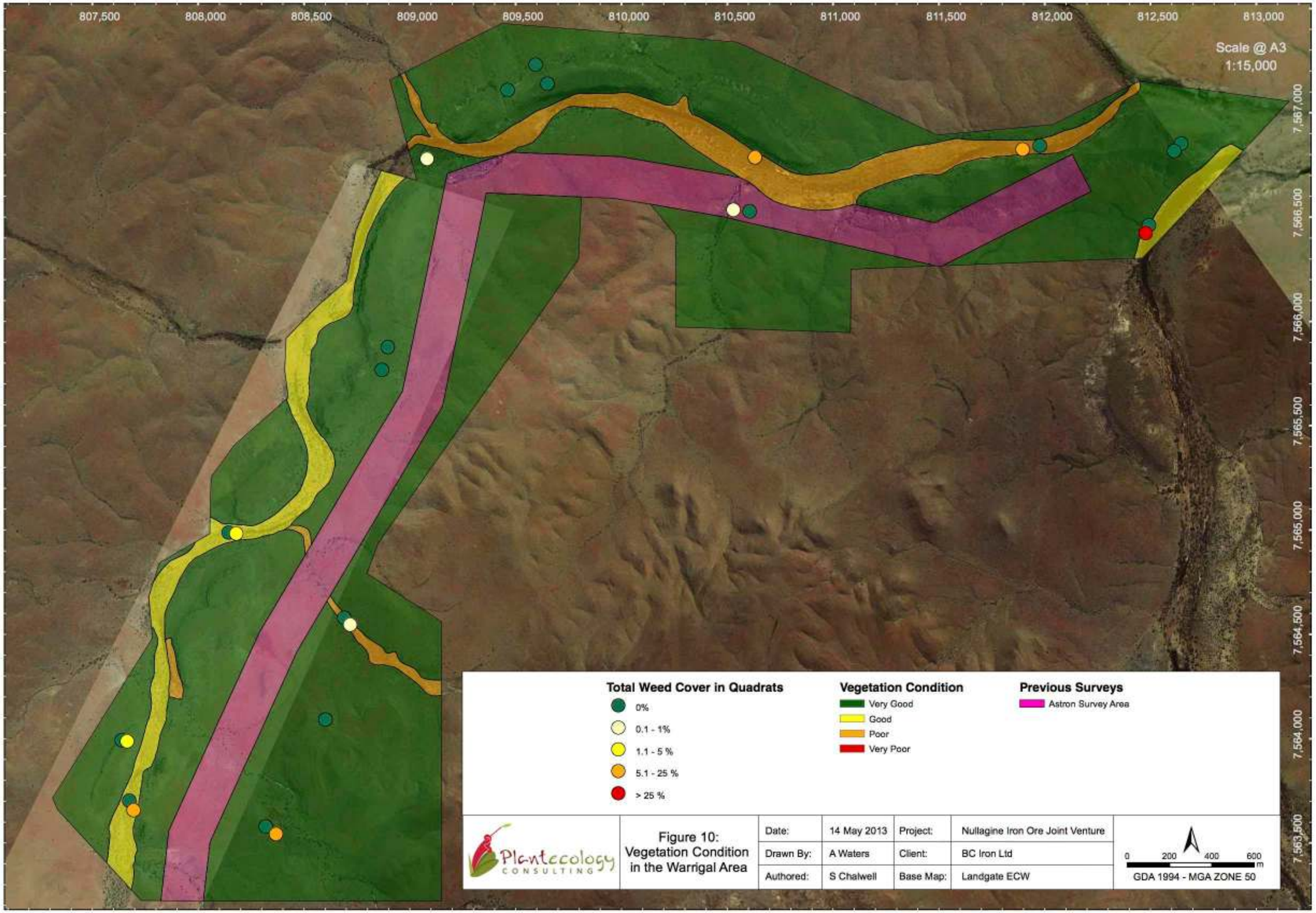
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Total Weed Cover in Quadrats
0%
0.1 - 1%
1.1 - 5 %
5.1 - 25 %
> 25 %
Vegetation Condition
Very Good
Good
Poor
Very Poor
Previous Surveys
Astron Survey Area
Plantecology CONSULTING
Figure 10: Vegetation Condition in the Warrigal Area
Date: 14 May 2013
Drawn By: A Waters
Authored: S Chalwell
Project: Nullagine Iron Ore Joint Venture
Client: BC Iron Ltd
Base Map: Landgate ECW
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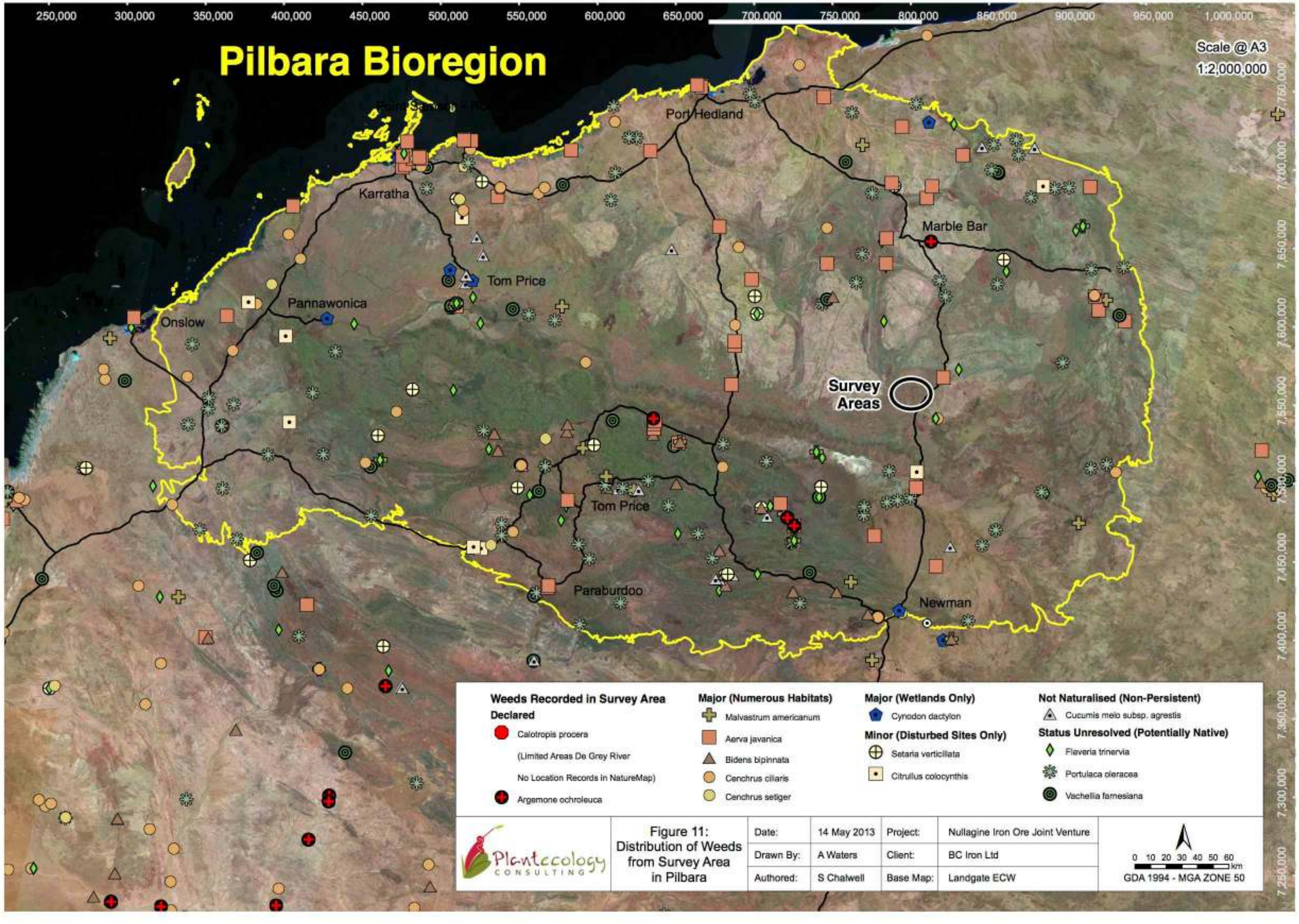
GDA 1994 - MGA ZONE 50


Pilbara Bioregion
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Port Hedland
Karratha
Marble Bar
Tom Price
Pannawonica
Onslow
Survey Areas
Tom Price
Paraburdoo
Newman
Weeds Recorded in Survey Area
Declared
Calotropis procera
(Limited Areas De Grey River
No Location Records in NatureMap)
Argemone ochroleuca
Major (Numerous Habitats)
Malvastrum americanum
Aerva javanica
Bidens bipinnata
Cenchrus ciliaris
Cenchrus setiger
Major (Wetlands Only)
Cynodon dactylon
Minor (Disturbed Sites Only)
Setaria verticillata
Citrullus colocynthis
Not Naturalised (Non-Persistent)
Cucumis melo subsp. agrestis
Status Unresolved (Potentially Native)
Flaveria trinervia
Portulaca oleracea
Vachellia farnesiana
Plantecology CONSULTING
Figure 11: Distribution of Weeds from Survey Area in Pilbara
Date: 14 May 2013
Drawn By: A Waters
Authored: S Chalwell
Project: Nullagine Iron Ore Joint Venture
Client: BC Iron Ltd
Base Map: Landgate ECW
0 10 20 30 40 50 60 km
GDA 1994 - MGA ZONE 50

Appendix A

List of flora recorded within the survey area

NB: * indicates introduced flora

Family	Species
Marsiliaceae	*?Marsilea hirsuta*
	Marsilea ?drummondii
	Marsilea ?hirsuta
Lauraceae	*Cassytha capillaris*
Potamogetonaceae	*Potamogeton tricarinatus*
Typhaceae	*Typha domingensis*
Cyperaceae	*Bulbostylis barbata*
	Cyperus difformis
	Cyperus squarrosus
	Cyperus vaginatus
	Fimbristylis dichotoma
	Schoenoplectus subulatus
Poaceae	*Amphipogon sericeus*
	Aristida contorta
	Aristida latifolia
	Aristida pruinosa
	Brachyachne convergens
	Brachyachne prostrata
	**Cenchrus ciliaris*
	**Cenchrus setiger*
	Chloris pumilio
	Chrysopogon fallax
	Cymbopogon ambiguus
	Cymbopogon obtectus
	Cymbopogon procerus
	**Cynodon dactylon*
	Dactyloctenium radulans
	Dichanthium sericeum subsp. *humilius*
	Enneapogon caerulescens
	Enneapogon lindleyanus
	Enneapogon polyphyllus
	Eragrostis cumingii
	Eragrostis desertorum
	Eragrostis leptocarpa
	Eragrostis setifolia
	Eragrostis tenellula
	Eriachne benthamii

Poaceae	*Eriachne lanata*
	Eriachne mucronata
	Eriachne pulchella subsp. *dominii*
	Eriachne pulchella subsp. *pulchella*
	Eriachne sp.
	Eulalea aurea
	Iseilema dolichotricum
	Iseilema vaginiflorum
	Panicum decompositum
	Panicum laevinode
	Paraneurachne muelleri
	Paspalidium clementii
	Poaceae sp.1
	Poaceae sp.2
	**Setaria verticillata*
	Sporobolus australasicus
	Themeda triandra
	Triodia brizoides
	Triodia epactia
	Triodia longiceps
	Triodia sp.
	Triodia wiseana
Papaveraceae	**Argemone ochroleuca* subsp. *ochroleuca*
Proteaceae	*Grevillea pyramidalis* subsp. *leucadendron*
	Grevillea wickhamii subsp. *aprica*
	Hakea lorea subsp. lorea
Haloragaceae	*Haloragis maierae*
Zygophyllaceae	*Tribulus platypterus*
	Tribulus suberosus
Fabaceae	Fabaceae sp.
	Acacia adsurgens
	Acacia ampliceps
	Acacia ancistrocarpa
	Acacia aptaneura
	Acacia bivenosa
	Acacia colei var. *colei*
	Acacia coriacea subsp. *pendens*
	Acacia eriopoda
	Acacia hilliana
	Acacia inaequilatera

Fabaceae

Acacia pruinocarpa
Acacia pyrifolia var. *morrisonii*
Acacia sericophylla
Acacia sibirica
Acacia synchronicia
Acacia tenuissima
Acacia tetragonophylla
Acacia trachycarpa
Acacia tumida var. *pilbarensis*
Alysicarpus muelleri
Crotalaria dissitiflora subsp. *benthamiana*
Crotalaria medicaginea var. *neglecta*
Cullen graveolens
Cullen leucanthum
Cullen stipulaceum
Desmodium campylocaulon
Desmodium filiforme
Glycine canescens
Indigofera colutea
Indigofera linifolia
Indigofera monophylla
Indigofera trita
Isotropis atropurpurea
Neptunia dimorphantha
Petalostylis labicheoides
Rhynchosia minima
Senna ?glaucifolia x ?
Senna artemisioides subsp. *helmsii*
Senna artemisioides subsp. *oligophylla*
Senna artemisioides subsp. *oligophylla* x ?
Senna artemisioides subsp. *sturtii* x ?
Senna glutinosa subsp. *glutinosa*
Senna glutinosa subsp. *pruinosa*
Senna glutinosa subsp. x *luerssenii*
Senna notabilis
Senna sericea
Senna symonii
Senna symonii x ?
Sesbania cannabina
Swainsona decurrens
Tephrosia clementii
Tephrosia sp. clay soils (S.v. Leeuwen et al. PBS 0273)
Tephrosia sphaerospora
**Vachellia farnesiana*
Vigna lanceolata var. lanceolata

Polygalaceae	*Polygala isingii*
Cucurbitaceae	*Austrobryonia pilbarensis* **Citrullus colocynthis* **Citrullus lanatus* *Cucumis maderaspatanus* **Cucumis melo subsp. agrestis*
Celastraceae	*Stackhousia muricata*
Euphorbiaceae	*Euphorbia alsiniflora* *Euphorbia australis* *Euphorbia biconvexa* *Euphorbia boopthona* *Euphorbia drummondii* subsp. *drummondii* *Euphorbia schultzii*
Phyllanthaceae	*Flueggea virosa* subsp. *melanthesioides* *Notoleptopus decaisnei* *Phyllanthus maderaspatensis*
Violaceae	*Hybanthus aurantiacus*
Lythraceae	*Ammannia baccifera* *Ammannia multiflora*
Myrtaceae	*Corymbia hamersleyana* *Eucalyptus camaldulensis subsp. obtusa* *Eucalyptus leucophloia* subsp. *leucophloia* *Eucalyptus socialis* subsp. *eucentrica* *Eucalyptus victrix* *Eucalyptus xerothermica* *Melaleuca eleuterostachya* *Melaleuca glomerata* *Melaleuca linophylla*
Sapindaceae	*Atalaya hemiglauca* *Dodonaea coriacea*
Malvaceae	*Abutilon cunninghamii* *Abutilon dioicum ms* *Abutilon lepidum* *Abutilon macrum* *Abutilon malvifolium* *Abutilon otocarpum*

Malvaceae	*Corchorus lasiocarpus* subsp. *lasiocarpus*
	Corchorus lasiocarpus subsp. *parvus*
	Corchorus parviflorus
	Corchorus tridens
	Gossypium australe
	Gossypium robinsonii
	Hibiscus brachysiphonius
	Hibiscus coatesii
	Hibiscus sturtii var. *campylochlamys*
	Hibiscus sturtii var. *platychlamys*
	Keraudrenia velutina subsp. *elliptica*
	Malvaceae sp.1
	Malvaceae sp.2
	**Malvastrum americanum*
	Melhania oblongata
	Sida ?spinosa
	Sida aff. *fibulifera*
	Sida clementii
	Sida echinocarpa
	Sida fibulifera
	Sida rohlenae subsp. *rohlenae*
	Sida spinosa
	Sida sp.
	Sida sp. Excedentifolia
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)
	Sida spinosa
Capparaceae	*?Capparis umbonata* (juvenile)
	Capparis spinosa
	Capparis umbonata
Cleomaceae	*Cleome viscosa*
Brassicaceae	*Lepidium pedicellosum*
	Lepidium pholidogynum
Santalaceae	*Santalum lanceolatum*
Plumbaginaceae	*Plumbago zeylanica*
Caryophyllaceae	*Polycarpaea corymbosa*
	Polycarpaea holtzei
	Polycarpaea longiflora
Amaranthaceae	*Achyranthes aspera*

Amaranthaceae
**Aerva javanica*
Amaranthus mitchellii
Amaranthus undulatus
Gomphrena cunninghamii
Ptilotus aervoides
Ptilotus astrolasius
Ptilotus auriculifolius
Ptilotus calostachyus
Ptilotus clementii
Ptilotus fusiformis
Ptilotus gomphrenoides
Ptilotus incanus
Ptilotus nobilis
Ptilotus obovatus

Chenopodiaceae
Dysphania rhadinostachya subsp. *rhadinostachya*
Dysphania sphaerosperma
Enchylaena tomentosa
Maireana melancoma
Rhagodia eremaea
Salsola australis
Sclerolaena cornishiana
Sclerolaena costata
Sclerolaena densiflora
Sclerolaena eriacantha
Sclerolaena lanicuspis
Sclerolaena minuta

Aizoaceae
Trianthema cussackiana
Trianthema glossostigma
Trianthema triquetra
Zaleya galericulata subsp. *galericulata*

Nyctaginaceae
Boerhavia ?schomburgkiana
Boerhavia burbidgeana
Boerhavia coccinea
Boerhavia paludosa

Molluginaceae
Mollugo molluginea

Portulacaceae
**Portulaca oleracea*

Rubiaceae
Alternanthera nana
Alternanthera nodiflora
Oldenlandia crouchiana

Apocynaceae	*Carissa lanceolata*
Boraginaceae	*Heliotropium chrysocarpum* *Heliotropium crispatum* *Heliotropium diversifolium* *Heliotropium heteranthum* *Heliotropium ?tanythrix* *Trichodesma zeylanicum* var. *zeylanicum*
Convolvulaceae	*Bonamia media* var. *villosa* *Duperreya commixta* *Evolvulus alsinoides* var. *decumbens* *Evolvulus alsinoides* var. *villosicalyx* *Ipomoea muelleri* *Operculina aequisepala*
Solanaceae	*Solanum horridum* *Solanum lasiophyllum* *Solanum phlomoides* *Solanum sturtianum*
Oleaceae	*Jasminum didymum* subsp. *lineare*
Plantaginaceae	*Stemodia grossa*
Scrophulariaceae	*Eremophila forrestii* subsp. *forrestii* *Eremophila latrobei* subsp. *latrobei* *Eremophila longifolia*
Lamiaceae	*Basilicum polystachyon* *Clerodendrum floribundum* var. *angustifolium*
Acanthaceae	*Rostellularia adscendens* var. *clementii*
Campanulaceae	*Wahlenbergia tumidifructa*
Goodeniaceae	*Dampiera candicans* *Goodenia cusackiana* *Goodenia microptera* *Goodenia muelleriana* *Goodenia stobbsiana* *Scaevola amblyanthera* var. *centralis*
Asteraceae	Asteraceae sp. **Bidens bipinnata*

Asteraceae	*Calocephalus knappii*
	Centipeda minima subsp. *macrocephala*
	Centipeda minima subsp. *minima*
	**Flaveria trinervia*
	Helichrysum luteoalbum
	Minuria integerrima
	Olearia stuartii
	Pentalepis trichodesmoides
	Peripleura arida
	Pluchea ?dentex
	Pluchea ferdinandi-muelleri
	?Pluchea rubelliflora
	Pluchea rubelliflora
	Pluchea tetrantha
	Pterocaulon sphacelatum
	Pterocaulon ?sphaeranthoides
	Pterocaulon sphaeranthoides
	Streptoglossa bubakii
	Streptoglossa liatroides
Araliaceae	*Trachymene oleracea*

Appendix B

Species presence in each recorded community within the survey area

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Abutilon cunninghamii											X	
Abutilon dioicum ms					X	X					X	
Abutilon lepidum				X	X						X	
Abutilon macrum			X									
Abutilon malvifolium												X
Abutilon otocarpum				X	X							
Abutilon oxycarpum var. *prostratum* ms					X							
Acacia adsurgens		X										
Acacia ampliceps			X									
Acacia ancistrocarpa			X		X	X	X				X	
Acacia aptaneura					X							
Acacia bivenosa			X	X	X	X	X	X			X	X
Acacia colei var. *colei*			X									
Acacia coriacea subsp. *pendens*	X	X	X					X				X
Acacia eriopoda			X									
Acacia hilliana								X			X	
Acacia inaequilatera			X	X	X	X			X			
Acacia monticola	X		X							X		
Acacia pruinocarpa			X			X						
Acacia pyrifolia var. *morrisonii*		X	X									
Acacia sericophylla						X						
Acacia sibirica											X	
Acacia synchronicia				X	X		X	X			X	X
Acacia tenuissima								X				
Acacia tetragonophylla					X							
Acacia trachycarpa		X	X									
Acacia tumida var. *pilbarensis*	X	X	X									

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Achyranthes aspera		X	X									
**Aerva javanica*			X	X	X				X		X	
Alternanthera nana		X										
Alternanthera nodiflora		X										
Alysicarpus muelleri		X	X	X	X				X			X
Amaranthus mitchellii												X
Amaranthus undulatus		X	X									X
Ammannia baccifera		X										
Ammannia multiflora		X										
Amphipogon sericeus			X		X	X	X				X	
Amyema preissii					X							
**Argemone ochroleuca* subsp. *ochroleuca*		X										
Aristida contorta			X	X	X	X	X	X	X			X
Aristida latifolia				X	X							X
Aristida pruinosa			X									
Asteraceae sp.												X
Atalaya hemiglauca		X	X									X
Austrobryonia pilbarensis												X
Basilicum polystachyon		X										
**Bidens bipinnata*		X	X									
Blumea tenella		X										
Boerhavia ?schomburgkiana			X						X			
Boerhavia burbidgeana			X									
Boerhavia coccinea		X	X		X							
Boerhavia paludosa												X
Bonamia media var. *villosa*					X	X	X		X		X	
Brachyachne convergens												X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Brachyachne prostrata								X				
Bulbostylis barbata				X	X							
Calocephalus knappii												X
Capparis spinosa			X									X
Capparis umbonata			X									
?Capparis umbonata (juvenile)						X					X	
Carissa lanceolata			X					X			X	
Cassytha capillaris						X					X	
**Cenchrus ciliaris*		X	X	X	X						X	X
**Cenchrus setiger*		X	X		X						X	X
Centipeda minima subsp. *macrocephala*		X										
Centipeda minima subsp. *minima*		X										
Chloris pumilio					X							X
Chrysopogon fallax			X									
**Citrullus lanatus*		X										
**Citrullus colocynthis*												X
Cleome viscosa		X	X		X				X			X
Clerodendrum floribundum var. *angustifolium*			X									
Corchorus lasiocarpus subsp. *lasiocarpus*			X		X	X		X	X		X	
Corchorus lasiocarpus subsp. *parvus*				X								
Corchorus parviflorus			X		X	X			X		X	
Corchorus tridens		X			X							X
Corymbia hamersleyana	X		X	X		X			X		X	
Crotalaria dissitiflora subsp. *benthamiana*			X									X
Crotalaria medicaginea var. *neglecta*		X	X		X							X
Cucumis maderaspatanus		X	X	X	X	X		X			X	X
**Cucumis melo* subp. *agrestis*												X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Cullen graveolens			X									X
Cullen leucanthum		X	X									X
Cullen stipulaceum									X			
Cymbopogon ambiguus	X	X	X	X	X	X			X	X	X	X
Cymbopogon obtectus					X							
Cymbopogon procerus												
**Cynodon dactylon*		X										
Cyperus difformis		X										
Cyperus squarrosus		X										
Cyperus vaginatus		X	X									
Dactyloctenium radulans					X							X
Dampiera candicans						X	X					
Desmodium campylocaulon					X							
Desmodium filiforme												X
Dichanthium sericeum subsp. *humilius*					X							X
Dodonaea coriacea						X	X					
Duperreya commixta			X			X						
Dysphania rhadinostachya subsp. *rhadinostachya*				X								X
Dysphania sphaerosperma				X								
Enchylaena tomentosa								X				
Enneapogon caerulescens				X	X				X		X	X
Enneapogon lindleyanus			X									
Enneapogon polyphyllus				X	X			X	X			X
Eragrostis cumingii		X	X		X							
Eragrostis desertorum											X	
Eragrostis leptocarpa		X										
Eragrostis setifolia							X					X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Eragrostis tenellula	X	X										
Eremophila forrestii subsp. *forrestii*						X						
Eremophila latrobei subsp. *latrobei*							X					
Eremophila longifolia	X		X		X						X	X
Eriachne benthamii	X	X	X									
Eriachne flaccida												X
Eriachne lanata						X	X					
Eriachne mucronata						X	X		X		X	X
Eriachne pulchella subsp. *dominii*						X						
Eriachne pulchella subsp. *pulchella*				X	X			X				X
Eriachne sp.		X										
Eucalyptus camaldulensis subsp. obtusa		X										
Eucalyptus leucophloia subsp. *leucophloia*							X	X			X	
Eucalyptus socialis subsp. *eucentrica*											X	
Eucalyptus victrix	X	X	X									
Eucalyptus xerothermica											X	
Eulalea aurea	X		X									
Euphorbia alsiniflora				X	X							X
Euphorbia australis			X	X	X				X		X	X
Euphorbia biconvexa		X			X	X						
Euphorbia boopthona					X							
Euphorbia drummondii subsp. *drummondii*												X
Euphorbia schultzii		X	X						X			
Evolvulus alsinoides var. *decumbens*	X											
Evolvulus alsinoides var. *villosicalyx*			X	X	X	X				X	X	X
Fabaceae sp.						X						
Fimbristylis dichotoma												X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
**Flaveria trinervia*					X							X
Flueggea virosa subsp. *melanthesioides*		X	X									
Glycine canescens		X	X									
Gomphrena cunninghamii			X	X	X	X			X			X
Goodenia cusackiana						X	X	X				
Goodenia microptera				X							X	
Goodenia muelleriana				X	X							X
Goodenia stobbsiana						X	X	X			X	
Gossypium australe			X						X			
Gossypium robinsonii			X									
Grevillea pyramidalis subsp. *leucadendron*			X		X	X			X			
Grevillea wickhamii subsp. *aprica*			X			X				X		
Hakea lorea subsp. *lorea*					X	X		X	X			
Haloragis maierae												X
Helichrysum luteoalbum		X										
Heliotropium chrysocarpum				X								
Heliotropium crispatum												X
Heliotropium diversifolium				X								
Heliotropium heteranthum				X	X				X			X
Heliotropium ?tanythrix												X
Hibiscus brachysiphonius												X
Hibiscus coatesii						X						
Hibiscus sturtii var. *campylochlamys*			X	X			X	X	X			
Hibiscus sturtii var. *platychlamys*			X	X	X						X	X
Hybanthus aurantiacus		X	X			X		X			X	
Indigofera colutea			X		X							
Indigofera linifolia			X		X							

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Indigofera monophylla	X		X	X	X	X		X			X	
Indigofera trita		X	X		X				X			X
Ipomoea muelleri		X	X									
Iseilema dolichotricum				X	X				X			X
Iseilema vaginiflorum					X							
Isotropis atropurpurea											X	
Jasminum didymum subsp. *lineare*			X			X				X		
Keraudrenia velutina subsp. *elliptica*						X						
Lepidium pedicellosum			X									
Lepidium pholidogynum				X			X					
Maireana melancoma								X				
Malvaceae sp.1										X		
Malvaceae sp.2												X
**Malvastrum americanum*		X	X			X			X			X
Marsilea ?drummondii		X										
Marsilea ?hirsuta												X
?Marsilea hirsuta		X										
Melaleuca eleuterostachya											X	
Melaleuca glomerata		X										
Melaleuca linophylla		X	X									
Melhania oblongata											X	
Minuria integerrima				X								X
Mollugo molluginea			X	X	X	X						
Neptunia dimorphantha												X
Notoleptopus decaisnei			X									
Oldenlandia crouchiana												X
Olearia stuartii			X									

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Operculina aequisepala												X
Panicum decompositum									X			
Panicum laevinode												X
Paraneurachne muelleri			X				X				X	
Paspalidium clementii				X								
Pentalepis trichodesmoides						X						
Peripleura arida												X
Petalostylis labicheoides	X		X									
Phyllanthus maderaspatensis		X	X		X	X					X	X
Pluchea ?dentex		X										
Pluchea ferdinandi-muelleri			X		X						X	
Pluchea rubelliflora		X	X									
?Pluchea rubelliflora			X									
Pluchea tetrantha												X
Plumbago zeylanica		X	X									
Poaceae sp.1		X										
Poaceae sp.2		X										
Polycarpaea corymbosa			X	X	X				X			
Polycarpaea holtzei			X	X	X	X	X	X	X			X
Polycarpaea longiflora					X							
Polygala isingii				X	X	X			X		X	X
**Portulaca oleracea*			X	X	X				X			X
Potamogeton tricarinatus		X										
Pterocaulon ?sphaeranthoides		X	X	X								X
Pterocaulon sphacelatum			X			X						X
Pterocaulon sphaeranthoides		X	X		X	X						
Ptilotus aervoides				X	X				X			X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Ptilotus astrolasius											X	
Ptilotus auriculifolius			X	X							X	
Ptilotus calostachyus				X		X	X	X	X			
Ptilotus clementii							X	X			X	
Ptilotus fusiformis									X			
Ptilotus gomphrenoides		X	X		X							X
Ptilotus incanus			X		X	X						
Ptilotus nobilis				X	X			X	X		X	X
Ptilotus obovatus											X	
Rhagodia eremaea						X						
Rhynchosia minima		X	X	X	X				X			X
Rostellularia adscendens var. clementii		X										
Salsola australis			X	X	X				X			
Santalum lanceolatum			X			X						
Scaevola amblyanthera var. centralis				X		X		X			X	
Schoenoplectus subulatus		X										
Sclerolaena cornishiana												X
Sclerolaena costata				X	X							X
Sclerolaena densiflora				X								
Sclerolaena eriacantha					X							
Sclerolaena lanicuspis				X				X				
Sclerolaena minuta				X								
Senna ?glaucifolia x ?						X						
Senna artemisioides subsp. *helmsii*					X							
Senna artemisioides subsp. *oligophylla*			X		X				X		X	X
Senna artemisioides subsp. *oligophylla* x ?				X		X		X				
Senna artemisioides subsp. *sturtii* x ?				X								X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Senna glutinosa subsp. *glutinosa*	X		X		X	X		X	X		X	
Senna glutinosa subsp. *pruinosa*			X			X	X	X	X		X	
Senna glutinosa subsp. *x luerssenii*			X	X	X		X				X	X
Senna notabilis			X	X	X	X		X		X		X
Senna sericea								X				
Senna symonii				X	X	X	X	X			X	
Senna symonii x ?						X						
Sesbania cannabina		X										
**Setaria verticillata*			X									
Sida spinosa		X										X
Sida aff. *fibulifera*			X		X							X
Sida clementii			X		X							
Sida echinocarpa			X		X				X			
Sida fibulifera			X	X								
Sida rohlenae subsp. *rohlenae*			X		X	X					X	X
Sida sp.				X								
Sida sp. Excedentifolia						X						
Sida sp. Pilbara (A.A. Mitchell PRP 1543)				X		X	X	X		X		
Sida spinosa												X
Solanum horridum			X	X	X	X		X	X	X		X
Solanum lasiophyllum						X					X	X
Solanum phlomoides			X	X	X	X				X		X
Solanum sturtianum								X				
Sporobolus australasicus		X	X	X	X				X			X
Stackhousia muricata											X	
Stemodia grossa		X	X	X	X	X						
Streptoglossa bubakii			X	X	X			X				X

Taxon	Association											
	D3a	**D4a**	**D6a**	**D8b**	**H10a**	**H1a**	**H3a**	**H3e**	**H9a**	**H9a4**	**H9b**	**PC1b**
Streptoglossa liatroides				X								
Swainsona decurrens					X							
Tephrosia clementii			X		X		X					X
Tephrosia sp. clay soils					X							X
Tephrosia sphaerospora					X							
Themeda triandra	X	X	X								X	
Trachymene oleracea				X								
Trianthema cussackiana			X									
Trianthema glossostigma			X									
Trianthema triquetra			X		X							X
Tribulus platypterus								X				
Tribulus suberosus						X		X				
Trichodesma zeylanicum var. *zeylanicum*			X		X	X			X			
Triodia brizoides								X				
Triodia epactia	X		X	X	X	X	X		X	X	X	X
Triodia longiceps		X	X	X	X			X			X	X
Triodia sp.					X		X					X
Triodia wiseana				X			X	X			X	X
Typha domingensis		X										
**Vachellia farnesiana*		X	X	X	X	X						X
Vigna lanceolata var. lanceolata			X									
Vigna sp. Hamersley clay (A.A. Mitchell PRP 113)												X
Wahlenbergia tumidifructa		X										
Zaleya galericulata subsp. *galericulata*			X									

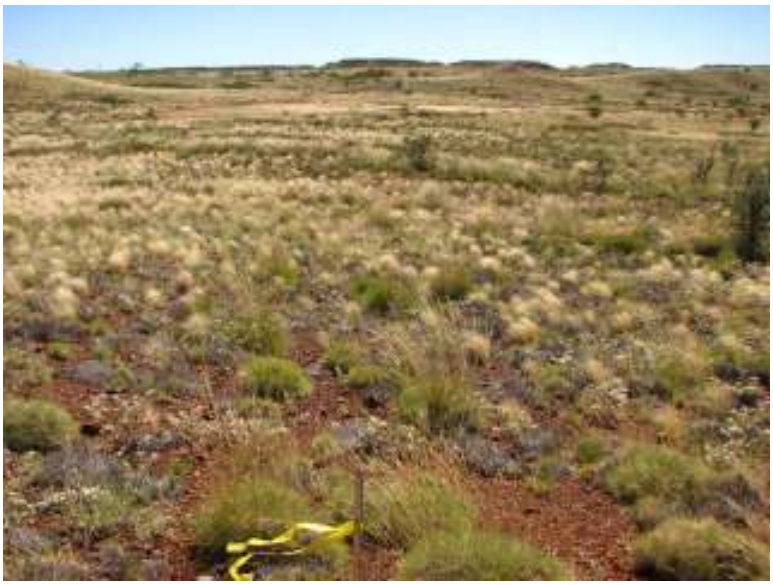
Appendix C

Relevé (Quadrat) Raw Data

Site Number	SITE 1	**Date**	25/04/12 & 20 09 12
Recorder/s	KR FO DM SC	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6373	793146	7552878	
6369	793119	7552908	
6370	793178	7552967	
6371	793211	7552922	
6374	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	silty clay	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	ironstone	moderate	55
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	ridge	NE	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	-	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	3	Grevillea wickhamii, Corymbia hamersleyana	<1
Mid	2	Acacia pruinocarpa, Acacia bivenosa	<1
Lower	0.4	Triodia epactia	30

Floristics

Species	FPC
Triodia epactia	30
Acacia bivenosa	+
Acacia inaequilatera	+
Acacia pruinocarpa	+
Amphipogon sericeus	+
Bonamia media var. villosa	+
Cassytha capillaris	+
Corchorus lasiocarpus subsp. lasiocarpus	+
Corymbia hamersleyana	+
Cymbopogon ambiguus	+
Dampiera candicans	+
Dodonaea coriacea	+
Eriachne lanata	+
Eriachne mucronata	+
Eriachne pulchella subsp. dominii	+
Evolvulus alsinoides var. villosicalyx	+
Gomphrena cunninghamii	+
Goodenia stobbsiana	+
Grevillea wickhamii subsp. aprica	+
Indigofera monophylla	+
Mollugo molluginea	+
Polycarpaea holtzeii	+
Ptilotus calostachyus	+
Senna glutinosa subsp. glutinosa	+
Senna symonii	+
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
Solanum phlomoides	+



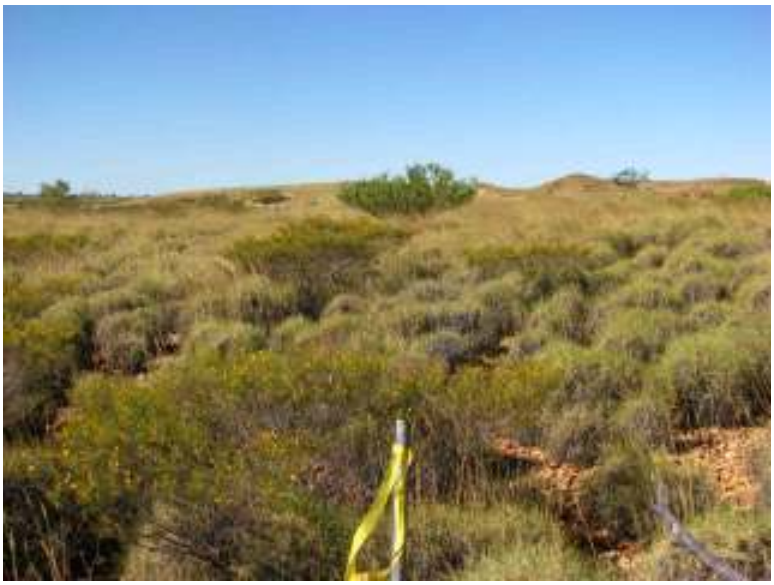
Site Number	2	**Date**	26/04/2012 & 18/09/12
Recorder/s	KR FO SC DM	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6381	794161	7553383	
6382	794230	7553357	
6383	794262	7553423	
6384	794193	7553457	
6385	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Silty clay	Orange	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
		Nil	75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Lower slope	North	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	3	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Grazing	>5	Nil
Vegetation Condition	Very good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Acacia inaequilatera	<1
Lower	0.5	Triodia epactia, Aristida contorta	25

Floristics

	Species	FPC
	Triodia ?epactia	20
	Aristida contorta	3
	Abutilon lepidum	+
	Abutilon oxycarpum var. prostratum ms	+
	Acacia inaequilatera	+
	Acacia synchronicia	+
*	*Aerva javanica*	+
	Alysicarpus muelleri	+
	Amphipogon sericeus	+
	Aristida contorta	+
	Aristida latifolia	+
	Boerhavia coccinea	+
	Boerhavia coccinea	+
	Bonamia media var. villosa	+
*	*Cenchrus ciliaris*	+
	Chloris pumilio	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cymbopogon obtectus	+
	Dichanthium sericeum subsp. humilius	+
	Enneapogon caerulescens	+
	Enneapogon polyphyllus	+
	Euphorbia australis	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Indigofera colutea	+
	Indigofera linifolia	+
	Iseilema dolichotricum	+
	Mollugo molluginea	+
	Polycarpaea corymbosa	+
	Polycarpaea holtzei	+
	Polycarpaea longiflora	+
	Polygala isingii	+
*	*Portulaca oleracea*	+
	Pterocaulon sphaeranthoides	+
	Ptilotus aervoides	+
	Ptilotus exaltatus	+
	Ptilotus incanus	+
	Rhynchosia minima	+
	Sclerolaena costata	+
	Senna artemisioides subsp. helmsii	+
	Senna glutinosa subsp. x luerssenii	+
	Senna notabilis	+
	Sida rohlenae subsp. rohlenae	+
	Sida rohlenae subsp. rohlenae	+

Floristics

Species	FPC
Solanum horridum	+
Solanum phlomoides	+
Sporobolus australasicus	+
Tephrosia sphaerospora	+
Triodia longiceps	+
Triodia wiseana	+



Site Number	3	**Date**	26/04/2012 & 18/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6386	793991	7553716	
6387	793910	7553723	
6388	793906	7553798	
6389	793992	7553796	
6390	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Stoney	Light brown/grey	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None	Nil	50
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Gentle slope	E	5
Weeds:	**% Cover**	**No. Plants**	
	+	10	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Very low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana	+
Mid	1.5	Acacia ?synchronicia, Acacia hilliana	3
Lower	0.6	Triodia wiseana	40

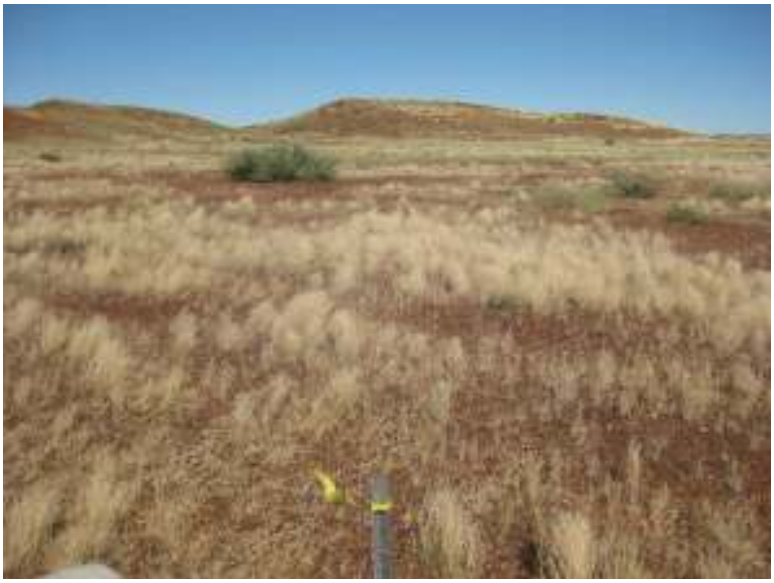
Floristics

	Species	FPC
	Triodia wiseana	40
	Acacia hilliana	2
	?Capparis umbonata (juvenile)	+
	Abutilon lepidum	+
	Acacia synchronicia	+
	Acacia bivenosa	+
*	*Aerva javanica*	+
	Amphipogon sericeus	+
	Carissa lanceolata	+
*	*Cenchrus ciliaris*	+
*	*Cenchrus setiger*	+
	Corymbia hamersleyana	+
	Eremophila longifolia	+
	Eucalyptus leucophloia subsp. leucophloia	+
	Euphorbia australis	+
	Ptilotus obovatus	+
	Senna symonii	+
	Sida rohlenae subsp. rohlenae	+
	Stackhousia muricata	+
	Triodia longiceps	+

Site Number	Site 04	**Date**	26/04/2012 18/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9554	794158	7553445	
9555	794038	7553375	
9556	Ground		
Observations	Old fence on ground		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		60
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage	S	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	20	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle	>5	Low
Vegetation Condition	Very good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Acacia inaequilatera	3
Lower	0.7	Triodia epactia, Triodia longiceps	40

Floristics

	Species	FPC
	Triodia longiceps	35
	Triodia epactia	5
	Acacia inaequilatera	3
	Acacia ancistrocarpa	+
	Acacia bivenosa	+
*	*Aerva javanica*	+
	Alysicarpus muelleri	+
	Aristida contorta	+
	Boerhavia coccinea	+
	Bonamia media var. villosa	+
	Bulbostylis barbata	+
*	*Cenchrus setiger*	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Dactyloctenium radulans	+
	Dichanthium sericeum subsp. humilius	+
	Enneapogon caerulescens	+
	Eragrostis cumingii	+
	Euphorbia australis	+
	Euphorbia biconvexa	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Indigofera colutea	+
	Indigofera linifolia	+
	Indigofera trita	+
	Phyllanthus maderaspatensis	+
	Polycarpaea corymbosa	+
	Polycarpaea holtzei	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Sclerolaena costata	+
	Senna glutinosa subsp. x luerssenii	+
	Senna notabilis	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+
	Sporobolus australasicus	+
	Trianthema triquetra	+



Site Number	5	**Date**	27/04/2012 & 20/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9563	791948	7552665	
9564	791886	7552666	
9565	791885	7552611	
9566	791943	7552608	
9567	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Plains	N	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	5	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle	>5	Medium
Vegetation Condition	Very good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.5	Acacia synchronicia	+
Lower	0.5	Aristida contorta, Triodia longiceps Triodia wiseana	20

Floristics

	Species	FPC
	Aristida contorta	15
	Triodia longiceps	4
	Abutilon lepidum	+
	Abutilon otocarpum	+
	Acacia ?synchronicia	+
	Alysicarpus muelleri	+
	Bulbostylis barbata	+
*	*Cenchrus ciliaris*	+
	Corchorus lasiocarpus subsp. parvus	+
	Cucumis maderaspatanus	+
	Dysphania rhadinostachya subsp. rhadinostachya	+
	Enneapogon polyphyllus	+
	Eriachne pulchella subsp. pulchella	+
	Euphorbia alsiniflora	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Goodenia microptera	+
	Goodenia muelleriana	+
	Heliotropium heteranthum	+
	Hibiscus sturtii var. campylochlamys	+
	Hibiscus sturtii var. platychlamys	+
	Iseilema dolichotricum	+
	Mollugo molluginea	+
	Polycarpaea corymbosa	+
	Polycarpaea holtzei	+
*	*Portulaca oleracea*	+
	Ptilotus aervoides	+
	Ptilotus auriculifolius	+
	Ptilotus calostachyus	+
	Ptilotus exaltatus	+
	Rhynchosia minima	+
	Salsola australis	+
	Sclerolaena costata	+
	Sclerolaena densiflora	+
	Sclerolaena lanicuspis	+
	Senna artemisioides subsp. oligophylla x ?	+
	Senna artemisioides subsp. sturtii x ?	+
	Senna notabilis	+
	Senna symonii	+
	Sida fibulifera	+
	Sida sp.	+
	Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
	Solanum horridum	+
	Sporobolus australasicus	+
	Stemodia grossa	+
*	*Streptoglossa liatroides*	+

Floristics

Species	FPC
Triodia brizoides	+
Triodia wiseana	+
Vachellia farnesiana	+

Site Number	Site 06	**Date**	27/04/2012 & 20/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9573	792345	7553034	
9574	792344	7552977	
9575	792406	7552975	
9576	792406	7553034	
9577	Ground		
Observations	Old pebble mouse mounds	Photos 9578, 9579, 9580	
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	Low	50
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mid slope	E	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Old track	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Eucalyptus leucophloia subsp. leucophloia	1
Mid	1.5	Acacia bivenosa	+
Lower	0.6	Triodia wiseana, Triodia longiceps	50

Floristics

Species	FPC
Triodia longiceps	40
Triodia wiseana	5
Triodia brizoides	5
Eucalyptus leucophloia subsp. leucophloia	1
Acacia bivenosa	+
Acacia coriacea subsp. pendens	+
Acacia hilliana	+
Acacia tenuissima	+
Carissa lanceolata	+
Corchorus lasiocarpus subsp. lasiocarpus	+
Cucumis maderaspatanus	+
Enneapogon polyphyllus	+
Goodenia cusackiana	+
Hakea lorea subsp. lorea	+
Hybanthus aurantiacus	+
Indigofera monophylla	+
Maireana melancoma	+
Ptilotus calostachyus	+
Senna artemisioides subsp. oligophylla x ?	+
Senna glutinosa subsp. glutinosa	+
Senna glutinosa subsp. pruinosa	+
Senna notabilis	+
Senna symonii	+
Triodia epactia	
Tribulus suberosus	+

Site Number	Site 07	**Date**	27/04/2012 & 17/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9591	800516	7560157	
9592	800496	7560162	
9593	800493	7560120	
9594	800515	7560116	
9595	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		60
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Riverbank	E	0-5
Weeds:	**% Cover**	**No. Plants**	
	40	>1000	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle	>5	High
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	20	Eucalyptus camaldulensis subsp. obtusa, Eucalyptus victrix	20
Mid	5	Acacia coriacea subsp pendens, *Vachellia farnesiana Atalaya hemiglauca	7
Lower	0.3	Cenchrus ciliaris	40

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	38
	Eucalyptus camaldulensis subsp. obtusa	10
	Eucalyptus victrix	10
	Acacia coriacea subsp. pendens	3
	Atalaya hemiglauca	2
*	*Vachellia farnesiana*	1
	?Pluchea rubelliflora	+
	Acacia pyrifolia var. morrisonii	+
*	*Aerva javanica*	+
	Alternanthera nana	+
	Boerhavia burbidgeana	+
*	*Cenchrus setiger*	+
	Chloris pumilio	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cyperus vaginatus	+
	Eulalea aurea	+
	Euphorbia schultzii	+
	Hybanthus aurantiacus	+
	Indigofera colutea	+
*	*Malvastrum americanum*	+
	Melaleuca linophylla	+
	Notoleptopus decaisnei	+
	Operculina aequisepala	+
	Phyllanthus maderaspatensis	+
	Plumbago zeylanica	+
	Pterocaulon sphaeranthoides	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Senna notabilis	+
*	*Setaria verticillata*	+
	Sida rohlenae	+
	Sporobolus australis	+
	Themeda triandra	+
	Trichodesma zeylanicum	+

Site Number	Site 08	**Date**	28/04/2012 & 17/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9596	799623	7559814	
Missing	799632	7559809	
9597	799584	7559750	
9598	799578	7559756	
9599	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	Few	70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Riverbank	NW	0-5
Weeds:	**% Cover**	**No. Plants**	
	10	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Medium
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Eucalyptus victrix	2
Mid	2	*Vachellia farnesiana	1
Lower	0.3	*Cenchrus setiger, *Cenchrus ciliaris, Triodia epactia	25

Floristics

	Species	FPC
	Triodia epactia	15
*	*Cenchrus setiger*	7
*	*Cenchrus ciliaris*	3
	Eucalyptus victrix	2
*	*Vachellia farnesiana*	1
	Acacia coriacea subsp. pendens	+
	Acacia inaequilatera	+
*	*Aerva javanica*	+
	Aristida contorta	+
	Boerhavia burbidgeana	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cyperus vaginatus	+
	Eragrostis cumingii	+
	Euphorbia schultzii	+
	Indigofera colutea	+
	Ipomaea muelleri	+
*	*Malvastrum americanum*	+
	Phyllanthus maderaspatensis	+
	Pluchea ferdinandi-muelleri	+
	Pluchea rubelliflora	+
	Pterocaulon sphaeranthoides	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Senna notabilis	+
	Sida aff. fibulifera	+
	Sida fibulifera	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+
	Sporobolus australasicus	+
	Stemodia grossa	+
	Trianthema triquetra	+
	Eragrostis leptocarpa	Opp.

Site Number	Site 09	**Date**	28/04/12 & 17/09 12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9600	799398	7559858	
9601	799401	7559935	
9602	799320	7559942	
9603	799323	7559863	
9604	Ground		
Observations	80 x 80		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mid slope	SE	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	1	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Acacia inaequilatera	+
Lower	0.5	Triodia epactia	25

Floristics

	Species	FPC
	Triodia epactia	25
	Acacia inaequilatera	+
	Acacia synchronicia	+
	Alysicarpus muelleri	+
	Amyema preissii	+
	Aristida contorta	+
	Aristida latifolia	+
	Bonamia media var. villosa	+
	Bulbostylis barbata	+
*	*Cenchrus ciliaris*	+
	Chloris pumilio	+
	Corchorus parviflorus	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Cymbopogon obtectus	+
	Dactyloctenium radulans	+
	Desmodium campylocaulon	+
	Dichanthium sericeum subsp. humilius	+
	Enneapogon polyphyllus	+
	Eriachne pulchella	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Hakea lorea subsp. lorea	+
	Heliotropium heteranthum	+
	Indigofera colutea	+
	Indigofera monophylla	+
	Iseilema dolichotricum	+
	Phyllanthus maderaspatensis	+
	Pluchea ferdinandi-muelleri	+
	Pluchea tetranthera	+
	Polycarpaea corymbosa	+
	Polycarpaea holtzei	+
	Polygala isingii	+
	Pterocaulon sphaeranthoides	+
	Ptilotus aervoides	+
	Sclerolaena costata	+
	Senna glutinosa subsp. glutinosa	+
	Senna notabilis	+
	Sida aff. fibulifera	+
	Sida aff. fibulifera	+
	Sida clementii	+
	Sida rohlenae subsp. rohlenae	+
*	*Solanum horridum*	+

Floristics

Species	FPC
Solanum phlomoides	+
Sporobolus australasicus	+
Stemodia grossa	+
Swainsona decurrens	+
Tephrosia sp. clay soils (S.v. Leeuwen et al. PBS 0273)	+
Trichodesma zeylanicum var. zeylanicum	+
Vachellia farnesiana	+

Site Number	Site 10	**Date**	29/04/2012 & 17/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9675	800345	7559696	
9676	800344	7559638	
9677	800410	7559641	
9678	800406	7559700	
9679	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
			70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Flood plain	None	0-5
Weeds:	**% Cover**	**No. Plants**	
	24	>1000	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle and weeds	>5	Medium
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Atalaya hemiglauca, Corymbia hamersleyana	1
Mid	2.5	Acacia pyrifolia, Acacia tumida, *Vachellia farnesiana	2
Lower	0.3	*Cenchrus ciliaris, *Cenchrus setigea, Triodia epactia	30

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	20
	Triodia epactia	5
*	*Cenchrus setiger*	4
	Acacia pyrifolia var. morrisonii	2
	Corymbia hamersleyana	1
	Acacia coriacea subsp pendens	+
	Acacia tumida var. pilbarensis	+
*	*Aerva javanica*	+
	Alysicarpus muelleri	+
	Amaranthus undulatus	+
	Atalaya hemiglauca	+
	Boerhavia coccinea	+
	Capparis umbonata	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Cucumis maderaspatanus	+
	Euphorbia australis	+
	Euphorbia schultzii	+
	Grevillea wickhamii	+
	Hibiscus sturtii var. campylochlamys	+
	Hybanthus aurantiacus	+
*	*Portulaca oleracea*	+
	Pterocaulon sphaeranthoides	+
	Rhynchosia minima	+
	Salsola australis	+
	Sclerolaena costata	+
	Senna notabilis	+
	Sida fibulifera	+
	Sporobolus australasicus	+
	Trianthema triquetra	+
	Triodia longiceps	+
*	*Vachellia farnesiana*	+
	Zaleya galericulata subsp. galericulata	+

Site Number	Site 11	**Date**	29/04/12 & 17/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9682	800148	7559159	
9683	800141	7559170	
9684	800221	7559200	
9685	800222	7559190	
9687	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sand	Orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	Few	70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
Weeds:	**% Cover**	**No. Plants**	
	25	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Medium
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	15	Corymbia hamersleyana, Acacia coriacea subsp pendens	2
Mid	3	Acacia tumida, Acacia pyrifolia, *Vachellia farnesiana	5
Lower	0.5	*Cenchrus ciliaris, *Cenchrus setigea, Cymbopogon ambiguus	25

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	10
*	*Cenchrus setiger*	10
	Triodia ?epactia	5
	Acacia pyrifolia var. morrisonii	1
	Acacia tumida var. pilbarensis	1
	Corymbia hamersleyana	1
*	*Vachellia farnesiana*	1
	Acacia coriacea subsp pendens	+
	Alysicarpus muelleri	+
	Corchorus parviflorus	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Euphorbia australis	+
	Euphorbia schultzii	+
	Rhynchosia minima	+
	Senna glutinosa subsp glutinosa	+
	Solanum horridum	+

Site Number	Site 12	**Date**	29/04/12 & 16/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9688	800311	7558256	
9689	800340	7558205	
9690	800287	7558176	
9691	800261	7558227	
9692	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Loamy clay	Pale brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Upper slope	NW	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	3.5	Eucalyptus socialis subsp. eucentrica	6
Mid			
Lower	0.3	Triodia wiseana	25

Floristics

Species	FPC
Triodia wiseana	25
Eucalyptus socialis subsp. eucentrica	6
Abutilon dioicum ms	+
Hibiscus sturtii var. platychlamys	+
Melhania oblongata	+
Polygala isingii	+
Ptilotus clementii	+
Santalum lanceolatum	+
Senna symonii	+
Stackhousia muricata	+

Site Number	Site 13	**Date**	29/04/12 & 16/09/12
Recorder/s	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9715	800432	7558407	
9716	800490	7558421	
9717	800479	7558484	
9718	800423	7558467	
9719	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mid slope	S	20-30
Weeds:	**% Cover**	**No. Plants**	
	+	1	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Old track	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana	1
Mid	1.8	Acacia inaequilatera	+
Lower	0.3	Triodia epactia	25

Floristics

	Species	FPC
	Triodia epactia	25
	Corymbia hamersleyana	1
	Abutilon dioicum ms	+
	Acacia ancistrocarpa	+
	Acacia inaequilatera	+
	Acacia pruinocarpa	+
	Acacia sericophylla	+
	Aristida contorta	+
	Corchorus parviflorus	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Duperreya commixta	+
	Euphorbia biconvexa	+
	Goodenia cusackiana	+
	Goodenia stobbsiana	+
	Gossypium australe	+
	Grevillea wickhamii subsp. aprica	+
	Hakea lorea subsp. lorea	+
	Hibiscus coatesii	+
	Hybanthus aurantiacus	+
	Indigofera monophylla	+
	Jasminum didymum subsp. lineare	+
	Malvastrum americanum	+
	Phyllanthus maderaspatensis	+
	Polygala isingii	+
	Pterocaulon sphaeranthoides	+
	Ptilotus incanus	+
	Rhagodia eremaea	+
	Santalum lanceolatum	+
	Scaevola amblyanthera var. centralis	+
	Senna ?glaucifolia x ?	+
	Senna glutinosa subsp. glutinosa	+
	Senna notabilis	+
	Senna symonii x ?	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum lasiophyllum	+
	Stemodia grossa	+
*	*Vachellia farnesiana*	+

Site Number	Site 14	**Date**	29/04/12 & 17/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9740	800251	7556708	
9741	800252	7556757	
9742	800302	7556759	
9743	800302	7556708	
9744	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Few	Calcrete	80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Upper slope	Flat	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4.5	Eucalyptus leucophloia subsp. leucophloia, Corymbia hamersleyana	+
Mid	1.2	Acacia bivenosa	+
Lower	0.3	Triodia wiseana	20

Floristics

Species	FPC
Triodia wiseana	20
Acacia bivenosa	+
Acacia inaequilatera	+
Acacia synchronicia	+
Carissa lanceolata	+
Corymbia hamersleyana	+
Eriachne mucronata	+
Eucalyptus leucophloia subsp. leucophloia	+
Goodenia stobbsiana	+
Pluchea ferdinandi-muelleri	+
Ptilotus astrolasius	+
Ptilotus auriculifolius	+
Scaevola amblyanthera	+
Senna symonii	+
Solanum lasiophyllum	+

Site Number	Site 15	**Date**	30/04/12 &15/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9745	807695	7563659	
9746	807676	7563660	
9747	807676	7563704	
9748	807700	7563702	
9749	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sand	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	Flat	0-5
Weeds:	**% Cover**	**No. Plants**	
	15	>1000	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Medium
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	14	Eucalyptus camaldulensis, Acacia coriacea	10
Mid	3	Melaleuca linophylla, Flueggea virosa subsp. melanthesioides	12
Lower	0.3	*Cenchrus ciliaris, *Cenchrus setigera, Cyperus vaginatus	15

Floristics

	Species	FPC
	Melaleuca linophylla	15
*	*Cenchrus ciliaris*	8
*	*Cenchrus setiger*	7
	Eucalyptus victrix	6
	Eucalyptus camaldulensis subsp. obtusa	3
	Acacia coriacea subsp. pendens	1
	Alternanthera nana	+
	Atalaya hemiglauca	+
	Boerhavia coccinea	+
	Cleome viscosa	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cyperus vaginatus	+
	Eragrostis tenellula	+
	Eriachne benthamii	+
	Euphorbia biconvexa	+
	Euphorbia schultzii	+
	Flueggea virosa subsp. melanthesioides	+
	Indigofera trita	+
	Ipomaea muelleri	+
*	*Malvastrum americanum*	+
	Melaleuca glomerata	+
	Paraneurachne muelleri	+
	Pluchea ?dentex	+
	Pluchea rubelliflora	+
	Plumbago zeylanica	+
	Pterocaulon sphaeranthoides	+
	Rhynchosia minima	+
	Rostellularia adscendens var. clementii	+
	Sesbania cannabina	+
	Stemodia grossa	+
*	*Vachellia farnesiana*	+
	Wahlenbergia tumidifructa	+

Site Number	Site 16	**Date**	30/04/12 & 15/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9758	808180	7564985	
9759	808182	7564966	
9580	808142	7564967	
9781	808146	7564989	
9782	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sand	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Few	Ironstone	90
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	Flat	0-5
Weeds:	**% Cover**	**No. Plants**	
	5	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Low
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	8	Eucalyptus victrix, Acacia coriacea subsp pendens	1
Mid	3	Melaleuca linophylla	3
Lower	0.3	Cenchrus ciliaris, Cenchrus setigera, Cyperus vaginatus	5

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	3
	Eucalyptus victrix	3
	Melaleuca linophylla	3
*	*Cenchrus setiger*	2
	Acacia coriacea subsp. pendens	+
	Acacia trachycarpa	+
	Amaranthus undulatus	+
	Atalaya hemiglauca	+
	Cleome viscosa	+
	Crotalaria medicaginea var. neglecta	+
	Cullen leucanthum	+
	Cyperus vaginatus	+
	Eriachne benthamii	+
	Eucalyptus camaldulensis	+
	Euphorbia biconvexa	+
	Euphorbia schultzii	+
	Flueggea virosa subsp. melanthesioides	+
	Hybanthus aurantiacus	+
	Indigofera trita	+
	Ipomaea muelleri	+
	Melaleuca glomerata	+
	Paraneurachne muelleri	+
	Pluchea ?dentex	+
	Pluchea rubelliflora	+
	Sesbania cannabina	+
	Sida rohlenae	+
	Stemodia grossa	+

Site Number	Site 17	**Date**	30/04/12 & 14/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9771	809082	7566781	
9772	809079	7566728	
9773	809182	7566727	
9774	809130	7566777	
9775	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
			80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Flood plain	N	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	10	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	9	Eucalyptus victrix	+
Mid	2.5	Acacia trachycarpa, Atalaya hemiglauca	8
Lower	0.5	Triodia epactia	15

Floristics

	Species	FPC
	Triodia epactia	15
	Acacia trachycarpa	8
	Acacia ancistrocarpa	+
	Acacia pyrifolia var. morrisonii	+
*	*Aerva javanica*	+
	Amaranthus undulatus	+
	Amphipogon sericeus	+
	Atalaya hemiglauca	+
	Boerhavia coccinea	+
*	*Cenchrus ciliaris*	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cullen graveolens	+
	Cymbopogon ambiguus	+
	Eriachne benthamii	+
	Eucalyptus victrix	+
	Euphorbia australis	+
	Euphorbia schultzii	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Grevillea pyramidalis subsp. leucadendron	+
	Hybanthus aurantiacus	+
	Indigofera linifolia	+
*	*Malvastrum americanum*	+
	Notoleptopus decaisnei	+
	Polycarpaea corymbosa	+
*	*Portulaca oleracea*	+
	Pterocaulon sphacelatum	+
	Pterocaulon sphaeranthoides	+
	Ptilotus auriculifolius	+
	Rhynchosia minima	+
	Salsola australis	+
	Senna glutinosa subsp. glutinosa	+
	Senna glutinosa x luersenii	+
	Senna notabilis	+
	Sida echinocarpa	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+

Site Number	Site 18	**Date**	30/04/12 & 14/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	51
Photo No.	**Easting**	**Northing**	
9776	190996	7566821	
9777	190999	7566813	
9782	191061	7566765	
9783	191059	7566762	
9784	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sand and clay loam	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Few	Ironstone	90
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
Weeds:	**% Cover**	**No. Plants**	
	6	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Medium
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Eucalyptus victrix	+
Mid	2	Melaleuca linophylla	8
Lower	0.3	*Cenchrus ciliaris, *Cenchrus setiger	6

Floristics

	Species	FPC
	Melaleuca glomerata	5
	Melaleuca linophylla	3
*	*Cenchrus ciliaris*	3
*	*Cenchrus setiger*	3
	Acacia coriacea subsp. pendens	+
	Acacia trachycarpa	+
	Aerva javanica	+
	Alternanthera nana	+
	Argemone ochroleuca subsp. ochroleuca	+
	Atalaya hemiglauca	+
	Basilicum polystachyon	+
	Blumea tenella	+
	Centipeda minima subsp. macrocephala	+
	Citrullus lanatus	+
	Cleome viscosa	+
	Cucumis maderaspatanus	+
	Cyperus squarrosus	+
	Cyperus vaginatus	+
	Eragrostis cumingii	+
	Eucalyptus victrix	+
	Euphorbia biconvexa	+
*	*Flaveria trinervia*	+
	Flueggea virosa subsp. melanthesioides	+
*	*Malvastrum americanum*	+
	Marsilea ?drummondii	+
	Pluchea ?dentex	+
	Pluchea rubelliflora	+
	Poaceae sp. 2	+
	Ptilotus gomphrenoides	+
	Rostellularia adscendens var. clementii	+
	Sesbania cannabina	+
	Sporobolus australasicus	+
	Stemodia grossa	+
*	*Vachellia farnesiana*	+

Site Number	Site 19	**Date**	1/05/12 & 14/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	51
Photo No.	**Easting**	**Northing**	
9819	192974	7566927	
9820	193017	7566900	
9821	193051	7566936	
9822	193007	7566965	
9823	Ground		
Observations	Changes to Triodia wiseana at WpPOI095		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	Numerous	80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	None	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Senna glutinosa subs.p glutinosa, Senna glutinosa subsp. pruinosa,	+
Lower	0.3	Triodia epactia	20

Floristics

Species	FPC
Triodia epactia	20
?Capparis umbonata (juvenile)	+
Bonamia media var. villosa	+
Corymbia hamersleyana	+
Eriachne lanata	+
Eriachne mucronata	+
Goodenia cusackiana	+
Gossypium australe	+
Mollugo molluginea	+
Ptilotus calostachyus	+
Ptilotus incanus	+
Senna artemisioides subsp. oligophylla x ?	+
Senna glutinosa subsp. glutinosa	+
Senna glutinosa subsp. pruinosa	+
Senna symonii	+
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
Solanum horridum	+
Triodia wiseana	+

Site Number	101	**Date**	26/04/2012 & 18/09/12
Recorder/s	DM	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6378	793594	7553105	
6379	793601	7553112	
6376	793654	7553050	
6377	793645	7553043	
6380	Ground		
Observations	Flood plain dominated by weeds		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sandy Loams	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Creek line	0	0 - 5
Weeds:	**% Cover**	**No. Plants**	
	5	> 1000	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds, grazing	> 5	Low
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Eucalyptus victix	15
Mid	2	Melaleuca linophylla	5
Lower	0.5	*Cenchrus ciliaris, Eragrostis tenellula, Cyperus vaginatus	15

Floristics

	Species	FPC
	Eucalyptus victrix	10
*	*Cenchrus ciliaris*	2
	Melaleuca linophylla	2
	?Marsilea hirsuta	+
	Acacia coriacea subsp. pendens	+
	Acacia pyrifolia var. morrisonii	+
	Acacia tumida var. pilbarensis	+
	Achyranthes aspera	+
	Alternanthera nana	+
	Alysicarpus muelleri	+
	Ammannia baccifera	+
	Ammannia multiflora	+
	Bidens bipinnata	+
*	*Cenchrus setiger*	+
	Corchorus tridens	+
	Crotalaria medicaginea var. neglecta	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Cyperus difformis	+
	Cyperus vaginatus	+
	Eragrostis cumingii	+
	Eragrostis tenellula	+
	Eriachne sp.	+
	Euphorbia biconvexa	+
	Glycine canescens	+
	Ipomaea muelleri	+
*	*Malvastrum americanum*	+
	Phyllanthus maderaspatensis	+
	Pluchea rubelliflora	+
	Pterocaulon ?sphaeranthoides	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Sida ?spinosa	+
	Sida rohlenae subsp. rohlenae	+
	Stemodia grossa	+
	Themeda triandra	+
	Triodia longiceps	+

Site Number	102	**Date**	26/04/12 & 20/09/12
Recorder/s	SC KR	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6398	792235	7553439	
6399	792229	7553450	
6400	792299	7553492	
6401	792306	7553485	
6402	Ground		
Observations	Acacia monticola shrubland on banks		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	sandy loam	orange - brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MaC	0	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	-	>5	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	10	Eucalyptus victix, Corymbia hamersleyana	3
Mid	5	Acacia coriacea subsp. pendens	1
Lower	0.5	Eriachne benthamii, Themeda triandra	20

Floristics

Species	FPC
Eriachne benthamii	15
Themeda triandra	+
Corymbia hamersleyana	1
Eucalyptus victrix	1
Acacia coriacea subsp. pendens	+
Acacia monticola	+
Acacia tumida var. pilbarensis	+
Cymbopogon ambiguus	+
Eremophila longifolia	+
Eulalea aurea	+
Evolvulus alsinoides var. decumbens	+
Indigofera monophylla	+
Petalostylis labicheoides	+
Triodia epactia	+
Eragrostis tenellula	+
Senna glutinosa subsp. glutinosa	+

Site Number	Site 103	**Date**	27/04/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6408	792084	7553393	
6409	792086	7553383	
6410	792025	7553393	
6411	792025	7553383	
6412	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sandy loams	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	flood plain	N	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	~20	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Grazing	>5	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	**Corymbia boulders**	<1
Mid	2	Acacia ancistrocarpa , Acacia eriopoda, Petalostylis labicheoides	40
Lower	0.5	Themeda triandra , Triodia epactia , Indigofera monophylla	

Floristics

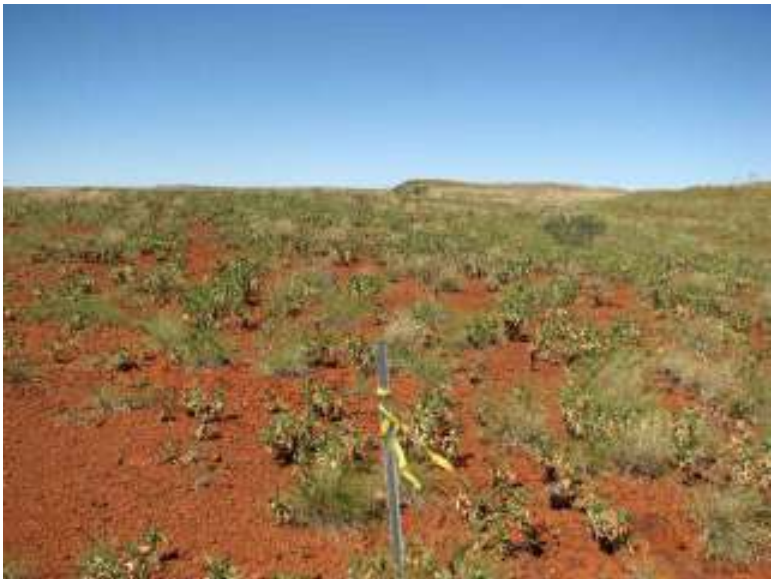
	Species	FPC
	Acacia ancistrocarpa	15
	Acacia eriopoda	15
	Triodia longiceps	1
	Triodia epactia	1
	Acacia bivenosa	+
	Acacia monticola	+
	Acacia pruinocarpa	+
	Acacia pyrifolia var. morrisonii	+
	Acacia tumida var. pilbarensis	+
	Aristida pruinosa	+
	Atalaya hemiglauca	+
*	*Cenchrus ciliaris*	+
*	*Cenchrus setiger*	+
	Corchorus lasiocarpus subsp. lasiocarpus	+
	Corymbia hamersleyana	+
	Duperreya commixta	+
	Eriachne benthamii	+
	Gossypium robinsonii	+
	Hybanthus aurantiacus	+
	Indigofera monophylla	+
	Mollugo molluginea	+
	Paraneurachne muelleri	+
	Petalostylis labicheoides	+
	Polycarpaea holtzei	+
	Rhynchosia minima	+
	Senna artemisioides subsp. oligophylla	+
	Senna glutinosa subsp. glutinosa	+
	Sporobolus australasicus	+
	Tephrosia clementii	+
	Themeda triandra	+
	Triodia brizoides	+

6

Site Number	Site 104	**Date**	27/04/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6419	791802	7553172	
6420			
6421	791748	7553307	
4			
6422	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	sandy clay loams	orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		65
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS - minor drainage line	NORTH	0-5
Weeds:	**% Cover**	**No. Plants**	
	10	>500	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	>5	low
Vegetation Condition	G		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Acacia ancistrocarpa , Acacia bivenosa	15
Lower	0.5	Cenchrus ciliaris ,Triodia longiceps	15

Floristics

	Species	FPC
	Acacia ancistrocarpa	10
*	*Cenchrus ciliaris*	1
	Acacia bivenosa	3
	Acacia coriacea subsp. pendens	+
	Acacia pyrifolia var. morrisonii	+
	Carissa lanceolata	+
*	*Cenchrus setiger*	+
	Corchorus lasiocarpus subsp. lasiocarpus	+
	Corymbia hamersleyana	+
	Crotalaria dissitiflora subsp. benthamiana	+
	Cymbopogon ambiguus	+
*	*Malvastrum americanum*	+
	Rhynchosia minima	+
	Santalum lanceolatum	+
	Senna symonii	+
*	*Triodia longiceps*	+
	Triodia epactia	+
*	*Vachellia farnesiana*	+



Site Number	Site 105	**Date**	27/04/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6429	791876	7552966	
6430	791837	7552971	
6433	791825	7552882	
6434	791865	7552878	
6435	Ground		
Observations	Recovering from fire 2-3 years		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	few	95
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	0	5-15
Weeds:	**% Cover**	**No. Plants**	
	no	-	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Fire	<3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Eucalyptus leucophloia subsp. leucophloia	+
Mid	1.3	Senna pruinosa subsp. pruinosa	+
Lower	0.3	Triodia epactia, Triodia brizoides, Goodenia stobbsiana	8

Floristics

Species	FPC
Triodia epactia	5
Amphipogon sericeus	2
Triodia brizoides	1
Acacia synchronicia	+
Acacia bivenosa	+
Aristida contorta	+
Bonamia media var. villosa	+
Cymbopogon ambiguus	+
Dampiera candicans	+
Dodonaea coriacea	+
Eremophila latrobei subsp. latrobei	+
Eriachne lanata	+
Eriachne mucronata	+
Eucalyptus leucophloia subsp. leucophloia	+
Goodenia cusackiana	+
Goodenia stobbsiana	+
Hibiscus sturtii var. campylochlamys	+
Lepidium pholidogynum	+
Paraneurachne muelleri	+
Polycarpaea holtzeii	+
Ptilotus calostachyus	+
Ptilotus clementii	+
Senna glutinosa subsp. pruinosa	+
Senna glutinosa subsp. x luerssenii	+
Senna symonii	+
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
Tephrosia clementii	+

Site Number	Site 106	**Date**	27 04 12 & 17/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6446	800288	7560187	
6447	800172	7560076	
6448			
6449			
6450	Ground		
Observations	tracks and drill pads near site. obvious signs of cattle traffic		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	loams	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		25
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	north	0-5
Weeds:	**% Cover**	**No. Plants**	
	10	>200	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing, mining	>5	medium
Vegetation Condition	poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Acacia coriacea , Corymbia hamersleyana	1
Mid	3	Vachellia farnesiana, Acacia bivenosa	15
Lower	0.6	Cenchrus ciliaris, Triodia longiceps	15

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	10
	Acacia bivenosa	8
*	*Vachellia farnesiana*	4
	Triodia longiceps	2
*	*Cenchrus setiger*	1
	Abutilon cunnighamii	+
	Abutilon lepidum	+
	Acacia pyrifolia var. morrisonii	+
	Acacia tumida var. pilbarensis	+
	Achyranthes aspera	+
*	*Aerva javanica*	+
	Amaranthus undulatus	+
	Atalaya hemiglauca	+
	Bidens bipinnata	+
	Cleome viscosa	+
	Clerodendrum floribundum var. angustifolium	+
	Corchorus parviflorus	+
	Corymbia hamersleyana	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Duperreya commixta	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
	Glycine canescens	+
	Hibiscus sturtii var. platychlamys	+
	Hybanthus aurantiacus	+
	Jasminum didymum subsp. lineare	+
	Malvastrum americanum	+
*	*Notoleptopus decaisnei*	+
	Phyllanthus maderaspatensis	+
	Pterocaulon ?sphaeranthoides	+
	Ptilotus incanus	+
	Rhynchosia minima	+
	Senna glutinosa subsp. pruinosa	+
	Senna glutinosa subsp. x luerssenii	+
	Senna notabilis	+
	Setaria verticillata	+
*	*Sporobolus australasicus*	+
	Triodia epactia	+
	Lepidium pedicellosum	Opp

Site Number	Site 107	**Dates**	28/04/12
Recorder/s	SC FO / SC DM AW		15/04/13
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6456	801630	7559736	
6457	801582	7559700	
6458	801619	7559654	
6459	801666	7559689	
6460	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		85
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	low plateau	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	5	>200	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	2-3	low
Vegetation Condition	good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	-		
Mid	2	*Vachellia farnesiana	5
Lower	0.5	Senna notabilis, Sida rohlenae, Ptilotus gomphrenoides	10

Floristics

	Species	FPC
	Ptilotus gomphrenoides	10
*	*Vachellia farnesiana*	5
	Solanum lasiophyllum	1
	Vigna sp. Hamersley clay (A.A. Mitchell PRP 113)	1
	Abutilon malvifolium	+
	Acacia coriacea subsp. pendens	+
	Alysicarpus muelleri	+
	Atalaya hemiglauca	+
	Austrobryonia pilbarensis	+
	Boerhavia paludosa	+
	Capparis spinosa var. *nummularia*	+
*	*Cenchrus ciliaris*	+
*	*Cenchrus setiger*	+
	Chloris pumilio	+
	Cleome viscosa	+
	Corchorus tridens	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
*	*Cucumis melo subsp. agrestis*	+
	Cullen leucanthum	+
	Desmodium filiforme	+
	Dichanthium sericeum subsp. humilius	+
	Euphorbia drummondii subsp. drummondii	+
	Hibiscus brachysiphonius	+
	Indigofera linifolia	+
	Malvaceae sp. 2	+
*	*Malvastrum americanum*	+
	Oldenlandia crouchiana	+
	Operculina aequisepala	+
	Panicum laevinode	+
	Phyllanthus maderaspatensis	+
	Rhynchosia minima	+
	Senna notabilis	+
	Sida rohlenae subsp. *rohlenae*	+
	Solanum horridum	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
	Tephrosia clementii	+

Site Number	Site 108	**Date**	28 04 12 & 16 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6482	801700	7560285	
6483	801709	7560226	
6484	801651	7560217	
6485	801641	7560275	
6486	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	dolerite	few	75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	rolling plain	N/A	0-5
Weeds:	**% Cover**	**No. Plants**	
	-	-	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Fire, some grazing	>3	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid			
Lower	0.3	Triodia epactia	25

Floristics

Species	FPC
Triodia epactia	25
Bonamia media var. villosa	+
Cleome viscosa	+
Corchorus lasiocarpus subsp. lasiocarpus	+
Enneapogon caerulescens	+
Polycarpaea holtzei	+
Polygala isingii	+
Trichodesma zeylanicum	+

Site Number	Site 109	**Date**	28/04/12
Recorder/s	SC FO / SC AW DM		15/04/13
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6492	801600	7558746	
6493	801604	7558803	
6494	801665	7558799	
6495	801659	7558739	
6496	Ground		
Observations	27 Vigna sp Hamersley Clay		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
			60
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	South	0-5
Weeds:	**% Cover**	**No. Plants**	
	10	300	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Heavy grazing	>3	low
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	*Vachellia farnesiana , Acacia ?synchronicia	2
Lower	0.5	*Cenchrus ciliaris, Triodia epactia, Eruachne mucronata	30

Floristics

	Species	FPC
	Triodia epactia	13
*	*Cenchrus ciliaris*	10
	Eriachne mucronata	5
	Ptilotus gomphrenoides	4
*	*Vachellia farnesiana*	2
	Alysicarpus muelleri	+
	Amaranthus mitchellii	+
	Amaranthus undulatus	+
	Aristida contorta	+
	Austrobryonia pilbarensis	+
	Boerhavia paludosa	+
*	*Cenchrus setiger*	+
	Chloris pumilio	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Corchorus tridens	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
*	*Cucumis melo subp. agrestis*	+
	Dactyloctenium radulans	+
	Dichanthium sericeum subsp. humilius	+
	Dysphania rhadinostachya subsp. rhadinostachya	+
	Euphorbia drummondii subsp. drummondii	+
*	*Flaveria trinervia*	+
	Goodenia muelleriana	+
	Heliotropium crispatum	+
	Hibiscus brachysiphonius	+
	Indigofera linifolia	+
	Indigofera trita	+
*	*Malvastrum americanum*	+
	Oldenlandia crouchiana	+
	Operculina aequisepala	+
	Panicum laevinode	+
	Phyllanthus maderaspatensis	+
*	*Portulaca oleracea*	+
	Pterocaulon ?sphaeranthoides	+
	Ptilotus exaltatus	+
	Rhynchosia minima	+
	Salsola australis	+
	Sclerolaena costata	+
	Senna artemisioides subsp. helmsii	+
	Senna notabilis	+
	Sida echinocarpa	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+

Solanum lasiophyllum	+
Sporobolus australasicus	+
Streptoglossa bubakii	+
Tephrosia clementii	+
Trianthema triquetra	+
Triodia sp.	+
Vigna sp. Hamersley clay (A.A. Mitchell PRP 113)	+

Site Number	Site 110	**Date**	29 04 12 & 18 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6519-6523	801740	7558066	
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		35
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	WSW	0-5
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	fire	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3.5	Acacia monticola , Grevillea wickhamii	30
Lower	0.5	Triodia ?epactia	10

Floristics

Species	FPC
Acacia monticola	30
Triodia ?epactia	10
Grevillea wickhamii subsp. aprica	2
Cymbopogon ambiguus	+
Evolvulus alsinoides var. villosicalyx	+
Goodenia stobbsiana	+
Jasminum didymum subsp. lineare	+
Malvaceae sp. 1	+
Santalum lanceolatum	+
Senna notabilis	+
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
Solanum horridum	+
Solanum phlomoides	+

Site Number	Site 111	**Date**	29 04 12 & 16 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6535	801454	7557590	
6536	801512	7557584	
6537	801503	7557525	
6538	801446	7557531	
6539	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	no		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	NW	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	~20	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Grazing	>3	Medium
Vegetation Condition	Very good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Acacia aptaneura	4
Mid	2	Acacia inaequilatera	+
Lower	0.4	Triodia ?epactia, Triodia sp., Aristida contorta	20

Floristics

	Species	FPC
	Triodia epactia	8
	Triodia brizoides	5
	Acacia aptaneura	4
	Aristida contorta	2
	Abutilon lepidum	+
	Abutilon otocarpum	+
	Acacia inaequilatera	+
	Aristida latifolia	+
*	*Cenchrus setiger*	+
	Chloris pumilio	+
	Corchorus tridens	+
	Crotalaria medicaginea var. neglecta	+
	Enneapogon caerulescens	+
	Enneapogon polyphyllus	+
	Eremophila longifolia	+
	Eriachne pulchella subsp. pulchella	+
	Euphorbia alsiniflora	+
	Euphorbia australis	+
	Euphorbia boopthona	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Heliotropium heterantha	+
	Indigofera trita	+
	Iseilema dolichotricum	+
	Polygala isingii	+
*	*Portulaca oleracea*	+
	Ptilotus aervoides	+
	Ptilotus gomphrenoides	+
	Salsola australis	+
	Sclerolaena costata	+
	Sclerolaena eriacantha	+
	Senna artemisioides subsp. helmsii	+
	Senna notabilis	+
	Senna symonii	+
	Sida aff. fibulifera	+
	Sida clementii	+
	Solanum horridum	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
	Trianthema triquetra	+
*	*Vachellia farnesiana*	+

Site Number	Site 112	**Date**	29 04 12 & 10 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6545	802551	7557602	
6547	802600	7557531	
6546	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Silty clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
			45
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Flood plain - 3 m wide channel	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	40	>500	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Heavy grazing	>3	Medium
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Corymbia hamersleyana	+
Mid	3.5	Acacia monticola, Acacia tumida, Acacia ancistrocarpa	12
Lower	0.6	*Cenchrus ciliaris, *Cenchrus setiger	40

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	35
	Acacia monticola	10
*	*Cenchrus setiger*	5
	Eremophila longifolia	2
	Abutilon macrum	+
	Acacia ancistrocarpa	+
	Acacia pyrifolia var. morrisonii	+
	Acacia tumida var. pilbarensis	+
	Alysicarpus muelleri	+
	Amaranthus undulatus	+
	Aristida contorta	+
	Cleome viscosa	+
	Corchorus lasiocarpus subsp. lasiocarpus	+
	Corymbia hamersleyana	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Duperreya commixta	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
	Gomphrena cunninghamii	+
	Gossypium australe	+
	Grevillea wickhamii subsp. aprica	+
	Hibiscus sturtii var. platychlamys	+
	Hybanthus aurantiacus	+
	Indigofera monophylla	+
	Jasminum didymum	+
	Paraneurachne muelleri	+
	Phyllanthus maderaspatensis	+
	Portulaca oleracea	+
	Pterocaulon ?sphaeranthoides	+
	Rhynchosia minima	+
	Santalum lanceolatum	+
	Scaevola amblyanthera var. centralis	+
	Senna artemisioides subsp. oligophylla	+
	Senna notabilis	+
	Sida clementii	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+
	Streptoglossa bubakii	+
	Trianthema cussackiana	+
	Trichodesma zeylanicum var. zeylanicum	+
	Triodia epactia	+
	Zaleya galericulata subsp. galericulata	+

Site Number	Site 113	**Date**	29 04 12 & 16 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6548	800780	7557187	
6549	800794	7557245	
6550	800850	7557232	
6551	800839	7557176	
6552	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Loamy clay	light brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	south	0-5
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	tracks	>5	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Eucalyptus xerothermica	2
Mid	1.2	Acacia bivenosa	2
Lower	0.3	Triodia wiseana	15

Floristics

Species	FPC
Triodia wiseana	15
Acacia bivenosa	2
Eucalyptus xerothermica	2
Abutilon cunninghamii	+
Acaccia sibirica	+
Acacia ancistrocarpa	+
Bonamia media var. villosa	+
Carissa lanceolata	+
Cenchrus ciliaris	+
Corchorus parviflorus	+
Cymbopogon ambiguus	+
Eragrostis desertorum	+
Eremophila longifolia	+
Evolvulus alsinoides var. villosicalyx	+
Goodenia microptera	+
Goodenia stobbsiana	+
Indigofera monophylla	+
Jasminum didymum	+
Paraneurachne muelleri	+
Phyllanthus maderaspatensis	+
Polygala isingii	+
Ptilotus clementii	+
Ptilotus exaltatus	+
Scaevola amblyanthera var. centralis	+
Senna artemisioides subsp. oligophylla	+
Senna glutinosa subsp. glutinosa	+
Senna glutinosa subsp. pruinosa	+
Senna glutinosa subsp. x luerssenii	+
Senna symonii	+
Themeda triandra	+
Triodia epactia	+

Site Number	Site 114	**Date**	30 04 12 & 14 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6583	808370	7563545	
6584	808338	7563496	
6585	808288	7563530	
6586	808320	7563579	
6587	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Rolling plain	North	0-5
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	Type	**Time Since Fire**	**Level of Human Impact**
	-	2 or 3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	3	Acacia inaequilatera	1
Mid	1.2	Acacia inaequilatera, Senna glutinosa subsp glutinosa	3
Lower	0.3	Triodia epactia	20

Floristics

	Species	FPC
	Triodia epactia	20
	Acacia inaequilatera	3
	Aristida contorta	+
	Boerhavia ?schomburgkiana	+
	Bonamia media var. villosa	+
	Corchorus parviflorus	+
	Enneapogon caerulescens	+
	Euphorbia australis	+
	Grevillea pyramidalis	+
	Hakea lorea subsp. lorea	+
	Heliotropium heterantha	+
	Indigofera trita	+
	Iseilema dolichotricum	+
*	*Portulaca oleracea*	+
	Ptilotus aervoides	+
	Salsola australis	+
	Senna glutinosa subsp. glutinosa	+
	Sida rohlenae	+
	Sporobolus australasicus	+

Site Number	Site 115	**Date**	30 04 12 & 15 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6598	808719	7564549	
6599	808725	7564557	
6600	808691	7564580	
6601	808685	7564572	
6602	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Silty clay loams	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	-		50
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	8	>500	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Grazing		medium
Vegetation Condition	Poor - good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Corymbia hamersleyana	+
Mid	2.5	Acacia trachycarpa , Acacia pyrifolia	20
Lower	0.6	Cenchrus setiger, Cenchrus ciliaris, Cullen leucanthum	30

Floristics

	Species	FPC
	Acacia trachycarpa	20
*	*Cenchrus ciliaris*	20
*	*Cenchrus setiger*	4
	Cullen leucanthum	2
	Cyperus vaginatus	1
	Acacia coriacea subsp. pendens	+
	Acacia pyrifolia var. morrisonii	+
*	*Aerva javanica*	+
	Alysicarpus muelleri	+
	Boerhavia ?schomburgkiana	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Corymbia hamersleyana	+
	Crotalaria medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Euphorbia schultzii	+
	Gomphrena cunninghamii	+
	Gossypium australe	+
	Grevillea pyramidalis subsp. leucadendron	+
	Hybanthus aurantiacus	+
	Ipomaea muelleri	+
*	*Malvastrum americanum*	+
	Mollugo molluginea	+
	Phyllanthus maderaspatensis	+
	Polycarpaea corymbosa	+
	Ptilotus astrolasius	+
	Rhynchosia minima	+
	Senna artemisioides subsp. oligophylla	+
	Senna glutinosa subsp. glutinosa	+
	Senna notabilis	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+
	Stemodia grossa	+
	Triodia epactia	+

Site Number	Site 116	**Date**	30 04 12 & 15 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6608	807666	7563989	
6609	807639	7563995	
6610	807586	7563889	
6611	807610	7563881	
6612	Ground		
Observations	Mesa top. Flat, slightly domed. Incudes Malvastrum americanum , Sida rohlenae , Eremophila forrestii in rocks of breakaway		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	Moderate	80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge		north
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	-	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Acacia pruinocarpa , Grevillea wickhamii	3
Lower	0.3	Triodia epactia	20

Floristics

	Species	FPC
	Triodia epactia	20
	Acacia pruinocarpa	3
	Bonamia media var. villosa	+
	Capparis spinosa	+
	Cymbopogon ambiguus	+
	Duperreya commixta	+
	Eremophila forrestii subsp. forrestii	+
	Eriachne mucronata	+
	Grevillea wickhamii subsp. aprica	+
*	*Malvastrum americanum*	+
	Ptilotus astrolasius	+
	Ptilotus calostachyus	+
	Senna glutinosa subsp. glutinosa	+
	Tribulus suberosus	+
	Eremophila forrestii subsp. forrestii	+
	Malvastrum americanum	+
	Sida rohlenae subsp. rohlenae	+

Site Number	Site 117	**Date**	30 04 12 & 15 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6644	809464	7567110	
6645	809479	7567097	
6646	809615	7567211	
6647	809595	7567232	
6648	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone - some exposed calcrete	moderate to high	65
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	NW	>15
Weeds:	**% Cover**	**No. Plants**	
	1	50 - 100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	fire	>3	low
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Acacia inaequilatera	+
Mid	2	Acacia inaequilatera, Senna glutinosa subsp glutinosa	2
Lower	0.5	Triodia ?epactia, *Aerva javanica, Cymbopogon ambiguus	35

Floristics

	Species	FPC
	Triodia epactia	30
	Acacia inaequilatera	2
*	*Aerva javanica*	1
	Alysicarpus muelleri	+
	Aristida contorta	+
	Corchorus lasiocarpus subsp. lasiocarpus	+
	Cymbopogon ambiguus	+
	Enneapogon lindleyanus	+
	Enneapogon polyphyllus	+
	Eriachne mucronata	+
	Euphorbia australis	+
	Euphorbia schultzii	+
	Fabaceae sp.	+
	Gomphrena cunninghamii	+
	Gossypium australe	+
	Hibiscus sturtii var. campylochlamys	+
	Malvastrum americanum	+
	Polycarpaea corymbosa	+
	Pterocaulon sphacelatum	+
	Ptilotus astrolasius	+
	Ptilotus calostachyus	+
	Ptilotus exaltatus	+
	Senna symonii	+
	Senna artemisioides subsp. oligophylla	+
	Senna glutinosa subsp. glutinosa	+
	Senna glutinosa subsp. pruinosa	+
	Sida echinocarpa	+
	Solanum horridum	+
	Trichodesma zeylanicum var. zeylanicum	+

Site Number	Site 118	**Date**	30 04 12 & 15 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6649	809661	7567114	
6650	809774	7567159	
6651	809763	7567187	
6652	809651	7567142	
6653	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone - lateritic	moderate	70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	East	0-5
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	fire	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Corymbia hamersleyana	+
Mid	2.5	Grevillea pyramidalis , Acacia pruinocarpa , Acacia inaequilatera	3
Lower	0.5	Triodia epactia, Eriachne lanata	25

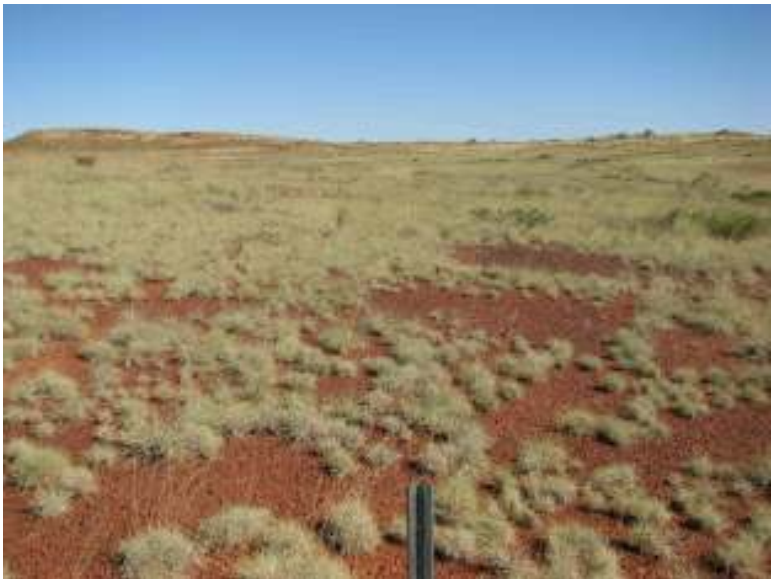
Floristics

Species	FPC
Triodia epactia	20
Eriachne lanata	2
Grevillea pyramidalis subsp. leucadendron	2
Acacia ?sericophylla	+
Acacia inaequilatera	+
Acacia pruinocarpa	+
Amphipogon sericeus	+
Aristida contorta	+
Capparis spinosa	+
Corymbia hamersleyana	+
Cymbopogon ambiguus	+
Dampiera candicans	+
Eriachne mucronata	+
Grevillea wickhamii subsp. aprica	+
Ptilotus calostachyus	+
Ptilotus incanus	+
Senna glutinosa subsp. glutinosa	+
Senna glutinosa subsp. pruinosa	+
Solanum horridum	+
Trichodesma zeylanicum var. zeylanicum	+

Site Number	H3a	**Date**	01/05/12 & 19/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6663	792808	7553137	
6664	792836	7553138	
6665	792843	7553019	
6668	792821	7553026	
6669	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams	orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	Ironstone	few	80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	north	0-5
Weeds:	**% Cover**	**No. Plants**	
	-	-	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
		>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Eucalyptus leucophloia subsp. leucophloia	+
Lower	0.3	Triodia epactia , Goodenia stobbsiana	20

Floristics

Species	FPC
Triodia epactia	15
Goodenia stobbsiana	2
Acacia ancistrocarpa	+
Acacia bivenosa	+
Amphipogon sericeus	+
Bonamia media var. villosa	+
Dampiera candicans	+
Eragrostis setifolia	+
Eriachne lanata	+
Eucalyptus leucophloia subsp. leucophloia	+
Ptilotus calostachyus	+
Senna symonii	+
Triodia wiseana	+
Pluchea ferdinand muelleri	+



Site Number	H3e	**Date**	01/05/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6675	791719	7552943	
6676	791666	7552913	
6677	791695	7552862	
6678	791748	7552889	
6679	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams	red brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	NW	0-5
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Fire	2	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	2	*Eucalyptus leucophloia subsp. leucophloia*	+
Mid	0.9	*Acacia bivenosa , Acacia synchronicia*	+
Lower	0.2	*Triodia brizoides , Triodia longiceps*	20

Floristics

Species	FPC
Triodia brizoides	10
Triodia longiceps	10
Acacia bivenosa	+
Acacia synchronicia	+
Aristida contorta	+
Brachyachne prostrata	+
Carissa lanceolata	+
Corchorus lasiocarpus subsp. lasiocarpus	+
Enchylaena tomentosa	+
Eriachne pulchella subsp. pulchella	+
Eucalyptus leucophloia subsp. leucophloia	+
Goodenia cusackiana	+
Goodenia stobbsiana	+
Hakea lorea subsp. lorea	+
Hibiscus sturtii var. campylochlamys	+
Indigofera monophylla	+
Polycarpaea holtzei	+
Ptilotus calostachyus	+
Ptilotus clementii	+
Ptilotus exaltatus	+
Scaevola amblyanthera var. centralis	+
Sclerolaena densiflora	+
Senna glutinosa subsp. glutinosa	+
Senna glutinosa subsp. pruinosa	+
Senna notabilis	+
Senna sericeous	+
Senna symonii	+
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	+
Solanum horridum	+
Solanum sturtianum	+
Sporobolus australasicus	+
Streptoglossa bubakii	+
Trianthema triquetra	+
Tribulus platypterus	+
Triodia epactia	+

Site Number	Site 23	**Date**	1/05/12 & 14/09/12
	DM KR	SC FO	
Datum	GDA 94	**Zone**	51
Photo No.	**Easting**	**Northing**	
9846	190981	7566559	
9847	190980	7566610	
9848	191030	7566611	
9849	191031	7566563	
9850	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Lower slope	N	0-5
Weeds:	**% Cover**	**No. Plants**	
	0	0	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	*Acacia inaequilatera, Greviillea pyrimidalis, Hakea lorea*	+
Lower	0.3	*Triodia epactia*	30

Floristics

Species	FPC
Triodia epactia	30
Acacia inaequilatera	+
Bonamia media var. villosa	+
Corchorus parviflorus	+
Corymbia hamersleyana	+
Euphorbia schultzii	+
Grevillea pyramidalis subsp. leucadendron	+
Hakea lorea subsp. lorea	+
Hibiscus sturtii var. campylochlamys	+
Ptilotus calostachyus	+
Rhynchosia minima	+
Senna glutinosa subsp. glutinosa	+
Sida echinocarpa	+
Triodia wiseana	+

Site Number	H9b	**Date**	01/05/12 & 19/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6658	793091	7553208	
6659	793085	7553248	
6660	793174	7553261	
6661	793179	7553222	
	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	loams	light brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	-		75
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	South	5-15
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	drilling	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Corymbia hamersleyana, Eucalyptus leucophloia subsp. leucophloia	+
Mid	1.7	Melaleuca eleuterostachya , Acacia hilliana , Acacia bivenosa	3
Lower	0.5	Triodia wiseana	30

Floristics

Species	FPC
Triodia wiseana	*30*
Acacia hilliana	*3*
Acacia ancistrocarpa	*+*
Acacia bivenosa	*+*
Cassytha capillaris	*+*
Corchorus lasiocarpus subsp. lasiocarpus	*+*
Corymbia hamersleyana	*+*
Cucumis maderaspatanus	*+*
Cymbopogon ambiguus	*+*
Enneapogon caerulescens	*+*
Eremophila longifolia	*+*
Eucalyptus leucophloia subsp. leucophloia	*+*
Evolvulus alsinoides var. villosicalyx	*+*
Hibiscus sturtii	*+*
Hybanthus aurantiacus	*+*
Melaleuca eleuterostachya	*+*
Phyllanthus maderaspatensis	*+*
Polygala isingii	*+*
Ptilotus clementii	*+*
Scaevola amblyanthera var. centralis	*+*
Senna artemisioides subsp oligophylla	*+*
Senna glutinosa subsp glutinosa	*+*
Senna symonii	*+*
Senna symonii	*+*
Sida rohlenae subsp. rohlenae	*+*
Stackhousia muricata	*+*

Site Number	H10a	**Date**	29 04 12 & 18 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6513	802620	7558340	
6514	802638	7558395	
6516	802583	7558416	
6517			
6518	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	orange brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		70
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	NE	5/15/10
Weeds:	**% Cover**	**No. Plants**	
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid			
Lower	0.5	Triodia epactia, Triodia brizoides	25

Floristics

	Species	FPC
	Triodia epactia	15
	Triodia brizoides	8
	Abutilon dioicum	+
	Alysicarpus muelleri	+
	Alysicarpus muelleri	+
	Aristida contorta	+
	Aristida latifolia	+
	Bulbostylis barbata	+
	Chloris pumilio	+
	Cleome viscosa	+
	Corchorus lasiocarpus subsp. lasiocarpus	+
	Crotalaria medicaginea var. neglecta	+
	Cymbopogon ambiguus	+
	Dactyloctenium radulans	+
	Dichanthium sericeum subsp. humilius	+
	Eneapogon caerulescens	+
	Enneapogon polyphyllus	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
*	*Flaveria trinervia*	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Grevillea pyramidalis subsp. leucadendron	+
	Hakea lorea subsp. lorea	+
	Hibiscus sturtii var. platychlamys	+
	Indigofera linifolia	+
	Indigofera trita	+
	Iseilema dolichotricum	+
	Iseilema vaginiflorum	+
	Polycarpaea corymbosa	+
	Polygala isingii	+
*	*Portulaca oleracea*	+
	Ptilotus aervoides	+
	Ptilotus exaltatus	+
	Rhynchosia minima	+
	Salsola australis	+
	Sclerolaena eriacantha	+
	Senna artemisioides subsp. oligophylla	+
	Senna glutinosa subsp. glutinosa	+
	Sida echinocarpa	+
	Solanum horridum	+
	Sporobolus australasicus	+
	Swainsona decurrens	+
	Tephrosia clementii	+
	Trianthema triquetra	+
	Trichodesma zeylanicum var. zeylanicum	+

Site Number	D6a	**Date**	1/05/2012 + 14/09/12
Recorders	DM KR	SC FO	
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
9841	810531	7566536	
9842	810524	7566540	
9843	810560	7566613	
9844	810553	7566619	
9845	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Sand	Brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	None		85
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
Weeds:	**% Cover**	**No. Plants**	
	1	~100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds	>5	Low
Vegetation Condition	Good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	10	Eucalyptus victrix	5
Mid	1.3	Acacia trachycarpa	+
Lower	1	Cyperus vaginata, *Cenchrus ciliaris, *Cenchrus setiger	15

Floristics

	Species	FPC
	Eucalyptus victrix	5
	Acacia coriacea subsp. pendens	+
	Acacia pyrifolia var. morrisonii	+
	Acacia trachycarpa	+
*	*Aerva javanica*	+
	Alysicarpus muelleri	+
	Amaranthus undulatus	+
	Atalaya hemiglauca	+
	Capparis spinosa	+
*	*Cenchrus ciliaris*	+
*	*Cenchrus setiger*	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Crotularia medicaginea var. neglecta	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Cyperus vaginatus	+
	Enneapogon lindleyanus	+
	Eriachne benthamii	+
	Euphorbia australis	+
	Euphorbia schultzii	+
	Flueggea virosa subsp. melanthesioides	+
	Gomphrena cunninghamii	+
	Gossypium australe	+
	Grevillea wickhamii subsp. aprica	+
	Hybanthus aurantiacus	+
	Indigofera monophylla	+
	Indigofera trita	+
	Ipomaea muelleri	+
*	*Malvastrum americanum*	+
	Melaleuca linophylla	+
	Olearia stuartii	+
	Phyllanthus maderaspatensis	+
	Pluchea rubelliflora	+
	Ptilotus auriculifolius	+
	Rhynchosia minima	+
	Senna notabilis	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Triodia epactia	+

Site Number	D8b	**Date**	01/05/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6670	793671	7553301	
6671	793696	7553269	
6672	793768	7553325	
6673	793743	7553356	
6674	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		50
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Rolling plain	NE	0-5
Weeds:	**% Cover**	**No. Plants**	
	+	30	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Some grazing and track	>3	low
Vegetation Condition	VG		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Corymbia hamersleyana	+
Mid	2.5	Acacia bivenosa , Acacia ?synchronicia	1
Lower	0.6	Triodia ?angusta	40

Floristics

	Species	FPC
	Triodia longiceps	40
	Acacia ?synchronicia	+
	Acacia bivenosa	+
	Acacia inaequilatera	+
*	*Aerva javanica*	+
	Aristida contorta	+
	Aristida latifolia	+
*	*Cenchrus ciliaris*	+
	Corchorus lasiocarpus subsp. parvus	+
	Corymbia hamersleyana	+
	Cucumis maderaspatanus	+
	Cymbopogon ambiguus	+
	Dysphania sphaerosperma	+
	Enneapogon caerulescens	+
	Enneapogon polyphyllus	+
	Eriachne pulchella subsp. pulchella	+
	Euphorbia alsiniflora	+
	Euphorbia australis	+
	Heliotropium chrysocarpum	+
	Hibiscus sturtii	+
	Indigofera monophylla	+
	Iseilema dolichotricum	+
	Lepidium pholidogynum	+
	Paspalidium clementii	+
	Polygala isingii	+
	Pterocaulon ?sphaeranthoides	+
	Ptilotus calostachyus	+
	Ptilotus exaltatus	+
	Rhynchosia minima	+
	Salsola australis	+
	Salsola australis	+
	Scaevola amblyanthera var. centralis	+
	Sclerolaena costata	+
	Senna artemisioides subsp oligophylla	+
	Senna glutinosa subsp. x luerssenii	+
	Senna symonii	+
	Solanum horridum	+
	Solanum phlomoides	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
	Trachymene oleracea	+
	Triodia epactia	+
	Triodia wiseana	+

Site Number	Pc1	**Date**	01/05/12 & 20/09/12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6653	792970	7553727	
6654	792988	7553671	
6655	7923045	7553690	
6656	793025	7553746	
6657	Ground		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
	none		40
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	broad plain	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	3	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	drilling , grazing	>3	medium
Vegetation Condition	Poor		

	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.8	*Vachellia farnesiana , Senna artemisioides subsp oligophylla , Acacia bivenosa , Acacia synchronicia	3
Lower	0.6	Triodia epactia , Triodia longiceps, Aristida latifolia	40

Floristics

	Species	FPC
	Triodia longiceps	15
	Triodia epactia	10
*	*Vachellia farnesiana*	2
	Acacia bivenosa	+
	Acacia synchronicia	+
	Aristida contorta	+
	Aristida latifolia	+
	Asteraceae sp.	+
	Cenchrus ciliaris	+
	Chloris pumilio	+
	Cleome viscosa	+
*	*Corchorus tridens*	+
	Crotalaria dissitiflora subsp. benthamiana	+
	Cucumis maderaspatanus	+
	Cullen graveolens	+
	Cymbopogon ambiguus	+
	Dactyloctenium radulans	+
	Dichanthium sericeum subsp. humilius	+
	Enneapogon caerulescens	+
	Enneapogon polyphyllus	+
	Eragrostis setifolia	+
	Eragrostis tenellula	+
	Eremophila longifolia	+
	Eriachne flaccida	+
	Eriachne pulchella subsp. pulchella	+
	Euphorbia alsiniflora	+
	Euphorbia australis	+
	Evolvulus alsinoides var. villosicalyx	+
	Fimbrystylis dichotoma	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Haloragis maierae	+
	Heliotropium heteranthum	+
	Hibiscus sturtii var. platychlamys	+
	Iseilema dolichotricum	+
	Iseilema dolichotricum	+
*	*Malvastrum americanum*	+
	Marsilea ?hirsuta	+
	Neptunia dimorphantha	+
	Oldenlandia crouchiana	+
	Panicum laevinode	+
	Phyllanthus maderaspatensis	+
	Polycarpaea holtzei	+
	Polygala isingii	+
*	*Portulaca oleracea*	+
	Pterocaulon ?sphaeranthoides	+
	Pterocaulon sphaeranthoides	+
	Ptilotus aervoides	+
	Ptilotus calostachyus	+

Ptilotus exaltatus	+
Ptilotus gomphrenoides	+
Sclerolaena cornishiana	+
Sclerolaena costata	+
Senna artemisioides subsp. oligophylla	+
Senna artemisioides subsp. sturtii x ?	+
Senna glutinosa subsp. x luerssenii	+
Senna notabilis	+
Senna symonii	+
Sida aff. fibulifera	+
Sida rohlenae subsp. rohlenae	+
Solanum horridum	+
Solanum phlomoides	+
Sporobolus australasicus	+
Streptoglossa bubakii	+
Trianthema triquetra	+
Triodia wiseana	+
Vigna sp. Hamersley clay (A.A. Mitchell PRP 113)	+

Site Number	Site 46	**Date**	1/05/12 & 14/09/12
Recorders	DM	SC FO	
Datum	GDA 94	**Zone**	51
Photo No.	**Easting**	**Northing**	
6924	192864	7566527	
6925	192856	7566530	
6926	192832	7566447	
6927	192841	7566445	
6928	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	silty clay	Brown	
Outcrop	**Type**	**Amount**	
	Ironstone and granite	Numerous	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	20	>1000	40
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Grazing	>5	medium
Vegetation Condition	Very good		

Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	10	*Eucalyptus camaldulensis*	1
Mid	2.5	*Melaleuca glomerata , Atalaya hemiglauca*	1
Lower	0.3	*Cenchrus ciliaris, Cynodon dactylon , Cypress vaginata*	40

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	25
*	*Cynodon dactylon*	10
	Eucalyptus camaldulensis	5
	Melaleuca glomerata	3
	Cyperus vaginatus	2
	Acacia coriacea subsp pendens	1
	Acacia trachycarpa	+
	Atalaya hemiglauca	+
	Centipeda minima subsp. minima	+
	Cullen leucanthum	+
	Desmodium campylocaulon	+
	Euphorbia drummondii subsp. drummondii	+
	Helichrysum luteoalbum	+
	Melaleuca linophylla	+
	Operculina aequisepala	+
	Pluchea rubelliflora	+
	Schoenoplectus subulatus	+
	Sesbania cannabina	+
	Sida rohlenae	+
	Triodia longiceps	+

Site Number	Site 47	**Date**	1/05/12 & 14/09/12
Recorders	DM	SC FO	
Datum	GDA 94	**Zone**	51
Photo No.	**Easting**	**Northing**	
6931	192340	7566924	
6932	192340	7566934	
6933	192260	7566909	
6934	192261	7566899	
6935	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loam	Brown	
Outcrop	**Type**	**Amount**	
		None	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	30	>1000	70
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	None	>5	Low
Vegetation Condition	Good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	12	*Eucalyptus camaldulensis, Atalaya hemiglauca, Acacia coriacea subsp pendans*	5
Mid	3	*Melaleuca linophylla, Melaleuca glomerata*	10
Lower	0.3	*Cenchrus ciliaris, Cyperus vaginatus*	15

Floristics

	Species	FPC
*	*Cenchrus ciliaris*	10
	Melaleuca linophylla	8
	Cyperus vaginatus	5
	Eucalyptus camaldulensis	5
	Acacia coriacea subsp pendens	1
	Acacia trachycarpa	1
	Acacia ampliceps	+
	Acacia pyrifolia	+
	Alternanthera nodiflora	+
	Ammannia multiflora	+
	Argemone ochroleuca	+
	Atalaya hemiglauca	+
	Basilicum polystachyon	+
	Centipeda minima subsp. minima	+
	Cullen leucanthum	+
	Cymbopogon ambigua	+
*	*Cynodon dactylon*	+
	Euphorbia drummondii subsp. drummondii	+
	Gossypium australe	+
	Helichrysum luteoalbum	+
*	*Malvastrum americanum*	+
	Marsilea ?hirsuta	+
	Melaleuca glomerata	+
	Operculina aequisepala	+
	Paraneurachne muelleri	+
	Pluchea rubelliflora	+
	Sesbania cannabina	+
	Stemodia grossa	+
	Triodia epactia	+
*	*Vachellia farnesiana*	+

Site Number	Site 48	**Date**	30 04 12 & 15/09/12
Recorders	SC FO	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6945	808601	7564093	
6946	808638	7564047	
6947	808595	7564012	
6948	808554	7564056	
6949	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	orange brown	
Outcrop	**Type**	**Amount**	
		none	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge , upper slope	north	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	-		
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	-	2 or 3	low
Vegetation Condition	Very Good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1	Acacia inaequilatera	+
Lower	0.2	Triodia epactia	30

Floristics

Species	FPC
Triodia epactia	30
Acacia inaequilatera	+
Bonamia media	+
Corchorus parviflorus	+
Euphorbia schultzii	+
Senna artemisioides subsp helmsii	+
Tephrosia supina	+
Tribulus suberosa	+

Site Number	Site 49	Date	30 04 12 & 15/09/12
Recorders	SC FO	SC FO	
Datum	GDA94	Zone	50
Photo No.	Easting	Northing	
6952	808897	7565880	
6953	808870	7565869	
6954	808824	7565980	
6955	808853	7565991	
6956	Ground		
Observations	Many additional species on drilling track and is not typical.		
Environment			
Soils:	Soil texture	Soil Colour	Soil Comments
	Clay loams	red brown	
Outcrop	Type	Amount	
	Ironstone	Moderate	
Geomorphology:	Topography	Aspect	Slope (o)
	Ridge	none	0-5
Weeds:	% Cover	No. Plants	Bare Ground (%)
	-		75
Disturbance:	Type	Time Since Fire	Level of Human Impact
	tracks - drilling. Old.	>3	low
Vegetation Condition	Very Good		

Vegetation Structure			
Strata	Canopy Height (m)	Dominant Species	% Cover
Upper	5	Corymbia opaca	+
Mid	2.5	Acacia pruinocarpa , Grevillea wickhamii , Acacia inaequilatera	2
Lower	0.5	Triodia epactia , Goodenia cusackiana , Eriachne lanata	25

Floristics

Species	FPC
Triodia epactia	30
Acacia inaequilatera	+
Bonamia media	+
Capparis spinosa	+
Corymbia hamersleyana	+
Cymbopogon ambiguus	+
Eriachne lanata	+
Eriachne mucronata	+
Goodenia cusackiana	+
Grevillea pyramidalis	+
Grevillea wickhamii	+
Hakea lorea	+
Ptilotus astrolasius	+
Ptilotus clementii	+
Senna glutinosa subsp glutinosa	+
Senna glutinosa subsp pruinosa	+
Senna symonii	+
Tribulus suberosa	+
Triodia wiseana	+
Pentalepis trichodesmoides	Opp

Site Number	Site 50	**Date**	28 04 12
Recorder/s	SC FO		16 09 12
	SC AW DM		13 04 13
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6959	801361	7559293	
6960	801312	7559329	
6961	801277	7559280	
6962	801325	7559244	
6963	**Ground**		
Observations	459 Vigna sp. Hamersley Clay		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
		none	80
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	low plateau	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	3	200	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	>3	low
Vegetation Condition	poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	*Vachellia farnesiana*	3
Lower	0.3	*Heliotropium crispatum, Ptilotus gomphrenoides, Panicum laevinode*	10

Floristics

	Species	FPC
	Ptilotus gomphrenoides	5
*	*Vachellia farnesiana*	2
	Panicum laevinode	1
	Amaranthus undulatus	+
	Argemone ochroleuca	+
	Boerhavia paludosa	+
*	*Cenchrus ciliaris*	+
	Cleome viscosa	+
	Cucumis maderaspatensis	+
	Desmodium campylocaulon	+
*	*Flaveria trinervia*	+
	Goodenia prostrata	+
	Gossypium australe	+
	Heliotropium crispatum	+
	Hibiscus brachysiphonius	+
	Malvastrum americanum	+
	Oldenlandia crouchiana	+
	Operculina aequisepala	+
	Peripleura arida	+
	Phyllanthus maderaspatensis	+
	Salsola australis	+
	Senna notabilis	+
	Sesbania cannibina	+
	Sida echinocarpa	+
	Sida fibulifera	+
	Sida rohlenae subsp. rohlenae	+
	Sida spinosa	+
	Solanum horridum	+
	Solanum lasiophyllum	+
	Trianthema triquetra	+
	Vigna sp. Hamersley clay (A.A. Mitchell PRP 113)	+

Site Number	Site 51	**Date**	17 09 12
Recorder/s	SC FO		12 04 13
	SC AW DM		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6970	800691	7559626	
6971	800746	7559604	
6972	800733	7559545	
6973	800679	7559567	
6974	**Ground**		
Observations	38 Vigna sp Hamersley Clay within quadrat		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	crabhole clay - dolerite rocks
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
		none	90
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	low plateau	-	0-5
Weeds:	**% Cover**	**No. Plants**	
	2	>100	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	2-3	low
Vegetation Condition	good		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	-		
Mid	2	*Vachellia farnesiana*	2
Lower	0.3	*Ptilotus gomphrenoides, Panicum, laevinode, Aristida latifolia*	20

Floristics

	Species	FPC
	Ptilotus gomphrenoides	12
	Aristida latifolia	2
	Panicum laevinode	2
*	*Vachellia farnesiana*	2
	Acacia ancistrocarpa	+
	Aerva javanica	+
	Alysicarpus muelleri	+
	Boerhavia burbidgeana	+
	Boerhavia paludosa	+
	Brachyachne convergens	+
	Cenchrus ciliaris	+
*	*Cenchrus setiger*	+
*	*Citrullus colocynthis*	+
	Cleome viscosa	+
	Corchorus parviflorus	+
	Cymbopogon ambiguus	+
	Dichanthium sericeum subsp. humilius	+
	Enneapogon caerulescens	+
	Eriachne mucronata	+
	Euphorbia australis	+
	Heliotropium ?tanythrix	+
	Hibiscus brachysiphonius	+
	Indigofera linifolia	+
	Indigofera trita	+
	Malvaceae sp.	+
	Malvastrum americanum	+
	Minura integerrima	+
	Oldenlandia crouchiana	+
	Operculina aequisepala	+
	Phyllanthus maderaspatensis	+
	Pluchea ferdinand-muelleri	+
	Pluchea tetrantha	+
*	*Portulaca oleracea*	+
	Pterocaulon spahulatum	+
	Salsola australis	+
	Senna notabilis	+
	Sida fibulifera	+
	Sida rohlenae subsp. rohlenae	+
	Solanum horridum	+
	Solanum lasiophyllum	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
	Tephrosia sp. Clay soils (S.V. Leeuwen et al. PBS 0273	+
	Trianthema triquetra	+
	Triodia epactia	+
	Vigna sp. Hamersley Clay (A.A. Mitchell PRP113)	+

Site Number	Site 52	**Date**	28 04 12
Recorder/s	SC FO		18 09 12
	SC AW DM		15 04 13
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
7374	801896	7559032	
7375	801836	7559038	
7376	801844	7559098	
7377	801842	7559098	
7378	**Ground**		
Observations	657 Vigna sp. Hamersley Clay		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay	brown	crabhole clay
Outcrop:	**Type**	**Amount**	**Bare Ground (%)**
			95
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Low plateau	n/a	0-5
Weeds:	**% Cover**	**No. Plants**	
	3	40	
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Heavy grazing	>3	med - high
Vegetation Condition	Poor		
	Vegetation Structure		
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	*Vachellia farnesiana*	2
Lower	0.5	*Cenchrus ciliaris, Cenchrus setiger, Ptilotus gomphrenoides*	4

Floristics

	Species	FPC
*	*Cenchrus setiger*	10
*	*Cenchrus ciliaris*	5
	Ptilotus gomphrenoides	4
*	*Vachellia farnesiana*	2
	Panicum laevinode	1
	Senna notabilis	1
*	*Aerva javanica*	+
	Alternanthera nana	+
	Alysicarpus muelleri	+
	Amaranthus undulatus	+
	Boerhavia paludosa	+
	Calocephalus knappii	+
	Chloris pumilio	+
*	*Citrullus colocynthis*	+
	Cleome viscosa	+
	Desmoodium campylocaulon	+
	Dysphania rhadinostachya	+
	Euphorbia alsiniflora	+
	Evolvulus alsinoides var. villosicalyx	+
*	*Flaveria trinervia*	+
	Heliotropium crispatum	+
	Hibiscus brachysiphonius	+
	Indigofera trita	+
	Malvastrum americanum	+
	Neptunia dimorphantha	+
	Oldenlandia crouchiana	+
	Operculina aequisepala	+
	Phyllanthus maderaspatensis	+
*	*Portulaca oleracea*	+
	Rhynchosia minima	+
	Sida fibulifera	+
	Sida rohlenae	+
	Solanum horridum	+
	Solanum lasiophyllum	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
	Trianthema triquetra	+

Site Number	Site 53	**Date**	29 04 12 & 19/09/12
Recorder/s	SC FO	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6993	802383	7557389	
6994	802341	7557347	
6995	802383	7557306	
6996	802426	7557348	
6997	**Ground**		
Observations	Moved site away from cracking clay intrusion		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay loams		Large surface rocks of dolerite
Outcrop	**Type**	**Amount**	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	NW	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	-		60
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
		>3	low
Vegetation Condition	Very good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.5	*Acacia inaequilatera*	+
Lower	0.4	*Triodia epactia*	20

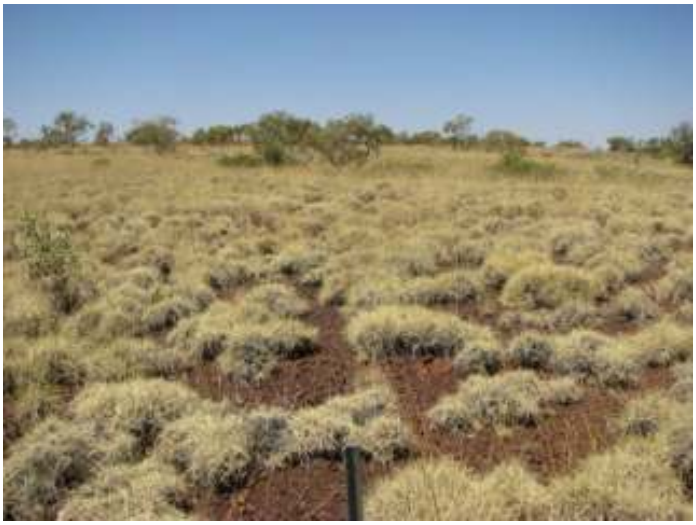
Floristics

Species	FPC
Triodia epactia	20
Abutilon otocarpum	+
Acacia inaequilatera	+
Aristida contorta	+
Boerhavia paludosa	+
Bonamia media	+
Cleome viscosa	+
Corchorus parviflorus	+
Dichanthium sericeum	+
Enneapogon caerulescens	+
Enneapogon polyphyllus	+
Evolvulus alsinoides var. villosicalyx	+
Gompholobium cunninghamii	+
Hakea lorea	+
Pluchea dentex	+
Rhynchosia minima	+
Salsola australis	+
Sclerolaena costata	+
Senna glutinosa subsp glutinosa	+
Sida echinocarpa	+
Sporobolus australasicus	+

Site Number	Site 54	**Date**	19 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
6999	801219	7557602	
7000	801242	7557379	
7001	801188	7557406	
7002	801163	7557351	
7003	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	red brown	surface gravel of quartz and ironstone
Outcrop	**Type**	**Amount**	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	NE	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	0	0	60
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	>3	low
Vegetation Condition	excellent		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	*Eucalyptus leucophloia*	+
Mid	2	*Acacia bivenosa* , *Acacia ancistrocarpa*	2
Lower	0.5	*Triodia brizoides* , *Triodia longiceps*	40

Floristics

Species	FPC
Triodia longiceps	25
Triodia brizoides	15
Acacia ancistrocarpa	+
Acacia bivenosa	+
Acacia synchronicia	+
Corchorus parviflorus	+
Eriachne pulchella subsp dominii	+
Eucalyptus leucophloia	+
Indigofera monophylla	+
Iseilema dolichotricum	+
Pterocaulon sphaeranthoides	+
Sclerolaena eriacantha	+
Sclerolaena lanicuspis	+
Senna artemisioides subsp helmsii	+
Senna glutinosa subsp pruinosa	+
Senna symonii	+
Sida echinocarpa	+
Sida rohlenae	+
Solanum horridum	+
Sporobolus australasicus	+
Triodia epactia	+



Site Number	Site 55	**Date**	19 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
7004	800797	7557654	
7005	800796	7557594	
7006	800736	7557594	
7007	800735	7557655	
7008	**Ground**		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	light brown	small compacted ironstone gravel with some calcrete nodules
Outcrop	**Type**	**Amount**	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS - LS	E	5-15
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	0	0	65
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing	>3	low
Vegetation Condition	Very Good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	*Corymbia hamersleyana*	+
Mid	2	*Acacia bivenosa* , *Grevillea wickhamii* , *Acacia ancistrocarpa*	4
Lower	0.5	*Triodia wiseana* , *Triodia epactia*	30

Floristics

Species	FPC
Triodia wiseana	25
Triodia epactia	2
Acacia bivenosa	1
Acacia ancistrocarpa	+
Corymbia hamersleyana	+
Eremophila longifolia	+
Eriachne mucronata	+
Goodenia cusackiana	+
Goodenia stobbsiana	+
Grevillea pyramidalis	+
Grevillea wickhamii	+
Hakea lorea	+
Indigofera monophylla	+
Isotropis atropurpurea	+
Pluchea tetranthera	+
Ptilotus astrolasius	+
Ptilotus calostachyus	+
Scaevola amblyanthera	+
Senna glutinosa subsp glutinosa	+
Senna glutinosa subsp x luersenii	+
Senna symonii	+
Stackhousia muricata	+

Site Number	Site 56	**Date**	19 09 12
Recorder/s	SC FO		
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
7009	801162	7556790	
7010	801044	7556813	
7011	801049	7556841	
7012	801167	7556820	
7013	**Ground**		
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	clay loams	light brown	small compacted ironstone gravel with some calcrete nodules
Outcrop	**Type**	**Amount**	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	n/a	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	0	0	85
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	grazing, fire	3-5	low
Vegetation Condition	Very Good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	*Corymbia hamersleyana*	+
Mid	2	*Grevillea wickhamii* , *Acacia synchronicia*	+
Lower	0.5	*Triodia epactia* , *Eriachne lanata*	15

Floristics

Species	FPC
Triodia epactia	15
Eriachne lanata	+
Acacia synchronicia	+
Grevillea wickhamii	+
Goodenia stobbsiana	+
Enchylaena tom	+
Amphipogon sericeum	+
Ptilotus calostachyus	+
Bonamia media	+
Senna glutinosa subsp x luersenii	+
Senna glutinosa subsp glutinosa	+
Acacia bivenosa	+

Site Number	Site 57	**Date**	27/04/12 & 20/09/12
Recorder/s	DM	SC FO	
Datum	GDA94	**Zone**	50
Photo No.	**Easting**	**Northing**	
7022	792100	7552474	
7023	792113	7552418	
7024	792173	7552419	
7025	792167	7552477	
7026	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Orange brown	Loose gravel ironstone and quartz
Outcrop	**Type**	**Amount**	
		None	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Adjacent to Minor drainage line	N	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	+	20	70
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Weeds, grazing	>5	med
Vegetation Condition	Very good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.8	*Acacia synchronicia*	1
Lower	0.7	*Triodia longiceps* , *Triodia epactia*, *Aristida contorta*	20

Floristics

	Species	FPC
	Triodia epactia	15
	Triodia longiceps	5
	Acacia synchronicia	2
	Aristida contorta	2
	Acacia inaequilatera	+
*	*Aerva javanica*	+
	Aristida latifolia	+
	Atalaya hemiglauca	+
	Boerhavia paludosa	+
*	*Cenchrus ciliaris*	+
	Corchorus parviflorus	+
	Cucumis maderaspatensis	+
	Cymbopogon ambiguus	+
	Dichanthium sericeum	+
	Enneapogon caerulescens	+
	Eriachne pulchella subsp pulchella	+
	Euphorbia australis	+
	Gomphrena cunninghamii	+
	Goodenia muelleriana	+
	Gossypium australe	+
	Hakea lorea	+
	Hibiscus sturtii var platychlamys	+
	Indigofera trita	+
	Iseilema dolichotricum	+
	Mollugo molluginea	+
	Polygala isingii	+
	Pterocaulon sphaeranthoides	+
	Ptilotus aervoides	+
	Ptilotus calostachyus	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Salsola australis	+
	Sclerolaena costata	+
	Senna notabilis	+
	Solanum horridum	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+

Site Number	58	**Date**	20 09 12
Recorder/s	SC FO		
Datum	GDA 94	**Zone**	50
Photo No.	**Easting**	**Northing**	
7028	792696	7552688	
7029	792641	7552663	
7030	792667	7552610	
7031	792722	7552635	
7032	**Ground**		
Observations			
Environment			
Soils:	**Soil texture**	**Soil Colour**	**Soil Comments**
	Clay	Brown	Surface gravel, ironstone and dolerite
Outcrop	**Type**	**Amount**	
		None	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	NE	0-5
Weeds:	**% Cover**	**No. Plants**	**Bare Ground (%)**
	3	250	70
Disturbance:	**Type**	**Time Since Fire**	**Level of Human Impact**
	Cattle	>5	Medium
Vegetation Condition	Very good		
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.5	*Vachellia farnesiaana , Acacia inaequilatera , Acacia synchronicia*	1
Lower	0.5	*Triodia brizoides , Triodia epactia, Aristida latifolia*	30

Floristics

	Species	FPC
	Triodia brizoides	10
	Triodia epactia	5
	Triodia longiceps	1
	Acacia ancistrocarpa	+
	Acacia inaequilatera	+
	Acacia pyrifolia	+
	Acacia synchronicia	+
	Alysicarpus muelleri	+
	Aristida contorta	+
	Aristida latifolia	+
	Boerhavia paludosa	+
	Bulbostylis barbata	+
*	*Cenchrus ciliaris*	+
*	*Cenchrus setiger*	+
	Chloris pumilio	+
	Cymbopogon ambiguus	+
	Dichanthium sericeus	+
	Enneapogon polyphyllus	+
	Eragrostis tenellula	+
	Eremophila longifolia	+
	Euphorbia australis	+
	Goodenia muelleriana	+
	Heliotropium diversifolium	+
	Hibiscus sturtii var. platychlamys	+
	Iseilema dolichotricum	+
	Minuria integerrima	+
	Mollugo molluginea	+
	Oldenlandia crouchiana	+
	Panicum laevinode	+
	Phyllanthus maderaspatensis	+
	Pluchea tetranthera	+
	Polycarpaea holtzei	+
	Pterocaulon sphaeranthoides	+
	Ptilotus aervoides	+
	Ptilotus astrolasius	+
	Ptilotus gomphrenoides	+
	Rhynchosia minima	+
	Senna glutinosa subsp glutinosa	+
	Senna notabilis	+
	Senna symonii	+
	Sida fibulifera	+
	Sida rohlenae	+
	Solanum horridum	+
	Solanum phlomoides	+
	Sporobolus australasicus	+
	Streptoglossa bubakii	+
*	*Vachellia farnesiana*	+

Appendix D

Mapping Point Raw Data

Site Number	MP01	**Date**	27/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	791771	7552619
Photo No.	9558 - 9562		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Orange brown	Loose gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	N	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.8	Acacia pruinocarpa	+
Lower	0.7	Triodia wiseana, Triodia longiceps	30

Site Number	MP03	**Date**	27/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	792071	7552815
Photo No.	9581 - 9585		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay sand	Brown	Large cracks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	Flat	0
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	20	**Type**	Cattle, weeds
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	80	**Level of Human Impact**	High
		Vegetation Condition	Poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Vachellia farnesiana	7
Lower	0.3	Cenchrus ciliaris, Chloris pumilio, Cenchrus setiger	13

Site Number	MP04	**Date**	27/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	792682	7552852
Photo No.	9586 - 9590		
Observations	Not including creek bed		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Ironstone and quartz gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Creek	None	0
	Outcrop		
	Type	**Amount**	
	Ironstone	Low	
Weeds:		**Disturbance:**	
% Cover	80	**Type**	Cattle and weeds
No. Plants	>1000	**Time Since Fire**	>5
Bare Ground (%)	20	**Level of Human Impact**	High
		Vegetation Condition	Poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Acacia coriacea subsp pendens	1
Mid	2.5	Vachellia farnesiana, Acacia pyrifolia	4
Lower	0.3	Cenchrus ciliaris	75

Site Number	MP05	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799665	7559373
Photo No.	9614 - 9618		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Orange brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mid slope	NW	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	75	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Acacia inaequilatera, Acacia synchronicia	+
Lower	0.6	Triodia epactia	25

Site Number	MP06	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799712	7559049
Photo No.	9624 - 9628		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Orange brown	Gravel ironstone and quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	5	**Type**	Cattle and weeds
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	90	**Level of Human Impact**	High
		Vegetation Condition	Poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Hakea lorea, Acacia coriacea subsp pendens	+
Mid	2	Vachellia farnesiana	1
Lower	0.3	Cenchrus ciliaris, Cenchrus setiger	5

Site Number	MP07	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799666	7558721
Photo No.	9629 - 9633		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Brown	Loose gravel ironstone and quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Lower slope	NW	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	80	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Acacia inaequilatera	+
Lower	0.3	Triodia brizoides	20

Site Number	MP08	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799866	7558559
Photo No.	9634 - 9638		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Light brown	Fine clay	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mesa top	None	0-5
	Outcrop		
	Type	**Amount**	
	Ironstone	Many	
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.6	Atalaya hemiglauca, Senna glutinosa subsp glutinosa	+
Lower	0.4	Triodia epactia, Eriachne mucronata	30

Site Number	MP09	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	800158	7558799
Photo No.	9639 - 9643		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Light brown	Loose gravel ironstone and calcrete	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Mid slope	S	May-15
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	60	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Eucalyptus leucophloia, Corymbia hamersleyana	+
Mid	1.8	Solanum phlomoides	+
Lower	0.5	Triodia wiseana, Triodia epactia	40

Site Number	MP10	**Date**	28/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	800418	7558790
Photo No.	9644 - 9648		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Loose gravel ironstone and quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	Ironstone	Few	
Weeds:		**Disturbance:**	
% Cover	5	**Type**	Weeds
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	85	**Level of Human Impact**	Medium
		Vegetation Condition	Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	25	Eucalyptus victrix, Eucalyptus camaldulensis, Acacia coriacea subsp pendens	10
Mid	2	Melaleuca glomerata, Acacia tumida, Acacia pyrifolia, Vachellia farnesiana	5
Lower	0.3	Cenchrus ciliaris, Cenchrus setiger	5

Site Number	MP12	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	801885	7560043
Photo No.	9665 - 9669		
Observations	SE side undisturbed, no Cenchrus and no Corymbia. This point is the southern extent of the Corymbia drainage line. Surrounding the drainage line is Acacia inaequilatera over Triodia epactia		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Orange brown		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	Ironstone	Medium	
Weeds:		**Disturbance:**	
% Cover	10	**Type**	Weeds and cattle
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	80	**Level of Human Impact**	Low
		Vegetation Condition	Very good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	7	Eucalyptus hamersleyana, Acacia coriacea subsp pendens	1
Mid	2	Acacia inaequilatera, Acacia bivenosa, Vachellia farnesiana	+
Lower	0.3	Cenchrus setiger, Cenchrus ciliaris, Triodia epactia	20

Site Number	MP13	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	802000	7560280
Photo No.	9670 - 9674		
Observations	Southern extent of Eucalyptus victrix in the drainage line, changes to Corymbia		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	15	**Type**	Weeds
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Low
		Vegetation Condition	Very good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	12	Eucalyptus victrix	2
Mid	2	Acacia bivenosa	+
Lower	0.3	Triodia epactia, Cenchrus ciliaris, Cenchrus setiger	30

Site Number	MP14	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799817	7557542
Photo No.	9705 - 9709		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Orange brown	Loose gravel ironstone and quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Lower slope	NE	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	75	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Acacia coriacea subsp. pendens	+
Mid	3	Acacia inaequilatera	+
Lower	0.4	Triodia epactia	25

Site Number	MP15	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799878	7557632
Photo No.	9710 - 9714		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay	Orange brown	Minor cracks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	NE	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	1	**Type**	Weeds and cattle
No. Plants	50	**Time Since Fire**	>5
Bare Ground (%)	80	**Level of Human Impact**	Low
		Vegetation Condition	Very good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Vachellia farnesiana	+
Lower	0.2	Cenchrus setiger, Cenchrus ciliaris, Choris pumilio	20

Site Number	MP16	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	800481	7558281
Photo No.	9724 - 9728		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	NE	Oct-20
	Outcrop		
	Type	**Amount**	
	Ironstone	Few	
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	75	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	12	Corymbia hamersleyana	1
Mid	3.5	Acacia ancistrocarpa, Senna glutinosa subsp glutinosa	1
Lower	0.4	Triodia epactia	25

Site Number	MP17	**Date**	29/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	799900	7557102
Photo No.	9729 - 9733		
Observations	Surrounding area purely Triodia brizoides		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	NE	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	60	**Level of Human Impact**	Low
		Vegetation Condition	Excellent
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Acacia ancistrocarpa, Acacia bivenosa	10
Lower	0.6	Triodia brizoides, Triodia sticky	30

Site Number	MP18	**Date**	30/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	807881	7564276
Photo No.	9750 -9754		
Observations	Major channel with pooled water, river banks with similar vegetation as other river bank sites		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	Weeds
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	40	**Level of Human Impact**	Medium
		Vegetation Condition	Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	12	Eucalyptus camaldulensis, Eucalyptus victrix, Atalaya hemiglauca, Acacia coriacea subsp pendens	20
Mid	3	Melaleuca linophylla	2
Lower	0.6	Cenchrus ciliaris, Cenchrus setigera	30

Site Number	MP19	**Date**	30/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	809400	7566806
Photo No.	9766 - 9770		
Observations	Melaleuca is present but limited in this highly disturbed area		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	10	**Type**	Weeds and tracks
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	85	**Level of Human Impact**	High
		Vegetation Condition	Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	16	Eucalyptus camaldulensis, Eucalyptus victrix, Atalaya hemiglauca, Acacia coriacea subsp pendens	20
Mid			
Lower	1	Cyperus vaginatus, Cenchrus ciliaris, Cenchrus setiger, Schoenoplectus subulatus	30

Site Number	MP20	**Date**	30/04/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	51	190267	7567055
Photo No.	9788 - 9792		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Loose gravel ironstone and quartz and dolorite	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	25	**Type**	Weeds
No. Plants	>1000	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Medium
		Vegetation Condition	Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	18	Eucalyptus camaldulensis, Eucalyptus victrix, Atalaya hemiglauca, Acacia coriacea subsp pendens	5
Mid	3	Melaleuca linophylla	5
Lower	0.3	Cenchrus ciliaris, Cenchrus setiger	25

Site Number	MP21	**Date**	0105/2012
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	51	191126	7566891
Photo No.	9793 - 9797		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	None	0-5
	Outcrop		
	Type	**Amount**	
	Many	Ironstone	
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.6	Acacia inaequilatera, Hakea lorea, Acacia pruinocarpa	+
Lower	0.3	Triodia epactia	30

Site Number	MP22	**Date**	1/05/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	51	191860	7566459
Photo No.	9798 - 9802		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Lower slope	None	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	70	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Acacia inaequilatera, Senna glutinosa subsp glutinosa	+
Lower	0.3	Triodia epactia	20

Site Number	MP23	**Date**	1/05/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	51	192508	7766665
Photo No.	9803 - 9807		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Loose gravel ironstone	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line	SW	0-5
	Outcrop		
	Type	**Amount**	
	Numerous	Ironstone	
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	90	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana	+
Mid	2.5	Acacia tuminda var. pilbarensis	70
Lower	0.3	Triodia epactia	5

Site Number	MP25	**Date**	1/05/12
Recorders	DM KR		
Datum	GDA 94	**Easting**	**Northing**
Zone	51	193347	7567079
Photo No.	9824 - 9828		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Sand	Brown	Loose gravel ironstone and dolerite and quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Major drainage line	None	0-5
	Outcrop		
	Type	**Amount**	
	Dolerite	Few	
Weeds:		**Disturbance:**	
% Cover	+	**Type**	Weeds
No. Plants	25	**Time Since Fire**	>5
Bare Ground (%)	90	**Level of Human Impact**	Low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	6	Eucalyptus victrix, Acacia coriacea subsp pendens	+
Mid	2.5	Acacia trachycarpa	1
Lower	0.3	Triodia epactia, Eriachne benthamii	9

Site Number	MP101	**Date**	26/04/2012
Recorder/s	DM		
Datum	GDA 94	**Easting**	**Northing**
Zone	50	794101	7553725
Photo No.	6391 - 6395		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loam	Brown	Surface gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	S	0-5
	Outcrop		
	Type	**Amount**	
	None		
Weeds:		**Disturbance:**	
% Cover	0	**Type**	None
No. Plants	0	**Time Since Fire**	>5
Bare Ground (%)	60	**Level of Human Impact**	Low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Acacia bivenosa, Senna glutinosa subsp glutinosa, Acacia inaequilatera	3
Lower	0.7	Triodia longiceps, Triodia epactia	40

Site Number	MP102	**Date**	27/04/12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	792117	7553389
Photo No.	6403-6407		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Loam	brown	boulders and ironstone rocks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	flood plain	N	0-5
	Outcrop		
	Type	**Amount**	
	ironstone	few	
Weeds:		**Disturbance:**	
% Cover	5	**Type**	grazing
No. Plants	>100	**Time Since Fire**	>5
Bare Ground (%)	85	**Level of Human Impact**	low
		Vegetation Condition	Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2	Acacia monticola, Acacia ancistrocarpa , Petalostylis labicheoides	50
Lower	0.5	Triodia epactia Triodia longiceps , Cenchrus ciliaris	10

Site Number	MP104	**Date**	27/04/12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	791792	7553324
Photo No.	6413 - 6417		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loamy clay	orange brown	surface gravel and rocks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	flood plain	north	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	5	**Type**	grazing
No. Plants	100	**Time Since Fire**	>5
Bare Ground (%)	75	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana, Acacia coriacea subsp. pendens	1
Mid	2	Acacia ancistrocarpa , Acacia bivenosa , Acacia synchronicia	10
Lower	0.5	Triodia epactia	15

Site Number	MP105	**Date**	27/0412
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	791579	7553126
Photo No.	6423 - 6427		
6423			
Observations	Flood plain between MP and creek is completely dominated by Cenchrus ciliaris . See photo 6428		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loamy clay	orange brown	surface gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	flood plain	west	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	50	**Type**	grazing
No. Plants	>5000	**Time Since Fire**	>3
Bare Ground (%)	30	**Level of Human Impact**	medium
		Vegetation Condition	poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana, Acacia coriacea subsp. pendens	3
Mid	3	Gossypiuum robinsonii , Acacia ancistrocarpa , Acacia bivenosa	10
Lower	0.5	Cenchrus ciliaris , Triodia epactia , Triodia longiceps	50

Site Number	MP106	**Date**	27 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	793373	7552813
Photo No.	6436 - 6440		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
sandy loams	orange brown	creek pebbles	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	east	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	15	**Type**	grazing
No. Plants	>200	**Time Since Fire**	<3
Bare Ground (%)	60	**Level of Human Impact**	low
		Vegetation Condition	poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Acacia coriacea subs.p pendens	+
Mid	2	Acacia ancistrocarpa	8
Lower	0.6	Cenchrus ciliaris , Triodia longiceps, Themeda triandra	40

Site Number	MP107	**Date**	27 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	793914	7553149
Photo No.	6441 - 6445		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	orange brown	surface gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	SW	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>5
Bare Ground (%)	80	**Level of Human Impact**	low
		Vegetation Condition	Very good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	3.5	Acacia inaequilatera, Acacia tetragonophylla	+
Mid			
Lower	0.5	Triodia epactia , Aristida contorta	15

Site Number	MP109	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801456	7559460
Photo No.	6466 - 6470		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay	orange brown	better drainage than adjacent crabhole clay	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	NE	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	35	**Type**	Grazing , heavy
No. Plants	>1000	**Time Since Fire**	>3
Bare Ground (%)	65	**Level of Human Impact**	medium
		Vegetation Condition	Very poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.8	Vachellia farnesiana	
Lower	0.3	Cenchrus ciliaris, Cenchrus setiger, Triodia epactia	35

Site Number	MP110	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801838	7559456
Photo No.	6471 - 6475		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loamy clay	red brown	creek deposits , dolerite rocks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	north	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	<1	**Type**	-
No. Plants	4	**Time Since Fire**	>3
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3.5	Grevillea wickhamii , Acacia tumida , Acacia inaequilatera	1
Lower	0.6	Triodia epactia , Cymbopogon ambiguus ,Sida rohlenae subsp. rohlenae, Corchorus lasiocarpus subsp. lasiocarpus	35

Site Number	MP111	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802114	7559354
Photo No.	6476 - 6480		
Observations	Red area on map is crabhole clay community.		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	orange brown	dolerite rocks on surface	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	ridge	East	0-5
	Outcrop		
	Type	**Amount**	
	dolerite	few	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Senna glutinosa subsp glutinosa , Acacia inaequilatera , Vachellia farnesiana	<1
Lower	0.5	Triodia epactia , Solanum horridum , Aristida latifolia , Rhynchosia minima	40

Site Number	MP112	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802098	7558668
Photo No.	6487 - 6491		
Observations	Surrounded by crabhole clay with Vachellia farnesiana		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	orange brown	large dolerite rocks on surface	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	SE	0-5
	Outcrop		
	Type	**Amount**	
	no		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	60	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid			
Lower	0.5	Triodia epactia, Abutilon dioicum, Cymbopogon ambiguus	35

Site Number	MP113	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801549	7558671
Photo No.	6497 - 6501		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loamy clay	orange brown		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	-	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	60	**Type**	Heavy grazing
No. Plants	>500	**Time Since Fire**	>3
Bare Ground (%)	35	**Level of Human Impact**	medium
		Vegetation Condition	Very poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Vachellia farnesiana	4
Lower	0.5	Cenchrus ciliaris , Cenchrus setiger	60

Site Number	MP114	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801553	7558581
Photo No.	6502 - 6506		
Observations	Community dissected by small aras of crabhole clay vegetation		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Loamy clay	Orange brown	Surface dolerite rocks	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Small ridge	West	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	Some graz
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	65	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid			
Lower	0.8	Triodia epactia, Senna glutinosa subsp. x luerssenii	30

Site Number	MP115	**Date**	28 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802012	7558309
Photo No.	6507-6512		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loamy clay	red brown	surface ironstone gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	NW	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	light grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	70	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	2.5	Acacia ancistrocarpa , Acacia bivenosa	18
Lower		Triodia epactia	20

Site Number	MP116	**Date**	29 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801643	7557980
Photo No.	6524-6528		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	orange brown	surface gravel lateritic	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)		**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	Eucalyptus leucophloia	+
Mid			
Lower	0.5	Triodia epactia	20

Site Number	MP117	**Date**	29 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801519	7557679
Photo No.	6530-6534		
Observations	Creek channel about 5 m wide		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	red brown	compacted	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage flood plain	-	0-5
	Outcrop		
	Type	**Amount**	
	non		
Weeds:		**Disturbance:**	
% Cover	90	**Type**	Heavy grazing
No. Plants	>1000	**Time Since Fire**	>3
Bare Ground (%)	5	**Level of Human Impact**	Medium
		Vegetation Condition	Very poor
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	9	Acacia coriacea subsp pendens , Corymbia hamersleyana	+
Mid	3	Vachellia farnesiana , Acacia ancistrocarpa , Grevillea wickhamii	5
Lower	0.7	Cenchrus ciliaris , Cenchrus setiger	90

Site Number	MP119	**Date**	29/04/12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801619	7556938
Photo No.	6556-6560		
Observations	Quartz mantle		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	brown	Quartz mantle and gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS/ Saddle	West	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	2-3
Bare Ground (%)		**Level of Human Impact**	low
		Vegetation Condition	Very good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	1.5	Senna glutinosa subsp glutinosa	+
Lower	0.3	Triodia brizoides , Triodia longiceps	25

Site Number	MP120	**Date**	29 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801924	7556850
Photo No.	6567-6571		
Observations	Joins drainage line which is same community but has more Acacia tumida		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Gravelly loams	light brown	some quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line	SW	0-5
	Outcrop		
	Type	**Amount**	
	-		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	2-3
Bare Ground (%)	70	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana	+
Mid	1.5	Acacia ancistrocarpa , Senna glutinosa subsp glutinosa	15
Lower	0.5	Indigofera monophylla	15

Site Number	MP121	**Date**	29 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802048	7556726
Photo No.	6572-6576		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Silty clay loams	brown	creek deposits of quartz	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	minor drainage line/ channel 2m	-	0-5
	Outcrop		
	Type	**Amount**	
	-		
Weeds:		**Disturbance:**	
% Cover	+	**Type**	-
No. Plants	5	**Time Since Fire**	>2
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Acacia ancistrocarpa , Eremophila longifolia , Acacia colei var. colei	10
Lower	0.5	Triodia epactia , Paraneurachne muelleri ,	20

Site Number	MP122	**Date**	29/04/12
Recorder/s			
Datum		**Easting**	**Northing**
Zone		802316	7556774
Photo No.	6577-6581		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
clay loams	red brown	quartz mantle at surface	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	South	0-5
	Outcrop		
	Type	**Amount**	
	-		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	2-3
Bare Ground (%)	65	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3	Acacia inaequilatera	+
Lower	0.4	Triodia epactia , Aristida contorta	30

Site Number	MP123	**Date**	30 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	808445	7563593
Photo No.	6588 - 6592		
6588			
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Silty clay loams	Brown	Creek deposits	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Minor drainage line and flood plain	none	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	2 or 3
Bare Ground (%)	75	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	7	Eucalyptus victrix	5
Mid	3	Acacia coriacea subsp pendens , Acacia trachycarpa ,	2
Lower	0.8	Acacia pyrifolia, Cyperus vaginatus, Themeda triandra	25

Site Number	MP124	**Date**	30 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	808862	7563701
Photo No.	6493-6497		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	orange brown	Dolerite rocks on surface	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	-	0-5
	Outcrop		
	Type	**Amount**	
	none		
Weeds:		**Disturbance:**	
% Cover	-	**Type**	-
No. Plants		**Time Since Fire**	2 or 3
Bare Ground (%)	80	**Level of Human Impact**	low
		Vegetation Condition	VG
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	5	Corymbia hamersleyana	+
Mid	1	Senna glutinosa subsp glutinosa , Acacia inaequilatera	+
Lower	0.2	Triodia epactia	20

Site Number	MP126	**Date**	30 04 12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	807644	7563872
Photo No.	6613-6617		
Observations	Steep , loose scree		
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
loam	Brown	loose scree , ironstone cobblestones	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	East	>15
	Outcrop		
	Type	**Amount**	
	Ironstone	Few	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	75	**Level of Human Impact**	low
		Vegetation Condition	Very good
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper			
Mid	3.5	Grevillea pyramidalis	+
Lower	0.3	Triodia epactia	25

Site Number	MP128	**Date**	30/04/12
Recorder/s	SC FO		
Datum	GDA94	**Easting**	**Northing**
Zone	50	808913	7566016
Photo No.	6639 - 6643		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	red brown	Steep slope.	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	MS	NE	>15
	Outcrop		
	Type	**Amount**	
	Ironstone	moderate - high	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing , drilling
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Mid	2	Acacia pruinocarpa , Senna glutinosa subsp glutinosa , Grevillea wickhamii	5
Lower	0.5	Eriachne mucronata , Triodia epactia	30

Site Number	MP201	**Date**	16/04/13
Recorder/s	SC AW DM		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802056	7560829
Photo No.	7384-7388		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	red brown	Surface dolerite	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	E	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Mid	3	Acacia inaequilatera , Hakea lorea, Grevillea pyrmidalis	<1
Lower	0.3	Triodia epactia	25

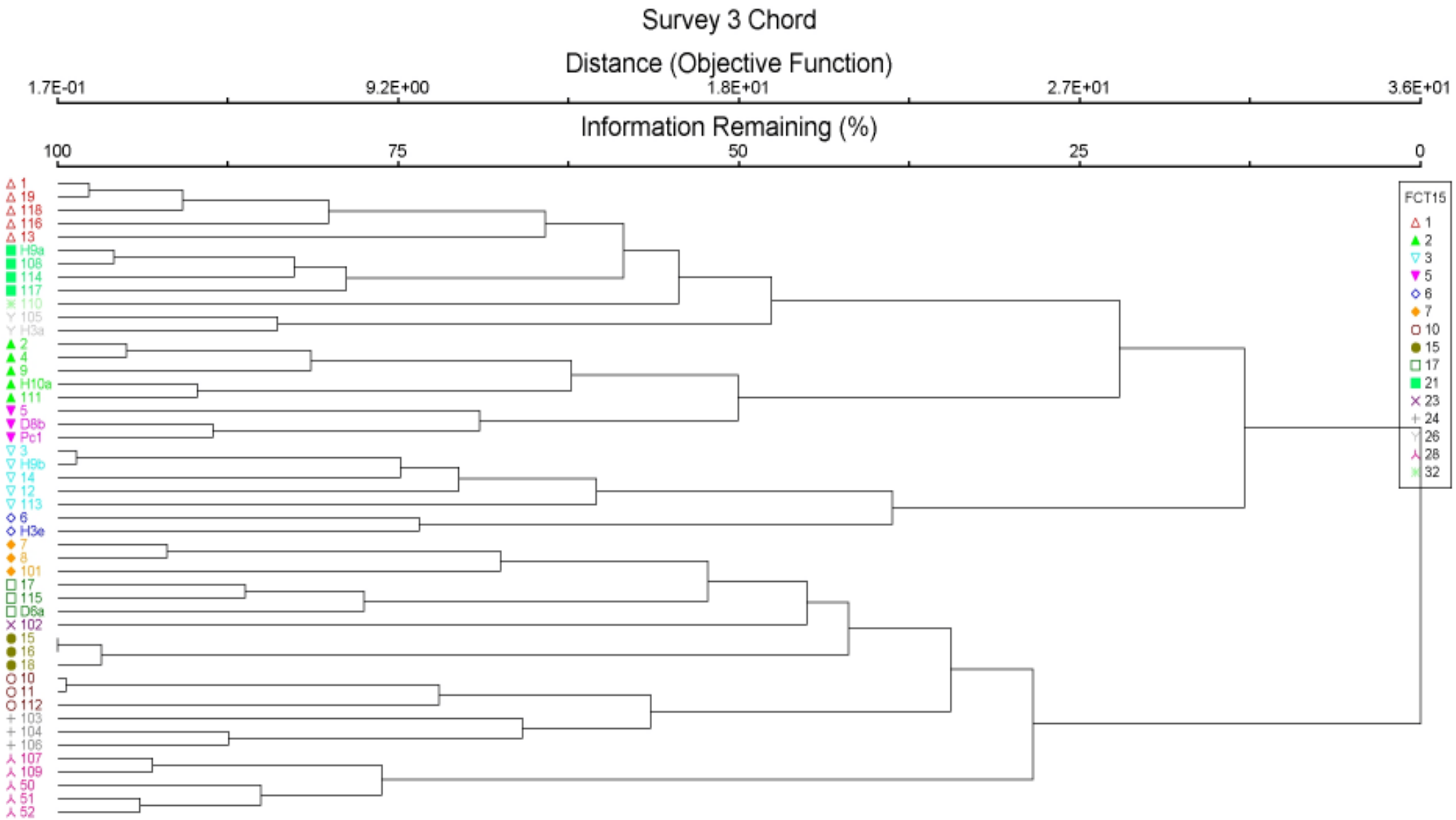
Site Number	MP202	**Date**	16/04/13
Recorder/s	SC AW DM		
Datum	GDA94	**Easting**	**Northing**
Zone	50	802281	7557877
Photo No.	7389-7393		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	red brown	Ironstone gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS	SE	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	80	**Level of Human Impact**	low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Mid			
Lower	0.3	Triodia epactia, Enneapogon polyphyllus, Aristida contorta	20

Site Number	MP203	**Date**	16/04/13
Recorder/s	SC AW DM		
Datum	GDA94	**Easting**	**Northing**
Zone	50	801051	7557251
Photo No.	7394-7398		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	red brown	Surface gravel	
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	Ridge	-	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	80	**Level of Human Impact**	low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Mid	1.5	Acacia ancistrocarpa	<1
Lower	0.2	Triodia brizoides	20

Site Number	MP204	**Date**	16/04/13
Recorder/s	SC AW DM		
Datum	GDA94	**Easting**	**Northing**
Zone	50	800435	7557584
Photo No.	7399-7403		
Observations			
Environment			
Soils:			
Soil texture	**Soil Colour**	**Soil Comments**	
Clay loams	brown		
Geomorphology:	**Topography**	**Aspect**	**Slope (o)**
	LS - floodplain	W	0-5
	Outcrop		
	Type	**Amount**	
Weeds:		**Disturbance:**	
% Cover	-	**Type**	grazing
No. Plants		**Time Since Fire**	>3
Bare Ground (%)	50	**Level of Human Impact**	low
		Vegetation Condition	Very Good
Vegetation Structure			
Strata	**Canopy Height (m)**	**Dominant Species**	**% Cover**
Upper	4	*Eucalyptus* leucophloia subsp. leucophloia, Corymbia hamersleyana	1
Mid	2	Acacia synchronicia, Acacia bivenosa	5
Lower	0.5	Triodia epactia	35

Appendix E

Cluster Dendrogram


Survey 3 Chord
Distance (Objective Function)
1.7E-01
9.2E+00
1.8E+01
2.7E+01
3.6E+01
Information Remaining (%)
100
75
50
25
0
1
19
118
116
13
H9a
108
114
117
110
105
H3a
2
4
9
H10a
111
5
D8b
Pc1
3
H9b
14
12
113
6
H3e
7
8
101
17
115
D8a
102
15
16
18
10
11
112
103
104
106
107
109
50
51
52
FCT15
1
2
3
5
6
7
10
15
17
21
23
24
26
28
32

Appendix F

Species Accumulation Curves

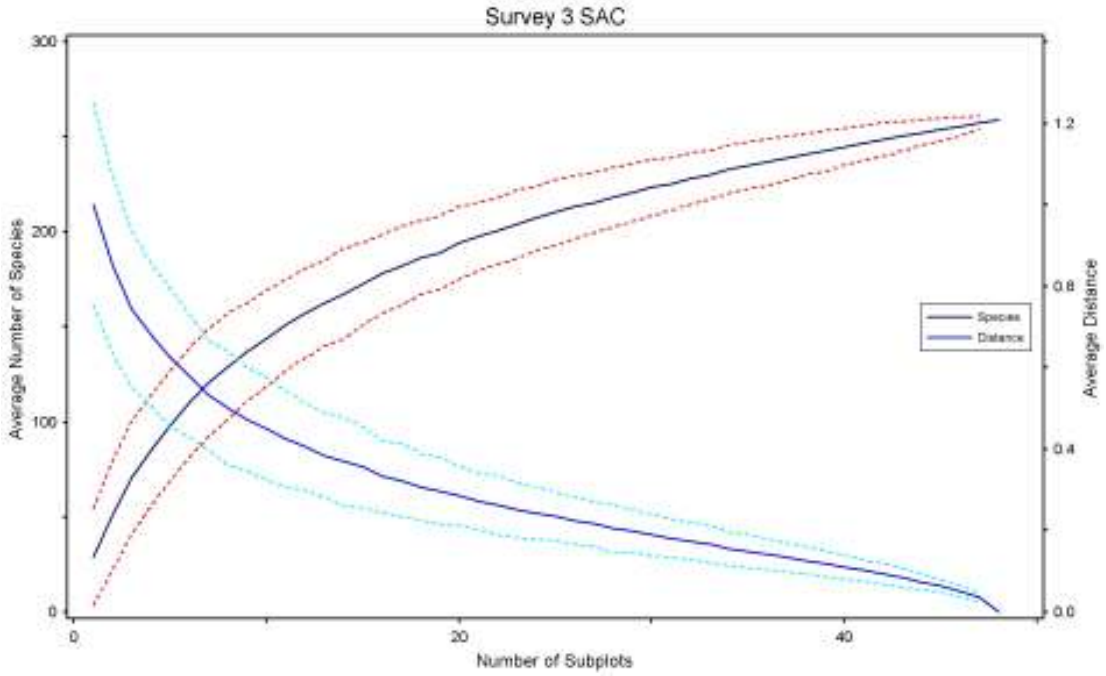
To test the adequacy of the sampling undertaken, a species-area curve (also known as a "species effort curve") was generated from the data collected for the relevés (Angermeier and Smogor 1995). As shown within the curve 40 sites yielded an average of 251 species with the remaining 18 plots yielding only 30 additional species (excluding opportunistics) and increasing in small increments. Additional survey plots would therefore yield little further information.

Species-area curves were also generated for each association that had more than three relevés established. Apart from Associations H10a and D6a, none of the species area curves show a flattening towards an asymptote. This may be due in some part to only three sample units being insufficient to calculate an accurate species-area curve, but also indicates that more samples may be required from those communities to be able to show that they have been surveyed adequately.

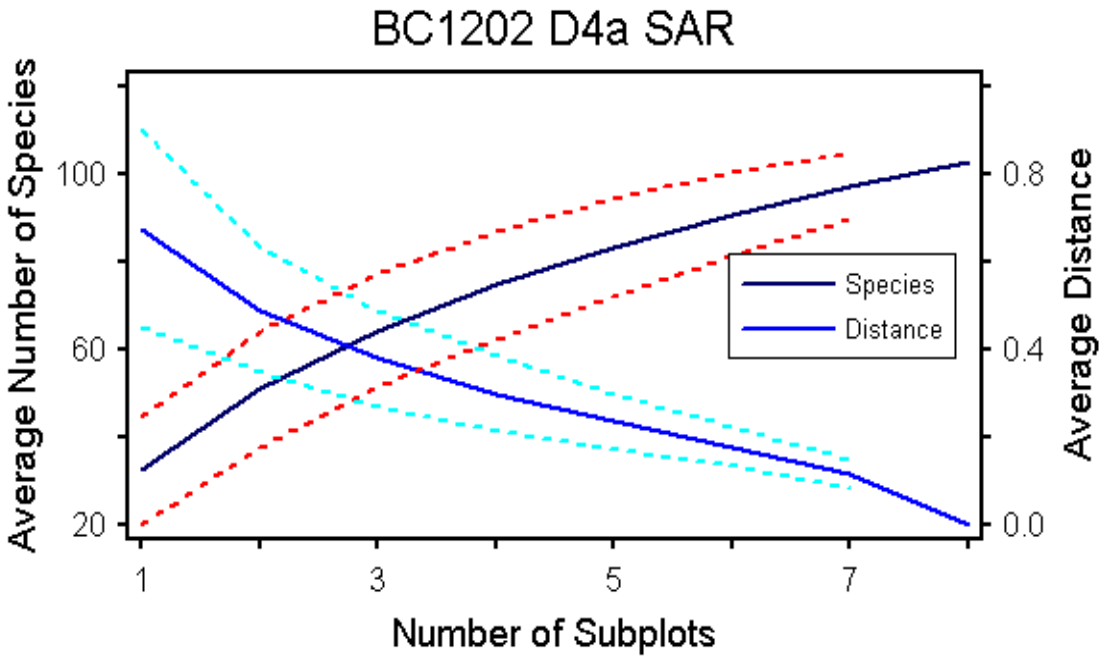
A first-order 'Jack-knife' method (Palmer 1990) estimated the total species richness of the site to be 337 species, which indicates 87.2% of the species expected to occur within the site were recorded. A second-order 'Jack-knife' estimate for the site was 383 species, indicating that 76.8% of the expected species were recorded within the sample sites. The Chao2 classic form and Chao2 bias corrected form estimated total species richness to be 356 and 350 species, respectively.

As the Jack-knife method is sensitive to heterogeneity in the data (i.e. the number of species with only one record), the estimated total species for the site is expected to be much less if the analysis was undertaken separately on each plant community. By including all sites within the analysis, the variability amongst plots is high and therefore the estimate of total species richness is also high. In addition, the second order 'Jack-knife' estimate method has limitations and usually overestimates the total number of species occurring within an area due to the high number of rare species recorded (e.g. occurring only once or twice in the dataset). Therefore the survey effort is considered to be adequate for the site and from the analysis undertaken it shows that a majority of the flora species present was recorded during the survey.

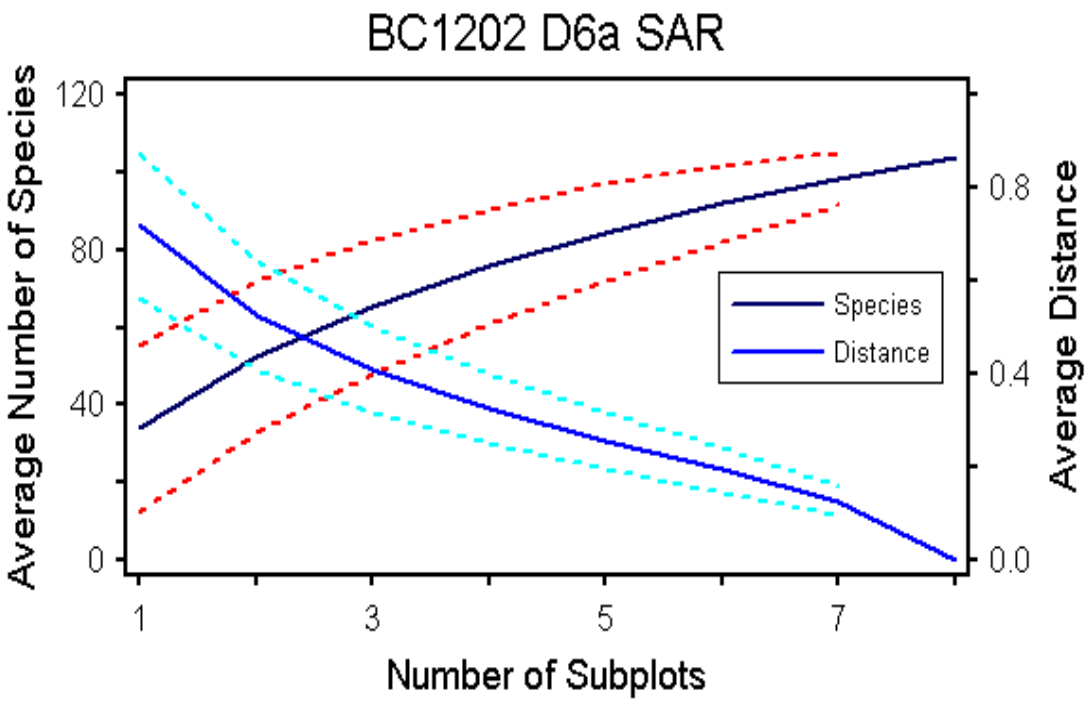
Estimator	Estimate of Total Species Richness	% Total species richness recorded
First order Jack-knife	337	87.2
Second order Jack-knife	383	76.8
Chao2 (classic form)	356	82.6
Chao2 (bias corrected)	350	84.0



Species-area curve calculated for the quadrat dataset as a whole.



Species-area curve calculated for Association D4a.



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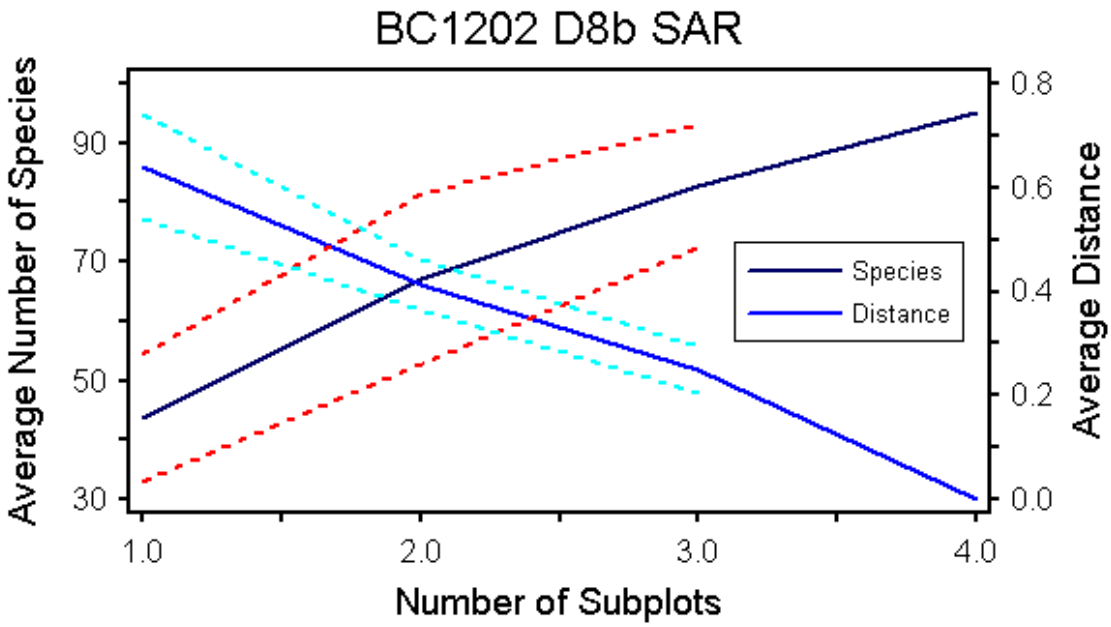

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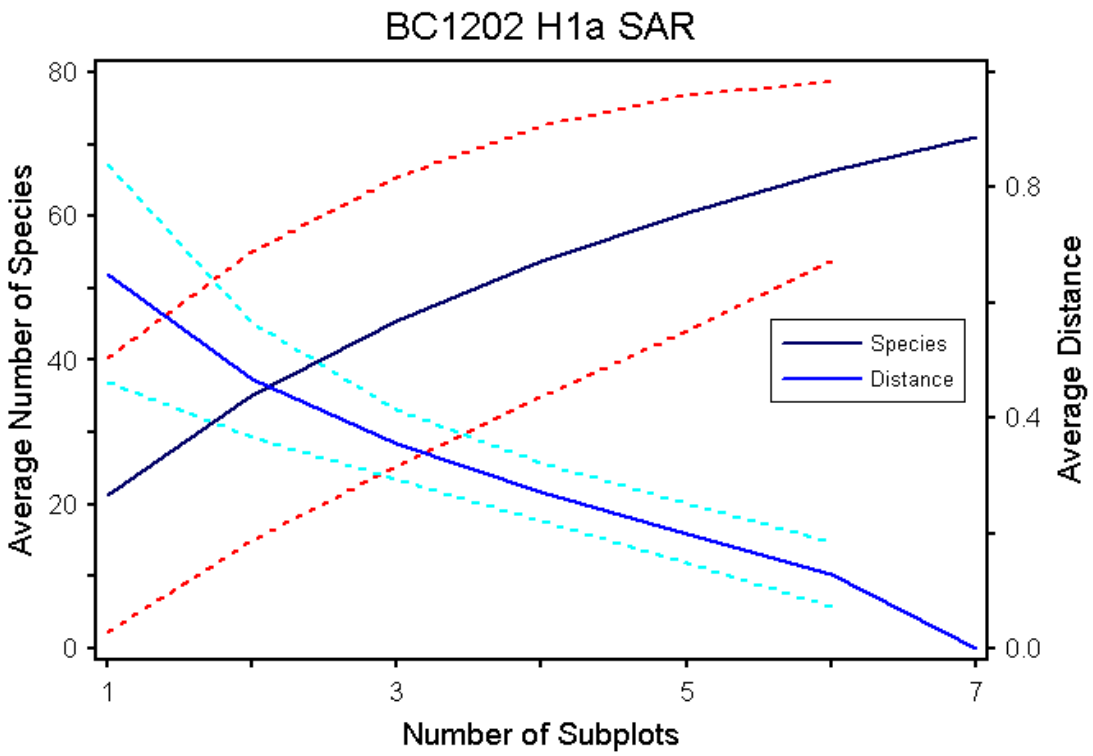
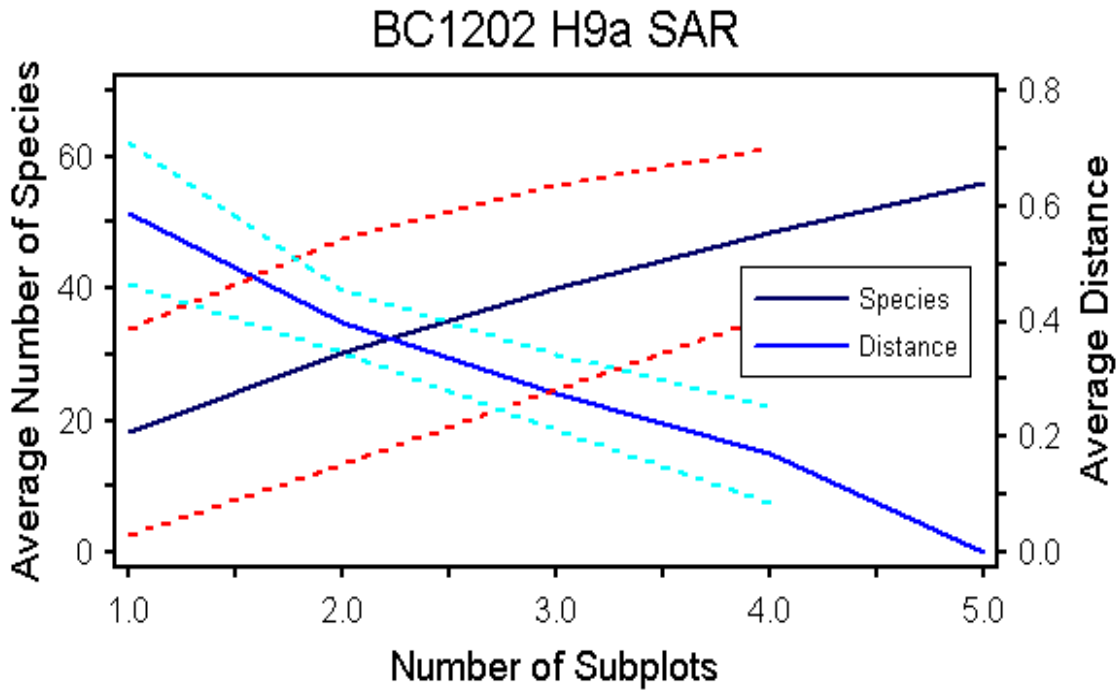


Species-area curve calculated for Community H1a.



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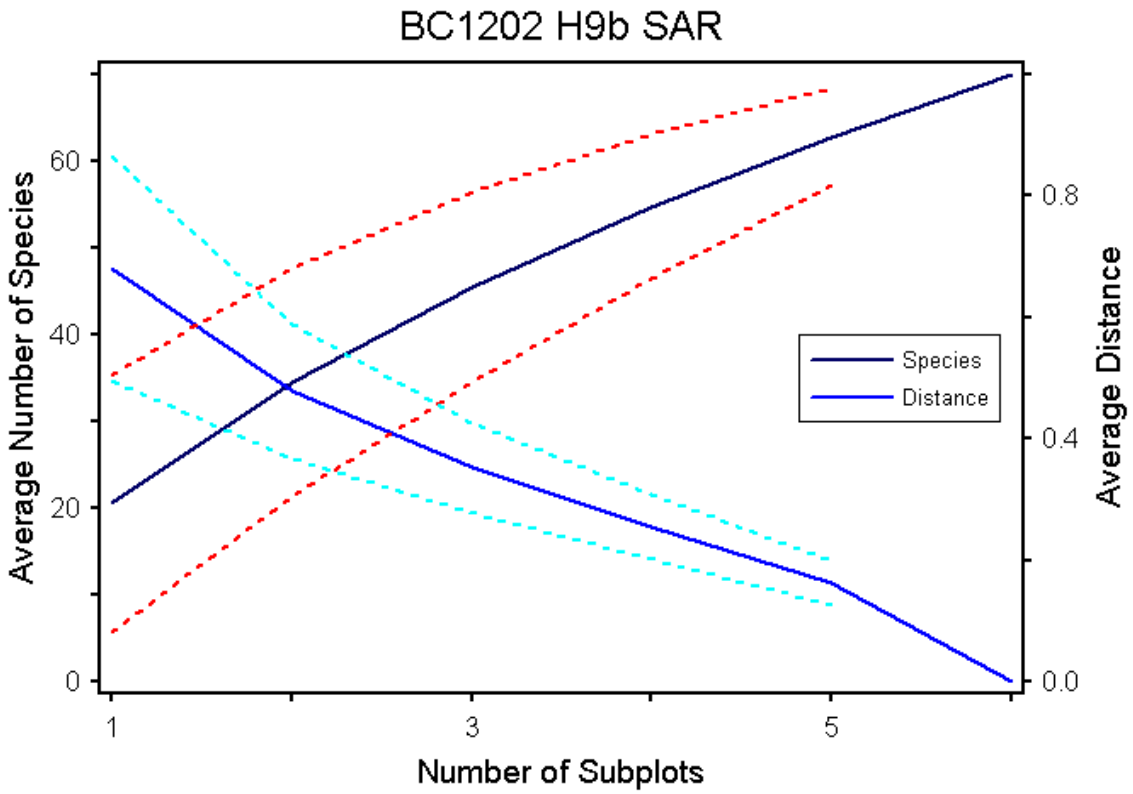

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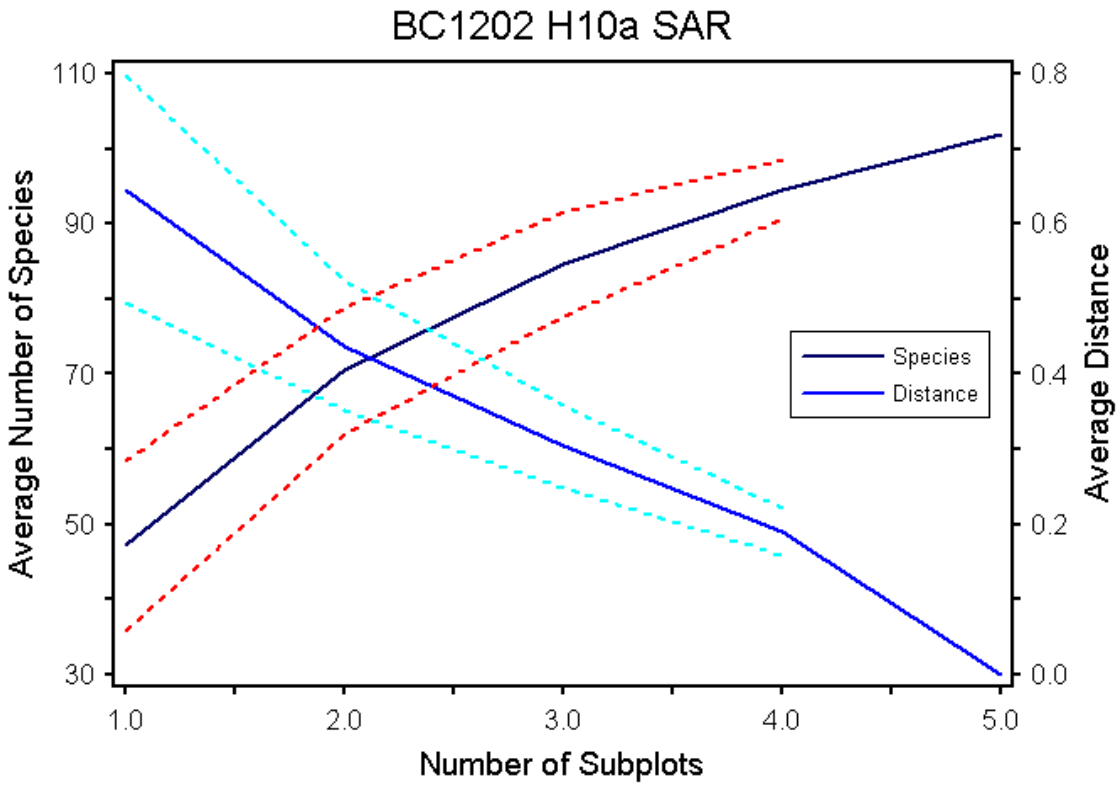
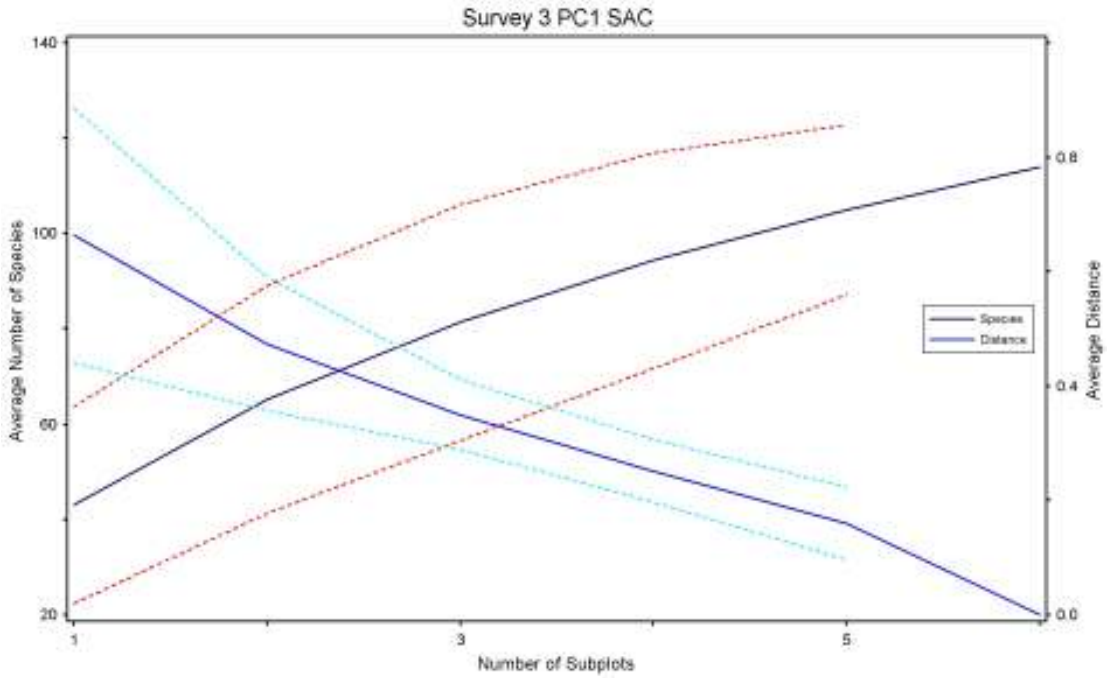


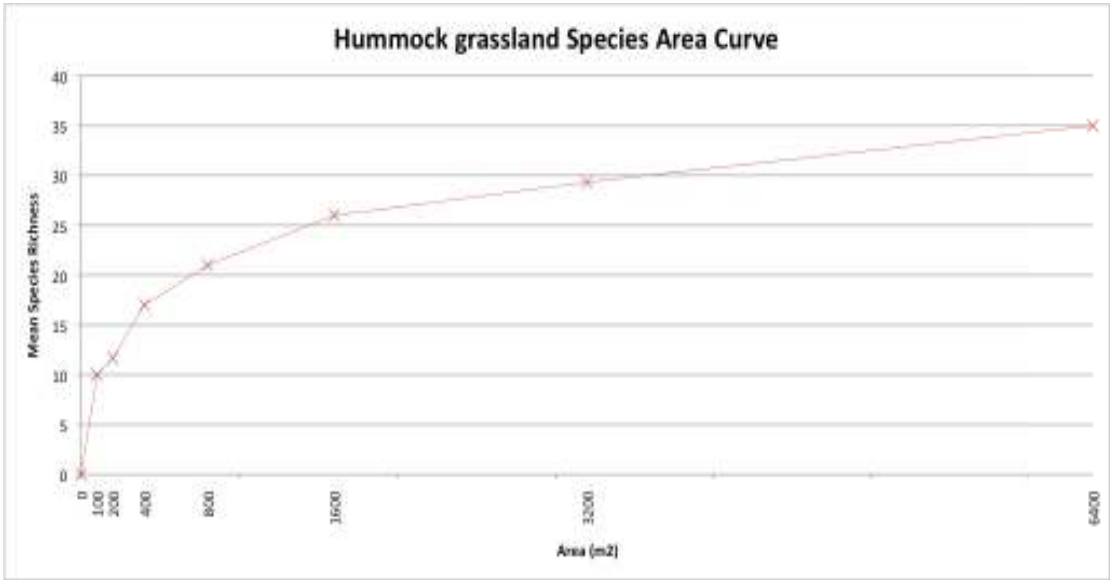
Species-area curve calculated for Association H10a.

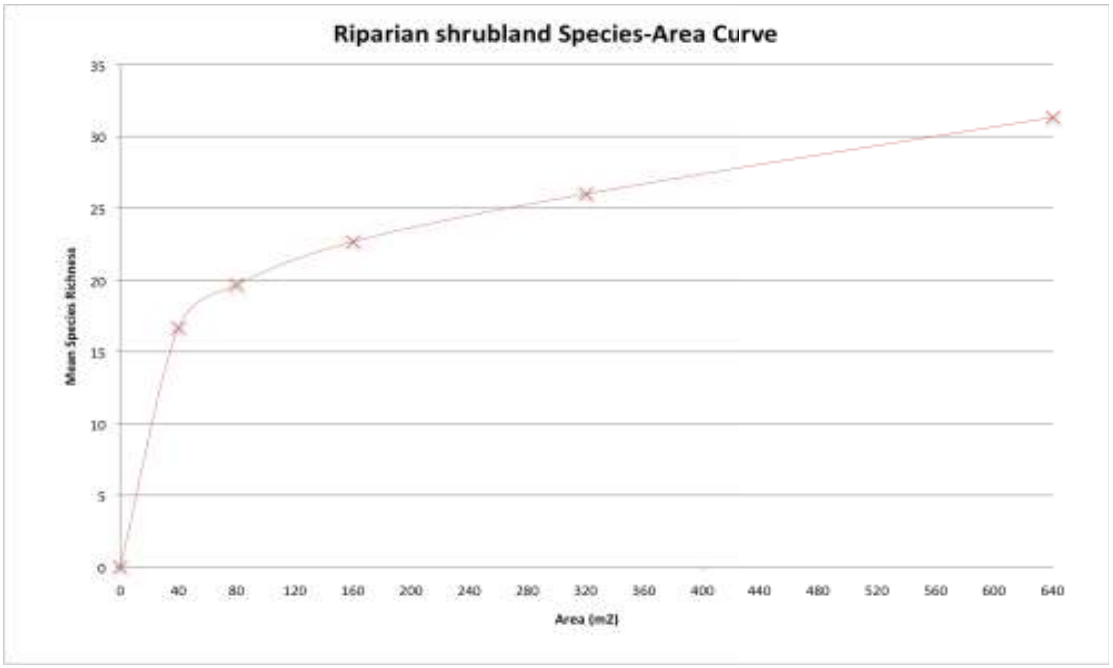


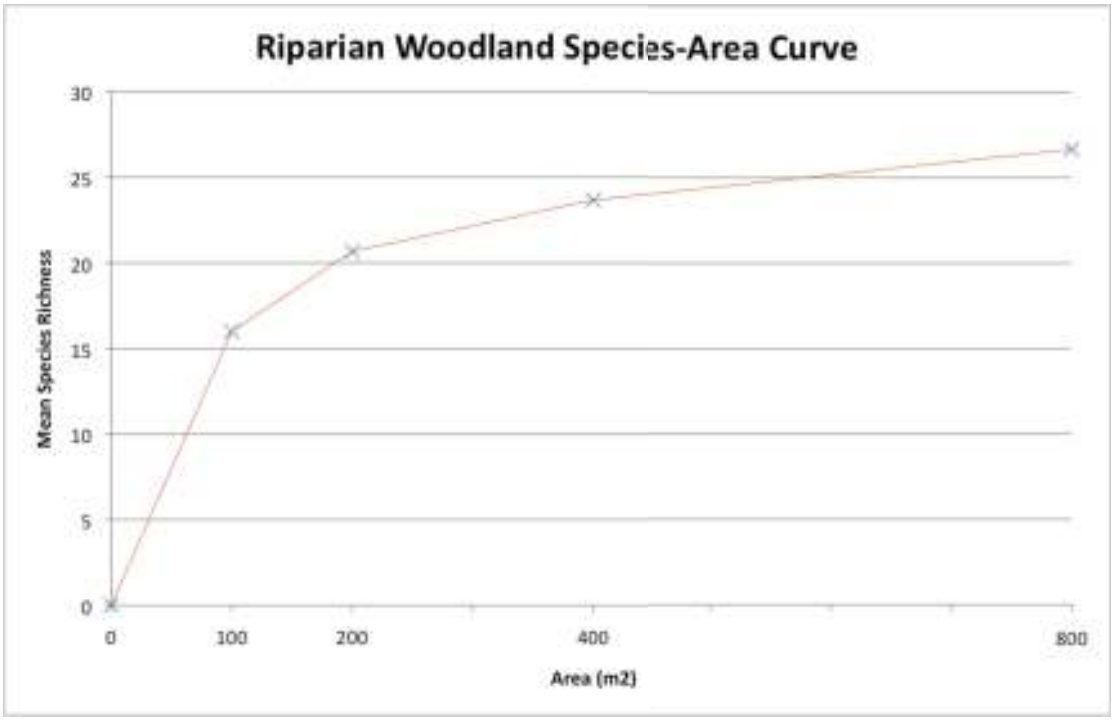
Species-area curve calculated for Association Pc1b

Appendix G

Species Area Curves for Determining Relevé Sizes


Hummock grassland Species Area Curve
Mean Species Richness
40
35
30
25
20
15
10
5
0
0
100
200
400
800
1600
3200
6400
Area (m2)


Riparian shrubland Species-Area Curve
Mean Species Richness
35
30
25
20
15
10
5
0
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
600
640
Area (m2)


Riparian Woodland Species-Area Curve
Mean Species Richness
30
25
20
15
10
5
0
0
100
200
400
800
Area (m2)

Appendix H

Matters of National Environmental Significance Report

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report

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

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

Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

Report created: 19/04/12 14:27:27

Coordinates
Buffer: 10.0Km

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	7
Migratory Species:	9

Other Matters Protected by the EPBC Act

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

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

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

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	6
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	2
State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	6
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Polytelis alexandrae		
Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Dasycercus cristicauda		
Mulgara [328]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus hallucatus		
Northern Quoll [331]	Endangered	Species or species habitat likely to occur within area
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Liasis olivaceus barroni		
Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat may occur within area

Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Garden Pool Geological Site	WA	Indicative Place
Historic		
Bonney Downs Homestead	WA	Indicative Place

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Mammals		
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		

Name	Status	Type of Presence
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Coordinates

-21.965 119.78,-21.965 120.03389,-22.14556 120.03389,-22.14556 119.78,-21.965 119.78

Caveat

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

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

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

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

- migratory and
- marine

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

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

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

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

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

Acknowledgements

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

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia

-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

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

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

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Appendix I

Management Categories and Priorities for Weeds recorded in the Survey

	Management / Monitoring	Taxa	Common Name	Life Form	Ecological Impact[1]	Feasibility of Control[1]	Abundance (Frequency in Pilbara Rangeland Survey Sites)[2]	Earliest Record in Pilbara[3]
Declared weeds, not well-established in Pilbara, not previously recorded in locality	Eradicate known population Notify DEC and DAFWA Conduct surveys to determine whether any other populations exist in locality Submit specimens to WA Herbarium	*Calotropis procera*	Calotropis	Tall Shrub	Medium	High	0%	2004 (limited occurrences on De Grey River system)
Declared weeds, well established in Pilbara	Survey abundance/extent within locality to determine appropriate management	*Argemone ochroleuca* subsp. *ochroleuca*	Mexican Poppy	Annual Herb	Low	Low	0%	1916
Weeds well-established in Pilbara, growing in a number of habitats, often becoming dominant and altering landscape-scale ecological processes (e.g. soil	Manage impacts where high value biodiversity assets exist (e.g. TECs) Manage in revegetation sites	*Aerva javanica*	Kapok Bush	Perennial Herb	High	High-Medium	6%	1920
		Bidens bipinnata	Black Jack	Annual Herb	Unknown	Low	2%	1962
		Cenchrus ciliaris	Buffel Grass	Tussock Grass	High	Low	28%	1900
		Cenchrus setiger	Birdwood Grass	Tussock Grass	High	Low	4%	1900

chemistry, fire regimes)		*Malvastrum americanum*	Spiked Malvastrum	Annual Herb	High	Low	9%	1938
High impact weeds well-established in Pilbara, growing in a limited habitats (e.g. wetlands)		*Cynodon dactylon*	Couch	Tussock grass	High	Low	0%	1941
Minor weeds establishing in highly disturbed sites		*Citrullus colocynthis*	Colocynth	Creeper	Low	Low	0%	1978
		Setaria verticillata	Whorled Pigeon Grass	Annual Grass	High	Low	0%	1937
Annual weeds considered to exist only as non-persistent temporary populations in Pilbara	Submit specimens to WA Herbarium Monitor to confirm non-persistence of population	*Cucumis melo* subsp. *agrestis*	Ulcardo Melon	Creeper	Not Rated	Not Rated	0%	1937
Plants for which the weed/native plant status in Pilbara has yet to be fully resolved	Submit specimens to WA Herbarium	*Flaveria trinervia*	Speedy Weed	Annual Herb	Not Rated	Not Rated	3%	1802
		Vachellia farnesiana	Mimosa Bush, False Mesquite	Tall Shrub	High	Low	6%	1861
		Portulaca oleracea	Purslane	Annual Herb	Not Rated	Not Rated	5%	2006