

**BHP BILLITON YEELIRRIE DEVELOPMENT
COMPANY PTY LTD**

Yeelirrie Project

Flora and Vegetation Survey

Baseline Report

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Executive Summary

The Proposed Yeelirrie Development (project) at Yeelirrie Pastoral Station, is some 700 km north-east of Perth and 500 km north of Kalgoorlie (Figure 1). BHP Billiton Yeelirrie Development Company Pty Ltd (BHPB Billiton), through URS Australia Pty Ltd, engaged Western Botanical to undertake an assessment of the flora and vegetation within an area referred to as the total study area. The total study area includes the areas studied both locally and regionally.

The Proposed Yeelirrie Development lies within study area 1. The local study area is defined as study areas 1, 2 and 3 (Figure 2), and the regional study area is defined as study areas 4 to 16 (Figure 3). During the assessment of study area 4 the north-western section was redefined as study area 3 (Figure 7).

The total study area (study areas 1 to 16), excluding study areas 8 and 9, lies in the Eremaean Botanical Province within the Murchison Biogeographic Region and the East Murchison (MUR1) subregion. Study area 8 lies within the West Murchison (MUR2) subregion, while study area 9 lies predominately within the Carnegie (GAS2) subregion of the Gascoyne Biogeographic Region.

The local study area falls between two Department of Agriculture Western Australia (DAWA) rangeland condition survey areas; the 'Sandstone-Yalgoo-Paynes Find' area and the 'North-eastern Goldfields' area.

Prior botanical knowledge of the Murchison Biogeographic Region consisted of broad scale regional flora surveys completed as part of rangeland condition surveys which provide a general account of vegetation and descriptions of land systems. More detailed surveys have been undertaken by the Department of Environment and Conservation (DEC) and the Western Australian Museum.

Western Mining Corporation Limited (WMC) completed flora and vegetation studies for the project as part of the WMC Draft Environmental Impact Statement (EIS) and Environmental Review and Management Programme (ERMP) for the project in 1979. None of the flora recorded at that time was considered rare and the majority of identified species were known to occur in similar landforms in the region. A number of the plants collected were at the time undescribed and it was not possible to

determine whether or not they were of particular botanical significance, as their regional distribution was not understood.

In the last 20 years, a number of flora and vegetation surveys including habitat mapping, have been undertaken in association with increased mining activities in the vicinity of the project. Western Botanical has undertaken the majority of these surveys. This report identifies species not identified during the WMC studies.

Survey effort

For the purposes of this report, Western Botanical completed both 'local' and 'regional' surveys. The local surveys are defined as study areas 1, 2 and 3. Study area 1 includes the project footprint area and the proposed 45 km access road from the Goldfields Highway. Study area 2 covers the proposed wellfields, quarry and buffers, and consists of five areas extending from borders of the north and south perimeter of study area 1. Study area 3, a satellite tenement, lies 30 km south-east of study area 1, and is a subset of study area 4. A section of the proposed access road, assessed as part of the study area 1, forms part of the northern boundary of study area 3.

Flora and vegetation surveys of the total study area were undertaken from December 2008 to December 2010, during which a total of 39 field visits were conducted. The proposed level of disturbance determined the level of survey detail in each study area.

Local study area surveys included mapping the vegetation communities and searching for, quantifying and distinguishing the extent of populations of significant species. In study area 1, the area studied in greatest detail, Western Botanical completed a Level 2 assessment of the flora and vegetation in accordance with Guidance Statement 51 issued by the Western Australian Environmental Protection Authority (EPA, 2004). This included mapping the vegetation communities, mapping the distribution and abundance of significant flora and assessing quadrats and relevés to provide a statistical analysis of the variation in the floristic composition of vegetation communities.

The regional surveys, defined as study areas 4 to 16, extended over an area of 185,000 square km and included targeted searches for significant flora and vegetation

communities of interest that were primarily associated with the Central Calcrete System within study area 1.

Land systems & vegetation communities

Contrasts in vegetation structure and species composition reflect soil chemical and physical properties, landscape position, hydrology and underlying geology. These vary significantly on a broad scale between land systems as defined by DAWA and also in the local study area in relation to soil landscapes defined by D.C. Blandford in *Soils and Soil Landscapes of the Yeelirrie Study Area* (Blandford, 2011). Further finer scale differences in vegetation structure and species composition were utilised to define vegetation communities in the local study area.

Many of the land systems found within the local study area are well represented in the wider biogeographical region. However, there is a considerable representation of land type 18, described as *calcrete drainage plains with mixed halophytic and non-halophytic shrublands* and its four component land systems, within the local study area. This is of interest due to the limited and disjunct distribution of this land type throughout the Sandstone-Yalgoo-Paynes Find and the North-eastern Goldfields Survey Areas. Regional representation of land type 18 (calcrete drainage plains), its four component land systems: Cunyu, Cosmo, Mileura and Melaleuca, and the vegetation communities supported within these land systems, are associated with the margins of salt lakes and occluded paleodrainage channels. These are an uncommon and geographically isolated series of land systems and vegetation communities within the broader region.

Fifty-two vegetation communities, which included one complex, were mapped within the local study area. Thirty-nine of these communities were represented in study area 1. The vegetation communities were aligned and associated with the four soil landscapes described by D.C. Blandford in *Soils and Soil Landscapes of the Yeelirrie Study Area* (Blandford, 2011): Granite Breakaway System, Sand Plain System, Playa System and Central Calcrete System (Calcrete System). A fifth system was added, Hardpan and Drainage System, which forms a continuum between the Sand Plain System and Playa System. A sixth system, the Saline Playa System, was also described in study area 3, which was not represented in study area 1 or 2.

Priority Ecological Communities

Western Botanical found no flora related Priority Ecological Communities (PECs) and Threatened Ecological Community (TECs) listed under the EPBC Act 1999 or WC Act 1950 as occurring within the study area 1.

Some vegetation communities, particularly those occurring within the Calcrete System of study area 1, are considered of interest as they are based on current information available of limited distribution. Some of these vegetation communities that are mapped in study area 1 fall within the descriptions of ecosystems at risk described by Cowan (2001) within the East Murchison IBRA subregion. These ecosystems are considered as being of limited distribution and at risk, and consequently, they are collectively considered to have conservation significance. The vegetation communities of interest within study area 1 are:

(i) Communities recognised by Cowan (2001) as being of limited distribution and at risk:

- CEGW *Eucalyptus gypsophila* Woodland on Calcrete, equivalent to Calcrete platform woodlands/shrublands of the north-east Goldfields (Pringle *et al.* 1994 - site type 8);
- CCpW *Casuarina pauper* Woodland on Calcrete, equivalent to Calcyphytic casuarina acacia woodlands/shrublands of the north-east Goldfields (Pringle *et al.* 1994 - site type 7); and
- CMxS *Melaleuca xerophila* Shrubland on Calcrete, equivalent to *Melaleuca* sp. nov. Low Closed to Open Forest Strand Community Near Wiluna.

(ii) Communities described by Western Botanical and known from within the local study area only:

- CApS *Atriplex* sp. Yeelirrie Station Shrubland on Calcrete. New community described by Western Botanical and is not documented to date. CApS is dominated by *Atriplex* sp. Yeelirrie Station on self-mulching clay in depressions and is confined to clay flats within the Calcrete System. Based on

current information available the CAPS community is limited in distribution;
and

- CRsS *Rhagodia* sp. Yeelirrie Station Shrubland on Calcrete. New vegetation community described by Western Botanical and is not documented to date. Based on current information available the CRsS community is limited in distribution.

Phreatophytic vegetation

Limited analysis of Phreatophytic vegetation (vegetation that utilises groundwater) has been undertaken in the local study area. The following vegetation communities are potentially groundwater dependent due to the specific species found within them: CMGbS, CEgW, CMxS, CCpW, PLAET and PLAMi. In addition to these communities, many potentially phreatophytic species occur scattered throughout large expanses of the Sand Plain System and Hardpan and Drainage System. These species include *Melaleuca interioris*, *Grevillea berryana*, *Eucalyptus* and *Corymbia* species, which occur in the SAWS, SAMU, SAMA, SAGS, SACSG, SASP and / or HPMS vegetation communities. It is also believed that many of the species within the study area 1 survive on perched water within the soil profile.

Threatened Flora, Declared Rare Flora, Priority Flora and Flora of Conservation Interest

During the desktop study:

- no species of Threatened Flora, as defined under Commonwealth legislation (*Environment Protection and Biodiversity Conservation (EPBC) Act 1999*), were known to occur in or within or in the vicinity of study area 1;
- no Declared Rare Flora (DRF) as defined under the *Western Australian Wildlife Conservation (WC) Act 1950* were known to occur in or within the vicinity of study area 1;
- twenty-six Priority Flora taxa listed by the DEC were known to occur in the vicinity of study area 1; these include five 'P1', seventeen 'P3' and four 'P4' species; and

- five Priority Flora species were identified in the project footprint area; these include two P1 species and three P3 species.

During the surveys, Western Botanical recorded:

- no species of Threatened Flora in the total study area;
- no Declared Rare Flora (DRF) in the total study area;
- Eight Priority Flora species in study area 1; these include two 'P1', four 'P3' and one 'P4' species;
- Seven Priority Flora species in study area 2; these include two 'P1', five 'P3' species; and
- Three Priority Flora species in study area 3; these include one 'P1', and two 'P3' species.

Priority species, significant flora and species of interest within study area 1

The two Priority One species in study area 1 were: *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) and *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396).

The other Priority species in study area 1 were: *Euryomyrtus inflata* P3, *Baeckea* sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963) P3, *Bossiaea eremaea* P3, *Eremophila arachnoides* subsp. *arachnoides* P3, *Olearia arida* P4 and *Comesperma viscidulum* P4.

Three species of significant flora represent new taxa that were recognised for the first time following these surveys: *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025), P1 *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1 and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560). The latter undescribed species does not as yet appear on the Census of Vascular Flora and therefore does not appear on the FloraBase website (Western Australian Herbarium).

A further 12 species 'of interest', which are not considered to be of conservation significance, were also recorded in study area 1. Species of interest are classified within this report as being flora that represent either (i) significant range extensions or, (ii) are geographically restricted or, (iii) may be poorly collected and / or, (iv) require further taxonomic work. Particular focus was placed on *Templetonia incrassata*, which was a newly defined taxon during the survey period that has been poorly recorded in the Murchison region. Records within the study area 1 represent a significant range extension.

***Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) P1**

Atriplex sp. Yeelirrie Station is a new species recognised during these surveys that was listed as Priority One by the DEC in September 2009. To date, *Atriplex* sp. Yeelirrie Station has been found at two major locations only: (i) in two sub-populations within study area 1 and (ii) in ten sub-populations south-east of study area 1, within study area 3. The second location of *Atriplex* sp. Yeelirrie Station was recorded during the regional survey of study area 4. After the initial findings, a more

detailed survey was done in the north-western section of study area 4 which was redefined as study area 3.

Western Botanical has estimated, provided the taxon of *Atriplex* sp. Yeelirrie Station are the same in study areas 1 and 3, that 30.71% of the total known individuals of *Atriplex* sp. Yeelirrie Station (approximately 84,510) lie within the proposed open pit mine. A minor population of scattered individuals (< 50) was observed in a historical rehabilitation site to the south of the proposed pit in study area 1. The remainder of the known individuals of *Atriplex* sp. Yeelirrie Station (approximately 190,656) are located in a confined area of study area 3. *Atriplex* sp. Yeelirrie Station predominately occurs in the vegetation community described as *Atriplex* sp. Yeelirrie Station shrubland on calcrete (CApS). It occurs on self-mulching clay in depressions and is confined to clay flats within the Calcrete System.

During the regional surveys, particular focus was placed on locating additional populations of *Atriplex* sp. Yeelirrie Station. Initially six paleodrainage and lake systems were selected for investigation based on the distribution of 'Land Type 18', and its four land systems: Cunyu, Cosmo, Mileura and Melaleuca, and their associated vegetation communities.

A targeted flora survey was undertaken utilising a helicopter to visit the lake systems and select areas for targeted on-ground surveys. On-ground surveys were undertaken at the southern end of the Yeelirrie palaeochannel and Lake Miranda, Lake Way, Lake Mason and Lake Noondie. A second targeted flora survey was undertaken, utilising a helicopter, to search for additional populations of *Atriplex* sp. Yeelirrie Station at a further seven lake systems or paleodrainage systems. These systems were selected for investigation based on the presence of the Cunyu and Mileura land systems and areas of self-mulching clay. No additional populations of *Atriplex* sp. Yeelirrie Station were located.

***Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1**

Rhagodia sp. Yeelirrie Station is a new species recognised during these surveys that was listed as Priority One by the DEC in August 2010. This taxon is new and distinct from known species of *Rhagodia* and is readily recognised in the field. While a preliminary investigation has been undertaken, a formal description has not yet been

prepared as adequate fruiting material has not yet been available. Western Botanical has estimated that a total of approximately 2,200 individuals occur within study area 1.

Rhagodia sp. Yeelirrie Station was recorded in five populations within study area 1 in the vegetation community described as *Rhagodia* sp. Yeelirrie Station shrubland on calcrete (CRsS). All five populations are associated with calcrete and Playa lakes. Four areas of this vegetation community (CRsS) occur outside the project footprint, while one population (approximately 100 individuals) occurs within the project footprint. Scattered individuals of *Rhagodia* sp. Yeelirrie Station also occur within *Melaleuca interioris* and *Acacia aneura* shrubland (PLAMi) vegetation, which fringes CRsS.

In addition to study area 1, this species is known only from the Coolgardie and Murchison Biogeographic regions and there are currently two voucher collections listed on FloraBase (Western Australian Herbarium, 2011). Collection localities include Rowles Lagoon (north-west of Kalgoorlie) and Pinnacles Station near Lake Noondie, the latter recorded during Western Botanical regional surveys in study area 7.

Priority species and species of interest within study area 2

Seven priority species were recorded from study area 2, including two Priority One flora, *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) and *Neurachne lanigera*, and five Priority Three flora, *Sauropus ramosissimus*, *Bossiaea eremaea*, *Euryomyrtus inflata*, *Calytrix erosipetala* and *Calytrix uncinata*.

Priority species and species of interest within study area 3

Western Botanical has estimated that there are a total of 190,656 *Atriplex* sp. Yeelirrie Station P1 individuals occurring within study area 3, a subset of study area 4. In addition, the following significant flora were recorded: *Bossiaea eremaea* P3, *Eremophila arachnoides* subsp. *arachnoides* P3, *Scaevola spinescens* terete leaf form and *Templetonia incrassata*.

Priority species and species of interest within regional study areas (study areas 4 to 16)

Regional surveys focused on determining the representation elsewhere of significant flora and vegetation communities of interest that were primarily associated with the Calcrete System within study area 1. This included searching for additional populations of *Atriplex* sp. Yeelirrie Station P1. A total of 13 paleodrainage and lake systems were surveyed during these targeted investigations. In addition to *Atriplex* sp. Yeelirrie Station, the following significant flora were recorded: *Rhagodia* sp. Yeelirrie Station P1, *Eremophila arachnoides* subsp. *arachnoides* P3, *Templetonia incrassata* and *Scaevola spinescens* terete leaf form.

Flora recorded within the local study area (study areas 1, 2 and 3)

A total of 577 taxa from 199 genera and 62 families were recorded within the local study area, including 11 non-endemic weed species. Most species recorded from the survey area are widespread and common in the region and occur across a range of land systems and soil types.

Weeds

Eleven weed species were recorded within the study area 1: *Acetosa vesicaria* (Ruby Dock), *Sonchus oleraceus* (Common Sowthistle), *Citrullus lanatus* (Afghan Melon or Pie Melon), *Tribulus terrestris* (Caltrop), *Cenchrus ciliaris* (Buffel Grass), *Lysimachia arvensis* (Pimpernel), *Cuscuta planiflora* (Dodder), *Erodium aureum*, *Portulaca oleracea* (Purslane), *Emex australis* (Doublegee), and *Opuntia* sp (a Cactus). Further, *Carrichtera annua* (Wards Weed) is suspected to be present as dead stems reminiscent of this species were observed. Weeds noted are generally non-aggressive species; however, the presence of *Acetosa vesicaria* in areas rehabilitated in 2004 is a concern as these areas could potentially act as a weed seed source in future.

Tribulus terrestris and *Citrullus lanatus* were also recorded in study area 3.

Vegetation Condition

Although the Murchison and North-eastern Goldfields regions are largely uncleared, the ecological integrity of these regions has been degraded by the combined effects of grazing by sheep, cattle, goats, rabbits and elevated populations of kangaroos (Van

Vreeswyk Godden, (1998). The local study area containing the Yeelirrie uranium deposit has been subject to long-term historical pastoral grazing and various exploration activities over the last forty years, which resulted in land clearing. The majority of the vegetation within the local study area is in 'excellent' condition (based on the ranking scale of Keighery 1994) with the exception of the historical rehabilitation areas in the project footprint, which are in a 'degraded' condition. Vegetation condition of the local study area reflected seasonal conditions. The effects of past grazing activities were more evident on palatable shrub species and were accentuated during poor seasonal conditions.

Assurance

This report was completed in accordance with the scope provided by BHP Billiton Yeelirrie Development Company Pty Ltd. The scope of work was undertaken by a team that included nineteen people over a period of two years. Flora and vegetation surveys were conducted using best practice principles and coordinated and led by botanists who had the relevant training and experience. Where possible all methods and results have been standardized. All limitations to vegetation surveys, plant identification and reporting have been provided in the relevant sections of the report.

To the best of their knowledge the authors verify that is report is complete and accurate at the time of publication.

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1. Introduction

BHP Billiton Yeelirrie Development Company Pty Ltd (BHPB Billiton) proposes to develop the Proposed Yeelirrie Development (project) in the North-eastern Goldfields of Western Australia within the Yeelirrie Pastoral Station, which lies in the Shire of Wiluna (Figure 1). The site is located at an elevation of between 480 and 595 m above sea level, approximately 550 km due east of the Port of Geraldton, 500 km north of Kalgoorlie, 110 km north-west of Leinster, 80 km south of Wiluna and 60 km west of the Mt Keith nickel mine.

1.1. Scope of submission

BHP Billiton Yeelirrie Development Company Pty Ltd (BHPB Billiton), through URS Australia Pty Ltd, engaged Western Botanical to undertake an assessment of the flora and vegetation within an area referred to as the total study area.

The total study area includes both areas studied locally (study areas 1, 2 and 3, Figure 2) and regionally (study areas 4 to 16), as presented by (Figure 3).

The scope included:

A Level 2 assessment of the flora and vegetation, within study area 1, suitable for the purposes of an ERMP in accordance with Guidance Statement 51 issued by the Western Australian Environmental Protection Authority (EPA, 2004). This included mapping the vegetation communities at a scale of 1:10,000 within study area 1, mapping the distribution and abundance of significant flora, and establishing and assessing 182 quadrats and 180 relevés within study area 1 to provide a numerical analysis of the variation in the floristic composition of vegetation communities. A greater survey effort was undertaken within the project footprint of study area 1.

Floristic surveys within study area 2, which included mapping the vegetation communities at a scale of 1:20,000, searching for and recording the extent of significant species.

Floristic surveys within study area 3, which included mapping the vegetation communities at a scale of 1:10,000, and mapping the distribution and abundance of significant flora, with particular focus on *Atriplex* sp. Yeelirrie Station.

Undertaking regional surveys to provide a regional context for the distribution of flora species and vegetation communities of conservation significance or interest that were recognised within study area 1. This included the species of interest and communities primarily associated with calcrete. The reasoning behind regional surveys is further defined in Section 1.11.

1.2. Location of study areas

For the purposes of completing this report, Western Botanical undertook both ‘local’ and ‘regional’ surveys. Local surveys included the areas defined as study areas 1, 2 and 3, with an area of 48,901 ha, 42,028 ha and 9,843 ha, respectively. The largest of these areas was defined as study area 1 and formed the focus of the flora and vegetation assessments conducted by Western Botanical. These study areas and their relationship to the Ministerial Temporary Reserve (TR70/6899) (MTR) is shown in Figure 2.

Study area 1 includes the project footprint area and the proposed 45 km access road from the Goldfields Highway. Study area 2 consists of five areas extending out from the boundary of study area 1 and includes the proposed quarry site, wellfields and buffers of the project.

Study area 3 is located on both Yeelirrie and Albion Downs Station, 30 km south-east of the proposed project footprint (located in study area 1) with a section of the proposed access road from study area 1 forming part of the northern boundary. Study area 3 was first assessed as part of the regional surveys and occurs in the north-west tip of study area 4 (discussed below) which includes the Yeelirrie Palaeochannel and Lake Miranda. Further detail of the relationship between study areas 3 and 4 is provided in Section 2.1.3.

The regional surveys are defined as study areas 4 to 16, as shown in Figure 3 and extend over an area of approximately 185,000 square km (Table 8 and Table 9). The regional surveys included targeted searches for significant flora and vegetation

communities of interest that were primarily associated with the Calcrete System within study area 1.

Figure 1. Proposed Yeelirrie Development location map



7000000E

8000000E

7100000mN

Meekatharra

Wiluna

Lake Way

7000000mN

Yeelirie

Lake Mason

6900000mN

Leinster



0 25km

Scale 1:1,250 000
 MGA94 (Zone 50)

LEGEND

- Ministerial Temporary Reserve
- Project Footprint

Proposed Yeelirie Development

Location

Author: C. Ringrose

Date: January 2011

Figure 2. Location map of the Ministerial Temporary Reserve (TR70/6899) and the local study areas (study areas 1, 2 and 3)

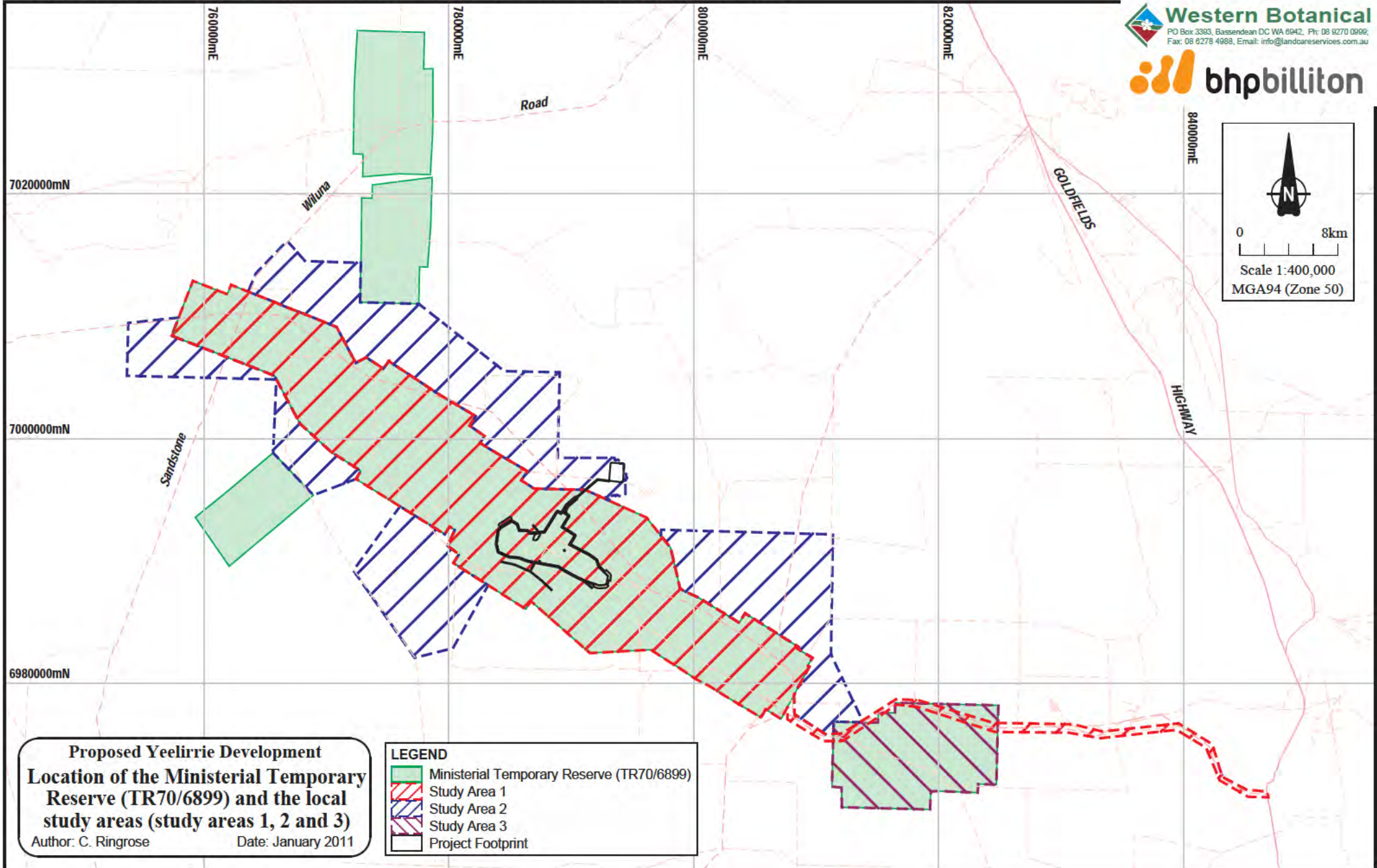
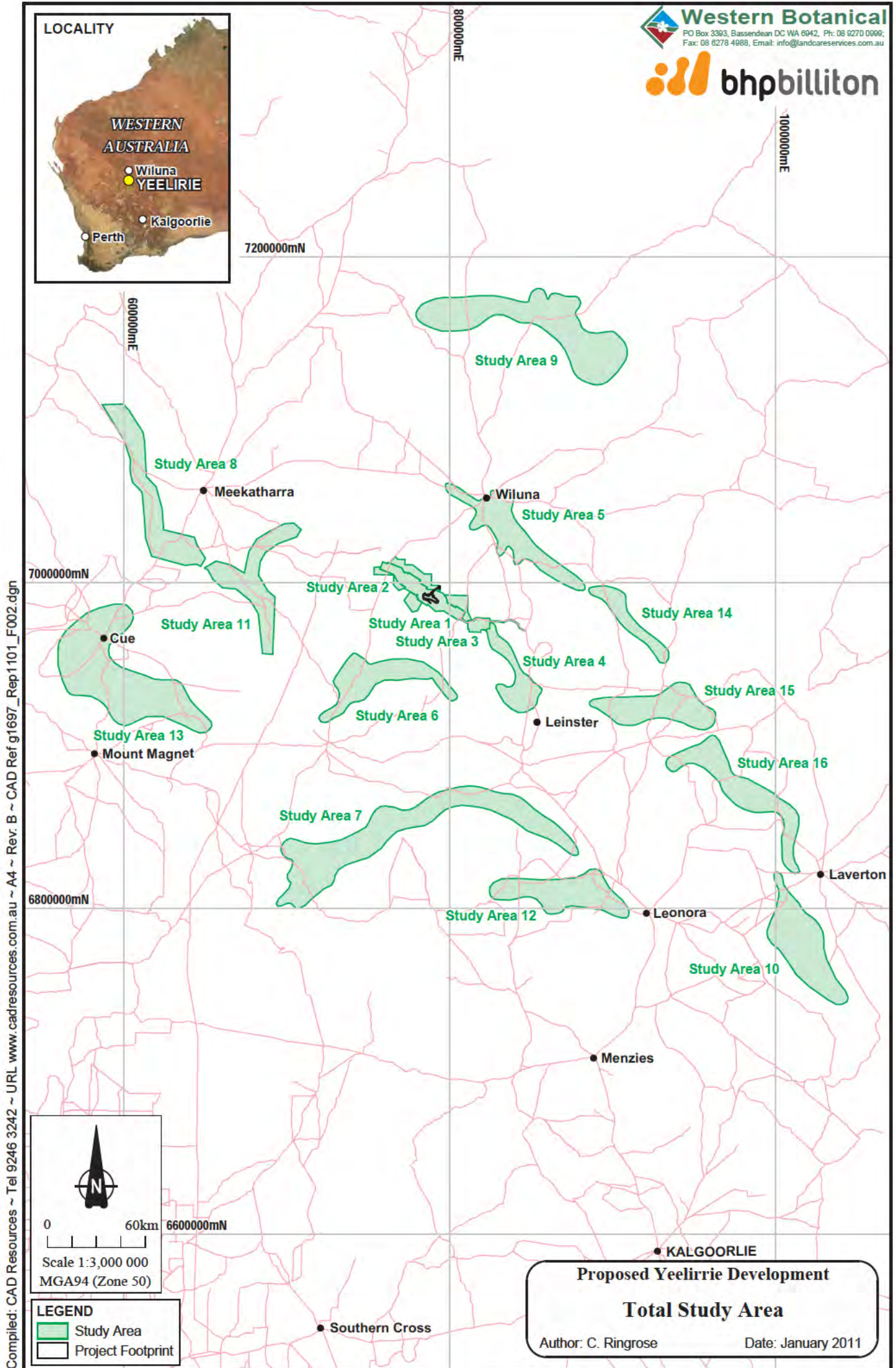
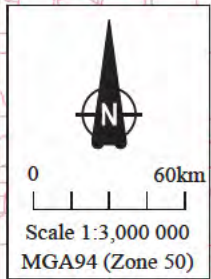


Figure 3. Total study area (study areas 1 to 16)

LOCALITY



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LEGEND	
	Study Area
	Project Footprint

Proposed Yeelirie Development
Total Study Area
 Author: C. Ringrose Date: January 2011

1.3. Bioregion

The total study area (study area 1 to 16), excluding study areas 8 and 9, lies in the Eremaean Botanical Province within the Murchison Biogeographic Region and the East Murchison (MUR1) subregion (Figure 4). Study area 8 lies within the West Murchison (MUR2) subregion, while study area 9 lies predominately within the Gascoyne Biogeographic Region and the Carnegie (GAS2) subregion. The local study area (study areas 1, 2 and 3) lies in the East Murchison (MUR1) subregion. Bioregions and subregions are areas of land with similar climate, geology, landform, vegetation and animal communities (Thackway and Creswell, 1995). There are 85 Bioregions in Australia and 403 subregions (Interim Biogeographic Regionalisation for Australia (IBRA), Version 6.1).

The Murchison 1 subregion, with an area of 7,847,996 ha, covers northern parts of the 'Southern Cross' and 'Eastern Goldfields' Terranes of the Yilgarn Craton. This subregion is characterised by; its internal drainage, extensive areas of elevated red desert sand plains with minimal dune development; salt lake systems associated with the occluded paleodrainage system; and broad plains of red-brown soils and breakaway complexes as well as red sand plains (Cowan, 2001). The vegetation in this region is dominated by Mulga (*Acacia aneura*) woodlands, often rich in ephemeral; hummock grasslands, saltbush shrublands and *Halosarcia* (now *Tecticornia*) shrublands (*ibid.*).

The Murchison bioregion is used primarily for grazing of native pastures by cattle and sheep whilst also supporting mining (predominately nickel and gold). Most of the mining occurs on pastoral lands. Yeelirrie became a pastoral lease in the mid 1920s and livestock were grazed until 1972 when Western Mining Corporation (WMC) purchased the property. Following the acquisition by WMC, the livestock were removed from the pastoral lease but bores and tanks were maintained (WMC, 1979). In 2005 BHP Billiton acquired Yeelirrie Station and it was again grazed for a period prior to recent destocking.

Figure 4. Total study area within the Eastern Murchison (MUR1) subregion of Western Australian IBRA Bioregions

LOCALITY



Compiled: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ A4 ~ Rev. A ~ CAD Ref g1697_Rep1101_F002.dgn

0 60km
Scale 1:3,000 000
MGA94 (Zone 50)

LEGEND
Study Area

Proposed Yeelirrie Development
Total study area within the Eastern Murchison (MUR1) subregion of Western Australia IBRA Bioregions
 Author: C. Ringrose
 Date: January 2011

1.4. Climate

The climate in the Murchison Region is classified as arid with a variable temporal and spatial rainfall distribution. Regional rainfall averages around 250 mm per year, however, both the quantity and frequency of rainfall is highly variable.

Yeelirrie typically has an erratic rainfall pattern and may have extended periods without significant rainfall events. No month is considered consistently wet and any month can record zero rainfall. Meteorological data collected over 80 years for Yeelirrie Station shows an average annual rainfall of 240 mm (median 221 mm). The lowest annual rainfall of 43 mm was recorded in 1950 and the highest of 507 mm was recorded in 1975 (Bureau of Meteorology, 2011).

Yeelirrie is located towards the inland extreme of two separate weather systems. The main influence on the climate is the east-west belt of high-pressure systems that lies over the southern portions of Australia throughout the year. During summer this belt of high-pressure systems moves southward and the climate at Yeelirrie also becomes influenced by the northern monsoonal system (DEC, 1979). Significant summer rainfall usually originates from tropical cyclones that pass over the coast between Port Hedland and Carnarvon and cross the state in a south-easterly direction (Pringle *et al.*, 1994).

On average 56% (135 mm) of the rainfall recorded is received during the ‘summer’ (warmer) months – December, January, February, March and April, with March recording the highest mean monthly rainfall of 31 mm (*ibid.*). The proportion of rainfall received in the warmer months for the years 2006, 2007, 2008 and 2010 was above the long-term average at 74% (322 mm), 81% (138 mm), 61% (139 mm) and 57% (157mm) respectively (Figure 5). The proportion of rainfall received during the warmer months of 2009 was below the long-term average at 52% (80 mm) (Figure 5).

The total annual rainfall for the four years prior to reporting was below the long-term average (240 mm): 2007 (169 mm), 2008 (228 mm) and 2009 (153 mm) (Bureau of Meteorology, 2010). This indicates that the rainfall received during the cooler months in these years was significantly less than average. The total annual rainfall for

2010 at 277.6 mm was above the long-term average (Bureau of Meteorology, 2011). The annual rainfall in 2006 was also well above the long-term average, at 436 mm.

The timing of rainfall is often more relevant to vegetation growth than the amount of rain an area receives. Rain received in the cooler months (May to September) is usually more effectual for vegetation growth than rain received in the warmer months (December to April). Although, rainfall received during the warmer months can help to lessen the extremity of the long, hot and dry periods, and relieve the requirement for plants to aestivate (Pringle *et al.*, 1994). Effective winter rainfall allows perennial trees and shrubs to flower and fruit while summer rainfall stimulates perennial grasses to flower and seed.

From meteorological data collected at Yeelirrie between 1973 and 2010, the mean summer temperatures (December to February) were 35.5°C at 3pm and 28.6°C at 9am. The mean winter temperatures (June to August) were 19.3°C at 3pm and 12.2°C at 9am (Bureau of Meteorology, 2011).

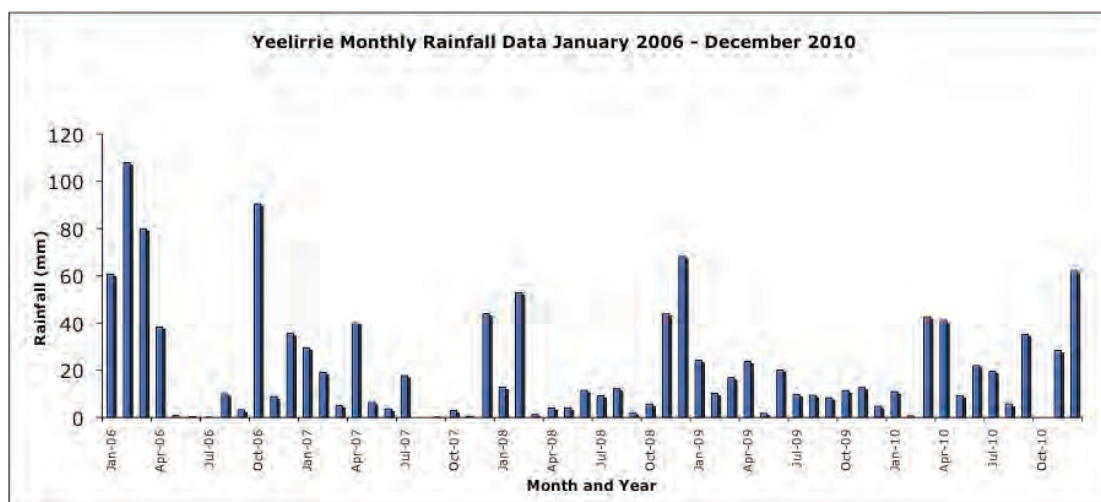


Figure 5. Yeelirrie Station monthly rainfall data from January 2006 to December 2010 (adapted from Bureau of Meteorology data, 2011)

1.5. Geology

Although not a part of Western Botanical's scope, a brief description of the geology of study areas 1, 2 and 3 has been included to provide physical framework to the flora and vegetation communities surveyed.

These study areas occur at the northern end of the Yilgarn Craton in the Eastern Goldfield Province. The Yilgarn Craton, with an age of approximately 2.5 gigaannum (Ga) (Griffin, 1990), encompass a large portion of the Western Australian landmass, 657,000 square km. The Eastern Goldfield Province is a typical Archaean granite-greenstone terrain, characterised by large areas of granitoid lithology and generally narrow, linear or arcuate belts of greenstone (*ibid.*).

There are several well-preserved major paleodrainage systems within the Yilgarn Craton that were active in the Early Tertiary period. Chains of playa lakes border these drainage systems. Some drainage is now internal but when active (significant flow ceased by Late Miocene) all the networks drained externally (Hocking and Cockbain, 1990, *after* van der Graff, 1977).

1.6. Soils and soil landscapes

Although not a part of Western Botanical's scope a brief description of the soil and landforms of study area 1 has been included. Where possible study areas 2 and 3 have also been included as the vegetation communities of the area are closely associated.

The interrelationships between the physical environment and vegetation communities is well documented and are apparent on both broad and local scales. Contrasts in vegetation structure and species composition reflect soil chemical and physical properties, landscape position, aspect, hydrology and underlying geology. These vary significantly on a broad scale between land systems as defined by DAWA, discussed further in Section 1.7, and also in the local study area in relation to soil landscapes defined by D.C. Blandford in *Soils and Soil Landscapes of the Yeelirrie Study Area* (Blandford, 2011).

In *Soils and Soil Landscapes of the Study Area* (2011), DC Blandford described four soil landscapes within study area 1, these are: Colluvial/ Alluvial Sand Plain System, Playa System, Central Calcrete System and Granite System.

The Colluvial/ Alluvial Sand Plain System extends from the central valley of study area 1 to the granite breakaways. The sand plains are characterised by inconsistent

soil profiles and have varying degrees of moisture retention according to the thickness and composition of gravels in the soil horizon (*ibid.*).

The Playa System soil landscape is a transition zone that reflects the interaction between the sand plain and central calcrete of study area 1 and is the major drainage focus for surface runoff along the valley floor. The Playa System comprises the following units: playas (shallow depressions), flats with scalds, and flats with sink holes (*ibid.*).

The Central Calcrete System (Calcrete System) is a variable soil landscape that occupies the central zone of the valley floor and has four recognized units: calcrete rises, depressions, flats, and clay flats. Each of these units has a distinctive soil stratigraphy (*ibid.*).

The Granite System has three key units and a highly variable transition zone to the sand plain. The system units are the breakaway plateau surface, the breakaway itself, and a foot slope. Breakaways are a prominent feature in the landscape and are characterised by a well-developed pallid zone dominated by kaolinitic material (*ibid.*).

1.7. Land Systems of the local study area (study areas 1, 2 and 3)

The local study area (study areas 1, 2 and 3) falls between two rangeland condition survey areas: the 'Sandstone-Yalgoo-Paynes Find' area (Payne *et al.*, 1998) and the 'North-eastern Goldfields' area (Pringle *et al.*, 1994). From these two surveys, sixteen land systems representing ten land types have been mapped at a scale of 1:500,000 within the local study area (Figure 6). Each land system that occurs within the local study area is described below and a summary is presented in Table 1. The terminology used to describe the land systems in this report reflects the scale of the rangeland condition surveys undertaken by the above authors and their descriptions published within each corresponding Technical Bulletin.

Figure 6. Land systems within the local study areas

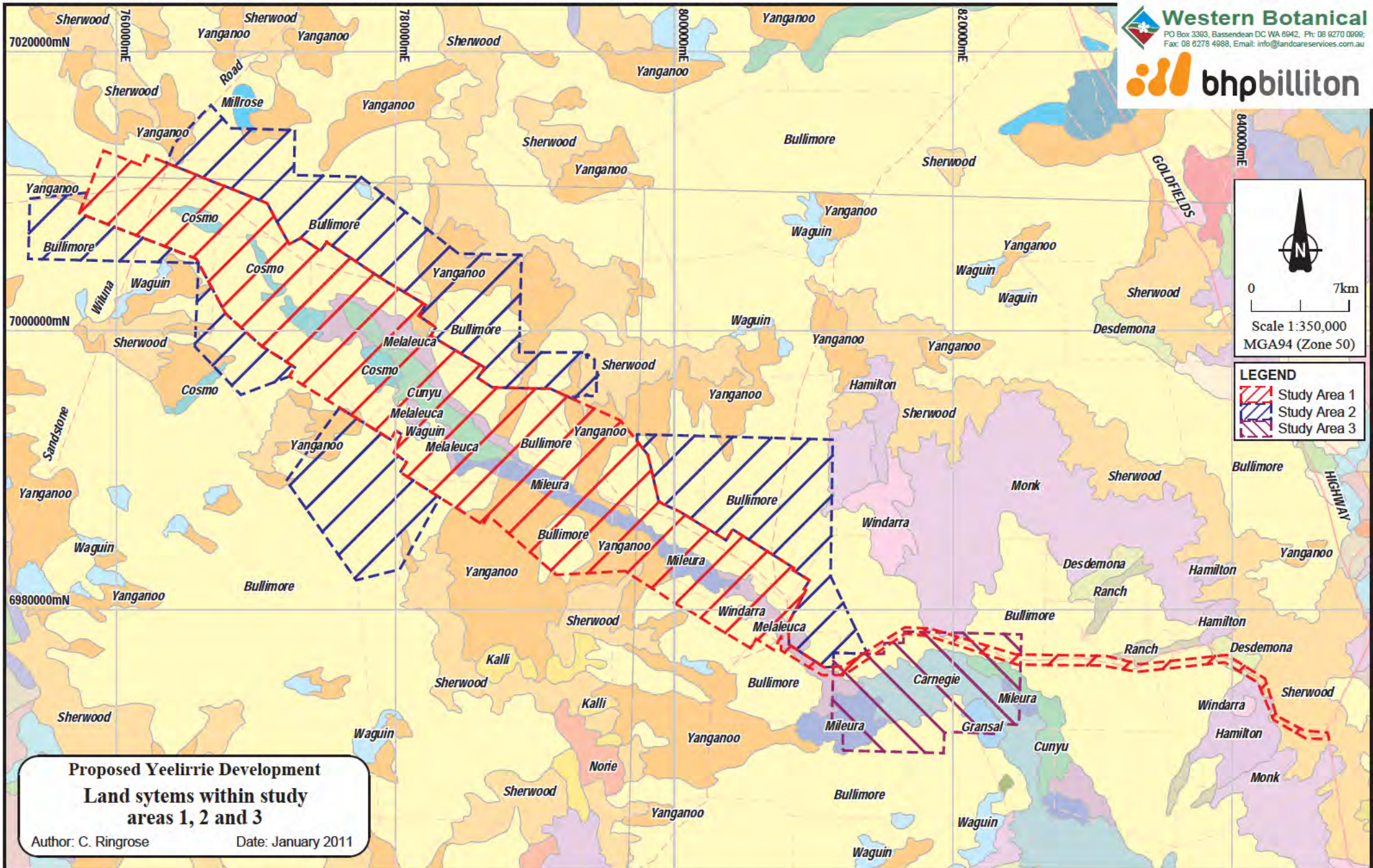


Table 1. Land types and land systems represented within the local study area

Land type number	Land type description	Land system	Study area (ha)		
			1	2	3
3	Low hills and quartz strewn plains with Mulga shrublands	Millrose	n/a	13.12	n/a
4	Breakaways, stony plains and sandy surfaced plains on granite with Mulga shrublands and minor halophytic shrublands	Sherwood	418.38	503.08	n/a
		Waguin	154.21	99.38	n/a
8	Stony plains with Acacia shrublands and halophytic shrublands	Gransal	n/a	n/a	440.49
9	Stony plains and occasional low rises with Acacia-Eremophila shrublands	Windarra	99.50	n/a	n/a
10	Sandplains with Spinifex hummock grasslands	Bullimore	31,380.66	36,239.98	9,909.71
13	Wash plains on hardpan with Mulga shrublands	Hamilton	46.33	n/a	n/a
		Ranch	10.98	n/a	n/a
14	Wash plains and sandy tracts on hardpan, with Mulga shrublands and Wanderrie Grasses	Monk	45.04	145.06	57.15
		Yanganoo	6,398.74	4,803.48	n/a
16	Plains with deep sandy soils supporting Acacia shrublands and occasionally with Wanderrie Grasses	Desdemona	141.43	n/a	n/a
18	Calcrete drainage plains with mixed halophytic and non-halophytic shrublands	Cosmo	1,772.55	24.09	n/a
		Cunyu	2,432.40	n/a	424.44
		Melaleuca	3,441.40	200.44	248.80
		Mileura	2,559.24	n/a	1,236.99
20	Salt lakes and fringing alluvial plains with halophytic shrublands	Carnegie	n/a	n/a	3,525.10

Land systems associated with paleodrainage channels and calcrete expressions

Four land systems mapped within the local study area are associated with paleodrainage channels and calcrete expressions and are described as follows.

Cosmo: This land system represents level sandplains enclosing and occasionally covering gently undulating low-rise calcrete platforms and calcrete plains with drainage foci, depressions collecting intermittent sheet flow.

Cunyu: Undulating calcrete platforms to 4 m relief, calcrete, level hardpan and alluvial plains influenced and subjected to sheet flow represent the dominant land form features of the Cunyu land system. Intervening drainage floors and occasional drainage foci are present.

Melaleuca: Comprised of level loamy plains with irregular marginal sandy banks and sandsheet plains. Gently inclined calcrete rubble plains, concentrated unchannelled drainage lines and drainage foci complete the dominant landform features.

Mileura: Representing the Mileura land system is a mosaic of gently undulating calcrete platforms and calcrete rubble plains with level alluvial plains. Saline hardpan plains with sandy banks intersected with unincised drainage tracts and drainage foci conclude the Mileura land system.

Land systems associated with breakaways, sandsheets, stony plains and hardpan wash plains

Twelve land systems mapped within the local study area are associated with breakaways, sandsheets and hardpan wash plains, and are described as follows.

Millrose: Gently undulating stony plains on hardpan and granite with irregularly distributed sandy wanderrie banks characterise the Millrose land system. Mulga shrublands and Wanderrie Grasses compose the vegetation of the Millrose land system.

Sherwood: Granite breakaways to 20 m relief with gently inclined lower footslopes, opening onto gritty surfaced, stony/ saline and hardpan loamy plains are the predominant features. Low quartz and granite rises, alluvial plains and flow concentrated drainage tracts constitute the remaining features.

Waguin: This land system is representative of sandplains and low weathered granite breakaways to 6 m relief. These gentle elevations descend onto lower footslopes with level to gently undulating stony quartz plains, gritty surface plains, loamy alluvial hardpan plains and drainage floors dominated by sheet flow and shallow channels.

Gransal: Stony plains and low rises based on granite, supporting halophytic shrublands characterise the Gransal land system.

Windarra: Saline stony, gritty quartz and hardpan plains are the dominant features with low granite rises and occasional channelled drainage floors.

Bullimore: Aeolian, fluvial and colluvial influenced gently undulating sandsheet plains represent 85% of the Bullimore land system. Level loamy plains subject to sheet flow, linear sand dunes, concentrated sheet flow drainage tracts and rare dissected weathered granite tracts combine to round out the Bullimore land system.

Hamilton: This land system is composed of a mosaic of stony hardpan plains intersected with dendritic drainage lines and sandy banks.

Ranch: Gently inclined hardpan and loamy plains with sandsheets characterise the Ranch land system. Irregular sheet flow is concentrated into broad drainage zones and shallow incised creek lines, with drainage foci of variable size and distribution.

Monk: Hardpan plains and loamy tracts with stony hardpan plains located within the higher elevated topography. Parallel shallow and narrow drainage lines with broader drainage tracts and sandy banks negotiate the land system.

Yanganoo: Level to gently inclined depositional hardpan loamy plains are the dominant feature with *Acacia aneura* groves, broad shallow drainage tracts, sandy banks and sandsheet plains intermittently represented.

Desdemona: Extensive level loamy plains are a dominant landform feature of the Desdemona land system. Completing the land system are bordering sandsheets and hardpan plains subject to dispersed runoff concentrated into poorly defined narrow drainage lines.

Carnegie: Salt lakes with extensive fringing saline plains, dunes and sandy banks, supporting low halophytic shrublands and scattered tall *Acacia* shrublands are representative of the Carnegie land system. The lakebeds are highly saline, gypsiferous and mainly unvegetated.

Details of the area (ha) of each land system and their proportional representation within the two regions are presented in Table 2. The considerable representation of land type 18, and its four land systems (Cosmo, Cunyu, Melaleuca and Mileura) within the study areas is of interest with reference to the land types' limited occurrence throughout the Sandstone-Yalgoo-Paynes Find and the North-eastern Goldfields survey areas. Regional representation of these four land systems has a high spatial association with the margins of salt lakes and occluded paleodrainage channels. These are an uncommon, geographically disjunct and isolated series of land systems within the broader region. Other land systems found within the local study area are well represented in the wider region.

Vegetation associated with land type 18, paleodrainage channels and calcrete expressions, can also be considered to have a limited occurrence throughout the Sandstone-Yalgoo-Paynes Find and the North-eastern Goldfields survey areas. As introduced in the previous Section, contrasts in vegetation structure and species composition reflect soil chemical and physical properties, landscape position, aspect, hydrology and underlying geology. Certain vegetation communities are associated wherever groundwater calcretes (calcium carbonate) have accumulated – generally in paleodrainage channels between and adjacent to salt lakes.

Table 2. Land system extent within the local study area and regional representation

Land type	Land system	Sandstone-Yalgoo-Paynes Find area (ha)	North-eastern Goldfields area (ha)	Total Mapped area (ha)	Local study area (ha)	Proportion within study area of total occurrence (%)
3	Millrose	n/a	n/a	53,500*	13	0.02
4	Sherwood	345,800	387,500	733,300	921	0.13
4	Waguin	124,900	74,500	199,400	254	0.13

Land type	Land system	Sandstone-Yalgoo-Paynes Find area (ha)	North-eastern Goldfields area (ha)	Total Mapped area (ha)	Local study area (ha)	Proportion within study area of total occurrence (%)
8	Gransal	80,000	274,100	354,100	440	0.12
9	Windarra	37,000	193,800	230,800	99	0.04
10	Bullimore	624,900	2,401,300	3,026,200	71,530	2.36
13	Hamilton	32,500	113,000	145,500	46	0.03
13	Ranch	29,800	65,500	95,300	11	0.01
14	Monk	182,200	816,200	998,400	247	0.02
14	Yanganoo	327,600	87,500	415,100	11,202	2.70
16	Desdemona	4000	252,400	256,400	141	0.06
18	Cosmo	5000	14,100	19,100	1,797	9.41
18	Cunyu	35,800	31,000	66,800	2,857	4.28
18	Melaleuca	12,900	26,700	39,600	3,008	7.60
18	Mileura	70,000	55,000	125,000	3,796	3.04
20	Carnegie	864,900	550,600	1,415,500	3,525	0.25

*Millrose land system is not present within Technical Bulletin No. 87 and Technical Bulletin No. 90. Total mapped area comes from the Millrose land system's presence within Technical Bulletin No. 84.

1.8. Previous regional botanical surveys

Prior botanical knowledge of the Murchison region consisted of broad scale regional flora surveys, including a general account of vegetation (Gardner, 1942 and Beard, 1976), and descriptions of land systems and vegetation across the Austin Botanical District in the Wiluna and Glengarry areas completed as part of rangeland condition surveys (Mabbutt *et al.*, 1963). Regional vegetation mapping of the Murchison region has been produced at a very broad scale of 1:1,000,000 (Beard, 1976 and 1979).

Pringle *et al.* (1994) and Payne *et al.* (1998) describe their survey area at two scales; the broader land system, as described in Section 1.7, and the individual vegetation unit (site type or habitat group). Habitat groups or site types are described in terms of land surface, dominant taxa, and dominant vegetation structure.

Initial assessment of ore body area in *Flora and Vegetation Assessment of Portion of Proposed Confirmation Drilling Program – Part 1* (Cockerton and Ringrose, 2009) and *Significant Flora Assessment of Remainder of Proposed Confirmation Drilling Program – Phase 1B* (Cockerton *et al.*, 2009) demonstrated a clear correlation of vegetation community types with significant and clear-cut changes in soil and topography.

During the current survey, 21 site types or habitat groups described by Pringle *et al.* (1994) and Payne *et al.* (1998) were recognised within the local study area (Table 3). These habitat groups occurred in the Sand Plain and Granite Systems, which are well represented in the North-eastern Goldfields and Sandstone-Yalgoo-Paynes Find survey areas (*ibid.*). Where possible the vegetation unit descriptions (site type or habitat group) defined by Pringle *et al.* (1994) and Payne *et al.* (1998) in land system mapping were adopted in the current vegetation mapping (see Section 2.3).

Table 3. Habitat groups represented within the local study area, adapted from Pringle *et al.* (1994) and Payne *et al.* (1998)

Habitat group or site type
Sand plain spinifex hummock grassland characterised by deep sands supporting hummock grassland (SASP)
SASP with a well-developed <i>Eucalyptus gongylocarpa</i> tree stratum (SAGS)
SASP with a low heath stratum of Myrtaceous shrubs (SAHS)
SASP with a tall tree stratum dominated by Mulga (<i>Acacia aneura</i> and <i>A. ayersiana</i>) (SAMU)
SASP with mixed <i>Acacia</i> (commonly known as wattles), and occasionally proteaceous tall shrub strata including <i>Hakea</i> and <i>Grevillea</i> (SAWS)
SASP with substantial mallee (SAMA)
SASP with a well-developed shrub stratum generally on sand dunes (SDSH)
Mulga shrublands with sparse sclerophyll understoreys associated with hardpan plains (HPMS)
Mulga groves on hardpan plains They have distinct boundaries with sparse intergrove communities (GRMU)
Wanderrie bank Mulga grassy shrublands, consists of very low sandy banks of red sand on hardpan (WABS)
Drainage tract Mulga shrublands occur on narrow unincised linear drainage zones receiving concentrated run-on (DRMS)
Stony plain <i>Acacia-Eremophila</i> shrublands occur on stony plains and are

Habitat group or site type
characterised by shallow, poorly developed soil profiles and substantial stony mantles (SAES)
Breakaway foot slope chenopod low shrubland, occurs on gently inclined foot slopes and alluvial plains of weathered granite (BCLS)
Calcrete platform Jam (<i>Acacia burkittii</i>) shrubland (JAMS)
Upland small Bluebush species shrublands (USBS)
Calcrete platform woodlands / shrublands (CAPW)
Mixed chenopod shrublands with Mulga overstorey (MHHS)
Sandy bank lake shrublands (SBLS)
Frankenia low shrublands (FRAN)
Samphire low shrublands (SAMP)
Silver Saltbush low shrublands (SSAS)

The first detailed surveys of the Eastern Goldfields Region were undertaken by the DEC and the Western Australian Museum (Burbidge *et al.*, 1995, Dell *et al.*, 1992, Dell *et al.*, 1998, Hall *et al.*, 1994, How *et al.*, 1992 and McKenzie and Hall, 1992).

Recent regional flora surveys in the Murchison have been undertaken by the DEC at Lake Mason and Black Range conservation reserves in 2004 and 2005 (Mark Cowan, DEC, pers comm.). Surveys were conducted at 24 sites within the Brooking, Nubev, Bullimore, Norie, Challenge, Kalli, Carnegie, Monitor, Cunyu, Woodline, Yanganoo, Violet, Gabanintha, Waguin, Sherwood and Miluera land systems. Some 309 taxa were recorded including two species with conservation significance: *Eremophila arachnoides* subsp. *arachnoides* P3 was recorded in the Cunyu land system and *Grevillea inconspicua* P4 was recorded in the Gabanintha land system.

At a finer scale, in the last 20 years, a number of flora and vegetation surveys including habitat level mapping, have been undertaken in association with increased mining activities in the vicinity of the study area. The majority of these have been undertaken by Western Botanical (including the current authors). These include the Mt Keith Operation (Cockerton, 1996a and 2004, Cockerton and Stratford, 1997a, Cockerton and O'Keefe, 2006a, Cockerton and True, 2006, Western Botanical, 2008a), Yakabindie Nickel Mine Project (*ecologia* Ecological Consultants, 1990a,

1990b and 1995, Cockerton *et al.*, 2006, Cockerton and O’Keefe, 2006b, Western Botanical 2008b), Agnew Gold Operations (Cockerton and Stratford, 1996), and Leinster Nickel Operations (Cockerton and Stratford, 1997b and 1997c, Kern, *et al.*, 2007, Western Botanical, 2007 and 2008c).

1.9. Botanical surveys within the local study area

Broad scale vegetation mapping of the region by Beard (1976) indicates five vegetation units within study areas 1, 2 and 3, as listed below.

1. Mulga (*Acacia aneura*), Mallee (*Eucalyptus kingsmillii*) and Spinifex (*Triodia basedowii*) shrub steppe on sand plains.
2. Mulga (*Acacia aneura*) and Wattles (*Acacia* spp.) with Saltbush (*Atriplex* spp.) or Bluebush (*Maireana* spp.) succulent steppe.
3. Saltbush (*Atriplex* spp.), Bluebush (*Maireana* spp.) and Samphire (*Tecticornia* spp.) communities succulent steppe.
4. Mulga (*Acacia aneura*) low woodland.
5. Mulga (*Acacia aneura*) and *A. quadrimarginea* scrub.

Studies of the flora and vegetation of the Ministerial Temporary Reserve were completed as part of the Draft EIS and ERMP by Western Mining Corporation Limited (1979).

The vegetation and flora survey of the EIS and ERMP report was conducted during winter and spring 1976 and autumn 1977, after an unseasonably long dry period. This period was the driest 18 months on record from 1926 to the time of survey and only perennial species were recorded. However, it is noted that the annual rainfall received in 1975, 507 mm, was the highest rainfall record for the region. The emphasis of this report was on plant physiology and ecology, specifically drought resistant characteristics of persistent plants. The major finding of this study concluded that flora at Yeelirrie was represented by a broad range of species with a large number of species stored in the seed bank, consisting of ephemerals, grasses and other annuals, forbs and shrubs, although not usually perennials.

None of the flora taxa recorded at that time were considered rare and the majority were known to occur in similar landforms in the region. A number of the plants collected were at the time undescribed and it was not possible to determine if they were of particular botanical significance as their distribution was not understood.

Vegetation mapping was prepared, and vegetation units were related to the landform units and described using Specht's structural formation (Specht, 1970). These are listed as follows:

- 1 Hummock grassland;
- 2 Low open woodland;
- 2A Low open grassy woodland;
- 2B Low open sparse layered shrubby woodland;
- 2C Low open grassy woodland;
- 3 Low open shrubland;
- 4 Tall shrubland;
- 5 Open grassy woodland;
- 6 Low open forest fringing clay pan areas; and
- 7 Low open halophytic shrubland.

1.10. Flora and vegetation of conservation significance

The conservation status of flora is assessed under Commonwealth and State Acts, the EPBC Act 1999 and the Western Australian *Wildlife Conservation (WC) Act 1950*, respectively.

1.10.1. Flora protected under the EPBC Act 1999

At a Commonwealth level, the *EPBC Act 1999* provides a legal framework to protect and manage nationally significant flora and ecological communities. A Protected Matters Search Report, Appendix 1 of this report, provides guidance on matters of national environmental significance and other matters protected by the EPBC Act 1999 in the region of Yeelirrie. There are no Commonwealth listed Threatened Flora species or Threatened Ecological Communities known to occur in the vicinity of study area 1.

1.10.2. Flora protected under the WC Act 1950

Under the WC Act 1950, the Minister for the Environment may declare a species to be 'Rare Flora' if considered to be in danger of extinction, rare or otherwise in need of special protection. There are also three categories of Priority Flora defined to cover poorly known species. These are flora that are either under consideration as threatened flora but are in need of further survey to adequately determine their status, or are adequately known but require monitoring to ensure that their security does not decline. A fourth category of Priority Flora is included for those species that have been adequately surveyed and are considered to be rare but not currently threatened. Brief descriptions of the flora conservation codes and their meanings are presented in Appendix 2 of this report.

1.10.3. Declared Rare Flora and Priority Flora recorded within the region

Regional data on conservation significant species was made available by the DEC. Searches were undertaken within an area defined by the coordinates 26° 49' - 27° 52' S and 119° 20' - 120° 38' E of the following databases:

- DEC's Threatened (Declared Rare) Flora database;
- Western Australian Herbarium (WA Herbarium) Specimen database, for priority species opportunistically collected in the area of interest; and
- DEC's Declared Rare and Priority Flora List (searched using 'place names'). This may be used as a species target list, and contains species that are declared rare (Conservation Code R or X for those presumed to be extinct), poorly known (Conservation Codes 1, 2 or 3), or require monitoring (Conservation Code 4).

Thirty-seven Priority Flora taxa were listed for the regional area including Yeelirrie. These included eleven P1, twenty P3 and six P4, shown in Table 1 of Appendix 3. This list includes one Priority 3 species of lichen, *Parmeliopsis macrospora*.

1.10.4. Threatened Ecological Communities

In addition to the flora of conservation significance discussed above, communities may also be considered threatened and at risk of being destroyed. Threatened communities are assessed by a scientific committee who suggest that the DEC advise the Minister for the Environment to endorse the community as a Threatened Ecological Community (TEC). In addition to TECs there is a category called Priority Ecological Communities (PECs) defined to cover poorly known vegetation communities. Priority Ecological Communities are communities awaiting nomination for TEC status.

There were no flora related TECs as listed by the Minister or under the *EPBC Act 1999* in the vicinity of the local study area and there were no flora related PECs listed for calcrete assemblages within the vicinity of the local study area. There are fifteen Priority One PEC communities associated with Banded Ironstone Formations (BIFs) listed in the DEC Goldfields region. These are not discussed further. The DEC database for Threatened Ecological Communities also lists the *Yeelirrie calcrete groundwater assemblage type on Carey paleodrainage on Yeelirrie Station* as a Priority One PEC (unique assemblages of short-range endemic subterranean aquatic fauna have been identified in the groundwater calcretes). The locations of all PECs listed in the vicinity of the local study area are shown on Figure 1 of Appendix 3.

1.11. Regional surveys (study areas 4 to 16)

Survey of study areas 4 to 16 provides a regional context to the distribution of flora species and vegetation communities of conservation significance or interest that were recognised within study area 1. The species and communities targeted during the regional surveys were primarily associated with calcrete. These surveys also provide a guide to the regional distribution of flora and vegetation with conservation significance. Both sets of data may be used to assess the proportional impact of the proposal on flora and vegetation recorded in study area 1.

1.11.1. Targeted vegetation communities

Several vegetation communities are considered of interest within study area 1 as they are, based on current information available, of limited distribution (Table 4). Some of

these communities fall within the descriptions of ecosystems at risk described by Cowan (2001) within the East Murchison IBRA subregion, as discussed in Section 3.1.9. Distribution of these communities outside the local study area is discussed further in Section 3.8.1. CApS and CRsS are new vegetation communities described by Western Botanical (refer to Appendix 8) and are not documented outside the local study area to date. Based on current information available both communities are limited in distribution and are considered to be of high conservation significance.

Table 4. Targeted vegetation communities of interest

Vegetation community	Vegetation community description	Soil landscapes
CApS	<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter and A. Douglas 25025) Shrubland on Calcrete	Calcrete
CRsS	<i>Rhagodia</i> sp. Yeelirrie Station (K. Shepherd et al. KS1396)	Calcrete
CMxS	<i>Melaleuca xerophila</i> Shrubland on Calcrete	Calcrete
CCpW	<i>Casuarina pauper</i> Woodland on Calcrete	Calcrete
CEgW	<i>Eucalyptus gypsophila</i> Woodland on Calcrete	Calcrete

1.11.2. Targeted flora species

The flora species targeted for this survey were those identified as occurring within the project footprint and having potentially high impacts from mining activities. Five flora taxa are considered to be significant or of interest and warranted regional surveys as they are, based on current information available, of limited distribution (Table 5). Further information on these taxa is provided in Section 3.3. Three are Priority species that are restricted to the calcrete communities: *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH25025) P1, *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1, and *Eremophila arachnoides* subsp. *arachnoides* P3. A further two species were also included as they are confined to playa and calcrete communities: *Templetonia incrassata* and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH14560).

Three of these species represent new taxa that were recognised as significant following the baseline survey: *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) P1, *Rhagodia* sp. Yeelirrie Station (K. Shepherd et al. KS1396)

P1 and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH14560).

Table 5. Targeted flora species

Species	Reason for interest	Vegetation community	Soil landscapes
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH25025) P1	P1	CApS	Calcrete
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1	P1	CRsS	Calcrete
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i> P3	P3	CCpW, CAbs, CEgW	Calcrete
<i>Templetonia incrassata</i>	Poorly collected, range extension	CCpW, CAbs, CEgW	Calcrete, Playa
<i>Scaevola spinescens</i> terete leaf form (G. Cockerton & C. Ringrose LCH14560)	Possible conservation significance	various	Playa

Prior to the regional survey, *Atriplex* sp. Yeelirrie Station was known from only one location, within self-mulching clay on clay flats within the central Calcrete System of study area 1. This taxon appears to be restricted to Mileura and Cunyu land systems. These land systems are associated with calcrete on the margins of large drainage systems or lake systems. *Rhagodia* sp. Yeelirrie Station also appears to be restricted to Mileura and Cunyu land systems.

Regional representation of the Mileura, Melaleuca, Cunyu and Cosmo land systems has a high spatial association with the margins of salt lakes and occluded paleodrainage channels. These are an uncommon and geographically isolated series of land systems within the broader region of the Sandstone - Yalgoo - Paynes Find and the North-eastern Goldfields survey areas.

2. Methodology

2.1. Survey effort

Western Botanical conducted flora and vegetation surveys in the total study area from December 2008 to December 2010. A total of 39 field visits were made of the total study area over this time. Chronological lists of field surveys undertaken in the study areas are presented in Appendix 4 (Table 1, Table 2 and Table 3). A summary of the personnel and their relevant experience is also provided in Table 4 of Appendix 4 of this report.

The number of field surveys and survey effort (depth of assessment) varied for each study area, as described below.

2.1.1. Study area 1

Western Botanical conducted 26 field surveys within study area 1 during December 2008 to December 2010. The field surveys included: mapping the vegetation communities (refer to Section 2.3.1), mapping the distribution and abundance of significant flora (including the project footprint at a higher density, refer to Section 2.8.1), and establishing and assessing 182 quadrats and 180 relevés (refer to Section 2.6.1) within study area 1 to provide a numerical analysis of the variation in the floristic composition of vegetation communities.

2.1.2. Study area 2

Western Botanical conducted two field surveys within study area 2 during November 2010. The field surveys included mapping the vegetation communities (refer to Section 2.3.2), searching for and recording the extent of significant species (refer to Section 2.8.2).

2.1.3. Study area 3

As discussed below Western Botanical conducted regional surveys of 13 paleodrainage and lake systems for targeted species of interest. It was during these surveys that *Atriplex* sp. Yeelirrie Station was recorded in the north-west tip of study area 4, which included the Yeelirrie Palaeochannel and Lake Miranda. Following

these findings this section of study area 4 was investigated further and was redefined as study area 3 (see Figure 7).



Figure 7. Location of study area 3 relative to study area 4

Western Botanical conducted a further five field surveys within study area 3 from March to December 2010. The field surveys included flora sampling, mapping the vegetation communities (refer to Section 2.3.3) and mapping the distribution and abundance of significant flora (refer to Section 2.8.3), with particular focus on *Atriplex* sp. Yeelirrie Station. Further details on the assessment of *Atriplex* sp. Yeelirrie Station numbers within study area 3 are provided in Section 2.8.5.

2.1.4. Regional surveys (study areas 4 to 16)

Western Botanical conducted regional flora and vegetation surveys from November 2009 to May 2010. A total of six surveys were conducted, two utilising a helicopter, and 13 paleodrainage and lake systems were investigated.

The field surveys included recording vegetation communities of interest (refer to Section 2.3.4), establishing and assessing quadrats in vegetation communities of interest (refer to Section 2.6.3) and recording the distribution of targeted significant and Priority Flora (refer to Section 2.8.4). Further methodology and site selection details are provided in Section 2.9.

2.2. Taxonomic identification specimen vouchering and nomenclature

Unidentified specimens found during surveys, vegetation mapping and quadrat establishment were identified either using the Western Australian reference herbarium or if that did not provide enough information the specimens were sent to a specialist taxonomist for identification. Taxonomists consulted are listed in Appendix 5 of this report. In addition, all collected samples were checked to validate the field identifications. Duplicates of each specimen were retained and the specimen of highest quality was vouchered at the WA Herbarium.

Plant nomenclature adopted for this report follows that of the Census of Vascular Plants of Western Australia administered by the DEC, WA Herbarium as at January 2011. Floristic terminology follows that of the WA Herbarium except where phrase names for undescribed species have been developed.

The WA Herbarium recently rearranged its vascular plant collections and updated its sequence and arrangement of collections to the modern APGIII phylogenetic system, which involved some family level changes. The changes to those families relevant to the Yeelirrie Project are listed below. In some cases an entire family was incorporated into another family or renamed (Table 6). In other cases, some genera were moved to another family while others were retained, and genera previously in the same family were split into different families (Table 7).

Table 6. Updates to family names relevant to the Yeelirrie Project that involved simple or entire family changes

Old family name	New family name
Adiantaceae	Pteridaceae
Asclepiadaceae	Apocynaceae

Old family name	New family name
Caesalpinaceae	Fabaceae
Lobeliaceae	Campanulaceae
Mimosaceae	Fabaceae
Myoporaceae	Scrophulariaceae
Papilionaceae	Fabaceae
Sterculiaceae	Malvaceae

Table 7. Updates to family names relevant to the Yeelirrie Project that involved splits within families

Old Family	Genus	New family
Euphorbiaceae	<i>Phyllanthus</i>	Phyllanthaceae
Scrophulariaceae	<i>Peplidium</i>	Phrymaceae
Scrophulariaceae	<i>Stemodia</i>	Plantaginaceae

2.3. Mapping the vegetation communities

2.3.1. Study area 1

The mapping of the vegetation within the study area 1 was initiated in April 2009, and was conducted over five visits during Autumn and Winter 2009. Mapping was validated in March 2010. The total area of vegetation mapped was 48,901 ha and included the proposed 45 km access road from the Goldfields Highway (Figure 2). The proposed access road was surveyed allowing for a buffer of 250 m either side of the centre line of the existing Yeelirrie Albion Downs Road.

The seasonal conditions prior to vegetation mapping were hot and dry resulting in the mapping of predominantly perennial species with few annuals recorded. The site received 83.8 mm of rainfall over March and April 2010 enabling many perennials to flower and fruit, which assisted the identification of taxa.

Vegetation communities were mapped at the floristic community level within landform. A combination of landform, vegetation structure and dominant species in the upper and lower strata were used to differentiate and name the vegetation

communities. Where possible the vegetation unit descriptions (site type or habitat group) defined by Pringle *et al.* (1994) and Payne *et al.* (1998) in land system mapping were adopted (Section 1.8). These have been aligned and associated with the soil landscapes described by DC Blandford in *Soils and Soil Landscapes of the Study Area* (2011).

For the purposes of this study, Western Botanical devised a further series of groups, which the authors defined as vegetation communities. These are based on floristic composition and vegetation structure at the scale required for this study. Where appropriate, the authors used a similar classification method and set of terms to allow for comparisons between the vegetation communities described in study area 1 to those described in the broader region by Pringle *et al.* (1994) and Payne *et al.* (1998). Section 2.4 provides further details on the vegetation communities naming conventions.

Vegetation communities were identified by defining boundaries between polygons with homogeneous reflectance on 1:10,000 aerial photography (high resolution RGB colour and Spot satellite imagery with GDA grid overlay). Where possible polygons were verified on ground either by four-wheel drive vehicle or on foot and the vegetation community was described and polygon shapes amended as required. Inaccessible areas were extrapolated from neighbouring communities. The large area traversed during significant species searches also provided a further opportunity for ground-truthing and refinement of the mapped vegetation communities. The survey team was well equipped to identify most flora in the field and had substantial experience in flora surveys of the North-east Goldfields, particularly in the Leinster - Yakabindie - Mt Keith region some 150 km east of study area 1. A comprehensive field herbarium compiled by Western Botanical in early 2009 and was continually added to for the duration of the studies, which also facilitated flora identification.

Comprehensive species lists were made at a total of 181 relevé sites within the different vegetation communities. In addition to the vegetation structure, floristic composition and density within each defined stratum (height range) were described as well as brief descriptions of soils and landforms. The locations of all species with either conservation significance or taxonomic interest, including undescribed species, were recorded using hand held Garmin GPS (+/- 5 m accuracy) in the WGS84 datum.

Photographic records of all vegetation communities and associated flora species were taken using a digital camera. Flora that could not be identified in the field were collected for reference and later identified, as discussed in Section 2.2.

To assist with the interpretation and description of vegetation communities of study area 1, vegetation quadrats were also established and assessed (refer to Section 2.6). Vegetation quadrats provide a more formalised, repeatable and consistent means of comparing floristic composition across the survey area and within the different vegetation communities. Point sampling utilising marked quadrats is the recommended form of sampling design as set in Section 3.2.6 of Guidance No. 51 (EPA, 2004).

2.3.2. Study area 2

As per the methodology utilised in study area 1, vegetation communities in study area 2 were mapped at the floristic community level within the landform. The vegetation communities mapped, where appropriate, were aligned with those defined in study area 1. New communities were based, where appropriate, on those defined by Pringle *et al.* (1994) and Payne *et al.* (1998) in land system mapping. In contrast, to study area 1, no quadrats were established or assessed in study area 2. Species lists were made at a total of 52 relevé sites within the different vegetation communities.

In study area 2, vegetation communities were identified by defining boundaries between polygons with homogeneous reflectance on 1:20,000 aerial photography (high resolution RGB colour and Spot satellite imagery with GDA grid overlay). Where possible on ground verification, either by four-wheel drive vehicle or on foot, was undertaken. During these surveys the boundaries of the vegetation community polygons were verified or amended, as required, and the vegetation community was described. Inaccessible areas were extrapolated from neighbouring communities.

The seasonal conditions prior to vegetation mapping were hot and dry following the winter rainfall events, resulting in the mapping of predominantly perennial species with the majority of annuals desiccated to the point of being unidentifiable. The nearest weather station, Yeelirrie, recorded 19.5 mm in July, 5.8 mm in August, 35.1 mm in September and no rainfall in October, 2010 (Bureau of Meteorology, 2011). This promoted good annual growth in the months prior to this survey; however, few

late season annuals remained in a condition of sufficient quality to be positively identified. The late winter rainfall did allow for good flowering and fruiting material to be taken from perennial species, aiding in the identification of several taxa.

2.3.3. Study area 3

The vegetation communities within study area 3 were mapped at 1:10,000, and defined as per the methodology utilised in study area 1, with the exception that no quadrats were established within study area 3. Ten relevé sites were recorded in study area 3.

The seasonal conditions prior to vegetation mapping were hot and dry resulting in the mapping of predominantly perennial species with few annuals recorded. Prior to mapping, the nearest weather station, Yeelirrie, recorded 83.8 mm of rainfall over March and April, 2010 (Bureau of Meteorology, 2010) enabling a small proportion of perennials to flower and fruit, which assisted the identification of some taxa.

2.3.4. Regional (study areas 4 to 16)

No vegetation mapping was undertaken during regional surveys. Non-permanent quadrats were established to determine consistency with communities of conservation significance to study area 1 (see Section 2.6.3).

2.4. Naming convention for vegetation communities

Vegetation communities were named using a protocol based on: (i) the landform group that the community occurs on, (ii) the dominant species defining the tallest stratum of the community (where a clear dominant existed) and (iii) the vegetation structure of the dominant species based on height and density (*e.g.* Woodland, Shrubland, Thicket or Heath) adapted from B.G. Muir (1977), for example, where *Casuarina pauper* is dominant and occurs as woodland on the Calcrete System, the vegetation unit is referred to as *Casuarina pauper* Woodland on Calcrete and given the acronym CCpW. Occasionally, the structure and/or species of the lower stratum are also given in the name to provide clarification between vegetation codes, for example, PLAPoS refers to *Acacia* spp. Shrubland over *Ptilotus obovatus* within the

Playa System. Vegetation structure classifications were based on Specht (1970) as modified by Aplin (1979).

2.5. Limitations to vegetation mapping

Difficulties encountered during vegetation community mapping include:

1. Limited vehicular access due to limited, widely spaced (2 to 5 km) and often overgrown tracks in study area 1;
2. Limited vehicle access to large parts of study area 2, with large distances and high temperatures restricting the area reachable by foot;
3. Rough terrain and dense vegetative growth, inaccessible to four-wheel drive vehicle, in study area 3;
4. Numerous fire regimes and recent burn scars, making Sand Plain communities difficult to define in all three study areas;
5. Dry seasonal conditions, resulting in flora encountered being in a vegetative state and few annuals present, during the same periods of the survey of study areas 1 and 3;
6. In study areas 1 and 3, vegetation community boundaries are limited to the scale of mapping. Mapping was undertaken on at 1:10,000 aerial photographs with on ground verification. As a result each boundary is estimated to be accurate to approximately 50 m, either side of the boundary, within the vegetation communities mapped in the Calcrete and Playa Systems and approximately 100 m in the Sand Plain System (also see Section 3.1.7 on Confidence level of mapping); and
7. In study area 2, vegetation community boundaries are limited to the scale of mapping. Mapping was undertaken on at 1:20,000 aerial photographs with on ground verification. As a result each boundary is estimated to be accurate to approximately 100 metres, either side of the boundary, within the vegetation communities mapped in the Calcrete, Playa and Granite Systems and

approximately 200 metres in the Sand Plain System (also see Section 3.4.2 on Confidence level of mapping).

2.6. Vegetation quadrat establishment and assessment

2.6.1. Study area 1

Vegetation quadrats were used to conduct a numerical analysis of the variation in the floristic composition of the vegetation communities within study area 1. This is in accordance with Guidance Statement No. 51 (EPA, 2004). The analysis was used to determine to what extent the floristic assemblages were consistent with the vegetation communities mapped.

Prior to quadrat establishment, species accumulation curves were used to determine an appropriate quadrat size that would provide the best representation of species numbers within a community. Commonly 30 m by 30 m quadrats are used as the standard to adequately sample the flora of the Murchison and Goldfields regions. A series of nested quadrats representing 10 vegetation communities were established within study area 1. Starting at 10 by 10 m, and increased by 10 m increments to a maximum of 50 by 50 m. On analysis of the species accumulation curves it was decided that 50 m by 50 m quadrats would provide the best representation of species in vegetation communities across survey area 1, a reflection of the dry (non-optimal) seasonal conditions.

The majority of quadrats were assessed for a second season following sufficient spring rainfall in 2010, which resulted in a large number of ephemeral and annual species germinating. During this second survey the size of the quadrats assessed was reduced to 20 by 20 m. The smaller quadrats provided a better representation of smaller vegetation communities and reduced the effects of community ecotones or edge effects.

During the first assessment, 149 permanent vegetation quadrats, each 50 by 50 m (2500 m²), were established in vegetation communities defined during vegetation mapping. Where possible, at least one replicate quadrat was included for each vegetation communities sampled. In cases when a 50 m by 50 m quadrat did not fit in

the associated vegetation community, for example, along drainage lines or within a narrow community, a representative shape was adjusted to better suit the community.

During the second (spring) assessment, 153, permanent vegetation quadrats, each 20 by 20 m (400 m²), were established across the validated vegetation communities. Of these 153 quadrats, 120 were rescored from the first round of sampling, and 33 were newly established. New quadrats were established when representative quadrats of a community had been impacted, or the previous quadrat was deemed to more closely reflect an ecotone rather than a defined vegetation community.

A detailed description of each quadrat was recorded, including a listing of the plant species and the number of individuals present. The total percentage foliage cover (PFC) for each quadrat was estimated, as was the PFC for each species in each height stratum (height range). Additional information to describe site characteristics was recorded including: presence of cryptogams (lichens), slope, aspect, the surrounding landforms estimated in terms of highest/nearest point affecting water run-off, outcropping type (if present), soil and nature of surface materials, erosion and disturbance by animals or people.

Locations of quadrats were recorded at the north-west corner peg using a hand-held GPS (accurate to approximately 5 m). Coordinates were recorded in the WGS84 datum. Two photographs were taken of each quadrat from the north-west and the north-east corner looking across the quadrat using a digital camera.

Following the first assessment of quadrats, a numerical analysis for the floristic quadrat data was conducted by Western Botanical using PATN (Belbin, 2010) on 149 quadrats. Five main functions of PATN were used: Bray and Curtis association, Flexible UPGMA classification with results displayed in a dendrogram, Semi-Strong Hybrid (SSH) Multidimensional Scaling (MDS) algorithm to create a three-dimensional ordination, a Two-way Table created by classification of sites and species groups, Kruskal-Wallis values to estimate the utility of species to discriminate between a set of groups. Site and species groups were generated; however, most of the interpretation was made from the classification of sites.

The analysis provided a means of classifying the observed floristic composition variation into different levels: two levels of classification (broad), five levels, and ten levels (fine).

2.6.2. Study area 2 and 3

No permanent vegetation quadrats were established in study areas 2 or 3.

2.6.3. Regional (study areas 4 to 16)

Vegetation communities of interest identified at lake systems 4, 5, 6 and 7 were revisited for quadrat assessment. Vegetation quadrats were established and assessed to provide data for comparison with those assessed in study area 1. Quadrats were assessed in accordance with Guidance Statement No. 51 (EPA, 2004). There were no quadrats established at lake systems 8 to 16.

Non-permanent vegetation quadrats, each 50 by 50 m (2500 m²), were established in vegetation communities of interest. When a 50 m by 50 m quadrat size did not fit in the associated vegetation community, for example, along drainage lines or within narrow communities, a representative shape was adjusted to better suit the community.

A detailed description of each quadrat was recorded as per the methodology utilised in study area 1. Vegetation codes follow those developed by Western Botanical, discussed in Section 2.4.

2.7. Vegetation condition assessment

An assessment of vegetation condition for the local study area (study areas 1, 2 and 3) were based on information collected during vegetation mapping, quadrat assessment, significant flora searches and formal weed assessments. In study area 1, during quadrat assessment the following descriptions could be used to provide a broad overview of the vegetation condition: evidence of disturbance, evidence of fire impacts, estimation of fire age, and presence of weeds. These descriptions were assessed against the Keighery (1994) ranking scale as pristine, excellent, very good, good, degraded and completely degraded (see Appendix 6 of this report for further detail).

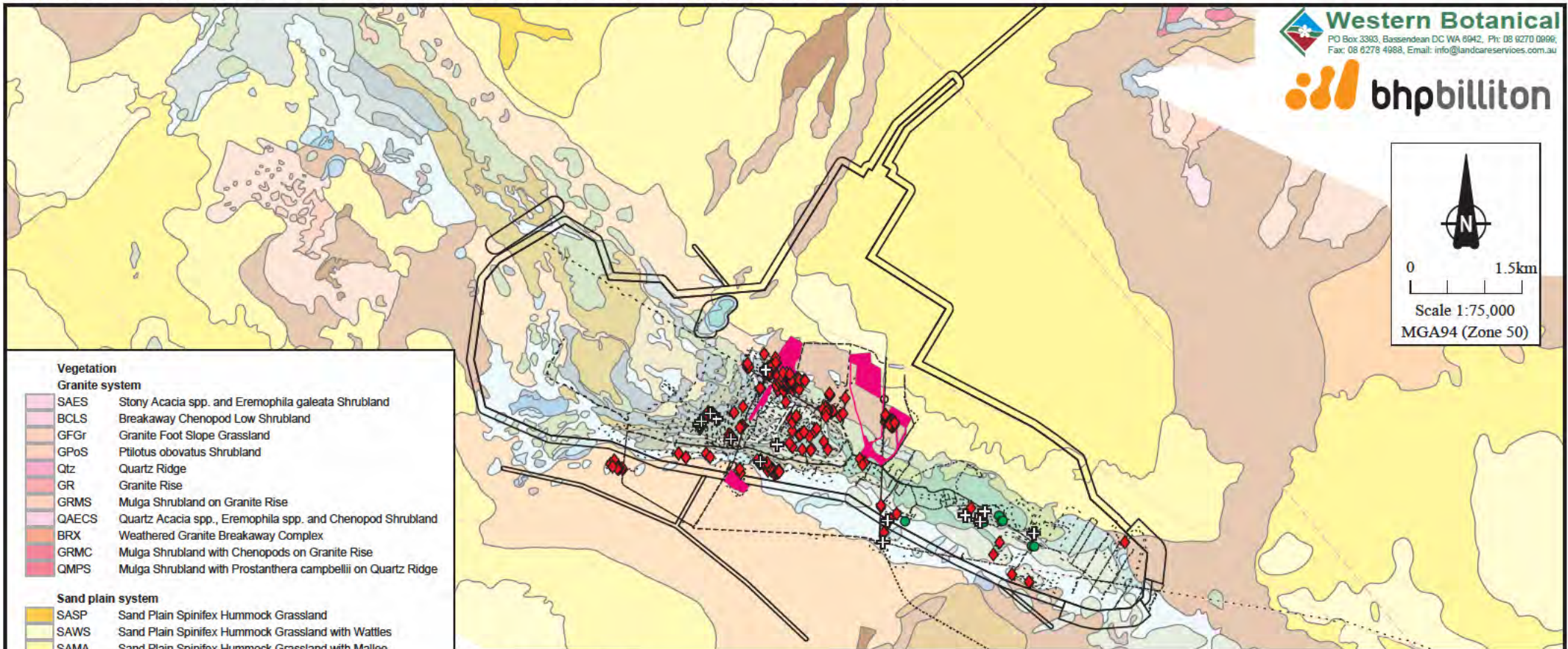
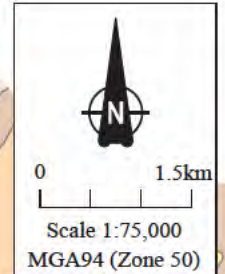
An assessment of Dieback (*Phytophthora cinnamomi*) was not undertaken, as the disease is not known to occur in the arid regions.

Methodology for weed survey

Study area 1 was assessed for the presence of weed species from areas identified during vegetation mapping and quadrat assessment. A targeted search was undertaken for weeds in the project footprint and focused on the rehabilitated areas and high usage areas associated with the drilling program. The presence of weeds in study areas 2 and 3 were recorded during vegetation mapping and significant flora searches. The locations of weeds were recorded by handheld GPS (level of accuracy +/- 5 m).

A detailed map of the distribution of *Acetosa vesicaria* (Ruby Dock) in the project footprint area was prepared for the purpose of future weed control and weed survey works, see Figure 8. *Acetosa vesicaria* records were mapped as points or polygons (for large populations) by handheld GPS (level of accuracy +/- 5 m). The tracks walked were also recorded on each handheld GPS and downloaded into an excel worksheet. The tracks provided a visual record of survey intensity and areas covered and were used to confirm that the appropriate areas had been adequately assessed.

Figure 8. Distribution of *Acetosa vesicaria* (Ruby Dock) in the project footprint area



Vegetation

Granite system

SAES	Stony Acacia spp. and Eremophila galeata Shrubland
BCLS	Breakaway Chenopod Low Shrubland
GFGr	Granite Foot Slope Grassland
GPoS	Ptilotus obovatus Shrubland
Qtz	Quartz Ridge
GR	Granite Rise
GRMS	Mulga Shrubland on Granite Rise
QAECs	Quartz Acacia spp., Eremophila spp. and Chenopod Shrubland
BRX	Weathered Granite Breakaway Complex
GRMC	Mulga Shrubland with Chenopods on Granite Rise
QMPS	Mulga Shrubland with Prostanthera campbellii on Quartz Ridge

Sand plain system

SASP	Sand Plain Spinifex Hummock Grassland
SAWS	Sand Plain Spinifex Hummock Grassland with Wattles
SAMA	Sand Plain Spinifex Hummock Grassland with Mallee
SAHS	Sand Plain Spinifex Hummock Grassland with Heath
SAGS	Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa

SAMU	Sandplain Mulga Spinifex Hummock Grassland
SDSH	Sand Dune Shrubland
MHHS	Mixed Chenopod Shrubland with Mulga Overstorey
SACSG	Sand plain Spinifex Hummock Grassland with Corymbia lenziana Woodland

Playa System

PLAPoS	Acacia spp. and Ptilotus obovatus Shrubland
PLAET	Acacia spp. and Eremophila spp. Thicket
PLAMI	Acacia spp. and Melaleuca interioris Shrubland
PLMf	Muehlenbeckia florulenta Shrubland
PLCsMp	Cratystylis subspinescens and Maireana pyramidata Shrubland
PLEmc	Eremophila maculata ssp. brevifolia Shrubland
PLEml	Eremophila malacoides Shrubland
PLEsp	Eragrostis spp. Grassland on Playa
PLCh	Chenopods on Scalded Areas

Hardpan and Drainage System

DRMS	Drainage Tract Mulga Shrubland
DRMps	Drainage Tract Maireana pyramidata shrubland
DRES	Drainage Line Eucalyptus camaldulensis Woodland
GRMU	Mulga Groves on Hardpan Plain
HPMS	Hardpan Plain Mulga Shrubland
WABS	Wanderrie Bank Grassy Shrubland

Calcrete system

CEgW	Eucalyptus gypsophila Woodland on Calcrete
CCpW	Casuarina pauper Woodland on Calcrete
CMxS	Melaleuca xerophila Shrubland on Calcrete
CABs	Acacia burkittii Shrubland on Calcrete
CMiS	Melaleuca interioris Shrubland on Calcrete
CERg	Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
CAPs	Atriplex sp. Yeelirrie Station Shrubland on Calcrete
CRSs	Rhagodia sp. Yeelirrie Station Shrubland on Calcrete
CMPs	Maireana pyramidata Shrubland on Calcrete
CLaS	Lycium australe Shrubland on Calcrete
CMGbS	Mulga Grevillea berryana Shrubland on Calcrete

Saline Playa System

CsMp	Cratystylis subspinescens and Maireana pyramidata Shrubland
SBMMS	Sandy Bank Mulga and Maireana pyramidata Shrubland
SPAbS	Atriplex bunburyana Shrubland on Saline Playa
SPFLS	Frankenia spp. Low Shrubland on Saline Playa
SPLS	Lawrenca helmsii Shrubland on Saline Playa
SPTLS	Tecticornia spp. Low Shrubland on Saline Playa

Mosaics

CABs & CCpW	
CABs & CEgW	
CERg & CABs & CEgW	
CERg & CLaS	
HPMS & SAMU	
SAWS & SAHS	
HPMS & WABS	
HPMS & PLAPoS	

Other	
Disturbed	
Bare	

LEGEND

- Proposed Infrastructure
- - - Landcare Services' Survey Tracks

Weeds

- ◆ *Acetosa vesicaria* individual (Ruby Dock)
- ◆ *Acetosa vesicaria* population (Ruby Dock)
- ⊕ *Sonchus oleraceus* (Sow Thistle)
- *Citrullus lanatus* (Afghan Melon)

**Proposed Yeelirrie Development
 2010 Weed Survey
 showing vegetation communities**
 Author: C. Ringrose Date: January 2011

2.8. Flora of conservation significance searches

2.8.1. Study area 1

Study area 1 was assessed for species of conservation significance either via traverses or from areas identified during vegetation mapping. Significant flora are those flora that have conservation status (Rare or Priority Flora as listed by DEC) and those that represent or may represent new species, sub-species or forms with potential conservation status.

Species of interest were also recorded. These include: species that are geographically restricted, may be poorly collected, represent significant range extensions of populations, or those requiring further taxonomic investigation.

Areas considered to have potentially high impacts from mining activities, such as the project footprint area, were surveyed intensively for significant flora. The ore body area was surveyed initially at 200 m intervals as part of the drilling programme over the ore body (and in accordance with clearing permits CPS2939/2 and CPS2965/1). The majority of the ore body area was further assessed at 50 m intervals, for additional resource confirmation, on request by BHP Billiton Yeelirrie Development Company Pty Ltd. Most of the proposed project footprint was traversed on foot by botanists at 100 m intervals. Figure 1 in Appendix 4 shows the survey intensity undertaken in study area 1.

While traversing each area, Western Botanical targeted and recorded Priority or Declared Rare Flora species, other species of conservation significance and species of interest. During these traverses botanists also recorded different vegetation communities to those already identified and potential significant ecological communities. Data on the distribution and abundance of Priority Flora elsewhere in study area 1 was collected opportunistically while conducting vegetation mapping and targeted significant species searches. The data from all surveys, including drill line and vegetation assessments over the ore body, was combined following the end of field works.

Significant species records were mapped as points or polygons (for large populations) by handheld GPS (level of accuracy +/- 5 m). The tracks walked by each botanist

were also recorded on each handheld GPS and downloaded into an excel worksheet. The tracks provided a visual record of survey intensity and areas covered and were used by botanists to confirm that the appropriate areas had been adequately assessed.

Care was taken not to duplicate counts or miss plants. Handheld two-way radios allowed communication between personnel when populations of significant species were encountered. Counts were then coordinated amongst adjacent botanists. As discussed previously, plant specimens were collected for verification and vouchering purposes for each of the significant species encountered.

Taxonomic identification, specimen vouchering and nomenclature was previously discussed in Section 2.2.

2.8.2. Study area 2

During mapping of study area 2, Western Botanical opportunistically recorded Priority or Declared Rare Flora species and other species of conservation significance. When encountered, the location of each species was recorded as per the methodology utilised in study area 1. Where a significant species was found to be a part of a larger population, the number of individuals were estimated by the methods defined in Section 2.8.7 below.

2.8.3. Study area 3

During the vegetation mapping of study area 3, Western Botanical opportunistically recorded Priority or Declared Rare Flora species and other species of conservation significance. When encountered, the location of each species was recorded as per the methodology in utilised in study area 1.

2.8.4. Regional (study areas 4 to 16)

Areas identified at each lake system were assessed for targeted species of conservation significance. The location of all significant species was recorded using a Garmin handheld GPS (accuracy +/- 5 m) and the number of plants at this point counted. Where possible specimens were collect for vouchering.

2.8.5. Population size calculations

2.8.6. Study area 1

Where necessary, the population sizes of significant flora and some flora species of interest were estimated. Where the population was considered too large to count individuals (numbers in the thousands) the perimeter of the population was recorded and the number of individuals within the population was estimated using random relevé points. At each relevé point the number of plants was counted within a 50 m diameter. When populations were extensive, in the case of *Euryomyrtus inflata* P3 and *Bossiaea eremaea* P3, an estimation of the population boundary was marked onto a series of 1:50,000 aerial photographs. A more detailed investigation was carried out for *Atriplex* sp. Yeelirrie Station P1, as discussed below.

***Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1**

Due to the density of *Atriplex* sp. Yeelirrie Station in study area 1, a detailed estimation of the population size was undertaken. This was assessed using a combination of (i) intensive survey that counted all individual plants and (ii) estimation of individual numbers from representative quadrats within defined sub-population boundaries. The second methodology was used where the numbers were deemed too high to accurately count individual plants.

Forty vegetation quadrats, each 10 by 10 m (100 m²), were established within areas that had very dense sub-populations of *Atriplex* sp. Yeelirrie Station. The quadrats were marked out with jarrah pegs, using a compass to get the bearing and a measuring tape to ensure the correct size. The following information was recorded within each quadrat:

- Where possible the number of plants with male and or female flowers (as suggested by Dr Kelly Shepherd WA Herbarium);
- Number of vegetative, reproductive, juvenile and aestivating/dead individuals; and
- Total Percentage Foliar Cover (PFC) of live plants and dead plants.

The quadrat data, specifically the number of live non-juvenile plants within each quadrat, and the area of occupancy of *Atriplex* sp. Yeelirrie Station was analysed and the total number of individuals was calculated using the following formula:

- Average number of live, non-juvenile, plants recorded within each 10 by 10 m quadrat. As the density of individuals was slightly higher in the west (21.62 per 100 m²) than the east (17.36 per 100 m²) the average number of plants within the west was calculated separately to that in the east; and
- Multiplied by the area of occupancy of *Atriplex* sp. Yeelirrie Station in the corresponding quadrated areas.

This total was added to the number of individual *Atriplex* sp. Yeelirrie Station plants counted during the intensive survey, of less dense populations, to provide the total number of *Atriplex* sp. Yeelirrie Station individuals within study area 1. Although juvenile plants were recorded, these were not included in the estimate of the total population.

The boundaries of the *Atriplex* sp. Yeelirrie Station were mapped using high resolution aerial photography and verified on ground using a handheld GPS (accuracy +/- 5 m) to record the boundary of each sub-population.

2.8.7. Study area 2

Due to the extent and density of *Euryomyrtus inflata* and *Bossiaea eremaea* populations within study area 2, an estimation of the population size of these species was undertaken, as discussed below.

Population size calculations of *Euryomyrtus inflata* P3

Surveys of *Euryomyrtus inflata* in study area 2 were carried out by walking 500 m transects, either side of the road or track, at regular intervals of one or two km spacings, dependant on the size of the population. Counts of individual plants were taken 30m either side of the transect line for a 60 m wide transect.

An estimate of the total number of *E. inflata* was calculated by multiplying the number of *E. inflata* counted against the proportion of the total area surveyed in transects. Given that each 500 m transect represented 3 ha, a total of 32 transects

were assessed and the total area surveyed was 96 ha. The total area of *E. inflata* populations covered in study area 2 was 18545 ha.

The following calculation: total area divided by area surveyed multiplied by number of plants within the area surveyed $[(18545/96) \times 9940]$, provided an estimate of 1,920,180 individuals in study area 2.

Population size calculations of *Bossiaea eremaea* P3

Where the populations *Bossiaea eremaea* were considered extensive (i.e. in the central northern area of study area 2) the number of individuals were estimated in a similar method to *Euryomyrtus inflata*, as described above. The exception being in the largest population of *Bossiaea eremaea* (301.99 ha) where a total count was carried out for approximately one eighth of the population area and then added to the estimated count of the remaining area of the population.

Small populations were either counted or when dense populations were estimated by a single transect passing through the population. When combined, 3839 individuals of *B. eremaea* were estimated to occur within study area 2.

2.8.8. Study area 3

A population size calculation was undertaken to determine the number of *Atriplex* sp. Yeelirrie Station individuals within study area 3. This was assessed using the same methodology utilised in study area 1, described in Section 2.8.6.

2.9. Regional survey site selection of study areas 4 to 16

2.9.1. Site selection

Regional sites selected for survey were determined using Landsat Imagery, land system maps at a scale of 1:500,000 (Payne *et al.*, 1998, Pringle *et al.*, 1994) and collection records of Priority Flora and species of interest (Western Australian Herbarium, 2011).

Lake systems and associated paleodrainage systems within the East Murchison IBRA sub-region were located and assigned a priority ranking according to their spatial association with four calcrete land systems: Cosmo, Cunyu, Melaleuca and Mileura.

Landform unit maps of Sandstone-Sir Samuel (Hall *et al.*, 1994) were used to isolate the presence of calcareous plains within each lake system mapped. The WA Herbarium species collection records were examined to confirm the presence of Priority Flora and other significant species, and similar vegetation communities of interest within regional paleodrainage systems (Western Australian Herbarium, 2011).

In addition to the above, aerial imagery on Google Earth was examined to locate potential sites of self-mulching clay for investigation in order to further define possible locations of *Atriplex* sp. Yeelirrie Station populations.

Thirteen paleodrainage systems within the Murchison and Eastern Goldfields regions were considered by the authors as having the highest likelihood of having flora and vegetation representative of that present within study area 1. Figure 9 shows the paleodrainage and lake systems selected for survey utilising a helicopter, and these span a distance of 500 km east to west and 370 km north to south, encompassing a total area of 185,000 square km (1,850,000 ha).

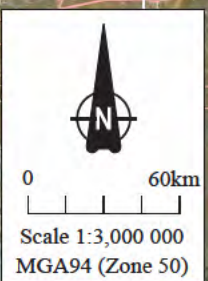
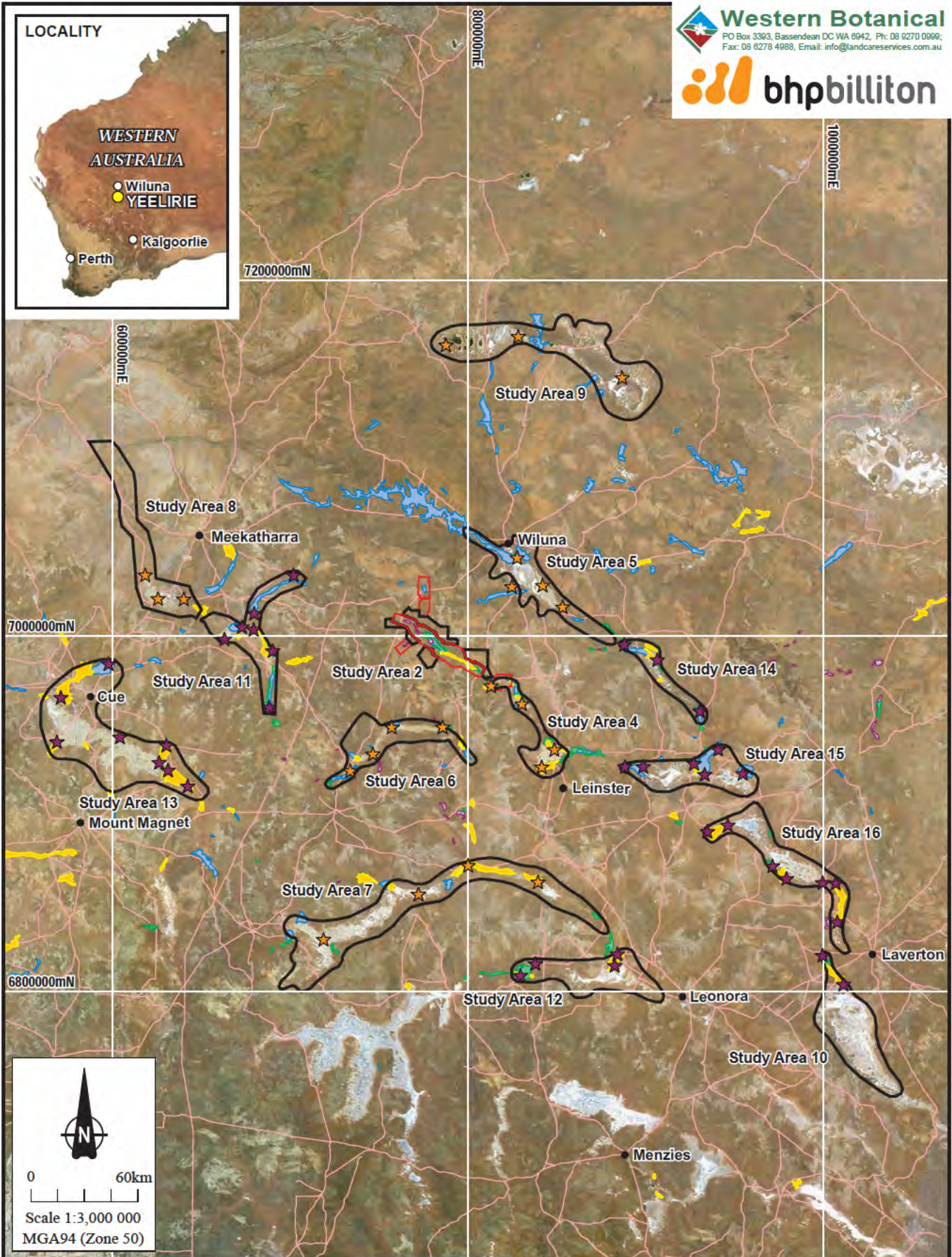
2.9.2. Targeted flora and vegetation survey by helicopter

The most efficient, effective and economical method considered for searching over the targeted lake systems was to utilise a helicopter. Undertaking the preliminary survey with a helicopter allowed for the remoteness of the target areas, extensive size of the lake systems and the highly restricted vehicle accessibility.

Six paleodrainage systems were selected as highest priority for the first survey by helicopter (Table 8). A series of 1:25,000 maps were used to mark potential new populations of conservation significant flora and vegetation communities of interest that were to be investigated further during on-ground surveys. The survey was conducted in November 2009. The airport at Mount Keith Nickel Operation was used as the primary base to conduct the search from.

Seven additional paleodrainage systems were selected for a second survey by helicopter (Table 9). The survey was conducted in May 2010 and was to specifically search for new populations of *Atriplex* sp. Yeelirrie Station.

Figure 9. Regional paleodrainage and lake systems selected for helicopter survey



LEGEND

	Study Area
	Ministerial Temporary Reserve
	Mileura Land System - Alluvial plains with halophytic shrublands
	Melaleuca Land System - Calcrete plains with acacia shrublands
	Cunyu Land System - Calcrete plains with acacia shrublands
	Cosmo Land System - Calcrete plains with spinifex grasslands
	Helicopter Survey 1 - Significant flora and vegetation search
	Helicopter Survey 2 - <i>Atriplex</i> sp. Yeelirie Station targeted search

Proposed Yeelirie Development
Regional paleodrainage and lake systems selected for helicopter survey
 Author: C. Ringrose
 Date: January 2011

Compiled: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ A4 ~ Rev. B ~ CAD Ref g1697_Rep1101_F012.dgn

Table 8. Paleodrainage systems targeted during the first survey by helicopter

Study Area	Site	Nearest town / Pastoral Station	Length of system	Distance (km) and direction from SA1	Land systems present	Reason for target
Study area 4	Yeelirrie Palaeochannel/ Lake Miranda	Leinster; Yakabindie and Albion Downs Stations	50 km	55 km SE	Melaleuca, Mileura, Cunyu	Regional representation of vegetation communities, <i>Scaevola spinescens</i> terete leaf form
Study area 5	Lake Way	Wiluna; Lake Way and Millbillillie Stations	50 km	60 km NE	Melaleuca, Cosmo	Regional representation of vegetation communities, <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> , <i>Melaleuca xerophila</i>
Study area 6	Lake Mason	Sandstone; Lake Mason and Kaluwiri Reserve (DEC)	70 km	50 km SW	Melaleuca, Mileura, Cunyu, Cosmo	Regional representation of vegetation communities, <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> , <i>Melaleuca xerophila</i> PEC: Black Range South calcrete groundwater assemblage – invertebrates
Study area 7	Lake Noondie	Sandstone; Cashmere Downs, Bulga Downs, Dandaraga, Pinnacles, Yuimmery and Sturt Meadows Stations	100 km	145 km SW	Melaleuca, Mileura, Cunyu, Cosmo	Regional representation of vegetation communities
Study area 8	Lake Annean paleodrainage channel	Meekatharra; Belele, Annean, Polelle, Culcilli, Yarrabubba and Colga Downs Stations	60 km	185 km W	Mileura, Cunyu	PEC: Belele calcrete groundwater assemblage – invertebrates
Study area 9	Lake Nabberu	Wiluna; Cunyu, Neds Creek, Millrose and Granite Peak Stations	120 km	185 km N	Not mapped	<i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> land systems not mapped

Table 9. Paleodrainage systems targeted for *Atriplex* sp. Yeelirrie Station during the second survey by helicopter

Study area	Lake system	Nearest town / Pastoral Station	Length of system	Distance (km) and direction from SA1	Land systems present	Reason for target
Study area 10	Lake Carey	Laverton Glenorn, Mt Weld Stations	180 km	290 km SE	Mileura, Cunyu	Self-mulching clays
Study area 11	Yarrabubba	Meekatharra Colga Downs, Hillview, Murchison Downs, Polelle, Sherwood and Yarrabubba Stations	105 km	100 km W	Mileura, Cunyu	Self-mulching clays
Study area 12	Lake Raeside	Leonora Sturt Meadows, Perrinvale Stations	90 km	200 km SSE	Mileura, Cunyu	Self-mulching clays
Study area 13	Lake Austin	Cue Austin Downs, Boogardie, Munbinia, Murrum, Nallan, Wondinong, Wyynyangoo, Yarraquin, Yoweragabbie Stations	130 km	200 km SW	Mileura, Cunyu	Self-mulching clays
Study area 14	Lake Maitland	Leinster Barwidgee and Wonganoo Stations	60 km	120 km E	Mileura, Cunyu	Self-mulching clays
Study area 15	Lake Darlot	Leinster Banjawarn, Melrose and Nambi Stations	80 km	160 km SE	Mileura, Cunyu	Self-mulching clays
Study area 16	Lake Irwin	Laverton Erlistoun, Laerton Downs, Melrose, Nambi Stations	100 km	230 km SE	Mileura, Cunyu	Self-mulching clays

2.9.3. Targeted flora and vegetation surveys on ground

These surveys were focused on areas of interest identified at each lake system following the first reconnaissance by helicopter. A series of 1:10,000 maps were used to record the locations of communities of interest, and locations of targeted flora.

3. Results and discussion

3.1. Study area 1 - vegetation

Thirty-nine vegetation communities were mapped within the 48,901 ha of study area 1; comprising 46,426 ha of the Ministerial Temporary Reserve and 2,475 ha of proposed access road. An overview of the study areas 1, 2 and 3 showing vegetation community boundaries is provided in Figure 10 and detailed vegetation maps of study area 1 are provided in Appendix 7 of this report. The communities mapped are grouped into five soil landscapes, as discussed below. The characteristics of each community is summarised in Table 10, and full descriptions are provided in Appendix 8 of this report. The area in hectares represented by each community, including those communities forming mosaics, are listed in Table 11.

3.1.1. Soil landscape association with vegetation communities

The vegetation communities of study area 1 are aligned and associated with the four soil landscapes as described in *Soils and Soil Landscapes of the Study Area* (Blandford, 2011). These soil landscapes are described below (adapted from Blandford, 2011). For the purposes of defining vegetation descriptions for study area 1, a fifth system was added, the Hardpan and Drainage System, which forms an interzone or continuum between the Sand Plain System and Playa System.

3.1.2. Communities occurring within the Sand Plain System

The sand plains are characterised by inconsistent soil profiles and have varying degrees of moisture retention according to the thickness and composition of gravels in the soil horizon. The Sand Plain System comprises the following units: plain, outwash fans, drainage lines, aeolian dunes and low relief granite rises. Surface gradients are low and there is a slight angle from the granite breakaways to the central valley. This system is underlain by weathered granites that occasionally intrude at the surface forming low relief granite rises.

Sand plain communities are characterised by Spinifex (*Triodia* spp.) hummock grasslands with a varying amount of shrub, tree and mallee components in the upper stratum. Seven vegetation communities were defined within the Sand Plain System of

study area 1: Sand Plain Spinifex Hummock Grassland (SASP), Sand Plain Spinifex Hummock Grassland with Wattles (SAWS), Sand Plain Spinifex Hummock Grassland with Mallee (SAMA), Sand Plain Spinifex Hummock Grassland with Heath (SAHS), Sand Plain Spinifex Hummock Grassland with *Eucalyptus gongylocarpa* Woodland (SAGS), Sand Plain Mulga Spinifex Hummock Grassland (SAMU) and Sand Dune Shrubland (SDSH).

Multiple fire regimes within these communities were observed. The occurrence of recent fire significantly altered vegetation structure and species composition. Notably Mulga varieties are killed by fire and must regenerate from soil stored seed. Successful extensive regeneration occurs sporadically following high rainfall events and it can take many decades for Mulga to reassert dominance.

3.1.3. Communities occurring within the Hardpan and Drainage System

Five communities are described in the Hardpan and Drainage System which forms an interzone or continuum between the Sand Plain and Playa System. These communities are characterised by predominately bare-ground and are subject to sheet flow following rainfall and significant wind erosion.

Wanderrie Bank Grassy Shrubland (WABS) and Hardpan Plain Mulga Shrubland (HPMS) are floristically similar, and often form a mosaic. Dominant species include *Acacia ayersiana*, *A. aneura* and *A. ramulosa* var. *linophylla*. WABS is defined by the presence of Wanderrie grass (*Eragrostis eriopoda*), and HPMS is defined by an absence of a well-developed grassland understorey. Mulga Groves on Hardpan Plain (GRMU) vegetation represents dense areas of HPMS that occur in groves where soil, nutrients and water have accumulated.

Drainage Line *Eucalyptus* Woodland (DRES) and Drainage Tract Mulga Shrubland (DRMS) describe communities occurring on drainage lines. Each drainage line was floristically distinct.

3.1.4. Communities occurring within the Playa System

The Playa System is a transition zone that reflects the interaction between the sand plain and central calcrete and is the major drainage focus for surface runoff along the

valley floor. The Playa System comprises the following units: playas (shallow depressions), flats with scalds, and flats with sink holes.

Playas are circular depressions of low relief often no more than 0.5 m deep (may have a slightly raised rim) and varying in diameter from tens of metres to hundreds of metres. Flats with scalds are essentially areas devoid of vegetation where wind erosion is the major degradation factor. These flats tend to temporarily pond water. Flats with sink holes are characterised by a deranged surface where local relief may be up to 0.5 m elevation. This feature is created by the shrink-swell characteristics of the double lattice clays present.

Nine communities are described within the Playa System; however, the majority of this system is vegetated with *Acacia - Ptilotus obovatus* Shrubland (PLAPoS) on flats surrounding playas. PLAPoS forms a mosaic, in which eight other minor vegetation communities occur fringing or within playa depressions, scalds and sink holes. Areas with no vegetation are mapped as bare ground.

Acacia and *Melaleuca interioris* Shrubland (PLAMi) is defined by thickets of *Acacia* spp. and *Melaleuca interioris* that occur on banks fringing playas or water holding depressions.

Acacia - Eremophila Thicket (PLAET) is defined by thickets of tall shrubs dominated by *Acacia* spp. and *Eremophila longifolia* that occur in playas or water holding depressions, often with sink holes.

The other six minor vegetation communities are defined by the presence of one or two dominant species, these being: PLMf defined by presence of *Muehlenbeckia florulenta* shrubs, PLCh defined by presence of low chenopods, PLCsMp defined by presence of *Cratystylis subspinescens* and *Maireana pyramidata* shrubland, PLEml defined by the presence of *Eremophila malacoides* shrubland, PLEmc defined by the presence of *Eremophila maculata* subsp. *brevifolia* shrubland, and PLEsp defined by the presence of annual grasses including *Eragrostis* spp.

3.1.5. Communities occurring within the Central Calcrete System (Calcrete System)

This variable soil landscape has four recognized units: calcrete rises, depressions, flats, and clay flats. Each of these units has a distinctive soil stratigraphy. The calcrete rises are expressed as discrete areas of outcropping but weathered calcrete is generally present as scattered surface gravel. The calcrete rises are characterised by a thin veneer of residual soil overlying massive to platy calcrete.

The surface of the calcrete may still contain 'flats' where sediment is retained on the structure and where it generally forms a thin veneer of sandy loams. Elsewhere, highly distinctive clay flats are present where the clays tend to be high ranking, self-mulching, and display seasonal cracking.

The Central Calcrete System (Calcrete System) is fringed by the Playa System, excluding the north-west extent where it adjoins the Sand Plain System. There are pockets of Calcrete System vegetation communities within the Playa System and Sand Plain System. Eleven communities are described within the Calcrete System of study area 1.

Three calcrete rise shrubland/woodland communities, *Eucalyptus gypsophila* Woodland (CEgW), *Casuarina pauper* Woodland (CCpW) and *Acacia burkittii* Shrubland (CAbS) are structurally and floristically similar and defined by the dominant upper storey species, and often form mosaics. Mulga *Grevillea berryana* Shrubland (CMGbS) is structurally and floristically similar to CAbS, with the addition of Mulga and *Grevillea berryana*. In contrast to the other communities, CMGbS occurs on the outwash zone below the calcrete rise.

Maireana pyramidata Shrubland (CMpS), *Rhagodia* sp. Yeelirrie Station Shrubland (CRsS) and *Melaleuca interioris* Shrubland (CMiS) are isolated communities that are floristically similar apart from their dominant defining species. *Atriplex* sp. Yeelirrie Station Shrubland (CApS) is distinctive from all other communities and is represented and defined by one species. *Melaleuca xerophila* Shrubland (CMxS), *Lycium australe* Shrubland (CLaS) and *Eragrostis* sp. Yeelirrie Calcrete Grassland (CErG) communities are often co-occurring, however, have been described separately as they are floristically distinct.

3.1.6. Communities occurring within the Granite System

The Granite System has three key units and a highly variable transition zone to the sand plain. The system units comprise the breakaway plateau surface, the breakaway itself, and foot slopes. Breakaways are a prominent feature in the landscape, and characterised by a well-developed pallid zone, dominated by kaolinitic material. The breakaways lead into small, discontinuous areas of coarse-grained foot slope deposits, which are often incised by small surface drainage lines. Quartz dominates the mineralogy of the foot slope deposits.

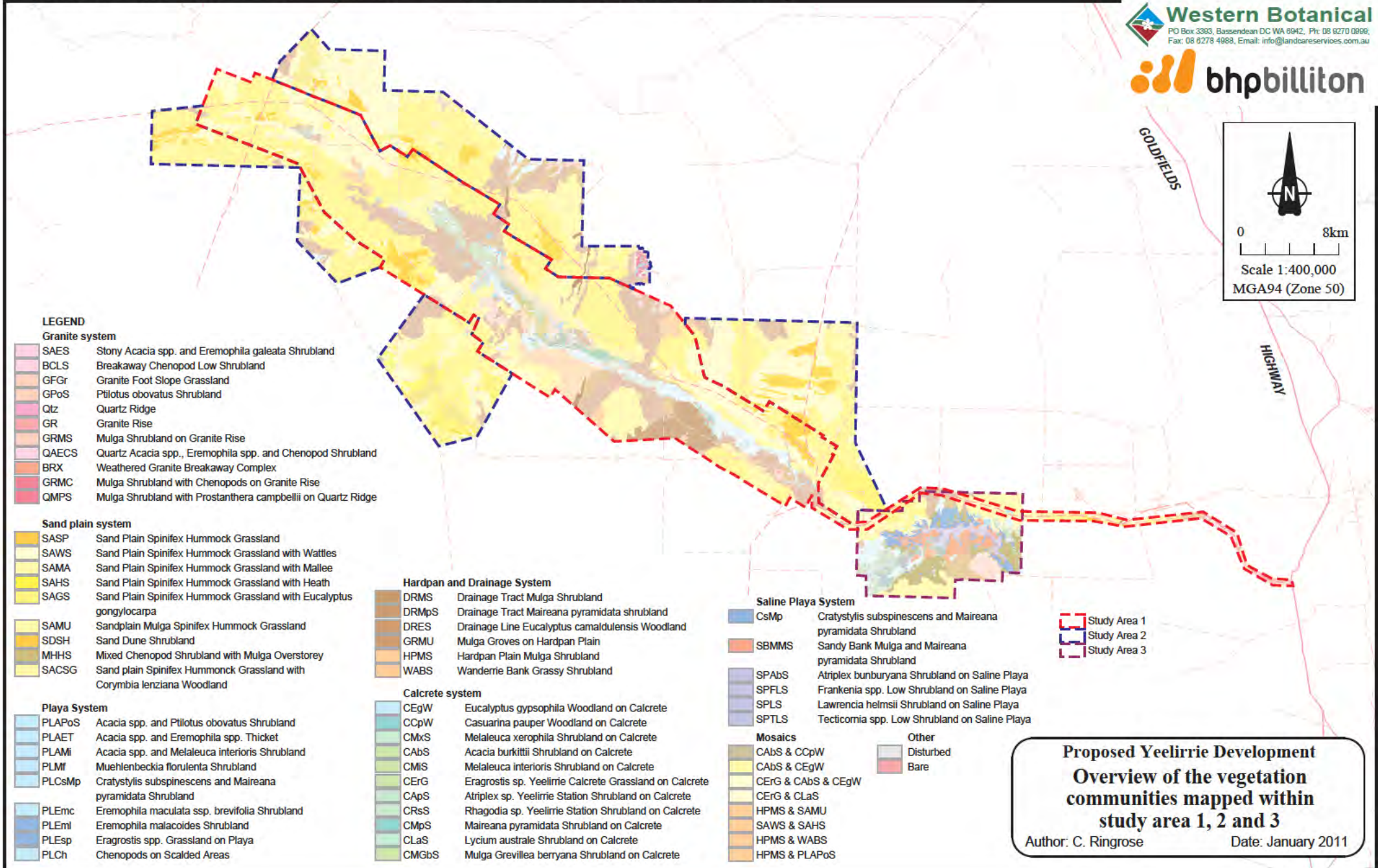
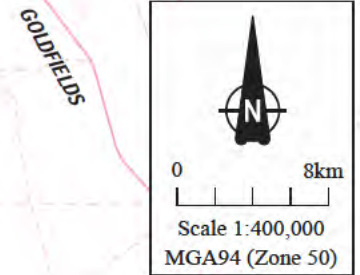
There are seven communities described within the Granite System, and these are represented at the base of the granite breakaways to the north and south of the ore body, and on the proposed access road near the intersection with the Goldfields Highway. Granite rises are also present within the Sand Plain System.

The distinction between Granite Rise (GR) and Quartz Ridge (Qtz) vegetation communities is on the basis of surface features, such as the presence or absence of quartz stones or exfoliating granite outcrops, rather than floristic composition.

Stony *Acacia* and *Eremophila* Shrubland (SAES), *Ptilotus obovatus* Shrubland (GPoS), and Breakaway Chenopod Low Shrubland (BCLS) communities have overlapping floristic compositions, and the distinction between these groups is based on vegetation structure.

The remaining two communities, Granite Foot Slope Grassland (GFGr) and Mulga Shrubland on Granite Rise (GRMS), have distinctive floristic and structural compositions.

Figure 10. Overview of the vegetation communities mapped within study areas 1, 2 and 3



LEGEND

Granite system

- SAES Stony Acacia spp. and Eremophila galeata Shrubland
- BCLS Breakaway Chenopod Low Shrubland
- GfGr Granite Foot Slope Grassland
- GPos Ptilotus obovatus Shrubland
- Qtz Quartz Ridge
- GR Granite Rise
- GRMS Mulga Shrubland on Granite Rise
- QAECs Quartz Acacia spp., Eremophila spp. and Chenopod Shrubland
- BRX Weathered Granite Breakaway Complex
- GRMC Mulga Shrubland with Chenopods on Granite Rise
- QMPS Mulga Shrubland with Prostanthera campbellii on Quartz Ridge

Sand plain system

- SASP Sand Plain Spinifex Hummock Grassland
- SAWS Sand Plain Spinifex Hummock Grassland with Wattles
- SAMA Sand Plain Spinifex Hummock Grassland with Mallee
- SAHS Sand Plain Spinifex Hummock Grassland with Heath
- SAGS Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa
- SAMU Sandplain Mulga Spinifex Hummock Grassland
- SDSH Sand Dune Shrubland
- MHHS Mixed Chenopod Shrubland with Mulga Overstorey
- SACSG Sand plain Spinifex Hummock Grassland with Corymbia lenziana Woodland

Hardpan and Drainage System

- DRMS Drainage Tract Mulga Shrubland
- DRMps Drainage Tract Maireana pyramidata shrubland
- DRES Drainage Line Eucalyptus camaldulensis Woodland
- GRMU Mulga Groves on Hardpan Plain
- HPMS Hardpan Plain Mulga Shrubland
- WABS Wanderie Bank Grassy Shrubland

Calcrete system

- CEgW Eucalyptus gypsophila Woodland on Calcrete
- CCpW Casuarina pauper Woodland on Calcrete
- CMxS Melaleuca xerophila Shrubland on Calcrete
- CABs Acacia burkittii Shrubland on Calcrete
- CMIS Melaleuca interioris Shrubland on Calcrete
- CErG Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
- CAPs Atriplex sp. Yeelirrie Station Shrubland on Calcrete
- CRsS Rhagodia sp. Yeelirrie Station Shrubland on Calcrete
- CMpS Maireana pyramidata Shrubland on Calcrete
- CLaS Lycium australe Shrubland on Calcrete
- CMGbS Mulga Grevillea berryana Shrubland on Calcrete

Saline Playa System

- CsMp Cratystylis subspinescens and Maireana pyramidata Shrubland
- SBMMS Sandy Bank Mulga and Maireana pyramidata Shrubland
- SPAbS Atriplex bunburyana Shrubland on Saline Playa
- SPFLS Frankenia spp. Low Shrubland on Saline Playa
- SPLS Lawrenca helmsii Shrubland on Saline Playa
- SPTLS Tecticornia spp. Low Shrubland on Saline Playa

- Mosaics**
- CABs & CCpW
 - CABs & CEgW
 - CErG & CABs & CEgW
 - CErG & CLaS
 - HPMS & SAMU
 - SAWS & SAHS
 - HPMS & WABS
 - HPMS & PLAPoS

- Other**
- Disturbed
 - Bare

- Study Area 1
- Study Area 2
- Study Area 3

**Proposed Yeelirrie Development
 Overview of the vegetation
 communities mapped within
 study area 1, 2 and 3**

Author: C. Ringrose Date: January 2011

3.1.7. Confidence level of mapping

Due to the complexity of and the potential impacts a greater level of detail was used for mapping of the communities within the Calcrete and Playa Systems, and boundaries are estimated to be accurate to approximately 50 m. Less focus was placed on mapping the boundaries of those vegetation communities occurring outside the project footprint, where there is little or no proposed impact to vegetation. These are primarily vegetation communities of the Sand Plain System, and boundaries are estimated to be accurate to approximately 100 m.

Boundaries between sand plain communities were difficult to distinguish on aerial photography and at the scale that the surveys were undertaken in this area. Distinct boundaries were often absent between communities and instead there is a zone of intergrade with slight differences in species composition, for example, myrtaceous shrub layer and mallee component. In addition, differing fire regimes and the presence of fire scars often changed the appearance and composition of communities between the time the aerial imagery was captured and the time that on-ground vegetation mapping took place.

While there were challenges involved, the level of mapping in study area 1, at a scale of 1:10,000, is considered to be adequate and satisfies the purposes of an ERMP in accordance with Guidance Statement 51 (EPA, 2004).

Table 10. Summary descriptions of the vegetation communities within study area 1

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
SAES	Stony <i>Acacia galeata</i> and <i>Eremophila</i> spp. Shrubland	Foot slope deposits of granite breakaway	<i>Eremophila galeata</i> , <i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila compacta</i> subsp. <i>compacta</i> , <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Senna artemisioides</i> subsp. <i>x sturtii</i> , <i>S. artemisioides</i> subsp. <i>helmsii</i> , <i>Sida ectogama</i> , <i>Eragrostis eriopoda</i>
BCLS	Breakaway Chenopod Low Shrubland	Foot slope deposits and undulating alluvial plains at the base of granite breakaway	<i>Maireana triptera</i> , <i>Sclerolaena diacantha</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Cymbopogon ambiguus</i>
GFGGr	Granite Foot Slope Grassland	Foot slope deposits of granite breakaway	<i>Aristida contorta</i> , <i>Cymbopogon ambiguus</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena</i> spp., <i>Eremophila galeata</i> , <i>Senna artemisioides</i> ssp. <i>helmsii</i>
GPoS	<i>Ptilotus obovatus</i> Shrubland	Foot slope deposits of granite breakaway	<i>Ptilotus obovatus</i> (typical Goldfields form), <i>Maireana pyramidata</i> , <i>Eremophila compacta</i> subsp. <i>compacta</i> , <i>E. maculata</i> subsp. <i>brevifolia</i> , <i>Senna</i> spp., <i>Eragrostis</i> sp.
Qtz	Quartz Ridge	Hills and foot slopes associated with granite breakaway	<i>Acacia quadrimarginea</i> , <i>Acacia aneura</i> , <i>Callitris columellaris</i> , <i>Dodonaea petiolaris</i> , <i>Eremophila exilifolia</i> and <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Cymbopogon ambiguus</i>
GR	Granite Rise	Exfoliating granite outcrop	<i>Acacia quadrimarginea</i> , <i>Acacia aneura</i> , <i>Callitris columellaris</i> , <i>Dodonaea</i> spp., <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Senna</i> spp., <i>Sida</i> spp., <i>Cymbopogon ambiguus</i> , various herbs
GRMS	Mulga Shrubland on Granite Rise	Plains with granite rise	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>A. craspedocarpa</i> , <i>A. quadrimarginea</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila</i> spp., <i>Sida ectogama</i> , <i>Senna</i> spp.
SASP	Sand plain Spinifex Hummock Grassland	Sand plain	<i>Triodia basedowii</i> , <i>Leptosema chambersii</i> , <i>Euryomyrtus inflata</i> P3, <i>Prostanthera wilkieana</i> , <i>Keraudrenia velutina</i> , <i>Acacia effusifolia</i> , <i>Grevillea acacioides</i> ,
SAWS	Sand plain Spinifex Hummock Grassland with Wattles	Sand plain	<i>Triodia basedowii</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. jamesiana</i> , <i>A. prainii</i> , <i>A. pachyacra</i>
SAMA	Sand plain Spinifex Hummock Grassland with Mallee	Sand plain	<i>Triodia basedowii</i> , <i>Eucalyptus leptopoda</i> ssp. <i>elevata</i> , <i>E. kingmillii</i> , <i>E. trivalva</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. prainii</i> , <i>A. ligulata</i> , <i>Leptosema chambersii</i>

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
SAHS	Sand plain Spinifex Hummock Grassland with Heath	Sand plain	<i>Triodia basedowii</i> , <i>Enekbatus eremaeus</i> , <i>E. cryptandroides</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. jamesiana</i> , <i>Hakea francisiana</i>
SAGS	Sand plain Spinifex Hummock Grassland with <i>Eucalyptus gongylocarpa</i>	Sand plain	<i>Eucalyptus gongylocarpa</i> , <i>Acacia effusifolia</i> , <i>A. ligulata</i> , <i>A. prairii</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>Eremophila platythamos</i> subsp. <i>platythamos</i> , <i>Halgania cyanea</i> ssp. <i>Allambi Stn</i> (B.W. Strong 676), <i>Triodia basedowii</i>
SAMU	Sandplain Mulga Spinifex Hummock Grassland	Sand plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. effusifolia</i> , <i>Melaleuca interioris</i> , <i>Triodia basedowii</i>
WABS	Wanderrie Bank Grassy Shrubland	Sand plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Grevillea berryana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Eremophila forrestii</i> ssp. <i>forrestii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eragrostis eriopoda</i>
SDSH	Sand Dune Shrubland	Sand dunes	<i>Callitris columellaris</i> , <i>Acacia aneura</i> , <i>Eucalyptus leptopoda</i> ssp. <i>elevata</i> , <i>Bertya dimerostigma</i> , <i>Micromyrtus flaviflora</i> , <i>Hakea lorea</i> ssp. <i>lorea</i> , <i>Triodia basedowii</i>
HPMS	Hardpan Plain Mulga Shrubland	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Melaleuca interioris</i> , <i>Grevillea berryana</i> , <i>Eremophila</i> spp.
DRMS	Drainage Tract Mulga Shrubland	Drainage lines on plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Eremophila</i> spp., <i>Pluchea dentex</i> , various herbs
DRES	Drainage Line <i>Eucalyptus camaldulensis</i> Woodland	Drainage lines on plains	<i>Eucalyptus camaldulensis</i> subsp. <i>obtusa</i> , <i>Acacia aneura</i> , <i>A. quadrimarginea</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>Cymbopogon ambiguus</i> , <i>Pluchea dentex</i>
GRMU	Mulga Groves on Hardpan Plain	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. craspedocarpa</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>Eremophila hygrophana</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	Flats in Playa System	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. burkittii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLAET	<i>Acacia</i> spp. and <i>Eremophila</i> spp. Thicket	Playas with sink holes	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>Eremophila longifolia</i> , <i>Hakea lorea</i> ssp. <i>lorea</i> , <i>Eucalyptus lucasii</i> , <i>Grevillea berryana</i> , <i>Santalum lanceolatum</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Eragrostis setifolia</i> , <i>Eriachne helmsii</i>

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
PLAMi	<i>Acacia</i> spp. and <i>Melaleuca interioris</i> Shrubland	Fringes of playas in Playa System	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Melaleuca interioris</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLMf	<i>Muehlenbeckia florulenta</i> Shrubs	Playas	<i>Muehlenbeckia florulenta</i>
PLCsMp	<i>Cratystylis subspinescens</i> and <i>Maireana pyramidata</i> Shrubland	Playas	<i>Maireana pyramidata</i> , <i>M. georgei</i> , <i>Cratystylis subspinescens</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena eriacantha</i> , <i>Solanum lasiophyllum</i> , <i>Frankenia laxiflora</i>
PLEmc	<i>Eremophila maculata</i> ssp. <i>brevifolia</i> Shrubland	Scalded areas in Playa System	<i>Eremophila maculata</i> ssp. <i>brevifolia</i>
PLEml	<i>Eremophila malacoides</i> Shrubland	Scalded areas in Playa System	<i>Eremophila malacoides</i>
PLEsp	<i>Eragrostis</i> sp. Grassland on Playa	Playas	<i>Eragrostis</i> sp. LCH26982, <i>Ophioglossum lusitanicum</i>
PLCh	Chenopods on Scalded Areas	Scalded area in Playa System	<i>Maireana georgei</i> , <i>M. carnosae</i> , <i>M. triptera</i> , <i>Sclerolaena diacantha</i> , <i>Dissocarpus paradoxus</i>
CEgW	<i>Eucalyptus gypsophila</i> Woodland on Calcrete	Calcrete rises	<i>Eucalyptus gypsophila</i> , <i>Templetonia incrassata</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Acacia burkittii</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i>
CCpW	<i>Casuarina pauper</i> Woodland on Calcrete	Calcrete rises	<i>Casuarina pauper</i> , <i>Acacia burkittii</i> , <i>Templetonia incrassata</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena fusiformis</i>
CMxS	<i>Melaleuca xerophila</i> Shrubland on Calcrete	Flats within Calcrete System	<i>Melaleuca xerophila</i> , <i>Acacia burkittii</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Lycium australe</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena fusiformis</i> , <i>Dissocarpus paradoxus</i> , <i>Amyema microphylla</i>
CABs	<i>Acacia burkittii</i> Shrubland on Calcrete	Calcrete rises	<i>Acacia burkittii</i> , <i>Grevillea berryana</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
CMiS	<i>Melaleuca interioris</i> Shrubland	Depressions in Calcrete System	<i>Melaleuca interioris</i> , <i>Acacia ayersiana</i> , <i>A. aneura</i> and <i>A. tetragonophylla</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena convexula</i>
CErG	<i>Eragrostis</i> sp. Yeelirrie Calcrete Grassland	Flats in Calcrete System	<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770), <i>Lycium australe</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
CApS	<i>Atriplex</i> sp. Yeelirrie Station Shrubland	Clay Flats in Calcrete System	<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter and A. Douglas LCH25025) P1
CRsS	<i>Rhagodia</i> sp. Yeelirrie Station Shrubland	Clay Flats in Calcrete System	<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1, <i>Teucrium racemosum</i>
CMpS	<i>Maireana pyramidata</i> Shrubland	Flats in Calcrete System	<i>Maireana pyramidata</i> , <i>M. georgei</i> , <i>Sclerolaena fusiformis</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
CLaS	<i>Lycium australe</i> Shrubland	Flats in Calcrete System	<i>Lycium australe</i> , <i>Eragrostis</i> sp. (S. Regan LCH 26770)
CMGbS	Mulga <i>Grevillea berryana</i> Shrubland	Outwash zone in Calcrete System	<i>Acacia aneura</i> , <i>Grevillea berryana</i> , <i>Senna artemisioides</i> spp. <i>filifolia</i> , <i>Acacia burkittii</i>

Table 11. Area (ha) represented by each vegetation community in study area 1

Vegetation Code	Study area 1 excluding proposed access road section (ha)	Proposed access road section (ha)	Study area 1 Total (ha)
SAES	14.01	184.49	198.50
DRES		4.97	4.97
BCLS		46.10	46.10
GFGGr		43.37	43.37
GPoS	125.96		125.96
Qtz		0.14	0.14
GR	4.02	3.29	7.31
GRMS	388.24	147.94	536.18
SASP	1002.53	54.84	1057.37
SAWS	6513.19	268.06	6781.25
SAMA	14048.28	392.95	14441.23
SAHS	679.91		679.91
SDSH	100.62		100.62
SAGS	554.31	55.68	609.99
SAMU	6002.82	815.23	6818.05
SACSG	11.38		11.38
WABS	549.29	102.19	651.48
HPMS	7019.65	302.72	7322.37
HPMS and PLAPoS	530.25		530.25
HPMS and SAMU	752.37		752.37
HPMS and WABS	1264.68		1264.68
DRMpS	3.35		3.35
DRMS	132.52	17.30	149.82
GRMU	1393.16	0.58	1393.74
PLAPoS	1814.58	3.52	1818.10
PLAET	260.98	1.15	262.13
PLAMi	25.53	17.10	42.63
PLMf	15.24	0.02	15.26
PLCsMp	27.10		27.10
PLEmc		8.47	8.47
PLEml	15.27	2.74	18.01
PLEsp	15.18		15.18
PLCh	55.81		55.81
CEgW	178.94		178.94
CCpW	453.28		453.28
CMxS	374.95		374.95
CAbS	1119.69		1119.69
CAbS and CCpW	69.26		69.26

Vegetation Code	Study area 1 excluding proposed access road section (ha)	Proposed access road section (ha)	Study area 1 Total (ha)
CAbS and CEgW	213.92		213.92
CMiS	6.33		6.33
CErG	63.17		63.17
CErG and CAbS and CEgW	71.77		71.77
CErG and CLaS	11.77		11.77
CApS	71.48		71.48
CRsS	22.10		22.10
CMpS	147.51		147.51
CLaS	104.12		104.12
CMGbS	47.85		47.85
Bare	63.75	2.07	65.82
Disturbed area	85.16		85.16

3.1.8. Quadrats and relevés

A list of the vegetation quadrats and relevés assessed within study area 1 is presented in Table 12, and the locations of quadrats are presented in Appendix 7 of this report, on the vegetation map discussed previously in Section 3. This includes 149 vegetation quadrats from the first assessment, and 153 vegetation quadrats from the second (spring) assessment (refer to Section 2.6.1). Of these 153 quadrats, 120 were rescored from the first round of sampling, and 33 were newly established.

A description of each vegetation quadrat surveyed during the first and second assessment is provided in Appendix 9 of this report. The detailed statistical investigation of vegetation communities using data from the first assessment of quadrats is provided in Appendix 10 of this report. A table of species by vegetation community, recorded during the first and second assessment of quadrats, is provided in Table 1 and Table 2 of Appendix 11. Descriptions of relevés surveyed within study area 1 are provided in Appendix 12 of this report.

Statistical investigation of quadrats from the first assessment was undertaken using PATN. The PATN classification, for the most part, supported the expected associations and relationships between quadrats and vegetation communities described in the field.

Most of the inconsistencies between PATN classifications and the vegetation communities were due to reasons noted below.

- Errors of classification of sites in the field. Where errors in classification were clearly made, the field classifications were changed. Examples are the initial classifications of YQ019 and YQ135.
- Species defining vegetation communities in the field not having very high discrimination power between PATN classification groups and therefore not being included in further analysis.
- Placement of quadrats in locations not entirely representative of the vegetation community, for reasons such as placement on boundary or within ecotones.
- Sites floristically similar that were differentiated on the basis of the presence of one or two species.
- Sites floristically similar and differentiated on the basis of vegetation structure and cover.
- Lower intensity of survey, both in mapping and number of quadrats for areas out of the proposed project footprint - *e.g.* Sand Plain System.

It must be noted that the relationships discussed between vegetation communities defined in the field during vegetation mapping surveys, were made on the basis of the quadrats sampled, which are only a very small and selective representation of each of the vegetation communities identified in the vegetation mapping.

Table 12. Vegetation quadrats and relevés recorded in vegetation communities identified in study area 1

Vegetation Community	No. Quadrats (YQ) First assessment	No. Quadrats (YQS) Second assessment	No. Relevés (R)
SAES	2 (YQ80, YQ134)	3 (YQS80, YQS134, YQS168)	3 (R99, R102, R176)
BCLS	1 (YQ132)	2 (YQS132, YQS172)	1 (R107)
GFGGr	1 (YQ128)	2 (YQS128, YQS171)	1 (R105)
GPOS	3 (YQ79, YQ83, YQ88)	3 (YQS79, YQS83, YQS88)	3 (R67, R76, R124)

Vegetation Community	No. Quadrats (YQ) First assessment	No. Quadrats (YQS) Second assessment	No. Relevés (R)
Qtz	1 (YQ133)	1 (YQS133)	1 (R106)
GR	3 (YQ126, YQ131, YQ147)	3 (YQS131, YQS147, YQS174)	3 (R33, R103, R104)
GRMS	5 (YQ82, YQ87, YQ116, YQ118, YQ135)	4 (YQS82, YQS87, YQS116, YQS118)	6 (R31, R32, R66, R74, R108, R109)
SASP	3 (YQ61, YQ62, YQ68)	4 (YQS61, YQS62, YQS68, YQS176)	2 (R96, R160)
SAWS	8 (YQ4, YQ9, YQ90, YQ91, YQ92, YQ105, YQ108, YQ109)	6 (YQS9, YQS90, YQS91, YQS92, YQS108, YQS109)	21 (R38, R45, R51, R54, R55, R56, R60, R61, R68, R78, R82, R85, R86, R87, R88, R95, R98, R114, R115, R167, R192)
SAMA	9 (YQ3, YQ48, YQ59, YQ63, YQ66, YQ85, YQ93, YQ104, YQ121)	7 (YQS3, YQS59, YQS63, YQS66, YQS85, YQS93, YQS165)	22 (R3, R4, R5, R6, R7, R24, R52, R58, R59, R110, R113, R116, R117, R152, R153, R156, R157, R159, R169, R177, R178, R179)
SAHS	5 (YQ60, YQ65, YQ67, YQ69, YQ94)	5 (YQS60, YQS65, YQS69, YQS94, YQS170)	5 (R53, R57, R166, R168, R171)
SAGS	3 (YQ51, YQ52, YQ53)	3 (YQS51, YQS52, YQS53)	3 (R89, R97, R112)
SAMU	7 (YQ1, YQ28, YQ55, YQ56, YQ57, YQ58, YQ111)	7 (YQS1, YQS28, YQS55, YQS56, YQS57, YQS58, YQS111)	15 (R2, R9, R10, R11, R12, R23, R26, R27, R39, R77, R79, R92, R94, R111, R154)
WABS	6 (YQ14, YQ71, YQ75, YQ77, YQ86, YQ107)	4 (YQS14, YQS71, YQS75, YQS86)	4 (R42, R65, R91, R121)
SDSH	3 (YQ49, YQ50, YQ54)	3 (YQS49, YQS50, YQS175)	1 (R170)
HPMS	9 (YQ2, YQ44, YQ45, YQ46, YQ47, YQ97, YQ98, YQ99, YQ112)	8 (YQS44, YQS45, YQS46, YQS47, YQS97, YQS99, YQ112, YQS166)	17 (R1, R8, R17, R20, R21, R22, R25, R34, R64, R83, R90, R122, R123, R125, R128, R139, R140)
DRMS	4 (YQ101, YQ110, YQ114, YQ115)	5 (YQS101, YQS110, YQS114, YQS115, YQS169)	1 (R101)
DRES	1 (YQ136)	2 (YQS136, YQS173)	1 (R100)
GRMU		3 (YQS135, YQS167, YQS178)	5 (R28, R29, R40, R41, R75)
PLAPoS	7 (YQ64, YQ70, YQ73, YQ74, YQ76, YQ138, YQ148)	6 (YQS64, YQS70, YQS74, YQS76, YQS138, YQS162)	8 (R35, R62, R63, R81, R119, R137, R138, R141)

Vegetation Community	No. Quadrats (YQ) First assessment	No. Quadrats (YQS) Second assessment	No. Relevés (R)
PLAET	8 (YQ12, YQ15, YQ78, YQ81, YQ84, YQ120, YQ127, YQ139)	5 (YQS15, YQS81, YQS84, YQS127, YQS139)	8 (R14, R37, R129, R134, R142, R162, R163, R172)
PLAMi	4 (YQ106, YQ113, YQ117, YQ123)	4 (YQS113, YQS117, YQS164, YQS182)	2 (R18, R93)
PLMf	2 (YQ137, YQ146)	3 (YQS137, YQS146, YQS179)	5 (R19, R48, R73, R165, R173)
PLCsMp	4 (YQ29, YQ43, YQ100, YQ149)	4 (YQS29, YQS43, YQS149, YQS155, YQS163)	1 (R175)
PLEmc	1 (YQ141)	1 (YQS141)	1 (R16)
PLEml	2 (YQ89, YQ140)	2 (YQS89, YQS140)	2 (R13, R44)
PLEsp	1 (YQ144)	1 (YQS144)	1 (R43)
PLCh	2 (YQ103, YQ142)	2 (YQS103, YQS177)	2 (R148, R149)
CEgW	6 (YQ10, YQ18, YQ20, YQ21, YQ23, YQ30)	5 (YQS10, YQS18, YQS21, YQS23, YQS30)	4 (R72, R127, R131, R136)
CCpW	7 (YQ17, YQ26, YQ39, YQ40, YQ41, YQ42, YQ72)	6 (YQS17, YQS26, YQS40, YQS41, YQS42, YQ72)	4 (R70, R71, R155, R158)
CMxS	11 (YQ8, YQ19, YQ22, YQ24, YQ32, YQ34, YQ35, YQ36, YQ37, YQ38, YQ145)	5 (YQS8, YQS24, YQS32, YQS34, YQS38)	6 (R36, R46, R49, R120, R133, R147)
CABs	4 (YQ6, YQ11, YQ25, YQ27)	5 (YQS6, YQS11, YQS25, YQS27, YQS151)	5 (R69, R80, R126, R150, R174)
CMiS	1 (YQ129)	2 (YQS129, YQS180)	2 (R84, R118)
CErG	2 (YQ5, YQ125)	5 (YQS5, YQS125, YQS159, YQS160, YQS161)	3 (R130, R135, R143)
CApS	3 (YQ7, YQ13, YQ16)	5 (YQS7, YQS13, YQS16, YQS157, YQS158)	1 (R132)
CRsS	2 (YQ102, YQ143)	4 (YQS102, YQS143, YQS150, YQS156)	4 (R146, R151, R161, R164)
CMpS	3 (YQ31, YQ33, YQ122)	4 (YQS31, YQS33, YQS122, YQS154)	2 (R30, R47)
CLaS	3 (YQ96, YQ119, YQ124)	5 (YQS96, YQS119, YQS124, YQS152, YQS153)	1 (R144)
CMGbS	2 (YQ95, YQ130)	3 (YQS95, YQS130, YQS181)	3 (R50, R145, R180)

3.1.9. Threatened Ecological Communities and Priority Ecological Communities

There were no flora related TECs or PECs listed for calcrete assemblages within the vicinity of the local study area. There are fifteen Priority One PEC communities associated with Banded Ironstone Formations (BIFs) listed in the DEC Goldfields region and these are not discussed further. Vegetation communities of interest within study area 1 are discussed in the next Section.

3.1.10. Vegetation communities of interest

Some vegetation communities, particularly those occurring within the Calcrete System of study area 1, are considered of interest as they are based on current information available of limited distribution. Some of these vegetation communities that are mapped in study area 1 fall within the descriptions of ecosystems at risk described by Cowan (2001) within the East Murchison IBRA subregion. These ecosystems are considered as being of limited distribution and at risk, and consequently, they are collectively considered to have conservation significance. Table 13 provides a summary of the ecosystems at risk identified by Cowan (2001) and correlates them with vegetation communities described in study area 1. While the defining species of these communities are regionally widespread, their distribution is limited and is closely associated with calcrete and/or gypsum.

Table 13. Ecosystems at risk in the East Murchison IBRA subregion which correlate with vegetation communities in study area 1.

East Murchison IBRA subregion ecosystems at risk (Cowan, 2001)	Appropriate Recovery Action recommended by Cowan (2001)	Similar Vegetation Communities in the study area 1
<i>Melaleuca</i> sp. nov (now <i>Melaleuca xerophila</i>) low closed to open forest strand community near Wiluna	Habitat retention and protection through reserves and fire management.	<i>Melaleuca xerophila</i> Shrubland on Calcrete (CMxS)

Calcyphytic <i>Casuarina</i> - <i>Acacia</i> woodlands / shrublands of the North-east Goldfields (Pringle <i>et al.</i> , 1994 – site type 7)	Habitat retention and protection through reserves. Fire Management.	<i>Casuarina pauper</i> Woodland on Calcrete (CCpW) and <i>Acacia burkittii</i> Shrubland on Calcrete (CAbS)
Calcrete platform woodlands / shrublands of the North-east Goldfields (Pringle <i>et al.</i> , 1994 – site type 8). NB: Eucalypt erroneously identified as <i>E. clelandii</i> , now <i>E. gypsophila</i> .	Habitat retention and protection through reserves, feral animal control and fencing.	<i>Casuarina pauper</i> Woodland on Calcrete (CCpW) and <i>Eucalyptus gypsophila</i> Woodland on Calcrete (CEgW)
Mixed chenopod shrublands with Mulga (<i>Acacia aneura</i>) overstorey of the north-east Goldfields (Pringle <i>et al.</i> , 1994 – site type 18)	Habitat retention and protection through reserves, feral animal control and fencing.	<i>Maireana pyramidata</i> Shrubland (CMpS); <i>Cratystylis subspinescens</i> and <i>Mairana pyramidata</i> Shrubland on Playa (PLCsMp)

Melaleuca xerophila shrublands or low woodlands occur on calcareous and gysiferous soils within palaeochannels and on the margins of salt lakes in the eastern Murchison biogeographic region and extends to the southern Pilbara. In study area 1, *Melaleuca xerophila* is abundant in the Calcrete System where it forms shrublands (CMxS) that have little associated understorey. It is considered a community of interest due to its (i) limited range as it is restricted to calcretes, (ii) the presence of the dominant species *Melaleuca xerophila* and (iii) the focus on these habitats in current development proposals in the North-eastern Goldfields and Murchison. While the species is not priority listed, *Melaleuca xerophila* woodlands / shrublands are recognised by Cowan (2001) as being of limited distribution and potentially under threat.

Eucalyptus gypsophila woodlands occur on red sand, calcrete and gypsum near salt or playa lakes throughout the Murchison, Yalgoo, Great Victoria Desert, Little Sandy Desert

and Coolgardie bioregions. *Casuarina pauper* is a widespread species occurring across a range of habitats including lake edges throughout the Eremaean Botanical district. Both species form woodlands (CEgW and CCpW) within study area 1 and have little associated understorey.

Acacia burkittii is a widespread species occurring across a range of habitats including lake edges, loamy hill sides and minor drainage tracts throughout the Eremaean Botanical district. It's occurrence on calcrete, in association with a limited range of understorey species (CAbS community), is an uncommon occurrence in the north-eastern Goldfields.

While the above species are regionally widespread, their association with calcrete platforms and rises is recognised by Cowan (2001) as being of limited distribution and potentially under threat. The occurrence of these landforms is geographically disjunct and associated with paleochannels.

The *Maireana pyramidata* Shrubland (CMpS) and the *Cratystylis subspinescens* and *Mairana pyramidata* Shrubland on Playa (PLCsMp) vegetation communities correlate with Mixed chenopod shrublands with Mulga (*Acacia aneura*) overstorey of the north-east Goldfields (Pringle *et al.*, 1994 – site type 18). Their occurrence within the project footprint is minor, no species with conservation significance are known within these communities in study area 1 and the communities are reasonably well represented in the north-eastern Goldfields region.

Two new vegetation communities described by Western Botanical have not been documented previous to these surveys and are known from within the local study area only: (i) *Atriplex* sp. Yeelirrie Station Shrubland on Calcrete (CApS) and (ii) *Rhagodia* sp. Yeelirrie Station Shrubland on Calcrete (CRsS). The CApS community, described previously in Section 3.3.1, is dominated by *Atriplex* sp. Yeelirrie Station P1 on self-mulching clay in depressions and is confined to clay flats within the Calcrete System. The CRsS community, described previously in Section 3.3.1, is dominated by *Rhagodia* sp. Yeelirrie Station P1 on playas in the Calcrete System. Based on current information available both communities are of limited distribution.

Regional surveys, detailed in Section 5, were undertaken to determine representation of these communities elsewhere within the region.

3.1.11. Vegetation condition and weeds

The Murchison and North-eastern Goldfields regions are largely uncleared, although the ecological integrity of these regions has been degraded by the effects of grazing by sheep, cattle, goats, rabbits and elevated populations of kangaroos (Van Vreeswyk and Godden, 1998). The local study area was historically used for pastoral grazing as part of the Yeelirrie and Albion Downs pastoral leases. Over the previous forty years the area containing the Yeelirrie uranium deposit has been subject to various exploration activities, including the drilling and the excavation of bulk sampling pits, all of which resulted in land clearing.

The majority of the vegetation within the local study area (study areas 1, 2 and 3) is in 'excellent' condition (based on the ranking scale of Keighery 1994, Appendix 6 of this report). The vegetation structure is intact, with disturbance affecting individual species, with the most notable being *Atriplex* sp. Yeelirrie Station P1 in study areas 1 and 3. Grazing by native mammals and rabbits is evident on palatable species. At the time of survey, a minimal number of stock were run on the Yeelirrie pastoral lease. The stock were confined to the eastern section of the pastoral lease, located along the Yeelirrie - Albion Downs Road, west from Snake Bore to the common boundary shared with Albion Downs Station. This occurs outside study area 1 and is limited to the western section of the proposed access road. There has been more extensive livestock grazing in the past, however, this has had little long-term impact on the vegetation.

Eleven weed species were recorded in the local study area. Weeds recorded are generally non-aggressive species, however, the presence of *Acetosa vesicaria* (Ruby Dock) in areas rehabilitated in 2004 is a concern, as these areas will act as a weed seed source in future. Weeds are discussed further in Section 3.3.5.

Vegetation within the historical rehabilitated areas in the project footprint area is in 'degraded' condition based on the ranking scale of Keighery (1994).

Vegetation condition of the local study area reflects seasonal conditions. Responses to a good season with significant rainfall events include the germination of annuals, vegetative growth, flowering and fruit set of perennials. The survey of the local study area was initiated in December 2008 after a long period of poor seasonal conditions and the effects of past grazing activities were more evident. This was indicated by low fruit set, poor vegetative growth, heavily grazed plants and the absence of annual species. The vegetation within the local study area at this time was in 'very good' condition as compared to 'excellent' at the time of reporting.

3.1.12. Phreatophytic vegetation

Phreatophytic vegetation is defined as deep-rooted plants that can access groundwater, via the capillary fringe. For the purposes of this report the authors did not differentiate between obligate and facultative phreatophytic vegetation. Obligate phreatophytic vegetation only inhabits areas where they can access groundwater for at least some proportion of their environmental water requirement. Facultative phreatophytic vegetation access groundwater for at least some portion of their environmental water requirement but can also inhabit areas where their water requirements can be met by soil moisture reserves alone and are therefore groundwater dependent in some environments but not in others. These two vegetation types have been combined here as a precautionary rule, that is, ecosystems that derive a part of their water budget from groundwater must be assumed to have some degree of groundwater dependency (Hatton and Evans 1998).

For the purposes of this report, groundwater is defined as the saturated zone of the regolith and its associated capillary fringe. It is distinct from soil water, which is water held under tension in soil pore spaces and is generally not saturated. Both calcretes and palaeochannel sands are known for their groundwater availability. However, significant local variations in salinity can occur in these systems, which is often dependent on the location of the calcretes within the catchment (Pringle *et al.*, 1994).

In Australia there are a limited number of studies that have identified groundwater use by terrestrial vegetation (Dillon *et al.*, 2009). It is difficult to accurately define the

phreatophytic vegetation without significant field studies. For this preliminary assessment the authors have defined phreatophytic vegetation as the vegetation where a significant proportion of the foliage remains green and physiologically active during extended dry periods, as indicated by Earmus (2009). In addition, observations of flowering during the summer period was used as an indicator of phreatophytic species (eg *Grevillea berryana* flowering in December, *Eucalyptus gypsophila* flowering in February). Based on their observations and experience, the authors believe the vegetation communities listed in Table 14 and associated mosaics represent communities with significant phreatophytic components within study areas 1, 2 and 3. In addition to these communities, many potentially phreatophytic species occur scattered throughout large expanses of the Sand Plain System and the Hardpan and Drainage System. These species and their associated vegetation communities are listed in Table 15.

Table 14. Phreatophytic vegetation in study areas 1, 2 and 3

Phreatophytic Vegetation	Potentially Impacted species	Soil Landscapes
PLAET	<i>Grevillea berryana</i> , <i>Eremophila longifolia</i> , <i>Eucalyptus lucasii</i> , <i>Hakea lorea</i> subsp. <i>lorea</i>	Playa System
PLAMi	<i>Melaleuca interioris</i>	Playa System
CMxS	<i>Melaleuca xerophila</i>	Calcrete System
CMiS	<i>Melaleuca interioris</i>	Calcrete System
CMGbS	<i>Grevillea berryana</i>	Calcrete System
CCpW	<i>Casuarina pauper</i>	Calcrete System
CEgW	<i>Eucalyptus gypsophila</i>	Calcrete System
SAGS	<i>Eucalyptus gongylocarpa</i>	Sand Plain System
SACSG	<i>Corymbia lenziana</i>	Sand Plain System

Table 15. Phreatophytic species and associated vegetation in study areas 1, 2 and 3

Phreatophytic Species	Associated Vegetation	Soil Landscapes
<i>Grevillea berryana</i>	HPMS, SAGS, SAMA, SDSH, SAWS, CAbs	Sand Plain System Hardpan and Drainage System Calcrete System
<i>Melaleuca interioris</i>	SAWS, SAMU, HPMS, SDSH	Sand Plain System Hardpan and Drainage System
<i>Eucalyptus kingsmillii</i>	SASP, SAWS, SAHS, SAMU, SAMA, SAGS	Sand Plain System
<i>Eucalyptus leptopoda</i>		
<i>Eucalyptus trivalva</i>		
<i>Eucalyptus lucasii</i>		

3.2. Study areas 1, 2 and 3 - flora

3.2.1. Flora identified within study areas 1, 2 and 3

A total of 577 taxa from 199 genera and 62 families were recorded within study areas 1, 2 and 3 including 11 non-endemic weed species. This total includes sub species, varieties and taxa not fully determined. Families with the greatest number of representatives were Fabaceae (124 taxa), Scrophulariaceae (36 taxa), Asteraceae (53 taxa), Chenopodiaceae (39 taxa) and Poaceae (41 taxa). Genera with the greatest number of representatives were *Acacia* (91 taxa including 45 forms of *Acacia aneura* which may include some duplicates), *Eremophila* (36 taxa), *Ptilotus* (12 taxa), *Sclerolaena* (12 taxa) and *Maireana* (12 taxa). A systematic list of vascular flora for study areas 1, 2 and 3 is presented in Appendix 13 of this report. Most taxa recorded from the study areas are widespread and common in the region and occur across a range of land systems and soil types. These are not discussed further.

3.2.2. Unidentified plant specimens from study areas 1, 2 and 3

The identification of some plant specimens has not yet been validated for one of three reasons: (i) insufficient material was available due to time of survey, (ii) dry seasonal conditions meant that flowers and or fruits needed for verification were not available or (iii) specimens are still with specialist taxonomists awaiting verification.

Approximately 44 collections of plant specimens have not been not fully identified. Most of these are likely to be equivalent to named species; however, they require further collections of better material to verify accurate identification. Once these specimens are fully identified some taxa may be considered of interest.

3.3. Study area 1 - Significant flora and species of interest

Significant flora are classified within this report as being flora that: have conservation status (Declared Rare Flora and Priority species listed by DEC), or represent or may represent new species, sub-species or forms yet to be described, that possibly warrant conservation status.

No Threatened Flora, protected under the EPBC Act 1999, or Declared Rare Flora, protected under the *WC Act 1950*, were located in the survey area. Eight Priority Flora species have been confirmed to occur within study area 1, and are listed in Table 16 and described in Section 3.3.1. These are: *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1, *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1, *Euryomyrtus inflata* P3, *Baeckea* sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963) P3, *Bossiaea eremaea* P3, *Eremophila arachnoides* subsp. *arachnoides* P3, *Olearia arida* P4 and *Comesperma viscidulum* P4. Of these, four occurred within the project footprint: *Atriplex* sp. Yeelirrie Station P1, *Rhagodia* sp. Yeelirrie Station P1, *Bossiaea eremaea* P3 and *Eremophila arachnoides* subsp. *arachnoides* P3. The conservation status of these flora are based on known ranges and potential threats to populations and individuals.

The eight Priority Flora recorded in study area 1 were included in the 37 Priority Flora listed by the DEC as occurring in the region including Yeelirrie (see Section 1.10.3 and Table 1 of Appendix 3). The remaining 29 Priority Flora were not recorded in study area 1 for one of two reasons: (i) there was no suitable habitat in study area 1, or (ii) the species has a limited distribution range. The nine P1 Flora listed as occurring in the region including Yeelirrie but not recorded in study area 1 are discussed further:

- *Anacampseros* sp. Eremaean (F. Hort, J. Hort & J. Shanks 3248) - There are currently six voucher collections listed on FloraBase (Western Australian Herbarium, 2011). This species is a tuberous perennial, less than 5 cm tall, and occurs in small pockets of soil on breakaway or granite outcrops. The nearest named locality is Yakabindie Station.
- *Beyeria lapidicola* - This species is restricted to banded ironstone formations, and is known only from the Murchison Biogeographic region. There are currently nine voucher collections listed on FloraBase (Western Australian Herbarium, 2011). There is no habitat suitable for this species occurring in study area 1 and the nearest named locality is Lake Way Station.
- *Dampiera plumosa* - There are currently four voucher collections listed on FloraBase (Western Australian Herbarium, 2011), and the nearest named locality

is Black Range Station near Sandstone. Suitable sand plain habitat is present in study area 1, although this species was not recorded during these surveys.

- *Eremophila congesta* - This species is restricted to banded ironstone formations and lateritic outcrops. There are currently 14 voucher collections listed on FloraBase (Western Australian Herbarium, 2011). There is no habitat suitable for this species occurring in study area 1 and the nearest named locality is Lake Way Station.
- *Neurachne lanigera* - There are currently five voucher collections listed on FloraBase (Western Australian Herbarium, 2011). The nearest named locality is Wiluna. Suitable sand plain habitat for this species occurs in study area 1, however, it was only recorded in study area 2 and is discussed further in Section 3.5.1.
- *Pityrodia canaliculata* - There are currently 20 voucher collections listed on FloraBase (Western Australian Herbarium, 2011) and the nearest named locality is Black Range Station. Suitable sand plain habitat is present in study area 1, although this species was not recorded during these surveys.
- *Stenanthemum mediale* - There are currently nine voucher collections listed on FloraBase (Western Australian Herbarium, 2011), including one from Yeelirrie Station. *Stenanthemum mediale* was recorded outside of the local study area as occasional plants on red clayey sands associated with granite breakaways. No habitat suitable for this species occurs in study area 1 and it not recorded during the survey.
- *Tecticornia* sp. Lake Way (P. Armstrong 05/961) - There are currently eight voucher collections listed on FloraBase (Western Australian Herbarium, 2011). No suitable salt lake bed habitat is present in study area 1. The nearest named locality is Lake Way Station near Wiluna.
- *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) - Known from granite breakaways on Yakabindie and Mount Keith Stations. No habitat suitable

for this species occurs in study area 1, however, it was recorded in study area 2 and is discussed in Section 3.5.1.

Three significant flora species recorded in study area 1 represent new taxa that were recognised for the first time following these surveys, and these are described in Section 3.3.2. These taxa have been confirmed as undescribed species and have had phrase names applied: *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025), *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560).

In addition to significant flora, a further 12 species of interest recorded in study area 1 are discussed below and a summary of all species including Priority Flora and other significant flora is presented in Table 16. Species of interest are classified within this report as being flora which either represent significant range extensions of populations, are geographically restricted, may be poorly collected, or require further taxonomic work.

Particular focus was placed on *Templetonia incrassata*, a prominently occurring species within study area 1. *Templetonia incrassata* is a newly defined taxon that was split from *T. egena* after a revision of the leafless species of *Templetonia* (Thompson, 2010). The revision was conducted independently of this survey, however, plant material collected from study area 1 was used in the assessment. *Templetonia incrassata* is poorly collected and restricted to the northern Coolgardie and Murchison Biogeographic regions. Records of *T. incrassata* within study area 1 represent a significant range extension. *Bertya dimerostigma* is known from the eastern Coolgardie Biogeographic region and is also of interest due to the population within study area 1 being a significant range extension.

In addition to the species outlined above, seven species of interest require further taxonomic work (Table 16). These are undescribed species that do not as yet appear on the Census of Vascular Flora and therefore do not appear on DEC's FloraBase website. For the purposes of reporting these taxa have been given phrase names, and it is unlikely that any warrant conservation status.

A full description of each species of interest is provided below. A discussion of the Mulga variants recorded within study area 1 is provided in Section 3.3. The variants are considered to be of taxonomic interest as Mulga show a large degree of variability and are in the process of being reviewed. There is likely duplication of Mulga varieties collected during these surveys.

Table 16. Priority Flora, other significant flora and species of interest recorded within study area 1

Species	Cons. status	Requires taxonomic investigation	Undescribed species	Geographically restricted	Range extension	Poorly collected
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025)	P1					
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS1396)	P1					
<i>Euryomyrtus inflata</i>	P3					
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3					
<i>Bossiaea eremaea</i>	P3					
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3					
<i>Olearia arida</i>	P4					
<i>Comesperma viscidulum</i>	P4					
<i>Scaevola spinescens</i> terete leaf form (G. Cockerton & C. Ringrose LCH 14560)						
<i>Templetonia incrassata</i>						
<i>Acacia</i> sp. Yakabindie (G. Cockerton & G. O'Keefe LCH14274) aff. <i>kempeana</i>						
<i>Acacia</i> sp. (G. Cockerton & R. Graham <i>Acacia</i> sp. (G. Cockerton & R. Graham LCH25491)						

Species	Cons. status	Requires taxonomic investigation	Undescribed species	Geographically restricted	Range extension	Poorly collected
<i>Eremophila</i> sp. Wiluna (G. Cockerton & K. Stratford 1983)						
<i>Prostanthera</i> sp. Bullimore sandplain (G. Cockerton & D. True 12813)						
<i>Eremophila subfloccosa</i> subsp. aff. <i>lanata</i> (G. Cockerton & C. Jowett 25337)						
<i>Acacia aneura</i> (multiple variants)						
<i>Bertya dimerostigma</i>						
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)						

3.3.1. Priority Flora

***Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1**

Atriplex sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) is a new species that has been recognised for the first time following these surveys. An *Atriplex* sp. was recognised in the study area considered in the EIS and ERMP flora survey (WMC, 1979), but was not confidently identified to species level. WA Herbarium staff at the time suggested that the *Atriplex* sp. was possibly a hybrid between *A. bunburyana* and *A. rhagodioides* (now *A. amnicola*). It was also noted in this document that the *Atriplex* sp. was a potential indicator species for uranium.

An initial description of *Atriplex* sp. Yeelirrie Station was provided by Paul Wilson at the WA Herbarium, a specialist for the Chenopodiaceae family. The taxon was then listed as Priority One by the Department of Environment and Conservation (DEC) in September 2009. A follow-up assessment undertaken by Dr Kelly Shepherd at the WA Herbarium in April 2010 supported the initial findings that this taxon is new and distinct from known species of *Atriplex*.

Atriplex sp. Yeelirrie Station is described as a divaricately branched dioecious perennial shrub, to 0.6 m high (Plate 1 and Plate 2). It has small ovate blue-green leaves. Flowering and fruiting were observed from March to May 2010 following significant rainfall. Male flowers are pale pink to yellow and readily observed (Plate 3), and female flowers are pale pink and difficult to observe with the naked eye (Plate 4). This taxon shows variability in fruiting bracteoles and two different morphotypes were recorded: those without appendages (Plate 5) and those with appendages (Plate 6). Both morphologies were present in all sub-populations of *Atriplex* sp. Yeelirrie Station. Reproductive strategies for this taxon are not yet understood. It was observed that both male and female plants produce fruiting bracteoles, and some plants had both male flowers and fruit.



Plate 1. *Atriplex* sp. Yeelirrie Station shrubs within the CApS vegetation community



Plate 2. *Atriplex* sp. Yeelirrie Station stem definition



Plate 3. Male flowers, *Atriplex* sp. Yeelirrie Station (Photo courtesy of Dr Kelly Shepherd)



Plate 4. Female flower, *Atriplex* sp. Yeelirrie Station (Photo courtesy of Dr Kelly Shepherd)



**Plate 5. Fruiting bracteoles with no appendages, *Atriplex* sp. Yeelirrie Station
(Photo courtesy of Dr Kelly Shepherd)**



**Plate 6. Fruiting bracteoles with appendages, *Atriplex* sp. Yeelirrie Station
(Photo courtesy of Dr Kelly Shepherd)**

Specimens representing various fruiting morphologies have been lodged with the WA Herbarium for further taxonomic investigation. Material was also collected for possible future molecular DNA assessment.

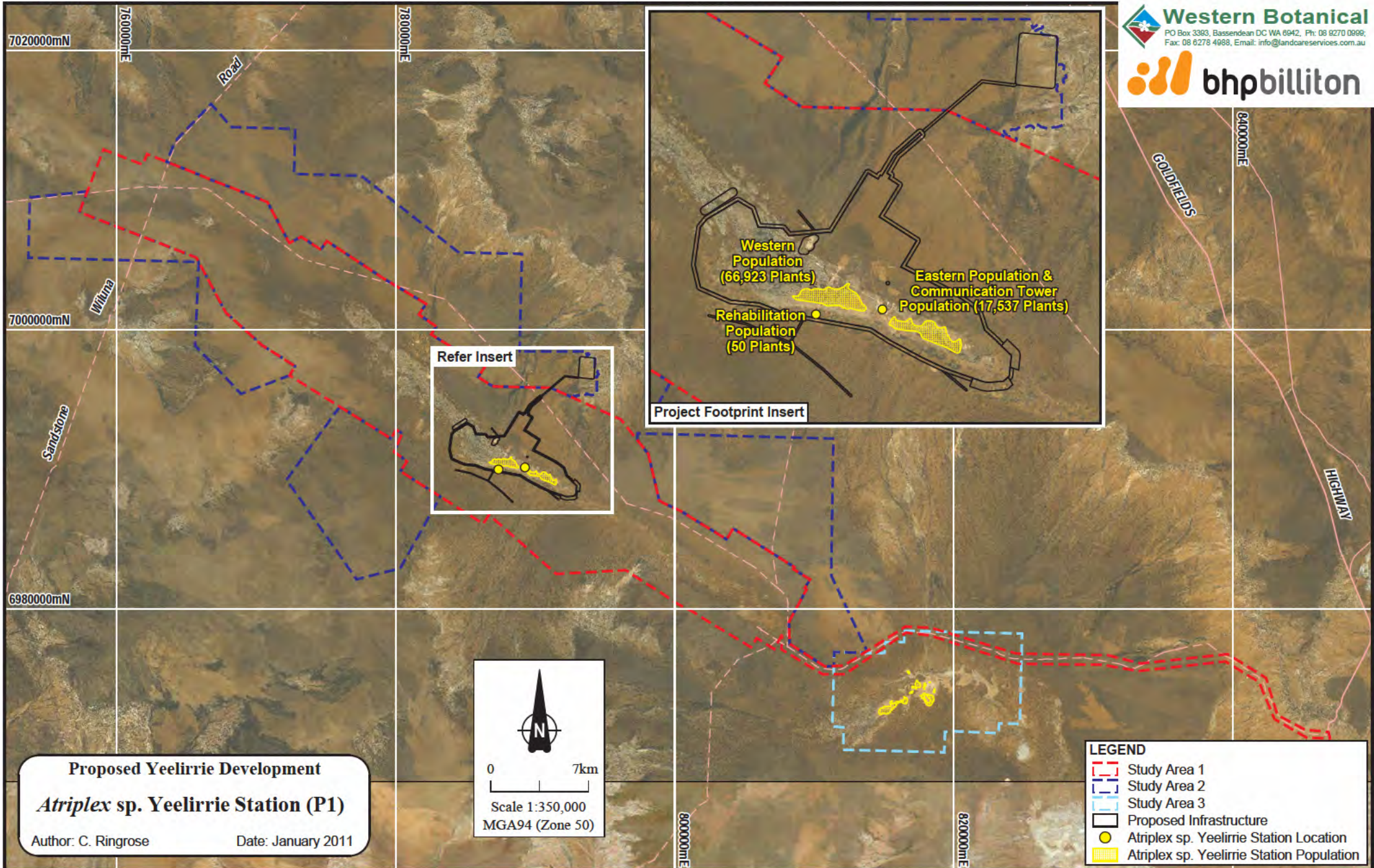
To date, *Atriplex* sp. Yeelirrie Station has been found at two major locations only: (i) in two sub-populations within study area 1 and (ii) in ten sub-populations south-east of study area 1, within study area 3 located in the Yeelirrie Palaeochannel (discussed in Section 3.7.1). The second location of *Atriplex* sp. Yeelirrie Station was initially recorded during the regional survey of study area 4. After the initial findings, a more detailed survey was done in the north-western section of study area 4 which was redefined as study area 3.

A survey was conducted to determine the population size within study area 1, and to date 84,510 individuals are known from this area. This number includes both sub-populations and the minor population discussed below. The distribution of *Atriplex* sp. Yeelirrie Station in the project footprint of study area 1 is shown in Figure 11). At the time of the population size survey, April 2010, no female flowers were observed. Approximately 8% of plants had fruit, 8% had male flowers only, and 15% of plants appeared to be dead or aestivating. These percentages are representative of the time of survey only and vary greatly according to seasonal rainfall trends.

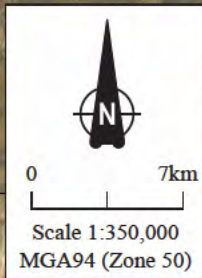
Atriplex sp. Yeelirrie Station is confined to the self-mulching clay flats within the Calcrete System, which coincides with the central part of the proposed open pit mine. It was primarily recorded within the CAPS vegetation community, described further in Appendix 8, with scattered plants also in surrounding CMxS and CLaS communities. The densest populations were recorded in the western end of the proposed open pit mine.

A minor population and scattered individuals were also recorded within a historical rehabilitation site at the southern end of the Central Baseline (< 50 individuals) and scattered individuals were also recorded within a rehabilitation site near the Communications Tower (Figure 11).

Figure 11. *Atriplex* sp. Yeelirrie Station populations within the project footprint



Proposed Yeelirrie Development
***Atriplex* sp. Yeelirrie Station (P1)**
 Author: C. Ringrose Date: January 2011



LEGEND

- - - Study Area 1
- - - Study Area 2
- - - Study Area 3
- Proposed Infrastructure
- *Atriplex* sp. Yeelirrie Station Location
- Atriplex* sp. Yeelirrie Station Population

***Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1**

Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) is a new species that had originally been identified as *Rhagodia* sp. or *Crenidium spinescens* in the field due to insufficient material being available. Following further investigation of flowering material, Paul Wilson and Mike Hislop of the WA Herbarium, identified this specimen as a *Rhagodia* not matching any known species. This was later verified by Johan Hurter, a specialist in the genus *Rhagodia*. The taxon was then listed as Priority One by the DEC in August 2010. While a preliminary investigation has been undertaken, a formal description has not yet been prepared as adequate fruiting material has not yet been available. *Rhagodia* sp. Yeelirrie Station is readily recognised in the field.

Rhagodia sp. Yeelirrie Station is described as an erect, compact shrub, to 1.9 m high and 1.5 m across (Plate 7). Male and female flowers are present on the same plant and these are yellow green in colour (Plate 8).



Plate 7. *Rhagodia* sp. Yeelirrie Station (Photo courtesy of Dr Kelly Shepherd)



Plate 8. Male and female flowers, *Rhagodia* sp. Yeelirrie Station (Photo courtesy of Dr Kelly Shepherd)

This species is known from only three sites within the Coolgardie and eastern Murchison Biogeographic regions. There are currently four voucher collections listed on FloraBase (Western Australian Herbarium, 2011). Known populations include Rowles Lagoon (approximately 67 km north-west of Kalgoorlie), Pinnacles Station near Lake Noondie, and within study area 1. The Pinnacles Station population was recorded during Western Botanical's regional survey of study area 7. A distribution map is not yet available on FloraBase.

Rhagodia sp. Yeelirrie Station was recorded in five populations within study area 1 in the vegetation community described as *Rhagodia* sp. Yeelirrie Station shrubland on calcrete (CRsS). CRsS is described as scattered to open shrublands of *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) on sparsely vegetated playas within the Calcrete System, and is described further in Appendix 8. These playas have a high content of fine silts on the surface and large sink holes or water accumulating depressions. Scattered individuals of *Rhagodia* sp. Yeelirrie Station also occur within *Melaleuca interioris* and *Acacia aneura* shrubland (PLAMi) vegetation, which fringes CRsS.

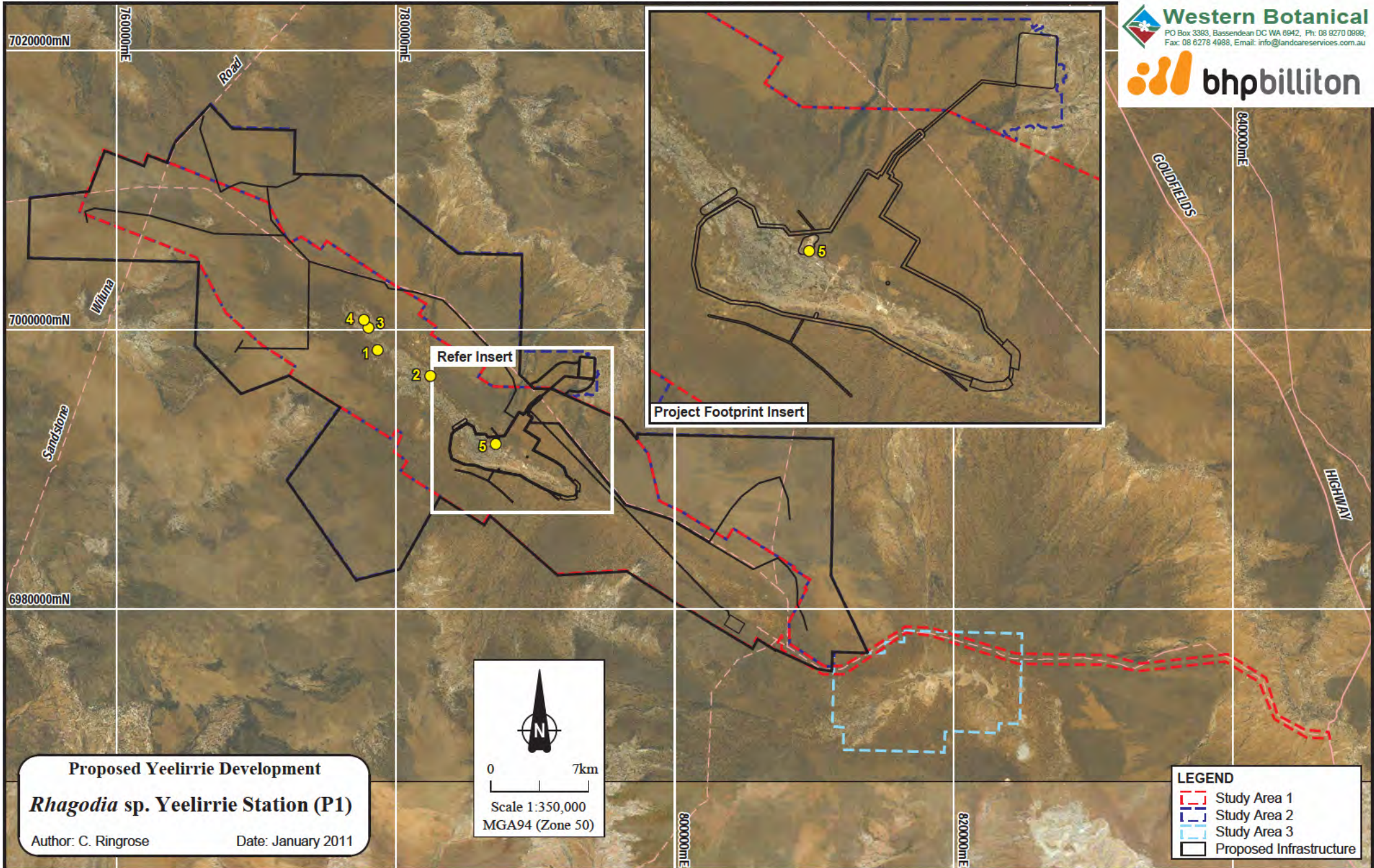
A location map showing its distribution in study area 1 is provided in Figure 12. Four areas of this vegetation community (CRsS) occur outside the project footprint. One area of the vegetation community occurs within the project footprint (Table 17).

Table 17. Number of *Rhagodia* sp. Yeelirrie Station (P1) individuals within study area 1

Population Number	Zone	Easting	Northing	Approximate number of Individuals
1	50J	778726	6998513	118
2	50J	782509	6996659	300
3	50J	778065	7000121	374
4	50J	777750	7000670	1,308
5*	50J	787189	6991784	100
Total number of individuals				2,200

* within project footprint

Figure 12. Distribution of *Rhagodia* sp. Yeelirrie Station in study area 1



***Euryomyrtus inflata* Trudgen P3**

Euryomyrtus inflata is a small long-live shrub with a lignotuber growing to 0.7 m high with flat dull blue-green leaves that turn red during times of moisture stress (Plate 9 and Plate 10). It has erect rounded fruits with three carpels, each with a single locule. Flowers are white to pink and occur in June and July.

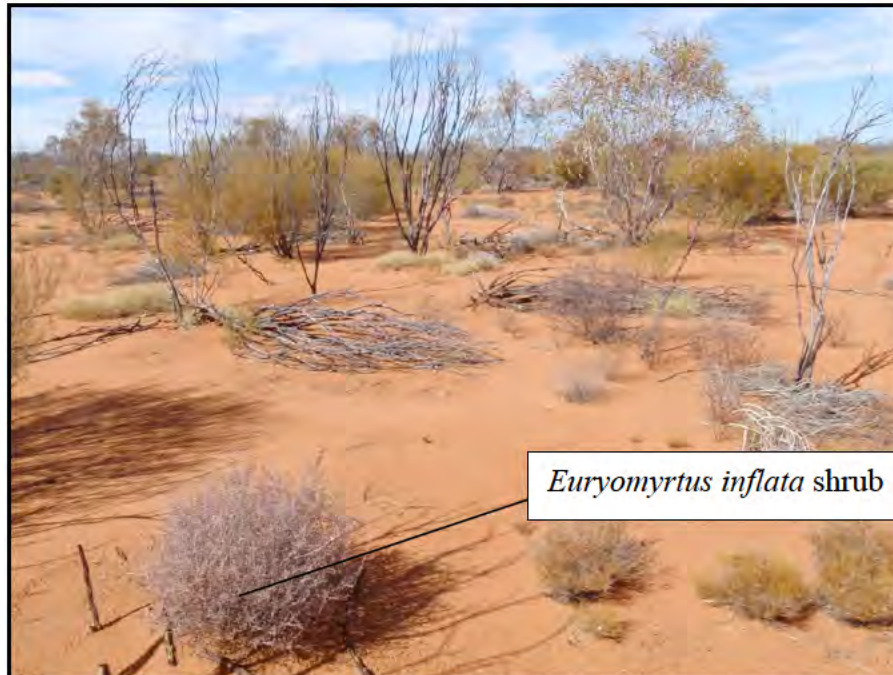


Plate 9. *Euryomyrtus inflata* within the SAMA vegetation community



Plate 10. *Euryomyrtus inflata* stem and leaf definition

Known only from the Murchison Biogeographic region, there are currently ten voucher collections listed on FloraBase (Western Australian Herbarium, 2011). Collection localities include Gidgee, Lake Mason Reserve, Kaluwiri Reserve, Yeelirrie Station, Albion Downs Station, and Youno Downs Station (Figure 13).

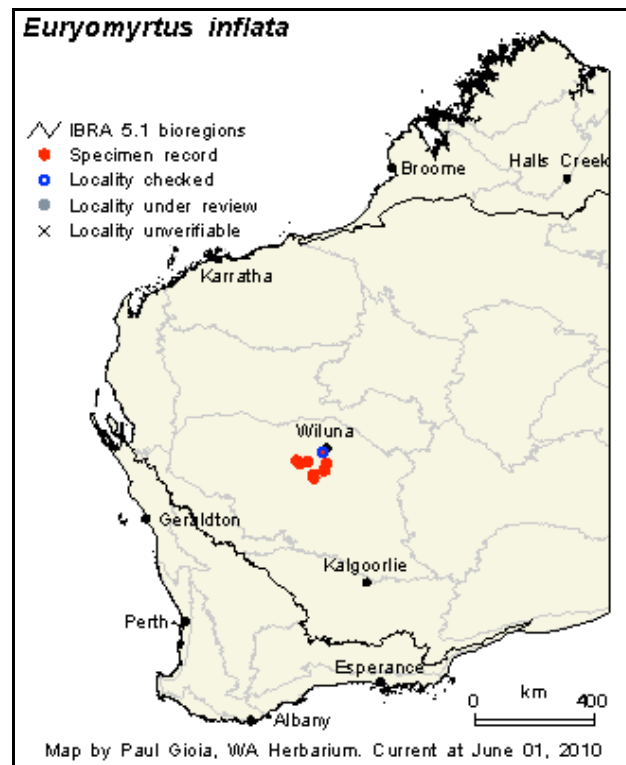


Figure 13. Distribution of *Euryomyrtus inflata* within WA

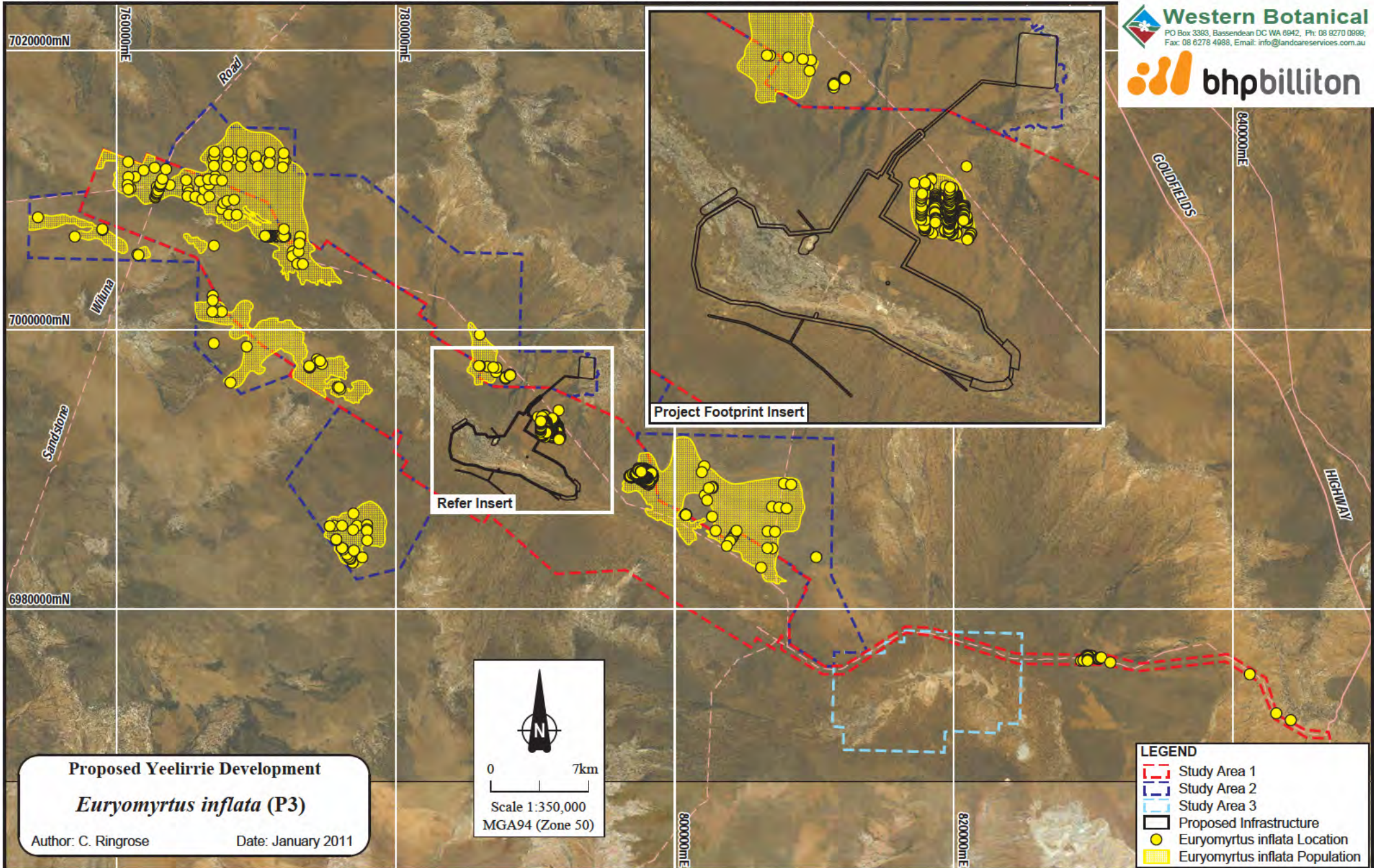
Euryomyrtus inflata occurs in extensive populations within the Sand Plain System of study area 1. A location map showing its distribution in study area 1 is provided in Figure 14. Records of individuals are shown as points, and where populations were extensive, a population boundary was inferred. The largest populations were identified in the north-west region of study area 1. These were primarily on the northern side of the Calcrete System in the more recently burnt SAWS and SAMA vegetation communities. The largest population of *E. inflata* within study area 1 extends for approximately 15 km north-west to south-east, and three km north-east to south-west along the northern side of study area 1 adjacent to the Calcrete System in the north-western part of study area 1. There was also an extensive population on the southern side of the Calcrete System in the SASP vegetation community. On the southern side of study area 1 the population extends for 10 km north-west to south-

east and two km north-east to south-west. Large populations of *E. inflata* were also present in the eastern region of study area 1, including two in the Sand Plain System. Scattered individuals were also recorded on the access road. Individual plants were present in varying densities, from approximately 10 plants per 50 m² (40 per ha) to 350 plants per 50 m² (1400 per ha). The number of plants estimated to occur within study area 1 is 134,520.

Euryomyrtus inflata is most commonly found in high numbers in areas burnt approximately five years ago. It occurs on flat sand plains and lower lying sandy areas, in SAWS, SAMA and SASP vegetation communities, and where *Triodia basedowii* has no more than 25% foliage cover. *Euryomyrtus inflata* is also present in communities that have remained unburnt for at least 15-20 years, however, plants are larger and less frequent. It is predicted that this species would also occur in the very recently burnt areas (within one to three years), given time for it to regenerate after fire.

Euryomyrtus inflata commonly occurs with *Eucalyptus kingsmillii* or *E. leptopoda* subsp. *elevata* scattered mallees over *Acacia effusifolia* (dominant), *A. jamesiana*, *Hakea francisiana*, *Enekbatus cryptandroides* and *Homalocalyx thryptomenoides* open shrubland, over *Leptosema chambersii* low open shrubland and *Triodia basedowii* (dominant) hummock grasses.

Figure 14. Distribution of *Euryomyrtus inflata* in study area 1 and 2



***Baeckea* sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963) P3**

Baeckea sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963) is a low upright shrub growing to 1 m. It occurs on orange sand flats and has white flowers in October (Western Australian Herbarium, 2011). Known from the Murchison and Great Victoria Desert Biogeographic regions, there are currently seven voucher collections listed by the WA Herbarium, shown in Figure 15 (Western Australian Herbarium, 2011). Collection localities in the Murchison include north and west of Sandstone, south-east of Leinster, and west of Agnew.

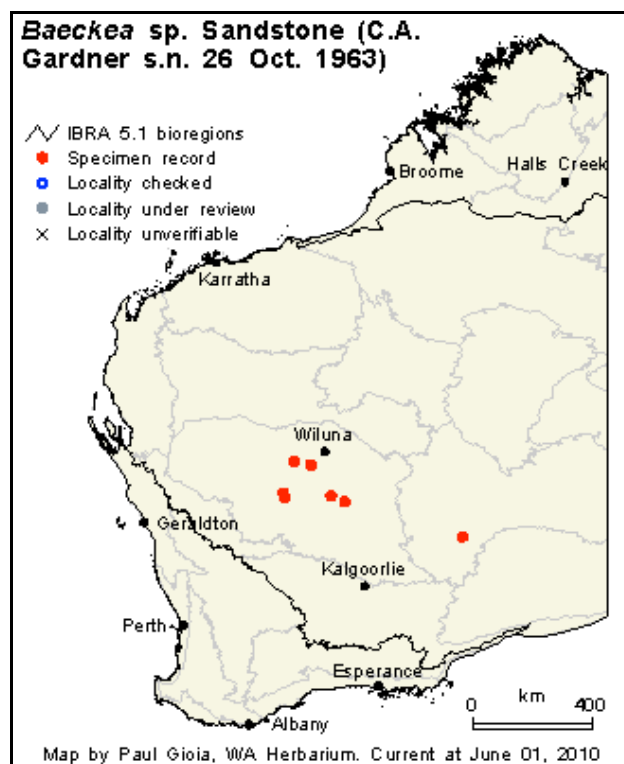


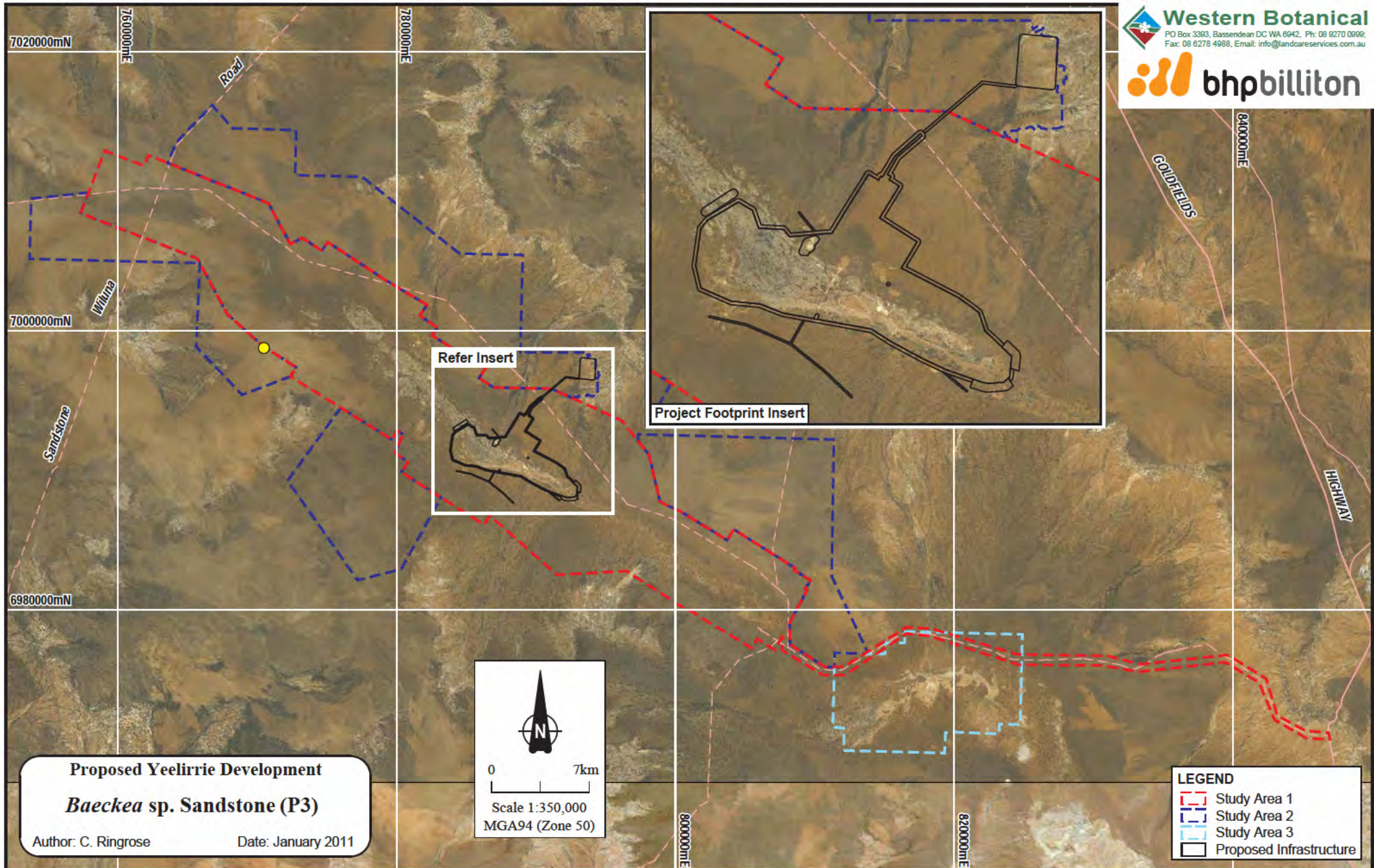
Figure 15. Distribution of *Baeckea* sp. Sandstone within WA

To date, it is known from only a single location within study area 1. This location is situated within the SAWS vegetation community at the north-western end of study area 1, and is shown Figure 16. The area appeared to have been burnt approximately 10-15 years ago. Associated species in the vicinity of *Baeckea* sp. Sandstone include *Acacia heteroneura* var. *prolixa*, *Eucalyptus leptopoda* and *Triodia basedowii*.

Baeckea sp. Sandstone was not flowering at the time of collection, which made identification in the field difficult. It is therefore possible that it occurs more

frequently than indicated in this one location. Furthermore the identification and conservation status were not known at the time of assessments and the species is likely to be more abundant within study area 1 than these data reflect.

Figure 16. Distribution of *Baeckea* sp. Sandstone in study area 1



***Bossiaea eremaea* J. H. Ross P3**

Bossiaea eremaea is a spiny, tangled, grey-green, lignotuberous spreading shrub to 1.2 m, which resprouts after fire from lignotuber (Plate 11). Flowers are red, yellow, purple or brown in colour and occur from July to September (Plate 12). There are 11 voucher specimens lodged at the WA Herbarium with a disjuncta distribution from the Murchison and Great Victoria Desert Biogeographic regions (Western Australian Herbarium, 2011) (Figure 17). Collection localities in the Murchison include west of Sandstone, Lake Mason Station, south-east of Laverton, east of Mount Magnet and Yeelirrie.



Plate 11. *Bossiaea eremaea* shrub (centre) in SAWS vegetation community



Plate 12. *Bossiaea eremaea* flower and stem detail

Extensive populations were found throughout the Sand Plain System within the survey area, and a map showing its distribution is provided Figure 18. Two large *Bossiaea eremaea* populations were recorded in study area 1 to the north of the Calcrete System. The densest population occurred within a recently burnt area on the southern side of the Yeelirrie-Meekatharra Road, in approximately the centre of study area 1. Both of these populations extended northwards into study area 2. The boundary of the largest population within study area 1 was extended by approximately 4 km to the north of its previous boundary. Other scattered populations of *B. eremaea* were also recorded on the north and south sides of the Yeelirrie - Albion Downs Road. It was found to occur within SAWS, SAGS and SAMA vegetation communities. Based on the actual count of plants in study area 1, (12,732) the total number of plants estimated to occur within study area 1 is 36,442.

Bossiaea eremaea commonly occurs with *Eucalyptus kingsmillii*, *E. leptopoda* subsp. *elevata*, *Acacia effusifolia* (dominant), *A. ligulata* (dominant), *Hakea francisiana*,

Eremophila platythamnus subsp. *platythamnus*, *Homalocalyx thryptomenoides*, *Leptosema chambersii*, *Ptilotus obovatus* (typical Goldfields form) and *Triodia basedowii* (dominant) hummock grasses.

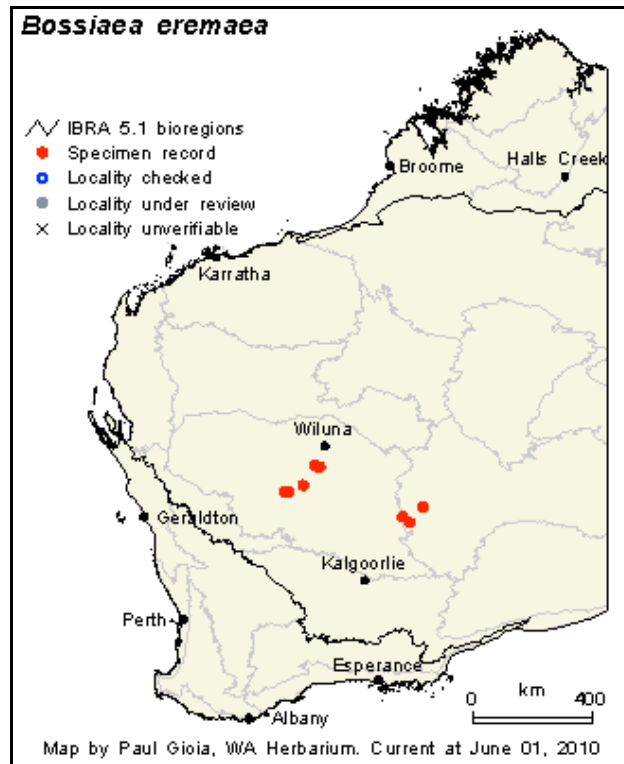
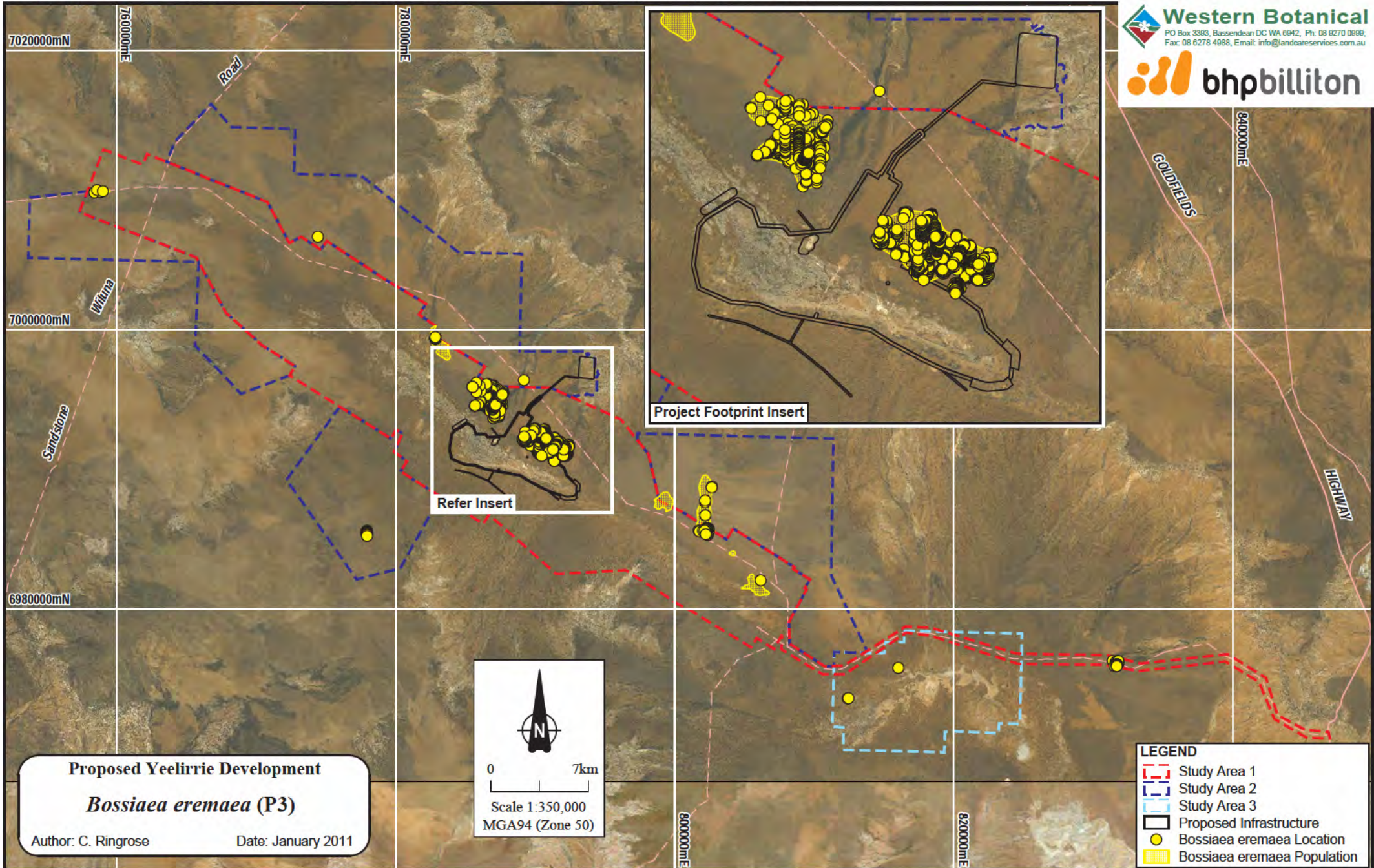


Figure 17. Distribution of *Bossiaea eremaea* within WA

Figure 18. Distribution of *Bossiaea eremaea* in study area 1 and 2



***Eremophila arachnoides* Chinnock subsp. *arachnoides* P3**

Eremophila arachnoides subsp. *arachnoides* is a tall broom-like shrub growing from 1.5 to 3.5 m with small linear leaves featuring a hooked tip (Plate 13, Plate 14). Flowers are white and blue or purple and occur in September, November and December (Plate 14). There are currently ten voucher collections of the species at the WA Herbarium from the Little Sandy Desert and Murchison Biogeographic regions (Western Australian Herbarium, 2011) (Figure 19). Collection localities in the Murchison include Lake Mason, Lake Noondie, Yeelirrie and Yarrabubba Stations.



Plate 13. *Eremophila arachnoides* subsp. *arachnoides* shrub (centre)



Plate 14. *Eremophila arachnoides* subsp. *arachnoides* leaf and flower definition

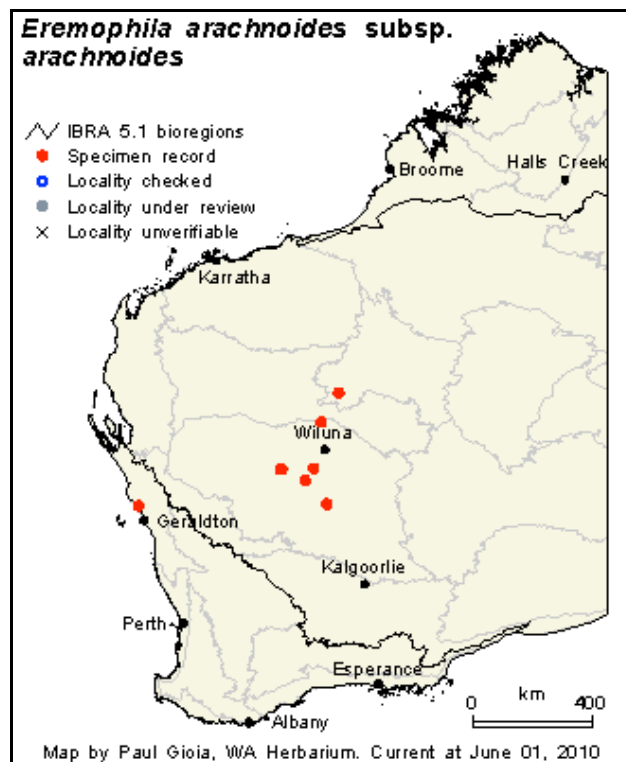
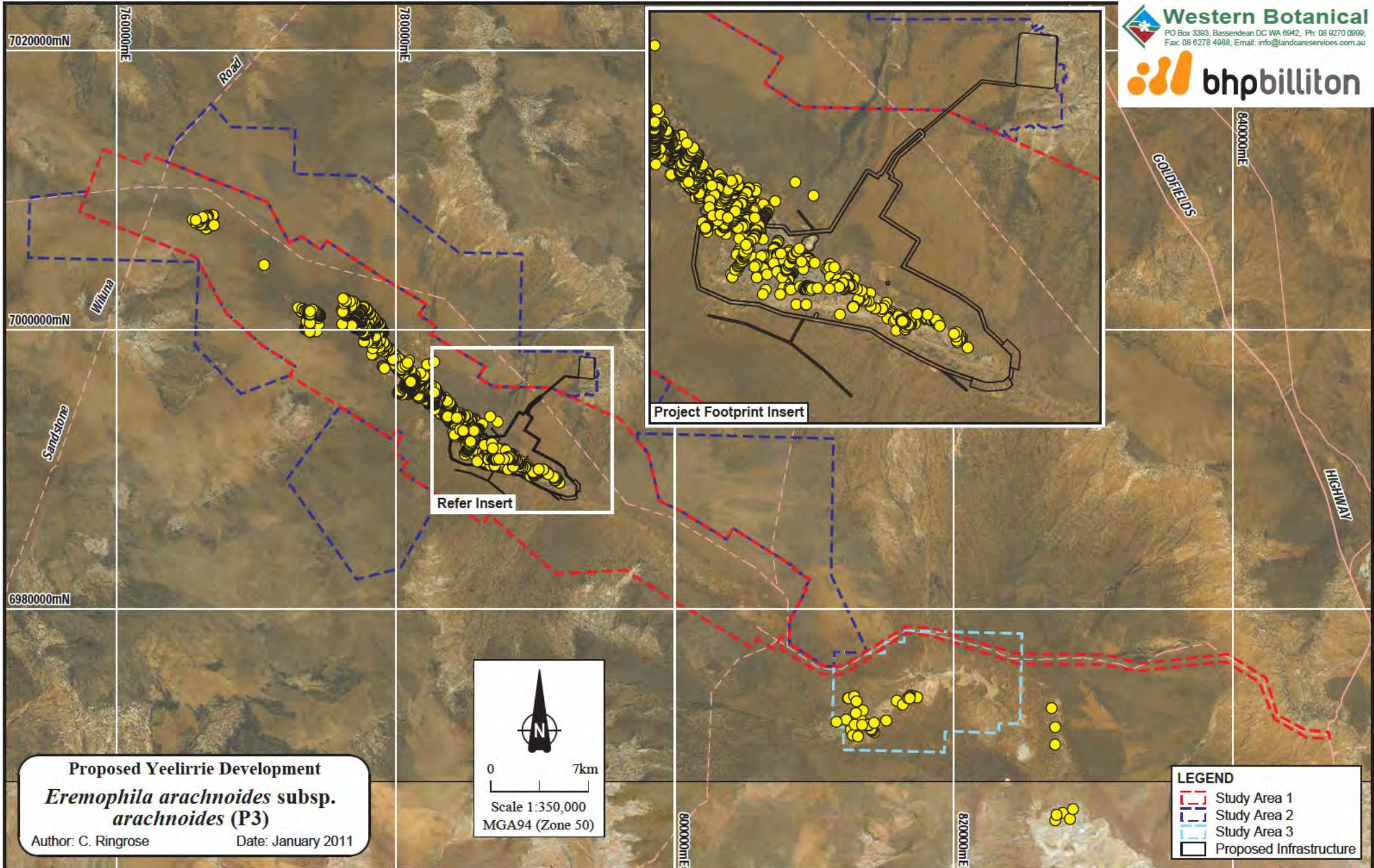


Figure 19. Distribution of *Eremophila arachnoides* subsp. *arachnoides* within WA

Eremophila arachnoides subsp. *arachnoides* almost exclusively occurs on the Calcrete System, and a map showing its distribution in study area 1 is provided in Figure 20. Scattered individuals were also recorded within the Playa and Sand Plain Systems. Intensive surveying carried out by Western Botanical has found that populations are evident on the majority of the exposed calcrete rises that occur throughout the survey area. Traverses (approximately 50 m in width) were conducted at 200 m spacings over all exposed calcrete rises within study area 1. The total population is approximated to be 43,255 plants. This is based on counts of approximately 25% of the population. The densest part of the *Eremophila arachnoides* subsp. *arachnoides* population occurred in the *Casuarina pauper* Woodland on Calcrete (CCpW) vegetation community, described in Appendix 8. Scattered individuals were recorded within CEgW, CAbS, CErG, CLaS, CMGbS, CMxS, CRsS, HPMS, PLAPoS and PLAET vegetation communities, and associated mosaics.

Eremophila arachnoides subsp. *arachnoides* commonly occurs with *Casuarina pauper* and *Eucalyptus gypsophila* scattered trees, and shrubs of *Acacia burkittii*, *A. tetragonophylla*, *Templetonia incrassata*, *Eremophila longifolia*, *Senna artemisioides* subsp. *filifolia*, *Ptilotus obovatus* (typical Goldfields form) and *Sclerolaena cuneata* herbs.

Figure 20. Distribution of *Eremophila arachnoides* subsp. *arachnoides* in study area 1



***Olearia arida* E. Pritz. P4**

Olearia arida is a glossy, viscid bright green glabrous erect shrub that grows to 0.5 m high (Plate 15) and has white flowers that are displayed between July and September and (Plate 16). The species occurs on red or yellow sands on low undulating rises. Known from the Great Victoria Desert Biogeographic region, there are currently 18 voucher collections listed by the WA Herbarium (Figure 21) (Western Australian Herbarium, 2011). These locations are approximately 400 km south-east of study area 1 and north-east of Kalgoorlie. The small population within study area 1 on Albion Downs stations represents a significant disjunction and range extension for this species.



Plate 15. *Olearia arida* within the SAWS vegetation community



Plate 16. *Olearia arida* flower and leaf definition

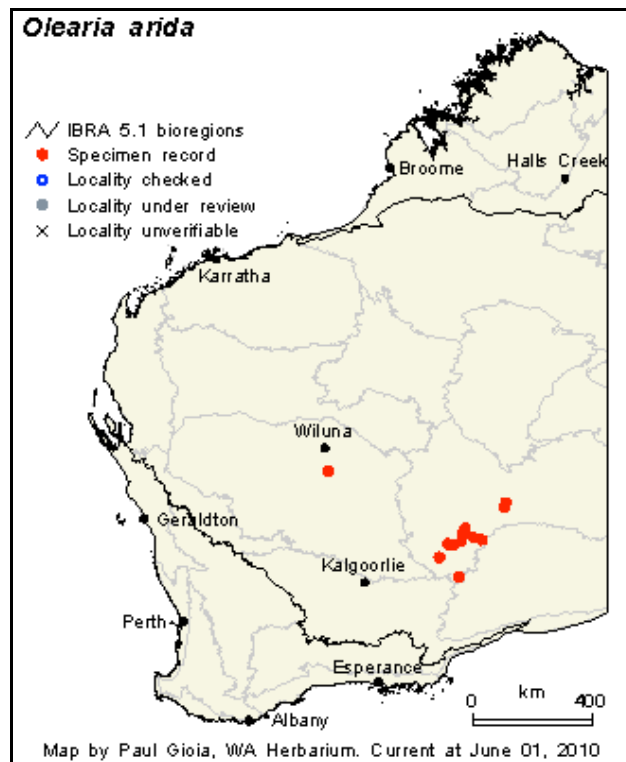
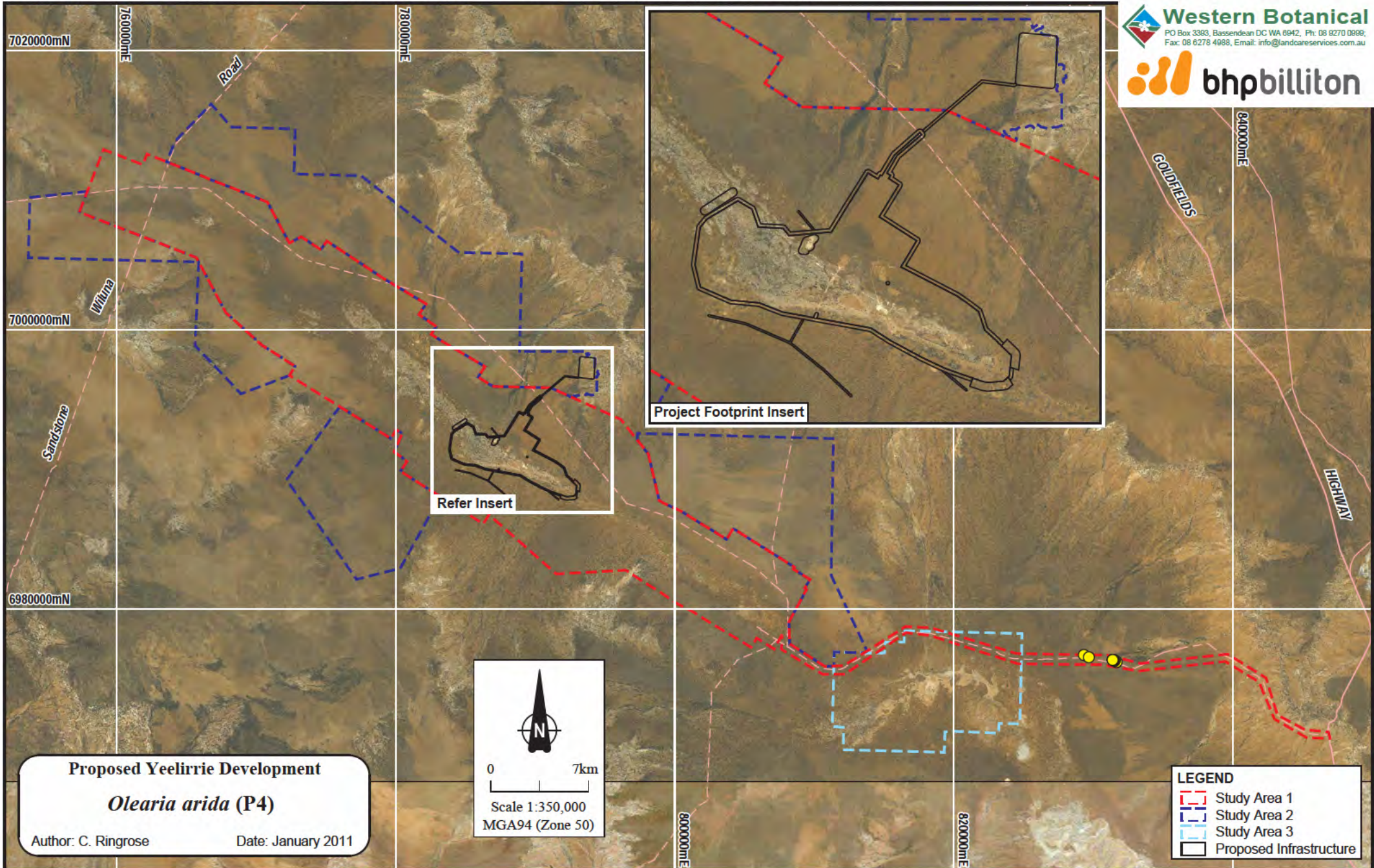


Figure 21. Distribution of *Olearia arida* within WA

Olearia arida was located on the roadside of the Yeelirrie - Albion Downs Road approximately 15 km west of its intersection with the Goldfields Highway. A single population consisting of 24 individuals in two sub-populations was recorded within SAWS and SAMA vegetation communities in the Sand Plain System. A map showing its distribution is provided in Figure 22. *Olearia arida* was not recorded in the project footprint.

Olearia arida occurs with *Acacia pachyacra*, *Triodia basedowii* (dominant), *Keraudrenia velutina* subsp. *velutina*, *Hakea francisiana*, *Grevillea eriostachya*, *Eremophila forrestii* subsp. *forrestii*, *E. platythamnos* subsp. *platythamnos*, and *Prostanthera* sp. Bullimore sandplain (G. Cockerton & D. True LCH 12813).

Figure 22. Distribution of *Olearia arida* in study area 1



***Comesperma viscidulum* F. Muell P4**

Comesperma viscidulum is a low shrub growing to 0.7 m (Plate 17, Plate 18). There are currently ten voucher collections of the species at the WA Herbarium from three IBRA Biogeographic regions: Central Ranges, Great Victoria Desert and Little Sandy Desert. The closest recorded location to study area 1 is approximately 150 km to the north (Western Australian Herbarium, 2011) (Figure 23).



Plate 17. *Comesperma viscidulum*



Plate 18. *Comesperma viscidulum* leaf definition

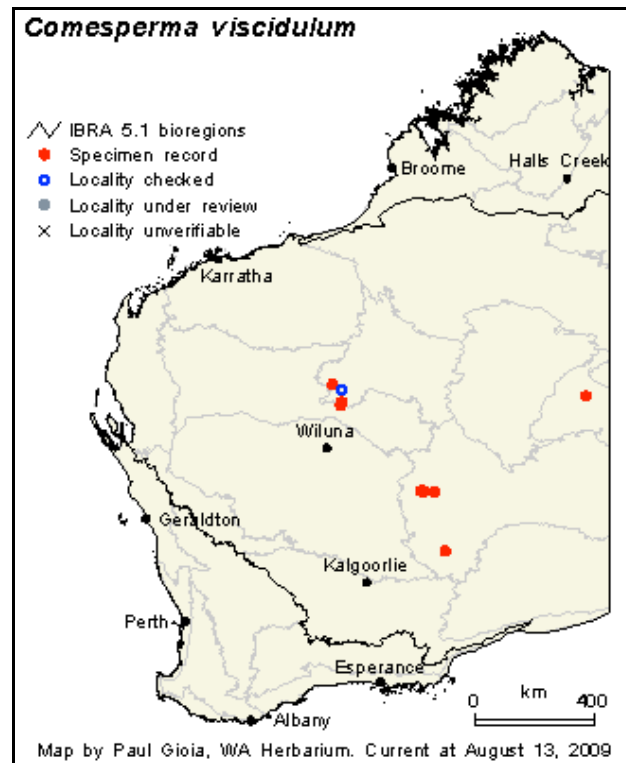
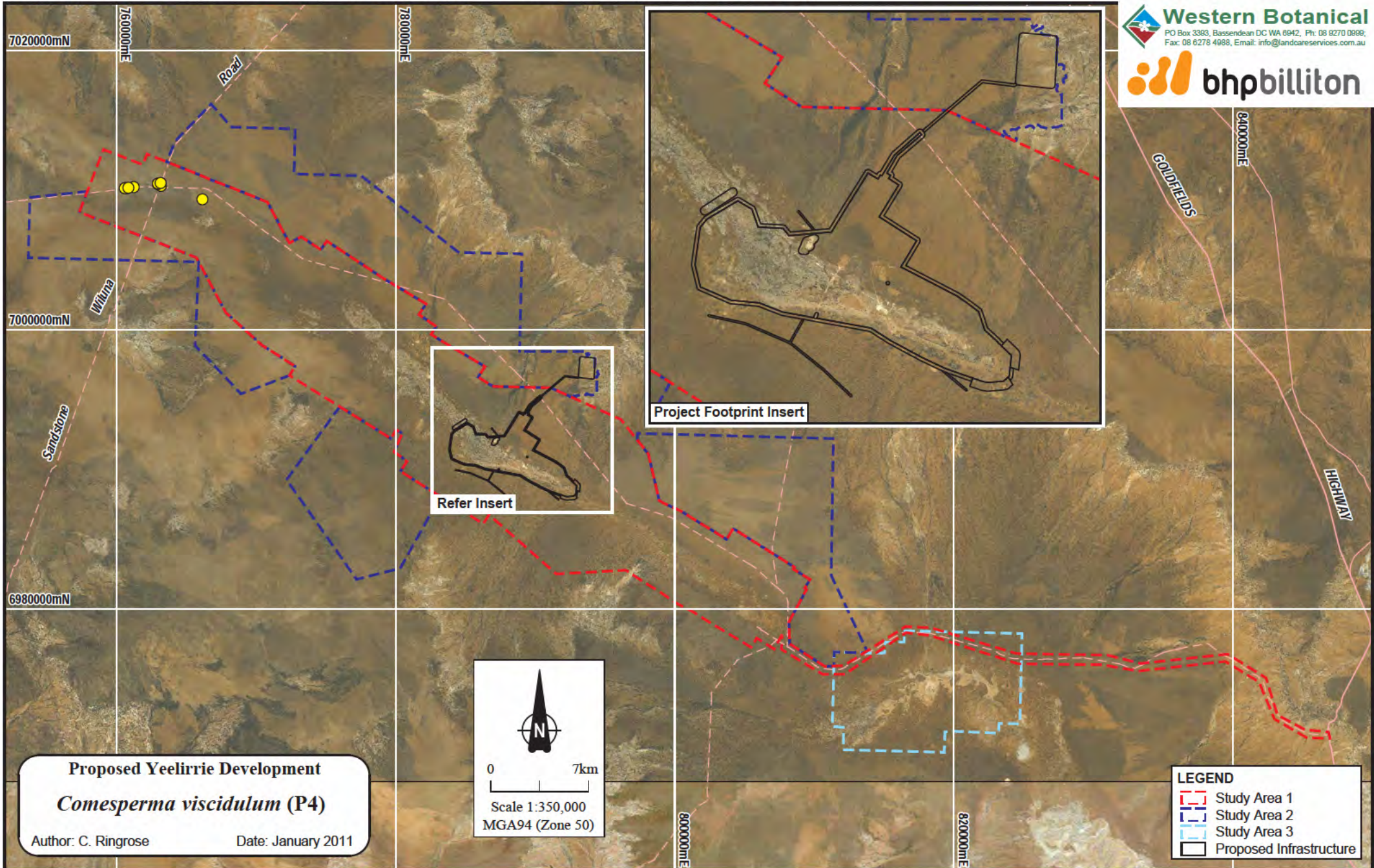


Figure 23. Distribution of *Comesperma viscidulum* within WA

Comesperma viscidulum was recorded within the Sand Plain System in the north-west region of the survey area. A map showing its distribution is provided in Figure 24. *Comesperma viscidulum* was not recorded within the project footprint.

Isolated plants were found in very low numbers, 23 in total. These were located on and near the roadside bunds near the junction of the Wiluna-Sandstone Road and Meekatharra Road, and also further west on the Meekatharra Road and further north on the Wiluna-Sandstone Road. It occurred in the SAMA vegetation community with *Eucalyptus leptopoda* subsp. *elevata* scattered mallees and shrubs of *Acacia jamesiana* (dominant), *Grevillea eriostachya*, *Eremophila platythamnos* subsp. *platythamnos*, *Prostanthera wilkieana* and *Triodia basedowii* (dominant) hummock grasses.

Figure 24. Distribution of *Comesperma viscidulum* in the study area 1



3.3.2. New, undescribed species with potential conservation significance

Three undescribed species recorded within study area 1, *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1, *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1 and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) are considered to be of conservation significance. *Atriplex* sp. Yeelirrie Station and *Rhagodia* sp. Yeelirrie Station have been listed as Priority One Flora and are described in Section 3.3.1.

***Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560)**

Scaevola spinescens terete leaf form (G. Cockerton & C. Ringrose LCH 14560) is a rigid, spiny shrub to 1.8 m high and 2.5 m wide with white, cream or yellow flowers from January to December in response to rainfall (Plate 19, Plate 20). It is found infrequently on the margins of playas and scalded areas and scattered throughout a number of other vegetation communities in study area 1. It is known from three locations: (i) study area 1, (ii) an un-named lake on Yakabindie Station, downstream of study area 1, and (iii) Lake Miranda, south-east of Albion Downs Station. All three populations are within the Yeelirrie paleodrainage system.



Plate 19. *Scaevola spinescens* terete leaf form shrub



Plate 20. *Scaevola spinescens* terete leaf form flowering stem and foliage

Areas of sparse populations were found within the Sand Plain and Playa Systems of study area 1, while the densest populations were recorded north of the airstrip. In total, 782

individuals were recorded. A map showing its distribution within study area 1 is provided in Figure 25. The taxon occurs within the SAWS, SAMU, HPMS, WABS, PLAPoS, PLAET, PLAMi, PLEmc, PLEml, PLEsp, CMxS, CEgW, CErG, CLaS, CMGbS, CMiS and CMpS vegetation communities. Associated species include *Acacia aneura* (multiple varieties), *A. effusifolia*, *A. ramulosa* var. *linophylla*, *Eremophila forrestii* subsp. *forrestii*, *E. malacoides*, *E. maculata* subsp. *brevis*, *Ptilotus obovatus* (typical Goldfields form) and *Triodia basedowii*.

The group known as *Scaevola spinescens* requires further taxonomic differentiation of the several morphologically distinct entities contained. The group known as *Scaevola spinescens* in the broad sense (sens. lat.) is widely distributed across the state, occurring in 18 Biogeographic regions, and is recognised as requiring taxonomic revision (L. Sage pers. comm., 2008). There are at least five forms of *S. spinescens* that, in the opinion of the author, could be separated at the sub-species level. These are:

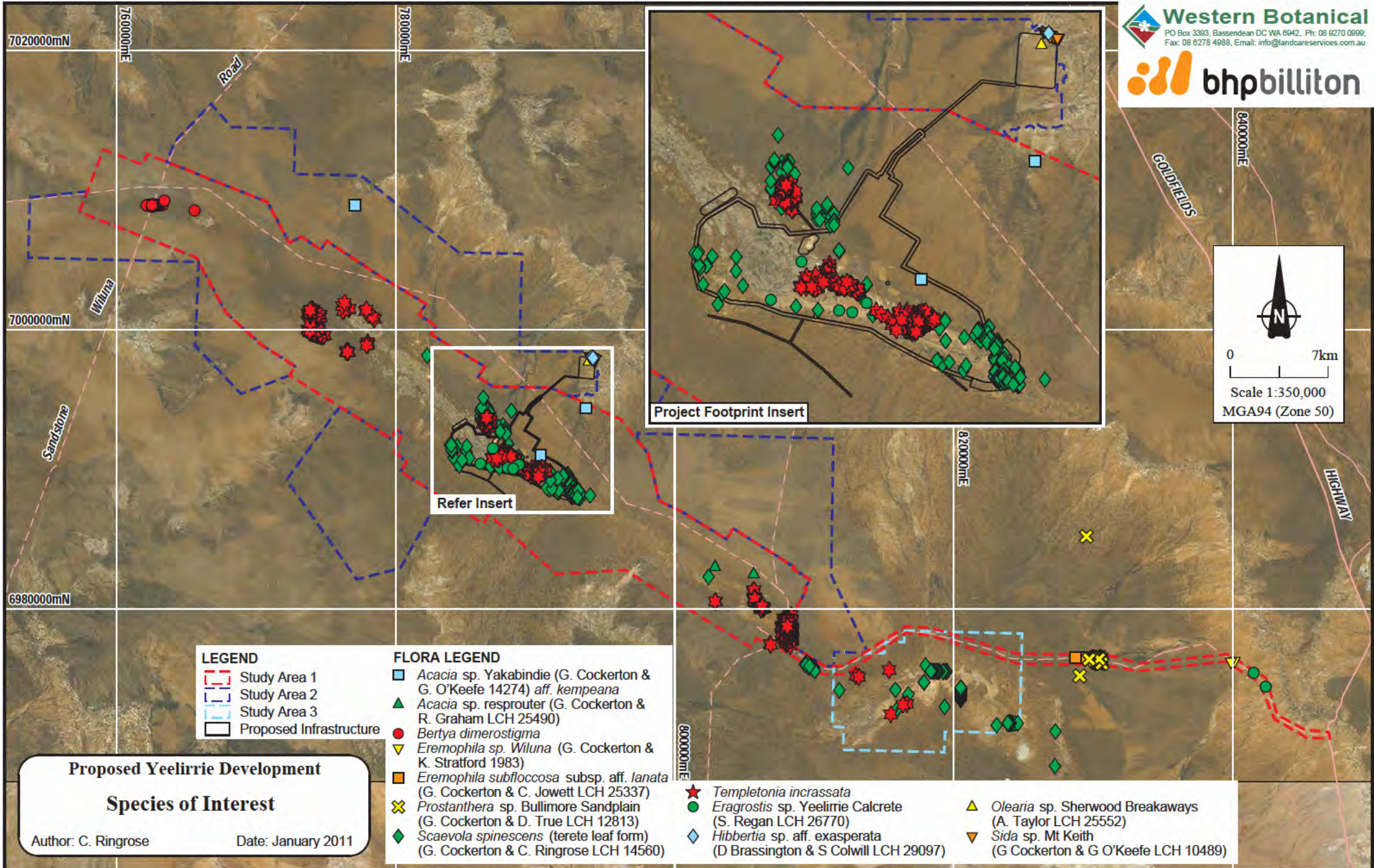
- Pilbara form - little known by the author of this form;
- Broad leaf, non-spinescent form associated with granitoid, often saline landforms, salt lake margins and gypsiferous dunes;
- Narrow leaf, very spinescent form associated with limonitic landforms in the North-eastern goldfields and on the banded ironstone ranges of the Yilgarn region;
- Terete leaf, spinescent form - associated with calcrete, shallow sandsheet over calcrete and margins of claypans in the Yeelirrie – Lake Miranda paleodrainage; and
- Recurved branch form - noted at Shark Bay.

The broad leaf, non-spinescent form; narrow leaf, spinescent form; and terete leaf, spinescent forms have been found to occur on different soils and geology within study area 1. The broad leaf form (mostly non-spiny) is common in the understory of *Casuarina pauper* woodlands on calcrete. The narrow leaf, spiny form is found infrequently as scattered individuals within the Playa and Sand Plain Systems. This form

is very abundant and common on the limonitic landforms east of the survey area near Mt Keith and Leinster. Neither of these two forms have conservation significance.

Locations of these forms are only indicative at this stage and should not be taken as the full extent of occurrence. The WA Herbarium and Leigh Sage (DEC, Goodeniaceae specialist) are currently involved in conducting taxonomic investigations into the *S. spinescens* group.

Figure 25. Distribution of Species Of Interest (SOI) in the local study area



3.3.3. Species of interest

Templetonia incrassata I. Thomps.

Templetonia incrassata is a long lived, erect, multi-stemmed leafless shrub to 2 m high by 4 m wide with yellow and brown flowers (Plate 21, Plate 22). It flowers from August to September, and, in the survey area, occurs exclusively within the Calcrete and Playa Systems in association with *Eucalyptus gypsophila* and *Casuarina pauper*.



Plate 21. *Templetonia incrassata* shrub within the CCpW vegetation community



Plate 22. *Templetonia incrassata* stem and flower definition

Templetonia incrassata was recently differentiated as a new combination (sub-grouping) of *T. egena* (Thompson, 2010). *Templetonia incrassata* is distinguished from *T. egena* by thicker, less distinctly grooved flowering branches, which can be relatively glaucous. The revision was conducted independently of this survey; however, plant material collected from study area 1 was used in the taxonomic assessment.

The occurrence of this species in the survey area represents a northward range extension for this species, which is otherwise known from the northern Coolgardie and south-eastern Murchison Biogeographic regions (Figure 26). There are currently six voucher collections of *T. incrassata* at the WA Herbarium from Yeelirrie, Lake Raeside and Menzies. *Templetonia incrassata* is a commonly occurring species within study area 1, however, is poorly recorded in the Murchison region.

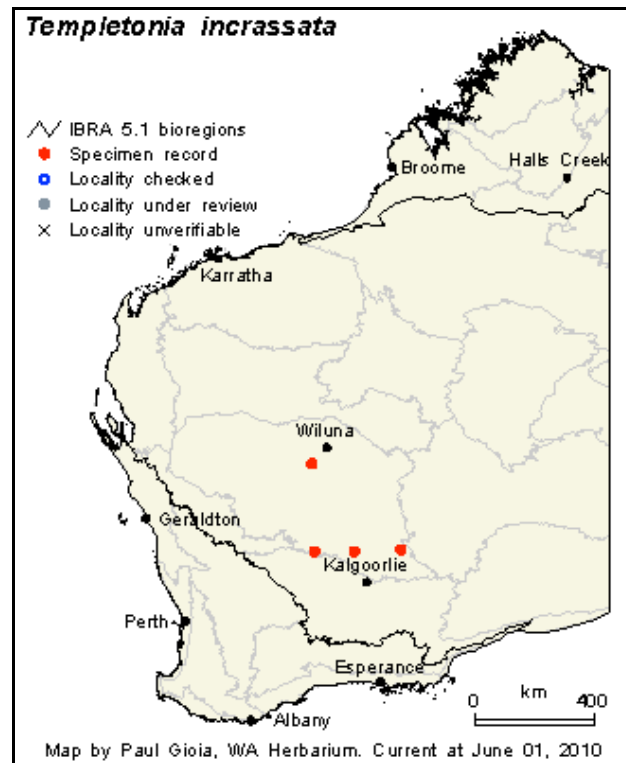


Figure 26. Distribution of *Templetonia incrassata* within WA

A total of 2,691 individuals were recorded within the CAbS, CErG, CEGW, CCpW, CLaS, CMGbS, CMxS, HPMS, PLAPoS, PLAET, PLAMi, PLEml and SAMU vegetation communities. Associated species include *Acacia aneura* (multiple varieties), *Eucalyptus gypsophila*, *Casurina pauper*, *A. ramulosa* var. *linophylla*, *A. burkittii*, *Eremophila forrestii* subsp. *forrestii*, *Eremophila arachnoides* subsp. *arachnoides* P3, *Lycium australe*, *Grevillea berryana*, and *Melaleuca xerophila*. A map showing the distribution of *T. incrassata* in study area 1 is provided in Figure 25.

***Eremophila* sp. Wiluna (G. Cockerton & K. Stratford 1983)**

During previous surveys near Lake Way, the calcrete Palaeochannel near Wiluna and the Mt Keith mine conducted by Western Botanical from 1996 to 1997, an undescribed *Eremophila* species was recorded and collected. Identification at the time by Bob Chinnock (pers comm.) resulted in the phrase name *Eremophila* sp. Wiluna (G. Cockerton & K. Stratford 1983) being applied by the authors with recognition that it was

allied to the variable *E. margarethae* group. It remains poorly collected with insufficient material available for a formal botanical description.

Eremophila sp. Wiluna (G. Cockerton & K. Stratford 1983) is a low erect shrub growing from 0.5 to 1.2 m tall and has grey foliage and purple flowers (Plate 23, Plate 24). *Eremophila* sp. Wiluna is superficially similar to *E. margarethae* but can be distinguished by habitat preference, (*Eremophila* sp. Wiluna occurring on calcrete landforms while *E. margarethae* is associated with granitic landforms), the absence of resin on stems and calyx, and the nature of the branched hairs on calyx lobes and corolla.

Eremophila sp. Wiluna is geographically restricted to alkaline soils with massive calcrete at or just below the surface, and occasionally metabasalt, which also has a high carbonate content. *E. margarethae*, in contrast, is often present on shallow gritty sand over granite, and was recorded in the Granite and Sand Plain Systems of study area 1. *Eremophila* sp. Wiluna has previously been recorded by the authors as occurring on palaeochannel calcrete at the western side and northern sides of Lake Way, near Wiluna, where it is locally abundant. A few plants have been noted in the Calcrete System of study area 1, although not within the project footprint (Figure 25).



Plate 23. *Eremophila* sp. Wiluna shrub



Plate 24. *Eremophila* sp. Wiluna leaf and flower definition

***Prostanthera* sp. Bullimore Sandplain (G. Cockerton & D. True LCH 12813)**

During previous surveys of the Bullimore sand plain near Leinster and Mt Keith conducted by Western Botanical from 1996 to 2007, an undescribed *Prostanthera* species was commonly recorded and collected. Identification at the time resulted in the species being included under *Prostanthera althoferi* subsp. *althoferi*. Further investigations at the WA Herbarium has identified that there are at least two taxa curated within *Prostanthera althoferi* subsp. *althoferi* folders.

The 'Type' (true form) of *Prostanthera althoferi* subsp. *althoferi* is a low, dense, divaricately shrub to 1 m high by 1.5 m wide and grows on the rocky outcrops and banded ironstone (BIF) and chert hills and limonitic gravelly plains in the Yilgarn and south-western part of the North-eastern Goldfields (Figure 27).

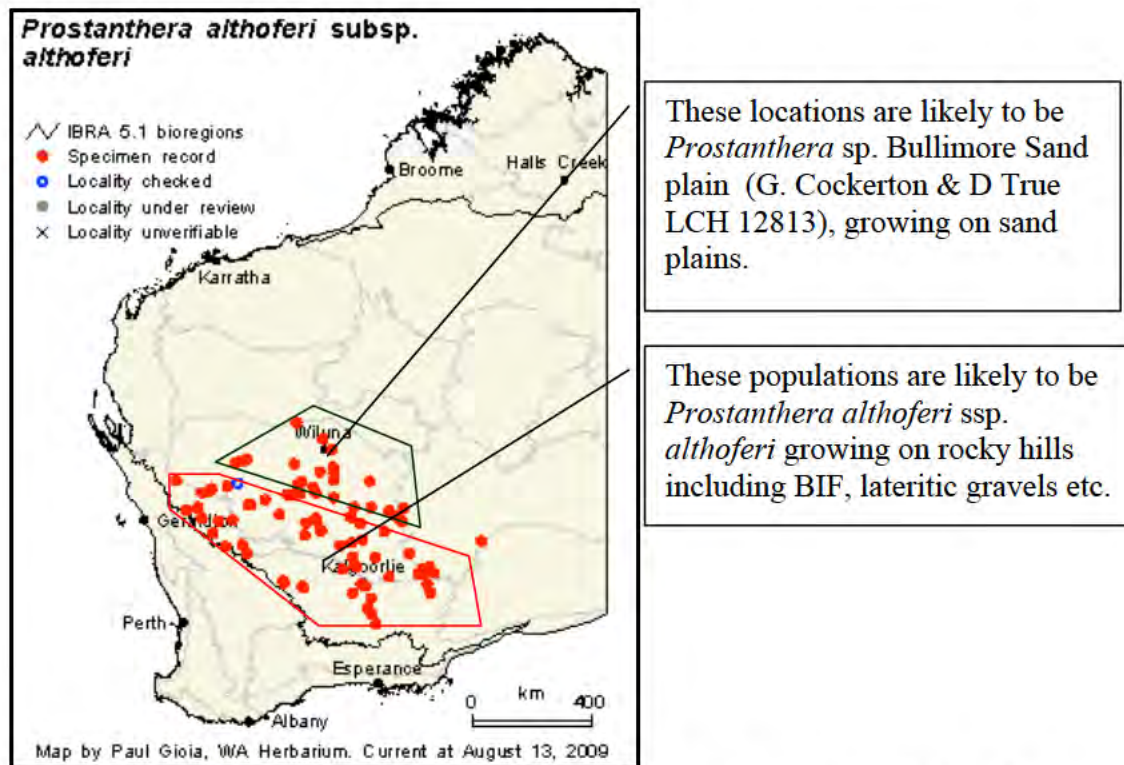


Figure 27. Distribution of *Prostanthera althoferi* subsp. *althoferi* within WA

Prostanthera sp. Bullimore sandplain (G. Cockerton & D. True LCH 12813) is a shrub to 2 m high by 2 m wide (Plate 25, Plate 26) and grows exclusively on the Aeolian yellow

sand plains of the Bullimore land system in the North-eastern Goldfields and Central Desert (Western Botanical, 2008c).



Plate 25. *Prostanthera* sp. Bullimore sandplain



Plate 26. *Prostanthera* sp. Bullimore sandplain, stem and leaf definition

The two forms differ slightly in leaf size and morphology and have major differences in growth habit and habitat preference. Western Botanical has tentatively applied the phrase name *Prostanthera* sp. Bullimore sandplain (G. Cockerton & D. True LCH 12813) to the taxon recorded in study area 1 and elsewhere on the sand plains near Yeelirrie to distinguish it from typical *P. althoferi* subsp. *althoferi* on the rocky hills further to the south-west. This phrase name has not yet been submitted to the WA Herbarium and does not appear on the Census of Vascular Flora.

Prostanthera sp. Bullimore sandplain was recorded within the Sand Plain System on the northern and southern roadsides of the Yeelirrie Albion Downs Road approximately 20 km west of the Yeelirrie Albion Downs Road and Goldfields Highway intersection. A map showing its distribution is provided in Figure 25. A total of 335 individuals were recorded within a 500 m wide buffer, 250 m either side of the current road alignment. A single individual was also recorded near the junction of the Sandstone Wiluna Road and Meekatharra Road. It occurs within the SASP, SAMA, SAGS and SAWS vegetation communities with *Acacia effusifolia*, *Eremophila forrestii* subsp. *forrestii*, *Leptosema chambersii* and *Triodia basedowii* (dominant).

Prostanthera althoferi subsp. *althoferi* does not have conservation significance. Both species curated under *P. althoferi* subsp. *althoferi* are considered common and widespread. It is discussed here as it is of taxonomic interest only and to recognise that a revision of this genus is required.

***Bertya dimerostigma* F. Muell**

Bertya dimerostigma is an erect dark green viscid shrub growing to 2 m (Plate 27, Plate 28). It flowers from April to July and occurs on yellow or red sands in Sand Plain Systems. There are currently 46 voucher collections of the species at the WA Herbarium from five different IBRA Biogeographic regions: Coolgardie, Great Victoria Desert, Murchison, Mallee and Avon Wheatbelt (Western Australian Herbarium, 2011) (Figure 28).



Plate 27. *Bertya dimerostigma* shrub within the SDSH vegetation community



Plate 28. *Bertya dimerostigma* stem and leaf definition

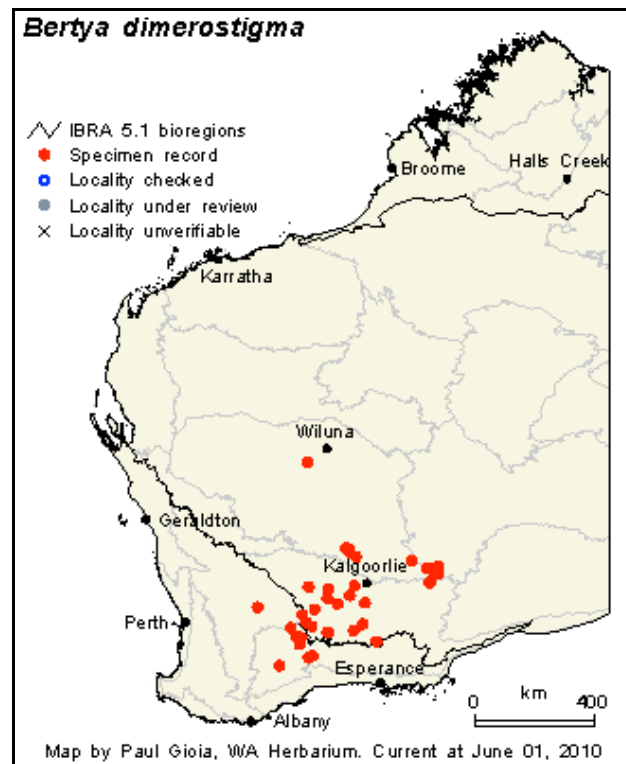


Figure 28. Distribution of *Bertya dimerostigma* within WA

Bertya dimerostigma was recorded in the north-west region of study area 1 within the Sand Plain System. A map showing its distribution in study area 1 is provided in Figure 25. A dense population (1045 individuals) was recorded on red sand dunes in the SDSH vegetation community in association with *Callitris columellaris*, *Acacia effusifolia*, *Triodia basedowii* (dominant) and *Triodia melvillei*. *Bertya dimerostigma* was also recorded in adjacent SAMA and SAWS vegetation communities.

The nearest recorded location of this species to study area 1 is approximately 200 km to the south at the Leinster townsite. Current WA Herbarium records show its present distribution is confined to the yellow and red sand plains of the greater Kalgoorlie-Boulder area extending to the south-west into the Mallee Biogeographic region. The record of *B. dimerostigma* in study area 1 represents a significant northward range extension for the species (Western Australian Herbarium, 2011).

***Eremophila subfloccosa* subsp. aff. *lanata* (G. Cockerton & C. Jowett 25337)**

Eremophila subfloccosa subsp. aff. *lanata* (G. Cockerton & C. Jowett 25337) is a shrub to 0.7 m in height with grey felty leaves and sessile dark bottle-green flowers in the leaf axils (Plate 29, Plate 30). It has been recorded on the road shoulder of the north side of the Yeelirrie Albion Downs Road at Albion Downs Station in the SAMA vegetation community. A map showing its distribution in study area 1 is provided in Figure 25.

The differentiation from true *Eremophila subfloccosa* subsp. *lanata* has not been fully investigated as yet. It is considered a species of interest until fully investigated.

Eremophila subfloccosa subsp. *lanata* is an erect or spreading shrub, 0.25 to 0.6 m high, with light green flowers that occur in June to December. This species grows in red sandy soils on undulating plains and salt lake margins. The WA Herbarium records show that this species occurs in a wide region of southern Western Australia including the Murchison, Coolgardie, Avon Wheatbelt and Malcolm Biogeographic regions (Figure 29).



Plate 29. *Eremophila subfloccosa* subsp. aff. *lanata*



Plate 30. *Eremophila subfloccosa* subsp. aff. *lanata* stem, foliage and flower

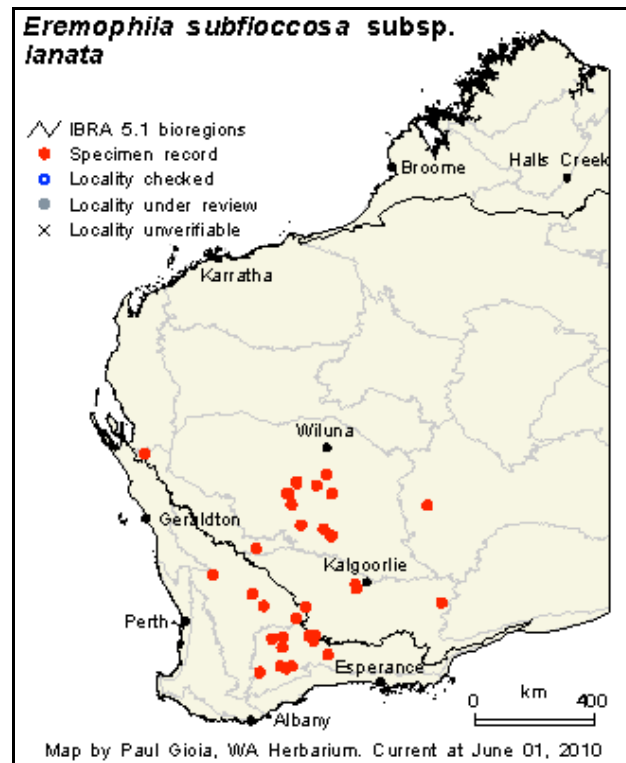


Figure 29. Distribution of *Eremophila subfloccosa* subsp. *lanata* within WA

***Acacia* sp. resprouter (G. Cockerton & R. Graham LCH 25490)**

Acacia sp. resprouter (G. Cockerton & R. Graham LCH 25490) is a shrub to 1.7 m high, which resprouts at the base from lignotuber after fire. It was recorded as a dominant *Acacia* in one area of SAWS vegetation community north of Three Mile Well on Yeelirrie Station and is associated with *Hakea lorea* subsp. *lorea*, *Triodia basedowii* and *T. melvillei* (Plate 31 and Plate 32). It has affinities with *A. coolgardiensis* subsp. *coolgardiensis* and *A. resinosa*. Fruits were collected in November 2010. Further investigation will be carried out on this species. A small population of this *Acacia* has also been noted by authors as occurring at Lake Way Station. It is not considered to be of conservation significance. A map showing its distribution in study area 1 is provided in Figure 25.



Plate 31. *Acacia* sp. resprouter in SAWS community



Plate 32. *Acacia* sp. resprouter leaf detail

Acacia* sp. Yakabindie (G. Cockerton & G. O'Keefe LCH 14274) aff. *kempeana

Acacia sp. Yakabindie (G. Cockerton & G. O'Keefe LCH 14274) aff. *kempeana* is a shrub to 4m with striking, characteristic, yellow-green and highly fragrant foliage (Plate 33). The species has many similarities to *Acacia kempeana*, a widespread species, however, the golden-brown resins on the phyllodes and terminal stems give the plant a characteristic yellow-green colour and a strong cinnamon-honey fragrance. This strongly contrasts with *A. kempeana* which is blue-green in colour and has no noted fragrance. The phyllode shape is similar to *A. kempeana*; however, differs in venation and resin characteristics (Plate 34).

To date, approximately 447 plants in 11 populations are known, primarily on Yakabindie Station, approximately 100 km south of Wiluna. It is also known from the Pilbara region where it has been widely collected. Scattered individuals have been noted by the authors on Yakabindie Station (Dingo Creek), Albion Downs borefield (near Bore 6) and north-east of Mt Keith Operation.

One plant was recorded in study area 1 in SAMA vegetation east of proposed high grade stockpile, and a single population of approximately 30 plants in study area 2, also in the SAMA vegetation community. Another individual plant was recorded on the northern boundary of the survey area within the GPoS vegetation community.

Associated species include *Eucalyptus kingsmillii*, *Acacia effusifolia*, *Bossiaea eremaea* and *Triodia basedowii*. A map showing its distribution in the study areas 1 and 2 is provided in Figure 25.



Plate 33. *Acacia* sp. Yakabindie (G. Cockerton & G. O'Keefe LCH 14274) aff. *kempeana* in SAMA community



Plate 34. *Acacia* sp. Yakabindie (G. Cockerton & G. O'Keefe LCH 14274) aff. *kempeana* leaf detail

***Acacia* sp. (G. Cockerton & R. Graham LCH 25491)**

Acacia sp. (G. Cockerton & R. Graham LCH 25491) is a tree 6-8 m high, with flat slightly curved phyllodes, 2 by 130 mm, yellow green in colour and a large amount of resin on phyllodes (Plate 35). The tree has rough grey bark and brittle branchlets, and timber has a dark centre. It doesn't key to any known *Acacia* species and fruits and flowers are required to be collected for further identification. It may fall within the broader *A. aneura* group upon revision of further collected material. It is not considered to be of conservation significance and was not recorded in the proposed project footprint. This *Acacia* was recorded in a population of 50 plants that formed a grove in SAMU vegetation, located approximately 4 km north west of the Yeelirrie Homestead. Associated species were *A. ayersiana*, *A. ramulosa* var. *linophylla* and *Triodia basedowii*.



Plate 35. *Acacia* sp. (G. Cockerton & R. Graham LCH 25491)

***Eragrostis* sp. Yeelirrie Calcrete (S. Regan LCH 26770)**

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770) is a commonly occurring and widespread grass of calcrete communities that has been recognised as being a new taxon for the first time following these surveys. Terry Macfarlane of the WA Herbarium initially identified collections as *Eragrostis xerophila*, although noted that the specimens did not match exactly. Further taxonomic work was later undertaken by Johan Hurter, also of the WA Herbarium, and Western Botanical. Although having floral character similarities with *Eragrostis xerophila*, it has distinct plant architecture, habitat preference and overall morphology. The taxon has been assigned the phrase name *Eragrostis* sp. Yeelirrie Calcrete (S. Regan LCH 26770). A formal description is yet to be prepared and requires the collection of further flowering and seeding material. It is not considered to be of conservation significance.

Eragrostis sp. Yeelirrie Calcrete is described as a perennial, tufted grass to 0.15 m in height (Plate 36 and Plate 37), with prominent scabrid hairs within and along the edges of parallel grooves on the leaf blades and on the keel of the lemma. The scabrid hairs, smaller growth habit and obligate associated with calcrete outcrops, are notable differences to the typically occurring *Eragrostis xerophila*, which has few to no hairs, grows to 0.5 m high and is found on orange sand plains.

Eragrostis sp. Yeelirrie Calcrete was observed within study area 1 as forming very low spreading colonies to 5 cm high and up to 0.3 m in diameter. For most of the survey period, these grasses were aestivating (over-summering), heavily grazed and had inadequate material for identification purposes. Flowering occurred after rainfall in March and April 2010. This species defines the CErG community, which is characterised as a very open grassland on otherwise bare calcareous soil, and is described further in Appendix 8.



Plate 36. *Eragrostis* sp. Yeelirrie Calcrete (S. Regan LCH 26770) clumping habit



Plate 37. *Eragrostis* sp. Yeelirrie Calcrete (S. Regan LCH 26770) flower detail

3.3.4. *Acacia aneura* variants within study area 1

The species *Acacia aneura* is part of a core group of *Acacia* species commonly named “Mulga” and includes *Acacia aneura* and its varieties, *Acacia aptaneura*, *A. ayersiana*, *A. caesaneura*, *A. craspedocarpa*, *A. fuscaneura*, *A. minyura*, *A. paraneura* and *A. pteraneura* (Miller *et al.*, 2002, FloraBase, 2011). The complex contains a confusing degree of variability, especially for species found in Western Australia, and it is difficult to accommodate an orthodox taxonomic treatment (Muell, 2001). The variation and taxonomic complexity of the Mulga complex has but few rivals within Australian flora (*ibid.*). No single character uniquely defines the Mulga complex, however phyllode and pod variation have been found to covary (Miller *et al.*, 2002). Additionally the variation of morphological features (growth form, phyllode shape, size and colour, and pod physiognomy) between and within populations makes the classification additionally complicated.

A guide to the identification of recognised varieties of *Acacia aneura* is presented in Flora of Australia (Muell, 2001), but this is found to be deficient for Western Australian varieties (Muell, 2001). The guide’s nomenclature key categorically separates the Mulga variants via the physiognomy of the phyllodes and pods. Inflorescence attributes of the Mulga complex are defined as simple with cylindrical spikes or obloid heads, never globular (Miller *et al.*, 2002). It is this relative uniformity that encouraged the use of morphological (form and phyllode) and physiognomical (phyllode and pod) attributes in classifying the Mulga species distributed within the survey area.

During the survey of study area 1, many collections of the Mulga variants lacked pods and flowers due to dry seasonal conditions. Therefore the classification of Mulga variants was undertaken with phyllode morphological attributes and informal phrase names were applied. These collections were submitted to the WA Herbarium and some were further identified as formally recognised *Acacia* species and variants. Phyllode morphological attributes utilised for the classification of local study area Mulga species include phyllode type (flat, subterete or terete), phyllode shape (straight, slightly curved

or curved), phyllode size (length and width) and phyllode colour. Eight informally phrase named variants were recognised within study area 1 (Table 18).

At the time of reporting, Dr. Bruce Maslin of the WA Herbarium was preparing a draft electronic key that will aid the identification of Mulga variants on characteristics other than pods, such as resin type. Further classification and confirmation of variants within the survey area utilising the draft key showed a great deal of hybridisation between *Acacia* species and a high level of uncertainty remained with regard to the collections lacking quality fruit and flowers. Mulga variants recorded within the survey area are considered to be of taxonomic interest only, and are not of conservation significance.

Table 18. Description of informally phrase named *Acacia aneura* variants within study area 1

Species	Variant description
<i>Acacia aneura</i>	flat curved 40-90 x 4mm silver grey green
	flat very slightly curved 20-40 x 3mm grey green
	flat slightly curved 30-70 x 3-5mm grey green
	flat straight 30-50 x 4mm grey green
	flat straight to slightly curved 30-80 x 2mm grey green
	sub-terete slightly curved 50-70 x 1mm olive green
	sub-terete straight 20-80 x 1mm grey green
	terete straight 30-110 x 1mm grey green

3.3.5. Introduced species

Eleven introduced taxa or weeds were recorded in study area 1: *Acetosa vesicaria* (Ruby Dock), *Sonchus oleraceus* (Common Sowthistle), *Citrullus lanatus* (Afghan Melon or Pie Melon), *Tribulus terrestris* (Caltrop), *Cenchrus ciliaris* (Buffel Grass), *Lysimachia arvensis* (Pimpernel), *Cuscuta planiflora* (Dodder), *Erodium aureum*, *Portulaca oleracea* (Purslane), *Emex australis* (Doublegee), and *Opuntia* sp. (a Cactus).

Extensive populations of *Acetosa vesicaria* were recorded within the historic rehabilitation sites in the project footprint and were most prevalent after spring and summer rainfall. Isolated populations or scattered individuals were also recorded outside of these rehabilitation areas. *Acetosa vesicaria* is a common weed along roadsides and in disturbed areas and is widespread in the north eastern Goldfields and Murchison regions. *Acetosa vesicaria* is highly competitive in rehabilitation areas and needs to be controlled.

Sonchus oleraceus, *Emex australis*, *Lysimachia arvensis*, *Cuscuta planiflora*, *Erodium aureum*, *Portulaca oleracea*, *Citrullus lanatus* and *Tribulus terrestris* are widespread across Western Australia in disturbed areas and, whilst invasive, are not strongly competitive. *Sonchus oleraceus*, *Citrullus lanatus* and *Tribulus terrestris* were prevalent in the project footprint after spring and summer rainfall.

The *Opuntia* sp. Cactus was a garden escapee from the Yeelirrie Station homestead (Plate 1 in Appendix 14). Cacti commonly persist around historic settlements in the north-eastern Goldfields and Murchison regions.

A very small and isolated population of *Cenchrus ciliaris* is located adjacent to a bore on the Yeelirrie Albion Downs Road and possibly introduced via stock.

Wards Weed (*Carrichtera annua*) is also suspected to be present as dead stems were observed in the project footprint.

Most weeds appear to have been introduced via stock and seed appears to persist in the soil seed bank for several years. Coordinates of introduced taxa are listed in Appendix 14 of this report and a map showing the distribution of *Acetosa vesicaria*, *Sonchus oleraceus*

and *Citrullus lanatus* is presented in Appendix 14. Although the taxa are found throughout Western Australia, they are not listed as a 'Declared Plant' species under the *Agricultural and Related Resources Protection Act 1976* (Department of Agriculture and Food, 2009).

3.4. Study area 2 - vegetation

Twenty-seven vegetation communities and one complex of three communities were identified and mapped within the 42,027.29 ha of study area 2. These were closely related to those found within study area 1, and 20 communities were recorded in both study areas. An overview of the study area 2 showing vegetation community boundaries is provided in Figure 10 and detailed vegetation maps are provided in Appendix 7 of this report. The characteristics of each community are summarised in Table 19 and more detailed descriptions are provided in Appendix 8 of this report. The representative areas of each community in study area 1 and 2, including those communities forming mosaics and complexes, are listed in Table 20 **Error! Reference source not found.** Descriptions of relevés surveyed within study area 2 are provided in Appendix 12 of this report, and a table of species by vegetation community recorded during relevés assessment is provided in Table 3 of Appendix 11.

3.4.1. Soil landscape association with vegetation communities

The vegetation communities of study area 2 were similarly aligned with the five soil landscapes described within study area 1 in Section 3.1.1.

Communities occurring within the Sand Plain System

Sand Plain System communities are characterised by Spinifex (*Triodia* spp.) hummock grasslands with a varying amount of shrub, tree and mallee components in the upper stratum. There are eight communities described within the Sand Plain System: Sand Plain Spinifex Hummock Grassland (SASP), Sand Plain Spinifex Hummock Grassland with Wattles (SAWS), Sand Plain Spinifex Hummock Grassland with Mallee (SAMA), Sand Plain Spinifex Hummock Grassland with Heath (SAHS), Sand Plain Spinifex

Hummock Grassland with *Eucalyptus gongylocarpa* Woodland (SAGS), Sand Plain Spinifex Hummock Grassland with *Corymbia lenziana* Woodland (SACSG), Sand Plain Mulga Spinifex Hummock Grassland (SAMU) and Sand Dune Shrubland (SDSH). Several of these communities formed mosaics, or intergraded with one another, as post fire succession of species plays an integral part in vegetation community determination. Multiple fire regime mosaics within these communities were observed. The occurrence of recent fire significantly altered vegetation structure and species composition. Notably Mulga varieties are killed by fire and must regenerate from soil stored seed. Successful extensive regeneration occurs sporadically following high rainfall events and it can take many decades for Mulga to reassert dominance.

Communities occurring within the Hardpan and Drainage System

Hardpan and Drainage System communities are characterised by a tall *Acacia aneura* (various forms) Shrubland with a highly variable understorey. There are five communities described in study area 2: Drainage Tract Mulga Shrubland (DRMS), Mulga Groves on Hardpan Plains (GRMU), Hardpan Plain Mulga Shrubland (HPMS), Wandarrie Bank Grassy Shrubland (WABS) and Drainage Tract *Maireana pyramidata* Shrubland (DRMpS). The Hardpan and Drainage System is associated with areas of surface water flow and accumulation during and following rainfall events. The soils tend to have a higher fine particle content with greater moisture retaining capacity near the surface.

Communities occurring within the Playa System

There are two communities described in the Playa System in study area 2, *Acacia - Ptilotus obovatus* Shrubland (PLAPoS) and *Eremophila malacoides* Shrubland (PLEml). The majority of the Playa System is vegetated with PLAPoS on flats surrounding playas. Vegetation communities of the Playa System occur interspersed within the Hardpan and Drainage System and are also associated with Granite System outwash zones.

Communities occurring within the Calcrete System

The Calcrete System of study area 2 consists of several outcropping calcrete rises that are situated on the outer margins of the ancient paleodrainage channel. The Calcrete System in study area 2 is represented by a single vegetation community, *Acacia burkittii* Shrubland on Calcrete (CAbS). Calcrete rises vegetated with CAbs are situated within, or adjacent to, the Playa, Hardpan and Drainage and Sand Plain Systems.

Communities occurring within the Granite System

The Granite System in study area 2 incorporates elements of outcropping granite masses, quartz ridgelines and weathered granite breakaways. Eleven communities were defined within the Granite System, and seven of these made up the mosaic representing the Weathered Granite Breakaway complex (BRX).

Ptilotus obovatus Shrubland (GPoS), Granite Rise (GR), Breakaway Chenopod Low Shrubland (BCLS) and Mulga Shrubland on Granite Rise (GRMS) communities are present within the BRX complex as well as elsewhere in the Granite System. In addition to these four communities, three are represented only in the BRX complex. These are the Weathered Granite Plateau (WGBP), Breakaway Mulga and *Sida ectogama* Shrubland (BMSS) and the *Acacia* spp. Shrubland in Weathered Granite Breakaway Gullies (WGAG) communities. BRX complex is mapped as one unit and the seven components listed above were not mapped separately at the scale at which this assessment was undertaken. These component units are not therefore presented in the vegetation map. In addition, WGBP, BMSS and WGAG were not mapped as vegetation communities during these surveys.

The communities defined within the Granite System that are not included in the BRX mosaic are: Quartz Ridge (Qtz), Mulga Shrubland with *Prostanthera campbellii* on Quartz Ridge (QMPS), Stony *Acacia* spp. and *Eremophila galeata* Shrubland (SAES), Mulga Shrubland with Chenopods on Granite Rise (GRMC).

3.4.2. Confidence level of mapping

The scale at which mapping was undertaken was 1:20,000, a broader mapping scale than used for study areas 1 and 3. The complex communities within the Granite System where

the majority of significant species occurred, were mapped at the finer scale, while less emphasis was placed on mapping the boundaries of vegetation communities at fine scales where there was little to no proposed impact to vegetation.

The majority of study area 2 was characterised by vegetation communities within the Sand Plain System. The boundaries of Sand Plain communities were difficult to distinguish on aerial photography at the scale these surveys were undertaken. Differing fire regimes and the presence of fire scars often changed the appearance and species composition of communities between the time the aerial imagery was captured and the time that on-ground vegetation mapping took place. Also, different densities of understorey can visually resemble one another when viewed from above, for example, myrtaceous heath (in the SAHS vegetation community) and higher densities of spinifex grasslands (in the SASP community). In addition to aerial photography limitations, during ground truthing, distinct boundaries were often absent between Sand Plain communities. Here, instead of a distinct zone of intergrade between communities, there was a wide ecotone - gradation of slight differences in species composition, for example, the myrtaceous heath stratum and the taller mallee components.

Table 19. Summary descriptions of the vegetation communities within study area 2

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
Qtz	Quartz Ridge	Hills and foot slopes associated with granite breakaway	<i>Acacia quadrimarginea</i> , <i>Acacia aneura</i> , <i>Callitris columellaris</i> , <i>Dodonaea petiolaris</i> , <i>Eremophila exilifolia</i> and <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Cymbopogon ambiguus</i>
QMPS	Mulga Shrubland with <i>Prostanthera campbellii</i> on Quartz Ridge	Quartz ridgeline	<i>Acacia aneura</i> (various forms), <i>A. quadrimarginea</i> , <i>Prostanthera campbellii</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Eriachne mucronata</i> (xerophytic form)
GR	Granite Rise	Exfoliating granite outcrop	<i>Acacia quadrimarginea</i> , <i>Acacia aneura</i> , <i>Callitris columellaris</i> , <i>Dodonaea</i> spp., <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Senna</i> spp., <i>Sida</i> spp., <i>Cymbopogon ambiguus</i> , various herbs
GRMS	Mulga Shrubland on Granite Rise	Plains with granite rise	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>A. craspedocarpa</i> , <i>A. quadrimarginea</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila</i> spp., <i>Sida ectogama</i> , <i>Senna</i> spp.
GRMC	Mulga Shrubland with Chenopods on Granite rise	Plains with granite rise	<i>Acacia aneura</i> (various forms), <i>Maireana pyramidata</i> , <i>Rhagodia drummondii</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Senna artemisioides</i> subsp. <i>filifolia</i> , <i>Aristida contorta</i> , <i>Tripogon loliformis</i>
SAES	Stony <i>Acacia galeata</i> and <i>Eremophila</i> spp. Shrubland	Foot slope deposits of granite breakaway	<i>Eremophila galeata</i> , <i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila compacta</i> subsp. <i>compacta</i> , <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Senna artemisioides</i> subsp. <i>x sturtii</i> , <i>S. artemisioides</i> subsp. <i>helmsii</i> , <i>Sida ectogama</i> , <i>Eragrostis eriopoda</i>
BCLS	Breakaway Chenopod Low Shrubland	Foot slope deposits and undulating alluvial plains at the base of granite breakaway	<i>Maireana triptera</i> , <i>Sclerolaena diacantha</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Cymbopogon ambiguus</i>
GPoS	<i>Ptilotus obovatus</i> Shrubland	Foot slope deposits of granite breakaway	<i>Ptilotus obovatus</i> (typical Goldfields form), <i>Maireana pyramidata</i> , <i>Eremophila compacta</i> subsp. <i>compacta</i> , <i>E. maculata</i> subsp. <i>brevifolia</i> , <i>Senna</i> spp., <i>Eragrostis</i> sp.

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
BRX	Weathered Granite Breakaway Complex	<p>WGBP Plateaus and upper slopes of weathered granite breakaways</p> <p>WGAG Gullies within Weathered Granite Breakaways</p> <p>BMSS Alluvial plain at immediate base of weathered granite outcropping</p>	<p>Mosaic of GPoS, GR, BCLS, GRMS, WPBP, WGAG and BMSS communities.</p> <p>WGBP <i>Acacia quadrimarginea</i>, <i>A. aneura</i> (various forms), <i>A. balsamea</i>, <i>Mirbelia rhagodioides</i>, <i>Eremophila latrobei</i> subsp. <i>Latrobei</i>, <i>Ptilotus obovatus</i>, <i>Scaevola spinescens</i>, <i>Dodonaea petiolaris</i>, <i>Ptilotus schwartzii</i>, <i>Calytrix erosipetala</i>, <i>Sida</i> sp. Mt Keith, <i>Eremophila exilifolia</i>, <i>Eriachne mucronata</i> (xerophytic form), <i>Stylidium induratum</i>, <i>Eragrostis desertorum</i> and <i>Amphipogon strictus</i></p> <p>WGAG <i>Acacia quadrimarginea</i>, <i>A. aneura</i> (various forms), <i>A. balsamea</i>, <i>A. burkittii</i>, <i>Dodonaea petiolaris</i>, <i>Eremophila latrobei</i> subsp. <i>Latrobei</i>, <i>Psyrax rigidula</i>, <i>Ptilotus obovatus</i>, <i>Mirbelia microphylla</i>, <i>Calytrix erosipetala</i>, <i>Eremophila exilifolia</i></p> <p>BMSS <i>Acacia aneura</i> (various forms), <i>Sida ectogama</i></p>
SASP	Sand plain Spinifex Hummock Grassland	Sand plain	<i>Triodia basedowii</i> , <i>Leptosema chambersii</i> , <i>Euryomyrtus inflata</i> P3, <i>Prostanthera wilkieana</i> , <i>Keraudrenia velutina</i> , <i>Acacia effusifolia</i> , <i>Grevillea acacioides</i> ,
SAWS	Sand plain Spinifex Hummock Grassland with Wattles	Sand plain	<i>Triodia basedowii</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. jamesiana</i> , <i>A. prainii</i> , <i>A. pachyacra</i>
SAMA	Sand plain Spinifex Hummock Grassland with Mallee	Sand plain	<i>Triodia basedowii</i> , <i>Eucalyptus leptopoda</i> ssp. <i>elevata</i> , <i>E. kingsmillii</i> , <i>E. trivalva</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. prainii</i> , <i>A. ligulata</i> , <i>Leptosema chambersii</i>
SAGS	Sand plain Spinifex Hummock Grassland with <i>Eucalyptus gongylocarpa</i>	Sand plain	<i>Eucalyptus gongylocarpa</i> , <i>Acacia effusifolia</i> , <i>A. ligulata</i> , <i>A. prainii</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>Eremophila platythamnos</i> subsp. <i>platythamnos</i> , <i>Halgania cyanea</i> ssp. <i>Allambi Stn</i> (B.W. Strong 676), <i>Triodia basedowii</i>
SACSG	Sand plain Spinifex Hummock Grassland with <i>Corymbia</i>	Sand plain	<i>Corymbia lenziana</i> , <i>Acacia effusifolia</i> , <i>A. jamesiana</i> , <i>A. heteroneura</i> , <i>Grevillea acacioides</i> , <i>Homalocalyx thryptomenoides</i> , <i>Enekbatus eremaeus</i> , <i>Micromyrtus flaviflora</i> , <i>Triodia basedowii</i>
SAMU	Sandplain Mulga Spinifex Hummock Grassland	Sand plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. effusifolia</i> , <i>Melaleuca interioris</i> , <i>Triodia basedowii</i>

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
SDSH	Sand Dune Shrubland	Sand dunes	<i>Callitris columellaris</i> , <i>Acacia aneura</i> , <i>Eucalyptus leptopoda</i> ssp. <i>elevata</i> , <i>Bertya dimeroostigma</i> , <i>Micromyrtus flaviflora</i> , <i>Hakea lorea</i> ssp. <i>lorea</i> , <i>Triodia basedowii</i>
SAHS	Sand plain Spinifex Hummock Grassland with Heath	Sand plain	<i>Triodia basedowii</i> , <i>Enekbatus eremaeus</i> , <i>E. cryptandroides</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. jamesiana</i> , <i>Hakea francisiana</i>
WABS	Wanderrie Bank Grassy Shrubland	Sandy hardpan plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Grevillea berryana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Eremophila forrestii</i> ssp. <i>forrestii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eragrostis eriopoda</i>
HPMS	Hardpan Plain Mulga Shrubland	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Melaleuca interioris</i> , <i>Grevillea berryana</i> , <i>Eremophila</i> spp.
DRMS	Drainage Tract Mulga Shrubland	Drainage lines on plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Eremophila</i> spp., <i>Pluchea dentex</i> , various herbs
GRMU	Mulga Groves on Hardpan Plain	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. craspedocarpa</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>Eremophila hygrophana</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	Flats in Playa System	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. burkittii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLEml	<i>Eremophila malacoides</i> Shrubland	Scalded areas in Playa System	<i>Eremophila malacoides</i>
DRMpS	Drainage Tract Maireana pyramidata shrubland	Sheet wash plains in the granite system	<i>Maireana pyramidata</i> , <i>Frankenia setosa</i> , <i>Maireana georgei</i> , <i>M. tomentosa</i> , <i>Sclerolaena densifolia</i> , <i>Ptilotus obovatus</i>
CABS	<i>Acacia burkittii</i> Shrubland on Calcrete	Calcrete rises	<i>Acacia burkittii</i> , <i>Grevillea berryana</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)

Table 20. Representation of vegetation communities within study areas 1 and 2

Vegetation community code	Area mapped Study area 2 (ha)	Area mapped Study area 1 (ha)
Bare	1.29	65.82
BRX	9.76	-
BCLS	8.34	46.10
CABs	25.50	1119.69
DRMS	133.52	149.82
GPoS	7.81	125.96
GR	40.41	7.31
GRMC	79.23	-
GRMS	299.56	536.18
GRMU	5.24	1393.74
HPMS	3583.07	7322.37
HPMS and SAMU	60.68	752.37
PLAPoS	387.80	1818.10
PLEml	1.66	18.01
DRMpS	74.10	3.35
QMPS	2.42	-
Qtz	6.03	0.14
SACSG	989.48	11.38
SAES	30.83	198.50
SAGS	2253.93	609.99
SAHS	1578.63	679.91
SAMA	15338.75	14441.23
SAMU	5574.31	6818.05
SASP	994.74	1057.37
SAWS	9456.72	6781.25
SAWS and SAHS	479.98	-
SDSH	63.39	100.62
WABS	541.42	651.48

3.5. Study area 2 – Flora

Most taxa recorded from within study area 2 are widespread and common in the region and occur across a range of land systems and soil types. These are not discussed further. A table of species by vegetation community is provided in Appendix 11, and a systematic list of vascular flora for study areas 1, 2 and 3 is presented in Appendix 13. Significant flora and species of interest recorded in study area 2 are summarised in Table 21 and discussed in the next Section.

Table 21. Priority Flora, other significant flora and species of interest recorded within study area 2

Species	Cons. status	Requires taxonomic investigation	Undescribed species	Geographically restricted	Range extension	Poorly collected
<i>Thryptomene</i> sp. Leinster (B.J. Lepschi & L.A. Craven 4362)	P1					
<i>Neurachme lanigera</i> S.T.Blake	P1					
* <i>Euryomyrtus inflata</i> Trudgen	P3					
* <i>Bossiaea eremaea</i> J.H.Ross	P3					
<i>Calytrix erosipetala</i> Craven	P3					
<i>Calytrix uncinata</i> Craven	P3					
<i>Sauropus ramosissimus</i> (F.Muell.) Airy Shaw	P3					
<i>Sida</i> sp. Mt Keith (G Cockerton & G O'Keefe LCH 10489)						
<i>Olearia</i> sp. Sherwood Breakaways (A. Taylor LCH 25552)						
<i>Hibbertia</i> sp. aff. <i>exasperata</i> (D. Brassington & S. Colwill LCH29097)						
* <i>Acacia</i> sp. Yakabindie (G. Cockerton & G. O'Keefe 14274) aff. <i>kempeana</i>						
* <i>Acacia aneura</i> (multiple variants)						

*These species were also present in study area 1

3.5.1. Priority flora

Seven priority species were recorded from study area 2, including two Priority One flora: *Thryptomene* sp. Leinster and *Neurachne lanigera*, and five Priority Three flora: *Sauropus ramosissimus*, *Bossiaea eremaea*, *Euryomyrtus inflata*, *Calytrix erosipetala* and *Calytrix uncinata*. *Calytrix erosipetala* occurs in the proposed quarry of the project footprint.

Thryptomene sp. Leinster (B.J. Lepschi & L.A. Craven 4362) P1

Priority one species, *Thryptomene* sp. Leinster is an upright to sprawling shrub up to 2.5 m in height, producing white to pink flowers from October to December (Plate 38 and Plate 39). It is known to occur on rocky Archaean granite breakaways, stony rises and rocky granite outcroppings, in association with *Acacia aneura*.

Known only from a narrow distribution in the eastern Murchison Biogeographic region, there are currently 13 voucher collections listed on FloraBase (Western Australian Herbarium, 2011) (Figure 30). *Thryptomene* sp. Leinster is associated with the Barr-Smith Range, which extends from the south of Wiluna to approximately 60 km south of Leinster.

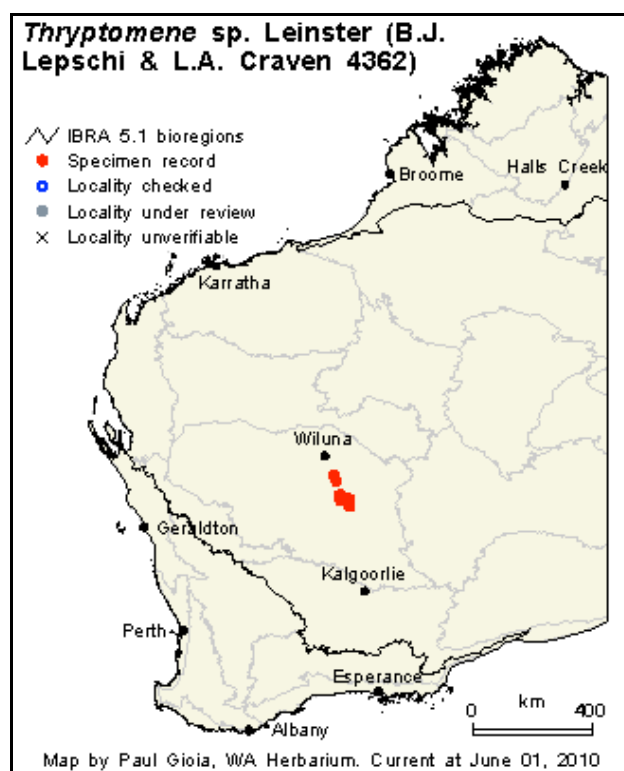


Figure 30. Distribution of *Thryptomene* sp. Leinster within WA

Thryptomene sp. Leinster has previously been referred to as the closely related species, *T. decussata*, but differs in morphology with the following attributes:

- Leaves are smaller and of a different shape – leaves are very broad ovate to sub-orbicular in shape with a truncate base,
- Oil glands on the leaves are more closely packed, and
- Difference in anther arrangement.



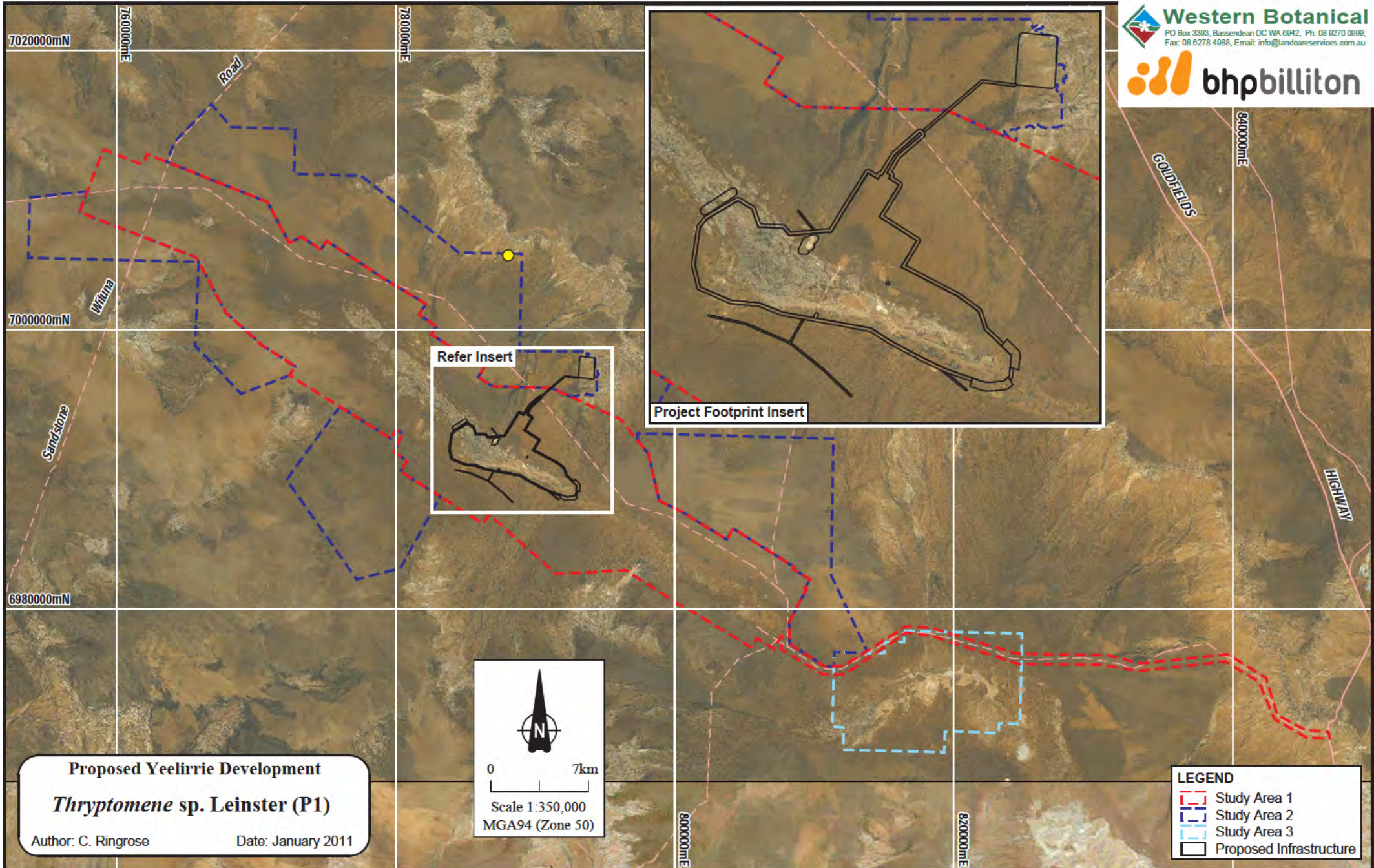
Plate 38. *Thryptomene* sp. Leinster (B.J. Lepschi and L.A. Craven 4362)



Plate 39. *Thryptomene* sp. Leinster stem and flower detail

A single population of 168 plants was recorded in study area 2. This population occurred on a Quartz ridge in the central north-western part of the study area 2 (Figure 31). The vegetation community Qtz (Quartz ridge), consists of *Acacia aneura* tall shrubland with occasional *Callitris columellaris*. *Thryptomene* sp. Leinster forms a mid shrub level over *Ptilotus obovatus* (typical Goldfields form). Other associated species include *Acacia quadrimarginea*, *Callitris columellaris*, *Dodonaea petiolaris*, *Eremophila exilifolia*, *E. latrobei* subsp. *latrobei*, and *Cymbopogon ambiguus*. Similar quartz ridges in the study area 2 did not support *T. sp. Leinster*.

Figure 31. *Thryptomene* sp. Leinster population within study area 2



***Neurachne lanigera* S.T.Blake P1**

Neurachne lanigera is a tufted, shortly rhizomatous perennial grass with a woolly base growing to about 0.3 m in height (Plate 40, Plate 41 and Plate 42). The inflorescence is a whitish grey oblong spike-like panicle or raceme 1.5 – 3.5 cm in length (Plate 43) (Jessop *et al.*, 2006). There are currently five voucher collections of the species lodged with the WA Herbarium from the Gibson Desert, Central Ranges and Murchison Biogeographic regions. Collection localities include Warburton, Wiluna, Cunyu and Winduldarra Rockhole (Figure 32) (Western Australian Herbarium, 2011).

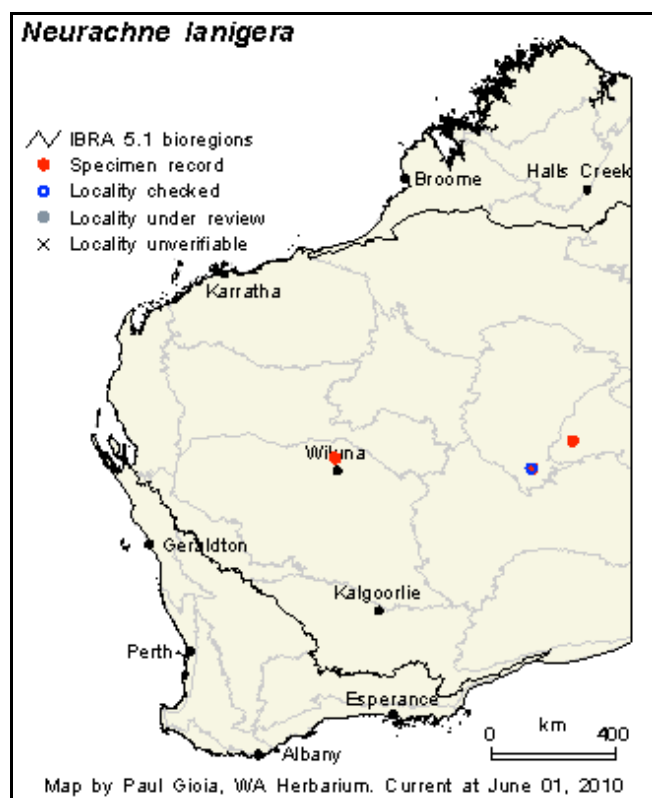


Figure 32. Distribution of *Neurachne lanigera* in WA

Neurachne lanigera occurs across a range of vegetation types and landscapes, including rocky hills and outcroppings, lateritic breakaways, and sandplains with Spinifex. Associated vegetation includes open *Acacia* shrublands and Spinifex grasslands (Western Australian Herbarium, 2011).



Plate 40. *Neurachne lanigera*



Plate 41. *Neurachne lanigera* leaves



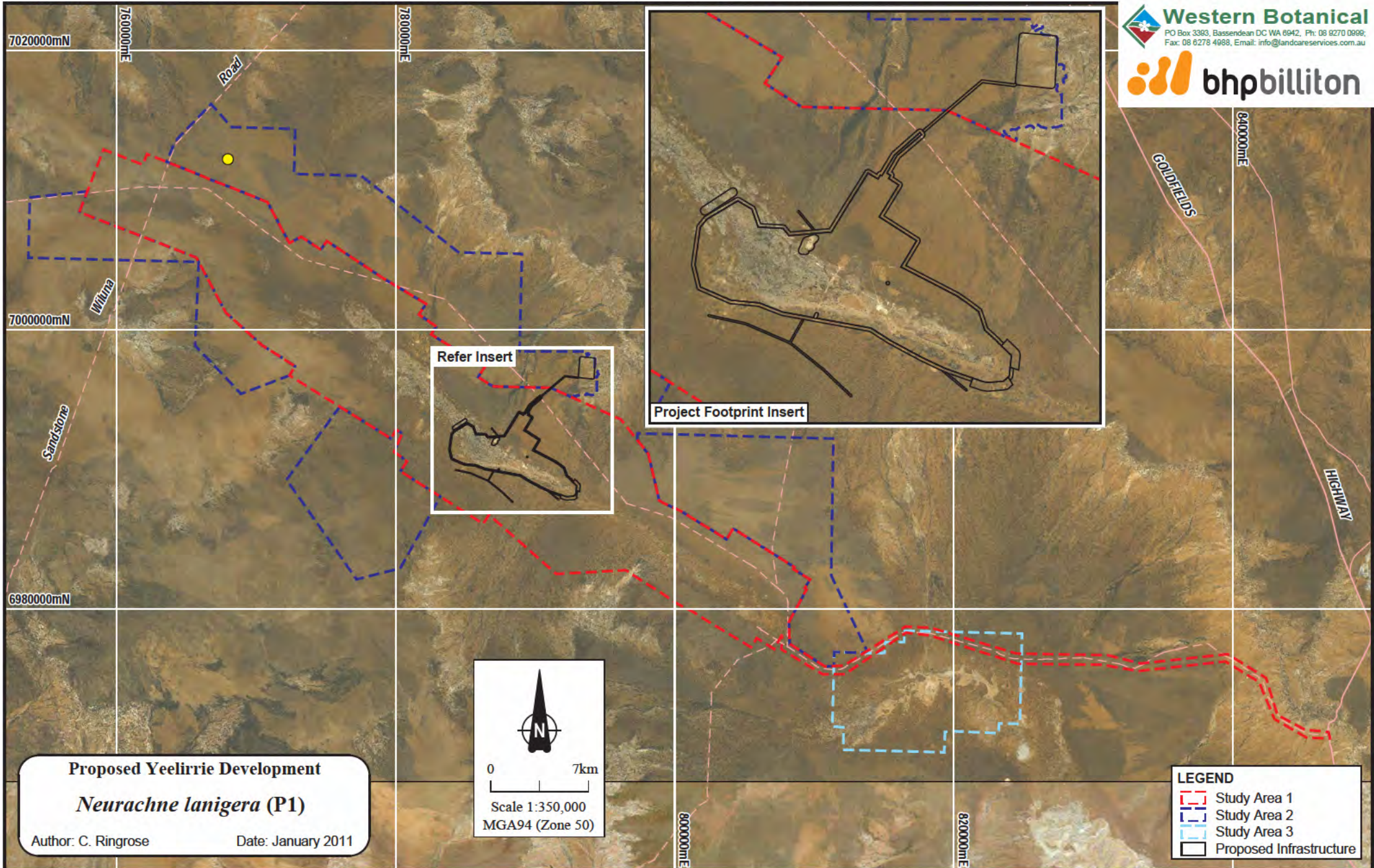
Plate 42. *Neurachne lanigera* woolly base



Plate 43. *Neurachne lanigera* spikelet from the inflorescence

In study area 2, *Neurachne lanigera* was recorded at a single location in the SACSG (*Corymbia lenziana* Woodland over *Spinifex* hummock grassland on Sandplains) vegetation community. Scattered individuals also co-occurred with *Triodia basedowii* hummock grasses. An assessment of population size was not undertaken, as this species was not identified until after all field surveys had been completed. Figure 33 shows where the identified specimen was collected.

Figure 33. *Neurachne lanigera* populations within study area 2



***Sauropus ramosissimus* (F.Muell.) Airy Shaw P3**

Sauropus ramosissimus is a spreading, much-branched shrub, to 0.3 m in height (Plate 44 and Plate 45). Flowers are small and green in colour and occur following spring rainfall. This species is often subject to high grazing pressure, particularly where goat populations are high, such as around the township of Leinster. There are currently 11 voucher collections of this species lodged with the WA Herbarium from four IBRA Biogeographic Regions: Gascoyne, Gibson Desert, Great Victorian Desert and Murchison (Figure 34) (Western Australian Herbarium, 2011).

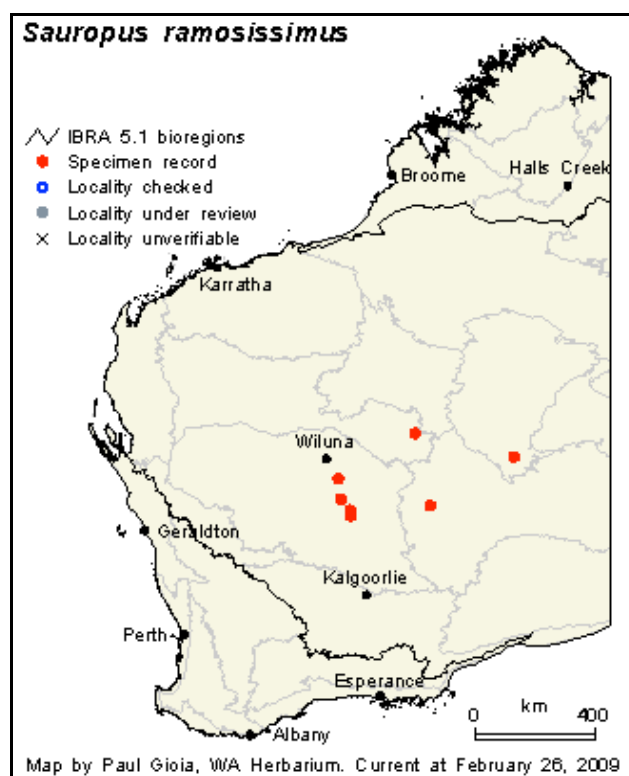


Figure 34. Distribution of *Sauropus ramosissimus* in WA

Two populations of *S. ramosissimus* were recorded within study area 2 (Figure 35). One population of 10 plants was recorded on low granite outcrops in the central-northern margins of study area 2, in the GRMS community; and a second collection was made on top of a small weathered granite breakaway plateau in the WGBP community (within the BRX complex).

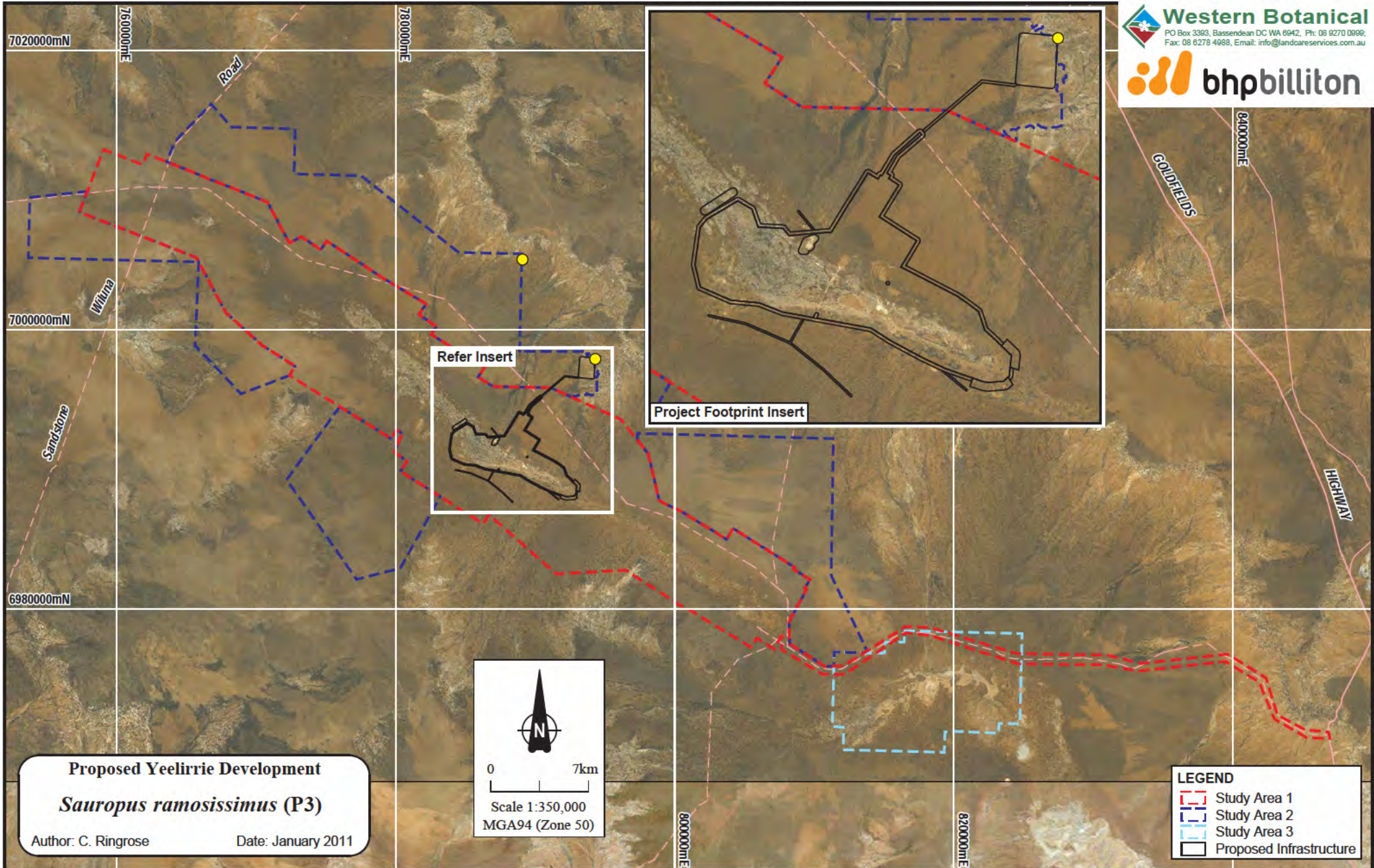


Plate 44. *Sauropus ramosissimus* within the GRMS vegetation community



Plate 45. *Sauropus ramosissimus* stem and leaf detail

Figure 35. *Sauropus ramosissimus* populations within study area 2



***Bossiaea eremaea* J. H. Ross P3**

A description of *Bossiaea eremaea* is provided in Section 3.3.1.

Extensive populations of *Bossiaea eremaea* were recorded throughout the Sand Plain System within study area 1. Two of these populations extended northwards into study area 2. The boundary of the largest population within study area 1 was extended by approximately 4 km to the north of its previous boundary. This population occurred in a mix of burnt and unburnt SAWS and SAMA vegetation communities.

An additional population of *Bossiaea eremaea* was recorded in the south-west corner of study area 2 in a SAGS community on a slight sandy rise. A total of 1,391 *B. eremaea* individual plants were counted, with an overall estimation of 3,839 individuals of *B. eremaea* within the study area 2.

Eight populations were recorded throughout study areas 1 and 2 and a map showing its distribution is provided in Figure 18, Section 3.3.1.

Bossiaea eremaea commonly occurs with *Eucalyptus kingsmillii*, *E. leptopoda* subsp. *elevata*, *Acacia effusifolia* (dominant), *A. ligulata* (dominant), *Hakea francisiana*, *Eremophila platythamnos* subsp. *platythamnos*, *Homalocalyx thryptomenoides*, *Leptosema chambersii*, *Ptilotus obovatus* (typical Goldfields form) and *Triodia basedowii* (dominant) hummock grasses.

***Euryomyrtus inflata* Trudgen P3**

A description of *Euryomyrtus inflata* is provided in Section 3.3.1. *Euryomyrtus inflata* was recorded in extensive populations within the Sand Plain System of study area 1. Five additional populations and several sub-populations were recorded within study area 2, which cover a total area of 18,545 ha. The greater portion of these populations were located on the northern side of Meekatharra Road, however, *E. inflata* was recorded in all but the south-west section of study area 2.

The largest population of *E. inflata* extends approximately 16 km west to east and six km north to south in the northern section of study area 2. The second largest population extends approximately 13 km west to east and six kilometers north to

south in the north-eastern section of study area 2. The other large populations of *E. inflata* were recorded in the western and south-western sections of study area 2. An overview location map showing its distribution in study area 2 is provided in Figure 14, Section 3.3.1.

Individual plants were present in varying densities, from approximately 10 plants per 50 m² (40 per ha) to 350 plants per 50 m² (1,400 per ha). A total of 2432 plants were recorded, with an estimated total of 1,920,180 individuals within study area 2.

Euryomyrtus inflata is most commonly found in high numbers in areas burnt approximately five years ago. It occurs on flat sand plains and lower lying sandy areas, in SAWS, SAMA, and SAHS vegetation communities and where *Triodia basedowii* has no more than 25 % projected foliage cover (PFC).

***Calytrix erosipetala* Craven P3**

Calytrix erosipetala is a small shrub, growing from 0.3 to 0.7 m in height, with white to pink flowers produced from September to October (Plate 46 and Plate 47). It occurs on rocky sandstone or granite breakaways.

Calytrix erosipetala is known from the Murchison and Yalgoo Biogeographic regions and there are currently 40 voucher collections listed on FloraBase (Western Australian Herbarium, 2011). The majority of the populations are located between Leonora, Wiluna and Mt Magnet on the Archaean granite breakaways of the Sherwood Land System (Figure 36) (Western Australian Herbarium, 2011). This land system is widespread in the North-eastern Goldfields on the extensive Barr-Smith Range that extends from north of Leonora to south of Wiluna.



Plate 46. *Calytrix erosipetala*



Plate 47. *Calytrix erosipetala* stem and leaf detail

☐

A single population of *Calytrix erosipetala* was recorded in study area 2 on the Weathered Granite Breakaway system, in the BRX complex, north of Meekatharra Road (Figure 37). A total of 419 plants were counted within study area 2, however, the population appeared to continue to the north and east in association with the breakaways. This population may represent a small proportion of the total number of plants in the region.

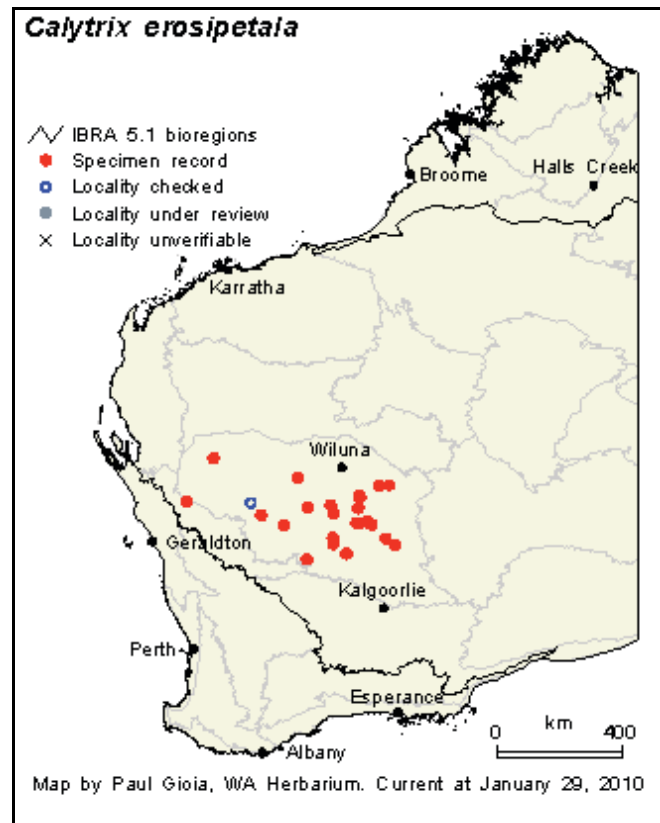
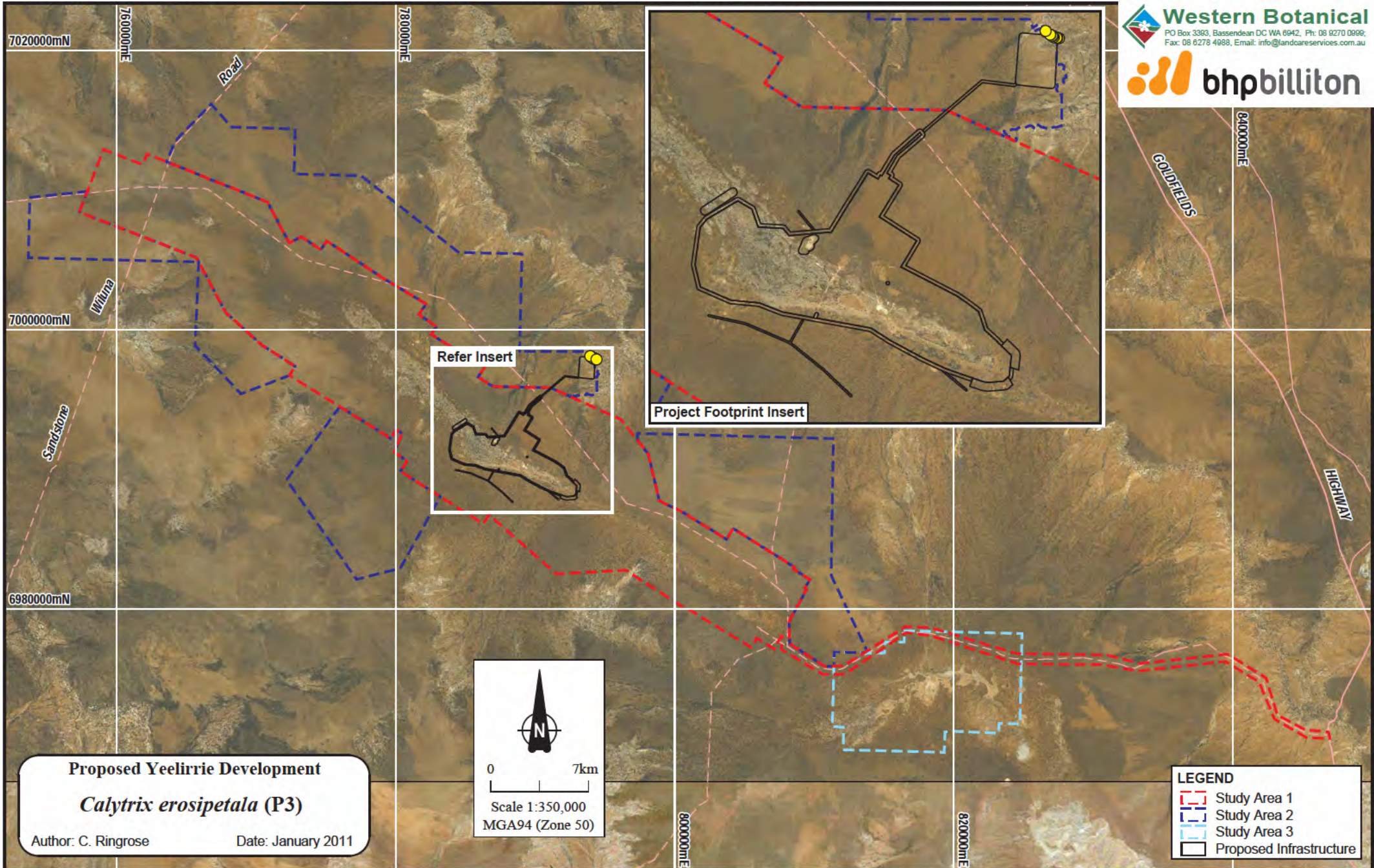


Figure 36. Distribution of *Calytrix erosipetala* within WA

Figure 37. *Calytrix erosipetala* populations within study area 2



***Calytrix uncinata* Craven P3**

Calytrix uncinata is a glabrous shrub to 1 m high with distinctive uncinata or hooked-tipped leaves (Plate 48). White flowers are usually produced between the months of August and November (Plate 49). It has been found growing in shallow pockets of sandy soil on granite breakaways and rocky rises.

Calytrix uncinata is known from the Murchison and Yalgoo IBRA Biogeographic regions and is represented by 44 voucher collections at the Western Australian Herbarium (FloraBase, 2011). The known range of *Calytrix uncinata* extends from Meekatharra and Paynes Find in the west to Leonora in the east and Mt Keith in the north (Figure 38).



Plate 48. *Calytrix uncinata* at Mt Keith



Plate 49. *Calytrix uncinata* flowers at Mt Keith

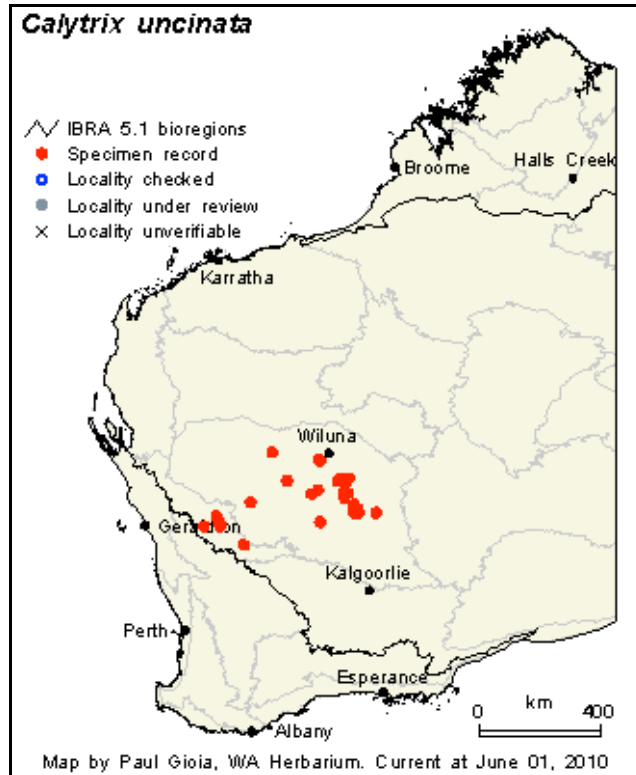
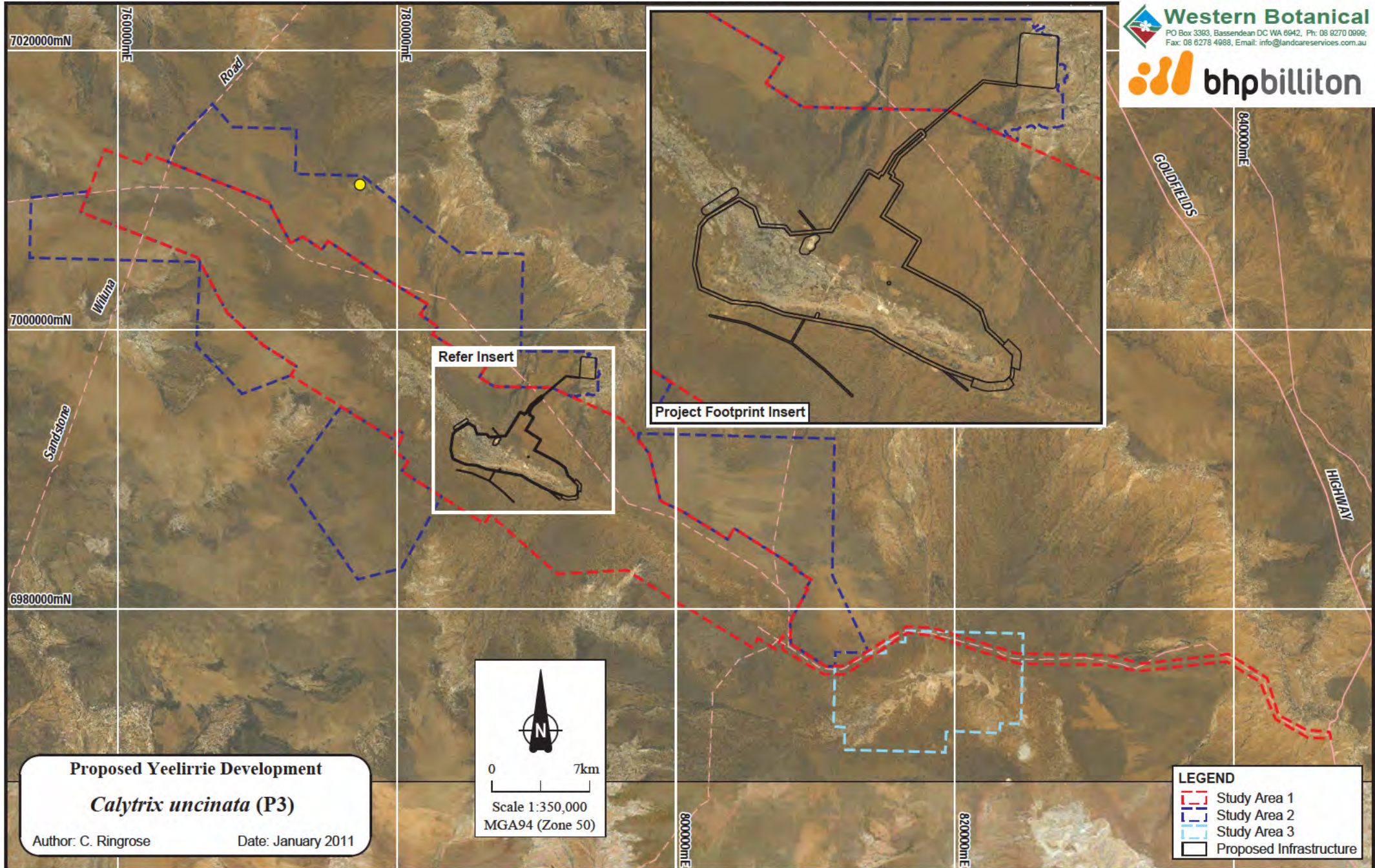


Figure 38. Distribution of *Calytrix uncinata* in WA

There is one record of *C. uncinata* in study area 2. A single site with 18 individuals was found in the Breakaway Complex (BRX) in the Weathered Granite Breakaway Plateau (WGBP) community (Figure 39).

Figure 39. *Calytrix uncinata* population within study area 2



3.5.2. New, undescribed species with potential conservation significance

Three undescribed species were recorded within study area 2: *Sida* sp. Mt Keith (G Cockerton & G O'Keefe LCH 10489), *Olearia* sp. Sherwood Breakaways (A. Taylor LCH25552) and *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097).

***Sida* sp. Mt Keith (G Cockerton & G O'Keefe LCH 10489)**

Sida sp. Mt Keith (G Cockerton & G O'Keefe LCH 10489) is a tangled divaricately branched dioecious shrub 0.3 to 0.5 m high x 0.3 to 1 m wide. The leaves are ovate, margin crenulate, 0.6 to 1.2 mm long x 0.4 to 0.7 mm wide (Plate 50). Plants are dioecious, that is male and female flowers of *Sida* sp. Mt Keith are borne on separate plants, (Plate 51 and Plate 52). Fruits have five carpels (Plate 53).

The species is unusual in that it represents a new taxon within the sub-genus of *Sida* with small unadorned fruits. Following investigations at the WA Herbarium, the undescribed species was given the phrase name *Sida* sp. Mt Keith (G Cockerton & G O'Keefe LCH 10489). The new species status has been verified by taxonomic experts K. R. Thiele (WA Herbarium) and R. Barker (Adelaide Herbarium) and is the subject of investigation by the WA Herbarium and Adelaide Herbarium.

Sida sp. Mt Keith has only been recorded from two other locations regionally, both in the proximity of the Mt Keith minesite. It occurs in small, scattered and disjunct populations on the weathered Archaean granite breakaway plateaux and upper footslopes of the Barr-Smith Range.



Plate 50. *Sida* sp. Mt Keith



Plate 51. *Sida* sp. Mt Keith male flower



Plate 52. *Sida* sp. Mt Keith female flower



Plate 53. *Sida* sp. Mt Keith fruit showing four of the five carpels filled

Sida sp. Mt Keith was recorded from a single population of 397 individuals within study area 2 (Figure 25). It was found growing along both the slopes and plateaux on

the edge of the weathered granite breakaway, which lies within the Sherwood Breakaway and Plateaux land system. *Sida* sp. Mt Keith was found in association with two vegetation communities, the Weathered Granite Breakaway Plateau (WGBP) community (apart of the BRX complex), and the *Acacia* Shrubland in Weathered Granite Breakaway Gullies (WGAG) community.

The conservation status of *Sida* sp. Mt Keith has not yet been assessed. However, the species is very restricted in its habitat preference and occurs in small, disjunct populations on the breakaways of the Barr-Smith Range. Should the DEC review the conservation status of this species, based on the known numbers of individuals and distribution of populations, the species would potentially qualify as a priority species (see flora conservation codes and their meanings, presented in Appendix 2 of this report).

***Olearia* sp. Sherwood Breakaways (A. Taylor LCH 25552)**

Olearia sp. Sherwood Breakaways (A. Taylor LCH 25552) is a small sparse highly fragrant shrub to 0.6 m high. It has an upright habit with few branches, producing white flowers with yellow centres following spring rainfall (Plate 54, Plate 55 and Plate 56). This species has affinities to *O. stuartii* but has some distinct differences which are noted below:

- *Olearia* sp. Sherwood Breakaways is highly fragrant whereas *O. stuartii* has no fragrance;
- The capillary bristles of *Olearia* sp. Sherwood Breakaways are larger than the bracts, whereas the capillary bristles of *O. stuartii* are the same length as the bracts;
- The petals of *Olearia* sp. Sherwood Breakaways curl under, whereas the petals of *O. stuartii* do not curl under;
- The leaves of *Olearia* sp. Sherwood Breakaways are not as long or as broad as the leaves of *O. stuartii*;
- *Olearia* sp. Sherwood Breakaways have noticeably more glandular hairs on its foliage than that of *O. stuartii*; and
- *Olearia* sp. Sherwood Breakaways leaves are lobed at the ends, whereas *O. stuartii* leaves have lobed sides.

A detailed taxonomic investigation of this taxon has not yet been undertaken, however, following a preliminary investigation and in consultation with WA Herbarium botanists Kevin Thiele and Nicholas Lander, it has been suggested as a novel species and the phrase name *Olearia* sp. Sherwood Breakaways (A. Taylor LCH 25552) was applied.



Plate 54. *Olearia* sp. Sherwood Breakaways (A. Taylor LCH 25552)



Plate 55. *Olearia* sp. Sherwood Breakaways (A. Taylor LCH 25552) stem and leaf detail



Plate 56. *Olearia* sp. Sherwood Breakaways (A. Taylor LCH 25552) flower detail

Olearia sp. Sherwood Breakaways was first collected on the Archaean breakaway of the Sherwood Land System within the Bar-Smith Range, to the west of the Mt Keith Nickel minesite. This species has been collected previously at Yakabindie (by the authors) and at the Brooking Hills, west of Menzies.

A population (70 individuals) of *Olearia* sp. Sherwood Breakaways was found on a small plateau in the Weathered Granite Plateau (WGBP) community of the BRX complex (Figure 25).

The conservation status of *Olearia* sp. Sherwood Breakaways has not yet been assessed. However, the species is very restricted in its habitat preference and occurs in small, disjunct populations on the breakaways of the Barr-Smith Range in the local region, with one population noted on Banded Ironstones at the Brooking Hills.

Should the DEC review the conservation status of this species, based on the known numbers of individuals and distribution of populations, the species would potentially qualify as a priority species (see flora conservation codes and their meanings, presented in Appendix 2 of this report).

***Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097)**

Hibbertia sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097) is an erect shrub to 1.2 m high with pungent, green leaves (Plate 57 and Plate 58). This species is restricted to the Archaean granite breakaway system, which is a part of the Sherwood Land System.

Hibbertia sp aff. *exasperata* is currently considered to be a part of the *H. exasperata* group, which is a group of at least four to five closely related species (Wheeler, 2004). Further collections of reproductive material and a review of the *H. exasperata* sens. lat. group are required to determine it's taxonomic status.



Plate 57. *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097)



**Plate 58. *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097)
stem and leaves**

One population, of 71 individuals, was recorded within the BRX complex on the breakaways in the central northern section of study area 2 (Figure 25). This population may extend beyond the boundary of study area 2 in association with the breakaway system. This species is also known by the authors from the same landform some 20 km south-east of this site on Yakabindie Station.

3.5.3. Species of interest

Acacia sp. Yakabindie (G. Cockerton & G. O’Keefe LCH 14274) aff. *kempeana*

A description of *Acacia* sp. Yakabindie (G. Cockerton & G. O’Keefe LCH 14274) aff. *kempeana* is provided in Section 3.3.3.

A single population of approximately 30 plants was recorded in the SAMA vegetation community in study area 2 (Figure 25). In study area 1, one plant was recorded in the SAMA vegetation east of proposed high grade stockpile, and a second plant was recorded on the northern boundary of the survey area within the GPoS vegetation community.

To date, approximately 447 plants in 11 populations are known in the local area, primarily on Yakabindie, Yeelirrie and Leinster Downs stations, approximately 100 km south of Wiluna. It is also known from the Pilbara region where it has been widely collected. It is not considered to have conservation significance other than populations in the Yeelirrie – Yakabindie – Leinster region likely representing the southern limit of its range.

Associated species include *Eucalyptus kingsmillii*, *Acacia effusifolia*, *Bossiaea eremaea* (P3) and *Triodia basedowii*.

3.5.4. *Acacia aneura* variants within study area 2

As discussed in Section 3.3.4, the *Acacia aneura* group is extremely variable and current taxonomic literature does not adequately describe the breadth of variability within the taxon. The *A. aneura* group in study area 2 was identified utilising phyllode morphological attributes and informal phrase names were applied to describe variants. A total of 30 informally morphologically described variants were recognised in study area 2 (Table 22), however there is likely considerable duplication or overlap in taxa. Mulga collections from study area 2 will be submitted to the WA Herbarium at a later date for further identification.

Table 22. Description of phrase named *Acacia aneura* variants within study area 2

Species	Variant description
<i>Acacia aneura</i>	flat blue grey 5mm x 50mm
	flat blue grey curved 3x60mm
	flat blue grey falcate 4x30mm
	flat blue grey straight 5x50mm
	flat blue grey straight to falcate 2x20mm
	flat blue grey straight to slightly curved 2x55mm
	flat blue grey straight to slightly curved 2x80mm
	flat blue grey straight to slightly curved 3x20mm
	flat blue grey straight to slightly curved 3x50mm
	flat blue grey straight to slightly curved 3x65mm
	flat blue grey straight to slightly curved 4.5x40mm
	flat blue grey straight to slightly curved 4x65mm
	flat blue grey straight to slightly falcate anastomosing nerves 6x30mm
	flat green slightly curved 3x60mm
	flat green straight 1.5x60mm
	flat green straight to falcate 4x40mm
	flat green straight to falcate 4x50mm
	flat green straight to slightly curved 1.5x35mm
	flat green straight to slightly curved 4.5x70mm
	flat grey green slightly curved 1x25mm
	flat grey green slightly curved 2x40mm
	flat grey green slightly curved 8x80mm
	flat grey green straight 8x60mm
	flat grey green straight to curved 2x50mm
	flat grey green straight to slightly curved 2x60mm
	sub-terete blue grey strait to slightly curved 1x30mm
	sub-terete green straight 1x60mm
	sub-terete green straight to slightly curved 1x60mm
	sub-terete grey green straight to curved 1x50mm
	terete green straight 1x60mm

3.6. Study area 3 - vegetation

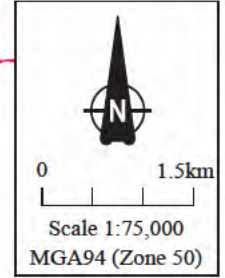
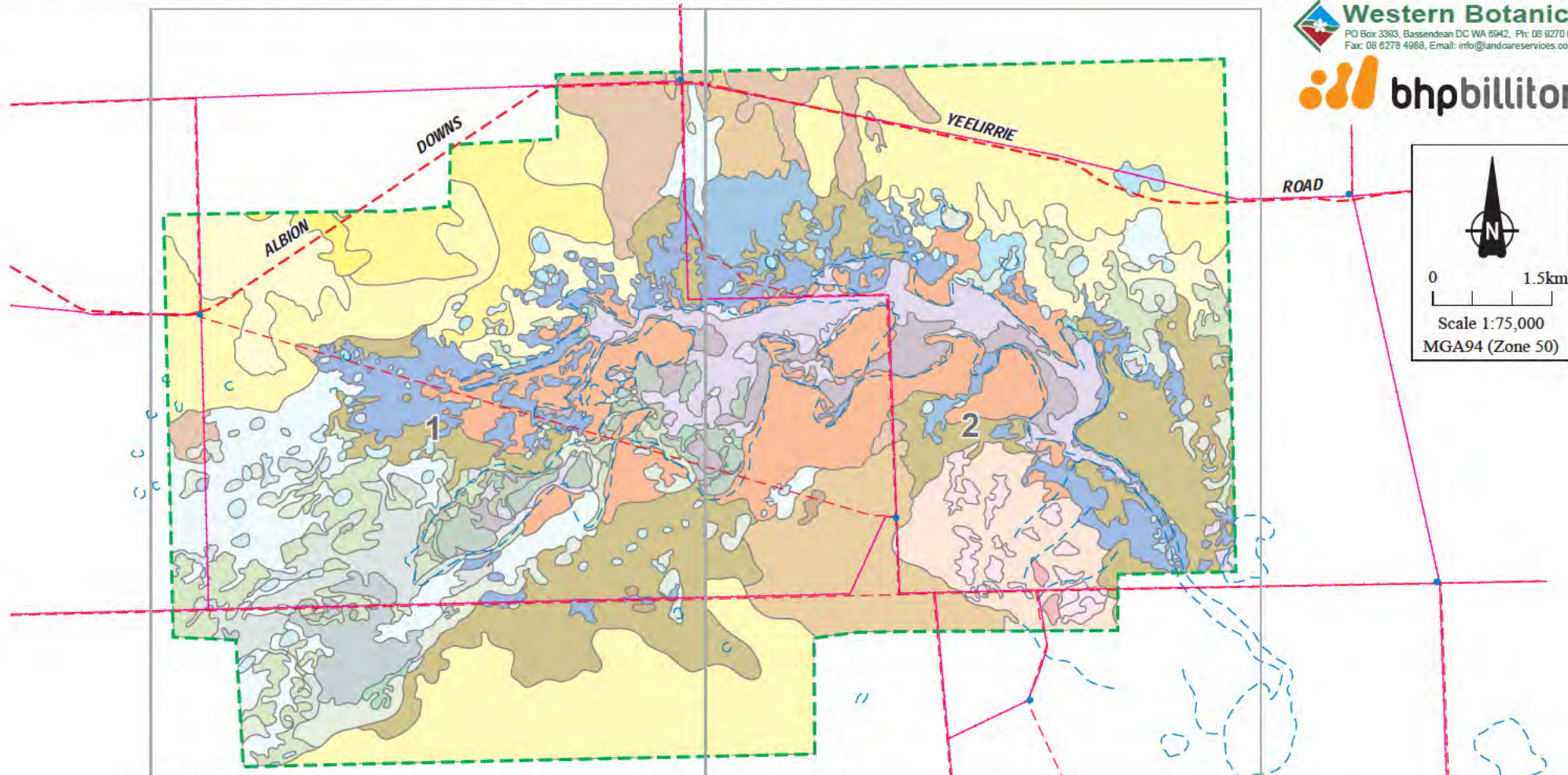
A total of 9,843 hectares was surveyed and 31 vegetation communities identified and mapped in study area 3. These were closely related to those found within study area 1, and 23 communities were recorded in both. A summary of the vegetation communities is listed in Table 23 and more detailed descriptions in Appendix 8 of this report. Figure 40 provides an overview of the vegetation communities mapped in study area 3. Note that “1” and “2” marked on Figure 40 refer to the two vegetation community map sheets provided in Appendix 7 of this report. Table 24 provides a summary of the representative area of each community in hectares. Descriptions of the 10 relevés surveyed within study area 3 are provided in Appendix 12 of this report.

3.6.1. Soil landscape association with vegetation communities

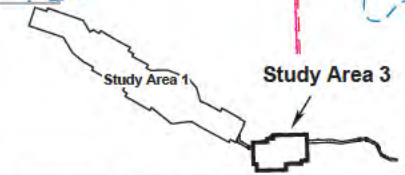
The vegetation communities of study area 3 were similarly aligned with the five soil landscapes described within study area 1 in Section 3.1.1.

A sixth soil landscape is the Saline Playa System, described below, which occurs within study area 3 but is not represented within study area 1. The western extents of Lake Miranda make up the Saline Playa System in study area 3. It is orientated roughly west to east in a broad inverted ‘U’ and is characterised by broad seasonally inundated low flats with saline clays. The area represents a large Playa System with high salinity levels.

Figure 40. Overview of vegetation communities mapped in study area 3



LEGEND	
SAES	Stony Acacia spp. and Eremophila galeata Shrubland
Qtz	Quartz Ridge
GRMS	Mulga Shrubland on Granite Rise
QAECS	Quartz Acacia spp., Eremophila spp. and Chenopod Shrubland
SAWS	Sand Plain Spinifex Hummock Grassland with Wattles
SAMA	Sand Plain Spinifex Hummock Grassland with Mallee
SAGS	Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa
SAMU	Sandplain Mulga Spinifex Hummock Grassland
WABS	Wanderrie Bank Grassy Shrubland
HPMS	Hardpan Plain Mulga Shrubland
GRMU	Mulga Groves on Hardpan Plain
MHHS	Mixed Chenopod Shrubland with Mulga Overstorey
CEGW	Eucalyptus gypsophila Woodland on Calcrete
CCpW	Casuarina pauper Woodland on Calcrete
CMxS	Melaleuca xerophila Shrubland on Calcrete
CAbS	Acacia burkittii Shrubland on Calcrete
PLEsp	Eragrostis spp. Grassland on Playa
CAPs	Atriplex sp. Yeelirrie Station Shrubland on Calcrete
CLaS	Lycium australe Shrubland on Calcrete
PLAPoS	Acacia spp. and Ptilotus obovatus Shrubland
PLAET	Acacia spp. and Eremophila spp. Thicket
PLAMi	Acacia spp. and Melaleuca interioris Shrubland
PLMF	Muehlenbeckia florulenta Shrubland
PLEmi	Eremophila malacoides Shrubland
CERg	Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
SBMMS	Sandy Bank Mulga and Maireana pyramidata Shrubland
CsMp	Cratystylis subspinescens and Maireana pyramidata Shrubland
SPABs	Atriplex bunburyana Shrubland on Saline Playa
SPTLS	Tecticornia spp. Low Shrubland on Saline Playa
SPLS	Lawrenxia helmsii Shrubland on Saline Playa
SPFLS	Frankenia spp. Low Shrubland on Saline Playa



Proposed Yeelirrie Development
Study Area 3
Vegetation Communities
 Author: C. Ringrose Date: January 2011

Communities occurring within the Granite System

There are four vegetation communities described within the Granite System, and these are represented in the south-eastern area of study area 3. A low quartz and granite hill is the predominant feature in this area and represent predominately with Stoney *Acacia Eremophila* Shrubland (SAES) and Mulga Shrubland on Granite Rise (GRMS) communities. The other two communities present are Quartz Ridge (Qtz) and Quartz *Acacia* spp., *Eremophila* spp. and Chenopod Shrubland (QAECS).

Communities occurring within the Sand Plain System

Sand Plain System communities are characterised by Spinifex (*Triodia* spp.) hummock grasslands with a varying amount of shrub, tree and mallee components in the upper stratum. There are four communities described within the Sand Plain System: Sand Plain Spinifex Hummock Grassland with Wattles (SAWS), Sand Plain Spinifex Hummock Grassland with Mallee (SAMA), Sand Plain Spinifex Hummock Grassland with *Eucalyptus gongylocarpa* Woodland (SAGS) and Sand Plain Mulga Spinifex Hummock Grassland (SAMU).

Multiple fire regimes within these communities were observed. The occurrence of recent fire significantly altered vegetation structure and species composition. Notably Mulga varieties are killed by fire and must regenerate from soil stored seed. Successful extensive regeneration occurs sporadically following high rainfall events and it can take many decades for Mulga to reassert dominance.

Communities occurring within the Hardpan and Drainage System

Four communities are described in an interzone or continuum between the Sand Plain system and Playa System. These communities are characterised by predominately bare ground, and are subject to sheet flow following rainfall and significant wind erosion.

Wanderrie Bank Grassy Shrubland (WABS) and Hardpan Plain Mulga Shrubland (HPMS) are floristically similar and often form a mosaic. Dominant species include *Acacia ayersiana*, *A. aneura* and *A. ramulosa* var. *linophylla*. WABS is defined by the presence of Wanderrie Grass (*Eragrostis eriopoda*) and HPMS is defined by an absence of a well-developed grassland understorey. Mulga Groves on Hardpan Plain

(GRMU) vegetation represents dense areas of HPMS that occur in groves where soil, nutrients and water have accumulated. Mixed Chenopod Shrublands with Mulga Overstorey (MHHS) vegetation occurs on the broad plains between the Lake System and Sand Plain communities.

Communities occurring within the Playa System

Six communities are described within the Playa System, however, the majority of this system is vegetated with *Acacia - Ptilotus obovatus* Shrubland (PLAPoS) on flats surrounding playas. PLAPoS forms a mosaic in which five other minor vegetation communities occur fringing or within playa depressions, scalds and sink holes.

Acacia and *Melaleuca interioris* Shrubland (PLAMi) is defined by thickets of *Acacia* spp. and *Melaleuca interioris* that occur on banks fringing playas or water holding depressions.

Acacia - Eremophila Thicket (PLAET) is defined by thickets of tall shrubs dominated by *Acacia* spp. and *Eremophila longifolia* that occur in playas or water holding depressions, often with sink holes.

The other three minor vegetation communities are defined by the presence of one or two dominant species, these being: PLMf defined by presence of *Muehlenbeckia florulenta* shrubs, PLEml defined by the presence of *Eremophila malacoides* shrubland and PLEsp defined by the presence of annual grasses including *Eragrostis* spp.

Communities occurring within the Calcrete System

The Calcrete System of study area 3 is characterised by outcropping calcrete rises and a series of flats and clay flats which run along the trunk of an ancient paleodrainage channel. The Calcrete System is fringed by the Playa System. There are pockets of Calcrete System vegetation communities within the Playa System and Sand Plain System. Seven communities are described within the Calcrete System of study area 3.

Three calcrete rise shrubland/woodland communities, *Eucalyptus gypsophila* Woodland (CEgW), *Casuarina pauper* Woodland (CCpW) and *Acacia burkittii* Shrubland (CAbS) are defined by the dominant upper storey species, and often form mosaics.

Atriplex sp. Yeelirrie Station Shrubland (CApS) is distinctive from all other communities and is represented and defined by one species. *Melaleuca xerophila* Shrubland (CMxS), *Lycium australe* Shrubland (CLaS) and *Eragrostis* sp. Yeelirrie Calcrete Grassland (CErG) communities are often co-occurring in mosaics, however, have been described separately as they are structurally and floristically distinct.

Communities occurring within the Saline Playa System

The Saline Playa System supports a complex of vegetation communities which appear to be well adapted to highly variable moisture and salinity conditions. Salinity levels have not been measured but the vegetation present is highly indicative of high salinity levels. This is especially evident where the *Frankenia* species are heavily crusted with sodium chloride crystals. The presence of gypsum crystals on the soil surface indicates that the Calcrete System retains an influence on the soil chemistry in the area.

Six communities are described within the Saline Playa System. The lake bed is vegetated with three communities: *Frankenia* Low Shrubland (SPFLS), *Lawrenzia helmsii* Shrubland (SPLS), and *Tecticornia* Low Shrubland (SPTLS). The *Atriplex bunburyana* Shrubland (SPAbS) community occurs as a narrow band between the lake bed and surrounding sandy banks.

The salt lake is fringed by sandy banks and extensive gently sloping clay flats, somewhat resembling the Playa System, and is characterised by expanses of Sandy Bank Mulga and *Maireana pyramidata* shrubland (SBMMS) and *Cratystylis subspinescens* and *Maireana pyramidata* Shrubland (CsMp). This grades into the Sand Plain System away from the lake system.

3.6.2. Confidence level of mapping

A high level of effort and therefore detail was placed on the Calcrete and Saline Playa Systems in study area 3 as the majority of significant species occurred on these soil landscapes. Less focus was placed on mapping the boundaries of the vegetation communities occurring where either (i) there was little to no access due to limited tracks and dense vegetation or (ii) the requirement for increased survey effort fell beyond the scope of this study. These are primarily vegetation communities of the Sand Plain System, which integrate with broad ecotones and are difficult to

distinguish on aerial photography and therefore are difficult to distinguish with clear boundaries. Fire regimes and fire scars may change the appearance and composition of communities between the time the aerial imagery was taken and field works for vegetation mapping.

Table 23. Summary descriptions of the vegetation communities within study area 3

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
SAES	Stony <i>Acacia</i> spp. and <i>Eremophila galeata</i> Shrubland	Foot slope deposits of granite breakaway	<i>Eremophila galeata</i> , <i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila compacta</i> subsp. <i>compacta</i> , <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Senna artemisioides</i> subsp. <i>x sturtii</i> , <i>S. artemisioides</i> subsp. <i>helmsii</i> , <i>Sida ectogama</i> , <i>Eragrostis eriopoda</i>
Qtz	Quartz Ridge	Hills and foot slopes associated with granite breakaway	<i>Acacia quadrimarginea</i> , <i>Acacia aneura</i> , <i>Callitris columellaris</i> , <i>Dodonaea petiolaris</i> , <i>Eremophila exilifolia</i> and <i>E. latrobei</i> subsp. <i>latrobei</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Cymbopogon ambiguous</i>
GRMS	Mulga Shrubland on Granite Rise	Plains with granite rise	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>A. craspedocarpa</i> , <i>A. quadrimarginea</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eremophila</i> spp., <i>Sida ectogama</i> , <i>Senna</i> spp.
QAECS	Quartz <i>Acacia</i> spp., <i>Eremophila</i> spp. and Chenopod Shrubland	Stony low quartz hill	<i>Acacia aneura</i> (various forms), <i>Acacia ayersiana</i> , <i>Acacia quadrimarginea</i> , <i>Acacia tetragonophylla</i> , <i>Hakea preissii</i> , <i>Maireana georgii</i> , <i>M. glomulifera</i> , <i>M. triptera</i> , <i>M. convexa</i> , <i>M. pyramidata</i> , <i>Eremophila alternifolia</i> , <i>E. falcata</i> , <i>E. malacoides</i> , <i>Enchylaena tomentosa</i> , <i>Sida calyxhymenia</i> , <i>Ptilotus obovatus</i> and <i>Solanum lasiophyllum</i>
SAWS	Sand plain Spinifex Hummock Grassland with Wattles	Sand plain	<i>Triodia basedowii</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. jamesiana</i> , <i>A. prainii</i> , <i>A. pachyacra</i>
SAMA	Sand plain Spinifex Hummock Grassland with Mallee	Sand plain	<i>Triodia basedowii</i> , <i>Eucalyptus leptopoda</i> ssp. <i>elevata</i> , <i>E. kingsmillii</i> , <i>E. trivalva</i> , <i>Acacia effusifolia</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>A. prainii</i> , <i>A. ligulata</i> , <i>Leptosema chambersii</i>
SAGS	Sand plain Spinifex Hummock Grassland with <i>Eucalyptus gongylocarpa</i>	Sand plain	<i>Eucalyptus gongylocarpa</i> , <i>Acacia effusifolia</i> , <i>A. ligulata</i> , <i>A. prainii</i> , <i>A. heteroneura</i> var. <i>prolixa</i> , <i>Eremophila platythamnos</i> subsp. <i>platythamnos</i> , <i>Halgania cyanea</i> ssp. Allambi Stn (B.W. Strong 676), <i>Triodia basedowii</i>
SAMU	Sandplain Mulga Spinifex Hummock Grassland	Sand plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. effusifolia</i> , <i>Melaleuca interioris</i> , <i>Triodia basedowii</i>
WABS	Wanderrie Bank Grassy Shrubland	Sand plain	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Grevillea berryana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Eremophila forrestii</i> ssp. <i>forrestii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Eragrostis eriopoda</i>
HPMS	Hardpan Plain Mulga Shrubland	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. tetragonophylla</i> , <i>Melaleuca interioris</i> , <i>Grevillea berryana</i> , <i>Eremophila</i> spp.
GRMU	Mulga Groves on Hardpan Plain	Plains	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. craspedocarpa</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>Eremophila hygrophana</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
MHHS	Mixed Chenopod Shrubland with Mulga Overstorey	Plains	<i>Acacia aneura</i> (various forms), <i>Acacia ayersiana</i> , <i>Maireana pyramidata</i> , <i>Cratystylis subspinescens</i>
PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	Flats in Playa System	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>A. tetragonophylla</i> , <i>A. ramulosa</i> var. <i>linophylla</i> , <i>A. burkittii</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLAET	<i>Acacia</i> spp. and <i>Eremophila</i> spp. Thicket	Playas with sink holes	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>Eremophila longifolia</i> , <i>Hakea lorea</i> ssp. <i>lorea</i> , <i>Eucalyptus lucasii</i> , <i>Grevillea berryana</i> , <i>Santalum lanceolatum</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Eragrostis setifolia</i> , <i>Eriachne helmsii</i>
PLAMi	<i>Acacia</i> spp. and <i>Melaleuca interioris</i> Shrubland	Fringes of playas in Playa System	<i>Acacia aneura</i> , <i>A. ayersiana</i> , <i>Melaleuca interioris</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
PLMf	<i>Muehlenbeckia florulenta</i> Shrubs	Playas	<i>Muehlenbeckia florulenta</i>
PLEml	<i>Eremophila malacoides</i> Shrubland	Scalded areas in Playa System	<i>Eremophila malacoides</i>
PLEsp	<i>Eragrostis</i> sp. Grassland on Playa	Playas	<i>Eragrostis</i> sp. LCH26982, <i>Ophioglossum lusitanicum</i>
CEgW	<i>Eucalyptus gypsophila</i> Woodland on Calcrete	Calcrete rises	<i>Eucalyptus gypsophila</i> , <i>Templetonia incrassata</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Acacia burkittii</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i>
CCpW	<i>Casuarina pauper</i> Woodland on Calcrete	Calcrete rises	<i>Casuarina pauper</i> , <i>Acacia burkittii</i> , <i>Templetonia incrassata</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena fusiformis</i>
CMxS	<i>Melaleuca xerophila</i> Shrubland on Calcrete	Flats within Calcrete System	<i>Melaleuca xerophila</i> , <i>Acacia burkittii</i> , <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Lycium australe</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena fusiformis</i> , <i>Dissocarpus paradoxus</i> , <i>Amyema microphylla</i>
CABs	<i>Acacia burkittii</i> Shrubland on Calcrete	Calcrete rises	<i>Acacia burkittii</i> , <i>Grevillea berryana</i> , <i>Eremophila arachnoides</i> ssp. <i>arachnoides</i> P3, <i>Senna artemisioides</i> ssp. <i>filifolia</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
CErG	<i>Eragrostis</i> sp. Yeelirrie Calcrete Grassland	Flats in Calcrete System	<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770), <i>Lycium australe</i> , <i>Ptilotus obovatus</i> (typical Goldfields form)
CApS	<i>Atriplex</i> sp. Yeelirrie Station Shrubland	Clay Flats in Calcrete System	<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter and A. Douglas LCH25025) P1
CLaS	<i>Lycium australe</i> Shrubland	Flats in Calcrete System	<i>Lycium australe</i> , <i>Eragrostis</i> sp. (LCH25340)

Code	Vegetation Community	Landform Description	Dominant, Defining Flora
SBMMS	Sandy Bank Mulga and <i>Maireana pyramidata</i> Shrubland	Sandy banks surrounding Saline playas	<i>Acacia aneura</i> (various forms), <i>Acacia ayersiana</i> , <i>Maireana pyramidata</i> , <i>Cratystylis subspinescens</i>
CsMp	<i>Cratystylis subspinescens</i> and <i>Maireana pyramidata</i> Shrubland	Playas and Plains surrounding Saline playas	<i>Maireana pyramidata</i> , <i>M. georgei</i> , <i>Cratystylis subspinescens</i> , <i>Ptilotus obovatus</i> (typical Goldfields form), <i>Sclerolaena eriacantha</i> , <i>Solanum lasiophyllum</i> , <i>Frankenia laxiflora</i>
SPAbS	<i>Atriplex bumburyana</i> shrubland on Saline playa	Saline playa	<i>Atriplex bumburyana</i>
SPTLS	<i>Tecticornia</i> spp. low shrubland on Saline playa	Saline playa	<i>Tecticornia undulata</i> , <i>Tecticornia pterygosperma</i> subsp. <i>pterygosperma</i>
SPLS	<i>Lawrencia helmsii</i> shrubland on Saline playa	Saline playa	<i>Lawrencia helmsii</i>
SPFLS	<i>Frankenia</i> spp. low shrubland on Saline playa	Saline playa	<i>Frankenia pauciflora</i> , <i>F. cinerea</i> , <i>F. laxiflora</i>

Table 24. Representation of vegetation communities within study area 3

Vegetation community code	Total area mapped (ha)
SAES	81.73
Qtz	9.66
GRMS	323.62
QAECS	9.24
SAWS	528.58
SAMA	335.81
SAGS	37.44
SAMU	2136.56
WABS	507.80
HPMS	400.39
GRMU	10.69
MHHS	1206.59
PLAPoS	596.17
PLAET	122.18
PLAMi	75.68
PLMf	2.45
PLEml	178.17
CEgW	130.95
CCpW	228.99
CMxS	287.63
CAbS	398.05
CErG	56.44
CAPs	120.73
CLaS	36.49
SBMMS	780.42
CsMp	610.41
SPAbS	25.42
SPFLS	68.50
SPLS	209.99
SPTLS	325.91

3.7. Study area 3 - flora

Most taxa recorded from within study area 3 are widespread and common in the region and occur across a range of land systems and soil types. These are not discussed further. A systematic list of vascular flora for study areas 1, 2 and 3 is presented in Appendix 13 of this report. Significant flora and species of interest recorded in study area 3 are discussed in the following Sections.

3.7.1. Priority Flora

Three Priority Flora species were recorded within study area 3. These were, *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1, *Bossiaea eremaea* P3 and *Eremophila arachnoides* subsp. *arachnoides* P3. The locations of taxa of conservation significance recorded in study area 3 are presented in Appendix 15 of this report. These records do not include locations of significant flora recorded during the regional survey of study area 4 of which study area 3 is a subset.

***Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1**

A description of *Atriplex* sp. Yeelirrie Station is provided in Section 3.3.1.

Atriplex sp. Yeelirrie Station was first recorded in the north-western section of study area 4 during the regional survey, and this area was redefined as study area 3 for a more detailed survey. These records comprise the second known location of *Atriplex* sp. Yeelirrie Station.

Atriplex sp. Yeelirrie Station was recorded primarily within the CApS vegetation community, as described in Appendix 8. It was also recorded as scattered individuals within the CLaS, SPFLS, SPTLS and SPLS communities.

Western Botanical has estimated that there are a total of 190,656 *Atriplex* sp. Yeelirrie Station individuals in study area 3. These occurred within ten sub-populations and five scattered clumps of between one and five individuals. The population boundaries are shown in Figure 41 and the locations of the 36 quadrats used in population size calculations are shown in Appendix 16 of this report. At the time of the population size survey, May 2010, no female flowers were observed. Approximately 5% of plants had fruit, 3% had male flowers only, 1% of plants had fruit and male flowers, and 10% of plants appeared to be dead or aestivating. These percentages are representative of the time of survey only and vary greatly according to seasonal rainfall trends.

***Bossiaea eremaea* P3**

A description of *Bossiaea eremaea* is provided in Section 3.3.1.

Two populations of *Bossiaea eremaea* were recorded in study area 3, approximately 4 km apart, with a total of five plants. Locations are shown in Figure 18 (Section 3.3.1). Population 1, with three plants, was recorded in SAMA vegetation. Population 2, with two plants, was recorded in PLAPoS vegetation. It is possible that additional small populations of *Bossiaea eremaea* are scattered throughout the tenement. Individual points and counts are listed in Appendix 15 of this report.

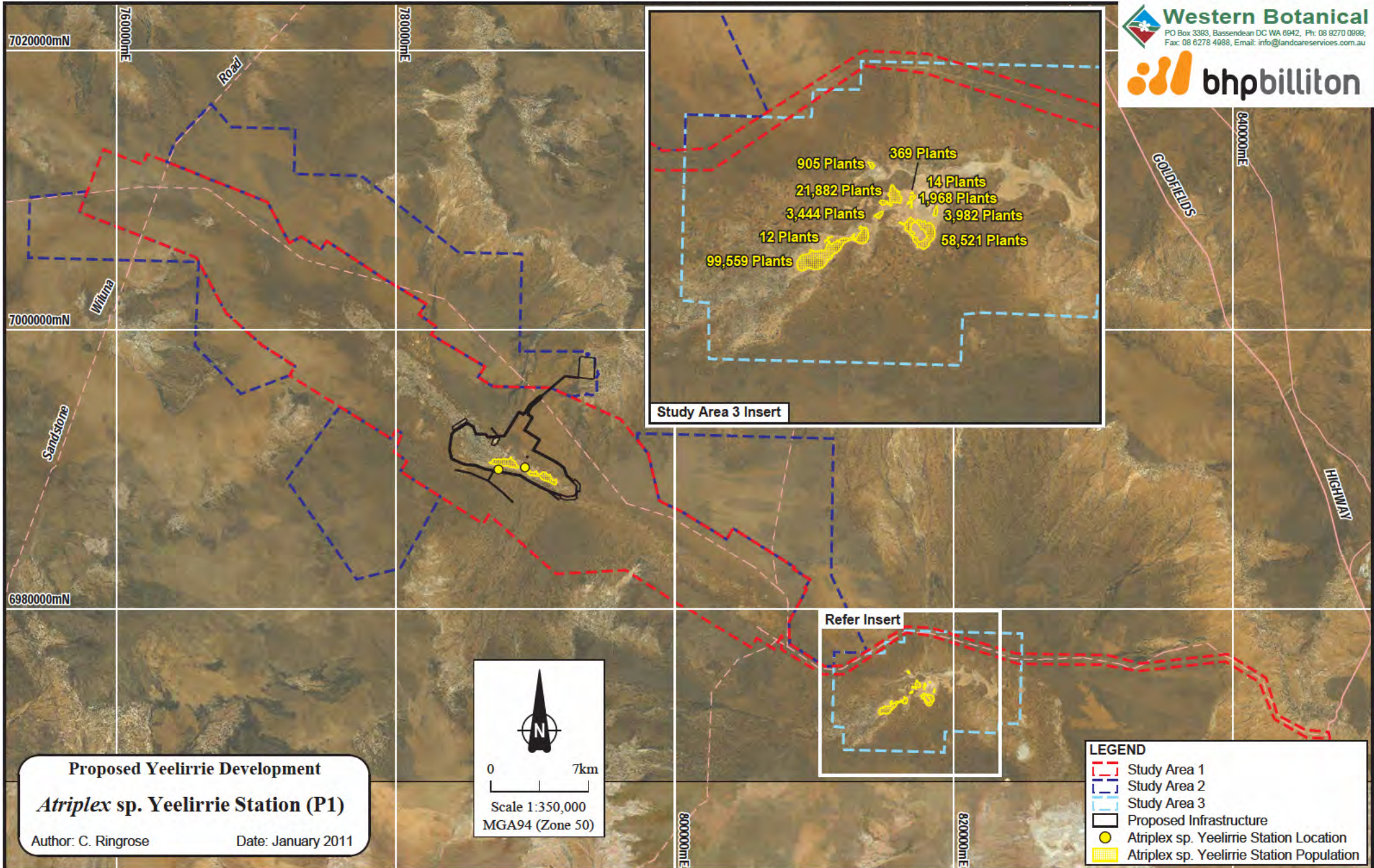
***Eremophila arachnoides* subsp. *arachnoides* P3**

A description of *Eremophila arachnoides* subsp. *arachnoides* is provided in Section 3.3.1.

Eremophila arachnoides subsp. *arachnoides* was found to be widespread in low numbers throughout the calcrete vegetation communities at study area 3.

Western Botanical recorded 97 individuals while traversing the area. Locations are shown in Figure 20 (Section 3.3.1). The majority of these occurred in CAbS, CEgW and CCpW communities, while a few occurred in PLAPoS adjacent to the calcrete rises. The survey effort is estimated to have covered 30% of the calcrete rises in study area 3, and it was extrapolated that the population consists of approximately 320 plants. Individual points and counts are listed in Appendix 15 of this report.

Figure 41. *Atriplex* sp. Yeelirrie Station populations within study area 3



3.7.2. Other significant species and species of interest

One species that may warrant conservation status was found in study area 3: *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560). A further species of interest, *Templetonia incrassata*, was also recorded in study area 3. The locations of these taxa are presented in Appendix 15 of this report.

***Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560)**

A description of *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) is provided in Section 3.3.2.

Twelve individuals of *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) were recorded, scattered throughout the CsMp, SBMMS and MHHS vegetation communities. A targeted search is likely to find a greater number of individuals of this taxon. Locations are shown in Figure 25 (Section 3.3.2), and individual points and counts are listed in Appendix 15 of this report.

Templetonia incrassata

A description of *Templetonia incrassata* is provided in Section 3.3.3.

Western Botanical recorded six small populations of *Templetonia incrassata* in study area 3, with a total of 31 plants. Four of these populations were found near the edge of the SAMU and SAMA communities and two in the MHHS community on the southern bank of the Saline Playa system. It is expected that *Templetonia incrassata* would occur in small populations throughout the area. Locations are shown in Figure 25 (Section 3.3.3) and individual points and counts are listed in Appendix 15 of this report. Given the limited area surveyed due to accessibility issues in some areas, the actual population may be as high as 200 individuals.

***Acacia aneura* variants**

In contrast to study area 1 and 2, only one form of *Acacia aneura* was recorded in study area 3 and separation into phyllode morphological forms was not warranted (refer to Section 3.3.4).

3.7.3. Introduced species

Two introduced taxa, *Tribulus terrestris* (Caltrop) and *Citrullus lanatus* (Afghan or Pie melon) were noted during the survey of study area 3. Although these are found throughout Western Australia, they are not listed as a 'Declared Plant' species under the *Agricultural and Related Resources Protection Act 1976* (Department of Agriculture and Food, 2009). Both taxa were observed as commonly occurring and widespread throughout study area 3 and their distribution was not mapped. No declared weeds were noted.

3.8. Regional survey (study areas 4 to 16) – vegetation

Regional surveys were planned and conducted to give regional context for significant species and vegetation communities which were present within study area 1 and, based on information at that time, were of restricted distribution. A total 13 paleodrainage and lake systems were investigated during the regional surveys. The regional survey area spanned a distance of 500 km east to west and 370 km north to south, encompassing a total area of 185,000 square km (1,850,000 ha).

Six paleodrainage systems were selected as highest priority for the first survey by helicopter (see Section 2.9, Table 8). Four of these: study areas 4 to 9, were targeted for ground survey. A further seven paleodrainage systems: study areas 10 to 16, were selected for a second survey by helicopter (see Section 2.9, Table 9). These latter surveys primarily focused on searching for further populations of *Atriplex* sp. Yeelirrie Station.

3.8.1. Vegetation communities of interest

Vegetation communities of interest were identified at four lake systems following the first survey by helicopter, these were: study area 4 (Lake Miranda and the southern end of the Yeelirrie Palaeochannel), study area 5 (Lake Mason), study area 6 (Lake Way), and study area 7 (Lake Noondie) (Table 25). These lake systems were further surveyed on ground.

No vegetation communities of interest were recorded in study area 9 (Lake Nabberu). Although study area 8 (Lake Annean) had extensive areas of *Melaleuca xerophila*,

Casuarina pauper and *Acacia burkittii* Shrubland on calcrete, it was decided to be unsuitable for further survey, as the vegetation communities were not representative of those recorded in the study area 1.

Table 25. Lake systems visited during ground surveys

Study area	Lake system	Dates of assessment
Study area 4	Lake Miranda and Yeelirrie Palaeochannel	3 rd to 9 th December 2009
Study area 5	Lake Way (northern shoreline, central western shoreline and southern palaeochannel)	25 th to 29 th January, 2010
Study area 6	Lake Mason (western and northern shorelines)	10 th to 11 th and 16 th February, 2010
Study area 7	Lake Noondie (western shoreline, northern shoreline and central eastern palaeochannel)	12 th to 15 th February, 2010

At each lake system it was observed that the majority of vegetation occurred on gypsum rather than calcrete. Although gypsum did not support the same vegetation communities that were recorded in study area 1, pockets of the same species were observed. Bordering the gypsum were smaller areas of calcrete that supported the same or similar vegetation communities to those recorded in study area 1.

In each vegetation community of interest up to three temporary quadrats were assessed to allow for statistical comparison and vegetation community clarifications. The locations of quadrats assessed at each lake system are shown in Figure 42 and coordinates and data recorded are provided in Appendix 17 of this report.

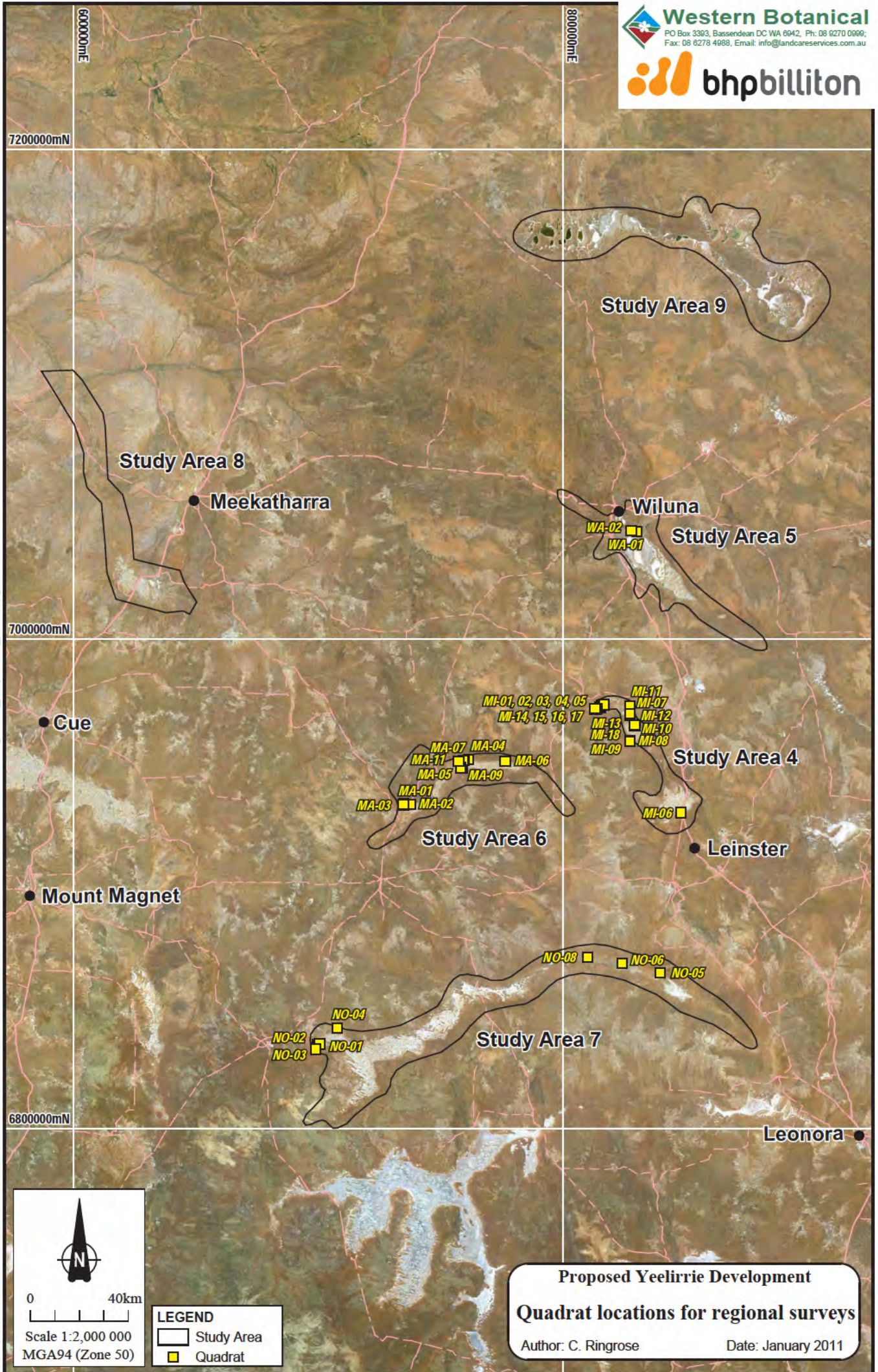
The findings for each lake system are summarised in Table 26 and described below.

Table 26. Vegetation communities of interest recorded at the four study areas visited during ground surveys

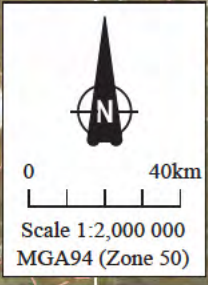
Vegetation Community	Study area 4	Study area 5	Study area 6	Study area 7
CEgW				
CMxS				
CCpW				
CAPs				
CRsS				



Green shaded cell indicates presence in that study area

Figure 42. Quadrat locations for regional study areas (4 to 7)



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LEGEND	
	Study Area
	Quadrat

Proposed Yeelirrie Development
Quadrat locations for regional surveys
 Author: C. Ringrose Date: January 2011

Study area 4

This paleodrainage system was the most representative of the vegetation communities recorded within study area 1. Four vegetation communities of interest were recorded during the survey at the southern end of the Yeelirrie Palaeochannel: CCpW, CApS, CMxS and CEgW.

Study area 3 is located within the southern end of the Yeelirrie Palaeochannel and vegetation communities occurring within this study area have been mapped and are discussed in Section 3.5.2.

Study area 5

Two vegetation communities of interest were recorded on calcrete occurring on the northern shoreline of Lake Way: CMxS and CEgW. Four small areas with CEgW (*Eucalyptus gypsophila* woodland on calcrete) were recorded. Of these, only one had an understorey comparable with those communities in study area 1: one small area of CMxS (*Melaleuca xerophila* shrubland on calcrete) was recorded. Extensive shrublands or woodlands of *M. xerophila* were observed bordering drainage lines and the shoreline of Lake Way. These occurred on gypsum, sand plain and cracking clay soils. *Casuarina pauper* was observed occasionally on the northern shoreline of Lake Way as scattered individuals within calcrete communities and did not form a woodland community.

Study area 6

Three vegetation communities of interest were recorded within study area 6: CCpW, CMxS, and CEgW. *Melaleuca xerophila* occurred in groves and large areas of shrubland bordering drainage lines and the shoreline of Lake Mason. Two communities similar to those recorded within study area 1 were *Melaleuca xerophila* and *Acacia burkittii* shrubland on calcrete with a high cryptogam cover, and *Casuarina pauper* woodland on calcrete.

Study area 7

Six areas with vegetation communities of interest were recorded at Lake Noondie along the western shoreline, northern shoreline and the central eastern palaeochannel.

Three vegetation communities of interest were recorded within these areas, CRsS, CCpW and CEgW.

Vegetation communities were not investigated in study areas 10 to 16.

3.9. Regional survey (study areas 4 to 16) - flora

3.9.1. Flora recorded during regional survey

A total of 143 species from 70 genera and 29 families were recorded during the regional surveys of study areas 4 to 16. Families with the greatest number of representatives were Chenopodiaceae (28 species), Fabaceae (24 species), Poaceae (20 species) and Scrophulariaceae (15 species). Genera with the greatest number of representatives were *Acacia* (17 species), *Eremophila* (15 species), *Maireana* (6 species) and *Sclerolaena* (5 species). Most species recorded are widespread and common in the region, and occur across a range of land systems and soil types. A systematic species list recorded during regional surveys is provided in Appendix 18 of this report.

The identification of some plant specimens has not yet been validated for one of three reasons: (i) insufficient material was available due to time of survey, (ii) dry seasonal conditions meant that flowers and or fruits needed for verification were not available or (iii) specimens are still with specialist taxonomists awaiting verification.

Approximately 40 collections of plant specimens have not been not fully identified. The identifications of these specimens will provide contextual regional information, however, were not targeted species of interest for these surveys.

3.9.2. Flora of conservation significance

Priority Flora and species of conservation interest were recorded at six lake systems during helicopter and ground surveys (Table 27). The coordinates of these records are presented in Appendix 19 of this report and locations are shown in Figure 43. Records represent population occurrences, or number of individuals observed. It was noted that often species of interest were recorded in different vegetation communities to those in study area 1.

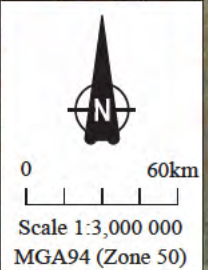
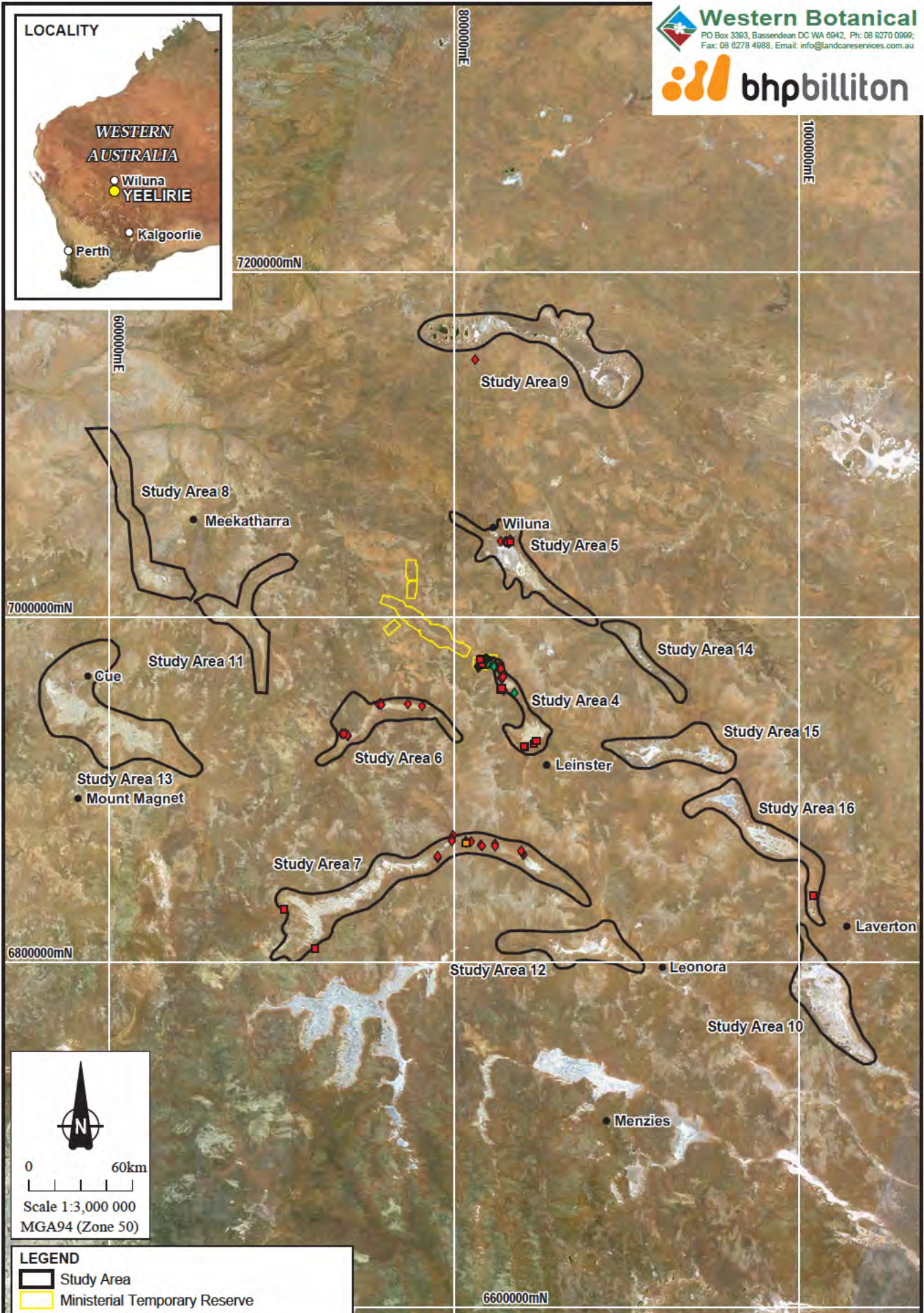
The second survey of study areas 10 to 16 by helicopter did not identify additional populations of *Atriplex* sp. Yeelirrie Station. Similar self-mulching clay habitats to those supporting *Atriplex* sp. Yeelirrie Station within the Yeelirrie palaeochannel occurred at most of the lake systems visited, however, different species were recorded growing in these habitats. Generally these were *Tecticornia* spp. (samphires) and other *Atriplex* species. All *Atriplex* species encountered were collected for identification verification and further taxonomic investigation at the WA Herbarium.

Table 27. Significant flora recorded in study area 4 to 16

Species	Study area 4	Study area 5	Study area 6	Study area 7	Study area 9	Study area 16
<i>Atriplex</i> sp. Yeelirrie Station P1						
<i>Rhagodia</i> sp. Yeelirrie Station P1						
<i>Eremophila</i> <i>arachnoides</i> subsp. <i>arachnoides</i> P3						
<i>Bossiaea eremaea</i> P3						
<i>Templetonia</i> <i>incrassata</i>						
<i>Scaevola</i> <i>spinescens</i> terete leaf form						

Green shaded cell indicates presence in that study area

Figure 43. Significant flora recorded in study areas 4 to 16



LEGEND

- Study Area
- Ministerial Temporary Reserve

Species Legend

- *Atriplex* sp. Yeelirie Station (P1)
- *Rhagodia* sp. Yeelirie Station (P1)
- *Bossiaea eremaea*
- ◆ *Eremophila arachnoides* subsp. *arachnoides*
- ◆ *Scaevola spinescens* (terete leaf form) (G. Cockerton & C. Ringrose LCH 14560)
- *Templetonia incrassata*

Proposed Yeelirie Development
Significant flora recorded at regional lake systems

Author: C. Ringrose Date: January 2011

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Study area 4

Three species of Priority Flora were recorded within the southern end of the Yeelirrie palaeochannel, *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) P1, *Bossiaea eremaea* P3 and *Eremophila arachnoides* subsp. *arachnoides* P3. A further two species of interest, *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560), and *Templetonia incrassata* were also recorded.

Atriplex sp. Yeelirrie Station was found in large numbers, and these were confined to self-mulching clays within study area 3. Details of population size estimates are discussed in Section 3.7.1. *Eremophila arachnoides* subsp. *arachnoides* and *Templetonia incrassata* was recorded in small and scattered populations within *Acacia burkittii* shrubland, *Lycium australe* shrubland and *Casuarina pauper* woodland. Individuals of *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) and *Bossiaea eremaea* were recorded in low numbers during the survey.

Study area 5

One Priority Flora species was recorded on the northern shoreline of Lake Way, *Eremophila arachnoides* subsp. *arachnoides* P3. A further species of interest, *Templetonia incrassata* was also recorded.

Scattered populations of *Eremophila arachnoides* subsp. *arachnoides* were recorded in calcrete communities in study area 5 spanning an area of approximately five by four kilometres across. *Eremophila arachnoides* subsp. *arachnoides* was recorded in the following calcrete communities: *Eucalyptus gypsophila* woodland, *Acacia burkittii* shrubland, *Casuarina pauper* woodland and *Acacia aneura* shrubland. Several small, scattered populations of *Templetonia incrassata* were recorded co-occurring with *Eremophila arachnoides* subsp. *arachnoides* in *Acacia burkittii* and *A. aneura* shrubland.

Subsequent to these surveys, populations of *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) have also been recorded by the authors on the south-eastern margins of Lake Way.

Study area 6

One Priority Flora species, *Eremophila arachnoides* subsp. *arachnoides* P3, was recorded within *Casuarina pauper* woodland and *Melaleuca xerophila* shrubland in study area 6 (Lake Mason).

Study area 7

Two Priority Flora species were recorded in study area 7 (Lake Noondie): *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1 and *Eremophila arachnoides* subsp. *arachnoides* P3.

Rhagodia sp. Yeelirrie Station was recorded in a population of between 100 - 200 plants on a clay flat within the calcrete land system.

Eremophila arachnoides subsp. *arachnoides* was recorded in large numbers within *Eucalyptus gypsophila* woodland, *Acacia burkittii* shrubland and *Casuarina pauper* woodland. A further species of interest, *Templetonia incrassata*, was also recorded as scattered individuals at two locations.

Study area 9

One Priority Flora species, *Eremophila arachnoides* ssp. *arachnoides* P3, was recorded in study area 9 (Lake Nabberu).

Study area 16

One species of interest, *Templetonia incrassata*, was recorded during the second survey by helicopter in study area 16 (Lake Irwin). Three individual plants were recorded adjacent to *Tecticornia* spp. shrubland on self-mulching clay.

3.9.3. Regional summary of significant flora

To provide a regional context for significant flora recorded in the proposed project footprint, Western Botanical examined FloraBase records and undertook prioritised surveys of regional paleochannels and lake systems. A summary of significant flora recorded to from the project footprint (in study areas 1 and 2) and regional lake systems (study areas 3 to 16) is presented in Table 28. An interpreted summary of FloraBase (WA Herbarium) records of these species is also provided in Table 28 to indicate the known number of individuals recorded elsewhere within Western

Australia. The interpreted summary of FloraBase records was prepared using a conversion table to convert qualitative data associated with population descriptions of vouchered specimens listed on FloraBase into quantitative values. FloraBase records and the conversion table are provided in Appendix 20 of this report.

Table 28. Summary of significant flora records from the project area (study areas 1 and 2), regional surveys (study areas 3 to 16) and interpreted population sizes of specimens vouchered at the WA Herbarium

Species	Cons Status	Project Area (Study areas 1 and 2) Western Botanical		Study areas 3 to 16 Western Botanical □		WA records (FloraBase, WA Herbarium) *
		Populations recorded	Individuals recorded	Populations recorded	Individuals recorded	Number of individuals interpreted
<i>Atriplex</i> sp. Yeelirrie Station	P1	1	84,510 ^b	1	190,656 ^b	-
<i>Rhagodia</i> sp. Yeelirrie Station	P1	5	2200	1	100-200	100-200
<i>Baeckea</i> sp. Sandstone	P3	1	1			69
<i>Bossiaea eremaea</i>	P3	9	12,732	1	5	154
<i>Eremophila arachmoides</i> subsp. <i>arachmoides</i>	P3	4	43,255 ^a	5	1059	303
<i>Euryomyrtus inflata</i>	P3	6	10,229			166
<i>Comesperma viscidulum</i>	P4	1	23			217
<i>Olearia arida</i>	P4	1	24			183
<i>Scaevola spinescens</i> terete leaf form		6	1047		50	-
<i>Templetonia incrassata</i>		3	2985		140	13

a. extrapolated counts based on plants per unit area of calcrete soil landscape system

b. refer to Section 2.8.5 for calculations of *Atriplex* sp. Yeelirrie Station population size

□ duplicate records of flora surveyed in study areas 3 and 4 were not counted twice

*quantitative data of individuals interpreted from FloraBase records, excluding Western Botanical records

Both Priority One species that were recorded in the project footprint are poorly represented in the region. *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) is known from two locations only: (i) the project footprint (within the pit boundary) and (ii) study area 3. *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396) is known from three locations only: (i) within and outside the project footprint in study area 1, (ii) study area 7, Lake Noondie and (iii) Rowles Lagoon near Coolgardie (J Hurter pers. comm., FloraBase, 2011).

Euryomyrtus inflata P3 occurs in extensive populations on the Sand Plain System, outside the pit and to the west of the proposed infrastructure development areas. This taxon is reasonably abundant where it occurs and numerous populations were noted.

Baeckea sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963) P3 occurs on the Sand Plain System outside the project footprint. Regional data on abundance is deficient.

Bossiaea eremaea P3 is relatively abundant in patches on the north side of study areas 1 and 2, particularly within the project footprint, although none occurs within the pit. The species has a strongly disjunct distribution with the Yeelirrie populations being some 300 km north-west of the populations near Laverton. Regional data on abundance is deficient.

Eremophila arachnoides subsp. *arachnoides* P3 is abundant and restricted to the Calcrete System within the project footprint. Of the 43,255 individuals recorded in the study area 1, 45% occur within the project footprint. During regional surveys, *Eremophila arachnoides* subsp. *arachnoides* was recorded at five lake systems; study areas 4, 5, 6, 7 and 9. The populations in study area 6, Lake Mason, occur within a proposed DEC Reserve. The largest populations noted during regional surveys was recorded on Pinnacles Station within study area 7.

Olearia arida P4 was recorded in one population (24 individuals in total) in study area 1. The population was located on the roadside of the Yeelirrie - Albion Downs access road approximately fifteen kilometres west of the Yeelirrie - Albion Downs and Goldfields Highway intersection. This is the first record in the Murchison Region, representing a range extension of more than 500 km. Road widening activities on the Yeelirrie - Albion Downs Road may impact on the extant population of this species.

Comesperma viscidulum (P4) was recorded as isolated plants (23 in total) within the Sand Plain System in the north-west region of study area 1. This species is known from five widely disjunct populations in central and eastern Western Australia with the population in the study area 1 being a new record and slight range extension to the south-west. Any road widening activities on the Yeelirrie – Meekatharra Rd or the Sandstone – Wiluna Rd (in the vicinity of that intersection) will impact on the extant population of this species.

Scaevola spinescens terete leaf form (G. Cockerton & C. Ringrose 14560) is associated with the Calcrete and Playa Systems within study areas 1 and 2. Of the 782 individuals recorded, 81% were recorded within the project footprint. A small population (~50) was recorded in study areas 3 and 4; however, the lack of information on the regional distribution of this species is noted. However, it is known by the authors at Lake Way (study area 5) and one specimen lodged at the WA Herbarium was collected at Lake Austin, south of Cue.

Templetonia incrassata was recently described as a new species after being distinguished from *Templetonia egena* (I.R. Thompson, 2010). Populations have been recorded in the northern Coolgardie Biogeographic region and the southern Murchison Biogeographic region. The population in the local study area occurs at the northern limit of its range. Of the 2,691 individuals recorded in the study area 1, 29% were recorded within the project footprint. This taxon was also recorded during regional surveys in study areas 4, 5 and 7, but in very low numbers. A lack of information on the regional populations of this species is noted. The largest known population of *Templetonia incrassata* (to date) occurs within the Yeelirrie paleochannel.

4. References

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5. Glossary

Assemblage (compare with community, which is similar): A collection of co-occurring populations (Lewis, 1977).

Biodiversity: is the variety of all life forms - the different plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part. It is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline, and extinction (Commonwealth of Australia, 1996).

Biodiversity has two key aspects:

- its intrinsic value at the genetic, individual species, and species assemblages levels; and
- its functional value at the ecosystem level.

Two different species assemblages may have different intrinsic values but may still have the same functional value in terms of the part they play in maintaining ecosystem processes.

Genetic diversity: is the variety of genetic information contained in all of the individual plants, animals and microorganisms that inhabit the earth (Commonwealth of Australia, 1996). In any given area it is the variety of genetic material contained in all organisms.

Genetic diversity occurs within and between the populations of organisms that comprise individual species as well as among species (Commonwealth of Australia, 1996). Due to a lack of research regarding the genetic range of endemic species, there has been, and will continue to be, difficulty in addressing protection of biodiversity specifically at the genetic level.

However for many species some information is available on the phenotypic expression of genetic variation through the recognition of different taxa at the subspecies or variety level. These may be significant in terms of exhibiting varying distribution and levels of rarity. The protection of species throughout their range and

on the variety of sites may therefore serve as a surrogate for protection of genetic diversity in the absence of specific information. This issue needs to be considered in the design/collection and interpretation of data obtained in flora and vegetation surveys.

Species diversity: the variety of species on the earth (Commonwealth of Australia, 1996). In any given area it is the variety of species, or a measure of that variety (Lewis 1977, Jones *et al.*, 1990). While diversity can be measured in many ways, Most simply it is measured as the species richness of ... an area, though it provides a more useful measure ... when it is combined with an assessment of the relative abundance of species present.

Diversity within ecosystems has been equated classically with stability and climax communities (Allaby, 1992). Species diversity is conceptually different from genetic diversity because:

- in general, the recognition of species is based on physical features (a taxonomic approach of recognising, describing, naming and classifying);
- a species is a concept, rather than a clear unit in nature. This can mean that the amount of genetic variation within one species may be markedly different from another species. To accommodate such inconsistencies, sub-divisions such as sub-species, varieties and hybrids may be recognised.

Species diversity is usually the default in biodiversity assessment, which means it becomes a surrogate for the underlying genetic diversity. Species diversity becomes a progressively better estimate of the full range of genetic diversity when it considers the range of variation within a species (including sub-species, varieties, and hybrids), a species' entire range, and the range of habitat in which a species occurs.

Declared Rare and Priority Flora are only one subset of species diversity. The scope of formal listings is limited by the extent and intensity of sampling in any area, by how well a surveyor recognises all different organisms in an area, by whether all known occurrences are registered (*i.e.* whether specimens were submitted), and by the current progress in naming species groups. Since these processes are ongoing, it is clear that survey for environmental impact assessment has a role in extending

knowledge. Consequently, consultants are encouraged to check specimens that have no known match, or appear anomalous, and which may be new.

In natural systems, species diversity varies from area to area and so is not a complete measure of the significance of a vegetation unit. Many communities with relatively few species, such as estuaries and mangrove forests, are highly productive and have an abundance of life but not a great variety of species.

Similarly, for any species, its significance may come from values other than scarcity, or because it may be under threat. For example, a prolific species may be a key part of an ecosystem (*e.g.* in terms of bulk, productivity, or the provision of resources such as nest sites or nectar).

Ecosystem diversity: in any given area, the variety of habitats, biotic communities and ecological processes (Commonwealth of Australia, 1996). Ecosystems are the basic functional ecological units. They comprise the diversity of all-living organisms and non-living components and their relationships within a given area. They can be defined at almost any nominated scale. Ecosystems include abiotic components, which include physical factors such as radiation, gases, the water cycle, geology, land and soil forming processes, and climate.

Ecological processes are the interactions, and changes or development processes, of the ecosystem over time. Ecosystem diversity is harder to measure than species or genetic diversity because the boundaries of ecosystems (or component habitats and communities) are a matter of definition within a matrix. Provided a consistent set of criteria is used to define ecosystems, their number and distribution can be measured. It is therefore essential that scale/s and the basis for differentiation are defined and understood in any treatment of ecosystem diversity.

Other expressions of biodiversity - Other expressions of biodiversity can be important. These include the relative abundance of species, the age structure of populations, the pattern of communities in a region, changes in community composition and structure over time, and ecological processes such as predation, parasitism and mutualism. It is often important to examine diversity in ecosystem structure and function as well as compositional diversity of genes, species and ecosystems (Environmental Protection Authority, 2002a).

Botanical Province: botanical regions within Western Australia described by Beard; Eremaean, South-west and Northern Provinces. These are further divided into botanical districts; *e.g.* Austin.

Calcrete: the term given to a calcium carbonate rich deposit, generally indurated to varying degrees, often commonly occurring in valley deposits where it has been formed as a precipitate from calcium carbonate rich groundwater.

Community (compare with assemblage and ecological community and vegetation community): A general term applied to any grouping of populations of different organisms found living together in a particular environment (Allaby, 1992). Plant community is an assemblage of plants at any given locality Beard (1990). The term 'community' has been applied at a range of scales in general use (as have ecosystem, habitat and vegetation). In this document 'community' is usually used to refer to all populations of all plant species at a locality. This is a detailed approach to plant diversity, with good resolution of the make-up of vegetation. Beard's regional vegetation mapping was several levels coarser than this.

Conservation Interest/Significance: poorly represented and poorly known taxa likely to be listed as Priority Flora in the future, pending review by the DEC.

Declared Rare Flora (DRF): Species specially protected under the *Wildlife Conservation (WC) Act 1950*, as identified in the current listing. At time of printing the listing is Wildlife Conservation (Rare Flora) Notice 2003 (Government of Western Australia, 2003b).

Ecological community: Naturally occurring biological assemblage that occurs in a particular type of habitat. Note that the scale at which ecological communities are defined will often depend on the level of detail in the information source. Therefore no particular scale is specified (English and Blyth, 1999). An assemblage of native species that: a) inhabits a particular natural area; and b) meets the additional criteria specified in the regulations, made for the purposes of this definition (*EPBC Act*, 1999).

Ecosystem: A dynamic complex of plant, animal, fungal, and microorganism communities and the associated non-living environment interacting as an ecological

unit (Commonwealth of Australia, 1996). (That is, all living and non-living parts of a system and their interaction. Non-living factors include climate, atmosphere, and the geosphere.)

Ecosystem function/processes (compare to threatening processes): Interconnected processes that sustain the biodiversity typical of a given ecosystem and drive the self-directed development of that ecosystem. Such processes involve all components of ecosystems, living and non-living. One-off biological survey tends to reveal little about ecosystem processes without complementary investigations over time.

Ephemerals: species that grow, flower and set seed within one season before dying off.

Factor: This word has two meanings in the contexts of EPA and ecology:

environmental factor - [EPA definition] Usually broad working divisions used to compartmentalise the environment for administrative purposes. Some of these definitions may have broad similarities with the ecological definitions at higher levels. Since these factors arise from an administrative need to compartmentalise, they are imposed *a priori* (before study). At lower levels, they may more closely approach environmental factors, such as within proposal-specific guidelines or approved scoping documents; and

environmental factor - [ecological definition] Any component or aspect of the environment that may influence the observed state. Since these factors arise from the environment, they are revealed by impartial observation. They are not imposed. Rather, they are labelled as they manifest themselves. (In ecology, multi-variate analysis is employed in order to account for the influence of all factors other than the one in question, so that its influence clearly stands out).

Flora (compare with vegetation): All the vascular plant taxa (including species, subspecies, varieties, hybrids, and ecotypes) in a given area or epoch (*after* Collocott and Dobson, 1975, Onions, 1978, Lewis, 1977, Delbridge, 1987 and Mueller-Dombois and Ellenberg, 1974).

GDE: Groundwater Dependent Ecosystem

Geographically restricted species: a species that is known to occur in a small geographical range, *i.e.* in one or two Biogeographic Regions, or within a 200 km diameter. May be restricted to small refuges (*i.e.* rocky outcrops), locally abundant or sparse in specific habitats.

Glabrous: lacking hairs or scales

Habitat: The natural environment of an organism or a community, including all biotic and abiotic elements; a suitable place for it to live (*after* Gilpin, 1996, Jones *et al.*, 1990, Lewis, 1977, Onions, 1978 and Commonwealth of Australia, 1996). The term ‘habitat’ has been applied at a range of scales in general use (as have community and vegetation). Vegetation can become a reasonable surrogate for outlining habitat when its main components, structure and the associated landform are also described.

Herbarium: a collection of dried plants or parts of plants usually flattened and mounted on paper or stored in packets.

Inflorescence: the flower-bearing parts of a plant, in particular those parts that are separated from one another by vegetative portions.

Land system: a recurring pattern of geology-landform-soils-vegetation and surface hydrology.

Landform: the term applied to the multitude of surface features that make up the surface of the earth and includes large-scale features such as mountain ranges, as well as small-scale features such debris slopes.

Landscape: a concept encompassing physical, biological, and social components. In the context of my reports, it comprises a collection of landforms, (hence landform elements) which have been formed within a geo-tectonic framework as modified by climate over time, and on which drainage systems and vegetation patterns have become established.

Midrib: the central vein of a leaf.

Morphology: the study of structure, form and development of plants.

ms: manuscript. Unpublished manuscript name.

Mucro: a short sharp point.

Mucronate: tipped with a short sharp point.

Palaeo drainage channel: an ancient drainage line that has been active in the past during periods of a wetter climate, and has been subsequently buried by modern sediments. Contemporary drainage systems often reflect the location of palaeo drainage lines. The depth below the surface of palaeo systems reflects the degree of erosion and sedimentation that has occurred during the onset of aridity.

Priority Ecological Community (PEC): Vegetation communities not initially categorized as a TEC and waiting nomination for TEC status.

Precautionary Principle: Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- an assessment of the risk-weighted consequences of various options.
(Intergovernmental Agreement on the Environment, 1992).

This provides an approach for considering the environmental impacts of a proposal on biodiversity values where there is a lack of knowledge and lack of scientific certainty. A useful methodology for applying the precautionary principle is that of Deville and Harding (1997).

Priority Flora: Lists of plant taxa, maintained by the Department of Conservation and Land Management (Atkins, 2003), that are either under consideration as threatened flora but are in need of further survey to adequately determine their status, or are adequately known but require monitoring to ensure that their security does not decline.

Pubescent: bearing hairs of any type.

Pungent: ending in a sharp point.

Quadrat: an in depth vegetation survey of a set area (in this survey 2500 m²). Marked by permanent pegs to allow for ongoing monitoring.

Range extension: a species recorded outside its known distribution.

Relevés: a high level vegetation survey of a small area. Similar to a quadrat, but with no permanent pegs and not used for ongoing monitoring.

Significant Flora: Species, subspecies, varieties, hybrids, and ecotypes may be significant for a range of reasons, other than as Declared Rare Flora or Priority Flora, and may include the following:

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

Significant Vegetation: Vegetation may be significant for a range of reasons, other than a statutory listing as Threatened Ecological Communities or because the extent is below a threshold level, which may include the following:

- scarcity;
- unusual species;
- novel combinations of species;

- a role as a refuge;
- a role as a key habitat for threatened species or large populations representing a significant proportion of the local to regional total population of a species;
- being representative of the range of a unit (particularly, a good local and/or regional example of a unit in 'prime' habitat, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range); and
- a restricted distribution.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (~intra-locality), intermediate-scale (~locality or inter-locality) or broad-scale (~local to region).

Soil landscapes: those landform elements making up the local landscape that comprise a suite of soils with similar characteristics. Any given soil landscape may contain up to 20 definable soils, all with similar characteristics, but which may vary in profile or horizon morphology.

sp.: species.

sp. aff.: species with affinity to ..., or close to ...

Species: a taxon consisting of individuals or populations that share certain common features and freely interbreed and produce fertile offspring.

Species of Interest or significance: species other than DRF or Priority listed flora with some value of interest, whether that is of taxonomic interest, a new taxa or have a range extension.

Spinescent: ending in a sharp point

sp. nov.: new species.

spp.: species (plural).

subsp.: subspecies.

Subspecies: taxon that are characterised by minor morphological differences from other species, such as the size or shape of parts, usually as a result of being geographically isolated or other ecological barriers.

subsp. nov.: new subspecies.

Taxa: A taxonomic group. Depending on context, this may be a species or their subdivisions (subspecies, varieties, forms), genus or higher group.

Taxonomic Interest: Poorly known or undescribed taxa that require taxonomic revision. May represent morphological or regional variation of known species; that is a possible new species, subspecies or variety e.g. *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560). Requires the acquisition of flowering and fruiting material to fully identify taxa.

Threatened Ecological Community (TEC): Ecological communities that have been assessed through a procedure (coordinated by DEC) and assigned to one of the following categories related to the status of the threat to the community. These categories are:

- Presumed Totally Destroyed;
- Critically Endangered: <10% of pre-European extent remains in an intact condition in the bioregion;
- Endangered: 10 to 30% of pre-European extent remains; and
- Vulnerable: declining and/or has declined in distribution and/or condition, and whose ultimate security is not yet assured (it could move into a category of higher threat in the near future if threatening processes continue) (English and Blyth 1997, 1999).

One of the criteria used to determine the categories of threatened ecological community is an estimate of the geographic range and/or the total area occupied and/or the number of discrete occurrences reduced since European settlement.

Threatening Processes (compare ecosystem function/processes): Any process or activity that threatens to destroy or significantly modify the ecological community

and/or effect the continuing evolutionary processes within any ecological community (English and Blyth, 1999). A process that threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community (ANZECC, 2000).

var.: variant

Variant: similar to subspecies, although after identification, the taxa are not regarded to fit into a recognised taxon.

Vegetation (compare with flora; and see significant vegetation): The various combinations that all populations of all vascular plant species form within a given area, and the nature and extent of each combination (*after* Mueller-Dombois and Ellenberg, 1974, Collocott and Dobson, 1975, Lewis, 1977, Onions, 1978, and Delbridge, 1987). Note that this is a biodiversity approach, and that other approaches may be based on structure or appearance - approaches that describe lesser subsets of plant diversity. The term vegetation has been applied at a range of scales in general use (as have community and habitat). The joint influence of different approaches and levels that can be applied to vegetation has led to a range of terms that describe vegetation, with resulting confusion.

Vegetation community: An association of vascular flora species characterized by key dominant species within observed strata which co-occur in a repeating pattern and consistently occupy a recognizable landscape position with unique soil and hydrological characteristics across the landscape, often strongly contrasting with those adjacent. Vegetation Communities defined here are broadly similar to Land Units defined by Pringle *et al* (1994). However, many have been described at finer scale and detail to enable definition and depiction of the distribution of key dominant species within the intricately variable landscapes associated with the Calcrete and Playa Soil Landscape Systems.

Vegetation unit: A general purpose term to apply to vegetation categories regardless of level, and with no level implied. This is required because the most variable area of terminology is to do with vegetation and its categorisation at various levels of meaning. If practitioners have any doubt about the application of vegetation terms, it is recommended that they:

- refer to absolute scales, densities, and extent of vegetation as much as possible; and
- use only the generic term “vegetation unit” and qualify whether each unit is fine-scale (~intra-locality), intermediate-scale (~locality or inter-locality) or broad-scale (~local to region).

Appendix 1. EPBC Act Protected Matters Report



EPBC Act Protected Matters Report: Coordinates

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.

You may wish to print this report for reference before moving to other pages or websites.

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: 10/02/11 14:12:39



[Summary](#)

[Details](#)

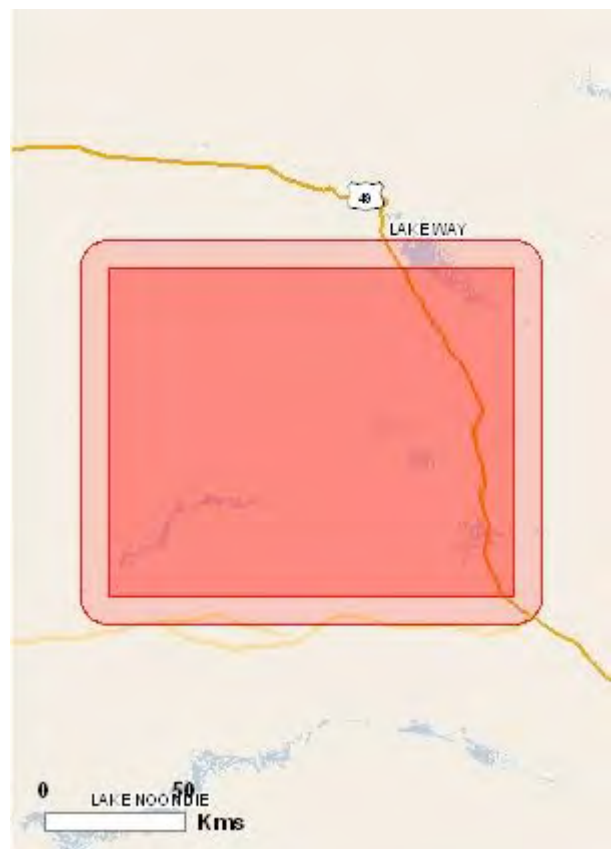
[Matters of NES](#)

[Other matters protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

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[Coordinates](#)

Buffer: 10Km

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	5
Migratory Species:	6

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>

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

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.au/epbc/permits/index.html>.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	4

Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

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

Place on the RNE:	4
State and Territory Reserves:	1
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		
Acanthiza iredalei iredalei Slender-billed Thornbill (western) [25967]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may occur within area

Migratory Species [\[Resource Information \]](#)

Name	Status	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
Migratory Terrestrial Species		
Leipoa ocellata		

Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
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[Merops ornatus](#)

Rainbow Bee-eater [670]		Species or species habitat may occur within area
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Migratory Wetlands Species

[Ardea alba](#)

Great Egret, White Egret [59541]		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 [\[Resource Information \]](#)

Name	Status	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
----------------------------------	--	--

[Charadrius veredus](#)

Oriental Plover, Oriental Dotterel [882]		Species or species habitat may 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	Status
------	--------

Natural

Wanjarri Nature Reserve WA	Registered
--	------------

Indigenous

Barr Smith Range and Jones Creek WA	Indicative Place
---	------------------

Yeelirrie Pool Mythological and Occupation Site WA	Registered
--	------------

[WA](#)

Yeelirrie Station Mythological Site WA	Registered
--	------------

State and Territory Reserves [\[Resource Information \]](#)

Wanjarri, WA

Invasive Species [\[Resource Information \]](#)

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

Name	Status	Type of Presence
------	--------	------------------

Mammals

[Capra hircus](#)

Goat [2]		Species or species habitat likely to occur within area
----------	--	--

[Felis catus](#)

Cat, House Cat, Domestic Cat
[19]

Species or species habitat likely to occur within area

[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

[Carrichtera annua](#)

Ward's Weed [9511]

Species or species habitat may occur within area

[Cenchrus ciliaris](#)

Buffel-grass, Black Buffel-grass
[20213]

Species or species habitat may occur within area

Caveat

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

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World 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 resolutions.

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

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

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.

Coordinates

119.3333 -26.81666,120.6333 -26.81666,120.6333 -27.86666,119.3333 -27.86666,119.3333 -26.81666

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

Environment Australia 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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Last updated: Thursday, 16-Sep-2010 09:13:25 EST

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Appendix 2. Western Australian flora conservation categories

R: Declared Rare Flora - Extant Taxa

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.

X: Declared Rare Flora - Presumed Extinct Taxa

Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.

1: Priority One - Poorly known Taxa

Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

2: Priority Two - Poorly Known Taxa

Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

3: Priority Three - Poorly Known Taxa

Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.

4: Priority Four - Rare Taxa

Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

Note, the need for further survey of poorly known taxa is prioritised into the three categories depending on the perceived urgency for determining the conservation status of those taxa, as indicated by the apparent degree of threat to the taxa based on the current information.

Appendix 3. DEC search results for the regional area including the Yeelirrie local study area

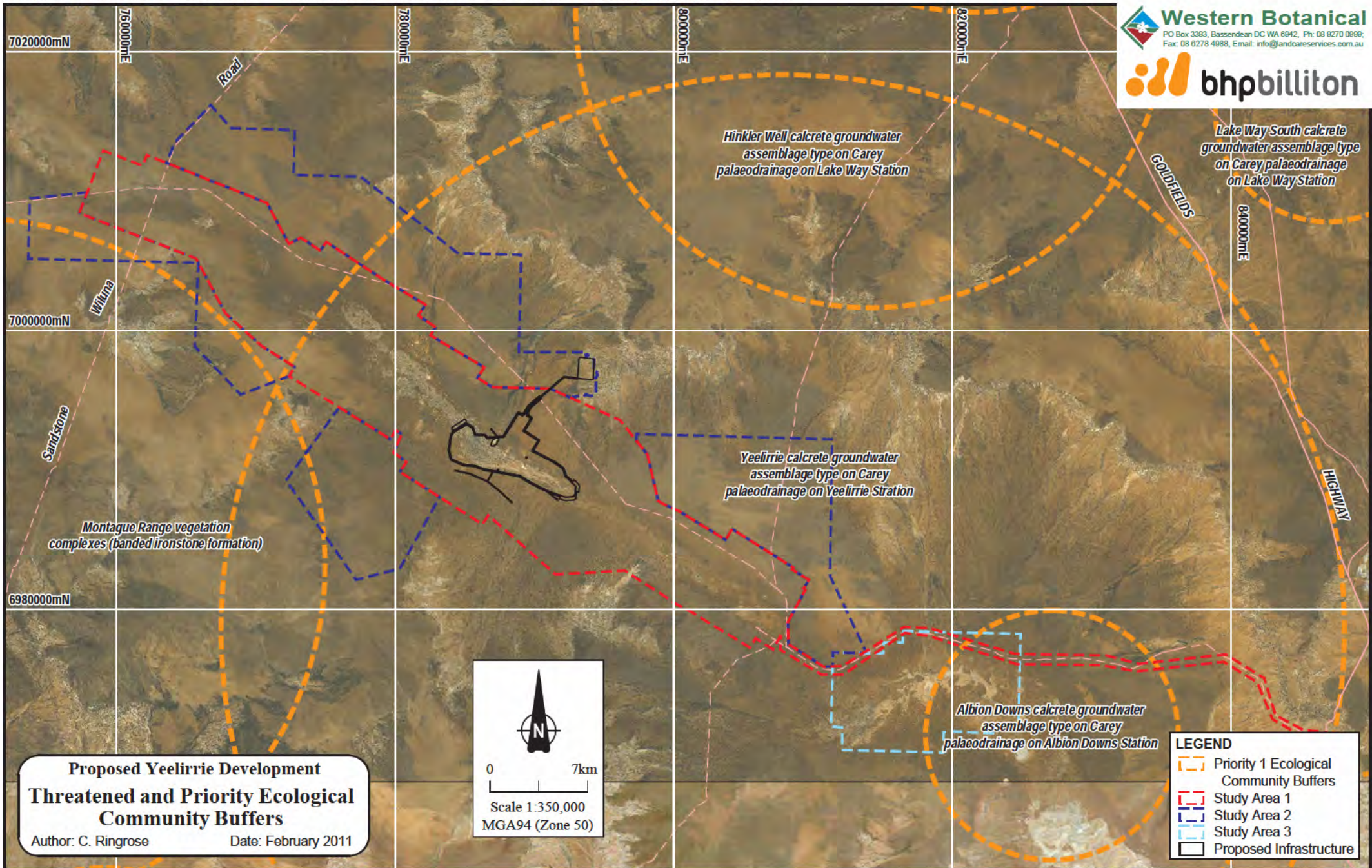
Table 1. Declared Rare and Priority Flora recorded in the vicinity of the Yeelirrie local study area. Requested from the Department of Environment and Conservation on 15/02/2010

Species / Taxon	Cons Code	DEC Record	WB Record	Distribution	Soil and Landform	Flowering Period
<i>Anacampseros</i> sp. Eremaean (F. Hort, J. Hort & J. Shanks 3248)	1	*		Niagara Dam, Yakabindie Stn	Sand patches inside rocks, brown sandy clay, granite. Depressions in rock outcrops, breakaways, flats.	Sep
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	1	*	*	Yeelirrie Stn	Self mulching red clay	Sporadically following rainfall
<i>Baeckea</i> sp. Melita Station (H. Pringle 2738)	4	*		Bugla Downs Stn, Weld Range, Leinster, Youno Downs, Sandstone, Laverton, Mt Keith	Dark red rocky soil over ironstone	
<i>Baeckea</i> sp. London Bridge (Trudgen 5393)	3	*		Sandstone, Youanmi	Rocky breakaways and hills	Oct-Nov
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s n. 26 Oct 1963)	3	*	*	Wiluna, Sandstone, Agnew, Great Victoria Desert	Orange sand flats	Oct
<i>Beyeria lapidicola</i>	1	*		Weld Range, Mt Forrest, Bulga Downs Stn, Lake Way Station	Red-orange sandy clay, fine gravel, banded ironstone outcropping	
<i>Bossiaea eremaea</i>	3	*	*	Lake Way Stn, Merolia Stn, Sandstone, White Cliffs Stn	Deep red sand. Ironstone	Jul-Sep
<i>Calytrix praecipua</i>	3	*		Gidgee, Niagara, Laverton Down Stn, White Cliffs Stn, Lehmanns Well, Merolia Stn, Melita Stn, Kookaburra Well, Laverton	Skeletal sandy soils over granite or laterite. Breakaways, outcrops	Jun-Nov
<i>Calytrix uncinata</i>	3	*	*	Bulga Downs Stn, Leinster, Wanjarri, Yakabindie Stn, Leonora, Nambi Stn, Teutonic	White or red sand, sandy clay. Granite or sandstone breakaways, rocky rises	Aug-Nov
<i>Comesperma viscidulum</i>	4	*	*	Yeelirrie Stn, Carnarvon Range, Rawlinson Range,	Red or yellow sand	May, Aug-Sep
<i>Dampiera plumosa</i>	1	*		Sandstone, Coolgardie, Lake Barlee	Red sandy soils	Oct

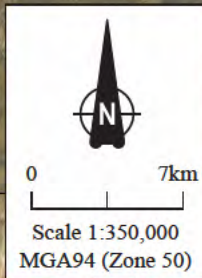
Species / Taxon	Cons Code	DEC Record	WB Record	Distribution	Soil and Landform	Flowering Period
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	3	*	*	Pinnacles Stn, Lake Noondie, Yeelirrie Stn, Yarrabubba	Shallow loam over limestone	Sep
<i>Eremophila congesta</i>	1	*		Wiluna, Lake Way Stn	Lateritic outcrops in greenstone hills, stony quartzite slopes, banded ironstone formations	Aug-Sep
<i>Eremophila flaccida</i> subsp. <i>attenuata</i>	3	*		Wiluna, Dairy Creek, Glenburgh	Stony clay over quartzite. Hill slopes, ridges	May, Oct
<i>Eremophila pungens</i>	4	*		Eareheedy, Meekatharra, Lake Way, Barwidgee, Wanjarri, Wiluna, Wonganoo, Granite Peak, Lorna Glen Hmstd, Agnew, Leinster, Mooloogool	Sandy loam, clayey and over laterite. Plains, ridges, breakaways	Jun-Oct
<i>Euryomyrtus inflata</i>	3	*	*	Yeelirrie Stn, Lake Mason Stn, Wiluna, Youno Downs Stn	Deep red sand. Flat plain	Jun-Jul
<i>Grevillea inconspicua</i>	4	*		Cue, Meekatharra, Yakabindie, Sandstone, Melrose, Leinster, Mt Magnet, Lake Mason, Booylgoo Stn	Loam, gravel along drainage lines on rocky outcrops, creeklines	Jul-Aug
<i>Hemigenia exilis</i>	4	*		Leonora, Mt Keith, Leinster, Bulga Downs, Sturt Meadows Stn, Glenorn Stn	Laterite. Breakaways, slopes	Apr, Sep-Nov
<i>Homalocalyx echinulatus</i>	3	*		Carnegie Stn, Wiluna, Doolgunna Stn, Weld Range, Mt Hale, Windidda, Wongawal Stn	Laterite. Breakaways, sandstone hills	Jun-Sep, Dec
<i>Labichea eremaea</i>	3	*		West of Sandstone, Bimbijy, Mt Jackson, Black Range Stn	Red sand	Aug-Sep
<i>Mirbelia stipitata</i>	3	*		North of Sandstone, North of Laverton	Red sandy loam	Aug
<i>Neurachne lanigera</i>	1	*		Wiluna, Warburton	Red sand, laterite. Rocky outcrops, plains	Jul-Oct
<i>Olearia arida</i>	4	*	*	Albion Downs Stn, Neale Junction	Red or yellow sand, Undulating low rises	Jul-Sep
<i>Olearia mucronata</i>	3	*		Mt Keith Stn, Hamersley and Chichester Range area, West Angelas, Paraburdoo, Mt Margaret, Mt Keith, Wiluna	Schistose hills, along drainage channels	Aug-Jan
<i>Parmeliopsis macrospora</i>	3	*		Kalgoorlie, Ninghan Stn, Wanjarri NR, Mt Harry, Kathleen, Bullfinch, Kalbarri	Red brown clayey sand, plain	
<i>Pityrodia canaliculata</i>	1	*		Anketell to Sandstone, Black Range Stn	Red sand	Jun-Sep

Species / Taxon	Cons Code	DEC Record	WB Record	Distribution	Soil and Landform	Flowering Period
<i>Prostanthera ferricola</i>	3	*		Wiluna, Meekatharra, Mooloogool, Doolgunna	Shallow red-brown skeletal sandy loam on banded ironstone, laterite, basalt or quartz. Gently inclined mid to upper slopes of hills, rocky crests, outcrops	Jul-Sep
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	1	*	*	Yeelirrie Stn	Fine silty soils, large sink holes and depressions	Sporadically following rainfall
<i>Sauropus ramosissimus</i>	3	*	*	Leinster, Mt Keith, Laverton, Carnegie Stn	Skeletal red loam, lateritic or granite breakaway, ironstone, outcropping	
<i>Sida</i> sp. Wiluna (A. Markey & S. Dillon 4126)	3	*		Wiluna, Doolgunna Stn, Lake Way Stn, Ned's Creek Stn	Sandy loam, quartz and ironstone gravels	Apr, Aug
<i>Stackhousia clementi</i>	3	*		Warburton, Wiluna, Karratha, Little Sandy Desert, NT, SA, Gnaraloo Stn, Burup Peninsula	Skeletal soils. Sandstone hills	Aug
<i>Stenanthemum mediale</i>	1	*		Yeelirrie Station, Black Hill Stn, Montague Range	Red clayey sand	Apr-Aug
<i>Tecticornia</i> sp. Lake Way (P. Armstrong 05/961)	1	*		Lake Way, Wiluna	Red clayey sand. Flat floodways, lake beds, saline alluvial plains, drainage sumps	
<i>Thryptomene</i> sp. Leinster (B.J. Lepschi & L.A. Craven 4362)	1	*	*	Leinster, Wanjarri Nature Reserve, Mount Keith Stn, Yakabindie Stn	Shallow red sandy loam. Low granite breakaway, sandstone outcrop	Oct
<i>Tribulus adelacanthus</i>	3	*		Wiluna, Robinson Range, Mt Magnet, Mt Keith Stn	Red brown shallow sandy clay loam soils	Aug
<i>Verticordia jamiesonii</i>	3	*		Breakaways near Leinster, Yakabindie Stn	Lateritic breakaways	Sep-Oct
<i>Xanthoparmelia nashii</i>	3	*		King Rocks, Lorna Glen Stn, Karolin Rock, Eurady Stn, Hammersley Range NP, Wiluna	Brown grey soils. Plains, outcrops, floodplains	

Figure 1. Priority Ecological Communities (PECs) recorded in the vicinity of the Yeelirrie local study area. Requested from the Department of Environment and Conservation 15/02/2011



**Proposed Yeelirrie Development
 Threatened and Priority Ecological
 Community Buffers**
 Author: C. Ringrose Date: February 2011



- LEGEND**
- Priority 1 Ecological Community Buffers
 - Study Area 1
 - Study Area 2
 - Study Area 3
 - Proposed Infrastructure

**Appendix 4. Chronological list of field surveys undertaken
by Western Botanical**

Table 1. Field surveys undertaken in study area 1

Field Trip	Dates	Survey
2008		
1	December 9-11	Flora and vegetation assessment for resource confirmation drilling phase 1A
2009		
2	March 14-16	Flora and vegetation assessment for resource confirmation drilling phase 1B
3	March 30 - April 3	Vegetation quadrat establishment
4	April 20 - May 1	Mapping the vegetation communities; mapping the distribution and abundance of significant plant species within project area; vegetation quadrat establishment
5	May 10-22	Mapping the vegetation communities; significant flora clearance for resource confirmation drilling
6	June 3-12	Mapping the vegetation communities; vegetation clearance of proposed infrastructure area (NVCP); significant flora clearance for resource confirmation drilling
7	June 23 - July 3	Mapping the vegetation communities; vegetation clearance on infrastructure area (NVCP); significant flora clearance for resource confirmation drilling; significant flora survey outside project area
8	July 28 - August 7	Vegetation quadrat establishment; significant flora clearance for resource confirmation drilling
9	September 15- 18	Significant flora clearance for resource confirmation drilling
10	September 24-25	Significant flora clearance for resource confirmation drilling
11	October 5-9	Significant flora clearance for Hydrostratigraphic drilling and resource confirmation drilling
12	October 13-16	Significant flora clearance for Hydrostratigraphic drilling and resource confirmation drilling
13	October 22-23	Significant flora clearance for Hydrostratigraphic drilling and resource confirmation drilling
2010		
14	January 12-21	Vegetation quadrats; significant flora surveys of proposed quarry and accommodation village; leaf sampling for radionuclides
15	March 8-18	Ground-water dependent ecosystem investigation; vegetation mapping validation; significant flora survey of 2 nd proposed accommodation village
16	April 15-16	<i>Atriplex</i> sp. Yeelirrie Station investigation with Kelly Shepherd trip
17	April 19-29	Significant Flora and Vegetation survey of Definition Drilling Areas; <i>Atriplex</i> sp. Yeelirrie Station population counts
18	May 6-7	Recollections of specimens requiring further material

Field Trip	Dates	Survey
		for identification
19	May 19- 21	Recollections of specimens requiring further material for identification
20	May 31-June 1	Significant flora clearances for definition drilling program; recollections of specimens requiring further material for identification
21	July 14-15	Species collections
22	August 3-7	Quadrat assessment, spring surveys
23	August 16-26	Quadrat assessment, spring surveys
24	September 6-16	Quadrat assessment, spring surveys, foliage sampling
25	Sept. 28 – October 7	Quadrat assessment, spring surveys
26	December 13-15	Sampling of <i>Atriplex</i> sp. Yeelirrie Station

Table 2. Study area 2 and study area 3 field surveys

Field Trip	Dates	Survey
2009		
1	December 3–9	Lake Miranda and Yeelirrie Palaeochannel (During regional surveys)
2010		
2	March 12–17	Vegetation mapping of study area 3
3	May 3-7	Vegetation mapping of study area 3
4	May 17-21	Second Helicopter survey for <i>Atriplex</i> sp. Yeelirrie Station; <i>Atriplex</i> sp. Yeelirrie Station population estimates of study area 3
5	November 3-12	Vegetation mapping of study area 2
6	November 17-24	Vegetation mapping of study area 2, sampling of <i>Atriplex</i> sp. Yeelirrie Station from study area 3
7	December 15-16	Sampling of <i>Atriplex</i> sp. Yeelirrie Station from study area 3

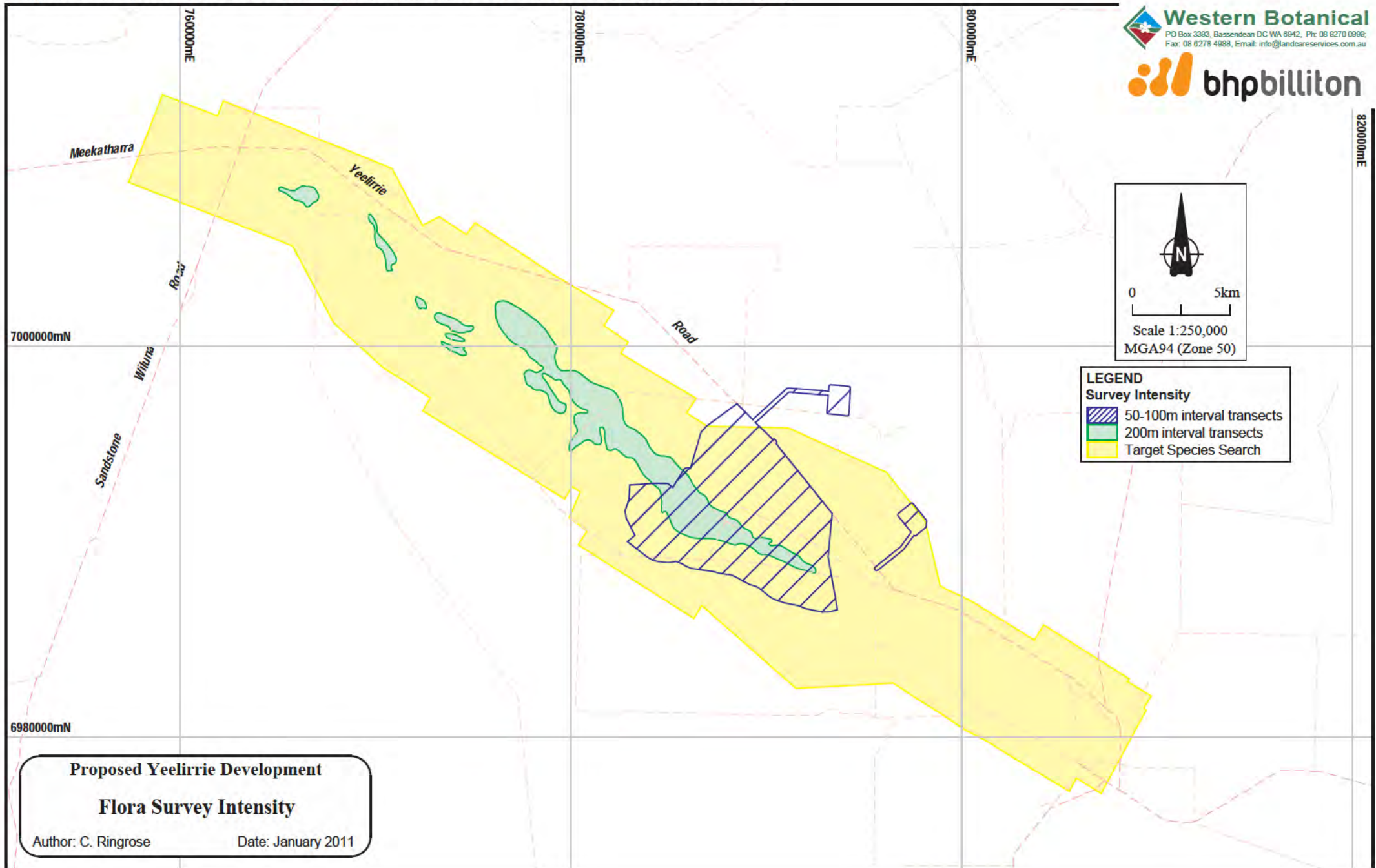
Table 3. Regional field surveys (study areas 4 to 16)

Field Trip	Dates	Survey
2009		
1	November 17-22	First Helicopter survey, six palaeochannels visited
2	December 3-9	Lake Miranda and Yeelirrie Palaeochannel
2010		
3	January 25-29	Lake Way
4	February 10-14, 16	Lake Mason
5	February 14-16	Lake Noondie
6	May 17-21	Second Helicopter survey for <i>Atriplex</i> sp. Yeelirrie Station, eight palaeochannels visited

Table 4. Western Botanical field team experience

Level of experience	Western Botanical Staff
Greater than 20 years experience	Geoff Cockerton
Greater than 5 years experience	Rebecca Graham
1 to 4 years experience	Amy Douglas, Daniel Brassington, Cheyne Jowett, Lewis Trotter, Bridget Watkins, Cassie Adam, Susan Regan
Graduate Botanist	Jessie-Leigh Brown, Simon Colwill, Sophie Fox, Elly Beatty, Jeremy Macknay, Dr. Carolyn Ringrose
Environmental Technician	Renee D'Herville, Sam Atkinson, John Rouw and Philip Trevenen

Figure 1. The intensity of survey undertaken during flora of conservation significance searches in study area 1



Appendix 5. Taxonomists consulted

The following specialist taxonomists assisted identification of taxa:

- *Acacia* Bruce Maslin, DEC, WA Herbarium
- *Atriplex, Rhagodia* Paul Wilson, DEC, WA Herbarium
- *Eremophila* Andrew Brown, DEC, Species & Communities Branch, Kensington
- *Eucalyptus* Malcolm French, DEC, WA Herbarium
- Myrtaceae (various genera) Mike Hislop, DEC, WA Herbarium
- *Atriplex, Rhagodia* Dr Kelly Shepherd, DEC, WA Herbarium
- *Rhagodia*, Poaceae Johan Hurter, DEC, WA Herbarium
- Poaceae Terry Macfarlane, DEC, Manjimup Branch

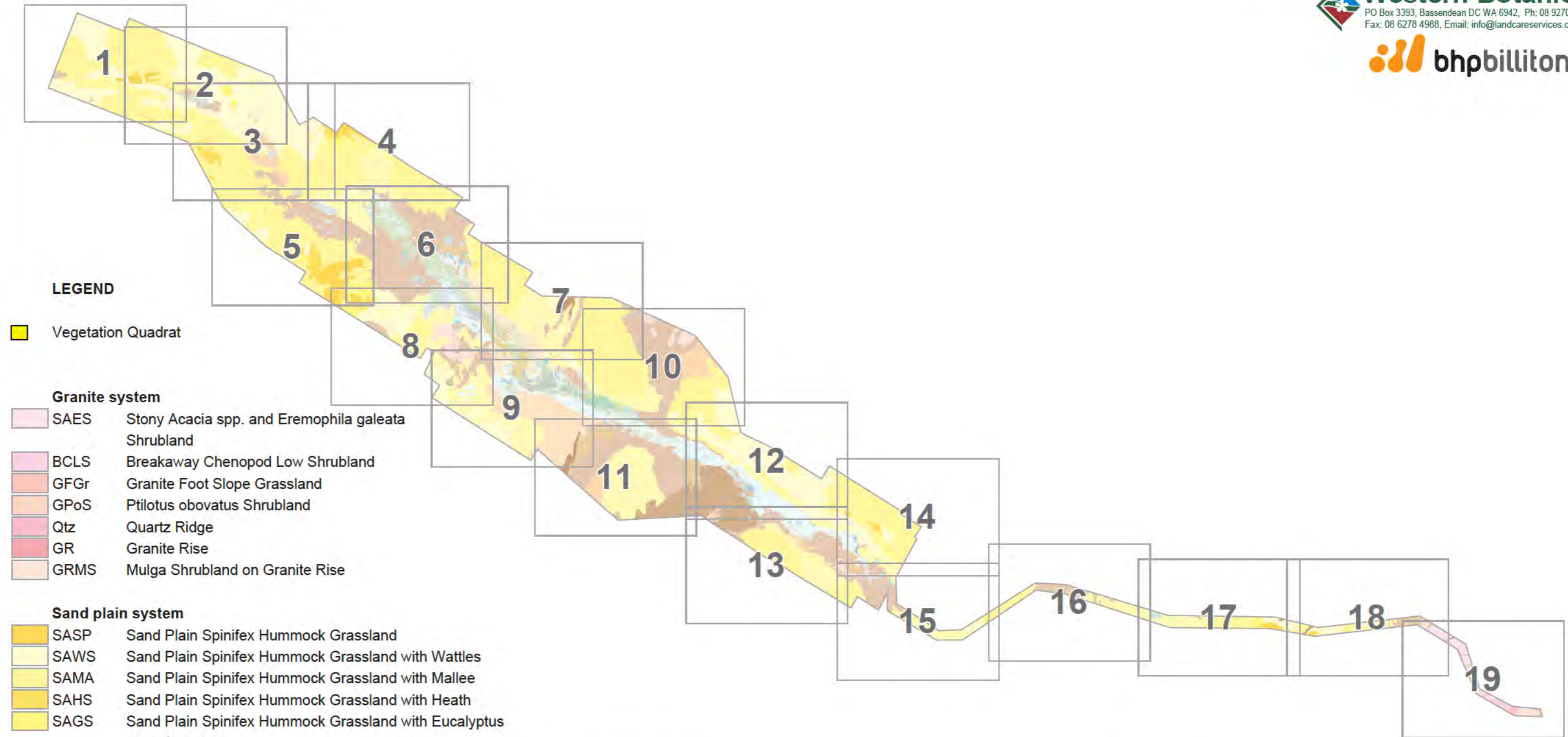
Appendix 6. Summary of vegetation condition scale

Vegetation condition scale developed by Keighery (1994) as summarized in Bush Forever (Government of Western Australia 2000)

Code	Description
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance.
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good (3)	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good (4)	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded (5)	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing
Completely Degraded (6)	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as “parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix 7. Vegetation communities mapped within the local study area

Author: C. Ringrose ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Jan 2011 ~ A3 ~ Rev. B ~ CAD Ref g1697_Veg_F01_00.dgn



LEGEND

Vegetation Quadrat

Granite system

- SAES Stony Acacia spp. and Eremophila galeata Shrubland
- BCLS Breakaway Chenopod Low Shrubland
- GFGr Granite Foot Slope Grassland
- GPoS Ptilotus obovatus Shrubland
- Qtz Quartz Ridge
- GR Granite Rise
- GRMS Mulga Shrubland on Granite Rise

Sand plain system

- SASP Sand Plain Spinifex Hummock Grassland
- SAWS Sand Plain Spinifex Hummock Grassland with Wattles
- SAMA Sand Plain Spinifex Hummock Grassland with Mallee
- SAHS Sand Plain Spinifex Hummock Grassland with Heath
- SAGS Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa
- SAMU Sandplain Mulga Spinifex Hummock Grassland
- SDSH Sand Dune Shrubland

Hardpan and Drainage System

- DRMS Drainage Tract Mulga Shrubland
- DRES Drainage Line Eucalyptus camaldulensis Woodland
- GRMU Mulga Groves on Hardpan Plains
- HPMS Hardpan Plain Mulga Shrubland
- WABS Wanderrie Bank Grassy Shrubland

Mosaics

- CAbs & CCpW
- CAbs & CEgW
- CErG & CAbs & CEgW
- CErG & CLaS
- HPMS & SAMU
- HPMS & WABS
- HPMS & PLAPoS

Other

- Disturbed
- Bare

Playa System

- PLAPoS Acacia spp. and Ptilotus obovatus Shrubland
- PLAET Acacia spp. and Eremophila spp. Thicket
- PLAMi Acacia spp. and Melaleuca interioris Shrubland
- PLMf Muehlenbeckia florulenta Shrubs
- PLCsMp Cratystylis subspinescens and Maireana pyramidata Shrubland
- PLEmc Eremophila maculata ssp. brevifolia Shrubland
- PLEml Eremophila malacoides Shrubland
- PLEsp Eragrostis spp. Grassland on Playa
- PLCh Chenopods on Scalded Areas

Calcrete system

- CEgW Eucalyptus gypsophila Woodland on Calcrete
- CCpW Casuarina pauper Woodland on Calcrete
- CMxS Melaleuca xerophila Shrubland on Calcrete
- CAbs Acacia burkittii Shrubland on Calcrete
- CMiS Melaleuca interioris Shrubland on Calcrete
- CErG Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
- CApS Atriplex sp. Yeelirrie Station Shrubland on Calcrete
- CRsS Rhagodia sp. Yeelirrie Station Shrubland on Calcrete
- CMpS Maireana pyramidata Shrubland on Calcrete
- CLaS Lycium australe Shrubland on Calcrete
- CMGbS Mulga Grevillea berryana Shrubland on Calcrete

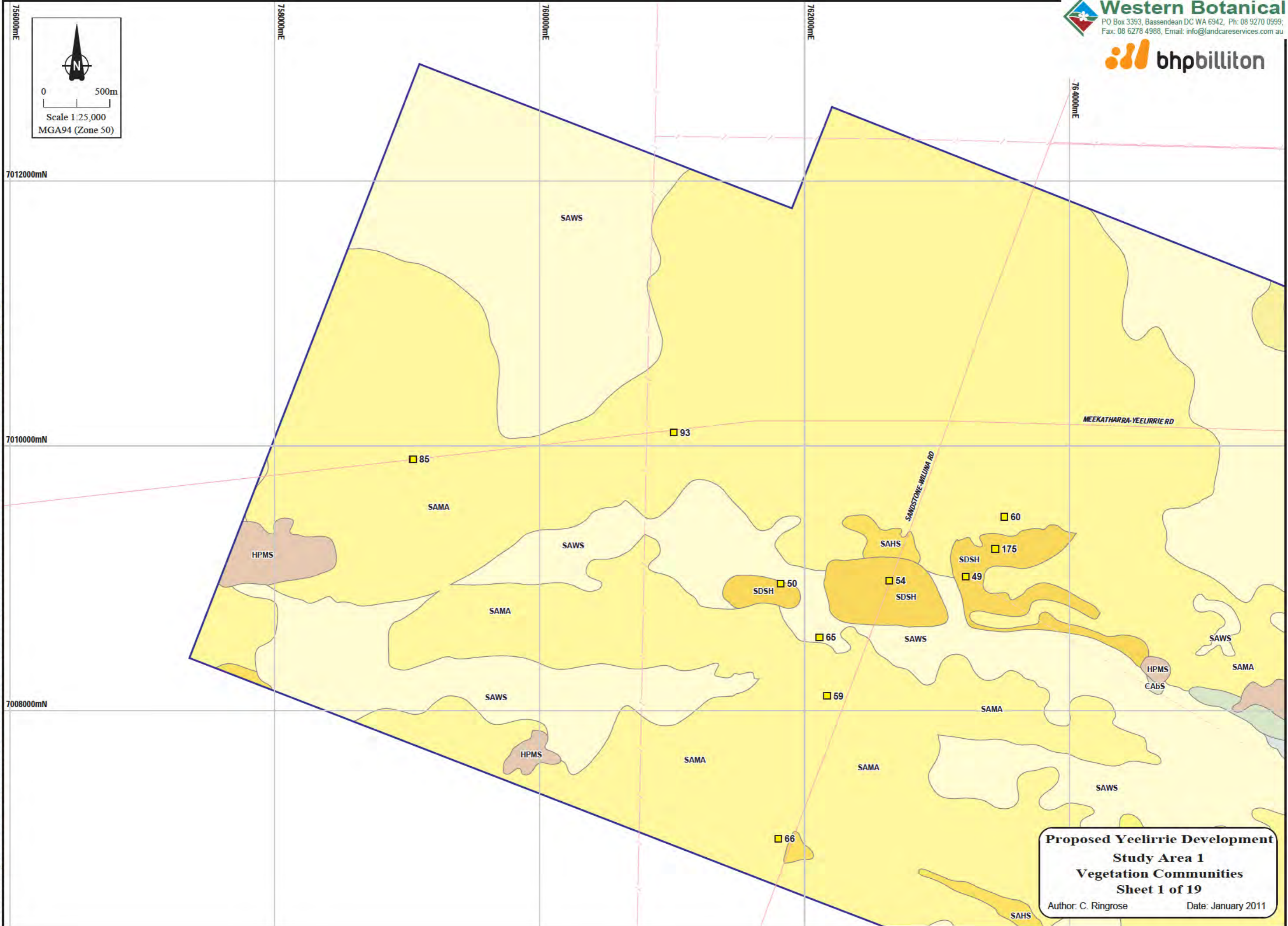
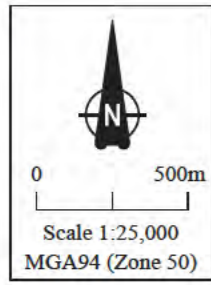
Proposed Yeelirrie Development

Study Area 1

Vegetation Communities

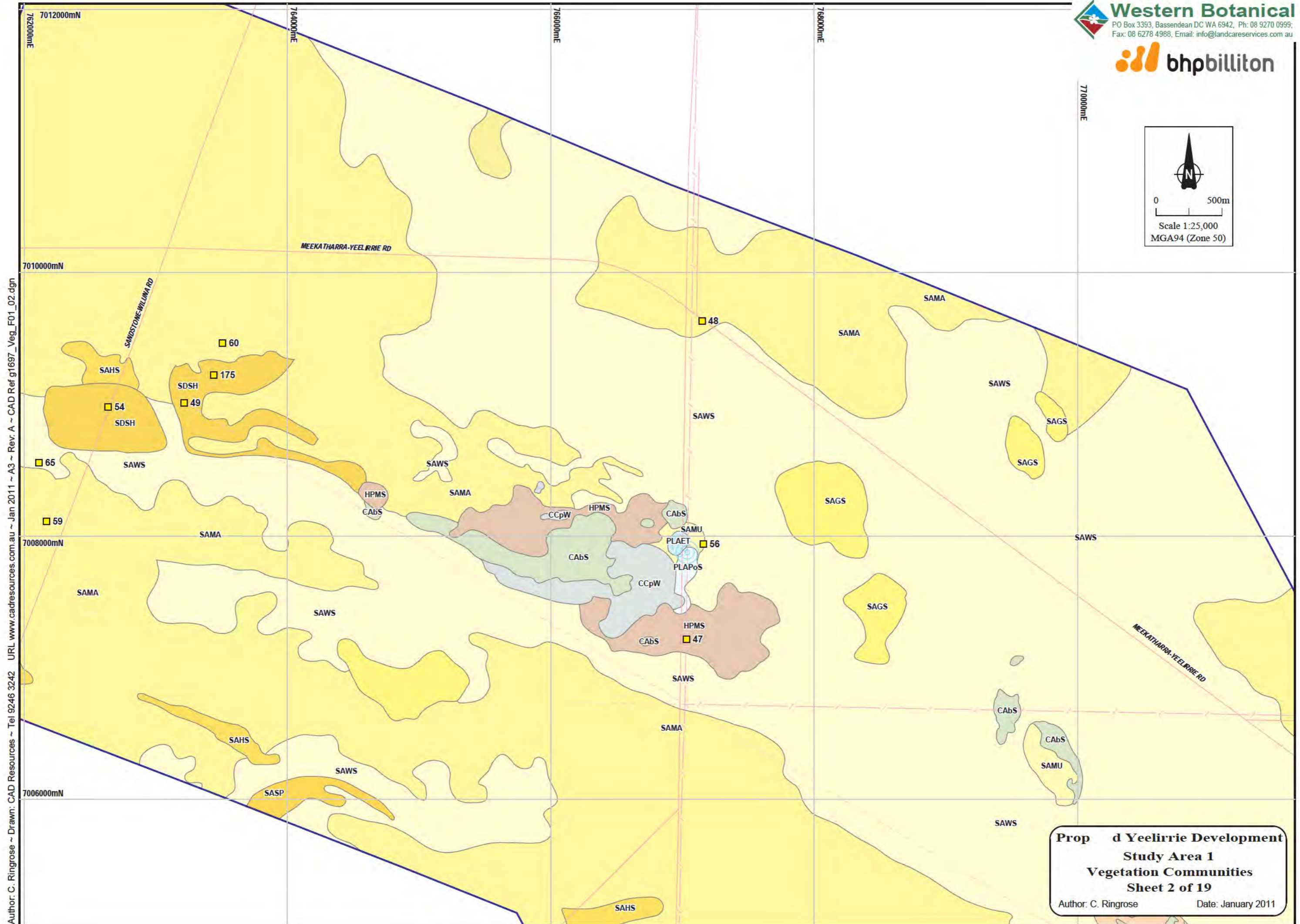
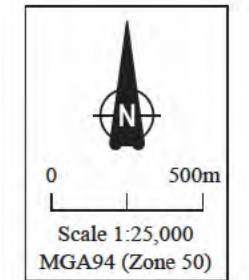
Author: C. Ringrose

Date: January 2011



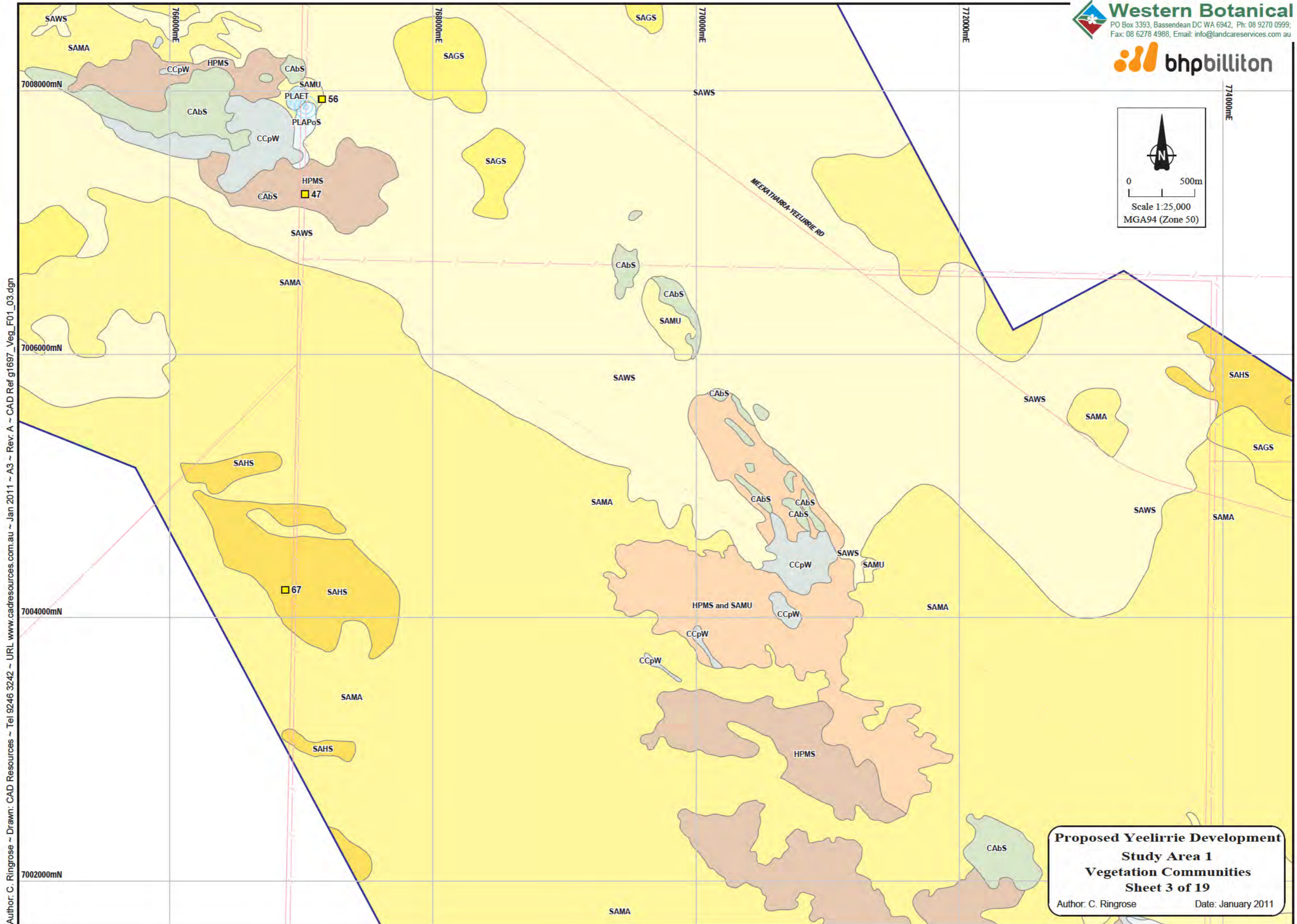
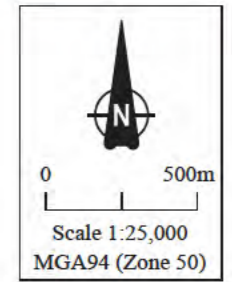
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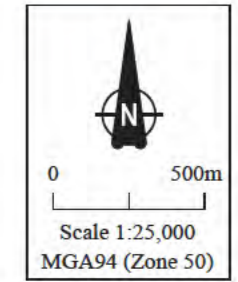
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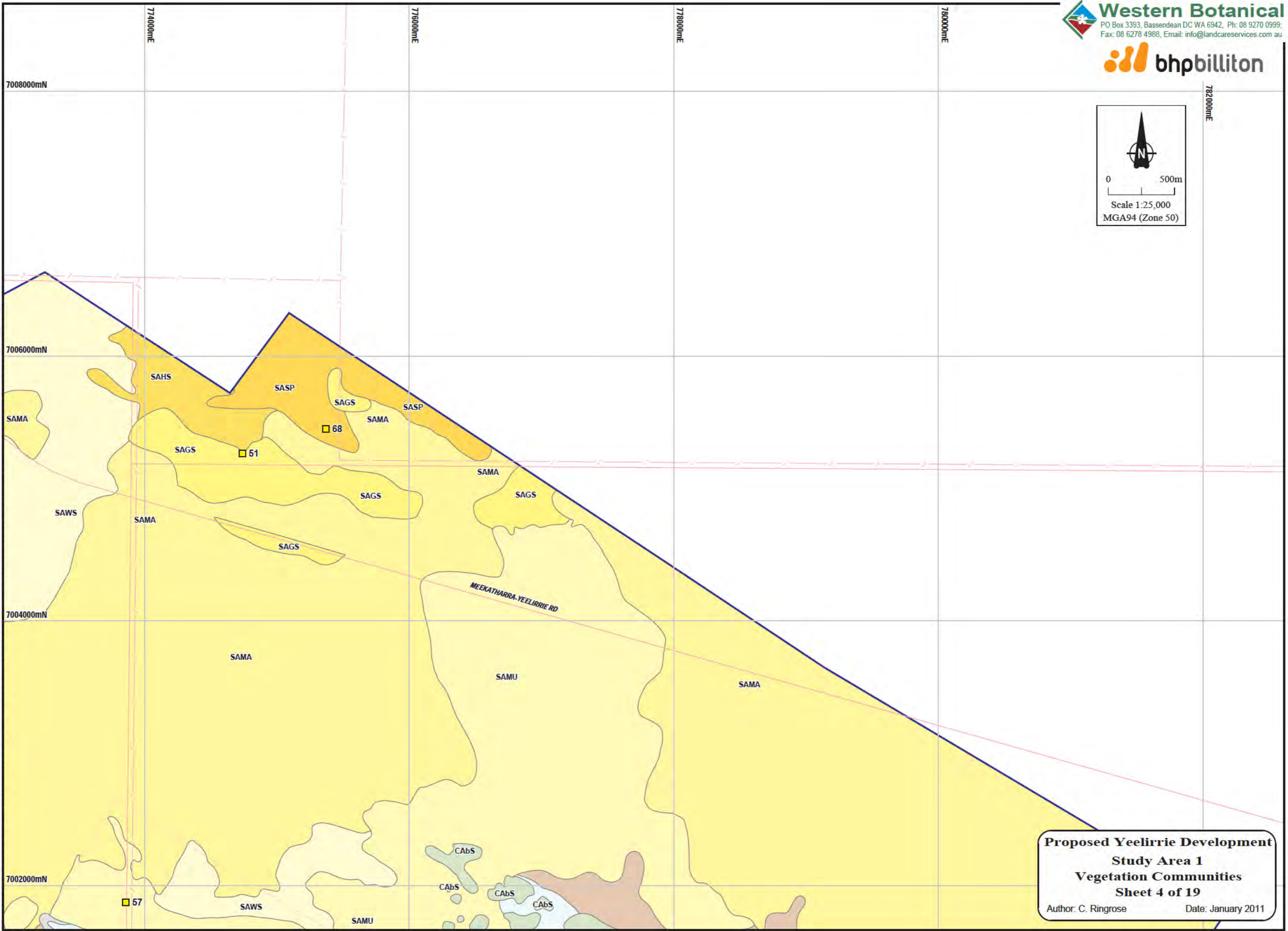


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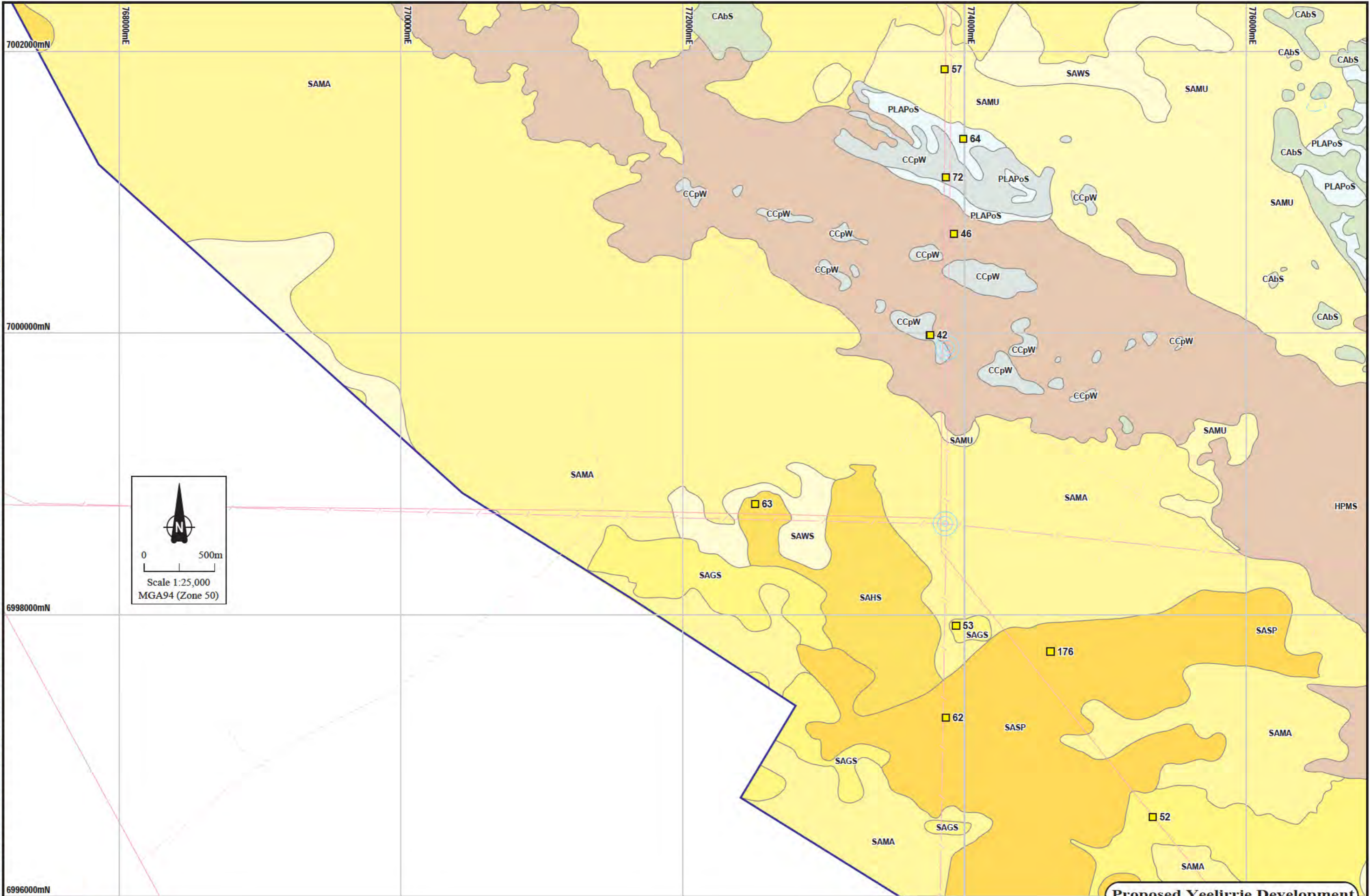


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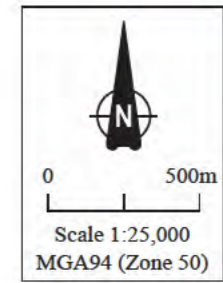


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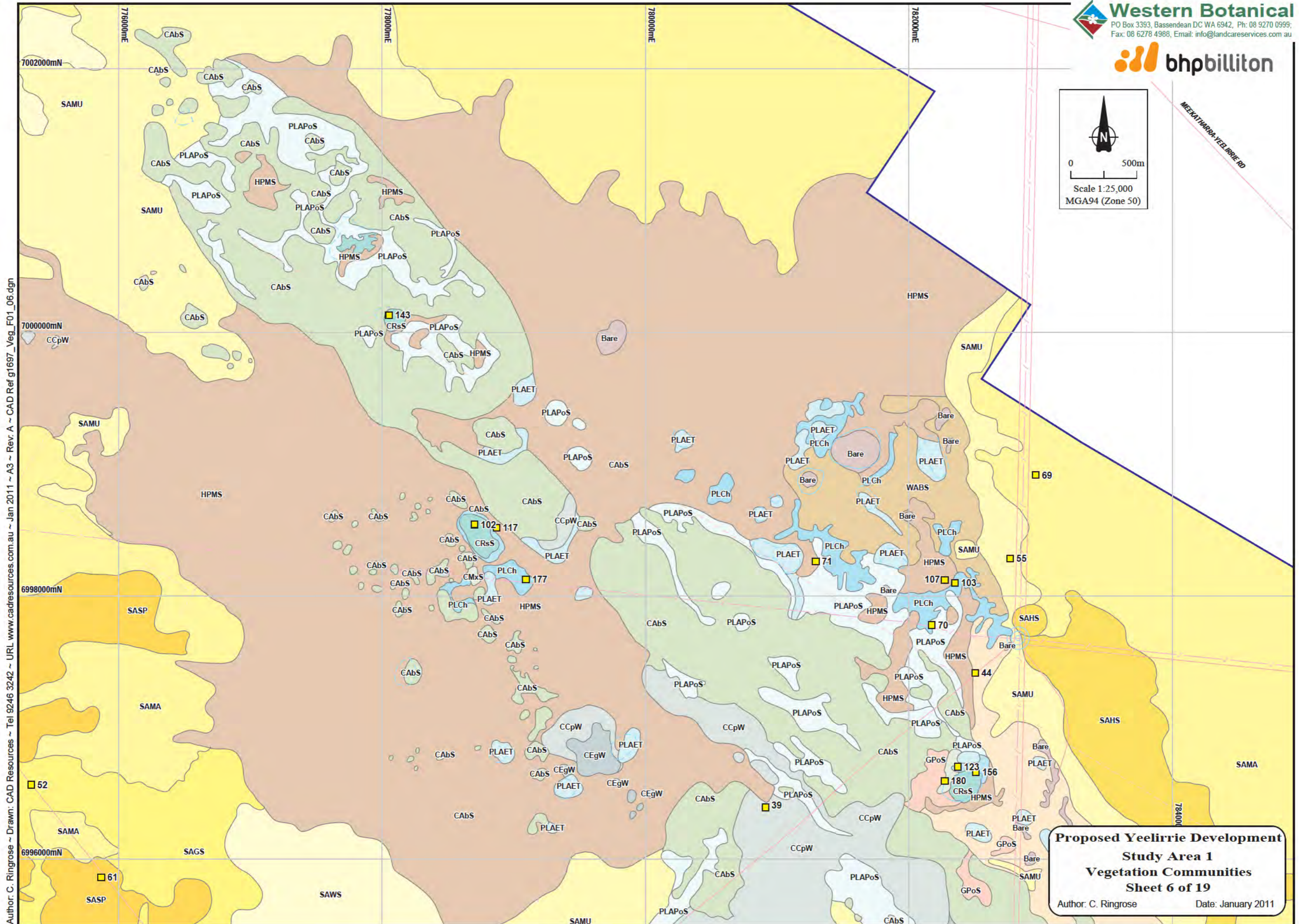
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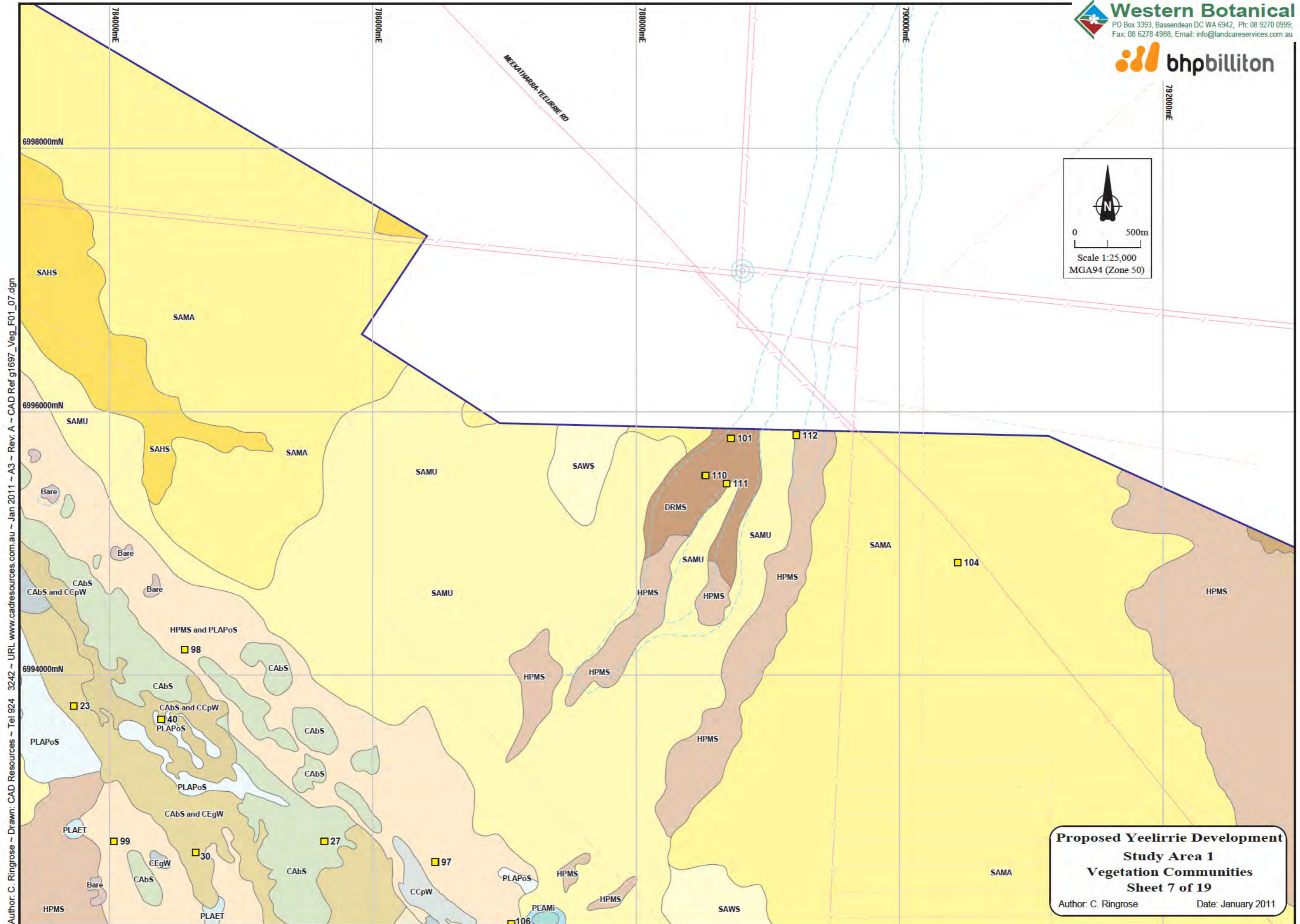
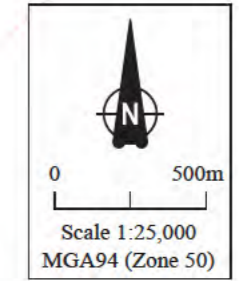


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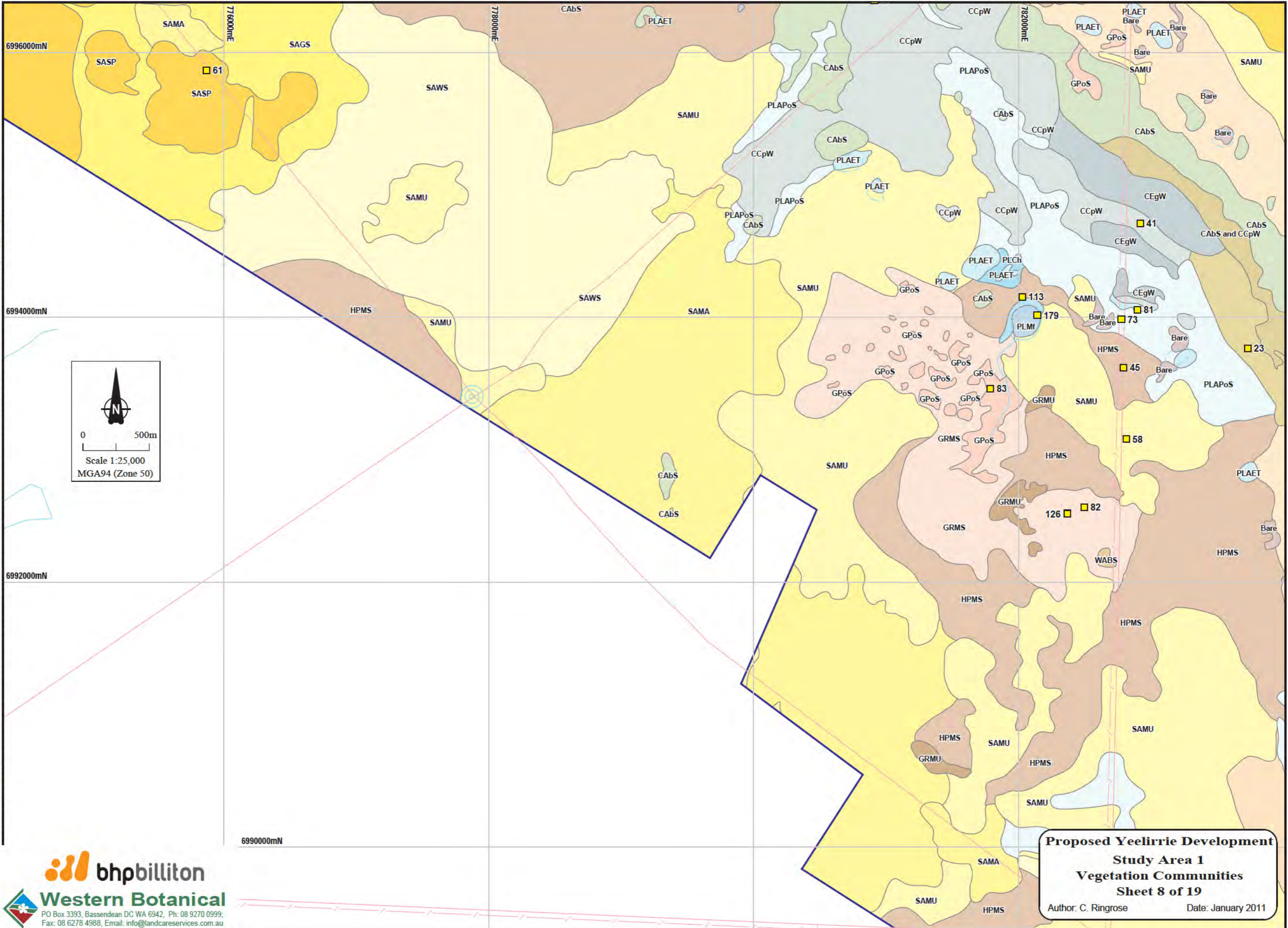
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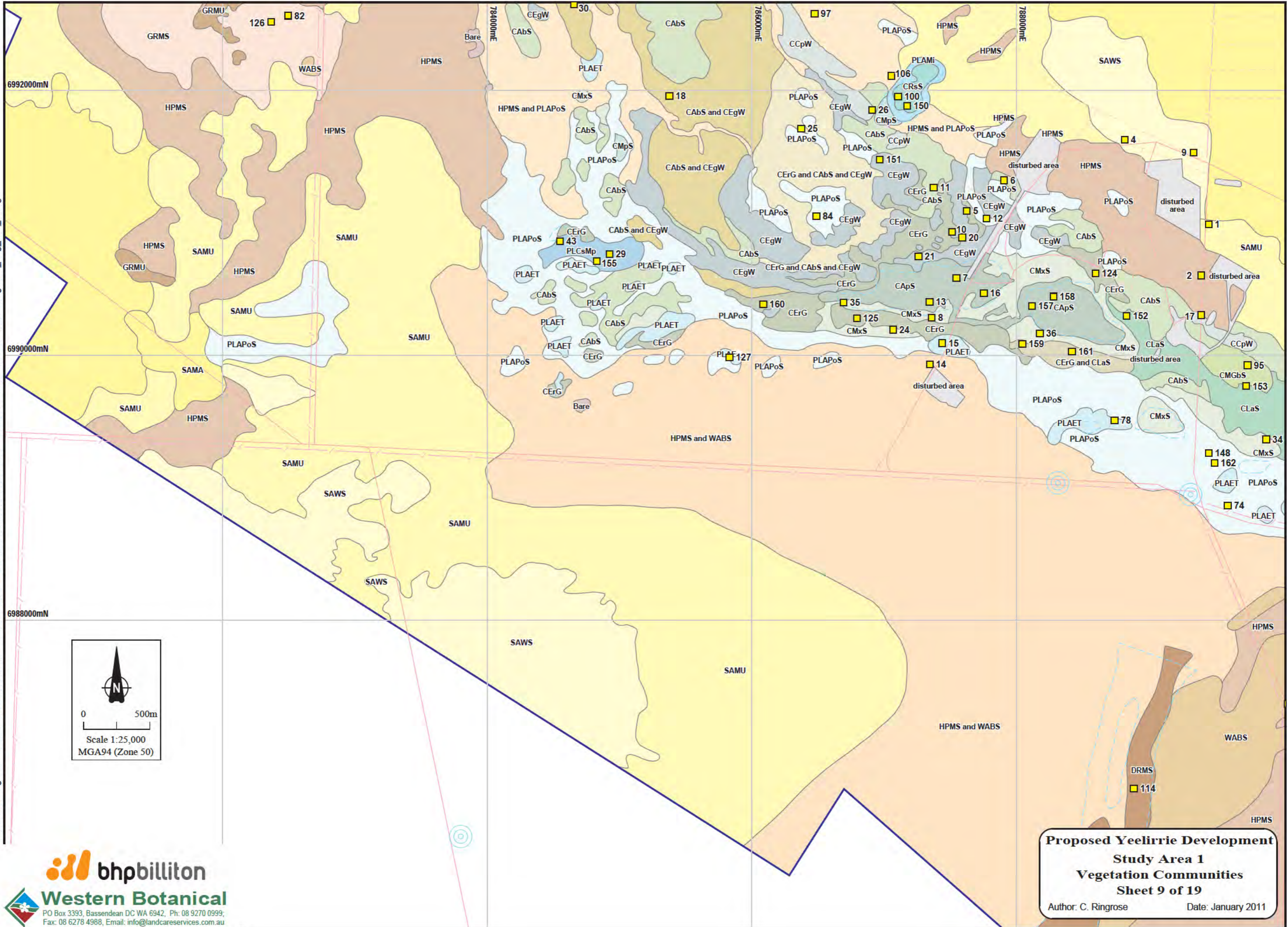
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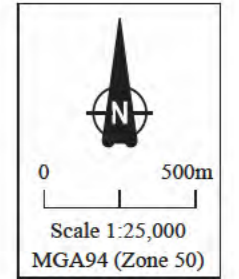
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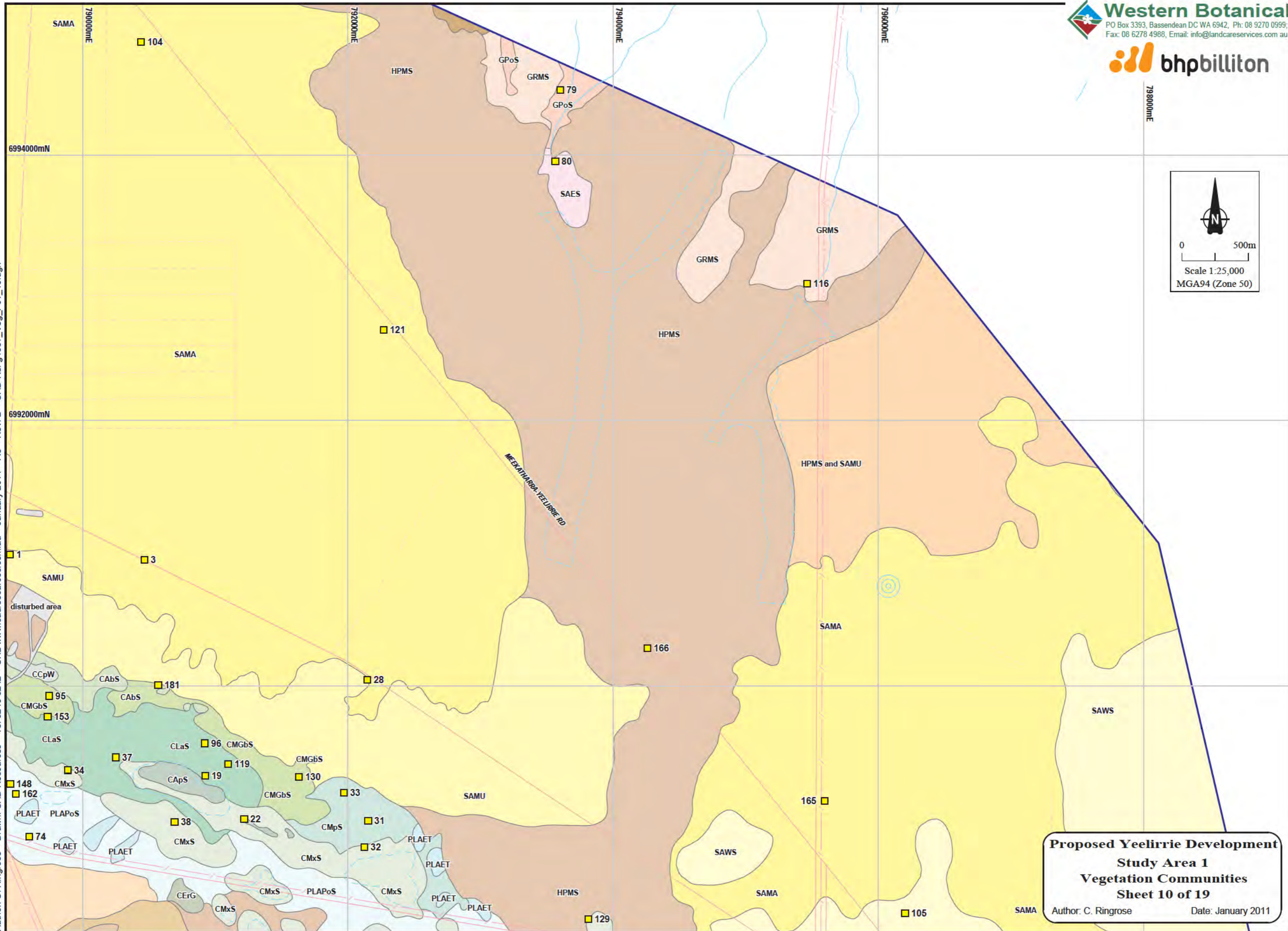
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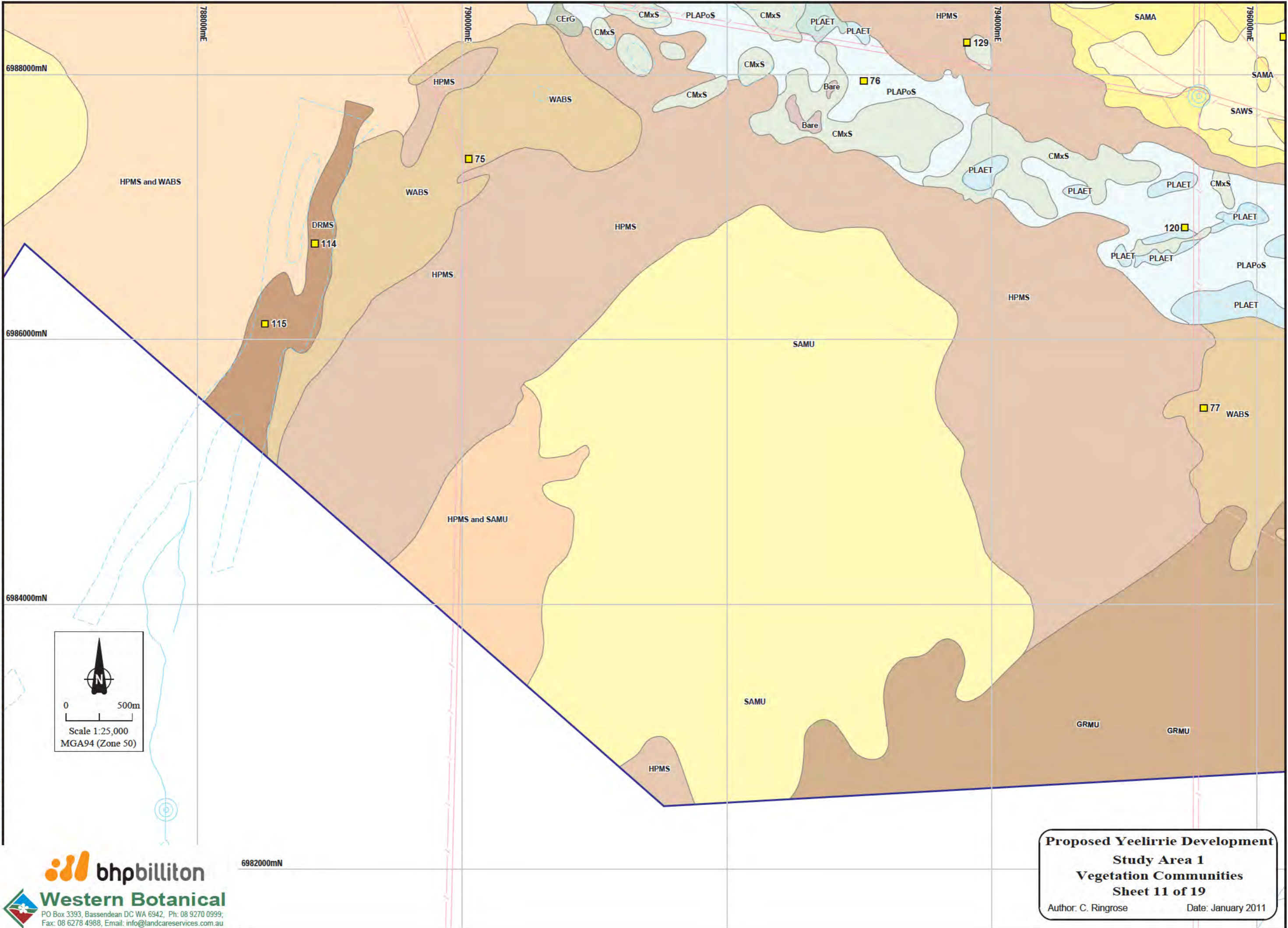


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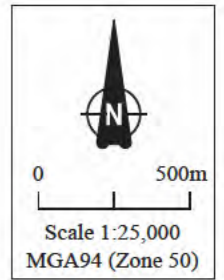


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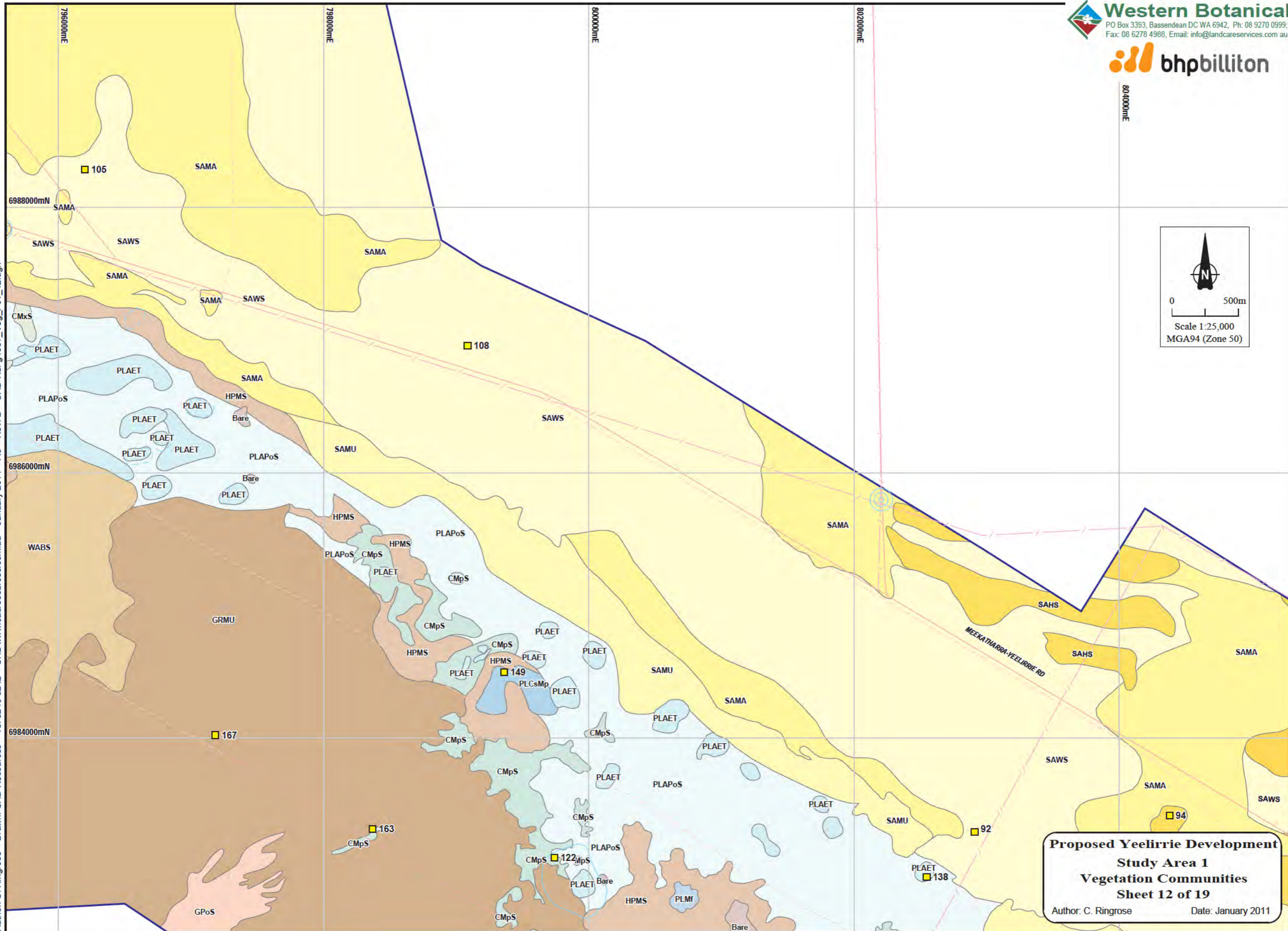
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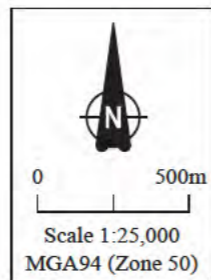
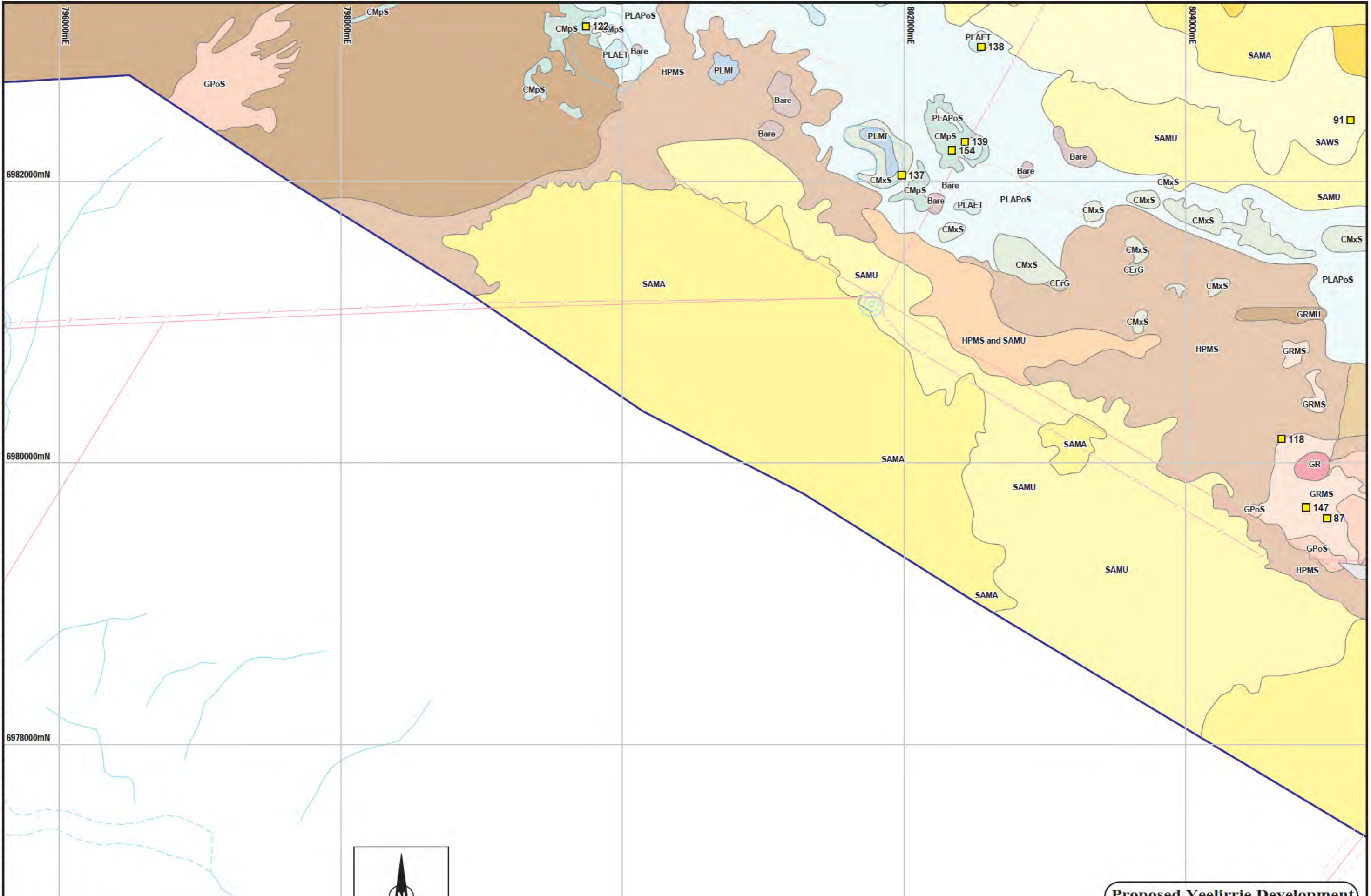


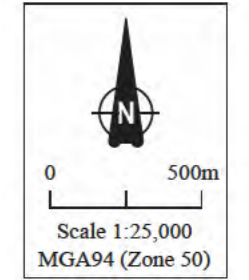
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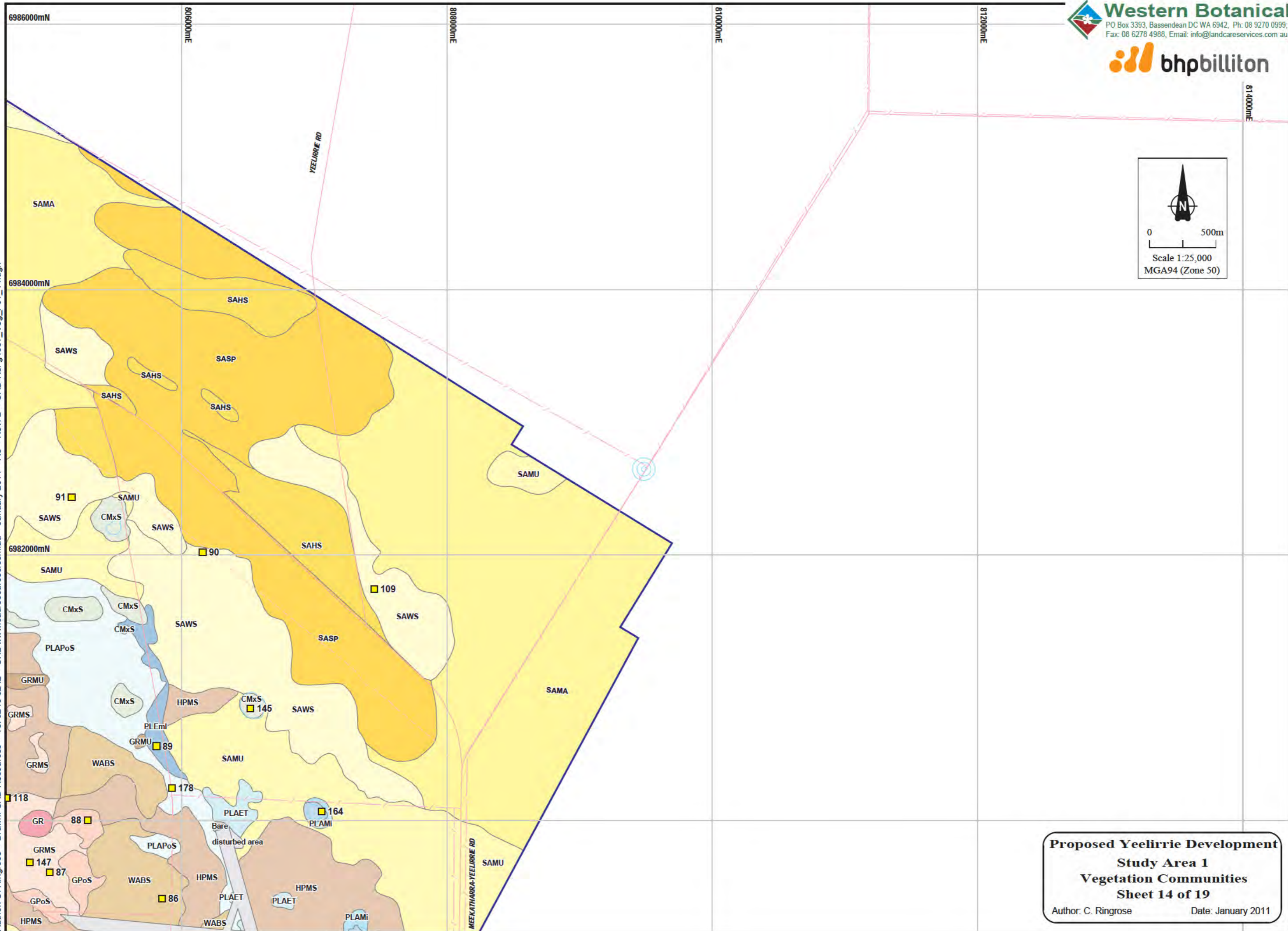
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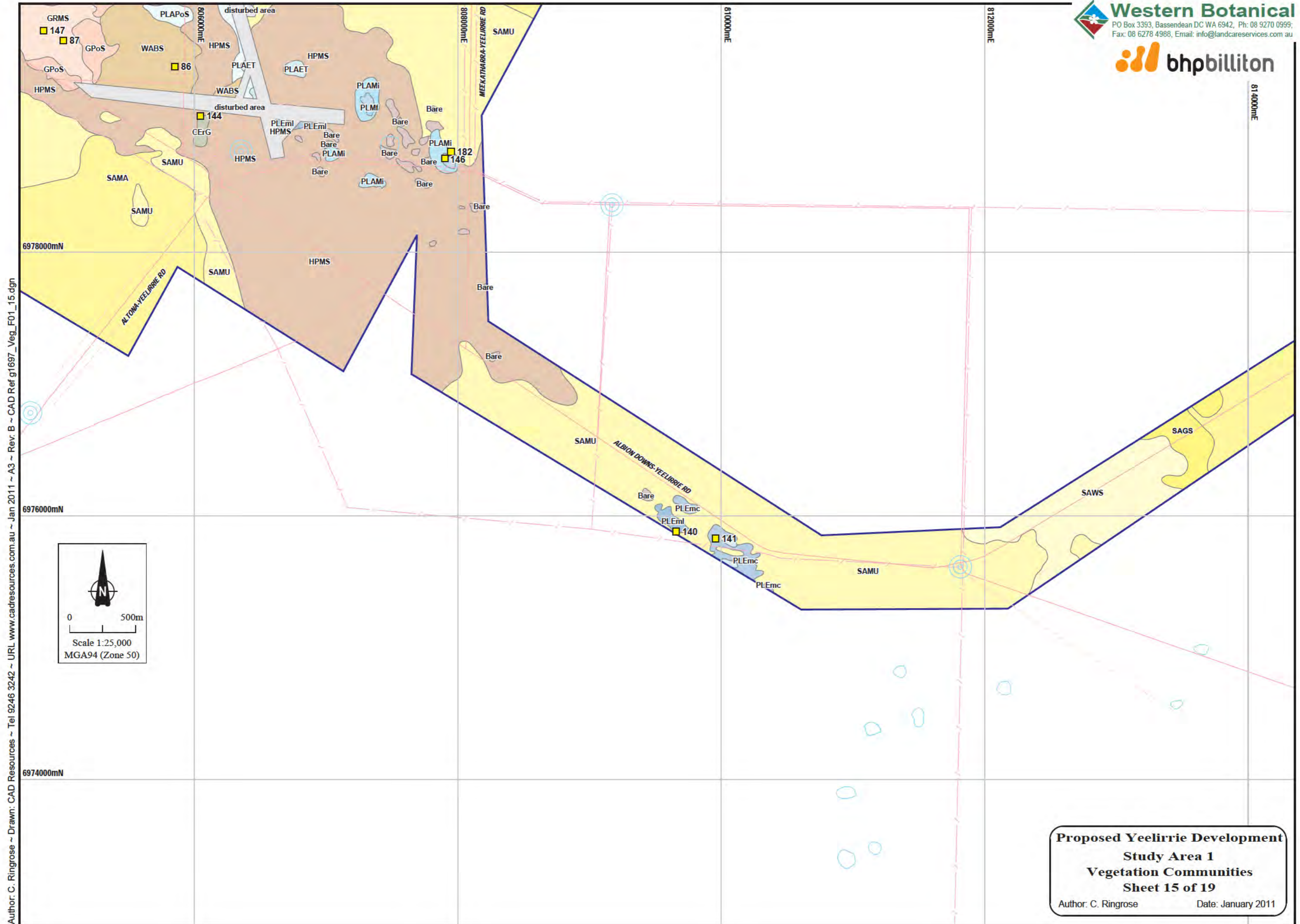




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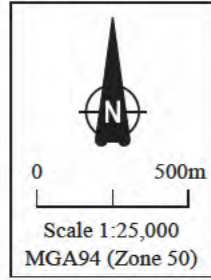
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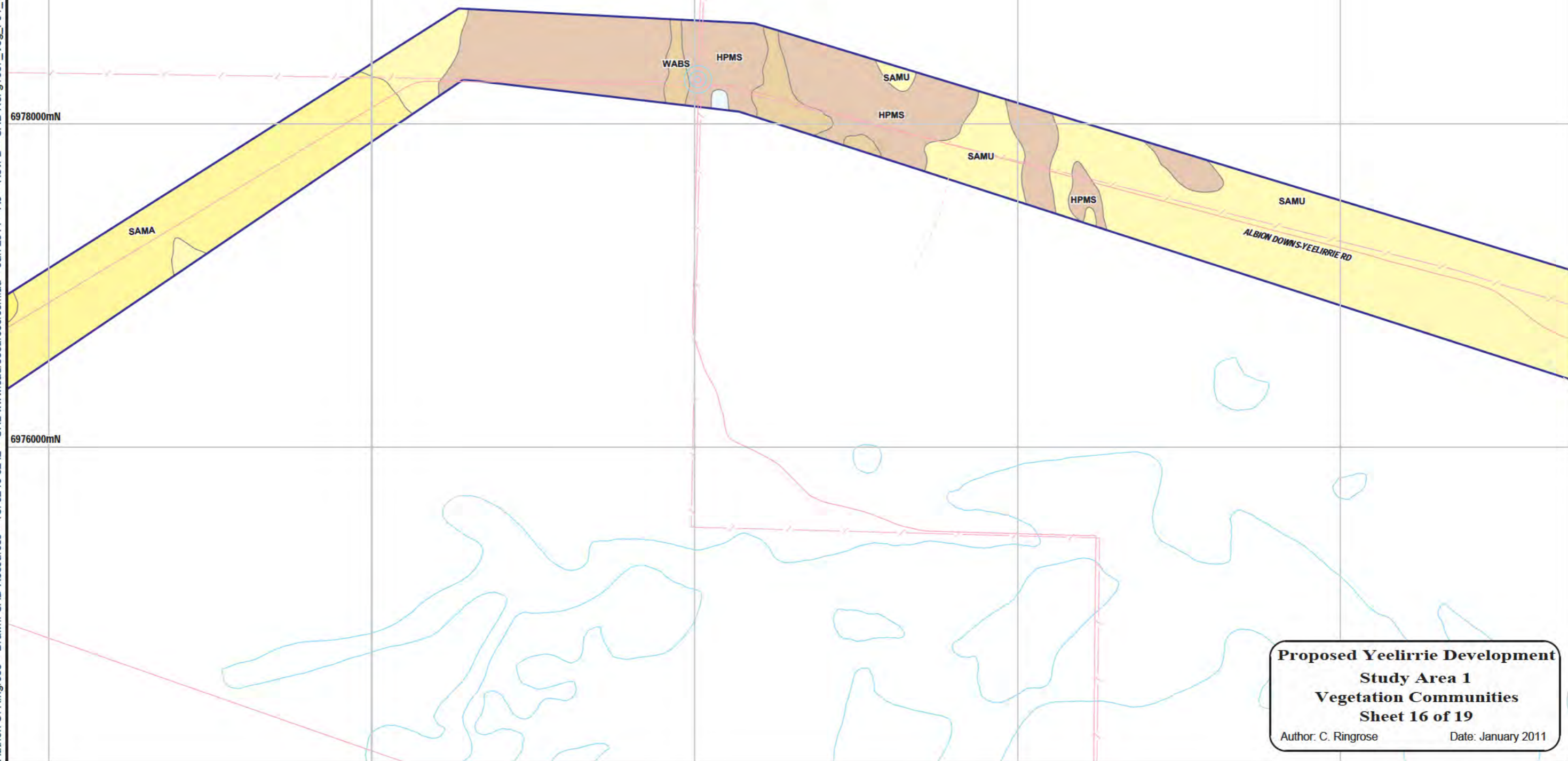
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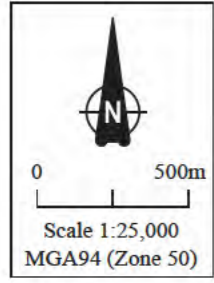
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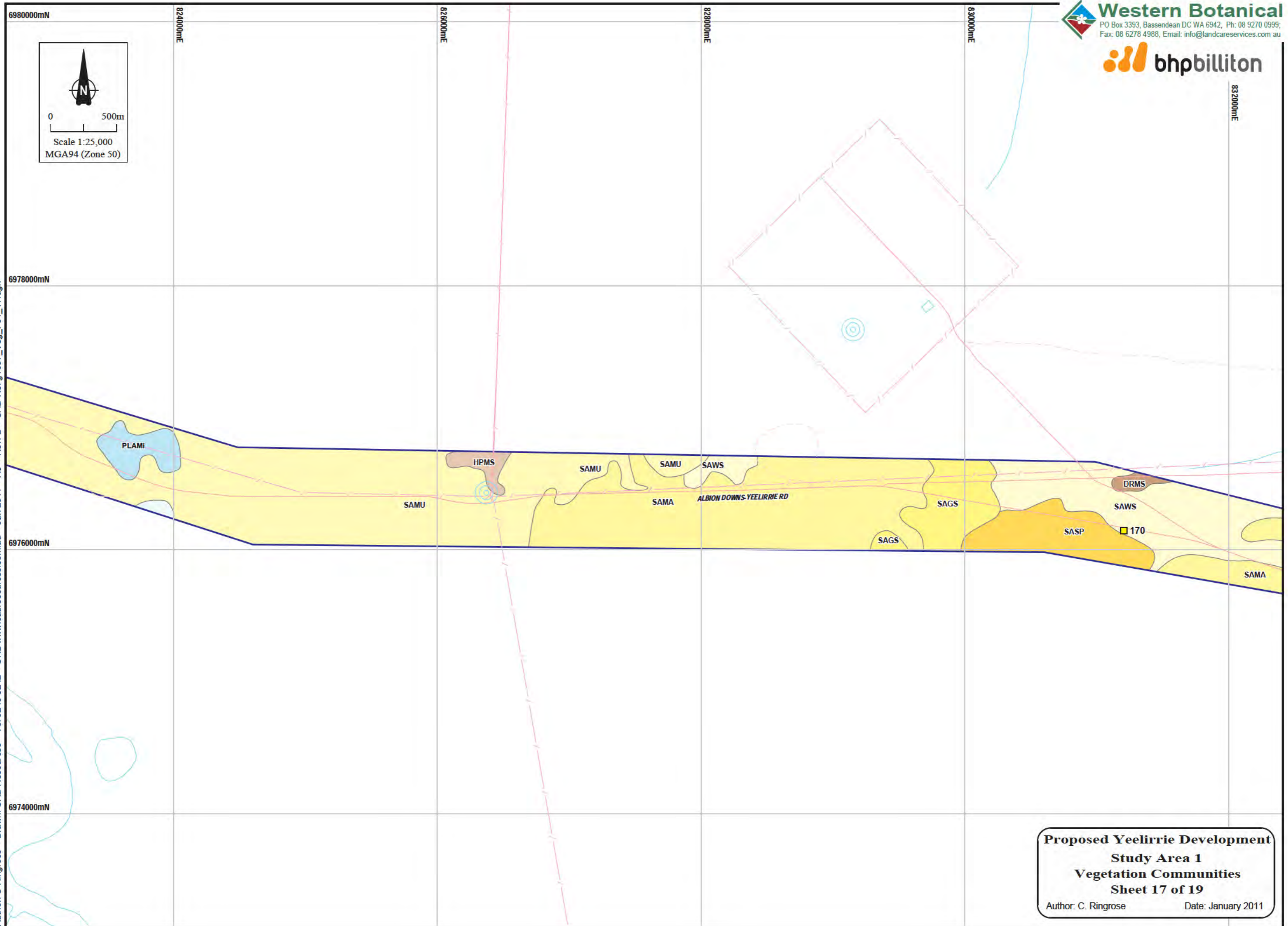
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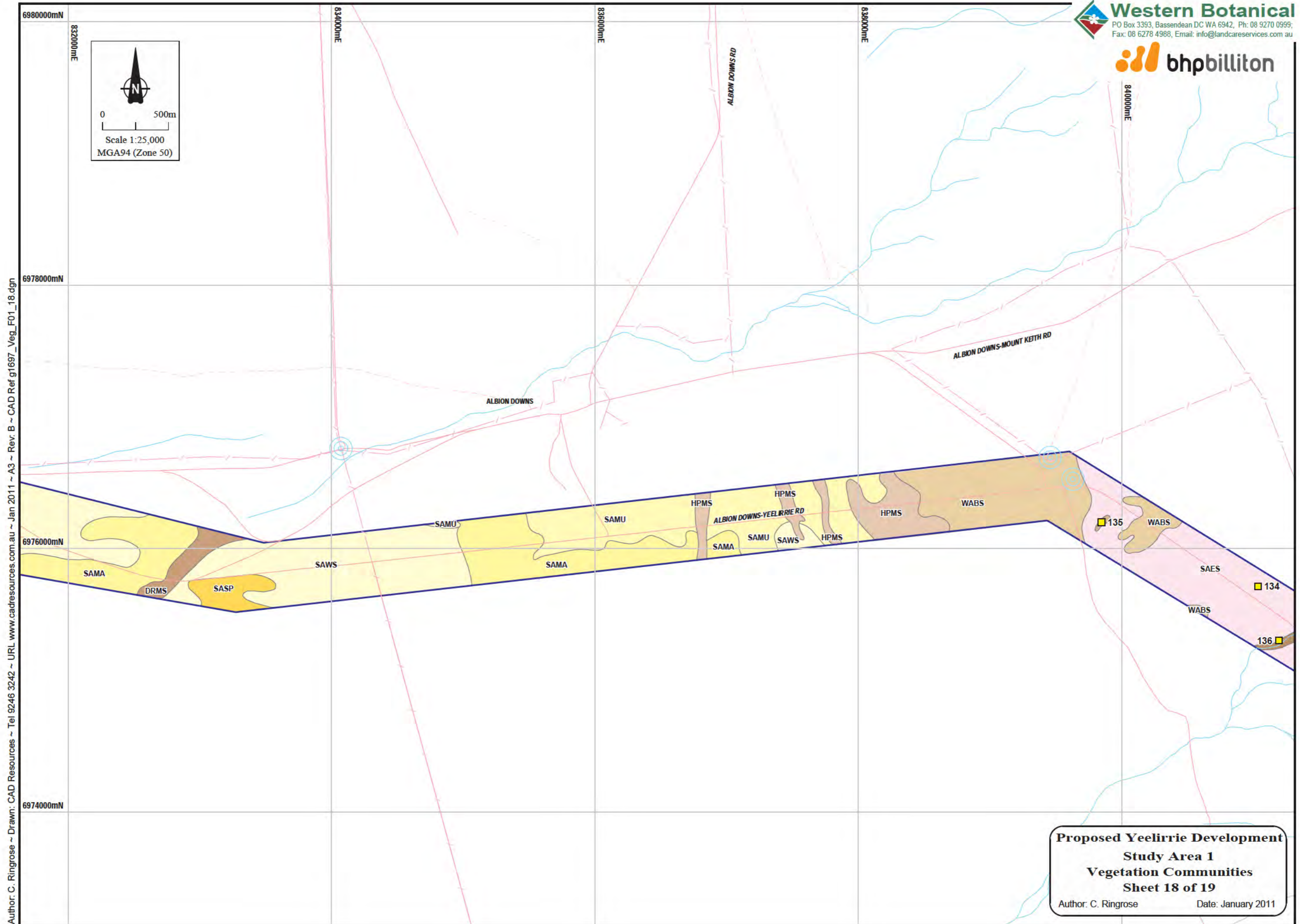
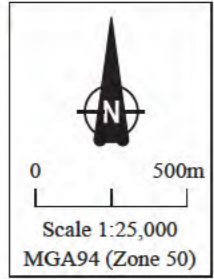
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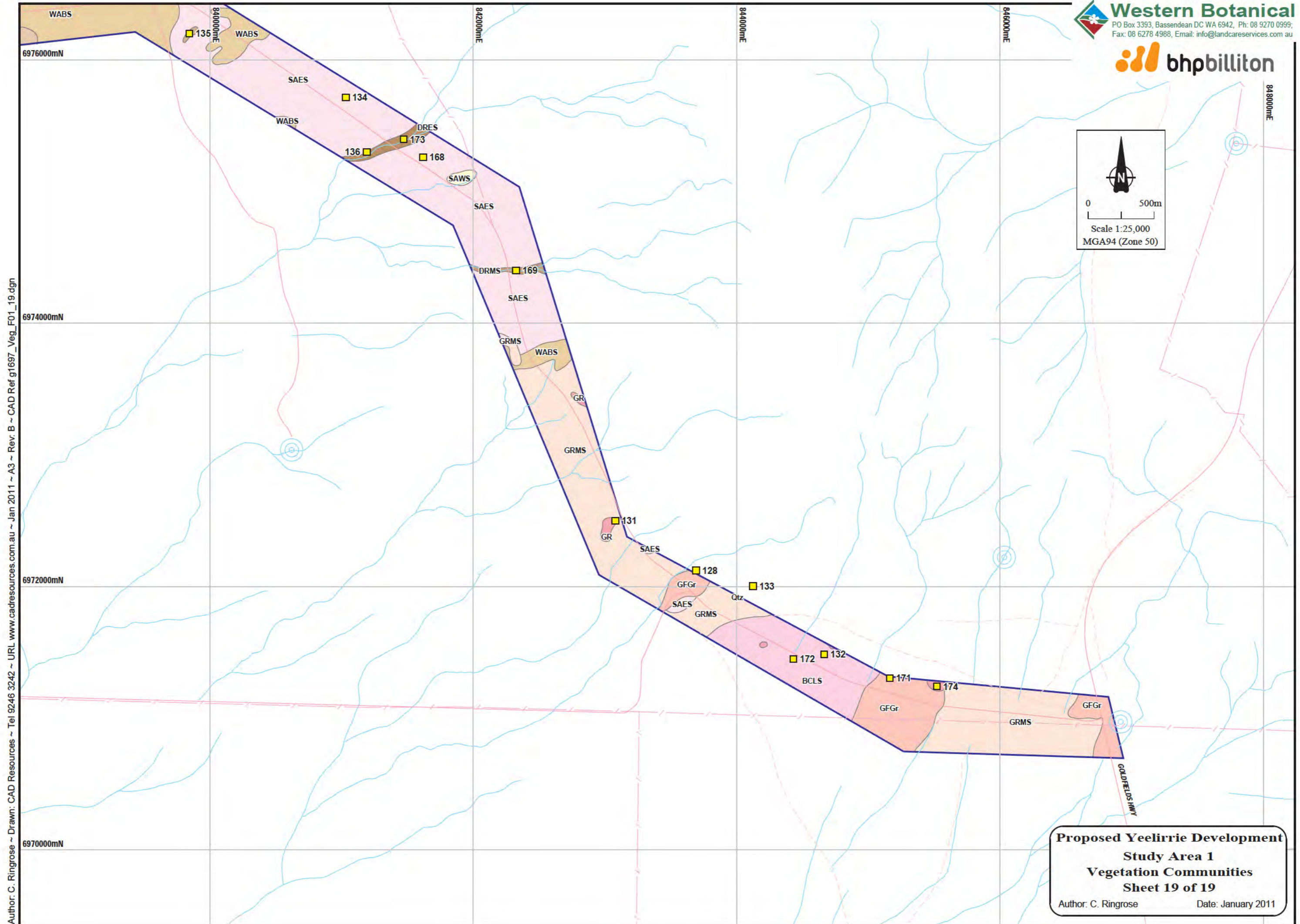


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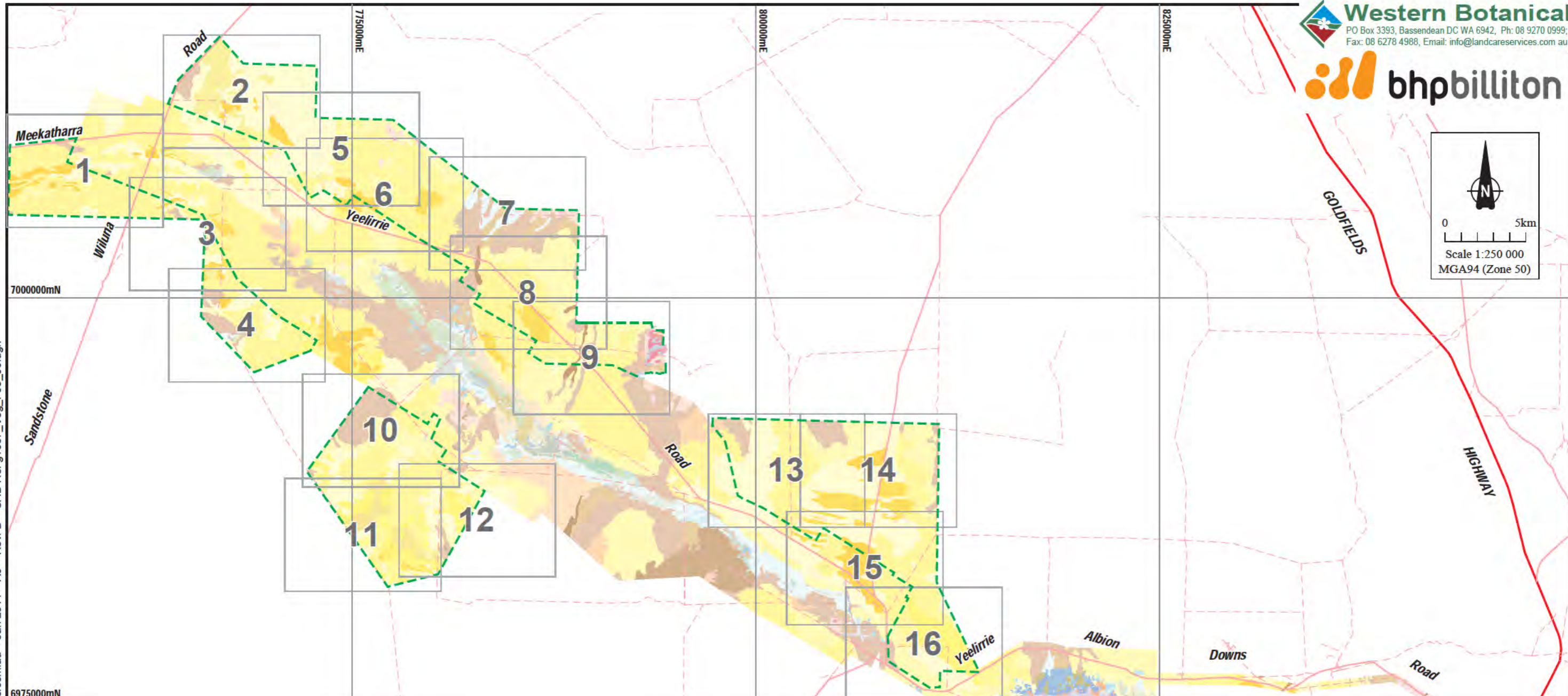
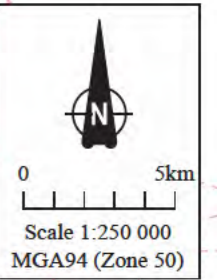
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LEGEND

Granite system

- SAES Stony Acacia spp. and Eremophila galeata Shrubland
- BCLS Breakaway Chenopod Low Shrubland
- GFGr Granite Foot Slope Grassland
- GPoS Ptilotus obovatus Shrubland
- Qtz Quartz Ridge
- GR Granite Rise
- GRMS Mulga Shrubland on Granite Rise
- QAECS Quartz Acacia spp., Eremophila spp. and Chenopod Shrubland
- BRX Weathered Granite Breakaway Complex
- GRMC Mulga Shrubland with Chenopods on Granite Rise
- QMPS Mulga Shrubland with Prostanthera campbellii on Quartz Ridge

Sand plain system

- SASP Sand Plain Spinifex Hummock Grassland
- SAWS Sand Plain Spinifex Hummock Grassland with Wattles
- SAMA Sand Plain Spinifex Hummock Grassland with Mallee
- SAHS Sand Plain Spinifex Hummock Grassland with Heath
- SAGS Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa
- SAMU Sandplain Mulga Spinifex Hummock Grassland
- SDSH Sand Dune Shrubland
- MHHS Mixed Chenopod Shrubland with Mulga Overstorey
- SACSG Sand plain Spinifex Hummock Grassland with Corymbia lenziana Woodland

Playa System

- PLAPoS Acacia spp. and Ptilotus obovatus Shrubland
- PLAET Acacia spp. and Eremophila spp. Thicket
- PLAMi Acacia spp. and Melaleuca interioris Shrubland
- PLMf Muehlenbeckia florulenta Shrubland
- PLCsMp Cratystylis subspinescens and Maireana pyramidata Shrubland
- PLEmc Eremophila maculata ssp. brevifolia Shrubland
- PLEml Eremophila malacoides Shrubland
- PLEsp Eragrostis spp. Grassland on Playa
- PLCh Chenopods on Scalded Areas

Hardpan and Drainage System

- DRMS Drainage Tract Mulga Shrubland
- DRMpS Drainage Tract Maireana pyramidata shrubland
- DRES Drainage Line Eucalyptus camaldulensis Woodland
- GRMU Mulga Groves on Hardpan Plain
- HPMS Hardpan Plain Mulga Shrubland
- WABS Wanderrie Bank Grassy Shrubland

Calcrete system

- CEgW Eucalyptus gypsophila Woodland on Calcrete
- CCpW Casuarina pauper Woodland on Calcrete
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- CABs Acacia burkittii Shrubland on Calcrete
- CMiS Melaleuca interioris Shrubland on Calcrete
- CERg Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
- CApS Atriplex sp. Yeelirrie Station Shrubland on Calcrete
- CRsS Rhagodia sp. Yeelirrie Station Shrubland on Calcrete
- CMpS Maireana pyramidata Shrubland on Calcrete
- CLaS Lycium australe Shrubland on Calcrete
- CMGbS Mulga Grevillea berryana Shrubland on Calcrete

Mosaics

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- CABs & CEgW
- CERg & CABs & CEgW
- CERg & CLaS
- HPMS & SAMU
- SAWS & SAHS

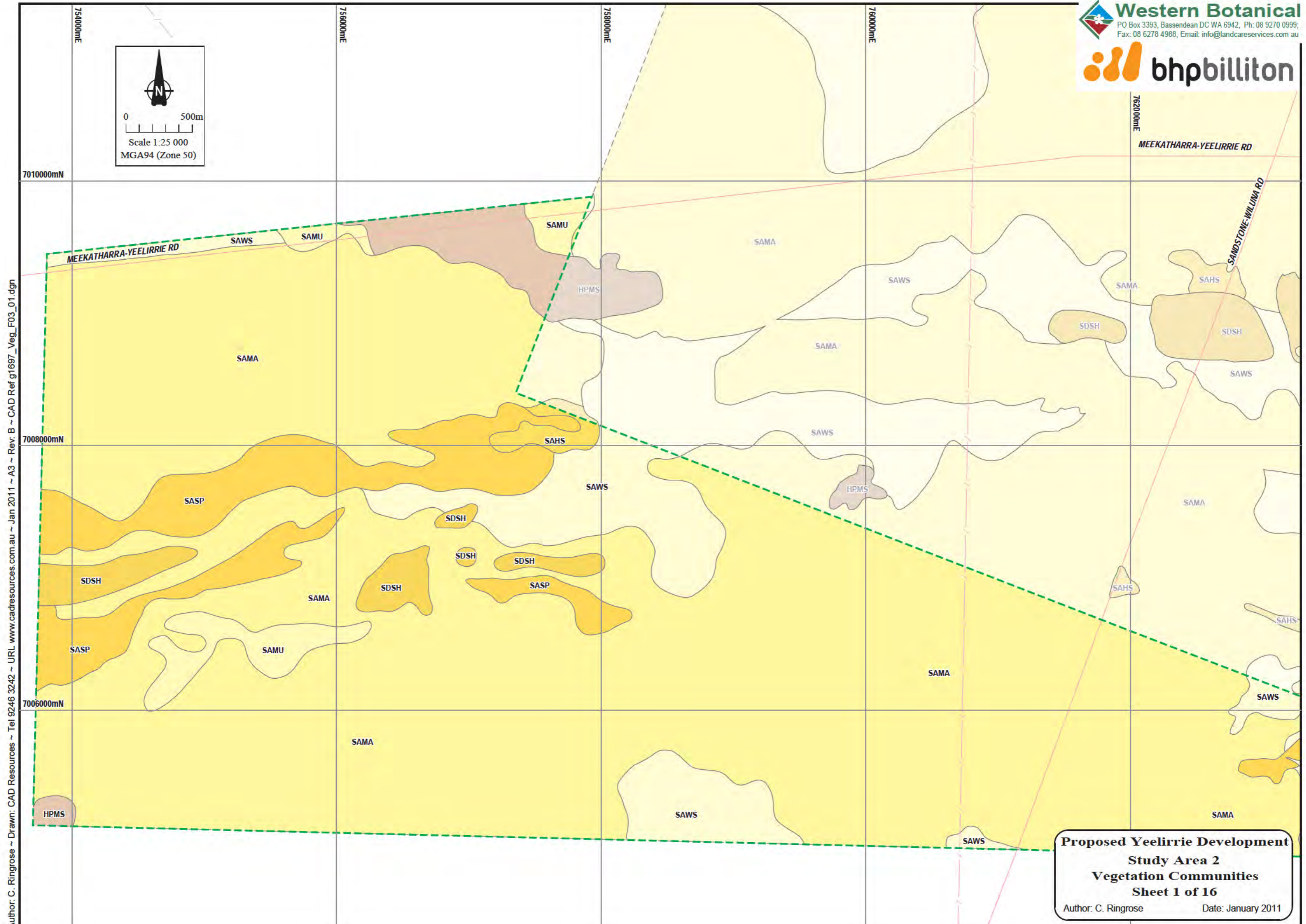
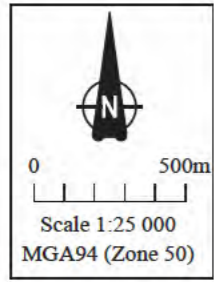
Study Area 2

Saline Playa System

- CsMp Cratystylis subspinescens and Maireana pyramidata Shrubland
- SBMMS Sandy Bank Mulga and Maireana pyramidata Shrubland
- SPABs Atriplex bunburyana Shrubland on Saline Playa
- SPFLS Frankenia spp. Low Shrubland on Saline Playa
- SPLS Lawrenca helmsii Shrubland on Saline Playa
- SPTLS Tecticornia spp. Low Shrubland on Saline Playa

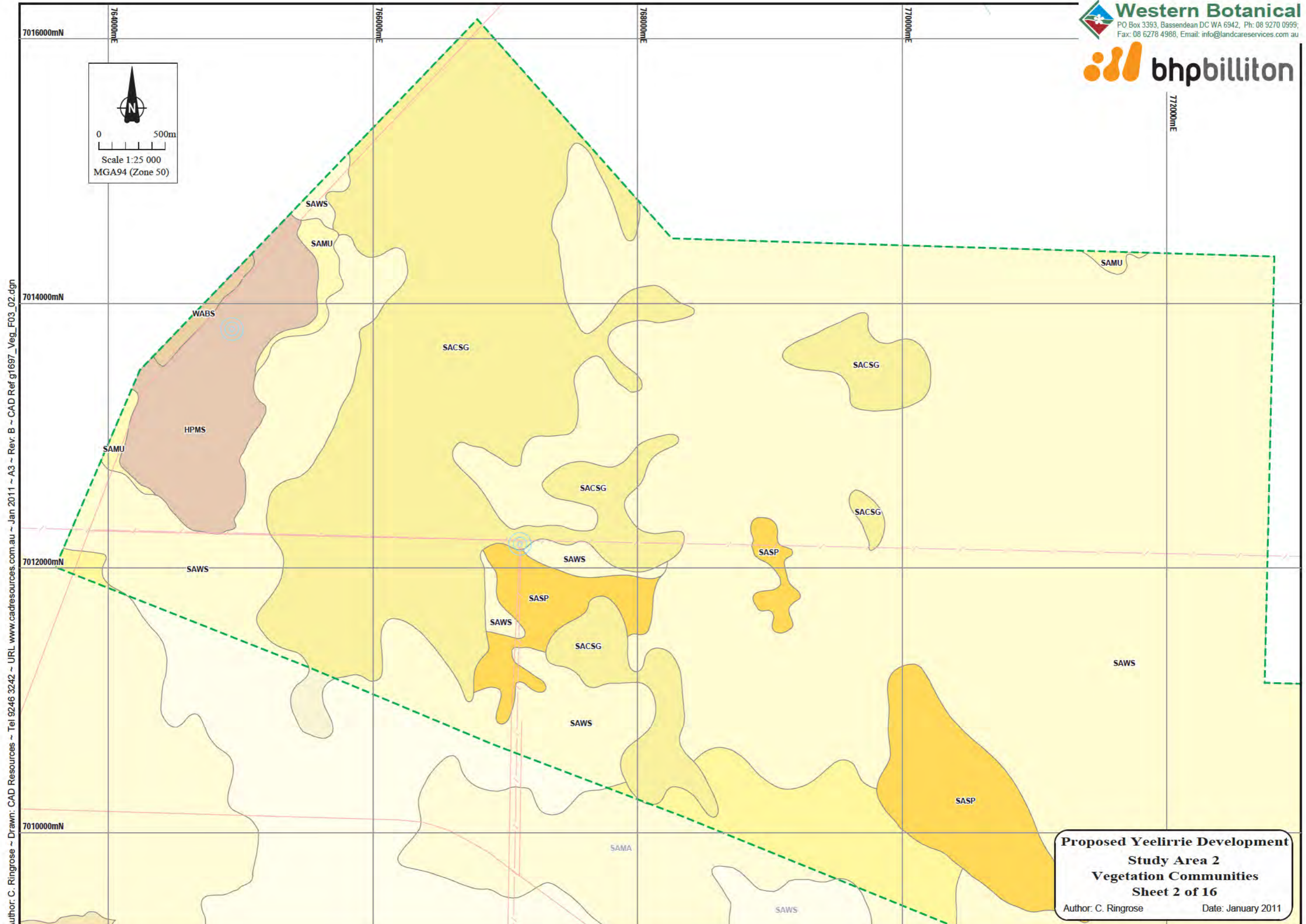
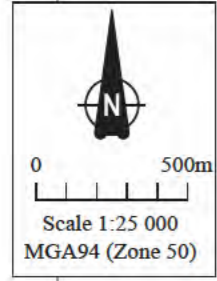
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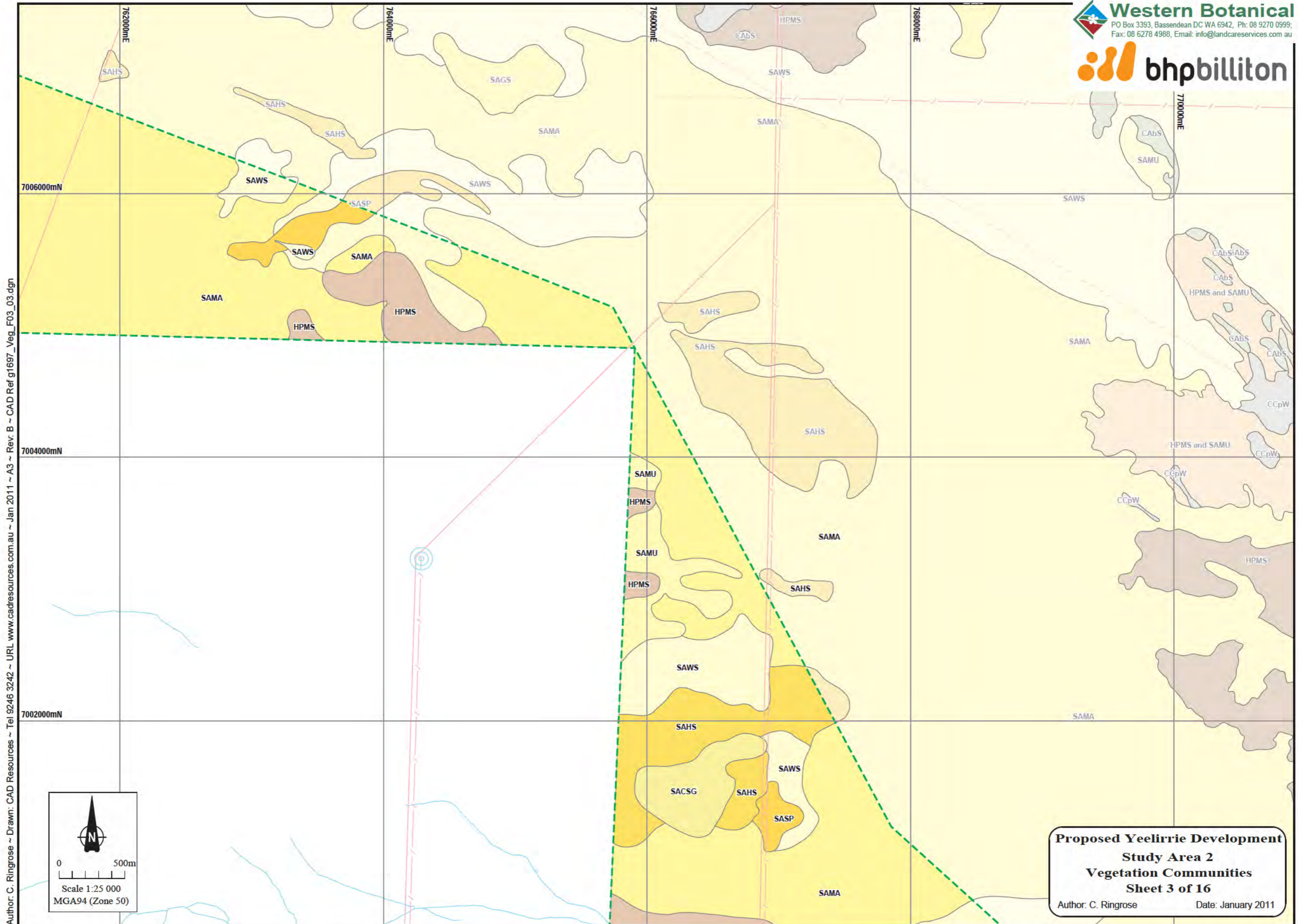
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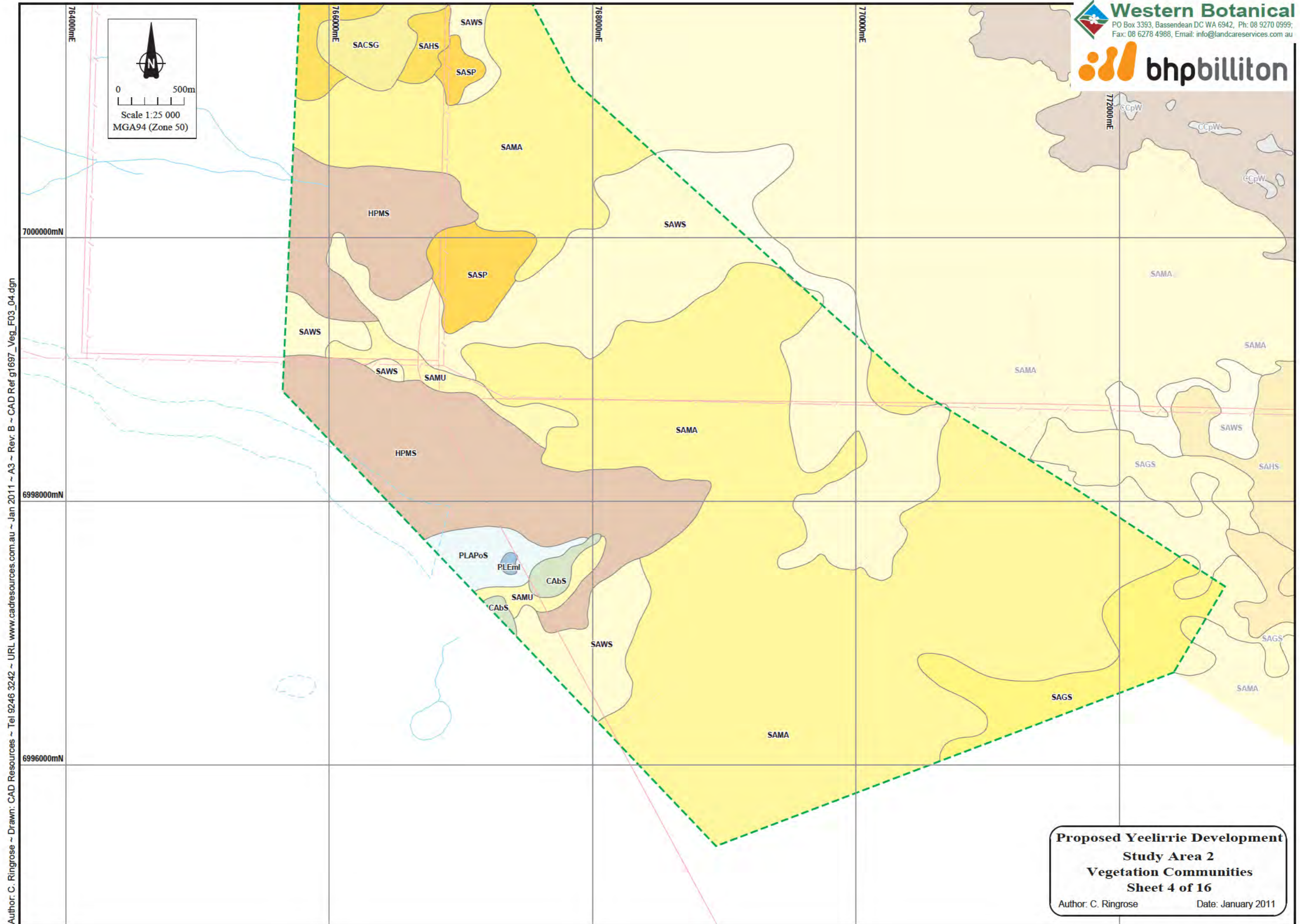
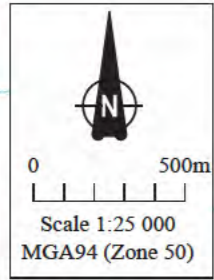
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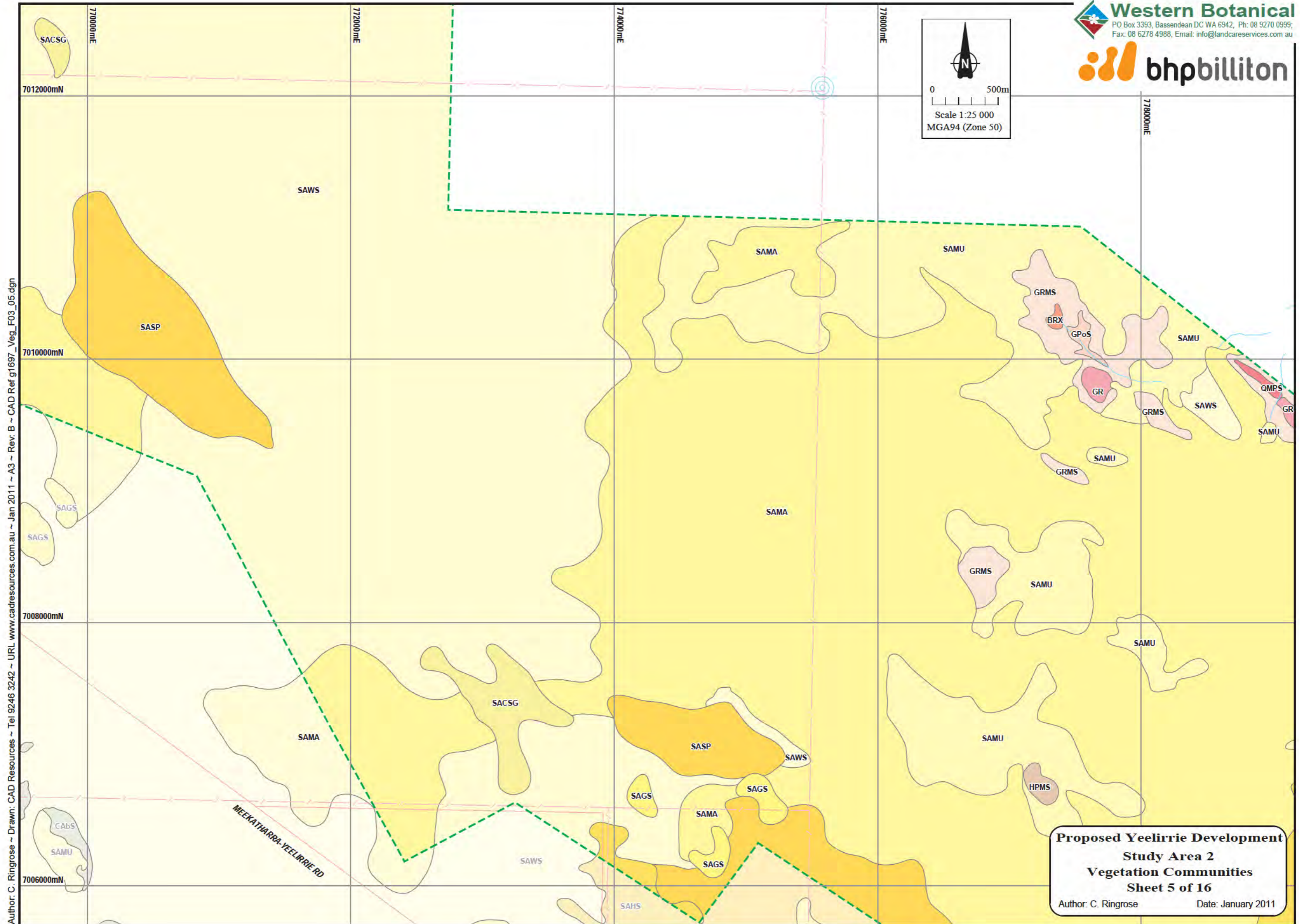
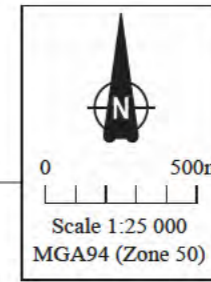
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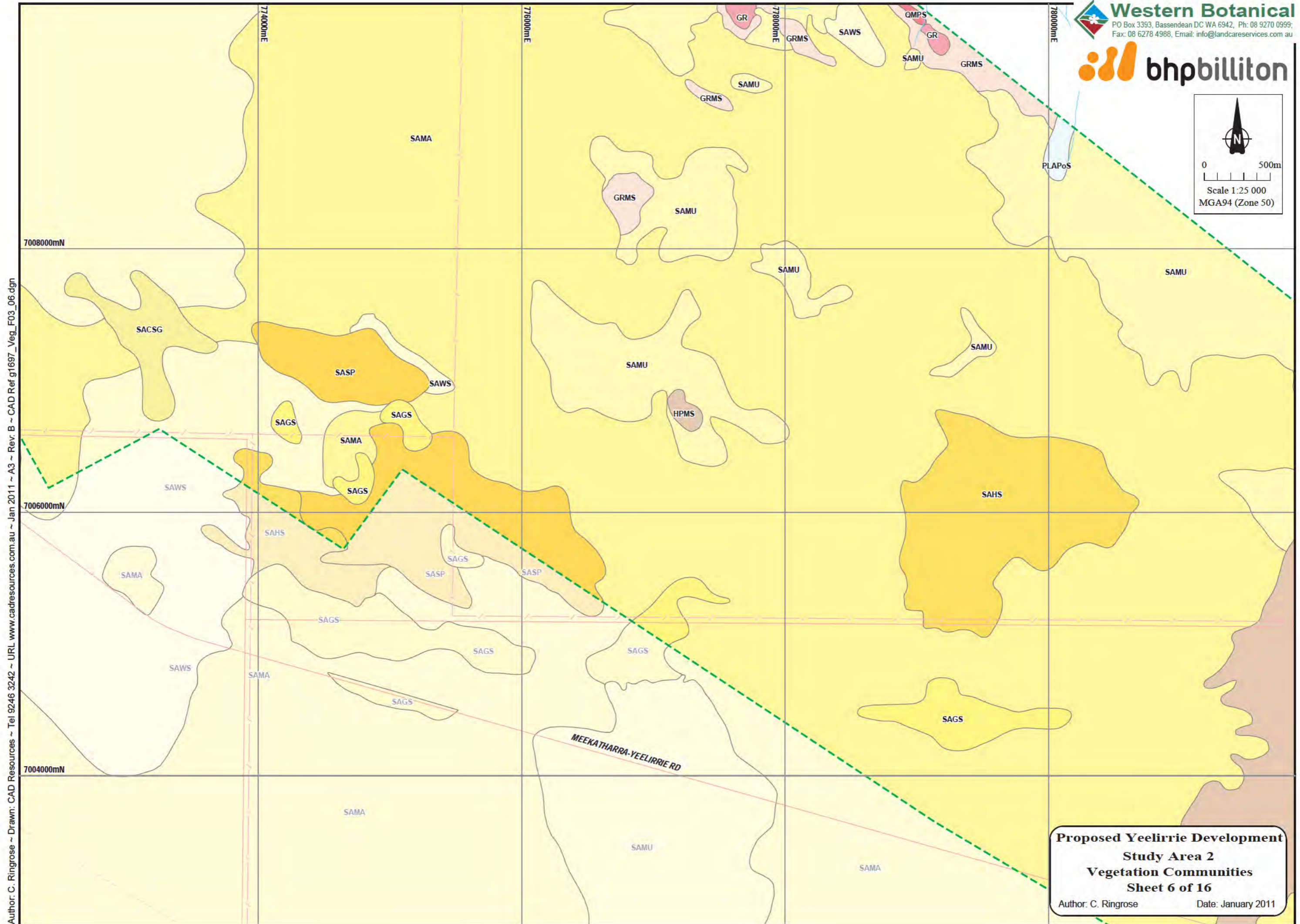
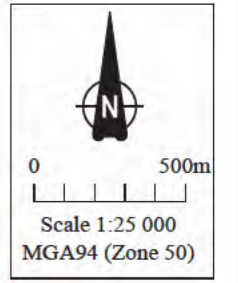
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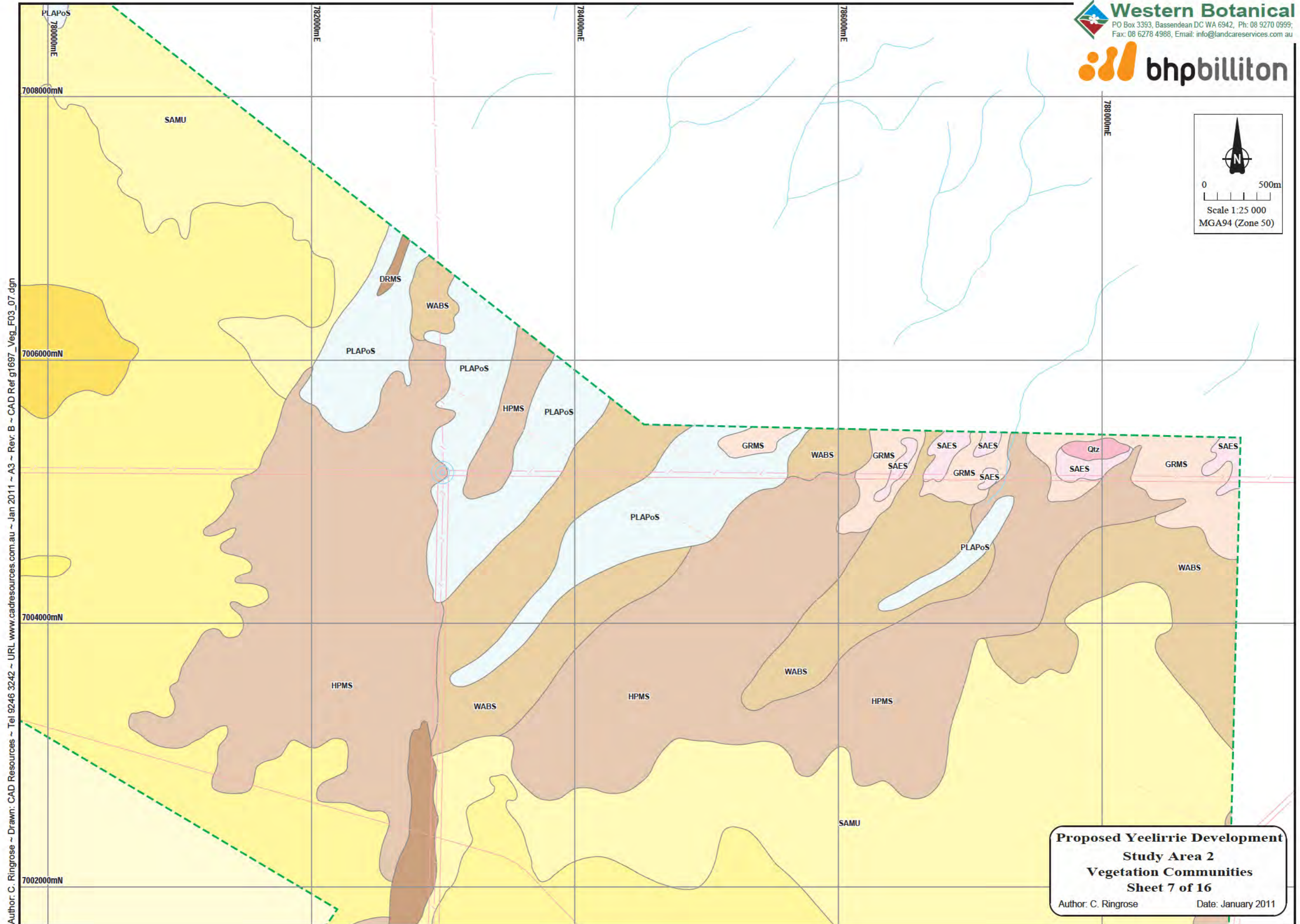
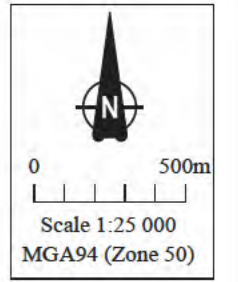
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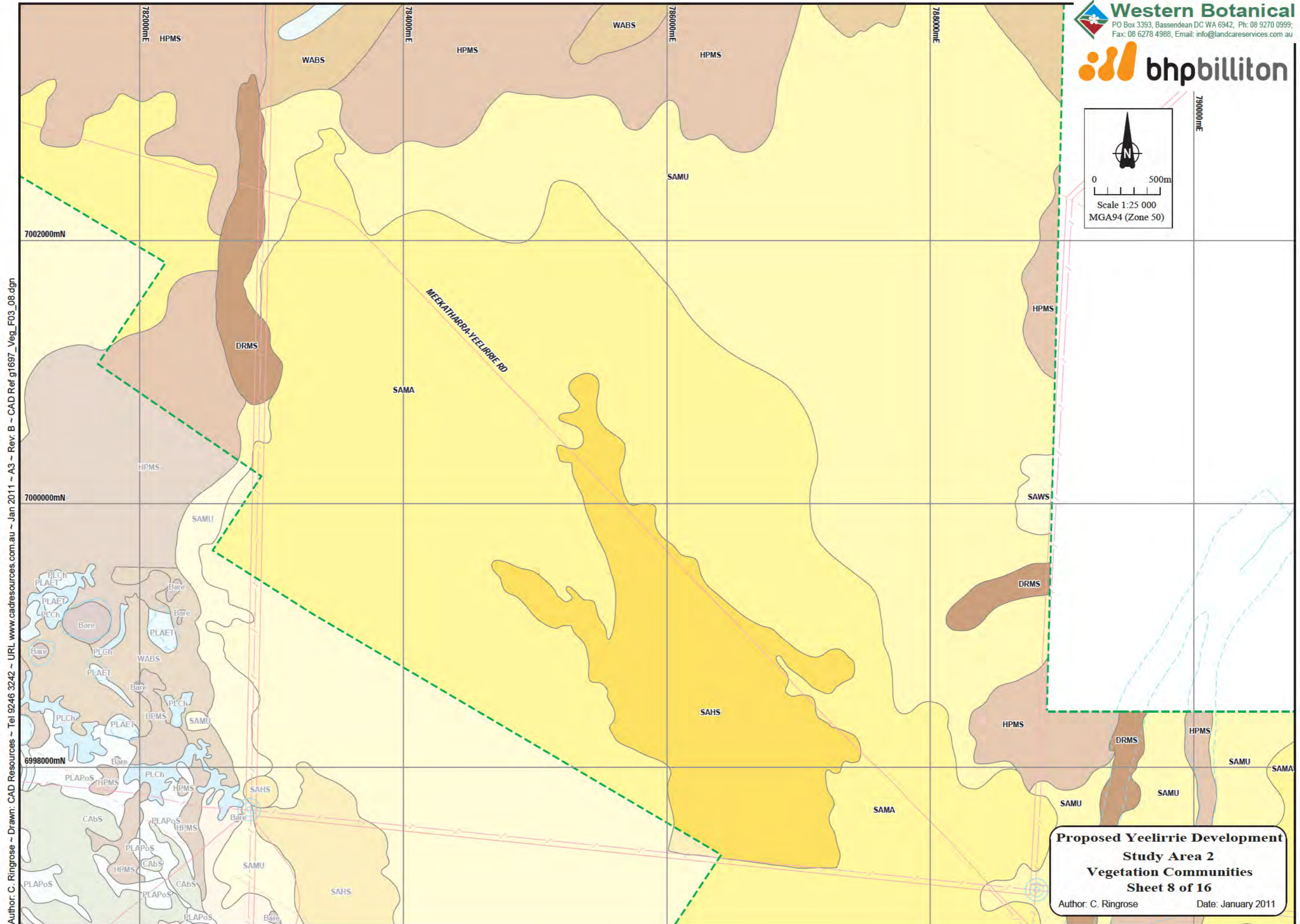
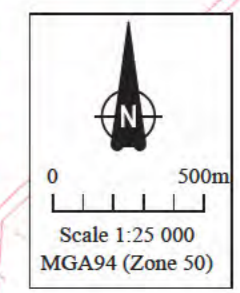
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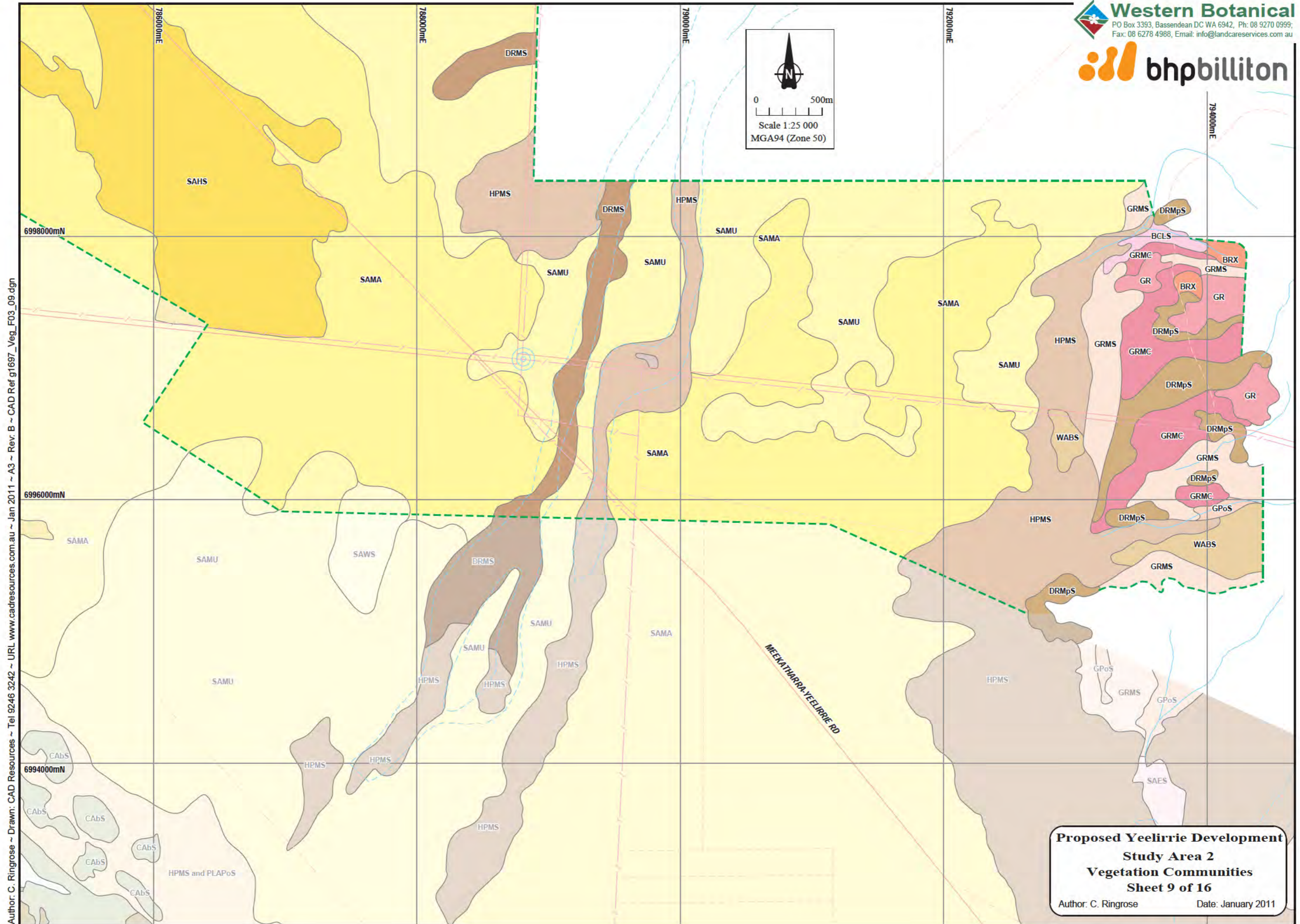
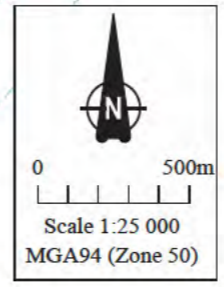
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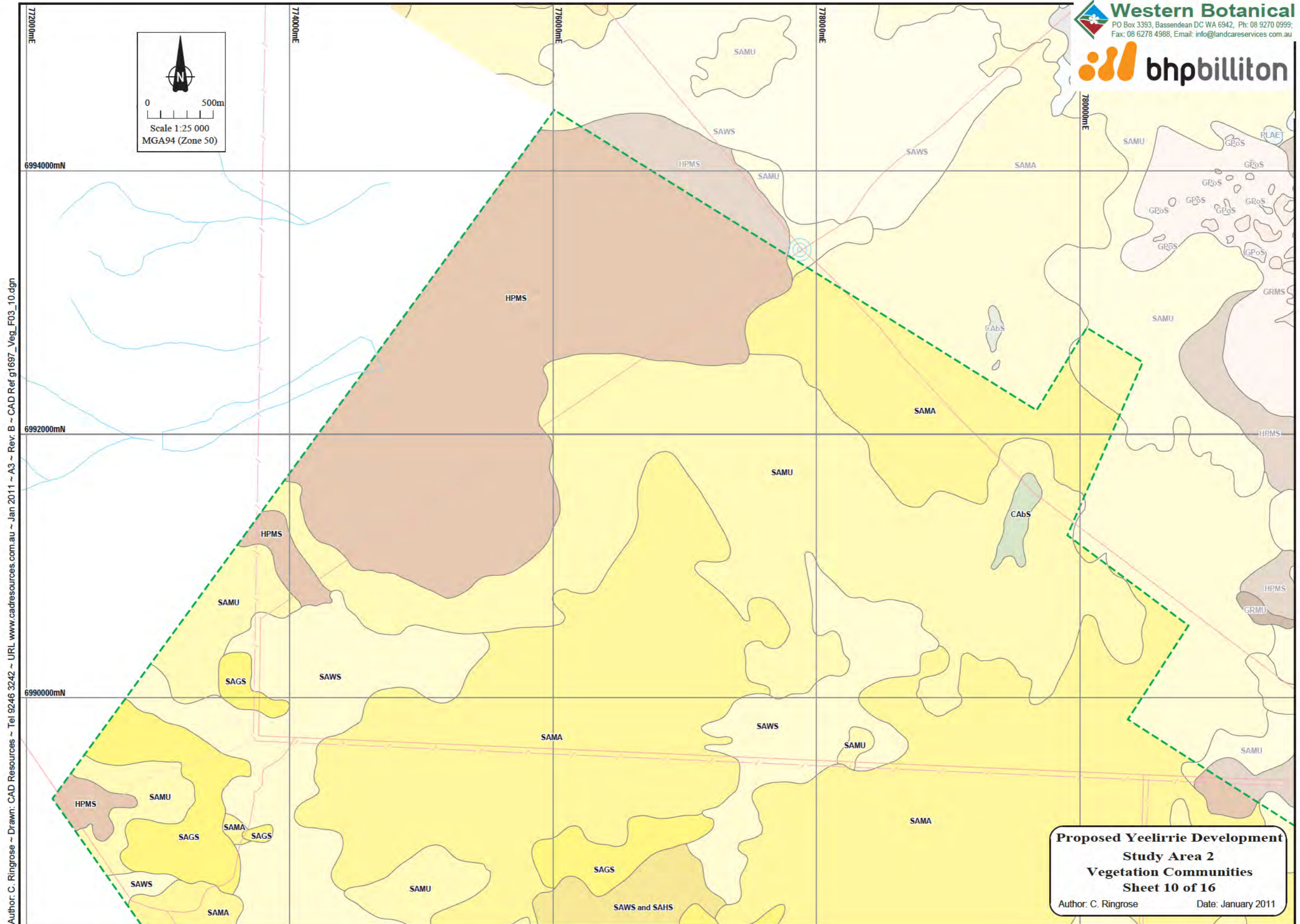
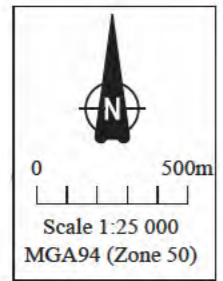
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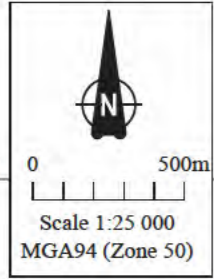
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6984000mN

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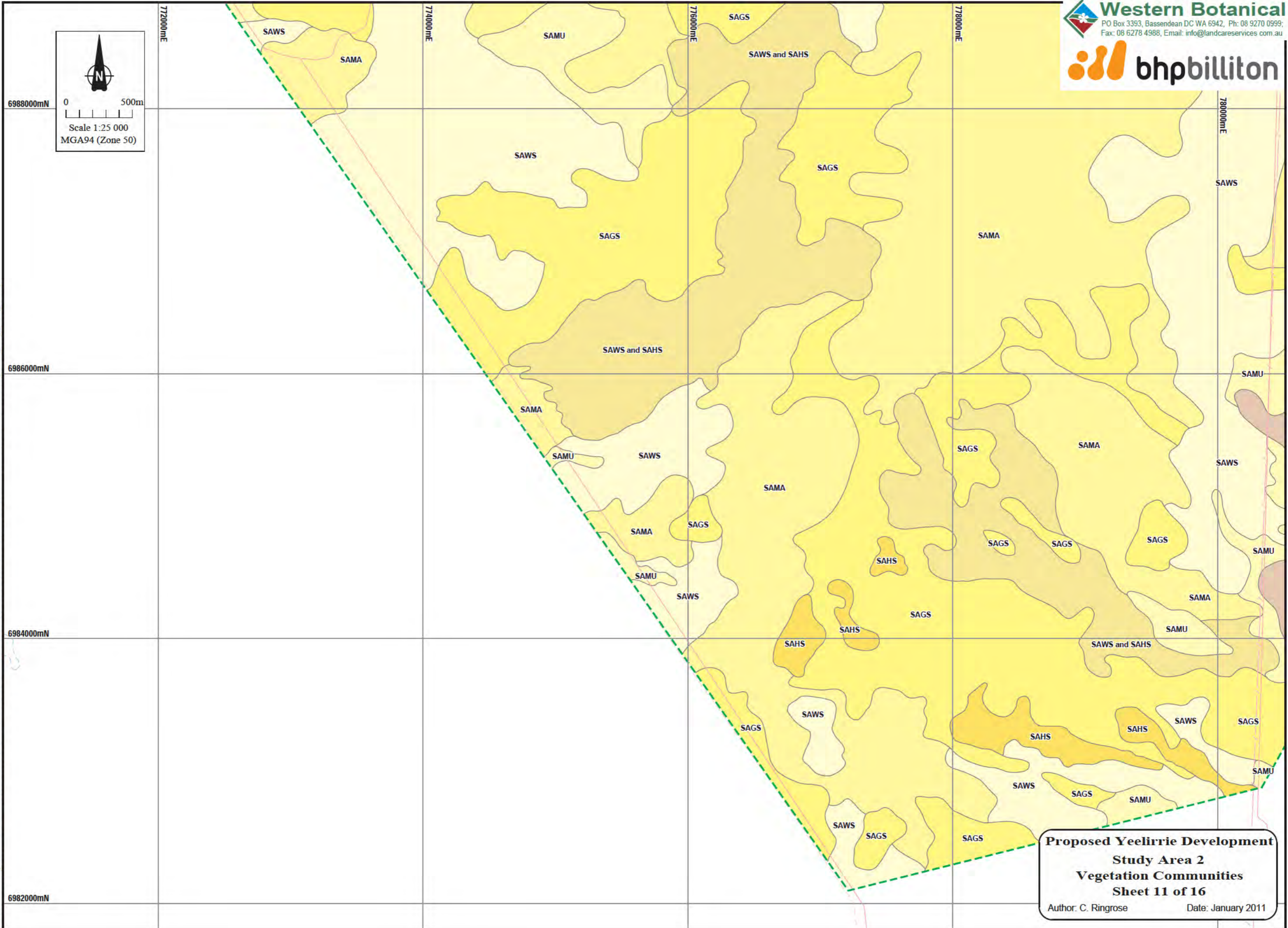
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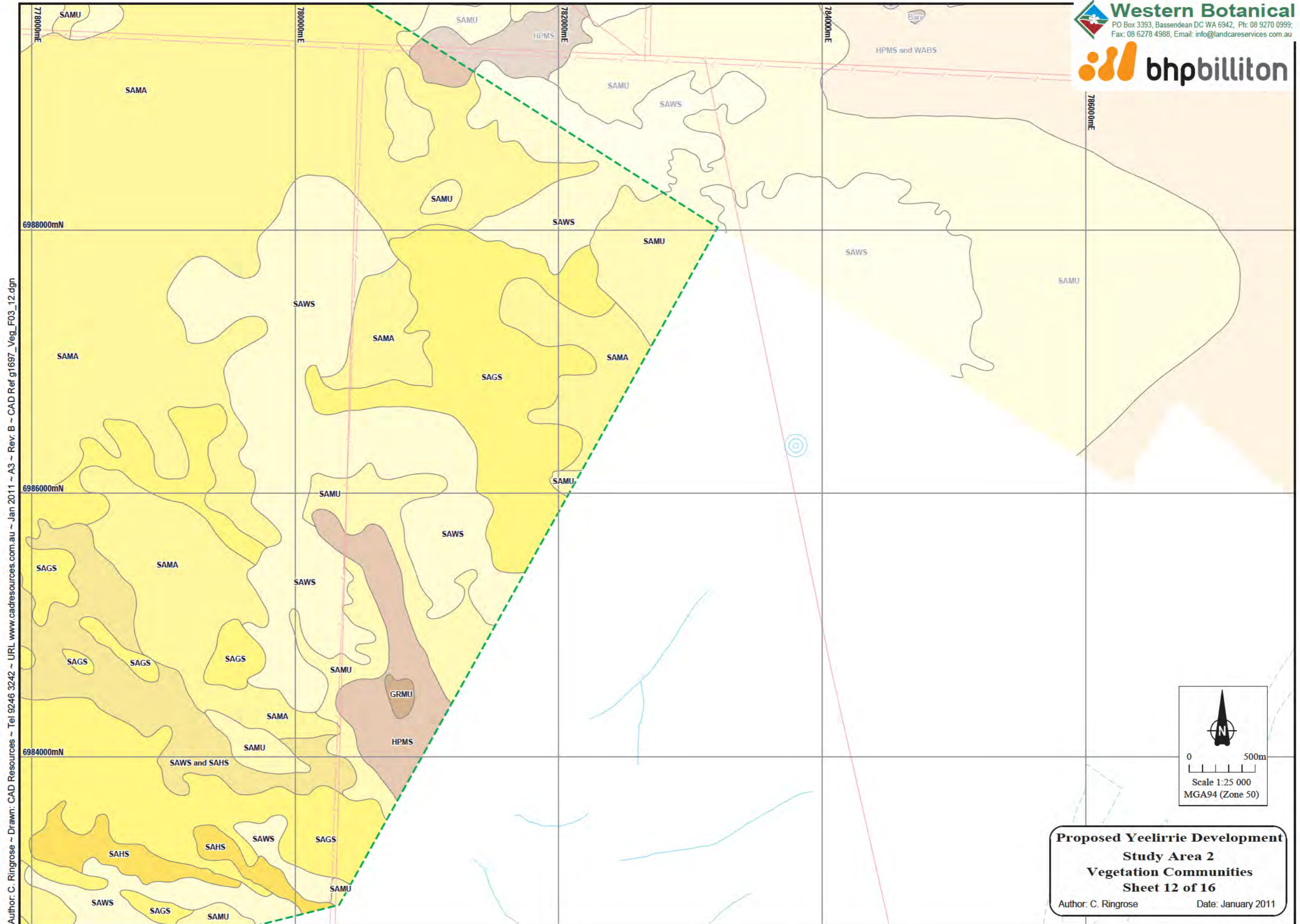
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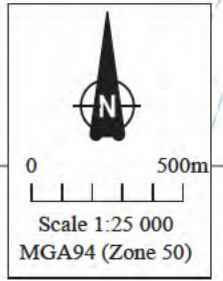
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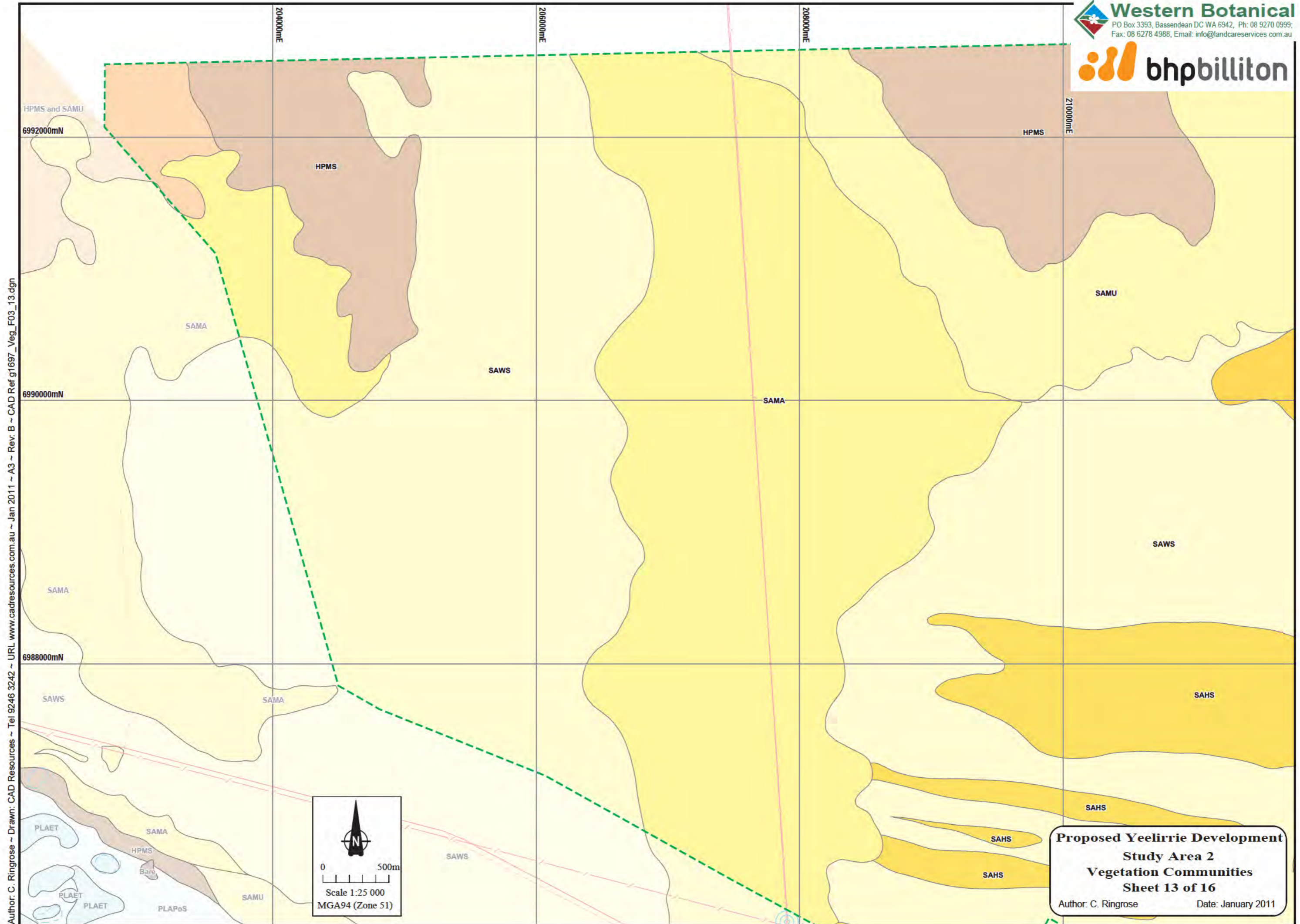
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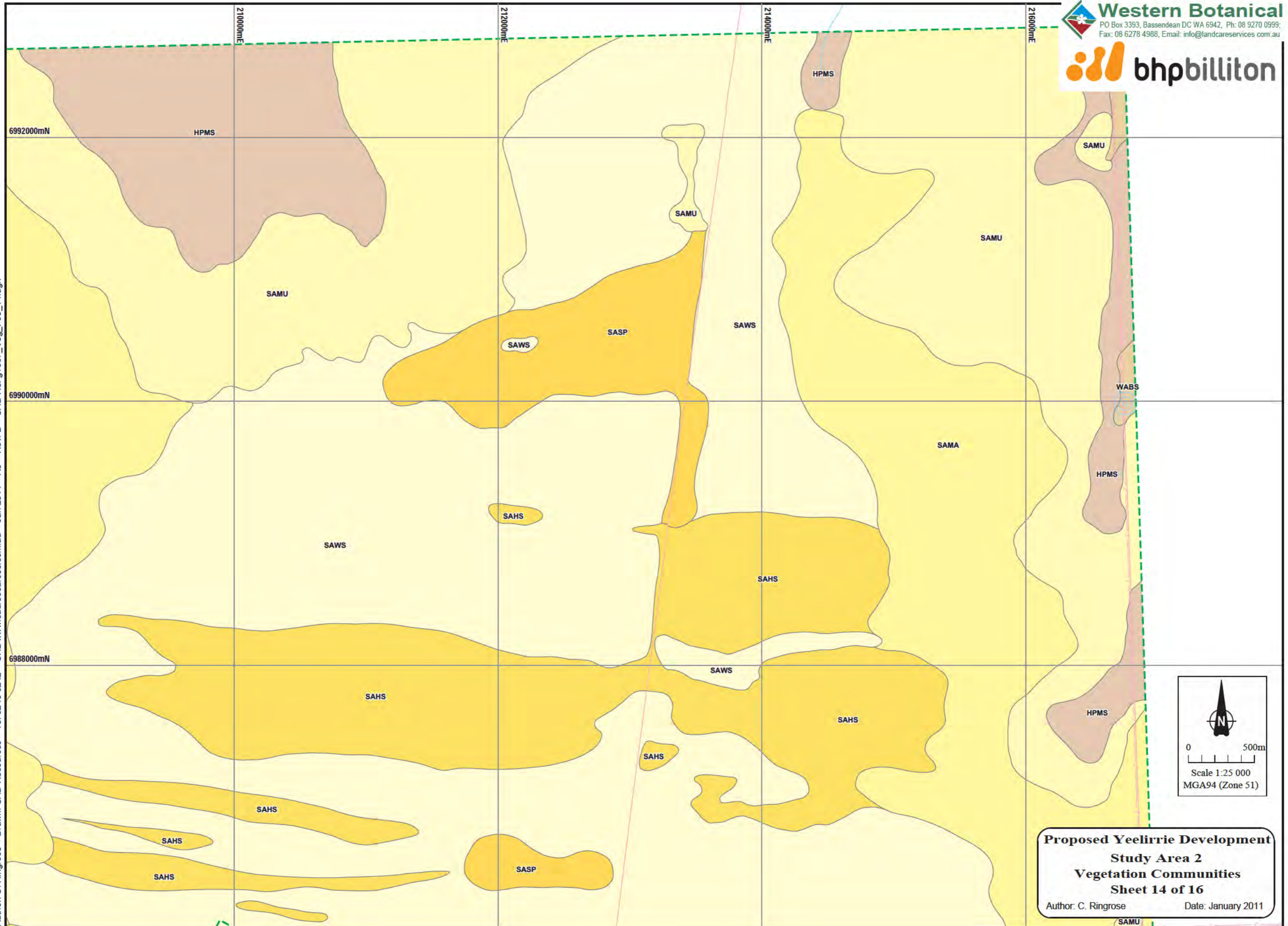
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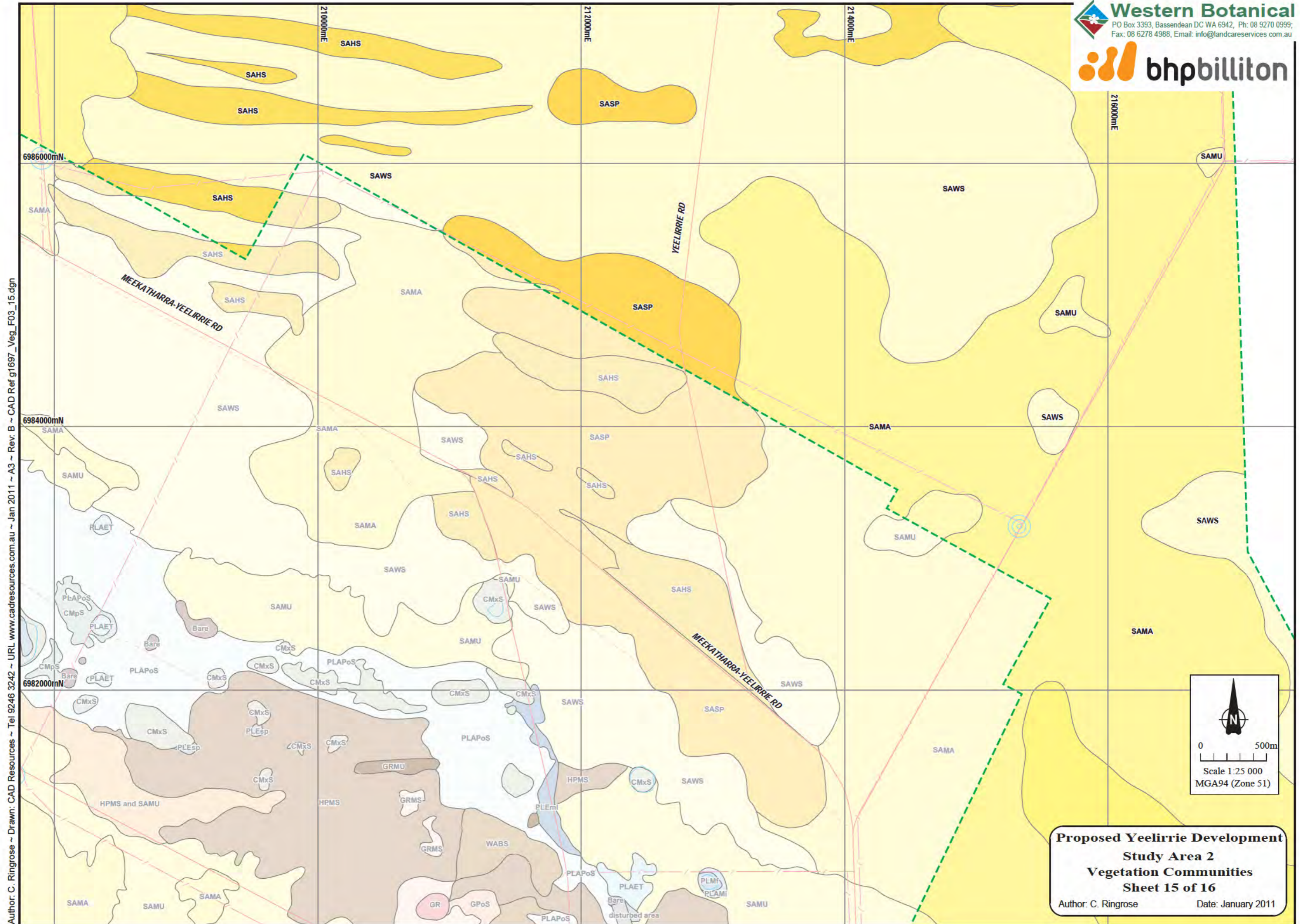
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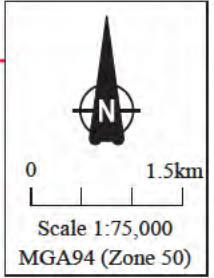
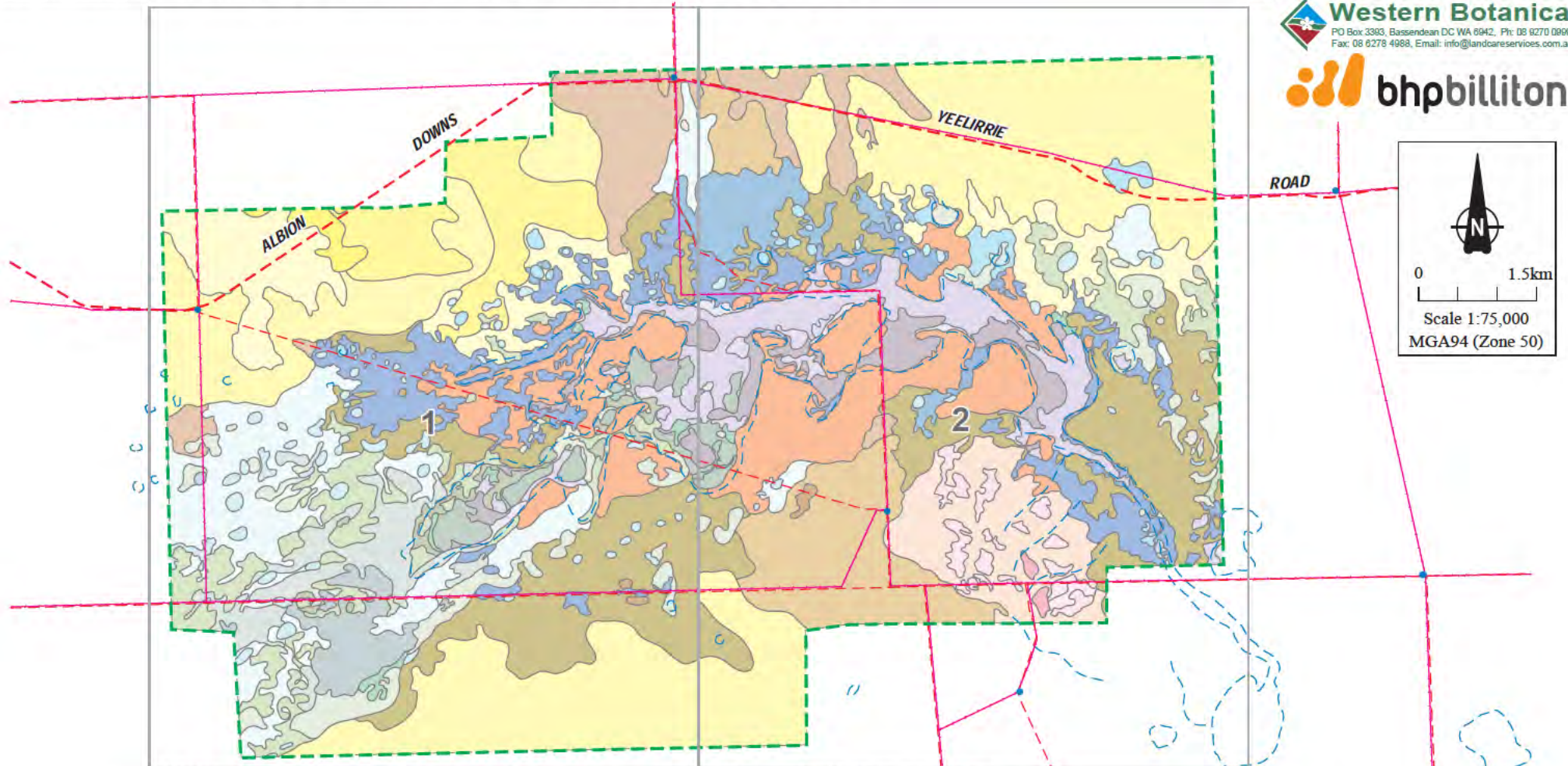
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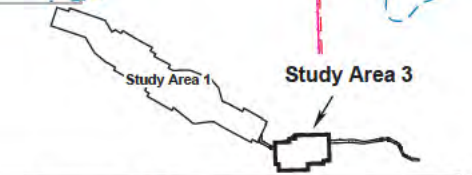


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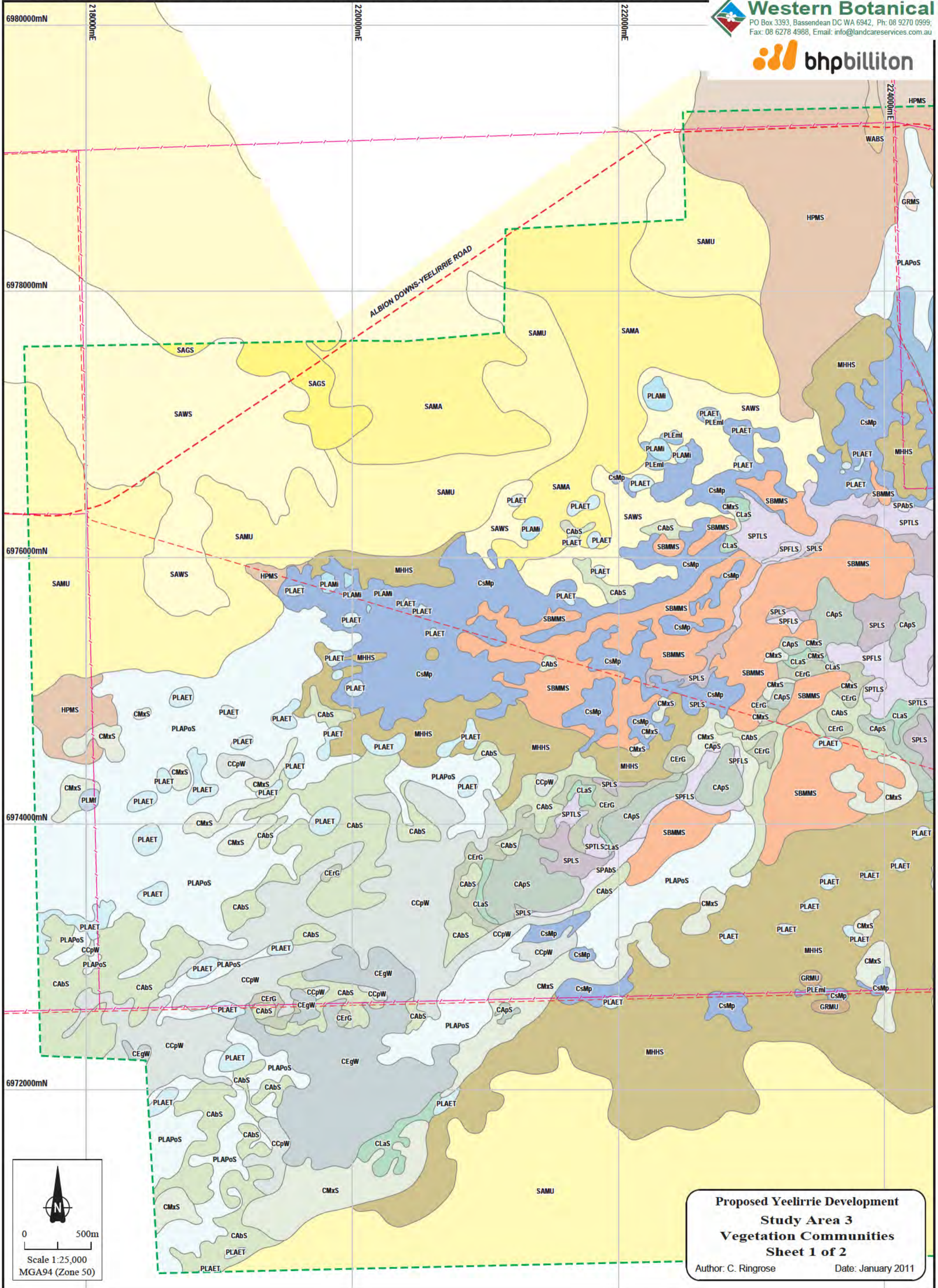
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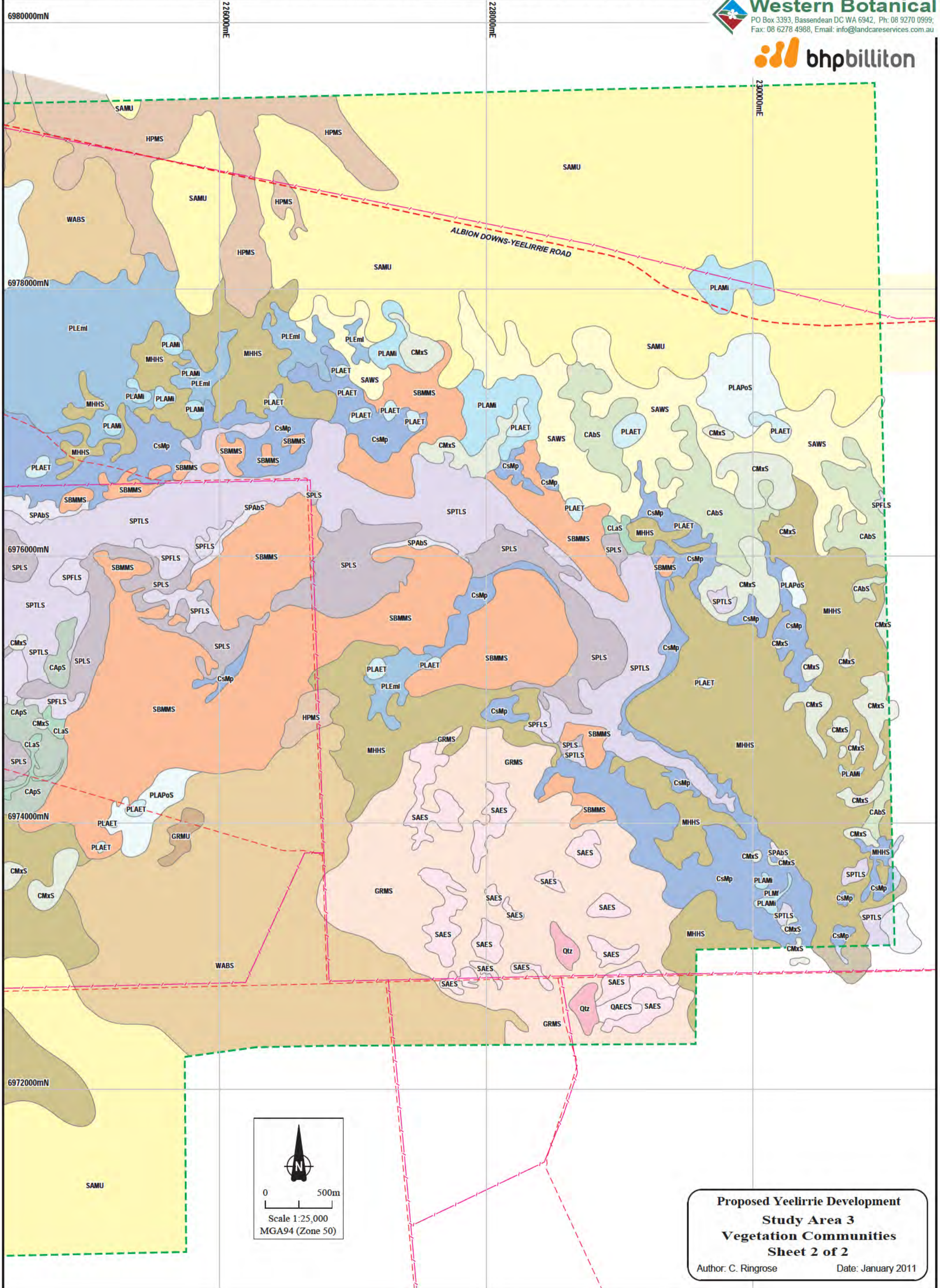
LEGEND	
SAES	Stony Acacia spp. and Eremophila galeata Shrubland
Qtz	Quartz Ridge
GRMS	Mulga Shrubland on Granite Rise
QAECS	Quartz Acacia spp., Eremophila spp. and Chenopod Shrubland
SAWS	Sand Plain Spinifex Hummock Grassland with Wattles
SAMA	Sand Plain Spinifex Hummock Grassland with Mallee
SAGS	Sand Plain Spinifex Hummock Grassland with Eucalyptus gongylocarpa
SAMU	Sandplain Mulga Spinifex Hummock Grassland
WABS	Wanderrie Bank Grassy Shrubland
HPMS	Hardpan Plain Mulga Shrubland
GRMU	Mulga Groves on Hardpan Plain
MHHS	Mixed Chenopod Shrubland with Mulga Overstorey
CEGW	Eucalyptus gypsophila Woodland on Calcrete
CCpW	Casuarina pauper Woodland on Calcrete
CMxS	Melaleuca xerophila Shrubland on Calcrete
CAbS	Acacia burkittii Shrubland on Calcrete
PLEsp	Eragrostis spp. Grassland on Playa
CAPs	Atriplex sp. Yeelirrie Station Shrubland on Calcrete
CLaS	Lycium australe Shrubland on Calcrete
PLAPoS	Acacia spp. and Pilotus obovatus Shrubland
PLAET	Acacia spp. and Eremophila spp. Thicket
PLAMi	Acacia spp. and Melaleuca interioris Shrubland
PLMF	Muehlenbeckia florulenta Shrubland
PLEmi	Eremophila malacoides Shrubland
CERg	Eragrostis sp. Yeelirrie Calcrete Grassland on Calcrete
SBMMS	Sandy Bank Mulga and Maireana pyramidata Shrubland
CsMp	Cratystylis subspinescens and Maireana pyramidata Shrubland
SPAbS	Atriplex bunburyana Shrubland on Saline Playa
SPTLS	Tecticornia spp. Low Shrubland on Saline Playa
SPLS	Lawrenxia helmsii Shrubland on Saline Playa
SPFLS	Frankenia spp. Low Shrubland on Saline Playa



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Appendix 8. Vegetation community descriptions (local study area)

1. Communities occurring within the Granite System

The Granite System in study area 1 is represented at the base of the granite breakaways to the north and south of the ore body, and on the proposed access road near the intersection with the Goldfields Highway. Granite rises are also present within the Sand Plain System. In study area 3, the Granite System is represented in the south-eastern section as a low quartz and granite hill, and is vegetated with SAES and GRMS communities.

The Granite System in study area 2 consists of granite breakaways, extensive stony plains with Mulga Shrublands, minor halophytic Shrublands and outcropping exfoliating granite domes. For the purpose of this report a complex has been described, the Weathered Granite Breakaway Complex (BRX). BRX is a mosaic of small vegetation communities occurring in a diverse landscape of weathered granite plateaus, gullies, rock faces and hills, Granite domes, scree slopes and depositional areas on the foot slopes of the weathered granite landforms, (see description below).

SAES Stony *Acacia* spp. and *Eremophila galeata* Shrubland

The Stony *Acacia* spp. and *Eremophila galeata* Shrubland (SAES) community is characterised by an open shrubland, 1-3 m high, of *Acacia aneura* (various forms), *A. ayersiana*, *A. tetragonophylla* and prominent *Eremophila galeata*, with a PFC of 1-5% (Plate 1). The low shrub stratum, 0.3-0.6 m high, is predominantly *Ptilotus obovatus* (typical Goldfields form), *Sida ectogama*, *Eremophila* spp. and *Senna* spp. with PFC of 5-10%, over *Eragrostis eriopoda* tussock grasses with a PFC of 1-10%. Some areas of the SAES community have a well represented mid storey of *Senna* spp. 0.5-1.5 m high.

Other species present include *Eremophila compacta* subsp. *compacta*, *E. margarethae*, *E. spectabilis* subsp. *brevis*, *E. latrobei* subsp. *latrobei* (filiform leaf form), *E. exilifolia*, *Senna artemisioides* subsp. *x sturtii*, *S. artemisioides* subsp. *helmsii* and *S. glutinosa* subsp. *chatelainiana*.

The SAES community occurs down slope of the granite breakaways on an area of foot slope deposits. The soils are shallow with a discontinuous mantle of granite and quartz cobbles approximately 2-12 cm in diameter. Closer to the granite breakaways, this landscape has numerous small to moderate sized outcrops of exfoliating granite rocks and boulders. As the cobbles become sparser, the SAES community grades into Mulga Shrubland on granite rises (GRMS) and *Ptilotus obovatus* Shrubland on granite breakaway foot slopes (GPoS) as described below.



Plate 1. SAES Community

BCLS Breakaway Chenopod Low Shrubland

The Chenopod Low Shrubland (BCLS) community is characterised by a low open shrubland 0.2-0.4 m high of *Maireana triptera*, *Sclerolaena diacantha*, *S. densiflora*, *S. eriacantha*, *S. lanicuspis* and *Ptilotus obovatus* (typical Goldfields form) with a PFC of 2-12%, over scattered *Aristida contorta*, *Enneapogon caeruleus* and *Tripogon loliiformis* grasses, PFC < 1-2% (Plate 2). BCLS commonly has emergent shrubs of *Acacia aneura* (various forms), *A. ayersiana*, *A. macraneura*, *Eremophila forrestii* subsp. *forrestii*, *E. longifolia*, *Rhagodia drummondii*, and *Senna* spp. with a PFC of < 1%.

The BCLS community occurs on foot slope deposits and undulating alluvial plains at the base of granite breakaways. The soils are characterised by a coarse siliceous sand mantle over kaolinitic coarse sandy clay. This vegetation community is represented on a small section of the Barr-Smith Range breakaway foot slope along the proposed access road near the junction with the Goldfields Highway.



Plate 2. BCLS Community

GFGGr Granite Foot Slope Grassland

The Granite Foot Slope Grassland (GFGGr) community is characterised by a very open tussock grassland to 0.3 m high of *Aristida contorta*, *Enneapogon caerulescens* and *Cymbopogon ambiguus* with a PFC of <1-5%, and low scattered shrubs 0.1-2 m high of *Ptilotus obovatus* (typical Goldfields form), *Sclerolaena* spp., *Eremophila galeata* and *Senna artemisioides* subsp. *helmsii* with a PFC of < 1% (Plate 3). After sufficient rainfall, the PFC of the grassland increases to 20% with the presence of annual grasses including *Tripogon loliiformis*, *Tragus australianus*, and *Eragrostis dielsii*, and annual herbs including *Helipterum craspedioides*.

The GFGGr community occurs in a highly erodible area at the foot slope of granite breakaways (Plate 4). Soils are coarse siliceous sand with kaolinitic clay and silt matrix with sub-angular quartz gravel and rocks 0.25-2.5 cm in diameter.



Plate 3. GFGGr Community



Plate 4. GFGr Community – erosion features

GPoS *Ptilotus obovatus* Shrubland

The *Ptilotus obovatus* Shrubland (GPoS) is characterised by a low open shrubland, 0.1-0.3 m high, of *Ptilotus obovatus* (typical goldfields form), *Maireana pyramidata*, *Eremophila compacta* subsp. *compacta*, *E. maculata* subsp. *brevifolia*, and *Senna artemisioides* subsp. *x sturtii*, with a PFC of <1-5% (Plate 5). There are occasional emergent shrubs up to 1.5 m high of *Acacia tetragonophylla* and *Eremophila galeata* with a PFC of <1%. *Eragrostis eriopoda* perennial grasses are often present, with a PFC of 1-6%. Annual grasses including *Aristida contorta*, *Tripogon loliiformis*, and herbs including *Maireana carnosa* and *Sclerolaena densiflora* may be present seasonally, with a PFC of 2-5%. This community usually has extensive cryptogamic crusting of up to 10% on the soil surface.

The GPoS community occurs on near-level plain foot slope deposits down slope of granite breakaways. The soil observed is coarse sand with substantial kaolinitic clay, often with discontinuous angular to sub-angular quartz lag gravel and cobbles from 0.5 to 15 cm long. GPoS is often recorded adjacent to Stony *Acacia* spp. and *Eremophila galeata* Shrublands (SAES) and Mulga Shrubland on Granite Rise (GRMS).



Plate 5. GPoS Community

Qtz Quartz Ridge

The Quartz Ridge (Qtz) community is characterised as a high open shrubland, generally 2-5 m high, of *Acacia quadrimarginea*, *A. aneura* (various forms) and *Callitris columellaris* with a PFC of 5-15% (Plate 6). The mid shrub stratum, up to 1.7 m high, includes *Dodonaea petiolaris*, *Eremophila exilifolia* and *E. latrobei* subsp. *latrobei* with a variable PFC of 1-20%. The low open shrub stratum, to 0.3 m high, is dominated by *Ptilotus obovatus* (typical Goldfields form) with a PFC of 2-15%, over scattered *Cymbopogon ambiguus* tussock grasses. *Thryptomene* sp. Leinster (B.J. Lepschi & L.A. Craven 4362) P1 was found to dominate the midshrub level at one site in study area 2.

The Qtz community occurs on low hills and foot slopes with a mantle of quartz stones 2 to 15 cm in diameter on foot slopes and large boulders of 2-3 m in diameter higher in the landscape. The soil is restricted to small collections of silt and sand between quartz stones.



Plate 6. Quartz Community

QMPS Mulga shrubland with *Prostanthera campbellii* on Quartz ridge

The Mulga Shrubland with *Prostanthera campbellii* on Quartz ridge (QMPS) community is characterised as a tall shrubland, 4-6 m high, of *Acacia aneura* (various forms) and *A. quadrimarginea*, PFC 30%, over a medium shrubland, 0.5-1 m high of *Eremophila latrobei* and *Prostanthera campbellii*, PFC 20%, over scattered grasses to 0.2 m of *Eriachne mucronata* (xerophytic form) with a PFC of 1% (Plate 7) .

QMPS occurs on a quartz ridge approximately 6 m high, consisting of quartz boulders and cobbles to 1.5 m in diameter with an orange brown sandy silty soil collecting in cracks and depressions. QMPS is bounded by the GRMS and SAES communities down slope and alongside the ridgeline.

The QMPS community occurs on a similar landform to the Qtz community, but has significantly different floristic composition of the vegetation. The QMPS community was recorded at one site in study area 2.



Plate 7. QMPS Community

QAECS Quartz *Acacia* spp., *Eremophila* spp. and Chenopod Shrubland

The Quartz *Acacia* spp., *Eremophila* spp. and Chenopod Shrubland (QAECS) community is characterised by tall shrubs of *Acacia aneura* (various forms), *Acacia ayersiana*, *Acacia quadrimarginea*, *Acacia tetragonophylla* and *Hakea preissii*, 2-4 m high, with a PFC of 5-10% (Plate 8), over a mid shrub layer consisting of *Maireana georgei*, *M. glomerifolia*, *M. triptera*, *M. convexa*, *M. pyramidata*, *Eremophila alternifolia*, *E. falcata*, *E. latrobei*, *E. malacoides*, *Enchylaena tomentosa* subsp. *tomentosa*, *Scaevola spinescens*, *Senna artemisioides* subsp. *filifolia*, *Sida calyxhymenia*, *Ptilotus obovatus* and *Solanum lasiophyllum*, 0.3-1.3 m high with a PFC of 3-8%.

QAECS occurs in study area 3 in a single area on a gentle incline on a hillside below a Qtz community with a stony quartz mantle on the surface. The soils are shallow sandy clays, overlying a quartz and granite substrate.



Plate 8. QAECS Community

GR Granite Rise

The Granite Rise (GR) community consists of a highly variable vegetation component, depending on the amount of exposed granite at the surface. Generally, this community is a high open shrubland, 2-4 m high, of *Acacia quadrimarginea*, sometimes with *Acacia aneura* (various forms), *Callitris columellaris* and occasional *Santalum spicatum* with a PFC of 2-15% (Plate 9). The varied mid-strata is generally open shrubland, 0.5-1.5 m high, which may include *Dodonaea petiolaris*, *D. viscosa* subsp. *mucronata*, *Eremophila exilifolia*, *E. latrobei* subsp. *latrobei*, *E. serrulata*, *Sida ectogama* and *Senna artemisioides* subsp. *x sturtii* with a PFC of 5-15%. Scattered tussock grasses, 0.2-0.5 m high, of *Cymbopogon ambiguus* and *Eragrostis* sp. with a PFC of 1-2% were recorded growing in cracks between granite rocks (Plate 10). Scattered shrubs of *Cynanchum floribundum* and herbs and grasses including *Aristida contorta*, *Cheilanthes sieberi* subsp. *sieberi*, *Chenopodium melanocarpum*, *Euphorbia drummondii*, *E. boophthona*, *Phyllanthus erwinii*, *Tribulus astrocarpus*, *Trichodesma zeylanicum*, *Tripogon loliiformis* and *Isotoma petraea* are sometimes present between stones.

The Granite Rise community is characterised by low exfoliating outcrops, piles of boulders, hills or domes of weathered granite with numerous small catchments that accumulate water intermittently. The soil in depressions and fissures between the granite rocks can be characterised as silty coarse sand. Extensive cryptogamic crusting on rocks and soil surfaces were observed. The granite outcrops occur within the Mulga Shrubland on granite rises (GRMS) community discussed below.



Plate 9. GR Community on boulders



Plate 10. GR Community on low exfoliating outcrop

GRMS Mulga Shrubland on Granite Rise

The Mulga Shrubland on granite rise (GRMS) community is characterised as high open shrubland, 1.5-3 m in height, of *Acacia aneura* (various forms) and *A. tetragonophylla*, occasionally with *A. quadrimarginea*, *A. craspedocarpa* and *A. ayersiana* with a PFC of 5-20 % (Plate 11). The low shrub stratum consists of scattered shrubs, 0.8-1.2 m high, of *Ptilotus obovatus* (typical goldfields form), *Eremophila compacta* subsp. *compacta*, *Sida ectogama*, *Senna artemisioides* subsp. *charlesiana*, *S. artemisioides* subsp. *filifolia*, *Eremophila latrobei* subsp. *latrobei* and *E. spectabilis* subsp. *brevis* with a PFC of 1-2 %.

Anacampteros sp. Eremaean (F. Hort, J. Hort & J. Shanks 3248) P1 is known to occur within the GRMS community in the Barr Smith Range and has been recorded from Lake Way Station and Yakabindie Station, which are within 100 km of study areas 1 and 2. However, this species was not recorded during these surveys.

The GRMS community occurs on a level plain or a gently inclined foot slope deposit, occasionally associated with granite out-cropping. The granite rises are often covered with abundant, discontinuous sub-angular to sub-rounded quartz stones and cobbles 2 to 8 cm in diameter.



Plate 11. GRMS Community

GRMC Mulga Shrubland with Chenopods on Granite Rise

The Mulga Shrubland with Chenopods on Granite Rise (GRMC) community consists of tall shrubland, 4-5 m of *Acacia aneura* (various forms), PFC 20-30%, over open mixed medium shrubland from 1-1.5 m in height of *Maireana pyramidata*, *Rhagodia drummondii*, *Eremophila latrobei* subsp. *latrobei* and *Senna artemisioides* subsp. *filifolia*, over low open grassland, 0.1m high of *Aristida contorta* and *Tripogon loliiformis* with a PFC of 7% (Plate 12). Scattered *Acacia ramulosa* var. *linophylla* shrubs, 2-3 m high, and a low open shrubland, 0.3 m in height of *Maireana georgei* and *Ptilotus obovatus*, PFC 3%, may also be present as a part of the GRMC community.

GRMC occurs on gently sloping flat plains associated with the granite landforms. It often occurs adjacent to GR and GRMS communities. The soils are a gravelly pale reddish-brown silty sands, often with a cryptogamic cover of up to 30% PFC.

The GRMC community is superficially similar to the Mixed Chenopod Shrubland with Mulga Overstorey (MHHS) community that occurs in study area 3. The two communities differ in that GRMC occurs on stony, depositional plains in association with the Granite System, while the MHHS community occurs on the transitional zone between the Saline Playa System and the Sand Plain System.



Plate 12. GRMC Community

BRX Weathered Granite Breakaway Complex

BRX is a vegetation complex of several vegetation communities. The GPoS, GR, GRMS and BCLS communities are present within the BRX complex as well as elsewhere in the Granite System. In addition to these four communities, three are unique to the BRX complex. These include the Weathered Granite Plateau (WGBP), Breakaway Mulga and *Sida ectogama* Shrubland (BMSS) and the *Acacia* spp. Shrubland in Weathered Granite Breakaway Gullies (WGAG). BRX is mapped as one unit and the seven components listed above were not mapped separately at the scale at which this assessment was undertaken, and therefore are not presented in the vegetation map. In addition, WGBP, BMSS and WGAG were not mapped as vegetation communities during these surveys but are described below.

The BRX mosaic supports populations of *Calytrix erosipetala* P3, *Olearia* sp. Sherwood Breakaways (A. Taylor LCH25552), *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097) and *Sida* sp. Mt Keith (G. Cockerton & G. O'Keefe LCH10489).

BRX - WGBP Weathered Granite Breakaway Plateau

BRX - Weathered Granite Breakaway Plateau (WGBP) consists of an open shrubland, 2 m in height, of *Acacia quadrimarginea*, *A. aneura* (various forms) and occasionally *A. balsamea* with a PFC up to 15% (Plate 13). This upper stratum is sometimes absent or extremely sparse. The mid stratum of WGBP is an open low to medium Shrubland, 0.3-1.3 m in height, with *Mirbelia rhagodioides*, *Eremophila latrobei* subsp. *latrobei* and *Ptilotus obovatus* consistently forming part of the stratum. Additional species including *Scaevola spinescens*, *Olearia* sp. Sherwood Breakaways (A. Taylor LCH25552), *Dodonaea petiolaris*, *Ptilotus schwartzii*, *Calytrix erosipetala*, *Sida* sp. Mt Keith (G. Cockerton and G. O'Keefe LCH10489) and *Eremophila exilifolia* are also present within the mid shrub strata in highly varying densities with a PFC ranging from 3-8%. A grass and herb layer is often present, consisting of variable components of *Sida calyxhymenia*, *Eriachne mucronata* (xerophytic form), *Stylidium induratum* and *Neurachne minor* to 0.2 m, PFC 1-2%.

The vegetation density and species assemblage of WGBP is variable, and dependent on the extent and level of isolation of the plateau. The more extensive plateau areas supported a higher diversity, while small isolated plateaus supported relatively fewer species, which is a reflection of the size of the landform.

WGBP occurs upon highly weathered granitic plateaus and upper slopes within the Sherwood land system, ranging from 1 to 20 m in relief with numerous small depressions in the surface. Soils are shallow silty sands that have accumulated in depressions.

WGBP supports populations of *Calytrix uncinata* P3, *Calytrix erosipetala* P3, *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097), *Olearia* sp. Sherwood Breakaways (A. Taylor LCH25552), and *Sida* sp. Mt Keith (G. Cockerton & G. O'Keefe LCH10489).



Plate 13. BRX - WGBP

BRX - WGAG *Acacia* spp. Shrubland in Weathered Granite Breakaway Gullies

BRX - *Acacia* spp. Shrubland in Weathered Granite Breakaway Gullies (WGAG) is characterised by a tall shrubland, 2-4 m high, of *Acacia quadrimarginea*, *A. aneura* (various forms), *A. balsamea* or *A. burkittii*, with a highly variable PFC of 10-50% (Plate 14). *Acacia balsamea* forms part of the tall shrubland near the plateau and upper reaches of the breakaways, giving way to *A. burkittii* towards the base of the breakaways.

A very open mid shrubland is present, 1-3 m in height, of *Dodonaea petiolaris*, *Eremophila latrobei* subsp. *latrobei* and *Psyrdrax rigidula* with a PFC of 2-4%, over a low shrubland, 0.3 m high, of *Ptilotus obovatus* with a PFC 2-6%. *Mirbelia rhagodioides*, *Calytrix erosipetala* P3, and *Eremophila exilifolia* are occasionally present as a part of the low shrubland.

WGAG occurs on slopes on the edges of the breakaways and gullies within the breakaways. The landform features steep rocky slopes, numerous rock faces and caves, which appear to be used regularly by local fauna. Soil accumulates in crevices and depressions on the rock face and in between the boulders and cobbles.

WGAG is bounded by WGBP on the upper surface of the breakaways and occurs on the scree slopes and foot slopes of the breakaway, grading into BMSS and GRMC at the base of the breakaways.

WGAG supports populations of *Calytrix erosipetala* P3, *Olearia* sp. Sherwood Breakaways (A. Taylor LCH25552), *Hibbertia* sp. aff. *exasperata* (D. Brassington & S. Colwill LCH29097) and *Sida* sp. Mt Keith (G. Cockerton & G. O'Keefe LCH10489).



Plate 14. BRX- WGAG

BRX - BMSS Breakaway Mulga and *Sida ectogama* Shrubland

BRX - Breakaway Mulga and *Sida ectogama* Shrubland (BMSS) is characterised by a tall shrubland, 3-4 m in height, of *Acacia aneura* (various forms), PFC 20-35%, over a mid shrub level, 1-2 m of *Sida ectogama*, PFC 15% (Plate 15). *Eremophila latrobei* subsp. *latrobei* and *E. exilifolia* also occur in the mid shrub level but are not continuous throughout the community. Occasionally a low shrub level, 0.4 m in height, of *Ptilotus obovatus* with a PFC of 15% is present. This community may have a greater PFC in drainage areas of the breakaways.

BMSS occurs on pale grey-brown silty sands, which accumulate at the foot slopes below the weathered granite breakaways.



Plate 15. BMSS Community

2. Communities occurring within the Sand Plain System

Sand Plain communities are characterised by Spinifex (*Triodia* spp.) hummock grasslands with a varying amount of shrub, tree and mallee components in the upper stratum. Fire regimes within these communities were observed to have negatively affected fire sensitive species including Mulga, favouring other resprouting *Acacia* species.

SASP Sand Plain Spinifex Hummock Grassland

The Sand Plain Spinifex Hummock Grassland (SASP) is characterised as an open hummock grassland to 0.3 m high of *Triodia basedowii* with a PFC of 10-30%, with a low open shrubland, 0.3-1 m high, of *Leptosema chambersii*, *Euryomyrtus inflata* P3, *Prostanthera wilkieana*, and *Keraudrenia velutina* subsp. *elliptica* with a PFC of 5-10% (Plate 16). There are occasional emergent shrubs, 0.5-1 m high, of *Eremophila forrestii* subsp. *forrestii*, *Acacia effusifolia*, *Grevillea acacioides*, and *G. eriostachya* with a PFC of 3%. There are also occasional mallee, *Eucalyptus kingsmillii*, present. *Euryomyrtus inflata* P3 and *Prostanthera* sp. Bullimore Sandplain (G. Cockerton & D. True LCH 12813) have been recorded in the SASP community.

The SASP community often occurs as a low-lying band of open hummock grassland between the sand plain Spinifex Hummock Grassland with Mallee (SAMA) community on the elevated surrounding sand plain.



Plate 16. SASP Community

Sand Plain Spinifex Hummock Grassland with Wattles

The Sand Plain Spinifex Hummock Grassland with Acacias other than Mulga (SAWS) is characterised as a hummock grassland, 0.3-0.5 m high, of *Triodia basedowii* with a PFC of 30-50%, with a high shrubland, 1.5-2.5 m high, of variable species including *Acacia effusifolia*, *A. heteroneura*, *A. jamesiana*, *A. prainii* and *A. pachyacra*, with a PFC of 30-50% (Plate 17). There are occasional emergent tall shrubs and mallees, 3-7 m high, of *A. aneura* (various forms), *A. ayersiana*, *Eucalyptus trivalva* and *E. kingsmillii*.

Other species present include *Melaleuca interioris*, *M. leiocarpa*, *Hakea lorea* subsp. *lorea*, and *Grevillea acacioides*. These species may dominate over the *Acacia* shrub stratum, particularly in areas burnt five to 15 years ago. In areas which have been recently burnt by fire, approximately one to five years ago, the SAWS community is typically dominated by perennial herbaceous shrubs such as *Leptosema chambersii*, *Rulingia loxophylla*, *Keraudrenia velutina* subsp. *elliptica*, *Dicrastylis* spp, and *Alyogyne pinoniana* with regenerating *Triodia basedowii* grasses and resprouting *Acacia* shrubs. Generally, areas that have been unburnt for a long period of time, at least 20 years, show low species richness.

The SAWS community also occurs on elevated sand ridges over calcrete, and is situated adjacent to patches of *Acacia burkittii* shrubland (CAbs). These ridges feature *Triodia basedowii* or *T. melvillei* hummock grassland with 30-40 % PFC. The upper stratum is an open shrubland to 3 m high of *Acacia ligulata* with a PFC of 20-30 %, over occasional shrubs, 0.4-1 m high, of *Eremophila glabra* subsp. *tomentosa* (inland form) and *Halgania cyanea* with PFC of 1 %.

Bossiaea eremaea P3, *Euryomyrtus inflata* P3, *Olearia arida* P4, *Comesperma viscidulum* P4, *Prostanthera* sp. Bullimore Sandplain (G. Cockerton & D. True LCH 12813), *Acacia* sp. resprouter (G. Cockerton & R. Graham LCH 25490) and *Bertya dimerostigma* have been recorded in the SAWS community.

Soil is massive loamy sand, gritty in part to 1 m, overlying highly indurated gravels with ferricrete and angular quartz and would demonstrate good moisture storage.



Plate 17. SAWS Community

SAMA Sand Plain Spinifex Hummock Grassland with Mallee

The Sand Plain Spinifex Hummock Grassland with Mallee (SAMA) community is characterised as an open hummock grassland to 0.4 m high of *Triodia basedowii* with a PFC of 20-30%, and a low open woodland, 2-4 m high, of *Eucalyptus* spp. mallee (Plate 18 and Plate 19). Mallee species include *Eucalyptus leptopoda* subsp. *elevata*, *E. leptopoda* subsp. *subluta*, *E. kingsmillii* and *E. trivalva* with a PFC of 2-10%. The mid stratum is a high shrubland of variable species including *Acacia effusifolia*, *A. heteroneura* var. *prolixa*, *A. prainii* and *A. ligulata* with a PFC of 20-30%, over mixed open low shrubland.

Eucalyptus kingsmillii and *E. leptopoda* subsp. *subluta* occasionally form dense groves of open forest with a PFC of 20-40%. It is assumed the groves follow inverted drainage lines, indicated by rises in the sand plain. Other species present in the SAMA community include *Hakea francisiana*, *Exocarpos sparteus*, *Halgania cyanea*, *Grevillea acacioides* and *Micromyrtus flaviflora*.

Bossiaea eremaea P3, *Euryomyrtus inflata* P3, *Olearia arida* P4, *Comesperma viscidulum*, *Prostanthera* sp. Bullimore Sandplain (G. Cockerton & D. True LCH 12813), *Acacia* sp. Yakabindie (G. Cockerton & G. O'Keefe 14274) aff. *kempeana*, *Eremophila subfloccosa* subsp. aff. *lanata* (G. Cockerton & C. Jowett 25337) and *Bertya dimerostigma* have been recorded in the SAWS community.

Soil is a gritty, weak, earthy, fabric loamy sand to 1.8 m, overlying a strongly indurated sediment with ferricrete and carbonate nodules, with abundant plant roots at 2 m. This horizon is a good moisture store.



Plate 18. SAMA Community long unburnt



Plate 19. SAMA Community recently burnt

SAHS Sand Plain Spinifex Hummock Grassland with Heath

The Sand Plain Spinifex Hummock Grassland with Heath (SAHS) is characterised as an open hummock grassland to 0.3 m high of *Triodia basedowii* with a PFC of 20-30%, and significant component of low myrtaceous heath or shrubland, 0.3-1 m high, of several species including *Enekbatus eremaeus*, *E. cryptandroides*, *Homalocalyx thryptomenoides* and *Micromyrtus flaviflora* with a PFC of 10-40% (Plate 20). There is an emergent over-storey 1.5-3 m high of *Eucalyptus kingsmillii*, *Acacia effusifolia*, *A. heteroneura* var. *prolixa*, *A. jamesiana*, and *Hakea francisiana* with a PFC of 15%.

Sometimes the SAHS community lacks an *Acacia* over-storey, and is dominated by *Grevillea acacioides*. Sites that have been unburnt for a long period of time are characterised by large mature *Hakea*, *Grevillea* and *Acacia* shrubs with a significant myrtaceous shrub stratum. Areas burnt more recently have a low percentage cover of myrtaceous shrubs, however, the abundance of these regenerating from soil stored seed is significant and these will increase in cover as the vegetation recovers post fire.

The SAHS community occurs on flats and may extend onto foot slopes of elevated sand ridges over calcrete.



Plate 20. SAHS Community

SAGS Sand Plain Spinifex Hummock Grassland with *Eucalyptus gongylocarpa* Woodland

The Sand Plain Spinifex Hummock Grassland with *Eucalyptus gongylocarpa* Woodland (SAGS) community is characterised as an open hummock grassland to 0.4 m high of *Triodia basedowii* with a PFC of 25-30% and an open woodland, 8-12 m high, of *E. gongylocarpa* and *E. kingsmillii* with a PFC of 5-10 % (Plate 21). There is a mid story of open shrubland, 1-2 m high, of *Acacia effusifolia*, *A. ligulata*, *A. prainii* and *A. heteroneura* var. *prolixa* with a PFC of 5%, over low shrubs of *Eremophila platythamnos* subsp. *platythamnos* and *Halgania cyanea* with a PFC of 5-10%.

There is often very little understorey in areas that have been recently burnt. The understorey has influences from adjacent SAWS community, and this is considered an artifact of fire regimes. The SAGS community occurs on elevated sand ridges over calcrete. *Euryomyrtus inflata* P3 has been recorded in the SAGS community.



Plate 21. SAGS Community

SACSG Sand Plain Spinifex Hummock Grassland with *Corymbia lenziana* Woodland

The Sand Plain Spinifex Hummock Grassland with *Corymbia lenziana* Woodland (SACSG) community is characterised as an open hummock grassland to 0.3 m high, of *Triodia basedowii* with a PFC of 15-40%, with a very open Woodland to 10 m of *Corymbia lenziana*, PFC 2-5% (Plate 22). A mid shrubland is present from 1-2 m including *Acacia effusifolia*, *A. jamesiana*, *A. heteroneura* var. *prolixa*, *Grevillea acacioides*, *Homalocalyx thryptomenoides*, *Enekbatus eremaeus* and *Micromyrtus flaviflora* with a PFC of 5-15%.

Neurachne lanigera P1 has been recorded in the SACSG community.

The SACSG community occurs on broad, flat sandplains of reddish-brown silty sand adjacent to the SAMA, SAMU, SAWS and HPMS communities. This community only occurs in the north-west section of study area 2.



Plate 22. SACSG Community

SAMU Sand Plain Mulga Spinifex Hummock Grassland

The Sand Plain Mulga Spinifex Hummock Grassland (SAMU) is characterised as an open hummock grassland, to 0.3 m high, of *Triodia basedowii* with a PFC of 10-30%, and a tall shrubland, 4-6 m high, of *Acacia aneura* (various forms) and *A. ayersiana* with a PFC of 10-15% (Plate 23). There is a mid-storey of scattered shrubs including *A. ramulosa* var. *linophylla*, *A. effusifolia* and *Melaleuca interioris* with occasional emergent mallee including *Eucalyptus trivalva*, *E. longissima*, and *E. lucasii*.

Other species present include *A. colletioides*, *A. prainii*, *A. thoma*, *Grevillea juncifolia*, *Eremophila forrestii* subsp. *forrestii*, *E. glabra* subsp. *tomentosa*, and *E. latrobei* subsp. *latrobei*.

Long unburnt Mulga Spinifex Shrubland is characterised by low species richness. A burnt SAMU community often regenerates post-fire with the major component comprising *Acacia* species characteristic of the SAWS community, until Mulga assumes dominance in the upper stratum over many decades.

Soil is red loamy sand to fine sandy loam, sometimes a massive gritty loamy sand to 1.2 m, overlying a massive mottled sandy loam, overlying weathering granite to 1.5 m.



Plate 23. SAMU Community

SDSH Sand Dune Shrubland

The Sand Dune Shrubland (SDSH) community is characterised as high shrubland, 1.5-3 m high, of *Callitris columellaris* and *Acacia aneura* (various forms) with a PFC of 12-25%, and low open mallee woodland, 2.5m high, of *Eucalyptus leptopoda* subsp. *elevata*, with PFC 1-5%, over open hummock grassland 0.3 m high, of *Triodia basedowii* with a PFC of 5-20% (Plate 24). The mid-storey low open shrubland, 0.3-0.8 m high, is predominantly *Bertya dimerostigma*, PFC of 5-10%, and scattered myrtaceous shrubs including *Micromyrtus flaviflora*, *Enekbatus eremaeus* and *Homalocalyx thryptomenoides*, PFC 1-3%. Other tall shrubs present include *Hakea lorea* subsp. *lorea*, *H. francisiana*, *Acacia burkittii* and *A. heteroneura* var. *prolixa* and *Melaleuca interioris*.

The SDSH community occurs on a series of undulations up to 5 m high of accumulated red Aeolian sand with included calcrete outcroppings and swales between ridges.



Plate 24. SDSH Community

3. Communities occurring within the Hardpan and Drainage System

WABS Wanderrie Bank Grassy Shrubland

The Wanderrie Bank Grassy Shrubland (WABS) is characterised as a high open shrubland, 5-6 m high, of *Acacia aneura* (various forms), *A. ayersiana* and occasional *Grevillea berryana* with a PFC of 5-15%, over a very open grassland 0.2-0.3 m high of *Eragrostis eriopoda* (Wire Wanderrie grass), and *Triodia basedowii* with PFC 1-10% (Plate 25). There is a mid story of open shrubland, 1-2 m high, of *Acacia ramulosa* var. *linophylla* and *A. tetragonophylla* with a PFC of 3-5%, over low open shrubland, 0.4-1.2 m high, of *Eremophila forrestii* subsp. *forrestii* and *Ptilotus obovatus* (typical Goldfields form) with PFC 5-10%. Following good rainfall, annual grasses and herbs contribute significant cover within the WABS community.

Scaevola spinescens terete leaf form (G. Cockerton & C. Ringrose LCH 14560) has been recorded in the WABS community in study area 1.

The WABS community occurs on a level plain with drifts of mobile coarse red sand in patches over clayey sand below, and small quartz gravel to 0.5 cm in diameter. Approximately 90% is bare-ground, and is subject to sheet flow following rainfall and significant wind erosion.



Plate 25. WABS Community

HPMS Hardpan Plain Mulga Shrubland

The Hardpan Plain Mulga Shrubland (HPMS) community is characterised as high shrubland, 4-8 m high, of *Acacia aneura* (various forms), *A. ayersiana* and *A. ramulosa* var. *linophylla* with a PFC of 10-30% (Plate 26). Other commonly occurring tall shrubs, 1-3 m high, include *Grevillea berryana*, *G. sarissa* subsp. *sarissa*, *Eremophila longifolia*, *Melaleuca interioris*, *Acacia macraneura* and *A. tetragonophylla*.

The understorey is low open shrubland, 0.3-1 m high, of *Ptilotus obovatus* (typical Goldfields form) and *Eremophila* spp. including *E. gilesii*, *E. spectabilis* subsp. *brevis* and *E. forrestii* subsp. *forrestii* with a PFC of 1-5%, and occasionally scattered grasses of *Triodia basedowii* and *Eragrostis eriopoda*, PFC of 1-10%. There is a notable absence of a well-developed grassland understorey. *Eremophila arachnoides* subsp. *arachnoides* P3, *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) and *Templetonia incrassata* were recorded in the HPMS community.

The HPMS community occurs as level plains, sometimes with a gentle decline towards calcrete rises. The soil surface is a thin sand coverage over hardpan and is subject to sheet flow following rainfall. Soil is massive indurated loamy sand.



Plate 26. HPMS Community

DRMS Drainage Tract Mulga Shrubland

The Drainage Line Mulga Shrubland (DRMS) community is characterised as high shrubland, 2-5 m high, of *Acacia aneura* (various forms), and occasionally *A. ayersiana* with PFC 10-80%, over low scattered shrubs of *Eremophila* spp. with a PFC of 1%, over scattered tussock grasses and scattered perennial herbs to 0.4 m high, including *Pluchea dentex* and *Rhodanthe charsleyae* with a PFC up to 30% (Plate 27 and Plate 28). Following sufficient rainfall the PFC of grasses and herbs is likely to increase to >10%.

The DRMS community usually occurs as bands associated with wide drainage lines originating from the Granite System and draining toward the Playa System. Drainage lines may be incised up to 0.5 m deep and may have sandy mobile sediment beds with granite cobbles, boulders and quartz stones occurring on the margins. DRMS often transect through other vegetation communities such as WABS, HPMS, GRMS and SAES.



Plate 27. DRMS Community on creekbed



Plate 28. DRMS Community

DRES Drainage Line *Eucalyptus* Woodland

The Drainage Line *Eucalyptus* Woodland (DRES) community is characterised as open woodland, 5-16 m high, of *Eucalyptus camaldulensis* subsp. *obtusata* with a PFC of 1-5%, over high shrubland, 2-7 m high, of *Acacia aneura* (various forms), *A. quadrimarginea*, *A. tetragonophylla*, and *A. ramulosa* var. *linophylla* with a PFC of 10-15% (Plate 29). There is understorey open shrubland, 1-2 m high, of *Senna artemisioides* subsp. *x artemisioides* and *Dodonaea petiolaris*, PFC 2-4% over very open perennial grassland of *Cymbopogon ambiguus* and perennial herbs *Pluchea dentex* with a PFC of 2-5%.

The DRES community occurs as narrow, up to 12 m wide, drainage lines with extensive mobile sandy beds. Numerous exposed exfoliating granite rocks, sheets and boulders may be present in the drainage line floor.



Plate 29. DRES Community

GRMU Mulga Groves on Hardpan Plains

The Mulga Groves on Hardpan Plains (GRMU) community is characterised as high Mulga shrubland forming groves, 3-8 m high, of *Acacia aneura* (various forms), *A. ayersiana*, *A. craspedocarpa*, *A. tetragonophylla*, *Acacia macraneura* and *A. ramulosa* subsp. *linophylla* with a PFC of 50-75%, over low open shrubland, 0.3-1 m high, of *Eremophila hygrophana* and *Ptilotus obovatus* (typical Goldfields form) with a PFC of 5% (Plate 30). Cryptogams are abundant on the surface.

The GRMU communities have distinct boundaries with sparser inter-grove communities, and are arranged in a series of bands. Groves occur in areas of HPMS vegetation where the soil, nutrients and water have accumulated. They are common in areas where concentrated flow from granite outcrops disperses into sand plain.



Plate 30. GRMU Community

MHHS Mixed Chenopod Shrublands with Mulga Overstorey

The Mixed Chenopod Shrublands with Mulga Overstorey (MHHS) community is characterized as Mulga shrubland, 4-8 m high, of *Acacia aneura* (various forms) and *Acacia ayersiana* with a PFC of 5-15% (Plate 31), over medium shrubland, 0.5-1.5 m high, of *Maireana pyramidata*, *Cratystylis subspinescens*, *Scaevola spinescens*, *Acacia tetragonophylla*, *Eremophila forrestii* subsp. *forrestii*, *Eremophila maculata*, *Eremophila spectabilis* subsp. *brevis*, *Senna artemisioides* subsp. *filifolia*, *Rhagodia drummondii*, *Atriplex bunburyana* and *Ptilotus obovatus* with a PFC of 5-15% over an open grassland of *Eragrostis eriopoda* and *Triodia basedowii* to 0.3m with a PFC of 1-10%

This community occurs on flat to gently inclined plains with a thin sandy surface over firmer clay soils. MHHS is often bounded down slope by SBMMS, upslope by WABS, SAMU and HPMS and is interspersed with CsMp and PLEml. MHHS represents a broad interzone between the lake system and its associated communities and the sand plain communities.



Plate 31. MHHS Community

DRMpS Drainage Tract *Maireana pyramidata* Shrubland

Maireana pyramidata Shrubland on Drainage Tract (DRMpS) community is characterised as an open shrubland, 1 m high, of *Maireana pyramidata*, PFC 10%, over a low open shrubland to 0.3 m of *Frankenia setosa*, *Maireana georgei*, *M. tomentosa*, *Sclerolaena densifolia* and *Ptilotus obovatus* with a PFC of 1-10% (Plate 32).

DRMpS community usually occurs on sheet wash plains draining from the Granite System and toward the Playa System. DRMpS grades into GRMC and is bounded by GRMS and GR. This community was only recorded in study area 2.



Plate 32. DRMpS Community

4. Communities occurring within the Playa System

The Playa System is predominantly vegetated with PLAPoS on flats with other minor vegetation communities occurring within playa depressions, scalds and sink holes. Areas with no vegetation are mapped as bare ground.

In study area 3, MHHS becomes the dominant community on the gently sloping areas closer to the Lake system.

PLAPoS *Acacia* spp. and *Ptilotus obovatus* Shrubland

The *Acacia* spp. and *Ptilotus obovatus* Shrubland (PLAPoS) community is characterised as a tall open shrubland to 4-6 m high of *Acacia ayersiana*, *A. aneura* (various forms), *A. tetragonophylla*, *A. ramulosa* var. *linophylla* and *A. burkittii*, with a PFC of 10-20%, over a low shrubland to 0.4 m high of *Ptilotus obovatus* with PFC 1-10% (Plate 33).

Other species present include *Acacia macraneura*, *Eremophila longifolia*, *E. forrestii* subsp. *forrestii*, *Grevillea berryana*, *Hakea lorea* subsp. *lorea*, *Senna artemisioides* subsp. *filifolia*, *E. arachnoides* subsp. *arachnoides* P3, *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) and *Templetonia incrassata*.

The PLAPoS community occurs on flats in the Playa System. The Playa System is a patchy mosaic with minor changes in micro-topography affecting surface water runoff, infiltration, waterlogging potential and density of vegetation. PLAPoS occurs in several varying landforms including bands between calcrete communities and Sand plain communities, in pockets within depressions between calcrete rises, and in extensive areas surrounding calcrete, hardpan and drainage, and granite communities. The PLAPoS landform is characterised by a high percentage of bare ground with scattered calcrete gravel on surface with extensive algal cryptogamic cover and calcrete at shallow depths. Small to large *Acacia* spp. and *Eremophila* spp. thickets (PLAET) are included within the PLAPoS community, but mapped separately where possible, and described below.

Soils are massive, indurated, gritty, loamy sand.



Plate 33. PLAPoS Community

PLAET *Acacia* spp. and *Eremophila* spp. Thicket

The *Acacia* spp. and *Eremophila* spp. Thicket (PLAET) community is characterised by dense thickets of tall shrubs 3-8 m high, of *Acacia tetragonophylla*, *A. aneura* (various forms), *Eremophila longifolia*, *Grevillea berryana*, *Hakea lorea* subsp. *lorea*, *Santalum lanceolatum* and *Pittosporum angustifolium*, with a PFC of 20-70% (Plate 34). There are occasional trees 10-12 m high of *Eucalyptus lucasii*. The understorey is a low open shrubland 0.3 m high of *Ptilotus obovatus* with a PFC of 2-20%, over abundant annual herbaceous grass species following sufficient rainfall. A prominent feature of this community is patches of tussock grasses, *Eriachne helmsii* and *Eragrostis setifolia*, with a PFC of up to 25% growing around sink holes. Other species occasionally present include *Senna artemisioides* subsp. *filifolia*, *Melaleuca interioris*, *Acacia burkittii*, *A. macraneura*, *Eremophila eriocalyx*, *E. arachnoides* subsp. *arachnoides* P3, *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) and *Templetonia incrassata*.

The PLAET community occurs in water accumulating depressions with large cracks and sink holes up to 1 m deep on flats within the Playa System. Thickets of vegetation often surround a bare central area with a PFC of up to 50-70% on the margins.

Frequently an understorey shrub component is absent in this community, particularly in areas of current or historical heavy sheep and cattle grazing (Plate 35).



Plate 34. PLAET Community



Plate 35. Heavily grazed PLAET Community

PLAMi *Acacia* spp. and *Melaleuca interioris* Shrubland

The *Acacia* spp. and *Melaleuca interioris* Shrubland (PLAMi) community is characterised as a high shrubland, 2-8 m high, of *Acacia aneura* (various forms), *A. ayersiana* and *Melaleuca interioris* with a PFC of 10-20%, over low scattered shrubs, 0.2-0.4 m high, of *Ptilotus obovatus* (typical Goldfields form) with a PFC of 1-3% (Plate 36).

Other shrub species present include *Acacia tetragonophylla*, *A. ramulosa* var. *linophylla*, *A. macraneura*, *Eremophila longifolia*, and *Grevillea berryana*. The understorey shrub component is variable and is influenced by adjacent vegetation communities. *Rhagodia* sp. Yeelirrie Station (K.A. Shepherd et al. KS1396) P1 has been recorded in the PLAMi community.

The PLAMi community occurs within the Playa System on elevated ground fringing the edges of scalded areas and shallow playas, both bare and vegetated.



Plate 36. PLAMi Community

PLMf *Muehlenbeckia florulenta* Shrubland

The *Muehlenbeckia florulenta* (PLMf) community is characterised by open shrubland or scattered shrubs of *Muehlenbeckia florulenta*, 0.5-1.8 m high, with a highly variable PFC of <1 to 30%, occurring in small clumps on otherwise predominantly bare soil (Plate 37).

Muehlenbeckia florulenta is always found in areas subject to periodic inundation and waterlogging. A highly variable component of scattered shrubs influenced by adjacent vegetation is often present.

The PLMf community occurs within the Playa System on playas or shallow water holding depressions with cracking and heaving clays and is fringed by PLAMi vegetation.



Plate 37. PLMf Community

PLCsMp *Cratystylis subspinescens* and *Maireana pyramidata* Shrubland

The *Cratystylis subspinescens* and *Maireana pyramidata* Shrubland (PLCsMp) is characterised as an open shrubland of *Cratystylis subspinescens* and *Maireana pyramidata*, 0.6-1.6 m high, with a highly variable PFC of 5-25% (Plate 38). There may be an understorey of low scattered shrubs, 0.2-0.4 m high, of *Ptilotus obovatus* (typical Goldfields form), *Maireana georgei*, *Sclerolaena eriacantha*, *Solanum lasiophyllum* and *Frankenia laxiflora* with a PFC of <1%. *Acacia macraneura* and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) have also been recorded.

The PLCsMp community occurs in depressions or shallow playas, and is often surrounded by PLAMi or HPMS vegetation communities. Presence of cryptogams and surface crusting was noted.



Plate 38. PLCsMp Shrubland

PLEmc *Eremophila maculata* subsp. *brevifolia* Shrubland

The *Eremophila maculata* subsp. *brevifolia* Shrubland (PLEmc) is characterised as mostly bare ground with an low open shrubland, 0.4-0.6 m high, of *Eremophila maculata* subsp. *brevifolia* with a PFC of 2-10% (Plate 39). Scattered tall shrubs of *Acacia ayersiana*, *A. tetragonophylla*, *A. aneura* and *A. burkittii* with a PFC of < 2% may also be present. *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) has also been recorded in the PLEmc community.

The PLEmc community occurs on scalded flats within the Playa System. A fine layer of depositional sand overlies compacted soil, and an extensive cryptogam cover is present on the soil surface.



Plate 39. PLEmc Community

PLEml *Eremophila malacoides* Shrubland

The *Eremophila malacoides* Shrubland (PLEml) is characterised as a low open shrubland of *Eremophila malacoides*, 0.5-0.7 m high, with a PFC of 4-15% (Plate 40). There are occasional emergent shrubs, 1-3.5 m high, of *Acacia tetragonophylla*, *A. ayersiana*, *A. aneura* and *Scaevola spinescens* terete leaf form (G. Cockerton & C. Ringrose LCH 14560) with a PFC of < 1%.

Fringing vegetation supports taller shrubs including *Scaevola spinescens* (terete leaf form G. Cockerton & C. Ringrose LCH 14560), *Templetonia incrassata*, *Acacia macraneura*, *A. ayersiana* and *Melaleuca interioris*, with a PFC of 5-10%.

The PLEml community occurs on bare scalded ground within the Playa System. Soil mounds of accumulated wind blown sediment, up to 15 cm high, are common at the bases of plants. The soil surface has a cryptogam cover of 5-15%.



Plate 40. PLEml Community

PLEsp *Eragrostis* spp. Grassland on Playa

The *Eragrostis* spp. Grassland on Playa (PLEsp) community is characterised as an open grassland, to 0.15 m high, dominated by the annual grasses *Eragrostis dielsii* and *E. tenellula*, and herbs including *Pluchea dentex*, and an abundant *Ophioglossum lusitanicum* geophyte component, with a PFC of 30-50% (Plate 41). Scattered tall shrubs of *Acacia tetragonophylla* and *A. ayersiana*, 2-4 m high, are present. An extensive cryptogam cover is present on the soil surface with a PFC of 15-20%.

The PLEsp community occurs on shallow playas of the Playa System, and retains moisture when other communities are dry.



Plate 41. PLEsp Community

PLCh Chenopods on Scalded Areas

The Chenopods on Scalded Areas (PLCh) community is characterised by a low open shrubland, 0.1-0.3 m high, of variable Chenopod species that are dominated by *Maireana carnososa*, *M. georgei*, *M. triptera*, *Sclerolaena diacantha* and *Dissocarpus paradoxus*, with a PFC of 5-10%, over scattered tussock grasses of perennial *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770) with a PFC of <2% (Plate 42). There are occasional emergent shrubs (PFC <1%) of *Acacia tetragonophylla*, *Santalum lanceolatum*, *Eremophila forrestii* subsp. *forrestii*, *E. battii*, *E. longifolia* and *Ptilotus obovatus* (typical Goldfields form), which reflect the adjacent vegetation communities. The PFC of both Chenopod and perennial grass component is expected to increase substantially after sufficient rainfall.

The PLCh community occurs on extensive scalded areas within the Playa System, and surrounded by PLAPoS and HPMS vegetation communities. A fine layer of depositional sand overlies compacted soil. Cryptogam cover is extensive with a PFC of 40%.



Plate 42. PLCh Community

5. Communities occurring within the Calcrete System

The Calcrete System of study area 1 is orientated north-west to south-east and is characterised by outcropping calcrete rises and a series of flats and clay flats which run along the trunk of an ancient paleodrainage channel. The majority of the targeted resource area is located in the Calcrete System. The Calcrete System is fringed by the Playa System, excluding the north-west extent where it adjoins the Sand Plain System. There are pockets of Calcrete System vegetation communities within the Playa System and Sand Plain System.

The Calcrete System of study area 2 occurs as a few outcropping calcrete rises with *Acacia burkittii* Shrubland on Calcrete (CAbS) surrounded by vegetation communities of the Playa System and Sand Plain System. The Calcrete System of study area 3 occurs in the south-eastern section of the Yeelirrie paleodrainage channel, and is fringed by the Playa System in sections, and borders the Saline Playa System in sections.

CEgW *Eucalyptus gypsophila* Woodland on Calcrete

The *Eucalyptus gypsophila* Woodland on Calcrete (CEgW) community is characterised as a woodland of *Eucalyptus gypsophila*, 8-12 m high, with a PFC of 5-30%, and often forming patches of open forest (Plate 43). There is a mid storey stratum of open shrubland, 1-3 m high, including *Templetonia incrassata*, *Eremophila arachnoides* subsp. *arachnoides* P3, *Acacia burkittii* and *Senna artemisioides* subsp. *filifolia* with a PFC of 1-10%, and occasional emergent *Casuarina pauper* trees up to 10 m high. There is usually very little shrub understorey with much bare ground between trees and shrubs. The soil surface has extensive cryptogam coverage with tufts of dead annual grasses and perennial grasses, including *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770). A notable feature of this community is the extensive cover of leaf litter, up to 15 cm deep, beneath the tree canopy.

The CEgW community occurs on calcrete rises and often forms a patchy mosaic with other calcrete communities including CCpW, CAbS and CERg, which are described below. Soil is hydrophobic loam fine sandy (Northcote & Skene, 1972), with

weathered carbonate and chert nodules grading to gritty loam fine sandy with angular to sub-angular gravels. The gravel content and induration increases with depth. Calcium sulphate (gypsum) crystals are present down to 1 m overlying transported and recemented calcrete. This lower horizon has good water storage capability with moisture increasing with depth.



Plate 43. CEgW Community

CCpW *Casuarina pauper* Woodland on Calcrete

The *Casuarina pauper* Woodland on Calcrete (CCpW) is characterised as a patchy woodland of *Casuarina pauper*, 8-12 m high, with a PFC of 10-15% and up to 100% in clumps (Plate 44). There is a mid-stratum shrubland, 0.5-2.5 m high, of *Acacia burkittii*, *Templetonia incrassata*, *Senna artemisioides* subsp. *filifolia* and *Eremophila arachnoides* subsp. *arachnoides* P3, with a PFC of 5-20%, over low scattered shrubs 0.2-0.4 m high of *Ptilotus obovatus* and *Sclerolaena fusiformis*, PFC 1-2%. *Acacia macraneura* has also been recorded. The CCpW community is highly variable in density of vegetation. Occasional depressions in the landscape are characterised by low shrubland of *Ptilotus obovatus* and an extensive cryptogam cover. Individual *C. pauper* trees are very large with trunks up to approximately 0.4 m diameter at breast height.

CCpW vegetation occurs on a gently undulating landscape with calcrete rises and depressions. The soil has a stony calcrete mantle with gravel and cobbles 0.5-5 cm.



Plate 44. CCpW Community

CMxS *Melaleuca xerophila* Shrubland on Calcrete

The *Melaleuca xerophila* Shrubland on Calcrete (CMxS) community is characterised as a tall shrubland, 3-6 m high, of *Melaleuca xerophila* with a PFC of 5-20% (Plate 45), and in some places an open scrub with a PFC of 30-80%. There is a mid-storey of scattered shrubs, 1-2 m high, of *Acacia burkittii*, *Senna artemisioides* subsp. *filifolia* and *Lycium australe*, with a PFC of <1-2%, over scattered low shrubs, 0.2-0.4 m high, of *Ptilotus obovatus* (typical Goldfields form), *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) P1, *Rhagodia drummondii*, *Maireana* spp., *Sclerolaena* spp. and *Dissocarpus paradoxus* with a PFC of <1-2%, over scattered low clumping grasses of *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770) with a PFC of <1-2%. Very little understorey occurs under the dense canopy of *M. xerophila*. The aerial parasite with restricted distribution, *Amyema microphylla*, is often present on *M. xerophila* shrubs and has an obligatory association with this species. *Eremophila arachnoides* subsp. *arachnoides* P3, *Templetonia incrassata* and *Scaevola spinescens* (terete leaf form G. Cockerton & C. Ringrose LCH 14560) have also been recorded. Cryptogam cover on the soil surface is 5-10%.

The CMxS community occurs on flats within the Calcrete System, and often surround calcrete rises, which are vegetated with the CAbs community (described below).

Soil is a 2 mm layer of silty sand over self-mulching clay with gypsum crystals to 0.3 mg/l, overlying powdery calcrete to 1.4 m.

CMxS often occurs in dense bands on the boundary between the Calcrete and Playa Systems. Smaller areas of CMxS form an annular pattern or ring small circular scalds in the Calcrete System. In some cases these playas were not investigated due to heritage considerations.

The CMxS community is closely associated with an ecosystem at risk that occurs near Wiluna and was identified by Cowan (2002) in the biodiversity audit of the East Murchison IBRA subregion. Communities with restricted distributions are discussed further in Section 3.5.



Plate 45. CMxS Community

CABs *Acacia burkittii* Shrubland on Calcrete

The *Acacia burkittii* Shrubland on Calcrete (CABs) community is characterised as a high shrubland of *A. burkittii*, 2-5 m high, with a PFC of 5-20% (Plate 46). There are scattered tall shrubs of *Grevillea berryana*, *Eremophila arachnoides* subsp. *arachnoides* P3 and *Templetonia incrassata*, over scattered shrubs, 0.5-1.5 m high, of *Senna artemisioides* subsp. *filifolia* with a PFC of <1-5%, over scattered low shrubs to 0.4 m high of *Ptilotus obovatus* (typical Goldfields form) with a PFC of 1-3 %. Dead tufts of grasses were observed at time of survey.

Soil is stony loam fine sandy, overlying carbonate rubble in a loam fine sandy matrix. The surface is typically a lag gravel dominated by weathered calcrete. The soil surface has a discontinuous stony mantle of calcrete gravel and cobbles 0.5-10 cm diameter, with occasional large stones. Approximately 85% of the ground is bare in this community, and substantial cryptogamic cover may be observed on the surface.

The CABs community occurs on low calcrete rises in the Calcrete System and often forms a mosaic with CEGW and CCpW communities.



Plate 46. CABs Community

CMiS *Melaleuca interioris* Shrubland on Calcrete

The *Melaleuca interioris* Shrubland on Calcrete (CMiS) community is characterised as high shrubland, 1-3 m high, of *M. interioris*, *Acacia ayersiana*, *A. aneura* and *A. tetragonophylla* with a PFC of 10-20%, over low scattered shrubs to 0.2-0.4 m high of *Ptilotus obovatus* (typical Goldfields form), *Dissocarpus paradoxus* and *Sclerolaena convexula* with a PFC of 1-2% (Plate 47). There are occasional patches of *M. xerophila* to 3.5 m high. *Scaevola spinescens* (terete leaf form G. Cockerton & C. Ringrose LCH 14560) has also been recorded in the CMiS community.

The CMiS community occurs in small internally drained depressions in the Calcrete System and was infrequently recorded. The calcareous soil has abundant, discontinuous calcrete gravel and cobbles 0.5-5 cm, and calcrete is at shallow depth within the soil profile. The CMiS community is sometimes surrounded by the HPMS community described below, and receives run-off from adjacent CAbS community.



Plate 47. CMiS Community

CERG *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770) Grassland on Calcrete

The *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770) Grassland on Calcrete (CERG) community is characterised as a very open grassland, 0.01-0.05 m high, of a low clumping *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770), with a PFC of 2-5%, on otherwise bare ground (Plate 48). There are emergent low scattered shrubs, 0.1-1 m high, with a PFC of <1-2%, that reflect adjacent vegetation communities. Occasional shrub species include *Lycium australe* and *Ptilotus obovatus* (typical Goldfields form) with herbaceous perennials *Sclerolaena eriacantha* and *Salsola tragus*. *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25025) P1, *Eremophila arachnoides* subsp. *arachnoides* P3 and *Templetonia incrassata* have also been recorded in the CERG community.

The CERG community occurs on flats in the Calcrete System in an outwash zone below a calcrete rise vegetated with CEgW and CCpW communities, and surrounding CAPS and CMxS communities. The calcareous soil has a significant proportion of cryptogam cover with abundant, discontinuous calcrete lag gravel and stones of 0.5-4 cm diameter.



Plate 48. CERG Community

**CAPs *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)
Shrubland on Calcrete**

The *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) Shrubland on Calcrete (CAPs) community is characterised as a low shrubland to 0.6 m high of *Atriplex* sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1, with a PFC varying from <1-20% (Plate 49). Also present are occasional emergent shrubs of *Lycium australe* to 1.5 m high, and *Melaleuca xerophila* to 4 m high.

The CAPs community occurs on flats of self-mulching light to medium clays within the calcrete system. The soil texture is described as a medium clay, and the soil surface has numerous cracks, sink holes and small pockets of calcrete pebbles.

This community is confined to two areas within study area 1 and situated down slope of the CEGW community on a calcrete rise, and surrounded by the CMxS community. In study area 3 there are nine areas of CAPs, and these are distributed adjacent to vegetation communities of the Lake System, and down slope of the CEGW community on a calcrete rise.



Plate 49. CAPs Community

CRsS *Rhagodia* sp. Yeelirrie Station (K. A. Shepherd *et al.* KS 1396) Shrubland on Calcrete

The *Rhagodia* sp. Yeelirrie Station (K. A. Shepherd *et al.* KS 1396) Shrubland on Calcrete (CRsS) community is characterised as an open shrubland 0.5-1.5 m high of *Rhagodia* sp. Yeelirrie Station (K. A. Shepherd *et al.* KS 1396) with a PFC of 30% (Plate 50). Perennial herbs are often present, in particular *Teucrium racemosum*, to 0.3 m high, with a PFC of 10 %.

Species present in the fringing vegetation include *Acacia aneura* (various forms), *A. tetragonophylla*, *Melaleuca interioris*, *Ptilotus obovatus* (typical Goldfields form) and *Eragrostis setifolia*.

Four areas of the CRsS community occurs on clay flats within the Calcrete System in study area 1, and these are fringed by PLAPoS and PLAET vegetation communities.



Plate 50. CRsS Community

CMpS *Maireana pyramidata* Shrubland on Calcrete

The *Maireana pyramidata* Shrubland on Calcrete (CMpS) community is characterised by an open shrubland 0.3-0.8 m high of *Maireana pyramidata* with a PFC of 15%, over *Maireana georgei* and *Ptilotus obovatus* (typical Goldfields form) with a PFC of 5% (Plate 51). Emergent shrubs may also be present, including *Acacia ayersiana*, *Eremophila longifolia*, *Melaleuca interioris*, *Melaleuca xerophila*, *Pittosporum angustifolium*, *Sclerolaena fusiformis* and *Scaevola spinescens* (terete leaf form G. Cockerton & C. Ringrose LCH 14560).

The CMpS community occurs on flats in the Calcrete System.



Plate 51. CMpS Community

CLaS *Lycium australe* Shrubland on Calcrete

The *Lycium australe* Shrubland on Calcrete (CLaS) community is characterised as an open shrubland, 1-2 m high, of *Lycium australe* with a PFC of 2-30%, over scattered clumping perennial tussock grasses, of *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770), with a PFC of 1-2% (Plate 52). Scattered tall shrubs of *Melaleuca xerophila* are often present, 5-6 m high by 10-15 m wide, with a PFC of 1-2%. There are also occasional scattered shrubs of *Templetonia incrassata*, *Scaevola spinescens* (terete leaf form G. Cockerton & C. Ringrose LCH 14560), *Senna artemisioides* subsp. *filifolia*, *Eremophila arachnoides* subsp. *arachnoides* P3, *Acacia synchronicia*, *A. burkittii* and *Rhagodia drummondii*, with a PFC of 1-2%, and low scattered shrubs of *Ptilotus obovatus*, *Dissocarpus paradoxus* and *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH 25052) P1 with PFCs of 1, 2 and 5%, respectively.

This is a variable community and has influences from adjacent vegetation communities.

The CLaS community occurs on flats in the Calcrete System with variable silt and clay content and a surface of scattered lag gravel or gravels of quartz and calcrete with occasional pebbles. Is often adjacent to the CMGbS, CCpW and CMxS vegetation communities.



Plate 52. CLaS Community

CMGbS Mulga and *Grevillea berryana* Shrubland on Calcrete

The Mulga and *Grevillea berryana* Shrubland on Calcrete (CMGbS) community is characterised as a high open shrubland, 2-5 m high, of *Acacia ayersiana* and *Grevillea berryana*, with a PFC of 5-15%, over open shrubland of *Senna artemisioides* subsp. *filifolia* and *Acacia burkittii*, with a PFC of 2-5%, over scattered clumping tussock grasses of *Eragrostis* sp. Yeelirrie Calcrete (S Regan LCH 26770) (Plate 53). Other species present include *Acacia aneura* (various forms), *A. synchronicia*, *A. tetragonophylla*, *Melaleuca interioris*, *Lycium australe*, *Eremophila arachnoides* subsp. *arachnoides* P3, and *Templetonia incrassata*.

The CMGbS community occurs on the outwash zone below calcrete rises within the Calcrete System, which grades into the Playa System. Soil is fine loamy sand. The soil profile shows a layer of windblown fine sandy loam over weathered calcrete. There is extensive cryptogammic crusting on the surface.

This community represents a broad ecotone between SAMU and HPMS with CLaS and CMxS. It is variable and has influences from adjacent habitats. The most distinguishing feature of this community is the dominance of *Grevillea berryana*, a likely ground water dependent species, indicating that this is a ground water dependent community.



Plate 53. CMGbS Community

6. Communities occurring within the Lake Miranda Saline Playa System

The Lake Miranda Saline Playa System is present in south-eastern section of the Yeelirrie paleodrainage channel in study area 3. This system supports a complex of vegetation communities that appear to be well adapted to highly variable moisture and salinity conditions. Salinity levels have not been measured but the vegetation present is highly indicative of high salinity levels. This is especially evident where the *Frankenia* species are heavily crusted with sodium chloride crystals. The presence of gypsum crystals on the soil surface indicates that the Calcrete System retains an influence on the soil chemistry in the area.

The Saline Playa System is fringed by sandy banks and extensive gently sloping clay flats, somewhat resembling the Playa System and is characterized by expanses of SBMMS and CsMp. This grades into the Sand Plain System further away from the Saline Playa System.

SBMMS Sandy Bank Mulga and *Maireana pyramidata* Shrubland

The Sandy Bank Mulga and *Maireana pyramidata* Shrubland associated with the Saline Playa System (SBMMS) community is characterised as Mulga shrubland, 4-8 m high, of *Acacia ayersiana* and *Acacia aneura* (various forms) with a PFC of 5-15% (Plate 54), over medium shrubland, 0.5-1.5 m high, of *Maireana pyramidata*, *Atriplex bunburyana*, *Cratystylis subspinescens* and *Lycium australe*, PFC 10-30% over occasional *Eragrostis eriopoda* perennial wanderrie grasses and *Triodia basedowii* hummock grasses to 0.3 m with a PFC up to 3%.

This community occurs adjacent to the Lake System on sandy rises and banks and often grades into MHHS or WABS with increasing distance from the lake system. The soil surface consists of a top layer of reddish-brown silty sand, overlaying firmer sandy clays. These areas appear to be depositional zones for windblown sediments from the lake bed and surrounding areas.



Plate 54. SBMSS Community

CsMp *Cratystylis subspinescens* and *Maireana pyramidata* Shrubland

The *Cratystylis subspinescens* and *Maireana pyramidata* Shrubland (CsMp) is characterised as a medium shrubland of *Cratystylis subspinescens* and *Maireana pyramidata*, 1-1.5 m high, with a variable PFC of 10-25% (Plate 55) with occasional *Scaevola spinescens* and *Atriplex bunburyana* over an understorey of low shrubs, 0.3-0.5 m high, of *Eremophila malacoides*, *Tecticornia* species and *Frankenia* species with a PFC of 1-5%.

The CsMp community occurs on the margins of the Saline Playa System, on the surrounding sandy banks and alluvial plains and less commonly in shallow playas. It is often intermixed with the SBMMS and MHHS vegetation communities. The dominance of *Maireana pyramidata* and *Cratystylis subspinescens* is highly interchangeable throughout the distribution.

CsMp has been described separately to the Playa System community PLCsMp based on the different soil landscape associations on which they occur and their differing understorey components. The species component of the lower shrub stratum of CsMp reflects the saline nature of the soil landscape system and includes *Tecticornia* and *Frankenia* species. The soils of the CsMp community were similar in appearance to the Playa System however subjection to grazing pressure by cattle had disturbed the soil surface in many areas. In contrast, the PLCsMp community occurs in depressions or shallow playas, and the presence of cryptogams and surface crusting was noted.



Plate 55. CsMp Community

SPAbS Lake System *Atriplex bunburyana* Shrubland

The *Atriplex bunburyana* Shrubland associated with the Saline Playa System (SPAbS) community is characterised as a medium shrubland of *Atriplex bunburyana* 0.4-1 m high with a PFC of 15-30% (Plate 56). Other species common in this community are *Maireana pyramidata*, *Cratystylis subspinescens*, *Tecticornia* spp. and *Frankenia* spp. These represent gradations into the surrounding communities.

The SPAbS community usually occurs as narrow bands between the lake bed communities and SBMMS, or as slightly elevated, narrow fingers extending into the Saline Playa System. The soils are sandy clays with a high gypsum and salt concentration.



Plate 56. SPAbS Community

SPTLS Lake System *Tecticornia* spp. Low Shrublands

The *Tecticornia* spp. Low Shrublands associated with the Saline Playa System (SPTLS) community is characterised as a low shrubland to 0.6m high of *Tecticornia undulata* and *Tecticornia pterygosperma* subsp. *pterygosperma* with a PFC of 7-20% with occasional *Atriplex bunburyana* and *Frankenia cinerea* present in areas (Plate 57).

The SPTLS community occurs on the level, seasonally inundated, saline gypsum lake bed. The soils have a high clay content and are usually surface crusting or cracking clays.



Plate 57. SPTLS Community

SPLS Lake System *Lawrenzia helmsii* Shrubland

The Saline Playa *Lawrenzia helmsii* Shrubland (SPLS) community is characterised as a low open shrubland of *Lawrenzia helmsii*, 0.5-1 m high, with a PFC of 10-15% over *Frankenia* spp. to 0.1 m high with a PFC of 3-5% (Plate 58).

SPLS is a part of the Saline Playa System complex and occurs on the seasonally inundated, flat bed of the saline gypsum lake system. The soil surface has a crust of gypsum and salt crystals mixed with pale brown clays and calcrete rubble. Moisture is present in the dry months just ten centimeters below the soil surface.



Plate 58. SPLS Community

SPFLS Saline Playa *Frankenia* spp. Low Shrublands

The *Frankenia* spp. Low Shrublands associated with the Saline Playa System (SPFLS) community are characterised as a low shrubland of *Frankenia pauciflora*, *F. cinerea* and *F. laxiflora* to 0.2 m with a PFC of 5-15% (Plate 59) with occasional scattered shrubs of *Lycium australe*, *Atriplex bunburyana*, *Atriplex* sp. Yeelirrie Station (L. Trotter and A. Douglas LCH25025) P1 and *Maireana pyramidata*.

The SPFLS community is found on the saline gypsum lake bed in association with CLaS, CApS, SPLS and SPTLS. The soils have a high clay content and usually have a surface crusting of salt and gypsum crystals.



Plate 59. SPFLS Community

7. References

Northcote, K. H., and Skene, J.K.M. (1972) Australian Soils with Saline and Sodic Properties. CSIRO. *Soils Publication No. 27.*

Appendix 9. Vegetation quadrat descriptions (study area 1)

First Assessment of Quadrats

BHP Billiton Yeelirrie Site YQ001**Described by** Lewis Trotter**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 450m south of North Gate, along North Gate-South Gate Road, east of road, central Yeelirrie study area 1**MGA Zone:** 50J789453 **mE**6990989 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga spinifex shrubland**Disturbance:** Nearby access track approximately 3 m from quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 64.063%; 20% leaf litter cover to a depth of 2 cm, 12 dead timber standing with 5% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.001%	0.4 m	YQ001-07=
<i>Acacia ayersiana</i>	20%	6 m	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.001%	1 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.1 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	n/a	n/a	YQ001-01
<i>Eragrostis eriopoda</i>	5%	0.2 m	n/a
<i>Eremophila eriocalyx</i>	0.001%	0.8 m	YQ001-08
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.036%	1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	1.2 m	n/a
<i>Grevillea berryana</i>	3%	6 m	n/a
<i>Maireana georgei</i>	0.001%	0.2 m	YQ001-03
<i>Melaleuca interioris</i>	1%	3 m	YQ001-05
<i>Monachather paradoxus</i>	n/a	n/a	n/a
<i>Psydrax suaveolens</i>	0.001%	0.9 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.016%	1 m	YQ001-04
<i>Rhagodia drummondii</i>	n/a	n/a	YQ001-09
<i>Sclerolaena cornishiana</i>	0.001%	0.4 m	YQ001-02
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1.1 m	YQ001-06
<i>Triodia basedowii</i>	35%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ002**Described by:** Lewis Trotter**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m south of North Gate, along North Gate-South Gate Road, west of road, central Yeelirrie study area 1**MGA Zone:** 50K789398 **mE**6990604 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland with *Acacia* sp. fragrant**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 27.105%; 5% leaf litter cover to a depth of 2 cm, 41 dead timber standing with 5% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 55% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.001%	0.5 m	YQ001-07=
<i>Acacia ayersiana</i>	3%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.036%	3 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	8%	3 m	YQ002-10
<i>Acacia tetragonophylla</i>	15%	1.2 m	n/a
<i>Austrostipa elegantissima</i>	n/a	n/a	n/a
<i>Dissocarpus paradoxus</i>	0.004%	0.1 m	n/a
<i>Eragrostis eriopoda</i>	0.004%	0.1 m	n/a
<i>Eremophila eriocalyx</i>	n/a	n/a	YQ001-08=
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.016%	0.8 m	n/a
<i>Eremophila longifolia</i>	n/a	n/a	n/a
<i>Maireana georgei</i>	0.001%	0.1 m	YQ002-11
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.6 m	n/a
<i>Rhagodia drummondii</i>	0.004%	1 m	n/a
<i>Santalum lanceolatum</i>	0.036%	2 m	n/a
<i>Sclerolaena cornishiana</i>	0.001%	0.1 m	YQ001-02
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.8 m	YQ001-06=

BHP Billiton Yeelirrie Site YQ003**Described by** Bridget Watkins**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.1km south-east of North Gate, along Albany Well-North Gate Road, south of road, central Yeelirrie study area 1**MGA Zone:** 50J790466 **mE**6990950 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland with mallees**Disturbance:** No evidence**Fire Age:** Long unburnt**Notes:** Total PFC 15.333%; 3.5% leaf litter cover to a depth of 2 cm, 9 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 87% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.1%	0.2 m	n/a
<i>Acacia ayersiana</i>	n/a	n/a	YQ003-06
<i>Acacia colletioides</i>	0.25%	0.4 m	n/a
<i>Acacia effusifolia</i>	0.3%	0.5-3 m	YQ003-03
<i>Acacia longispinea</i>	0.12%	1.5 m	YQ003-08
<i>Acacia pachyacra</i>	0.25%	0.8 m	n/a
<i>Acacia prainii</i>	n/a	n/a	YQ003-01
<i>Alyogyne pinoniana</i>	0.12%	0.2 m	YQ003-05
<i>Amphipogon caricinus</i>	n/a	n/a	YQ003-02
<i>Bossiaea eremaea</i>	0.5%	0.6 m	n/a
<i>Cymbopogon ambiguus</i>	0.001%	0.3 m	YQ003-02
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	n/a	n/a	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.06%	1 m	YQ003-04
<i>Eucalyptus trivalva</i>	7%	5 m	n/a
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.2%	1 m	YQ003-11
<i>Leptosema chambersii</i>	0.25%	0.2 m	n/a
<i>Olearia incana</i>	n/a	n/a	n/a
Poaceae sp. (inadequate material)	0.12%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.4 m	n/a
<i>Scaevola parvifolia</i>	0.06%	0.2 m	YQ003-02
<i>Sida</i> sp. (inadequate material)	n/a	n/a	YQ003-09
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Triodia basedowii</i>	6%	0.2-0.4 m	n/a

BHP Billiton Yeelirrie Site YQ004**Described by** Rebecca Graham**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 650m west of North Gate, along North Gate-Laydown Road, 50m north of road, central Yeelirrie study area 1**MGA Zone:** 50J788818 **mE**6991630 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 43.504%; 2% leaf litter cover to a depth of 1 cm, 30 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 5% cover of clay, 83% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.25%	6 m	YQ004-03
<i>Acacia ayersiana</i>	3%	2-6.5 m	n/a
<i>Acacia effusifolia</i>	25%	5 m	YQ004-01
<i>Acacia longispinea</i>	4%	1-2.5 m	YQ004-02
<i>Eremophila longifolia</i>	0.001%	3 m	n/a
<i>Eucalyptus kingsmillii</i>	1%	5 m	n/a
<i>Grevillea berryana</i>	0.25%	4.5 m	n/a
<i>Melaleuca leiocarpa</i>	0.001%	1.5 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.7 m	YQ004-04
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.4 m	n/a
<i>Triodia basedowii</i>	10%	0.2-0.4 m	n/a

BHP Billiton Yeelirrie Site YQ005**Described by** Amy Douglas**Date:** 7/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 300m west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J787625 **mE**6991091 **mN****Vegetation Code:** CERG**Landscape Association:** Calcrete system**Vegetation:** *Eragrostis* sp. Yeelirrie Calcrete grassland**Disturbance:** Animal scratchings and droppings, vehicle tyre marks near south-west corner**Fire Age:** Long unburnt**Notes:** Total PFC 4.463%; 0.4% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0.06% dead timber cover on ground, 60% cover of cryptogam crusting, 15% cover of clay, 10% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	4%	0.05 m	YQ005-02
Indeterminate	n/a	n/a	YQ005-05
<i>Lycium australe</i>	0.001%	0.2 m	n/a
Poaceae sp. (inadequate material)	0.125%	0.15 m	YQ005-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.01%	0.2 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.2%	0.2 m	YQ005-04
<i>Sclerolaena convexula</i>	0.125%	0.1 m	YQ005-03
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.3 m	n/a
<i>Sida calyxhymenia</i>	n/a	n/a	YQ005-01
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ006**Described by:** Lewis Trotter**Date:** 30/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 250m north-north-west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J787907 mE 6991323 mN**Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 15.103%; 1% leaf litter cover to a depth of 0.05 cm, 6 dead timber standing with 1% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 35% cover of sand, 35% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	15%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	0.016%	2.5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.001%	0.8 m	n/a
<i>Grevillea berryana</i>	0.064%	3.5 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.3 m	YQ006-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.016%	0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	n/a	n/a	YQ005-04
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.3 m	n/a
<i>Sida fibulifera</i>	n/a	n/a	YQ006-02
<i>Solanum lasiophyllum</i>	0.004%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ007**Described by** Amy Douglas**Date:** 29/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 500m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 100m west of road, central Yeelirrie study area 1**MGA Zone:** 50J787547 **mE**6990586 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete system**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** Small area of ripped soil in the south-east corner**Fire Age:** Long unburnt**Notes:** Total PFC 23.038%; 0.001% leaf litter cover to a depth of 0.001cm, 0 dead timber standing with 5% dead timber cover on ground, 0% cover of cryptogam crusting, 70% cover of clay, 0% cover of sand, 1% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	8%	0.4 m	YQ013-01=
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	15%	0.4 m	n/a
<i>Cratystylis subspinescens</i>	n/a	n/a	YQ007-09
<i>Eucalyptus gypsophila</i>	0.001%	0.4 m	n/a
<i>Lycium australe</i>	0.036%	1.2 m	n/a
<i>Sclerolaena cuneata</i>	n/a	n/a	YQ007-02
<i>Sclerolaena diacantha</i>	n/a	n/a	YQ007-04
<i>Sclerolaena fusiformis</i>	0.001%	0.1 m	YQ007-01

BHP Billiton Yeelirrie Site YQ008**Described by** Bridget Watkins**Date:** 30/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 150m west of Central Baseline and Southern Baseline intersection, along Southern Baseline, 100m north of road, central Yeelirrie study area 1**MGA Zone:** 50J787361 **mE**6990284 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** No evidence**Fire Age:** Unknown**Notes:** Total PFC 10.28%; 1% leaf litter cover to a depth of 1-2 cm, 0 dead timber standing with 0.25% dead timber cover on ground, 20% cover of cryptogam crusting, 5% cover of clay, 6% cover of sand, 1% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.4 m	YQ009-08
<i>Acacia burkittii</i>	0.06%	1.5 m	n/a
<i>Amyema microphylla</i>	0.02%	0.2 m	n/a
<i>Dissocarpus paradoxus</i>	0.06%	0.2 m	n/a
<i>Eremophea spinosa</i>	n/a	n/a	YQ008-04
<i>Lycium australe</i>	0.08%	1.7 m	n/a
<i>Melaleuca xerophila</i>	8%	2.5-3.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.02%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.02%	0.2 m	n/a
<i>Sclerolaena fusiformis</i>	2%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.02%	0.15 m	n/a

BHP Billiton Yeelirrie Site YQ009**Described by** Rebecca Graham**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 125m west of North Gate, along North Gate-Laydown Road, 50m north of road, central Yeelirrie study area 1**MGA Zone:** 50J789340 **mE**6991534 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Rabbit srcatchings and droppings**Fire Age:** Burnt within 5 years ago**Notes:** Total PFC 33.018%; 2% leaf litter cover to a depth of 0 cm, 15 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	3%	0.2-1.2 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.001%	0.3 m	n/a
<i>Acacia prainii</i>	0.001%	1 m	YQ009-07
<i>Acacia</i> sp. Resprouter (G. Cockerton & R. Graham LCH 25490)	1%	2.5 m	#130
<i>Bonamia rosea</i>	0.001%	0.3 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.4 m	YQ009-08
<i>Dianella revoluta</i>	0.001%	0.7 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	n/a	n/a	YQ009-02
<i>Eremophila hygrophana</i>	0.001%	0.5 m	n/a
<i>Eremophila spuria</i>	n/a	n/a	YQ009-03
<i>Eucalyptus kingsmillii</i>	1%	3 m	n/a
<i>Hakea francisiana</i>	n/a	n/a	YQ009-06
<i>Halgania erecta</i>	n/a	n/a	YQ009-04
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	2%	0.3 m	YQ009-01
<i>Leptosema chambersii</i>	15%	0.3 m	n/a
<i>Maireana georgei</i>	0.001%	0.2 m	n/a
<i>Melaleuca leiocarpa</i>	0.004%	1.2 m	n/a
Poaceae sp. (inadequate material)	0.004%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Rulingia luteiflora</i>	10%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.3 m	n/a
<i>Triodia basedowii</i>	1%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ010**Described by** Bridget Watkins**Date:** 28/4/2009**Type:** Quadrat**Size:** 30 x 50 m**Season:** Poor**Location:** 150m south-south-west of Central Baseline and Northern Baseline intersection, along Central Baseline, 350m west of road, central Yeelirrie study area 1**MGA Zone:** 50J787515 **mE**6990932 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** No evidence**Fire Age:** Unknown**Notes:** Total PFC 42.521%; 80% leaf litter cover to a depth of 4-8 cm, 2 dead timber standing with 15% dead timber cover on ground, 1% cover of cryptogam crusting, 0% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Austrostipa elegantissima</i>	n/a	n/a	YQ010-02
<i>Eucalyptus gypsophila</i>	40%	10-15 m	n/a
<i>Lycium australe</i>	0.02%	0.7 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	1-2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.15 m	n/a
<i>Templetonia incrassata</i>	0.5%	1-2 m	n/a

BHP Billiton Yeelirrie Site YQ011**Described by** Lewis Trotter**Date:** 1/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 700m north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 150m south of road, central Yeelirrie study area 1**MGA Zone:** 50J787375 **mE**6991267 **mN****Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Various vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 13.174%; 3% leaf litter cover to a depth of 0.05 cm, 5 dead timber standing with 3% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 70% cover of sand, 5% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	10%	3 m	n/a
<i>Acacia tetragonophylla</i>	0.036%	0.7 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	n/a	n/a	n/a
<i>Eucalyptus gypsophila</i>	3%	10 m	n/a
<i>Grevillea berryana</i>	0.064%	2 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.1 m	YQ011-02
Poaceae sp. (inadequate material)	0.004%	0.1 m	YQ011-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.004%	0.5 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.3 m	n/a
<i>Sclerolaena convexula</i>	n/a	n/a	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.06%	0.9 m	n/a
<i>Solanum lasiophyllum</i>	0.004%	2 m	n/a
<i>Solanum nummularium</i>	OUT	n/a	YQ011-03

BHP Billiton Yeelirrie Site YQ012**Described by** Bridget Watkins**Date:** 29/4/2009**Type:** Quadrat**Size:** 20 x 20 m**Season:** Poor**Location:** 200m west-south-west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J787774 **mE**6991034 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Track beside quadrat**Fire Age:** Unknown**Notes:** Total PFC 11.746%; 0.25% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.25% dead timber cover on ground, 70% cover of cryptogam crusting, 0% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.06%	1.3 m	n/a
<i>Acacia synchronicia</i>	n/a	1.3 m	YQ012-02
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	YQ012-04=
<i>Eremophila longifolia</i>	2%	1-1.5 m	n/a
<i>Grevillea berryana</i>	0.06%	0.5 m	n/a
<i>Marsdenia australis</i>	0.06%	0.4 m	n/a
Poaceae sp. (inadequate material)	0.5%	0.05-0.15 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	n/a	0.3-0.5 m	n/a
<i>Rhagodia drummondii</i>	0.06%	0.7 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Sclerolaena fusiformis</i>	0.001%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	n/a	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.7 m	n/a

BHP Billiton Yeelirrie Site YQ013**Described by** Amy Douglas**Date:** 28/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 250m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 200m west of road, central Yeelirrie study area 1**MGA Zone:** 50J787344 **mE**6990404 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete syatem**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 26%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 75% cover of clay, 0% cover of sand, 0.016% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	21%	0.5 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	5%	0.5 m	YQ013-01

BHP Billiton Yeelirrie Site YQ014**Described by** Cheyne Jowett**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 300m south-south-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 20m west of road, central Yeelirrie study area 1**MGA Zone:** 50J787345 **mE**6989931 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** Not evident**Fire Age:** Unknown**Notes:** Total PFC 6.623%; 3% leaf litter cover to a depth of 2 cm, 8 dead timber standing with 3% dead timber cover on ground, 0.25% cover of cryptogam crusting, 0.12% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	4%	7 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.25%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	n/a	n/a	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.06%	0.3 m	YQ014-05
<i>Eragrostis eriopoda</i>	1.5%	0.3 m	YQ014-01
<i>Eremophila eriocalyx</i>	n/a	n/a	YQ014-06
Indeterminate	n/a	n/a	YQ014-03
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.5%	1 m	YQ014-02
<i>Scaevola spinescens</i> (narrow form)	0.001%	1.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.4 m	YQ014-07
<i>Triodia basedowii</i>	n/a	n/a	n/a

BHP Billiton Yeelirrie Site YQ015**Described by** Bridget Watkins**Date:** 22/5/2009**Type:** Quadrat**Size:** 40 x 20 m**Season:** Poor**Location:** 100m south-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J787440 **mE**6990093 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Track running near to quadrat and rehabilitation rip line between track and quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 22.15%; 1% leaf litter cover to a depth of 1-2 cm, 10 dead timber standing with 2% dead timber cover on ground, 5% cover of cryptogam crusting, 80% cover of clay, 4% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	1%	3 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.5%	1.5 m	n/a
<i>Acacia tetragonophylla</i>	4%	1-5 m	n/a
<i>Dissocarpus paradoxus</i>	0.2%	0.2 m	n/a
<i>Eremophila longifolia</i>	3%	4 m	n/a
<i>Grevillea berryana</i>	1%	3 m	n/a
<i>Maireana tomentosa</i>	0.2%	0.2 m	n/a
<i>Melaleuca interioris</i>	OUT	3 m	n/a
Poaceae sp. (inadequate material)	0.5%	0.05 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	7%	0.4 m	n/a
<i>Rhagodia drummondii</i>	2%	0.4 m	n/a
<i>Santalum lanceolatum</i>	2%	3 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.2%	0.5 m	n/a
<i>Sclerolaena fusiformis</i>	0.25%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.1%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.2%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ016**Described by** Amy Douglas**Date:** 29/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 400m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 120m east of road, central Yeelirrie study area 1**MGA Zone:** 50J787754 **mE**6990469 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete system**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** Tyre track through north-east corner**Fire Age:** Long unburnt**Notes:** Total PFC 34.039%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 3% dead timber cover on ground, 0% cover of cryptogam crusting, 75% cover of clay, 0% cover of sand, 0% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	8%	0.5 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	8%	0.5 m	n/a
Chenopodiaceae sp. (inadequate material)	0.001%	0.1 m	YQ016-02
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.01 m	YQ016-03
<i>Lycium australe</i>	12%	1.5 m	n/a
<i>Melaleuca xerophila</i>	6%	2.5 m	n/a
<i>Sclerolaena cuneata</i>	0.001%	0.1 m	YQ007-01=
<i>Zygophyllum</i> sp. (inadequate material)	0.036%	0.1 m	YQ016-01

BHP Billiton Yeelirrie Site YQ017**Described by** Lewis Trotter**Date:** 20/5/2009**Type:** Quadrat**Size:** 45 x 25 m**Season:** Poor**Location:** 1.1km south of North Gate, along North Gate-South Gate Road, west of road, central Yeelirrie study area 1**MGA Zone:** 50J789398 **mE**6990304 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 40.109%; 20% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 1% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 2% cover of sand, 80% cover of gravel, 5% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.06%	1.6 m	n/a
<i>Acacia tetragonophylla</i>	0.004%	1.7 m	n/a
<i>Casuarina pauper</i>	25%	6 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.1 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	n/a	n/a	YQ017-01
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.016%	1.7 m	n/a
<i>Eremophila longifolia</i>	0.015%	2 m	n/a
<i>Maireana georgei</i>	0.004%	0.6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	5%	0.2 m	n/a
<i>Rhagodia drummondii</i>	0.004%	0.8 m	n/a
<i>Sclerolaena cuneata</i>	0.004%	0.1 m	YQ007-01=
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	10%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ018**Described by** Bridget Watkins**Date:** 30/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 850m south of road, central Yeelirrie study area 1**MGA Zone:** 50J785377 **mE**6991960 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Old light vehicle tracks**Fire Age:** Unknown**Notes:** Total PFC 17%; 20% leaf litter cover to a depth of 2-8 cm, 12 dead timber standing with 6% dead timber cover on ground, 4% cover of cryptogam crusting, 0% cover of clay, 60% cover of sand, 2.5% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1%	2-4 m	n/a
<i>Acacia oswaldii</i>	0.25%	4 m	n/a
<i>Casuarina pauper</i>	OUT	8 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.5%	1.7-2 m	n/a
<i>Eucalyptus gypsophila</i>	15%	6-12 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	0.5-1.5 m	n/a

BHP Billiton Yeelirrie Site YQ019**Described by** Lewis Trotter**Date:** 29/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.6km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1**MGA Zone:** 50J790925 **mE**6989324 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 15.183%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 60% cover of clay, 0% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.001%	n/a	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.064%	0.5 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.015%	0.5 m	n/a
<i>Dissocarpus paradoxus</i>	0.015%	0.3 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.004%	0.5 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.004%	0.1 m	YQ016-03
<i>Lycium australe</i>	0.064%	0.8 m	n/a
<i>Melaleuca xerophila</i>	15%	5 m	n/a
<i>Rhagodia drummondii</i>	0.016%	0.75 m	n/a

BHP Billiton Yeelirrie Site YQ020**Described by** Cheyne Jowett**Date:** 28/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 200m south-south-west of Central Baseline and Northern Baseline intersection, along Central Baseline, 250m west of road, central Yeelirrie study area 1**MGA Zone:** 50J787591 **mE**6990891 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Light vehicle tracks**Fire Age:** Unknown**Notes:** Total PFC 11.269%; 3% leaf litter cover to a depth of 2-4 cm, 3 dead timber standing with 1% dead timber cover on ground, 2% cover of cryptogam crusting, 0% cover of clay, 94% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	7%	0.5-4 m	n/a
<i>Eucalyptus gypsophila</i>	1%	10 m	n/a
<i>Grevillea berryana</i>	2%	6-8 m	n/a
Poaceae sp. (inadequate material)	0.016%	0.05 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	0.5-1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Templetonia incrassata</i>	0.25%	1 m	n/a

BHP Billiton Yeelirrie Site YQ021**Described by** Bridget Watkins**Date:** 30/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 750m south-west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J787260 **mE**6990748 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Fauna pit trap survey diggings**Fire Age:** Unknown**Notes:** Total PFC 23.81%; 40% leaf litter cover to a depth of 2-6 cm, 1 dead timber standing with 2% dead timber cover on ground, 0.5% cover of cryptogam crusting, 2% cover of clay, 50% cover of sand, 0.3% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.02%	1.5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.02%	2 m	n/a
<i>Eucalyptus gypsophila</i>	23%	1.5-20 m	n/a
Poaceae sp. (inadequate material)	0.25%	0.02 m	n/a
<i>Sclerolaena fusiformis</i>	0.25%	0.2 m	YQ021-01
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.02%	0.7-1 m	n/a
<i>Templetonia incrassata</i>	0.25%	0.5-1.5 m	n/a

BHP Billiton Yeelirrie Site YQ022**Described by:** Lewis Trotter**Date:** 30/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.75km east-south-east of South Gate, along Albany Well-South Gate Road, 500m north of road, central Yeelirrie study area 1**MGA Zone:** 50J791218 **mE**6988996 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 12.191%; 0% leaf litter cover to a depth of 0 cm, 3 dead timber standing with 0.004% dead timber cover on ground, 0% cover of cryptogam crusting, 70% cover of clay, 0% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.015%	0.4 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.001%	0.3 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.06%	0.5 m	n/a
<i>Dissocarpus paradoxus</i>	0.015%	0.1 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	YQ019-01=
<i>Lycium australe</i>	0.08%	0.8 m	n/a
<i>Melaleuca xerophila</i>	12%	3.5 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.2 m	YQ022-01
<i>Rhagodia drummondii</i>	0.015%	0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.015 m	n/a
<i>Sclerolaena cuneata</i>	0.001%	0.1 m	YQ007-01=
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ023**Described by** Bridget Watkins**Date:** 29/4/2009**Type:** Quadrat**Size:** 70 x 30 m**Season:** Poor**Location:** 1.1km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 100m south of road, central Yeelirrie study area 1**MGA Zone:** 50J783730 **mE**6993765 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 33.71%; 40% leaf litter cover to a depth of 3-4 cm, 8 dead timber standing with 3% dead timber cover on ground, 5% cover of cryptogam crusting, 0% cover of clay, 45% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1.5%	1.2-2.5 m	n/a
<i>Acacia oswaldii</i>	0.25%	1-1.6 m	n/a
<i>Casuarina pauper</i>	1.5%	4-8 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.06%	1.5-1.6 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.03%	0.4m	n/a
<i>Eremophila longifolia</i>	0.03%	0.4m	n/a
<i>Eucalyptus gypsophila</i>	30%	8-15 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.03%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	0.4-1.6 m	n/a
<i>Spartothamnella teucriflora</i>	0.06%	0.6-1.2 m	YQ023-02

BHP Billiton Yeelirrie Site YQ024**Described by:** Bridget Watkins**Date:** 1/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 400m west of Central Baseline and Southern Baseline intersection, along Southern Baseline, 50m south of road, central Yeelirrie study area 1**MGA Zone:** 50J787068 **mE**6990194 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Light vehicle tracks in north-east corner**Fire Age:** Unknown**Notes:** Total PFC 8.18%; 0.5% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.25% dead timber cover on ground, 0.5% cover of cryptogam crusting, 0.25% cover of clay, 75% cover of sand, 0.06% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Dissocarpus paradoxus</i>	0.5%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.06%	0.4 m	YQ024-02
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.25%	0.05 m	n/a
<i>Melaleuca interioris</i>	OUT	2 m	n/a
<i>Melaleuca xerophila</i>	7%	1.5-6.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.3-0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.02%	0.2 m	n/a
<i>Sclerolaena obliquicuspis</i>	0.06%	0.4 m	YQ024-03
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.02%	0.5 m	n/a
<i>Solanum lasiophyllum</i>	0.02%	0.2-0.4 m	n/a

BHP Billiton Yeelirrie Site YQ025**Described by** Lewis Trotter**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.8km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 450m south of road, central Yeelirrie study area 1**MGA Zone:** 50J786374 **mE**6991714 **mN****Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Minor vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 6.062%; 0.004% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 0.036% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 0.004% cover of sand, 75% cover of gravel, 0.004% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	2%	n/a	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.2 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.004%	1.5 m	n/a
<i>Eucalyptus gypsophila</i>	3%	5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.036%	0.4 m	n/a
<i>Sclerolaena cuneata</i>	0.02%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	0.6 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ026**Described by** Amy Douglas**Date:** 1/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.25km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 50m north of road, central Yeelirrie study area 1**MGA Zone:** 50J786910 **mE**6991854 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Minor vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 22.059%; 5% leaf litter cover to a depth of 5 cm, 6 dead timber standing with 1% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 15% cover of sand, 50% cover of gravel, 5% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	10%	3 m	n/a
<i>Acacia synchronicia</i>	0.02%	2 m	n/a
<i>Casuarina pauper</i>	5%	7 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	2%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.036%	0.4 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.05 m	n/a
<i>Sclerolaena cuneata</i>	0.001%	0.1 m	YQ007-01=
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	5%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ027**Described by** Lewis Trotter**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50m**Season:** Poor**Location:** 3.25km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 100m north of road, central Yeelirrie study area 1**MGA Zone:** 50J785633 **mE**6992737 **mN****Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 3.331%; 0.001% leaf litter cover to a depth of 0.5 cm, 4 dead timber standing with 0.036% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 2% cover of sand, 80% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	3%	3.5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.02%	0.6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ028**Described by** Cheyne Jowett**Date:** 20/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.9km south-east of North Gate, along Albany Well-North Gate Road, south of road, central Yeelirrie study area 1**MGA Zone:** 50J792148 **mE**6990046 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga spinifex shrubland**Disturbance:** n/a**Fire Age:** Over 10 years**Notes:** Total PFC 42.995%; 3% leaf litter cover to a depth of 3 cm, 12 dead timber standing with 2% dead timber cover on ground, 0.1% cover of cryptogam crusting, 0% cover of clay, 55% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	4%	n/a	n/a
<i>Acacia colletioides</i>	4%	n/a	YQ028-05
<i>Acacia craspedocarpa</i>	0.003%	n/a	YQ028-08
<i>Acacia prainii</i>	0.35%	n/a	YQ028-02
<i>Alyogyne pinoniana</i>	n/a	n/a	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	n/a	YQ028-07
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.25%	n/a	YQ028-04
<i>Eucalyptus trivalva</i>	4%	n/a	YQ028-06
Poaceae sp. (inadequate material)	0.3%	n/a	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.015%	n/a	YQ028-01
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.075%	n/a	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	30%	n/a	n/a

BHP Billiton Yeelirrie Site YQ029**Described by** Cheyne Jowett**Date:** 20/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.6km west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J784925 **mE**6990764 **mN****Vegetation Code:** PLCsMp**Landscape Association:** Playa system**Vegetation:** *Cratystylis subspinescens* and *Maireana pyramidata* shrubland**Disturbance:** Some animal diggings**Fire Age:** Unknown**Notes:** Total PFC 11.28%; 0.002% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 0.5% dead timber cover on ground, 2% cover of cryptogam crusting, 40% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	0.5%	2.5 m	n/a
<i>Cratystylis subspinescens</i>	4%	1.6 m	YQ029-05
<i>Dissocarpus paradoxus</i>	0.004%	0.2 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.5 m	YQ029-06
<i>Maireana pyramidata</i>	4%	1.5 m	YQ029-01
Poaceae sp. (inadequate material)	1%	0.05 m	n/a
Poaceae sp. (inadequate material)	0.005%	1.2 m	YQ029-03
<i>Ptilotus</i> sp. (inadequate material)	2%	0.02 m	YQ029-04
<i>Rhagodia drummondii</i>	0.015%	1.4 m	YQ029-07
<i>Sclerolaena diacantha</i>	0.001%	0.3 m	YQ029-02
<i>Solanum lasiophyllum</i>	0.004%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ030**Described by** Bridget Watkins**Date:** 29/4/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.1km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 700m south of road, central Yeelirrie study area 1**MGA Zone:** 50J784656 **mE**6992653 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Slight old track through edge of north-west corner**Fire Age:** Unknown**Notes:** Total PFC 26.751%; n/a% leaf litter cover to a depth of 3 cm, 7 dead timber standing with 2% dead timber cover on ground, 4% cover of cryptogam crusting, n/a% cover of clay, n/a% cover of sand, 15% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1%	1-2 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1.5%	0.7-2 m	n/a
<i>Eremophila falcata</i>	0.25%	2 m	n/a
<i>Eucalyptus gypsophila</i>	20%	9 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	4%	0.5-2.5 m	n/a

BHP Billiton Yeelirrie Site YQ031**Described by** Rebecca Graham**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.3km west-north-west of Albany Well, along Albany Well-South Gate Road, 650m north of road, central Yeelirrie study area 1**MGA Zone:** 50J792153 **mE**6988982 **mN****Vegetation Code:** CMpS**Landscape Association:** Calcrete system**Vegetation:** *Maireana pyramidata* shrubland**Disturbance:** Animal scratchings and scats, mainly rabbits and also kangaroos**Fire Age:** Long unburnt**Notes:** Total PFC 28.252%; 0.001% leaf litter cover to a depth of 0 cm, 1 dead timber standing with 0% dead timber cover on ground, 25% cover of cryptogam crusting, 20% cover of clay, 30% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	1%	0.01 m	#077
<i>Lycium australe</i>	2%	1.5 m	n/a
<i>Maireana pyramidata</i>	25%	0.8 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.4 m	n/a
<i>Sclerolaena fusiformis</i>	0.001%	0.25 m	#285
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ032**Described by** Bridget Watkins**Date:** 22/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.4km west-north-west of Albany Well, along Albany Well-South Gate Road, 350m north of road, central Yeelirrie study area 1**MGA Zone:** 50J792125 **mE**6988785 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Old drilling clearance track running through site**Fire Age:** Long unburnt**Notes:** Total PFC 31.55%; 15% leaf litter cover to a depth of 1-3 cm, 3 dead timber standing with 0.25% dead timber cover on ground, 40% cover of cryptogam crusting, 10% cover of clay, 30% cover of sand, 0.06% cover of gravel, 0% cover of rocks.**Species List:**

Quad	Name	Cover	Height	Collection
	<i>Amyema microphylla</i>	1%	1-3 m	n/a
	<i>Dissocarpus paradoxus</i>	0.06%	0.3 m	n/a
	<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.06%	0.05 m	n/a
	<i>Lycium australe</i>	0.25%	0.5-1.5 m	n/a
	<i>Maireana thesioides</i>	0.06%	0.2 m	n/a
	<i>Melaleuca xerophila</i>	30%	2-4 m	n/a
	<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.4 m	n/a
	<i>Salsola tragus</i> subsp. <i>tragus</i>	0.06%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ033**Described by** Rebecca Graham**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.5km west-north-west of Albany Well, along Albany Well-South Gate Road, 800m north of road, central Yeelirrie study area 1**MGA Zone:** 50J791970 **mE**6989195 **mN****Vegetation Code:** CMpS**Landscape Association:** Calcrete system**Vegetation:** *Maireana pyramidata* shrubland**Disturbance:** Animal scratchings and scats, mainly rabbits**Fire Age:** Long unburnt**Notes:** Total PFC 13.017%; 0.001% leaf litter cover to a depth of 0 cm, 1 dead timber standing with 0.001% dead timber cover on ground, 20% cover of cryptogam crusting, 10% cover of clay, 55% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Cratystylis subspinescens</i>	2%	1.8 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.5%	0.01 m	#077
<i>Lycium australe</i>	0.5%	1.5-2 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Maireana pyramidata</i>	10%	0.4-1.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.008%	0.3 m	n/a
<i>Sclerolaena fusiformis</i>	0.004%	0.05 m	#285
<i>Solanum lasiophyllum</i>	0.004%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ034**Described by** Bridget Watkins**Date:** 1/5/2009**Type:** Quadrat**Size:** 70 x 30 m**Season:** Poor**Location:** 700m north of South Gate, along North Gate-South Gate Road, 500m east of road, central Yeelirrie study area 1**MGA Zone:** 50J789888 **mE**6989365 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Animal diggings and an old cleared drill line running north-south**Fire Age:** Unknown**Notes:** Total PFC 81.43%; 30% leaf litter cover to a depth of 1-3 cm, 1 dead timber standing with 1% dead timber cover on ground, 5% cover of cryptogam crusting, 3% cover of clay, 50% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.02%	0.2 m	n/a
<i>Cratystylis subspinescens</i>	OUT	0.8 m	n/a
<i>Dissocarpus paradoxus</i>	0.25%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.06%	0.2-0.4 m	YQ024-02=
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.02%	0.05 m	n/a
<i>Lycium australe</i>	OUT	1-1.5 m	n/a
<i>Melaleuca interioris</i>	1%	2.5-4.5 m	n/a
<i>Melaleuca xerophila</i>	80%	2-4.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.02%	0.3 m	n/a
<i>Sclerolaena obliquicuspis</i>	0.06%	0.2 m	YQ024-03=

BHP Billiton Yeelirrie Site YQ035**Described by** Bridget Watkins**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J786695 **mE**6990400 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Rabbit warren present**Fire Age:** Long unburnt**Notes:** Total PFC 20.504%; 0.001% leaf litter cover to a depth of 2 cm, 0.25 dead timber standing with 1% dead timber cover on ground, 3% cover of cryptogam crusting, 2% cover of clay, 92% cover of sand, 2% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	1%	0.6-3 m	n/a
<i>Dissocarpus paradoxus</i>	0.25%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.004%	0.1 m	YQ035-02
<i>Lycium australe</i>	OUT	1 m	n/a
<i>Melaleuca xerophila</i>	15%	2-6 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.25%	0.2 m	n/a
<i>Sclerolaena fusiformis</i>	4%	0.2 m	YQ035-01

BHP Billiton Yeelirrie Site YQ036**Described by** Bridget Watkins**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 700m east-south-east of Central Baseline and Southern Baseline intersection, along Southern Baseline, 250m north of road, central Yeelirrie study area 1**MGA Zone:** 50J788178 **mE**6990166 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 28.546%; 1% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 1% dead timber cover on ground, 1% cover of cryptogam crusting, 10% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.06%	1-5 m	n/a
<i>Atriplex codonocarpa</i>	0.001%	0.2 m	YQ036-04
<i>Dissocarpus paradoxus</i>	1.5%	0.2 m	n/a
<i>Lycium australe</i>	1%	1-1.5 m	n/a
<i>Maireana thesioides</i>	1%	0.5 m	YQ036-01
<i>Melaleuca xerophila</i>	20%	3-6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.004%	0.4 m	n/a
<i>Rhagodia drummondii</i>	3%	0.5-1.5 m	YQ036-02
<i>Rhagodia drummondii</i>	n/a	n/a	YQ036-03
<i>Rhagodia drummondii</i>	n/a	n/a	YQ036-06
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.5%	0.2 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	YQ036-07
<i>Sclerolaena fusiformis</i>	1.5%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.004%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ037**Described by** Amy Douglas**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1**MGA Zone:** 50J790250 **mE**6989462 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Maleleuca xerophila* shrubland**Disturbance:** Vehicle tracks, rabbit diggings and droppings**Fire Age:** Long unburnt**Notes:** Total PFC 21.538%; 4% leaf litter cover to a depth of 3 cm, 0 dead timber standing with 0.25% dead timber cover on ground, 0.001% cover of cryptogam crusting, 60% cover of clay, 30% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.036%	1-5 m	n/a
<i>Dissocarpus paradoxus</i>	0.25%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.15 m	YQ035-02
<i>Lycium australe</i>	3%	1-1.5 m	n/a
<i>Maireana thesioides</i>	1%	0.4 m	n/a
<i>Melaleuca xerophila</i>	8%	3-6 m	n/a
<i>Rhagodia drummondii</i>	6%	0.5 m	n/a
<i>Sclerolaena fusiformis</i>	0.25%	0.5 m	n/a
<i>Templetonia incrassata</i>	OUT	1-2 m	n/a
<i>Vittadinia</i> sp. (inadequate material)	0.001%	0.1 m	YQ037-01
<i>Zygophyllum</i> sp. (inadequate material)	3%	0.2-0.5 m	YQ037-02

BHP Billiton Yeelirrie Site YQ038**Described by** Amy Douglas**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.3km east-south-east of South Gate, along Albany Well-South Gate Road, 400m north of road, central Yeelirrie study area 1**MGA Zone:** 50J790694 **mE**6988974 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 59.263%; 30% leaf litter cover to a depth of 3 cm, 0 dead timber standing with 2% dead timber cover on ground, 10% cover of cryptogam crusting, 15% cover of clay, 25% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	1%	1-4 m	n/a
<i>Amyema microphylla</i>	0.005%	5-9 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.4 m	YQ038-01
<i>Cratystylis subspinescens</i>	3%	0.5 m	n/a
<i>Dissocarpus paradoxus</i>	0.25%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.004%	0.1 m	YQ035-02
<i>Eremophila longifolia</i>	0.001%	3 m	n/a
<i>Maireana thesioides</i>	0.001%	0.4 m	n/a
<i>Melaleuca interioris</i>	15%	1-6 m	n/a
<i>Melaleuca xerophila</i>	35%	3-9 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	5%	0.2-0.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ039**Described by** Lewis Trotter**Date:** 19/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.9km south-west of Midnight Bore, 400m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J780911 **mE**6996393 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Rabbit warren in north-west corner**Fire Age:** Long unburnt**Notes:** Total PFC 47.522%; 20% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 2% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 2% cover of sand, 80% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Casuarina pauper</i>	22.5%	6 m	n/a
<i>Enneapogon caeruleus</i>	0.001%	0.1 m	YQ039-02
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.016%	1.2 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.4 m	n/a
<i>Marsdenia australis</i>	0.001%	0.2 m	YQ039-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	10%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1.2 m	n/a
<i>Sclerolaena cuneata</i>	5%	0.1 m	YQ007-01=
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	10%	1.5 m	n/a
<i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32)	0.001%	0.1 m	YQ039-03
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ040**Described by** Lewis Trotter**Date:** 21/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.8km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 200m north of road, central Yeelirrie study area 1**MGA Zone:** 50J784394 **mE**6993663 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 27.064%; 20% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 4% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 35% cover of sand, 50% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	2%	2 m	n/a
<i>Alyogyne pinoniana</i>	0.001%	0.02 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1 m	YQ040-01
<i>Casuarina pauper</i>	20%	6 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5%	2 m	n/a
<i>Paspalidium gracile</i>	0.001%	0.2 m	YQ040-02
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.016%	0.2 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.004%	0.1 m	n/a
<i>Sclerolaena cuneata</i>	0.004%	0.1 m	YQ007-01=
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.036%	0.7 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ041**Described by** Amy Douglas**Date:** 21/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Locatio:** 2.9km south of Midnight Bore, 100m east of road, central Yeelirrie study area 1**MGA Zone:** 50J782919 **mE**6994710 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 51.02%; 5% leaf litter cover to a depth of 2 cm, 10 dead timber standing with 5% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 40% cover of sand, 50% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	3%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.6 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.9 m	YQ040-01=
<i>Casuarina pauper</i>	25%	5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	8%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.1 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.016%	1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	15%	2 m	n/a

BHP Billiton Yeelirrie Site YQ042**Described by** Lewis Trotter**Date:** 21/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.8km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773756 **mE**6999985 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 28.126%; 10% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 0.036% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0% cover of clay, 15% cover of sand, 65% cover of gravel, 0.01% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.016%	1 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1.4 m	YQ040-01=
<i>Casuarina pauper</i>	20%	6 m	n/a
<i>Enneapogon caeruleus</i>	0.001%	0.1 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5%	2 m	n/a
<i>Eremophila falcata</i>	0.036%	2.2 m	YQ042-01
<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	0.001%	0.5 m	YQ042-02
<i>Ptilotus obovatus</i> (Typical Goldfields form)	3%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Sclerolaena cuneata</i>	0.004%	0.1 m	YQ007-01=
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Templetonia incrassata</i>	0.064%	1.5 m	n/a

BHP Billiton Yeelirrie Site YQ043**Described by** Cheyne Jowett**Date:** 22/5/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.9km west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J784551 **mE**6990861 **mN****Vegetation Code:** PLCsMp**Landscape Association:** Playa system**Vegetation:** *Cratystylis subspinescens* and *Maireana pyramidata* shrubland**Disturbance:** Vehicle tracks**Fire Age:** Unknown**Notes:** Total PFC 26.194%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 6% cover of cryptogam crusting, 24% cover of clay, 22% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Cratystylis subspinescens</i>	16%	1.6 m	n/a
<i>Dissocarpus paradoxus</i>	0.04%	0.2 m	n/a
Indeterminate	2%	0.01 m	YQ043-02
<i>Maireana eriosphaera</i>	0.001%	0.15 m	YQ043-04
<i>Maireana pyramidata</i>	8%	1.3 m	YQ043-01
<i>Maireana</i> sp. (inadequate material)	0.001%	0.3 m	YQ043-03
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.4 m	n/a
<i>Sclerolaena diacantha</i>	0.075%	0.2 m	YQ043-06
<i>Sclerolaena eriacantha</i>	0.001%	0.15 m	YQ043-05
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ044**Described by** Bridget Watkins**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 400m south-west of Midnight Bore, north-west Yeelirrie study area 1**MGA Zone:** 50J782504 **mE**6997413 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 45.067%; 0.001% leaf litter cover to a depth of 0.5 cm, 7 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 8% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	0.06%	1.5 m	n/a
<i>Acacia aneura</i> var. <i>tenuis</i>	1%	3-4 m	#220
<i>Acacia ayersiana</i>	15%	0.2-8 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	15%	1-3 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	1.8 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.4 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	10%	0.9 m	n/a
<i>Melaleuca interioris</i>	3%	1-3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1.5 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	0.1 m	n/a
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.001%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.05 m	n/a
<i>Triodia basedowii</i>	1%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ045**Described by** Bridget Watkins**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.9km south of Midnight Bore, central Yeelirrie study area 1**MGA Zone:** 50J782793 **mE**6993621 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 24.351%; 1% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 5% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	20%	1-8 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.02%	2 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.8-1.2 m	n/a
<i>Aristida contorta</i>	0.001%	0.5 m	#184=
<i>Eragrostis eriopoda</i>	0.001%	0.4 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.036%	0.6-1.2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	1 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	4%	1 m	n/a
<i>Prostanthera wilkieana</i>	0.001%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.036%	1.1 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.8 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	0.9 m	n/a
<i>Santalum lanceolatum</i>	0.001%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	0.25%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ046**Described by** Bridget Watkins**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.2km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773926 **mE**7000704 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 25.026%; 2% leaf litter cover to a depth of 1 cm, 10 dead timber standing with 5% dead timber cover on ground, 0% cover of cryptogam crusting, 15% cover of clay, 60% cover of sand, 0.001% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	0.001%	0.8 m	n/a
<i>Acacia ayersiana</i>	15%	2-8 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	1.2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.02%	0.9 m	n/a
<i>Grevillea berryana</i>	5%	6-8 m	n/a
<i>Maireana triptera</i>	0.001%	0.2 m	n/a
<i>Ptilotus rotundifolius</i>	2%	0.5 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	0.1 m	n/a
<i>Sclerolaena fusiformis</i>	0.001%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3%	1-3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ047**Described by** Bridget Watkins**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.5km south of turnoff 4km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J767030 **mE**7007216 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 47.71%; 5% leaf litter cover to a depth of 1-2 cm, 10 dead timber standing with 4% dead timber cover on ground, 8% cover of cryptogam crusting, 60% cover of clay, 30% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	40%	2-6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1%	2 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.5%	2-3 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	1%	1 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	3%	0.5-0.8 m	n/a
<i>Grevillea berryana</i>	1%	6 m	n/a
<i>Maireana triptera</i>	0.01%	0.1 m	n/a
<i>Melaleuca interioris</i>	0.2%	3 m	n/a
<i>Triodia basedowii</i>	1%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ048**Described by** Lewis Trotter**Date:** 3/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4km east of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 20m south of road, north-west Yeelirrie study area 1**MGA Zone:** 50J767148 **mE**7009631 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia* Spinifex shrubland with mallees**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 15.545%; 0% leaf litter cover to a depth of 0 cm, 4 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia prainii</i>	0.001%	0.6 m	n/a
<i>Bonamia rosea</i>	0.001%	0.3 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.3 m	n/a
<i>Dianella revoluta</i>	0.25%	0.5 m	n/a
<i>Eucalyptus trivalva</i>	1%	1 m	n/a
<i>Glischrocaryon flavescens</i>	0.02%	0.3 m	YQ048-01
<i>Grevillea acacioides</i>	0.001%	0.4 m	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.02%	0.3 m	YQ048-02
<i>Leptosema chambersii</i>	4%	0.2 m	n/a
<i>Marsdenia australis</i>	0.001%	0.1 m	n/a
<i>Triodia basedowii</i>	10%	0.2 m	n/a
<i>Triodia melvillei</i>	0.25%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ049**Described by** Lewis Trotter**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.25km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 500m east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J763216 **mE**7009012 **mN****Vegetation Code:** SDSH**Landscape Association:** Sand plain system**Vegetation:** *Callitris columellaris* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 52.005%; 2% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	6%	1-2.5 m	n/a
<i>Acacia aneura</i> var. subterete slightly curved 50-70x1mm olive green	0.001%	0.8 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.5%	1-2.5 m	YQ054-01=
<i>Bertya dimerostigma</i>	10%	0.5-0.8 m	n/a
<i>Callitris columellaris</i>	10%	1-2.5 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.2 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	5%	1-2.2 m	n/a
<i>Hakea francisiana</i>	0.001%	1 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.25%	3 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.5 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	2 m	n/a
<i>Rulingia luteiflora</i>	0.25%	0.1 m	n/a
<i>Triodia basedowii</i>	20%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ050**Described by** Lewis Trotter**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.5km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 800m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J761820 **mE**7008959 **mN****Vegetation Code:** SDSH**Landscape Association:** Sand plain system**Vegetation:** *Callitris columellaris* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 45.605%; 1% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 3 % dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 65% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	7%	1-3 m	n/a
<i>Acacia burkittii</i>	5%	2-3 m	n/a
<i>Acacia ligulata</i>	0.5%	2.5 m	n/a
<i>Bertya dimerostigma</i>	6%	0.5-1 m	n/a
<i>Callitris columellaris</i>	6%	1-3 m	n/a
<i>Dianella revoluta</i>	0.001%	0.4 m	n/a
<i>Enekbatus eremaeus</i>	0.001%	0.8 m	n/a
<i>Hakea francisiana</i>	0.5%	2.5 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.5%	3.5 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.3 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	1 m	n/a
<i>Rulingia luteiflora</i>	0.1%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.8 m	n/a
<i>Triodia basedowii</i>	20%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ051**Described by** Rebecca Graham**Date:** 28/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m north-north-west of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1**MGA Zone:** 50J774740 **mE**7005264 **mN****Vegetation Code:** SAGS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland**Disturbance:** Rabbit and kangaroo droppings and scratchings**Fire Age:** 10-15 years ago**Notes:** Total PFC 17.763%; 5% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 92% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia jamesiana</i>	0.75%	2.5 m	n/a
<i>Acacia ligulata</i>	0.5%	2 m	n/a
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Brachychiton gregorii</i>	0.001%	1-2.5 m	n/a
<i>Calandrinia eremaea</i>	0.001%	0.01 m	YQ052-01=
<i>Dianella revoluta</i>	0.001%	0.5 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.3 m	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.25%	1.3 m	n/a
<i>Eremophila longifolia</i>	0.001%	1.2 m	n/a
<i>Eucalyptus gongylocarpa</i>	8%	3-15 m	n/a
<i>Eucalyptus kingsmillii</i>	0.25%	3 m	n/a
<i>Hakea francisiana</i>	0.5%	1.2 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	1.5%	0.4 m	n/a
<i>Kennedia prorepens</i>	0.001%	0.05 m	n/a
<i>Leptosema chambersii</i>	1%	0.2 m	n/a
<i>Maireana triptera</i>	0.001%	0.4 m	n/a
<i>Petalostylis cassioides</i>	0.001%	1 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.03 m	n/a
<i>Triodia basedowii</i>	5%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ052**Described by** Rebecca Graham**Date:** 28/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 8.2km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 1.4km east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J775337 **mE**6996565 **mN****Vegetation Code:** SAGS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland**Disturbance:** Kangaroo and emu sratching**Fire Age:** 10-15 years ago**Notes:** Total PFC 39.406%; 2% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	15%	1.5-3 m	n/a
<i>Acacia ligulata</i>	1%	1-2 m	YQ052-03
<i>Bossiaea eremaea</i>	1.25%	0.5-0.8 m	n/a
<i>Calandrinia eremaea</i>	0.001%	0.001 m	YQ052-01
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	1%	1.2 m	YQ052-02
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.5%	1.2 m	n/a
<i>Eucalyptus gongylocarpa</i>	8%	5-10 m	n/a
<i>Eucalyptus kingsmillii</i>	0.25%	2 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	4%	0.4 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	1 m	n/a
<i>Leptosema chambersii</i>	0.4%	0.2 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.03 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Triodia basedowii</i>	8%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ053**Described by** Lewis Trotter**Date:** 28/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 6.75km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J

773940 mE

6997921 mN

Vegetation Code: SAGS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland**Disturbance:** n/a**Fire Age:** 10 years**Notes:** Total PFC 36.774%; 5% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.001%	0.9 m	n/a
<i>Acacia ligulata</i>	8%	1.5 m	n/a
<i>Acacia thoma</i>	0.5%	1-1.5 m	n/a
<i>Bonamia rosea</i>	0.001%	0.1 m	n/a
<i>Codonocarpus cotinifolius</i>	0.001%	0.5 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.5-1 m	n/a
<i>Dianella revoluta</i>	0.001%	0.5 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.2 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	3%	0.5-1 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	5%	0.5-1 m	n/a
<i>Eremophila subfloccosa</i> subsp. aff. <i>lanata</i> (G Cockerton & C Jowett 25337)	0.001%	0.6 m	n/a
<i>Eucalyptus gongylocarpa</i>	15%	1-8 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	0.01%	0.5-1 m	n/a
<i>Grevillea berryana</i>	0.25%	1 m	n/a
<i>Hakea francisiana</i>	0.001%	0.9 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.001%	0.2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	n/a
<i>Leptosema chambersii</i>	0.001%	0.5 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.1 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.001%	0.6 m	n/a
<i>Sida ectogama</i>	0.001%	0.3 m	n/a
<i>Triodia basedowii</i>	5%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ054**Described by** Lewis Trotter**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.25km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J762639 **mE**7008980 **mN****Vegetation Code:** SDSH**Landscape Association:** Sand plain system**Vegetation:** *Callitris columellaris* shrubland**Disturbance:** Filled in soil sample pit in quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 34.255%; 3% leaf litter cover to a depth of 2 cm, 12 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	0.001%	1 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	5%	1-1.5 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.25%	1-1.5 m	YQ054-01
<i>Bertya dimerostigma</i>	0.5%	1 m	YQ054-03
<i>Callitris columellaris</i>	2%	0.5-2 m	n/a
<i>Dianella revoluta</i>	0.001%	0.3 m	n/a
<i>Enekbatus eremaeus</i>	0.001%	0.7 m	n/a
<i>Eragrostis xerophila</i>	0.001%	0.1 m	n/a
<i>Eremophila subfloccosa</i> subsp. aff. <i>lanata</i> (G Cockerton & C Jowett 25337)	0.001%	0.6 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	1.5%	2.5 m	n/a
<i>Hakea francisiana</i>	3%	2-3 m	n/a
<i>Micromyrtus flaviflora</i>	2%	0.3-1 m	n/a
<i>Triodia basedowii</i>	12%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ055**Described by** Rebecca Graham**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 600m north of Midnight Bore, 100m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J782769 **mE**6998283 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga Spinifex shrubland**Disturbance:** Some old cattle faeces, animal scratchings and ant nests**Fire Age:** Long unburnt**Notes:** Total PFC 22.508%; 3% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 1% dead timber cover on ground, 0.25% cover of cryptogam crusting, 0.001% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. <i>tenuis</i>	4%	6 m	#303
<i>Acacia ayersiana</i>	2%	6 m	n/a
<i>Acacia effusifolia</i>	3%	4.5 m	n/a
<i>Acacia pachyacra</i>	0.001%	1 m	n/a
<i>Enekbatus eremaeus</i>	1.5%	1.2 m	n/a
<i>Eragrostis setifolia</i>	0.001%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	1 m	n/a
<i>Eriachne helmsii</i>	0.001%	0.3 m	YQ055-01
<i>Melaleuca leiocarpa</i>	0.001%	3 m	n/a
<i>Psydrax suaveolens</i>	0.001%	2.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1 m	n/a
<i>Triodia basedowii</i>	12%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ056**Described by** Rebecca Graham**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.75km south of turnoff 4km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J767158 **mE**7007938 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga Spinifex shrubland**Disturbance:** Animal diggings**Fire Age:** Long unburnt, old fire evidence on bark of *Hakea lorea* subsp. *lorea***Notes:** Total PFC 37.259%; 3% leaf litter cover to a depth of 3 cm, 7 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 40% cover of sand, 0% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	2%	6 m	n/a
<i>Acacia aneura</i> var. terete straight to slightly curved 15-30x1mm yellow olive green	0.001%	1 m	#229
<i>Acacia ayersiana</i>	1%	7 m	n/a
<i>Acacia burkittii</i>	1.25%	2.8 m	n/a
<i>Acacia ligulata</i>	0.001%	1.5 m	#338
<i>Acacia tetragonophylla</i>	0.5%	2 m	n/a
<i>Brachychiton gregorii</i>	0.5%	6 m	n/a
<i>Dianella revoluta</i>	0.001%	1 m	n/a
<i>Eremophila longifolia</i>	0.001%	1.2 m	n/a
<i>Eucalyptus kingsmillii</i>	0.5%	1.5 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	1.5%	5.5 m	n/a
<i>Pimelea microcephala</i>	0.001%	0.3 m	#336
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.5 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.8 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1.3 m	n/a
<i>Triodia basedowii</i>	30%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ057**Described by** Rebecca Graham**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773860 **mE**7001872 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga Spinifex shrubland**Disturbance:** Animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 32.254%; 4% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.001%	5 m	#110
<i>Acacia ayersiana</i>	0.001%	2 m	n/a
<i>Acacia colletioides</i>	3%	3 m	n/a
<i>Acacia effusifolia</i>	1.5%	4 m	n/a
<i>Acacia prainii</i>	1%	5 m	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.25%	1.3 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.25%	1.2 m	n/a
<i>Eucalyptus trivalva</i>	1%	6 m	n/a
<i>Melaleuca interioris</i>	0.001%	2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Triodia basedowii</i>	25%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ058**Described by** Rebecca Graham**Date:** 2/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.5km south of Midnight Bore, east of road, central Yeelirrie study area 1**MGA Zone:** 50J

782813 mE

6993080 mN

Vegetation Code: SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga Spinifex shrubland**Disturbance:** Animal scratchings and scats**Fire Age:** Long unburnt**Notes:** Total PFC 30.681%; 2% leaf litter cover to a depth of 1 cm, 14 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	5%	5 m	#091
<i>Acacia ayersiana</i>	3%	6 m	n/a
<i>Eragrostis setifolia</i>	0.01%	0.2 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.8 m	n/a
<i>Eriachne helmsii</i>	0.67%	0.3 m	YQ055-01=
<i>Triodia basedowii</i>	22%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ059**Described by** Lewis Trotter**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.5km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 250m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J

762170 mE

7008111 mN

Vegetation Code: SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia* Spinifex shrubland with mallees**Disturbance:** n/a**Fire Age:** Approximately 5 years**Notes:** Total PFC 16.511%; 0.5% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0.25% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.001%	0.4 m	YQ054-01=
<i>Acacia ligulata</i>	0.001%	1.2 m	n/a
<i>Acacia prainii</i>	0.001%	0.7 m	n/a
<i>Bonamia rosea</i>	0.001%	0.3 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.7 m	n/a
<i>Dianella revoluta</i>	0.25%	0.4 m	n/a
<i>Eremophila longifolia</i>	0.001%	1 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.4 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	3%	1 m	n/a
<i>Exocarpos aphyllus</i>	0.001%	1.3 m	n/a
<i>Grevillea acacioides</i>	0.25%	0.5 m	n/a
<i>Hakea francisiana</i>	1%	1 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.3 m	n/a
<i>Leptosema chambersii</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	12%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ060**Described by** Lewis Trotter**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m south-west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1**MGA Zone:** 50J763508 **mE**7009464 **mN****Vegetation Code:** SAHS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with heath**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 23.255%; 1.5% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	0.25%	1-3 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	3%	1-3 m	YQ054-01=
<i>Acacia ligulata</i>	0.001%	0.4 m	n/a
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Callitris columellaris</i>	0.5%	2-3 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.2 m	n/a
<i>Dianella revoluta</i>	0.001%	0.5 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	1%	2.5 m	n/a
<i>Grevillea acacioides</i>	4%	0.5-1.5 m	n/a
<i>Hakea francisiana</i>	1%	1-3 m	n/a
<i>Homalocalyx thryptomenoides</i>	7.5%	0.5 m	n/a
<i>Micromyrtus flaviflora</i>	2%	1-2 m	YQ061-02
<i>Prostanthera wilkieana</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	4%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ061**Described by** Rebecca Graham**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 8.8km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 2km east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J775869 **mE**6995863 **mN****Vegetation Code:** SASP**Landscape Association:** Sand plain system**Vegetation:** Spinifex grassland**Disturbance:** Animal scratchings**Fire Age:** 2-5 years ago**Notes:** Total PFC 33.766%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 65% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	0.001%	0.5-1.2 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	1%	0.75 m	YQ061-01
<i>Acacia jamesiana</i>	0.001%	0.4 m	YQ061-03
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.006%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.8 m	YQ052-02=
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.6 m	n/a
<i>Eucalyptus kingsmillii</i>	0.25%	1.7 m	n/a
<i>Euryomyrtus inflata</i>	12%	0.4m	n/a
<i>Grevillea acacioides</i>	0.002%	0.7 m	n/a
<i>Hakea francisiana</i>	0.001%	0.5 m	n/a
<i>Leptosema chambersii</i>	2%	0.3 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.4 m	YQ061-02
<i>Newcastelia hexarrhena</i>	0.5%	0.6 m	n/a
Poaceae sp. (inadequate material)	2%	0.3 m	n/a
<i>Prostanthera wilkieana</i>	4%	0.3 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.3 m	n/a
<i>Triodia basedowii</i>	12%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ062**Described by** Rebecca Graham**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 7.5km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773868 **mE**6997269 **mN****Vegetation Code:** SASP**Landscape Association:** Sand plain system**Vegetation:** Spinifex grassland**Disturbance:** Animal scratchings and some motor vehicle tracks**Fire Age:** 2-5 years ago**Notes:** Total PFC 12.01%; 0.001% leaf litter cover to a depth of 0.05 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	0.001%	0.8 m	n/a
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.3 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.3 m	YQ062-01
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	OUT	0.6 m	YQ052-02=
<i>Eremophila spuria</i>	0.001%	0.6 m	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.001%	0.3 m	YQ062-02
<i>Euryomyrtus inflata</i>	3%	0.3 m	n/a
<i>Grevillea acacioides</i>	0.001%	0.2 m	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.001%	0.4 m	n/a
<i>Leptosema chambersii</i>	2%	0.3 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.4 m	YQ061-02=
Poaceae sp. (inadequate material)	3%	0.3 m	n/a
<i>Prostanthera wilkieana</i>	0.001%	0.4 m	n/a
<i>Triodia basedowii</i>	4%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ063**Described by** Rebecca Graham**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 6km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 1.3km west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J772514 **mE**6998786 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland with mallees**Disturbance:** Animal scratchings**Fire Age:** 5 years ago**Notes:** Total PFC 21.516%; 0.5% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.5%	1 m	YQ061-01=
<i>Acacia ligulata</i>	0.75%	1.5 m	n/a
<i>Dianella revoluta</i>	0.006%	0.5 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.7 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>	2%	2 m	n/a
<i>Grevillea acacioides</i>	0.25%	0.7-1.4 m	n/a
<i>Hakea francisiana</i>	0.5%	0.6 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	2%	0.4 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	YQ063-02
<i>Micromyrtus flaviflora</i>	0.001%	0.4 m	YQ063-03
Poaceae sp. (inadequate material)	0.5%	0.3 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.5 m	n/a
<i>Triodia basedowii</i>	15%	0.4 m	n/a
<i>Wurmbea deserticola</i>	0.006%	0.07 m	YQ063-01

BHP Billiton Yeelirrie Site YQ064**Described by** Rebecca Graham**Date:** 29/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.5km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 125m east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773991 **mE**7001380 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** Rabbit scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 19.51%; 4% leaf litter cover to a depth of 1 cm, 8 dead timber standing with 3% dead timber cover on ground, 0.25% cover of cryptogam crusting, 5% cover of clay, 75% cover of sand, 0.006% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. curved flat 40-90x4mm silver grey green	2%	6 m	YQ064-04
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	12%	6 m	YQ064-02
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	1%	3.5m	YQ064-05
<i>Acacia aneura</i> var. subterete straight to slightly curved 50-90x1mm yellow green	0.5%	6 m	YQ064-02
<i>Acacia ayersiana</i>	0.25%	7 m	n/a
<i>Acacia burkittii</i>	1%	3 m	n/a
<i>Enneapogon caerulescens</i>	0.001%	0.1 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.5%	2 m	YQ064-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	#290
<i>Sida ectogama</i>	0.006%	0.3 m	YQ064-06
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	0.25%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ065**Described by** Lewis Trotter**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.75km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 400m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J762113 **mE**7008555 **mN****Vegetation Code:** SAHS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with heath**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 34.507%; 0.25% leaf litter cover to a depth of 0.5 cm, 5 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.5%	3 m	n/a
<i>Acacia pachyacra</i>	0.001%	3 m	n/a
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Callitris columellaris</i>	0.75%	2.4 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.2 m	n/a
<i>Dianella revoluta</i>	0.001%	0.4 m	n/a
<i>Enekbatus eremaeus</i>	7.5%	0.6 m	n/a
<i>Grevillea acacioides</i>	4%	1-3 m	n/a
<i>Hakea francisiana</i>	0.25%	1.2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.5%	0.5 m	n/a
<i>Melaleuca interioris</i>	1%	0.8 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.3 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.3 m	n/a
<i>Sida ectogama</i>	0.001%	0.2 m	YQ065-01
<i>Triodia basedowii</i>	20%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ066**Described by** Lewis Trotter**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.25km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 100m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J761802 **mE**7007031 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland with mallees**Disturbance:** n/a**Fire Age:** Approximately 5 years**Notes:** Total PFC 23.007%; 1% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0.25% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ligulata</i>	0.5%	0.4 m	n/a
<i>Acacia prainii</i>	8%	0.5 m	n/a
<i>Alyogyne pinoniana</i>	0.001%	0.3 m	YQ066-01
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.3 m	n/a
<i>Dianella revoluta</i>	0.5%	0.5 m	n/a
<i>Enekbatus eremaeus</i>	0.25%	0.2 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.4 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.4 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	3%	2 m	n/a
<i>Grevillea acacioides</i>	0.001%	0.4 m	n/a
<i>Hakea francisiana</i>	0.5%	1.5 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.3 m	n/a
<i>Sida ectogama</i>	0.25%	0.3 m	n/a
<i>Triodia basedowii</i>	10%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ067**Described by** Lewis Trotter**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 5.4km south of turnoff 4km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J766879 **mE**7004211 **mN****Vegetation Code:** SAHS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with heath**Disturbance:** n/a**Fire Age:** 5 years**Notes:** Total PFC 33.004%; 2% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	5%	1.8 m	YQ067-01
<i>Acacia ligulata</i>	0.001%	0.6 m	n/a
<i>Bonamia rosea</i>	0.001%	0.2 m	n/a
<i>Dianella revoluta</i>	0.25%	0.6 m	n/a
<i>Enekbatus eremaeus</i>	12.5%	0.5 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	1.5%	2 m	n/a
<i>Exocarpos aphyllus</i>	0.001%	0.3 m	n/a
<i>Grevillea acacioides</i>	0.25%	1 m	n/a
<i>Hakea francisiana</i>	1%	0.8 m	n/a
<i>Homalocalyx thryptomenoides</i>	5%	0.4 m	n/a
<i>Leptosema chambersii</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	7.5%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ068**Described by** Lewis Trotter**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.5km north-north-west of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1**MGA Zone:** 50J775371 **mE**7005451 **mN****Vegetation Code:** SASP**Landscape Association:** Sand plain system**Vegetation:** Spinifex grassland**Disturbance:** n/a**Fire Age:** 5 years**Notes:** Total PFC 21.506%; 1% leaf litter cover to a depth of 2cm, 0 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.001%	0.6 m	YQ068-01
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.2 m	n/a
<i>Dianella revoluta</i>	0.001%	0.4 m	n/a
<i>Eragrostis xerophila</i>	1%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.4 m	n/a
<i>Eucalyptus kingsmillii</i>	1.5%	2 m	n/a
<i>Hakea francisiana</i>	0.001%	0.3 m	n/a
<i>Leptosema chambersii</i>	15%	0.2 m	n/a
Poaceae sp. (inadequate material)	1%	0.3 m	YQ068-02
<i>Prostanthera wilkieana</i>	0.25%	0.1 m	n/a
<i>Rulingia luteiflora</i>	0.25%	0.2 m	n/a
<i>Sida ectogama</i>	0.5%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	2%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ069**Described by** Lewis Trotter**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.25km north of Midnight Bore, 100m east of road, north-west Yeelirrie study area 1**MGA Zone:** 50J782963 **mE**6998916 **mN****Vegetation Code:** SAHS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with heath**Disturbance:** n/a**Fire Age:** 5 years**Notes:** Total PFC 21.91%; 0.25% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0.2% dead timber cover on ground, 0% cover of cryptogam crusting, 0.01% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	2%	0.6 m	n/a
<i>Acacia jamesiana</i>	0.25%	1 m	YQ069-01
<i>Acacia pruinocarpa</i>	0.01%	0.4 m	n/a
<i>Bonamia rosea</i>	0.01%	0.2 m	n/a
<i>Dianella revoluta</i>	0.1%	0.5 m	n/a
<i>Enekbatus eremaeus</i>	2%	0.4 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.25%	1 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	0.5%	1.5 m	n/a
<i>Euphorbia drummondii</i>	0.01%	0.2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.01%	0.4 m	n/a
<i>Leptosema chambersii</i>	7%	0.1 m	n/a
<i>Micromyrtus flaviflora</i>	0.5%	0.8 m	n/a
<i>Newcastelia hexarrhena</i>	3%	0.5 m	n/a
<i>Rulingia luteiflora</i>	0.01%	0.2 m	n/a
<i>Santalum lanceolatum</i>	0.01%	2 m	n/a
<i>Sida ectogama</i>	0.25%	0.2 m	n/a
<i>Triodia basedowii</i>	6%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ070**Described by** Lewis Trotter**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m west of Midnight Bore, north of road, north-west Yeelirrie study area 1**MGA Zone:** 50J782174 **mE**6997778 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 22.005%; 2% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	5%	2-5 m	YQ070-02
<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green	0.5%	2.2 m	YQ070-01
<i>Acacia ayersiana</i>	7.5%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	3%	2 m	n/a
<i>Eragrostis eriopoda</i>	0.25%	0.3 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.5%	0.6 m	n/a
<i>Maireana georgei</i>	0.001%	0.2 m	n/a
<i>Melaleuca interioris</i>	0.001%	0.6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	5%	0.8 m	n/a
<i>Rhagodia drummondii</i>	0.25%	0.4 m	n/a
<i>Santalum lanceolatum</i>	0.001%	0.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ071**Described by** Lewis Trotter**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.5km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1**MGA Zone:** 50J781293 **mE**6998260 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 16.89%; 0.75% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green	0.75%	5 m	YQ070-01=
<i>Acacia ayersiana</i>	7%	0.3-6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.01%	0.2 m	n/a
<i>Acacia tetragonophylla</i>	0.06%	2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.01%	0.4 m	YQ071-01
<i>Eragrostis eriopoda</i>	3%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	4.5%	1 m	n/a
<i>Eremophila longifolia</i>	0.06%	3.5 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.06%	0.5 m	n/a
<i>Maireana pyramidata</i>	0.01%	0.8 m	n/a
<i>Melaleuca interioris</i>	0.3%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.6 m	n/a
<i>Rhagodia drummondii</i>	0.06%	0.6 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.01%	0.1 m	n/a
<i>Solanum lasiophyllum</i>	0.06%	0.2 m	n/a
<i>Triodia basedowii</i>	0.75%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ072**Described by** Rebecca Graham**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.75km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J773867 **mE**7001107 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Animal scratchings and a minor drainage channel**Fire Age:** Long unburnt**Notes:** Total PFC 17.759%; 3% leaf litter cover to a depth of 0.5 cm, 2 dead timber standing with 1.5% dead timber cover on ground, 1% cover of cryptogam crusting, 45% cover of clay, 0.001% cover of sand, 5% cover of gravel, 40% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1%	3 m	n/a
<i>Acacia</i> sp. inadequate material (R. Graham & A. Douglas LCH 26640)	0.001%	2.5 m	YQ072-02
<i>Austrostipa elegantissima</i>	0.001%	0.4 m	n/a
<i>Casuarina pauper</i>	3%	10 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	YQ072-03
<i>Enneapogon caeruleus</i>	0.001%	0.15 m	n/a
<i>Eremophila alternifolia</i>	n/a	n/a	YQ072-04
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	3%	2.5 m	n/a
<i>Eremophila falcata</i>	0.5%	2 m	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.001%	0.8 m	n/a
<i>Eremophila longifolia</i>	0.001%	2 m	n/a
<i>Marsdenia australis</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.1 m	n/a
<i>Sclerolaena diacantha</i>	1%	0.2 m	#290
<i>Sclerolaena eriacantha</i>	2%	n/a	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	n/a	n/a
<i>Templetonia incrassata</i>	5%	2 m	YQ072-01

BHP Billiton Yeelirrie Site YQ073**Described by** Rebecca Graham**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.6km south of Midnight Bore, west of road, central Yeelirrie study area 1**MGA Zone:** 50J782777 **mE**6993984 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** Rabbit droppings, scratchings and minor vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 13.337%; 2% leaf litter cover to a depth of 2 cm, 8 dead timber standing with 1% dead timber cover on ground, 15% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm	grey green		
	0.25%	3 m	n/a
<i>Acacia ayersiana</i>	6%	8 m	n/a
<i>Acacia burkittii</i>	0.75%	4 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.001%	1.5 m	n/a
<i>Acacia tetragonophylla</i>	3%	3 m	n/a
<i>Atriplex semilunaris</i>	0.01%	0.2 m	YQ073-02
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.4 m	YQ073-01
<i>Eremophila ericalyx</i>	0.001%	1 m	n/a
<i>Eremophila longifolia</i>	0.25%	3 m	n/a
<i>Grevillea berryana</i>	1%	6 m	n/a
<i>Maireana glomerifolia</i>	0.001%	0.3 m	YQ073-04
<i>Maireana pyramidata</i>	0.001%	0.3 m	YQ073-05
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.8 m	n/a
<i>Santalum lanceolatum</i>	0.006%	2 m	n/a
<i>Sclerolaena eriacantha</i>	0.06%	0.02 m	YQ073-03
<i>Sida ectogama</i>	0.001%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Solanum nummularium</i>	0.001%	0.8 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ074**Described by** Rebecca Graham**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 200m east of South Gate, along Albany Well-South Gate Road, 50m north of road, central Yeelirrie study area 1**MGA Zone:** 50J789598 **mE**6988865 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** Animal diggings and droppings**Fire Age:** Long unburnt**Notes:** Total PFC 6.263%; 1% leaf litter cover to a depth of 1 cm, 14 dead timber standing with 3% dead timber cover on ground, 1% cover of cryptogam crusting, 6% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	0.001%	1 m	YQ074-01
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	0.001%	1.3 m	YQ074-02
<i>Acacia ayersiana</i>	4%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.001%	0.3 m	n/a
<i>Acacia tetragonophylla</i>	0.25%	1.5 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.2 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.4 m	n/a
<i>Rhagodia eremaea</i>	1%	1.5 m	n/a
<i>Santalum lanceolatum</i>	0.001%	1.5m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.006%	0.7 m	n/a

BHP Billiton Yeelirrie Site YQ075**Described by** Rebecca Graham**Date:** 30/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.2km south-east of South Gate, along Core Farm Express, 500m south of road, central Yeelirrie study area 1**MGA Zone:** 50J790050 **mE**6987364 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** Camel droppings and kangaroo scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 13.816%; 4% leaf litter cover to a depth of 2 cm, 10 dead timber standing with 2% dead timber cover on ground, 2% cover of cryptogam crusting, 2% cover of clay, 88% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	8%	1-8 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.5%	1.2 m	n/a
<i>Eragrostis eriopoda</i>	3%	0.2 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.5%	1.3 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.75%	1.2 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	YQ075-02
<i>Marsdenia australis</i>	0.001%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.7 m	YQ075-01
<i>Rhagodia eremaea</i>	0.06%	1.3 m	n/a
<i>Sclerolaena eriacantha</i>	0.001%	0.15 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.4 m	n/a
<i>Triodia basedowii</i>	1%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ076**Described by** Rebecca Graham**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.5km west-north-west of Albany Well, along Albany Well-South Gate Road, 250m south of road, central Yeelirrie study area 1**MGA Zone:** 50J793033 **mE**6987954 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** Kangaroo droppings and diggings**Fire Age:** Long unburnt**Notes:** Total PFC 14.962%; 4% leaf litter cover to a depth of 2 cm, 12 dead timber standing with 2% dead timber cover on ground, 1.5% cover of cryptogam crusting, 2% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	5%	0.5-7 m	n/a
<i>Acacia tetragonophylla</i>	2.5%	2.5 m	n/a
<i>Cratystylis subspinescens</i>	0.001%	0.7 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.1 m	n/a
<i>Eremophila longifolia</i>	0.25%	4 m	n/a
<i>Grevillea berryana</i>	3%	0.5-7 m	n/a
<i>Maireana triptera</i>	0.001%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.5 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.5 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.2%	1.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3%	2 m	n/a
<i>Solanum lasiophyllum</i>	0.006%	0.4 m	n/a
<i>Solanum nummularium</i>	0.001%	0.5 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ077**Described by** Rebecca Graham**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.4km south of Albany Well, east of road, central Yeelirrie study area 1**MGA Zone:** 50J795600 **mE**6985482 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** Kangaroo droppings and scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 11.514%; 1% leaf litter cover to a depth of 1 cm, 8 dead timber standing with 2% dead timber cover on ground, 3% cover of cryptogam crusting, 1% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.125%	2.5 m	#091
<i>Acacia ayersiana</i>	1%	5 m	n/a
<i>Acacia tetragonophylla</i>	0.25%	2 m	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.001%	0.3 m	n/a
<i>Eragrostis eriopoda</i>	3%	0.4 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	2%	1.4 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.5 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	OUT	0.7 m	n/a
<i>Grevillea berryana</i>	5%	6 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Psydrax suaveolens</i>	0.001%	1.5 m	n/a
<i>Rhagodia eremaea</i>	0.001%	1 m	n/a
<i>Santalum lanceolatum</i>	0.001%	1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.006%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1 m	n/a
<i>Triodia basedowii</i>	0.125%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ078**Described by** Rebecca Graham**Date:** 31/7/2009**Type:** Quadrat**Size:** 40 x 62.5 m**Season:** Poor**Location:** 600m north-east of 12 Mile Bore, central Yeelirrie study area 1**MGA Zone:** 50J788742 **mE**6989510 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Extensive rabbit burrowing, kangaroo droppings and diggings**Fire Age:** Long unburnt**Notes:** Total PFC 13.685%; 2% leaf litter cover to a depth of 2 cm, 47 dead timber standing with 3% dead timber cover on ground, 7% cover of cryptogam crusting, 10% cover of clay, 65% cover of sand, 0.006% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.06%	3 m	#110
<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green	1%	4 m	YQ078-01
<i>Acacia ayersiana</i>	0.25%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.06%	2 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.5%	1.8 m	n/a
<i>Acacia tetragonophylla</i>	5%	4 m	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.01%	0.5 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1 m	n/a
<i>Dissocarpus paradoxus</i>	0.06%	0.01 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.05 m	n/a
<i>Eremophila longifolia</i>	4%	6 m	n/a
<i>Eriachne ovata</i>	0.5%	0.1 m	n/a
<i>Lycium australe</i>	0.001%	0.7 m	n/a
<i>Melaleuca interioris</i>	0.06%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.06%	1.5 m	n/a
<i>Santalum lanceolatum</i>	0.06%	3 m	n/a
<i>Sclerolaena cornishiana</i>	0.001%	0.1 m	YQ001-02=
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ079**Described by** Rebecca Graham**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 6.5km north of Albany Well, 1.9km west of road, central Yeelirrie study area 1**MGA Zone:** 50J793601 **mE**6994491 **mN****Vegetation Code:** GPoS**Landscape Association:** Granite system**Vegetation:** *Ptilotus obovatus* shrubland**Disturbance:** Sheet wash**Fire Age:** Long unburnt**Notes:** Total PFC 5.436%; 0.001% leaf litter cover to a depth of 0.02 cm, 0 dead timber standing with 0% dead timber cover on ground, 8% cover of cryptogam crusting, 8% cover of clay, 65% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.001%	0.4 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.5 m	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.006%	0.4 m	n/a
<i>Eremophila galeata</i>	0.25%	1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.5 m	YQ079-02
<i>Maireana pyramidata</i>	1.5%	0.5 m	n/a
Poaceae sp. (inadequate material)	1.5%	0.02 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Sclerolaena eriacantha</i>	0.001%	0.05 m	YQ079-03
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.06%	0.8 m	YQ079-01
<i>Sida calyxhymenia</i>	0.001%	0.3 m	YQ079-05
<i>Sida</i> sp. (inadequate material)	0.001%	0.05 m	YQ079-06
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ080**Described by** Rebecca Graham**Date:** 31/7/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 6km north of Albany Well, 1.9km west of road, central Yeelirrie study area 1**MGA Zone:** 50J793564 **mE**6993953 **mN****Vegetation Code:** SAES**Landscape Association:** Granite system**Vegetation:** *Acacia Eremophila* shrubland**Disturbance:** Sheet wash**Fire Age:** Unknown**Notes:** Total PFC 5.631%; 0.001% leaf litter cover to a depth of 0.5 cm, 1 dead timber standing with 0% dead timber cover on ground, 4% cover of cryptogam crusting, 1.5% cover of clay, n/a% cover of sand, 20% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.001%	0.5 m	YQ080-07
<i>Acacia aneura</i> var. terete straight 30-110x1mm grey olive green	0.001%	1.5 m	YQ080-06
<i>Acacia tetragonophylla</i>	0.5%	1.2 m	n/a
<i>Chrysocephalum puteale</i>	0.001%	0.1 m	YQ080-03
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.06%	0.2 m	n/a
<i>Eremophila galeata</i>	3%	1.8 m	n/a
<i>Eremophila gilesii</i> subsp. <i>variabilis</i>	0.001%	0.15 m	YQ080-02
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.6 m	YQ080-05
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.001%	0.2 m	n/a
Poaceae sp. (inadequate material)	2%	0.01 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.3 m	n/a
<i>Sclerolaena</i> sp.	0.001%	0.1 m	YQ080-04
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.001%	0.5 m	n/a
<i>Sida ectogama</i>	0.001%	0.5 m	YQ080-01
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1 m	n/a

BHP Billiton Yeelirrie Site YQ081**Described by** Rebecca Graham**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.8km south of Midnight Bore, 100m east of road, central Yeelirrie study area 1**MGA Zone:** 50J782898 **mE**6994057 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Goanna and rabbit burrows, kangaroo droppings and scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 17.136%; 5% leaf litter cover to a depth of 2 cm, 9 dead timber standing with 2% dead timber cover on ground, 20% cover of cryptogam crusting, 20% cover of clay, 10% cover of sand, 0% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green	0.001%	0.5 m	YQ078-01=
<i>Acacia ayersiana</i>	1%	7 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.001%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	3%	3 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.6 m	n/a
<i>Cymbopogon ambiguus</i>	0.001%	1 m	n/a
<i>Eremophila eriocalyx</i>	0.06%	1.8 m	n/a
<i>Eremophila longifolia</i>	4%	6 m	n/a
<i>Eriachne ovata</i>	2%	0.05 m	n/a
<i>Eucalyptus lucasii</i>	3%	9 m	n/a
Indeterminate	0.001%	0.3 m	n/a
<i>Maireana pyramidata</i>	0.001%	0.9 m	n/a
<i>Maireana triptera</i>	0.006%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.7 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	2 m	n/a
<i>Santalum lanceolatum</i>	0.06%	2.5 m	n/a
<i>Sclerolaena eriacantha</i>	0.001%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1.1 m	n/a
<i>Spartothamnella teucriflora</i>	2%	0.8 m	n/a

BHP Billiton Yeelirrie Site YQ082**Described by** Rebecca Graham**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.9km south of Midnight Bore, 250m west of road, central Yeelirrie study area 1**MGA Zone:** 50J782496 **mE**6992567 **mN****Vegetation Code:** GRMS**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** Animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 32.89%; 1% leaf litter cover to a depth of 2 cm, 7 dead timber standing with 0.125% dead timber cover on ground, 3.5% cover of cryptogam crusting, 0.25% cover of clay, 80% cover of sand, 3% cover of gravel, 0.25% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. terete straight to slightly curved	0.25%	3.5 m	#229
<i>Acacia ayersiana</i>	0.001%	4.5 m	n/a
<i>Acacia craspedocarpa</i>	25%	3 m	n/a
<i>Acacia tetragonophylla</i>	1.2%	5 m	n/a
<i>Acacia thoma</i>	0.125%	1.5 m	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	1.5%	0.4 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	1.125%	2.5 m	YQ082-01
<i>Eremophila longifolia</i>	0.001%	3 m	n/a
<i>Marsdenia australis</i>	0.001%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1.5%	0.25 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.7 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.06%	0.7 m	n/a
<i>Scaevola spinescens</i> (narrow form)	0.125%	0.7 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	1.8 m	n/a
<i>Senna charlesiana</i>	0.001%	0.8 m	n/a
<i>Sida ectogama</i>	1%	0.6 m	n/a

BHP Billiton Yeelirrie Site YQ083**Described by** Rebecca Graham**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.2km south of Midnight Bore, 1km west of road, central Yeelirrie study area 1**MGA Zone:** 50J781788 **mE**6993461 **mN****Vegetation Code:** GPoS**Landscape Association:** Granite system**Vegetation:** *Ptilotus obovatus* shrubland**Disturbance:** Kangaroo scratchings**Fire Age:** Unknown**Notes:** Total PFC 13.526%; 0.001% leaf litter cover to a depth of 0.05 cm, 1 dead timber standing with 0% dead timber cover on ground, 10% cover of cryptogam crusting, 6% cover of clay, 70% cover of sand, 0% cover of gravel, 6% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia craspedocarpa</i>	0.001%	0.5 m	n/a
<i>Acacia tetragonophylla</i>	0.006%	1.5 m	n/a
<i>Atriplex</i> sp. (inadequate material)	0.001%	0.05 m	n/a
<i>Eremophila battii</i>	0.001%	0.25 m	YQ083-05
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.125%	0.3 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.5 m	YQ082-02=
<i>Eremophila longifolia</i>	0.001%	0.4 m	n/a
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	2%	0.3 m	YQ083-01
<i>Maireana glomerifolia</i>	0.006%	0.15 m	n/a
<i>Maireana pyramidata</i>	4%	0.5 m	YQ083-02
Poaceae sp. (inadequate material)	2%	0.01 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	4%	0.3 m	n/a
<i>Rhagodia eremaea</i>	n/a	n/a	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.001%	0.15 m	n/a
<i>Sclerolaena eriacantha</i>	1%	0.05 m	YQ083-03
<i>Sclerolaena</i> sp.	0.001%	0.02 m	YQ080-04=
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.125%	0.4 m	n/a
<i>Senna charlesiana</i>	0.25%	0.7 m	n/a
<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	0.006%	1.7 m	YQ083-04
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ084**Described by** Rebecca Graham**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.4km west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J786489 **mE**6991053 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Animal scratchings, tunnel water erosion**Fire Age:** Unknown**Notes:** Total PFC 17.195%; 4% leaf litter cover to a depth of 1 cm, 7 dead timber standing with 3% dead timber cover on ground, 11% cover of cryptogam crusting, 12% cover of clay, 40% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.06%	3 m	#091
<i>Acacia burkittii</i>	3%	3.5 m	n/a
<i>Acacia tetragonophylla</i>	3%	6 m	n/a
<i>Austrostipa elegantissima</i>	n/a	n/a	n/a
<i>Cratystylis subspinescens</i>	0.25%	1 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.02 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Eremophila longifolia</i>	0.25%	4 m	n/a
<i>Eriachne ovata</i>	2%	0.25 m	n/a
<i>Grevillea berryana</i>	5%	7 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2.5%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.125%	1.3 m	n/a
<i>Santalum lanceolatum</i>	0.006%	2.5 m	n/a
<i>Sclerolaena cornishiana</i>	0.001%	0.01 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.05 m	n/a

BHP Billiton Yeelirrie Site YQ085**Described by** Rebecca Graham**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4km west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1**MGA Zone:** 50J759044 **mE**7009899 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland with mallees**Disturbance:** Animal diggings and droppings**Fire Age:** 5-10 years**Notes:** Total PFC 53.184%; 4% leaf litter cover to a depth of 2 cm, 22 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 45% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ligulata</i>	1.5%	1.5 m	n/a
<i>Acacia prainii</i>	1%	0.8 m	n/a
<i>Alyogyne pinoniana</i>	0.002%	0.3 m	n/a
<i>Bonamia rosea</i>	0.001%	0.25 m	n/a
<i>Bossiaea eremaea</i>	3%	0.8 m	n/a
<i>Calothamnus aridus</i>	0.125%	1.6 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.25%	0.3 m	n/a
<i>Dianella revoluta</i>	1.25%	1.3 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.06%	0.6 m	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	1.5%	1.7 m	n/a
<i>Exocarpos sparteus</i>	0.06%	2 m	n/a
<i>Grevillea acacioides</i>	0.125%	0.5 m	n/a
<i>Hakea francisiana</i>	2%	1.5 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.5%	0.3 m	YQ093-05=
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	1%	0.4 m	n/a
<i>Leptosema chambersii</i>	0.25%	0.25 m	n/a
<i>Micromyrtus flaviflora</i>	0.25%	0.45 m	YQ085-01
Poaceae sp. (inadequate material)	0.06%	0.4 m	n/a
Poaceae sp. (inadequate material)	n/a	0.25 m	n/a
<i>Prostanthera wilkieana</i>	0.001%	0.4 m	n/a
<i>Rulingia luteiflora</i>	0.25%	0.2 m	n/a
<i>Triodia basedowii</i>	40%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ086**Described by** Lewis Trotter**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.75km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 250m north of the RFDS Airstrip, west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J211851 **mE**6979836 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 16.171%; 0.06% leaf litter cover to a depth of 0.25 cm, 8 dead timber standing with 0.5% dead timber cover on ground, 0.06% cover of cryptogam crusting, 3% cover of clay, 92% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	0.3%	5 m	n/a
<i>Acacia ayersiana</i>	6%	5 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1%	1.6 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	4%	5 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	1.8 m	n/a
<i>Eragrostis eriopoda</i>	0.75%	0.3 m	n/a
<i>Eremophila battii</i>	0.25%	0.2 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	3%	0.8 m	n/a
<i>Psydrax suaveolens</i>	0.06%	2.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.4 m	n/a
<i>Triodia basedowii</i>	0.75%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ087**Described by** Lewis Trotter**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.55km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 850m west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J210996 **mE**6979992 **mN****Vegetation Code:** GRMS**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 14.315%; 1% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 0.5% dead timber cover on ground, 1% cover of cryptogam crusting, 2% cover of clay, 90% cover of sand, 2.5% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	8%	2.5 m	YQ087-02
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	1%	2.5 m	YQ087-01
<i>Acacia ayersiana</i>	1.5%	4 m	n/a
<i>Acacia tetragonophylla</i>	1.5%	2.5 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.4 m	n/a
<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>	1%	3 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.001%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.1 m	n/a
<i>Santalum lanceolatum</i>	0.06%	1.2 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.75%	0.5 m	n/a
<i>Senna charlesiana</i>	0.001%	0.3 m	n/a
<i>Sida</i> sp. (inadequate material)	0.25%	0.8 m	YQ087-03
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ088**Described by** Lewis Trotter**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.1km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 650m west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J211263 **mE**6980400 **mN****Vegetation Code:** GPoS**Landscape Association:** Granite system**Vegetation:** *Ptilotus obovatus* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 0.884%; 0.01% leaf litter cover to a depth of 1 cm, 11 dead timber standing with 0.001% dead timber cover on ground, 0.06% cover of cryptogam crusting, 1% cover of clay, 95% cover of sand, 3% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	0.06%	0.6 m	n/a
<i>Chrysocephalum puteale</i>	0.001%	0.1 m	YQ088-01
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.5%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.3%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	0.001%	0.2 m	n/a
<i>Senna charlesiana</i>	0.001%	0.4 m	n/a
<i>Sida</i> sp. (inadequate material)	0.02%	1 m	YQ087-03=
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ089**Described by** Bridget Watkins**Date:** 1/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.75km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J211754 **mE**6980981 **mN****Vegetation Code:** PLEml**Landscape Association:** Playa system**Vegetation:** *Eremophila malacoides* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 14.47%; 0.001% leaf litter cover to a depth of 0.5 cm, 5 dead timber standing with 0.001% dead timber cover on ground, 0.5% cover of cryptogam crusting, 10% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.2%	0.5 m	n/a
<i>Acacia burkittii</i>	0.001%	0.8 m	n/a
<i>Acacia colletioides</i>	0.25%	1.5 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.25%	1.8 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.5 m	n/a
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	0.25%	0.6 m	YQ089-02
<i>Eremophila malacoides</i>	12.5%	0.5 m	YQ089-03
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.2%	1.2 m	YQ090-01=
<i>Maireana thesioides</i>	0.001%	0.1 m	YQ089-01
<i>Maireana triptera</i>	0.001%	0.4 m	n/a
<i>Marsdenia australis</i>	0.001%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.4 m	YQ089-04
<i>Santalum lanceolatum</i>	0.001%	0.3 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.06%	0.4 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.5%	0.5 m	n/a
<i>Sclerolaena eriacantha</i>	0.001%	0.1 m	YQ089-05
<i>Senna charlesiana</i>	0.001%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ090**Described by** Bridget Watkins**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.2km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 600m east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J

212033 mE

6982458 mN

Vegetation Code: SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia Spinifex* shrubland**Disturbance:** Track running either side of a fence to the north of the quadrat**Fire Age:** Greater than 5 years ago**Notes:** Total PFC 21.738%; 0.5% leaf litter cover to a depth of 2 cm, 10 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ligulata</i>	1.5%	1.2 m	n/a
<i>Bossiaea eremaea</i>	0.25%	0.4 m	n/a
<i>Dianella revoluta</i>	0.001%	0.3 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.5%	0.4 m	n/a
<i>Grevillea acacioides</i>	0.06%	0.5 m	n/a
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.001%	0.3 m	YQ090-01
<i>Hakea francisiana</i>	0.3%	0.5 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.06%	0.2 m	#205
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	n/a
<i>Leptosema chambersii</i>	0.001%	0.1 m	n/a
<i>Marsdenia australis</i>	0.001%	0.1 m	n/a
<i>Melaleuca interioris</i>	1%	0.8 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.3 m	YQ090-02
<i>Prostanthera wilkieana</i>	0.001%	0.1 m	n/a
<i>Rulingia luteiflora</i>	0.06%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Triodia basedowii</i>	18%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ091**Described by** Bridget Watkins**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50m**Season:** Poor**Location:** 750m south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 350m west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J211026 **mE**6982823 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings and droppings**Fire Age:** Greater than 5 years**Notes:** Total PFC 27.366%; 1% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.06% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.06%	0.6 m	n/a
<i>Acacia colletioides</i>	0.001%	0.4 m	n/a
<i>Acacia ligulata</i>	0.001%	0.5 m	n/a
<i>Dianella revoluta</i>	0.06%	0.6 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.4 m	n/a
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.001%	0.3 m	YQ090-01=
<i>Hakea francisiana</i>	0.06%	0.5 m	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.06%	0.2 m	#205
<i>Homalocalyx thryptomenoides</i>	0.001%	0.2 m	n/a
<i>Leptosema chambersii</i>	0.06%	0.2 m	n/a
<i>Melaleuca interioris</i>	5%	0.7 m	n/a
<i>Melaleuca leiocarpa</i>	0.06%	0.5 m	n/a
<i>Prostanthera wilkieana</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	22%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ092**Described by** Amy Douglas**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.3km north-east of 3 Mile Bore, 100m north-west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J208727 **mE**6983573 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings and droppings**Fire Age:** Greater than 5 years**Notes:** Total PFC 17.424%; 0.25% leaf litter cover to a depth of 2 cm, 12 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0.06% cover of clay, 82% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. subterete straight to slightly curved 50-90x1mm yellow green	0.5%	1 m	YQ091-02= #226
<i>Acacia jamesiana</i>	0.5%	0.5 m	
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.1 m	n/a
<i>Dianella revoluta</i>	0.001%	0.4 m	n/a
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.001%	0.4 m	n/a
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.25%	0.4 m	YQ090-01=
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.03%	1.4 m	n/a
<i>Leptosema chambersii</i>	0.06%	0.2 m	n/a
<i>Newcastelia hexarrhena</i>	1%	0.5 m	n/a
<i>Rulingia luteiflora</i>	0.02%	0.2 m	n/a
<i>Triodia basedowii</i>	15%	0.3 m	n/a
<i>Triodia melvillei</i>	0.06%	0.2 m	n/a
<i>Wurmbea deserticola</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ093**Described by** Rebecca Graham**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2km west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, south of road, north-west Yeelirrie study area 1**MGA Zone:** 50J761013 **mE**7010100 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland with mallees**Disturbance:** Animal scratchings and diggings, termite activity**Fire Age:** Unknown**Notes:** Total PFC 55.192%; 4% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 35% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia jamesiana</i>	0.5%	2.5 m	YQ093-02
<i>Acacia prainii</i>	0.001%	1 m	n/a
<i>Bonamia rosea</i>	0.125%	0.3 m	n/a
<i>Dampiera roycei</i>	0.25%	0.2 m	YQ093-03
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.06%	0.4 m	n/a
<i>Dianella revoluta</i>	0.25%	0.4 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.5 m	YQ093-01
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	1%	2 m	n/a
<i>Euryomyrtus inflata</i>	1%	0.3 m	n/a
<i>Grevillea acacioides</i>	0.5%	2.5 m	n/a
<i>Hakea francisiana</i>	3%	2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.75%	1.2 m	YQ093-05
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.001%	0.3 m	n/a
<i>Leptosema chambersii</i>	3%	0.3 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.3 m	n/a
<i>Prostanthera wilkieana</i>	0.001%	0.3 m	n/a
<i>Schoenus subaphyllus</i>	0.001%	0.3 m	YQ093-06
<i>Thysanotus manglesianus</i>	0.001%	n/a	YQ093-04
<i>Triodia basedowii</i>	45%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ094**Described by** Lewis Trotter**Date:** 2/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.5km north-east of 3 Mile Bore, 1.25km east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J210189 **mE**6983766 **mN****Vegetation Code:** SAHS**Landscape Association:** Sand plain system**Vegetation:** Spinifex hummock grassland with heath**Disturbance:** n/a**Fire Age:** 5 years**Notes:** Total PFC 30.113%; 1% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	2%	1.5-3.5 m	YQ094-01
<i>Acacia jamesiana</i>	0.06%	2 m	YQ094-03
<i>Acacia tetragonophylla</i>	0.001%	0.6 m	n/a
<i>Alyogyne pinoniana</i>	0.001%	0.2 m	n/a
<i>Dianella revoluta</i>	0.12%	0.6 m	n/a
<i>Enekbatus eremaeus</i>	12%	0.3-0.8 m	YQ094-04
<i>Eucalyptus kingsmillii</i>	0.25%	3.5 m	n/a
<i>Exocarpos sparteus</i>	0.12%	1.6m	YQ094-06
<i>Grevillea acacioides</i>	0.25%	1.5 m	YQ094-02
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.06%	2 m	n/a
<i>Homalocalyx thryptomenoides</i>	0.25%	0.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>x artemisioides</i>	0.001%	1 m	YQ094-05
<i>Triodia basedowii</i>	15%	0.2-0.4 m	n/a

BHP Billiton Yeelirrie Site YQ095**Described by** Bridget Watkins**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.45km south of North Gate, along North Gate-South Gate Road, 350m east of road, central Yeelirrie study area 1**MGA Zone:** 50J789748 **mE**6989925 **mN****Vegetation Code:** CMGbS**Landscape Association:** Calcrete system**Vegetation:** Mulga *Grevillea berryana* shrubland**Disturbance:** Drillers track running to the west of quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 9.485%; 2% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 3% dead timber cover on ground, 2% cover of cryptogam crusting, 40% cover of clay, 52% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.06%	2.5 m	#091
<i>Acacia ayersiana</i>	0.06%	1.5 m	n/a
<i>Acacia burkittii</i>	0.75%	1.5 m	n/a
<i>Acacia synchronicia</i>	0.3%	1-2 m	n/a
<i>Acacia tetragonophylla</i>	1.25%	1 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.5 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.3 m	n/a
<i>Eremophila alternifolia</i>	0.001%	1.5 m	YQ095-01
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.5%	1.5 m	n/a
<i>Eremophila longifolia</i>	0.02%	2 m	n/a
<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>	0.06%	1.5 m	n/a
<i>Grevillea berryana</i>	4%	1.5-5 m	n/a
<i>Lycium australe</i>	0.06%	0.5-1.5 m	n/a
<i>Maireana triptera</i>	0.001%	0.3 m	n/a
Poaceae sp. (inadequate material)	0.25%	0.05 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.02%	0.5 m	n/a
<i>Rhagodia drummondii</i>	0.05%	1.2 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.02%	0.1 m	n/a
<i>Santalum lanceolatum</i>	0.06%	4 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.02%	0.6 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	1-3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ096**Described by** Bridget Watkins**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.5km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1**MGA Zone:** 50J790922 **mE**6989567 **mN****Vegetation Code:** CLaS**Landscape Association:** Calcrete system**Vegetation:** *Lycium australe* shrubland**Disturbance:** Light vehicle tracks around the quadrat and drill lines are due to be started to the east and west of the quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 5.42%; 0.25% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 2% cover of cryptogam crusting, 25% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.06%	0.4 m	n/a
<i>Dissocarpus paradoxus</i>	0.06%	0.2 m	n/a
<i>Lycium australe</i>	3.5%	1.3 m	n/a
Poaceae sp. (inadequate material)	1.5%	0.2 m	n/a
<i>Rhagodia drummondii</i>	0.06%	0.5 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.06%	1 m	n/a
<i>Sclerolaena obliquicuspis</i>	0.06%	0.4 m	YQ096-02
<i>Zygophyllum</i> sp. (inadequate material)	0.12%	0.4 m	YQ096-01

BHP Billiton Yeelirrie Site YQ097**Described by** Bridget Watkins**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.8km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 500m north of road, central Yeelirrie study area 1**MGA Zone:** 50J786475 **mE**6992581 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 13.041%; 3% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 4% dead timber cover on ground, 1.5% cover of cryptogam crusting, 2.5% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	3.5%	0.5-5.5 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	6%	1.5-4 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.25%	1-1.5 m	n/a
<i>Acacia tetragonophylla</i>	0.12%	2 m	n/a
<i>Dissocarpus paradoxus</i>	0.25%	0.3 m	n/a
<i>Eragrostis eriopoda</i>	0.12%	0.3 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.02%	1.3 m	n/a
<i>Grevillea berryana</i>	1%	5 m	n/a
<i>Maireana triptera</i>	0.001%	0.3 m	n/a
<i>Melaleuca interioris</i>	1.5%	0.5-2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.12%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a
<i>Solanum nummularium</i>	0.02%	0.5 m	YQ097-01
<i>Triodia basedowii</i>	0.02%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ098**Described by** Bridget Watkins**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.9km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 800m north of road, central Yeelirrie study area 1**MGA Zone:** 50784572 **mE**6994192 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainae system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 17.981%; 1% leaf litter cover to a depth of 1 cm, 9 dead timber standing with 1.5% dead timber cover on ground, 55% cover of cryptogam crusting, 25% cover of clay, 15% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	4.5%	0.5-5 m	#068
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	7%	0.5-5 m	#091
<i>Acacia ayersiana</i>	4%	0.5-5 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1%	2 m	n/a
<i>Acacia tetragonophylla</i>	1%	2.5 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.06%	0.7 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.5 m	n/a
<i>Santalum lanceolatum</i>	0.06%	2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.12%	1.8 m	n/a
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.12%	1 m	n/a

BHP Billiton Yeelirrie Site YQ099**Described by** Cheyne Jowett**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.4km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 800m south of road, central Yeelirrie study area 1**MGA Zone:** 50J

784036 mE

6992738 mN

Vegetation Code: HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Animal scratchings and diggings**Fire Age:** Unknown**Notes:** Total PFC 10.562%; 3% leaf litter cover to a depth of 2 cm, 16 dead timber standing with 3% dead timber cover on ground, 3% cover of cryptogam crusting, 4% cover of clay, 88% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	7%	7 m	n/a
<i>Acacia tetragonophylla</i>	1.5%	2.5 m	n/a
<i>Eragrostis eriopoda</i>	0.12%	0.2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.12%	1.3 m	n/a
<i>Eremophila longifolia</i>	0.12%	2 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.02%	0.4 m	n/a
<i>Grevillea berryana</i>	1%	4 m	n/a
<i>Halgania erecta</i>	0.25%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.02%	0.5 m	n/a
<i>Santalum lanceolatum</i>	0.12%	4 m	n/a
<i>Sclerolaena fusiformis</i>	0.001%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.02%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.02%	0.5 m	n/a
<i>Triodia basedowii</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ100**Described by** Bridget Watkins**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 300m north of road, central Yeelirrie study area 1**MGA Zone:** 50787106 **mE**6991956 **mN****Vegetation Code:** PLCsMp**Landscape Association:** Playa system**Vegetation:** *Cratystylis subspinescens* and *Maireana pyramidata* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 0.183%; 0.06% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 94% cover of clay, 3% cover of sand, 3% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex codonocarpa</i>	0.001%	0.03 m	YQ100-01
<i>Cratystylis subspinescens</i>	0.12%	0.8 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Maireana pyramidata</i>	0.06%	0.6 m	YQ100-02
<i>Sclerolaena fusiformis</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ101**Described by** Amy Douglas**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.25km north of North Gate, 900m west of road, central Yeelirrie study area 1**MGA Zone:** 50J788720 **mE**6995799 **mN****Vegetation Code:** DRMS**Landscape Association:** Handpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Animal droppings**Fire Age:** Long unburnt**Notes:** Total PFC 36.334%; 60% leaf litter cover to a depth of 2 cm, 37 dead timber standing with 3% dead timber cover on ground, 0.5% cover of cryptogam crusting, 20% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. curved flat 40-90x4mm silver grey green	10%	1-6 m	YQ101-04
<i>Acacia aneura</i> var. flat slightly curved 10-20 x2mm yellow green	2%	1-5 m	YQ101-07
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	1%	3 m	YQ101-06
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	1%	0.5-5 m	YQ101-08
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	15%	1-6 m	YQ101-05
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1%	3 m	n/a
<i>Acacia tetragonophylla</i>	0.75%	2.5 m	n/a
<i>Amyema hilliania</i>	0.06%	0.5 m	n/a
Asteraceae sp. (inadequate material)	0.02%	n/a	YQ101-01
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	n/a	n/a
<i>Comesperma integerrimum</i>	0.001%	0.5 m	YQ101-03
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	OUT	n/a	n/a
Poaceae sp. (inadequate material)	5%	0.5 m	YQ101-02
<i>Santalum lanceolatum</i>	0.5%	2.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	n/a	n/a

BHP Billiton Yeelirrie Site YQ102**Described by** Rebecca Graham**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.1km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1**MGA Zone:** 50J778703 **mE**6998541 **mN****Vegetation Code:** CRsS**Landscape Association:** Calcrete system**Vegetation:** *Rhagodia* sp. Yeelirrie Station shrubland**Disturbance:** Clayplan heavily utilised by kangaroos and emus**Fire Age:** Long unburnt**Notes:** Total PFC 2.191%; 0.5% leaf litter cover to a depth of 0.5 cm, 0 dead timber standing with 0% dead timber cover on ground, 0.5% cover of cryptogam crusting, 90% cover of clay, 2% cover of sand, 2% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Alternanthera nodiflora</i>	0.001%	0.03 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.5 m	n/a
<i>Euphorbia drummondii</i>	0.06%	prostrate	n/a
<i>Goodenia pinnatifida</i>	0.001%	0.02 m	YQ102-01
<i>Pluchea dentex</i>	0.125%	0.03 m	YQ102-02
Poaceae sp. (inadequate material)	0.002%	0.01 m	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd <i>et al.</i> KS 1396)	2%	0.5-2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.04 m	n/a

BHP Billiton Yeelirrie Site YQ103**Described by** Rebecca Graham**Date:** 3/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 600m north-west of Midnight Bore, north-west Yeelirrie study area 1**MGA Zone:** 50J782350 **mE**6998098 **mN****Vegetation Code:** PLCh**Landscape Association:** Playa system**Vegetation:** Chenopod shrubland**Disturbance:** Kangaroo and emu droppings**Fire Age:** Unknown**Notes:** Total PFC 11.331%; 0.001% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 10% cover of cryptogam crusting, 40% cover of clay, 50% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	2%	0.01 m	#077
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.06%	0.6 m	n/a
<i>Eremophila longifolia</i>	0.25%	4 m	n/a
<i>Maireana carnososa</i>	8%	0.08 m	YQ103-01
<i>Maireana triptera</i>	0.6%	0.4 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.3 m	n/a
<i>Sclerolaena diacantha</i>	0.3%	0.06 m	YQ103-02
<i>Solanum lasiophyllum</i>	0.06%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ104**Described by** Rebecca Graham**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 9.25km north-west of Meekatharra-Yeelirrie Road and Albany Well-North Gate Road intersection, along Meekatharra-Yeelirrie Road, 50m south of road, central Yeelirrie study area 1**MGA Zone:** 50J790441 **mE**6994854 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Goanna burrows, rabbit droppings**Fire Age:** Long unburnt**Notes:** Total PFC 33.187%; 5% leaf litter cover to a depth of 2 cm, 45 dead timber standing with 3% dead timber cover on ground, 1% cover of cryptogam crusting, 1% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	1.5%	0.5-7 m	n/a
<i>Acacia effusifolia</i>	25%	1-5 m	n/a
<i>Eremophila hygrophana</i>	0.125%	1 m	n/a
<i>Eremophila spuria</i>	0.001%	1.7 m	n/a
<i>Eucalyptus kingsmillii</i>	2%	4.5 m	n/a
<i>Hakea francisiana</i>	1.5%	0.5-3.5 m	n/a
<i>Micromyrtus flaviflora</i>	0.001%	0.7 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.2 m	n/a
<i>Psyrdrax attenuata</i>	0.06%	1.5 m	n/a
<i>Triodia basedowii</i>	3%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ105**Described by** Rebecca Graham**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 800m north-east of Albany Well, central Yeelirrie study area 1**MGA Zone:** 50J796201 **mE**6988286 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings**Fire Age:** 1-2 years**Notes:** Total PFC 2.323%; 0.006% leaf litter cover to a depth of 0.01 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 0.25% cover of clay, 97% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Aristida contorta</i>	0.001%	0.1 m	YQ105-02
<i>Bonamia rosea</i>	0.06%	0.2 m	n/a
<i>Dianella revoluta</i>	0.125%	0.4 m	n/a
<i>Diplopeltis stuartii</i> var. <i>stuartii</i>	0.001%	0.1 m	YQ105-03
<i>Eriachne</i> sp. (inadequate material)	0.125%	0.3 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.25%	3.5 m	n/a
<i>Kennedia prorepens</i>	0.001%	0.03 m	n/a
<i>Leptosema chambersii</i>	0.125%	0.1 m	n/a
<i>Petalostylis cassioides</i>	0.125%	0.3 m	n/a
<i>Phyllota humilis</i>	0.001%	0.1 m	YQ105-01
<i>Psyrdrax attenuata</i>	0.001%	0.2 m	n/a
<i>Rulingia luteiflora</i>	1.5%	0.3 m	n/a
<i>Scaevola parvifolia</i>	0.001%	0.2 m	YQ105-04
<i>Triodia basedowii</i>	0.006%	0.03 m	n/a
<i>Wurmbea deserticola</i>	0.001%	0.01 m	n/a

BHP Billiton Yeelirrie Site YQ106**Described by** Lewis Trotter**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.2km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 400m north of road, central Yeelirrie study area 1**MGA Zone:** 50J787054 **mE**6992112 **mN****Vegetation Code:** PLAMi**Landscape Association:** Playa system**Vegetation:** *Acacia Melaleuca interioris* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 20.103%; 1% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 0.5% dead timber cover on ground, 3% cover of cryptogam crusting, 3% cover of clay, 75% cover of sand, 0.5% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	3%	5 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	2.5%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	1.25%	2 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.001%	0.3 m	n/a
<i>Dissocarpus paradoxus</i>	1%	0.1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	1.6 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.3 m	n/a
<i>Grevillea berryana</i>	1%	5 m	n/a
<i>Lycium australe</i>	0.75%	0.6 m	n/a
<i>Maireana pyramidata</i>	3%	1 m	n/a
<i>Maireana triptera</i>	0.6%	0.1 m	n/a
<i>Melaleuca interioris</i>	5.5%	3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1.5%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ107**Described by** Lewis Trotter**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 750m north-west of Midnight Bore, north-west Yeelirrie study area 1**MGA Zone:** 50J782272 **mE**6998121 **mN****Vegetation Code:** WABS**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eragrostis eriopoda* grassland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 29.087%; 2% leaf litter cover to a depth of 2 cm, 7 dead timber standing with 1.5% dead timber cover on ground, 0.25% cover of cryptogam crusting, 1.25% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm	grey green 5%	6 m	#178
<i>Acacia aneura</i> var. subterete straight 20-80x1mm	grey green 1%	0.5-2 m	YQ107-01
<i>Acacia aneura</i> var. terete straight 30-110x1mm	grey olive green 0.5%	2. m	YQ107-03
<i>Acacia aneura</i> var. terete straight 30-110x1mm	grey olive green 1%	5 m	YQ107-02
<i>Acacia ayersiana</i>	10%	4-7.5 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	3%	4 m	n/a
<i>Acacia tetragonophylla</i>	0.06%	1 m	n/a
<i>Eragrostis eriopoda</i>	0.2%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	4.75%	1.2 m	n/a
<i>Eremophila longifolia</i>	0.25%	4 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.75%	0.8 m	n/a
<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	2%	3 m	n/a
<i>Maireana triptera</i>	0.125%	0.3 m	n/a
<i>Psydrax suaveolens</i>	0.25%	3 m	n/a
<i>Rhagodia drummondii</i>	0.2%	1 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.001%	0.6 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ108**Described by** Rebecca Graham**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.45km east-south-east of Albany Well, along Meekatharra-Yeelirrie Road, 100m north-east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J204733 **mE**6987050 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings**Fire Age:** 1-2 years**Notes:** Total PFC 1.275%; 0.001% leaf litter cover to a depth of 0.05 cm, 13 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0.75% cover of clay, 97% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia effusifolia</i>	0.001%	0.2 m	n/a
<i>Acacia jamesiana</i>	0.001%	0.3 m	n/a
<i>Acacia ligulata</i>	0.001%	0.4 m	n/a
<i>Acacia pachyacra</i>	0.125%	0.5 m	n/a
<i>Alyogyne pinoniana</i>	0.001%	0.05 m	n/a
<i>Bonamia rosea</i>	0.06%	0.1 m	n/a
<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)	0.001%	0.3 m	n/a
<i>Dianella revoluta</i>	0.06%	0.2 m	n/a
<i>Dicrastylis brunnea</i>	0.006%	0.05 m	YQ108-02=
<i>Dicrastylis doranii</i>	OUT	0.3 m	YQ108-04
<i>Diplopeltis stuartii</i> var. <i>stuartii</i>	0.001%	0.05 m	YQ108-01
<i>Glischrocaryon flavescens</i>	0.001%	0.15 m	YQ108-03
<i>Hakea francisiana</i>	0.125%	0.4 m	n/a
<i>Halgania erecta</i>	0.001%	0.05 m	n/a
<i>Kennedia prorepens</i>	0.125%	0.15 m	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.06%	0.2 m	n/a
<i>Leptosema chambersii</i>	0.2%	0.1 m	n/a
<i>Newcastelia hexarrhena</i>	0.001%	0.1 m	n/a
<i>Petalostylis cassioides</i>	0.125%	0.3 m	n/a
<i>Phyllota humilis</i>	0.125%	0.2 m	YQ105-01=
<i>Prostanthera wilkieana</i>	0.001%	0.1 m	n/a
<i>Rulingia luteiflora</i>	0.001%	0.15 m	n/a
<i>Scaevola parvifolia</i>	0.001%	0.02 m	YQ105-04=
<i>Schoenus subaphyllus</i>	0.001%	0.2 m	YQ093-06=
<i>Solanum centrale</i>	0.001%	0.15 m	n/a
<i>Triodia basedowii</i>	0.125%	0.2 m	n/a
<i>Wurmbea deserticola</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ109**Described by** Rebecca Graham**Date:** 4/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 250m north of Meekatharra-Yeelirrie Road and Yeelirrie Road intersection, 120m east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J213337 **mE**6982241 **mN****Vegetation Code:** SAWS**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** Animal scratchings**Fire Age:** 1-2 years**Notes:** Total PFC 4.981%; 0.001% leaf litter cover to a depth of 0.5 cm, 4 dead timber standing with 0.001% dead timber cover on ground, 0.001% cover of cryptogam crusting, 0.5% cover of clay, 95% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.06%	0.4 m	n/a
<i>Acacia pachyacra</i>	0.125%	0.4 m	n/a
<i>Aristida contorta</i>	0.001%	0.15 m	YQ105-02
<i>Bonamia rosea</i>	0.001%	0.1 m	n/a
<i>Dianella revoluta</i>	0.001%	0.3 m	n/a
<i>Dicrastylis brunnea</i>	0.06%	0.25 m	YQ109-01
<i>Dicrastylis doranii</i>	0.06%	0.2 m	YQ109-02
<i>Eriachne</i> sp.	0.06%	0.25 m	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.5%	0.3 m	n/a
<i>Leptosema chambersii</i>	0.3%	0.2 m	n/a
<i>Newcastelia hexarrhena</i>	0.06%	0.25 m	n/a
<i>Petalostylis cassioides</i>	1%	0.3 m	n/a
<i>Phyllota humilis</i>	0.001%	0.05 m	YQ105-01
Poaceae sp. (inadequate material)	0.001%	0.01 m	YQ109-03
<i>Prostanthera wilkieana</i>	0.001%	0.2 m	n/a
<i>Rulingia luteiflora</i>	0.75%	0.25 m	n/a
<i>Triodia basedowii</i>	2%	0.05-0.3 m	n/a

BHP Billiton Yeelirrie Site YQ110**Described by** Rebecca Graham**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4km north of North Gate, 1.1km west of road, central Yeelirrie study area 1**MGA Zone:** 50J788527 **mE**6995516 **mN****Vegetation Code:** DRMS**Landscape Association:** Handplan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Kangaroo droppings and scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 26.748%; 45% leaf litter cover to a depth of 1 cm, 10 dead timber standing with 3% dead timber cover on ground, 5% cover of cryptogam crusting, 30% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. curved flat 40-90x4mm silver grey green	20%	7 m	YQ101-04=
<i>Acacia aneura</i> var. flat slightly curved 10-20 x2mm yellow green	0.06%	0.6 m	YQ101-07=
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	1%	1-2.5 m	YQ110-01
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	0.5%	4 m	YQ101-06=
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	1.5%	4 m	YQ101-05=
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	1%	1-2.5 m	YQ110-02
<i>Acacia ayersiana</i>	0.06%	2 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1.5%	2 m	n/a
<i>Acacia tetragonophylla</i>	0.5%	1-2.5 m	n/a
<i>Amyema hilliiana</i>	0.125%	0.3 m	n/a
Asteraceae sp. (inadequate material)	0.00%	0.1 m	YQ101-01=
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	0.02 m	n/a
<i>Eremophila spuria</i>	0.001%	2.5 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	0.06%	5 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.1 m	YQ101-02=
<i>Psyrax attenuata</i>	0.125%	2.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.4 m	n/a
<i>Rhyncharhena linearis</i>	0.001%	1 m	n/a
<i>Santalum lanceolatum</i>	0.25%	1-2.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.6 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.06%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ111**Described by** Rebecca Graham**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.8km north of North Gate, 800m west of road, central Yeelirrie study area 1**MGA Zone:** 50J788687 **mE**6995453 **mN****Vegetation Code:** SAMU**Landscape Association:** Sand plain system**Vegetation:** Mulga spinifex shrubland**Disturbance:** Goanna diggings**Fire Age:** Long unburnt**Notes:** Total PFC 21.305%; 4% leaf litter cover to a depth of 2 cm, 12 dead timber standing with 1.5% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 83% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	3%	6 m	YQ111-01
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	1.5%	5 m	#091
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	0.3%	6 m	YQ111-02
<i>Acacia ayersiana</i>	3%	7 m	n/a
<i>Acacia ayersiana</i>	3%	0.5-8 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	2%	3 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.7 m	n/a
<i>Eragrostis eriopoda</i>	0.001%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.5%	1.6 m	n/a
<i>Rhagodia eremaea</i>	0.001%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.5 m	n/a
<i>Triodia basedowii</i>	8%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ112**Described by** Rebecca Graham**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.3km north of North Gate, 450m west of road, central Yeelirrie study area 1**MGA Zone:** 50J789215 **mE**6995822 **mN****Vegetation Code:** HPMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Animal scratchings, kangaroo and rabbit droppings**Fire Age:** Long unburnt**Notes:** Total PFC 27.563%; 4% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 2% dead timber cover on ground, 10% cover of cryptogam crusting, 40% cover of clay, 40% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	2%	6 m	YQ101-05=
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	2%	6 m	YQ112-02
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	2%	6 m	#091
<i>Acacia ayersiana</i>	6%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	5%	2.5-4 m	n/a
<i>Acacia</i> sp. inadequate material (B. Watkins LCH 26641)	3%	5 m	YQ112-01
<i>Eragrostis eriopoda</i>	0.001%	0.1 m	n/a
<i>Eremophila flabellata</i>	3%	0.8 m	YQ112-03
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	3%	1.1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	2.5 m	YQ112-04
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	1.5%	0.7 m	n/a
<i>Psyrdrax attenuata</i>	0.06%	3 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	n/a	n/a

BHP Billiton Yeelirrie Site YQ113**Described by** Rebecca Graham**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.4km south of Midnight Bore, 750m west of road, central Yeelirrie study area 1**MGA Zone:** 50J782028 **mE**6994154 **mN****Vegetation Code:** PLAMi**Landscape Association:** Playa system**Vegetation:** *Acacia Melaleuca interioris* shrubland**Disturbance:** Kangaroo droppings**Fire Age:** Long unburnt**Notes:** Total PFC 17.431%; 12% leaf litter cover to a depth of 1 cm, 14 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 84% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	2%	6 m	YQ113-02
<i>Acacia aneura</i> var. subterete slightly curved 70-80x1mm blue green	1%	1.5-6 m	YQ113-01
<i>Acacia ayersiana</i>	4%	7 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	2%	1.7 m	n/a
<i>Acacia tetragonophylla</i>	0.25%	3 m	n/a
<i>Melaleuca interioris</i>	8%	3.5 m	n/a
<i>Muehlenbeckia florulenta</i>	0.06%	1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.15 m	n/a
<i>Spartothamnella teucriflora</i>	0.06%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ114**Described by** Rebecca Graham**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.2km south of South Gate, 1.2km west of road, central Yeelirrie study area 1**MGA Zone:** 50J788888 **mE**6986725 **mN****Vegetation Code:** DRMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Minor animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 26.312%; 3% leaf litter cover to a depth of 2 cm, 16 dead timber standing with 2% dead timber cover on ground, 15% cover of cryptogam crusting, 60% cover of clay, 15% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.25%	2.5 m	YQ114-01
<i>Acacia ayersiana</i>	7%	7 m	n/a
<i>Acacia ayersiana</i>	18%	8 m	n/a
<i>Acacia tetragonophylla</i>	0.75%	5 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.2 m	YQ114-03
<i>Eremophila battii</i>	0.001%	0.15 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.6 m	n/a
<i>Eremophila latrobei</i> subsp. <i>filiformis</i>	0.06%	1.6 m	n/a
<i>Psyrax suaveolens</i>	0.001%	1.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.06%	1.2 m	n/a
<i>Sida ectogama</i>	0.001%	0.3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.125%	0.5 m	n/a
<i>Thysanotus manglesianus</i>	0.001%	0.1 m	YQ114-02

BHP Billiton Yeelirrie Site YQ115**Described by** Rebecca Graham**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.8km south of South Gate, 1.5m west of road, central Yeelirrie study area 1**MGA Zone:** 50J788512 **mE**6986117 **mN****Vegetation Code:** DRMS**Landscape Association:** Hardpan and drainage system**Vegetation:** Mulga shrubland**Disturbance:** Minor animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 20.563%; 4% leaf litter cover to a depth of 2 cm, 19 dead timber standing with 2% dead timber cover on ground, 6% cover of cryptogam crusting, 10% cover of clay, 60% cover of sand, 5% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.125%	1 m	YQ114-01=
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	1%	4 m	YQ115-04
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	0.75%	0.5-3 m	YQ115-03
<i>Acacia ayersiana</i>	12%	0.5-9 m	n/a
<i>Acacia craspedocarpa</i> (broad lanceolate leaf form)	2.25%	1.8-3 m	YQ115-01
<i>Acacia</i> sp. inadequate material (B. Watkins LCH 26641)	0.75%	6 m	YQ112-01=
<i>Acacia tetragonophylla</i>	2%	3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.8 m	n/a
<i>Eremophila latrobei</i> subsp. <i>filiformis</i>	0.06%	0.6 m	n/a
<i>Psydrax attenuata</i>	0.125%	3 m	n/a
<i>Psydrax suaveolens</i>	0.001%	3.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.75%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.25%	2 m	n/a
<i>Santalum lanceolatum</i>	0.001%	3 m	n/a
<i>Sida ectogama</i>	0.25%	0.5 m	n/a
<i>Spartothamnella teucriflora</i>	0.25%	0.5	n/a

BHP Billiton Yeelirrie Site YQ116**Described by** Lewis Trotter**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 5km north of Albany Well, west of road, south-east Yeelirrie study area 1**MGA Zone:** 50J795463 **mE**6993032 **mN****Vegetation Code:** GRMS**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 21.015%; 0.125% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 1% dead timber cover on ground, 20% cover of cryptogam crusting, 20% cover of clay, 30% cover of sand, 0% cover of gravel, 20% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	7.5%	1-5 m	#068
<i>Acacia ayersiana</i>	6%	6-8 m	n/a
<i>Acacia quadrimarginea</i>	0.125%	0.8 m	n/a
<i>Acacia tetragonophylla</i>	5%	4 m	n/a
<i>Eremophila galeata</i>	0.06%	1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.5%	0.5 m	n/a
<i>Psyrax attenuata</i>	0.06%	2.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.75%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.06%	0.6 m	n/a
<i>Senna charlesiana</i>	0.2%	0.5-1.5 m	n/a
<i>Sida ectogama</i>	0.7%	0.6 m	n/a
<i>Spartothamnella teucriflora</i>	0.06%	0.8 m	n/a

BHP Billiton Yeelirrie Site YQ117**Described by** Lewis Trotter**Date:** 5/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.7km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1**MGA Zone:** 50J778870 **mE**6998516 **mN****Vegetation Code:** PLAMi**Landscape Association:** Playa system**Vegetation:** *Acacia Melaleuca interioris* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 27.132%; 3% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 0.75% dead timber cover on ground, 0.01% cover of cryptogam crusting, 1% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	3%	4 m	YQ107-01=
<i>Acacia ayersiana</i>	8%	6 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	4.5%	1-4 m	n/a
<i>Eragrostis eriopoda</i>	0.06%	0.2 m	n/a
<i>Eremophila clarkei</i>	0.001%	0.4 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	6%	0.5-1.8 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.01%	0.5 m	n/a
<i>Melaleuca interioris</i>	5%	2.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	0.6 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Triodia basedowii</i>	0.25%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ118**Described by** Amy Douglas**Date:** 7/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 1.25km west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J210645 **mE**6980538 **mN****Vegetation Code:** GRMS**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** Animal scratchings and droppings**Fire Age:** Long unburnt**Notes:** Total PFC 15.574%; 0.5% leaf litter cover to a depth of 1 cm, 15 dead timber standing with 0.25% dead timber cover on ground, 0.06% cover of cryptogam crusting, 2% cover of clay, 35% cover of sand, 12% cover of gravel, 45% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	1.25%	4 m	YQ118-06
<i>Acacia aneura</i> var. subterete straight 20-80x1mm grey green	3%	3 m	YQ118-06
<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green	4%	4 m	YQ118-05
<i>Acacia ayersiana</i>	0.8%	3 m	n/a
<i>Acacia quadrimarginea</i>	2%	4 m	n/a
<i>Acacia tetragonophylla</i>	0.5%	2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	2%	0.5 m	YQ118-01
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	1.5%	0.7 m	n/a
<i>Hibiscus burtonii</i>	0.001%	0.4 m	YQ118-04
<i>Marsdenia australis</i>	0.001%	1.6 m	n/a
<i>Psydrax suaveolens</i>	0.06%	2.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.4%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.6 m	n/a
<i>Sida cardiophylla</i>	0.06%	0.2 m	YQ118-02
<i>Thyridolepis mitchelliana</i>	0.001%	0.2 m	YQ118-03

BHP Billiton Yeelirrie Site YQ119**Described by** Rebecca Graham**Date:** 14/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.7km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1**MGA Zone:** 50J791098 **mE**6989410 **mN****Vegetation Code:** CLaS**Landscape Association:** Calcrete system**Vegetation:** *Lycium australe* shrubland**Disturbance:** Vehicle and animal tracks, rabbit diggings and holes**Fire Age:** Unknown**Notes:** Total PFC 5.908%; 0.25% leaf litter cover to a depth of 0.5 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 4% cover of cryptogam crusting, 15% cover of clay, 70% cover of sand, 1% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.75%	3.5 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.001%	1 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.075%	0.02 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.075%	0.3 m	n/a
<i>Lycium australe</i>	5%	1.8 m	n/a
<i>Minuria cunninghamii</i>	0.001%	0.05 m	YQ119-01
<i>Paspalidium basicladum</i>	0.001%	0.3 m	YQ130-01=
<i>Rhagodia drummondii</i>	0.001%	1 m	n/a
<i>Sclerolaena convexula</i>	0.001%	0.03 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	n/a
<i>Zygophyllum</i> sp. (inadequate material)	0.001%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ120**Described by** Rebecca Graham**Date:** 14/1/2010**Type:** Quadrat**Size:** 40 x 60 m**Season:** Poor**Location:** 1km south of Albany Well, east of road, central Yeelirrie study area 1**MGA Zone:** 50J795457 **mE**6986846 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Rabbit burrows and vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 12.413%; 3% leaf litter cover to a depth of 3 cm, 6 dead timber standing with 3.5% dead timber cover on ground, 10% cover of cryptogam crusting, 25% cover of clay, 40% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm	grey green		
	0.4%	4 m	n/a
<i>Acacia burkittii</i>	1.25%	3 m	n/a
<i>Acacia tetragonophylla</i>	4%	4 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1 m	n/a
<i>Dianella revoluta</i>	0.001%	0.7 m	n/a
<i>Digitaria brownii</i>	0.001%	0.04 m	YQ120-01
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.5 m	n/a
<i>Eremophila longifolia</i>	3%	6 m	n/a
<i>Marsdenia australis</i>	0.001%	0.5 m	n/a
<i>Pittosporum angustifolium</i>	0.001%	8 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.05 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	3%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1.4 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	1 m	n/a
<i>Santalum lanceolatum</i>	0.75%	4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.5 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.5 m	n/a
<i>Thyridolepis mitchelliana</i>	0.001%	0.25 m	YQ120-02

BHP Billiton Yeelirrie Site YQ121**Described by** Lewis Trotter**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 6.5m north-west of Meekatharra-Yeelirrie Road and Albany Well-North Gate Road intersection, along Meekatharra-Yeelirrie Road, 50m south of road, central Yeelirrie study area 1**MGA Zone:** 50792270 **mE**6992682 **mN****Vegetation Code:** SAMA**Landscape Association:** Sand plain system**Vegetation:** *Acacia spinifex* shrubland**Disturbance:** n/a**Fire Age:** Long unburnt**Notes:** Total PFC 37.737%; 2% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 1% dead timber cover on ground, 0.5% cover of cryptogam crusting, 2% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	5%	8 m	#178
<i>Acacia ayersiana</i>	0.125%	1.5 m	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	4%	2.5 m	n/a
<i>Acacia prainii</i>	20%	4 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.25%	1.5 m	n/a
<i>Eremophila spuria</i>	0.001%	0.6 m	n/a
<i>Eucalyptus kingsmillii</i>	3%	4 m	n/a
<i>Hakea francisiana</i>	0.3%	3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.06%	0.8 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.5 m	n/a
<i>Triodia basedowii</i>	5%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ122**Described by** Lewis Trotter**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.8km north-west of 3 Mile Bore, along Core Farm Express, 600m north-east of road, south-east Yeelirre study area 1**MGA Zone:** 51J205572 **mE**6983226 **mN****Vegetation Code:** CMpS**Landscape Association:** Calcrete system**Vegetation:** *Maireana pyramidata* shrubland**Disturbance:** Old tyre tracks through quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 3.404%; 0.001% leaf litter cover to a depth of 0.1 cm, 4 dead timber standing with 0.06% dead timber cover on ground, 3% cover of cryptogam crusting, 5% cover of clay, 80% cover of sand, 2% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. terete straight 30-110x1mm grey olive green	0.001%	0.4 m	n/a
<i>Acacia craspedocarpa</i>	0.125%	0.5 m	n/a
<i>Acacia tetragonophylla</i>	0.3%	1.5 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.25%	0.2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.4 m	n/a
<i>Frankenia pauciflora</i>	0.125%	0.1 m	YQ122-02
<i>Maireana glomerifolia</i>	1.5%	0.3 m	YQ122-01
<i>Maireana pyramidata</i>	n/a	n/a	n/a
<i>Maireana triptera</i>	0.1%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.3 m	n/a
<i>Senna charlesiana</i>	0.001%	0.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ123**Described by** Rebecca Graham**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 900m south of Midnight Bore, 500m west of road, north-west Yeelirrie study area 1**MGA Zone:** 50J782372 **mE**6996702 **mN****Vegetation Code:** PLAMi**Landscape Association:** Playa system**Vegetation:** *Acacia Melaleuca interioris* shrubland**Disturbance:** Animal diggings**Fire Age:** Long unburnt**Notes:** Total PFC 15.376%; 0.25% leaf litter cover to a depth of 0 cm, 5 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 90% cover of clay, 0% cover of sand, 3% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. terete straight to slightly curved	15-30x1mm	yellow olive green	
	2%	1.8 m	#229
<i>Acacia synchronicia</i>	0.001%	0.4 m	n/a
<i>Acacia tetragonophylla</i>	2%	3.5 m	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.001%	0.3 m	n/a
<i>Eremophila longifolia</i>	3%	8 m	n/a
<i>Grevillea berryana</i>	3%	4 m	n/a
<i>Maireana triptera</i>	0.001%	0.4 m	n/a
<i>Melaleuca interioris</i>	3%	3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.5 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.4 m	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	0.25%	0.4 m	n/a
<i>Sclerolaena eriacantha</i>	0.12%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.7 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ124**Described by** Rebecca Graham**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 750m south-east of Central Baseline and Northern Baseline intersection, along Northern Baseline, south of road, central Yeelirrie study area 1**MGA Zone:** 50J788599 **mE**6990620 **mN****Vegetation Code:** CLaS**Landscape Association:** Calcrete system**Vegetation:** *Lycium australe* shrubland**Disturbance:** Quadrat adjacent to drill tracks, rabbit droppings and scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 2.114%; 0.5% leaf litter cover to a depth of 0.02 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 8% cover of cryptogam crusting, 70% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	0.125%	2.5 m	#091
<i>Acacia synchronicia</i>	0.001%	1.2 m	n/a
<i>Dissocarpus paradoxus</i>	0.06%	0.05 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.5%	0.001 m	#077
<i>Lycium australe</i>	0.75%	1.8 m	n/a
<i>Maireana georgei</i>	0.001%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.5%	0.3 m	n/a
<i>Rhagodia eremaea</i>	0.125%	0.4 m	n/a
<i>Scaevola spinescens</i> (narrow form)	0.001%	0.4 m	n/a
<i>Sclerolaena eriacantha</i>	0.05%	0.02 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ125**Described by** Rebecca Graham**Date:** 6/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 750m west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J786794 **mE**6990280 **mN****Vegetation Code:** CERG**Landscape Association:** Calcrete system**Vegetation:** *Eragrostis* sp. Yeelirrie Calcrete grassland**Disturbance:** Rabbit diggings, exploration tracks adjacent to quadrat**Fire Age:** Long unburnt**Notes:** Total PFC 3.251%; 0.001% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 80% cover of cryptogam crusting, 10% cover of clay, 2% cover of sand, 4% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	3%	0.01 m	#077
<i>Lycium australe</i>	0.001%	0.2 m	n/a
<i>Sclerolaena eriacantha</i>	0.25%	0.01 m	n/a

BHP Billiton Yeelirrie Site YQ126**Described by** Rebecca Graham**Date:** 7/8/2009**Type:** Quadrat**Size:** 35 x 35 m**Season:** Poor**Location:** 5km south of Midnight Bore, 400m west of road, central Yeelirrie study area 1**MGA Zone:** 50J

782369 mE

6992519 mN

Vegetation Code: GR**Landscape Association:** Granite system**Vegetation:** Scattered Mulga and *Ptilotus obovatus***Disturbance:** Heavily grazed and water stressed**Fire Age:** Long unburnt**Notes:** Total PFC 4.789%; 0.5% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 2% dead timber cover on ground, 6.5% cover of cryptogam crusting, 4% cover of clay, 85% cover of sand, 1% cover of gravel, 9% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	1%	1.2 m	n/a
<i>Acacia tetragonophylla</i>	0.75%	1.3 m	n/a
<i>Aristida contorta</i>	0.001%	0.15 m	YQ126-03
<i>Calandrinia eremaea</i>	0.001%	0.01 m	YQ126-09
<i>Chrysocephalum puteale</i>	0.001%	0.15 m	YQ126-05
<i>Chthonocephalus pseudevax</i>	0.02%	0.01 m	YQ126-07
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.001%	0.3 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.2 m	YQ126-02
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	1.2 m	YQ082-01=
<i>Eremophila longifolia</i>	1%	2.5 m	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001%	0.002 m	YQ126-06
Indeterminate	0.001%	0.01 m	YQ126-10
<i>Lemooria burkittii</i>	0.005%	0.01 m	YQ126-08
<i>Podolepis capillaris</i>	0.005%	0.15 m	YQ126-04
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.3 m	YQ126-01
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.001%	0.4 m	n/a
<i>Solanum lasiophyllum</i>	1%	0.25 m	n/a

BHP Billiton Yeelirrie Site YQ127**Described by** Rebecca Graham**Date:** 7/8/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.6km west-south-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1**MGA Zone:** 50J785832 **mE**6989984 **mN****Vegetation Code:** PLAET**Landscape Association:** Playa system**Vegetation:** *Acacia Eremophila* thicket**Disturbance:** Numerous rabbit burrows**Fire Age:** Long unburnt**Notes:** Total PFC 28.055%; 5% leaf litter cover to a depth of 2 cm, 19 dead timber standing with 4.5% dead timber cover on ground, 15% cover of cryptogam crusting, 10% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	4%	3 m	n/a
<i>Acacia ayersiana</i>	0.12%	1.8 m	n/a
<i>Acacia tetragonophylla</i>	4.5%	5 m	n/a
<i>Aristida contorta</i>	0.12%	0.1 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.6 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.8 m	n/a
<i>Eremophila longifolia</i>	5%	4 m	n/a
<i>Grevillea berryana</i>	0.25%	5 m	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	6%	10 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	4%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.06%	0.6 m	n/a
<i>Santalum lanceolatum</i>	1%	4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.5 m	n/a

BHP Billiton Yeelirrie Site YQ128**Described by** Jessie-Leigh Brown **Date:** 15/1/2010 **Type:** Quadrat **Size:** 50 x 50 m**Season:** Poor**Location:** 3.5km west of Goldfields Highway turnoff, along Yeelirrie-Albion Downs Road, 250m north-west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J 249984 **mE** 6974377 **mN****Vegetation Code:** GFGr**Landscape Association:** Granite system**Vegetation:** Grassland**Disturbance:** Animal and vehicle tracks**Fire Age:** Unknown**Notes:** Total PFC 2.318%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.075% dead timber cover on ground, 2% cover of cryptogam crusting, 3% cover of clay, 85% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Cymbopogon ambiguus</i>	0.04%	0.3 m	n/a
<i>Eremophila galeata</i>	0.2%	1.8 m	n/a
Poaceae sp. (inadequate material)	2%	0.02 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Rhagodia drummondii</i>	0.075%	1 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.05 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ129**Described by** Cheyne Jowett**Date:** 14/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.75km west-north-west of Albany Well, along Albany Well-South Gate Road, 200m north of road, central Yeelirrie study area 1**MGA Zone:** 50J793813 **mE**6988242 **mN****Vegetation Code:** CMiS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca interioris* shrubland**Disturbance:** Animal activity**Fire Age:** Unknown**Notes:** Total PFC 16.754%; 0.75% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 0.5% dead timber cover on ground, 5% cover of cryptogam crusting, 3% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	1%	6 m	n/a
<i>Acacia ayersiana</i>	1.25%	5 m	n/a
<i>Acacia tetragonophylla</i>	1%	3 m	n/a
<i>Dianella revoluta</i>	0.001%	0.6 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Melaleuca interioris</i>	12%	3 m	n/a
Poaceae sp. (inadequate material)	0.5%	0.02 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.4 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	1 m	n/a

BHP Billiton Yeelirrie Site YQ130

Described by Rebecca Graham

Date: 14/1/2010

Type: Quadrat

Size: 50 x 50 m

Season: Poor

Location: 2.25km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1

MGA Zone: 50J

791632 **mE**

6989313 **mN**

Vegetation Code: CMGbS

Landscape Association: Calcrete system

Vegetation: *Grevillea berryana* shrubland

Disturbance: Grazing, animal activity

Fire Age: Unknown

Notes: Total PFC 7.512%; 2.5% leaf litter cover to a depth of 1 cm, 7 dead timber standing with 2% dead timber cover on ground, 5% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 10% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1.5%	2 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	3 m	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.001%	0.5 m	n/a
<i>Enneapogon caerulescens</i>	0.001%	0.05 m	n/a
<i>Grevillea berryana</i>	3%	6 m	n/a
<i>Lycium australe</i>	0.25%	1.3 m	n/a
<i>Maireana georgei</i>	0.001%	0.4 m	n/a
<i>Maireana pyramidata</i>	0.25%	0.7 m	n/a
<i>Paspalidium basicladum</i>	0.001%	0.25 m	YQ130-01
Poaceae sp. (inadequate material)	1%	0.02 m	n/a
<i>Ptilotus exaltatus</i>	0.001%	0.05 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.03 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.25%	6 m	n/a
<i>Santalum acuminatum</i>	0.5%	6 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.001%	0.8 m	n/a
<i>Sclerolaena convexula</i>	0.001%	0.05 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	1.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ131**Described by** Rebecca Graham**Date:** 15/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 100m west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J249355 **mE**6974723 **mN****Vegetation Code:** GR**Landscape Association:** Granite system**Vegetation:** Scattered mulgas and *Cymbopogon ambiguus***Disturbance:** Very little disturbance, kangaroo grazing**Fire Age:** Long unburnt**Notes:** Total PFC 8.759%; 1.5% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 1% dead timber cover on ground, 0.5% cover of cryptogam crusting, 0% cover of clay, 15% cover of sand, 5% cover of gravel, 70% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	0.75%	6 m	n/a
<i>Acacia quadrimarginea</i>	2%	5 m	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	0.05 m	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	0.05 m	n/a
<i>Cymbopogon ambiguus</i>	4%	0.2 m	n/a
<i>Dodonaea petiolaris</i>	0.001%	1.6 m	n/a
<i>Eremophila galeata</i>	0.001%	1.5 m	n/a
<i>Eremophila serrulata</i>	0.5%	0.5 m	YQ131-03
<i>Isotoma petraea</i>	0.001%	0.4 m	n/a
<i>Paspalidium</i> sp. (inadequate material)	0.001%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.001%	0.4 m	n/a
<i>Sida phaeotricha</i>	0.001%	0.2 m	YQ131-02
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	1.5%	0.2 m	YQ131-01

BHP Billiton Yeelirrie Site YQ133**Described by** Rebecca Graham**Date:** 15/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 600m north-west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J250422 **mE**6974279 **mN****Vegetation Code:** Qtz**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** Minimal disturbance, animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 10.756%; 0.75% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 1% dead timber cover on ground, 1% cover of cryptogam crusting, 1% cover of clay, 14% cover of sand, 20% cover of gravel, 65% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	5%	4 m	n/a
<i>Acacia quadrimarginea</i>	0.75%	5 m	n/a
<i>Callitris columellaris</i>	1%	5 m	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	0.1 m	n/a
<i>Cymbopogon ambiguus</i>	0.1%	0.2 m	n/a
<i>Dodonaea petiolaris</i>	0.5%	1.6 m	n/a
<i>Eremophila galeata</i>	0.1%	1.6 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.2%	1.7 m	n/a
<i>Marsdenia australis</i>	0.001%	0.15 m	n/a
<i>Paspalidium</i> sp. (inadequate material)	0.001%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	3%	0.3 m	n/a
<i>Ptilotus rotundifolius</i>	0.1%	0.8 m	n/a
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.001%	0.5 m	n/a
<i>Sida</i> sp. (inadequate material)	0.001%	0.1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ134**Described by** Cheyne Jowett**Date:** 15/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 7.5km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 150m north-west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J247158 **mE**6977833 **mN****Vegetation Code:** SAES**Landscape Association:** Granite system**Vegetation:** *Acacia Eremophila* shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 3.048%; 1% leaf litter cover to a depth of 2 cm, 8 dead timber standing with 1% dead timber cover on ground, 2% cover of cryptogam crusting, 8% cover of clay, 70% cover of sand, 0.001% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.5%	3.5 m	n/a
<i>Acacia craspedocarpa</i>	0.001%	1 m	n/a
<i>Acacia tetragonophylla</i>	0.25%	2 m	n/a
<i>Duboisia hopwoodii</i>	0.001%	1.5 m	n/a
<i>Eremophila galeata</i>	0.25%	2 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.75%	0.6 m	n/a
Poaceae sp. (inadequate material)	1%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	0.12%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.1%	0.6 m	n/a

BHP Billiton Yeelirrie Site YQ135**Described by** Cheyne Jowett**Date:** 15/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 9km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 400m south-west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J245948 **mE**6978261 **mN****Vegetation Code:** GRMS**Landscape Association:** Granite system**Vegetation:** Mulga shrubland**Disturbance:** Minor vehicle tracks and animal activity**Fire Age:** Unknown**Notes:** Total PFC 20.707%; 6% leaf litter cover to a depth of 2 cm, 9 dead timber standing with 1.5% dead timber cover on ground, 10% cover of cryptogam crusting, 25% cover of clay, 60% cover of sand, 1% cover of gravel, 1.25% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	12%	6 m	n/a
<i>Acacia ayersiana</i>	0.001%	4 m	n/a
<i>Acacia ayersiana</i>	0.75%	4 m	n/a
<i>Acacia pruinocarpa</i>	0.25%	6 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	1%	4 m	n/a
<i>Acacia tetragonophylla</i>	2%	4 m	n/a
<i>Eremophila galeata</i>	3%	2.5 m	n/a
<i>Eremophila margarethae</i>	0.05%	1 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.02 m	n/a
<i>Psydrax attenuata</i>	0.001%	3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1.5%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1.8 m	n/a
<i>Rhyncharrhena linearis</i>	0.001%	0.2 m	n/a
<i>Santalum lanceolatum</i>	0.1%	4 m	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.05%	1.5 m	n/a
<i>Senna pleurocarpa</i> var. <i>angustifolia</i>	0.001%	0.6 m	n/a
<i>Sida ectogama</i>	0.001%	1.1 m	YQ136-01=
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.001%	0.2 m	YQ131-01=
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Spartothamnella teucriflora</i>	0.001%	0.6 m	n/a

BHP Billiton Yeelirrie Site YQ136**Described by** Rebecca Graham**Date:** 15/1/2010**Type:** Quadrat**Size:** 80 x 20 m**Season:** Poor**Location:** 7km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 250m south-west of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J247336 **mE**6977428 **mN****Vegetation Code:** DRES**Landscape Association:** Hardpan and drainage system**Vegetation:** *Eucalyptus Acacia* shrubland**Disturbance:** Minor animal grazing**Fire Age:** Long unburnt**Notes:** Total PFC 25.515%; 8% leaf litter cover to a depth of 15 cm, 5 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 3% cover of clay, 50% cover of sand, 25% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.001%	2.5 m	YQ136-05
<i>Acacia aneura</i> (indeterminate variant)	3.5%	7 m	YQ136-06
<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	1%	6 m	YQ136-08
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	3.5%	8 m	YQ136-07
<i>Acacia craspedocarpa</i>	0.001%	1 m	n/a
<i>Acacia quadrimarginea</i>	2%	4 m	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1%	4 m	YQ136-04
<i>Acacia tetragonophylla</i>	1%	5 m	n/a
<i>Callitris columellaris</i>	0.001%	0.6 m	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001%	0.1 m	n/a
<i>Cymbopogon ambiguus</i>	2.5%	1 m	n/a
<i>Dodonaea petiolaris</i>	0.5%	3 m	n/a
<i>Duperreya commixta</i>	1.5%	4 m	n/a
<i>Eremophila exilifolia</i>	0.001%	1 m	YQ136-02
<i>Eremophila galeata</i>	0.001%	3 m	n/a
<i>Eucalyptus camaldulensis</i>	4%	16 m	n/a
<i>Harnieria kempeana</i> subsp. <i>muelleri</i>	0.001%	0.4 m	YQ136-03
<i>Pluchea dentex</i>	3%	0.6 m	n/a
<i>Psydrax attenuata</i>	0.001%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	n/a	0.3 m	n/a
<i>Santalum lanceolatum</i>	0.001%	5 m	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	2%	1.2 m	n/a
<i>Senna pleurocarpa</i> var. <i>angustifolia</i>	0.001%	1 m	n/a
<i>Sida ectogama</i>	0.001%	1.2 m	YQ136-01
<i>Sida phaeotricha</i>	0.001%	0.4 m	YQ131-02=
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.001%	0.4 m	YQ131-01=
<i>Solanum ellipticum</i>	0.001%	0.2 m	n/a
<i>Trichodesma zeylanicum</i>	0.001%	0.6 m	n/a

BHP Billiton Yeelirrie Site YQ137**Described by** Rebecca Graham**Date:** 16/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1km north of 3 Mile Bore, 300m north-west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J207862 **mE**6982280 **mN****Vegetation Code:** PLMf**Landscape Association:** Playa system**Vegetation:** *Muehlenbeckia florulenta* shrubland**Disturbance:** Animal scratchings**Fire Age:** Long unburnt**Notes:** Total PFC 7.511%; 2% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.25% dead timber cover on ground, 40% cover of cryptogam crusting, 42% cover of clay, 18% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	0.001%	1.2 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	1 m	n/a
<i>Cratystylis subspinescens</i>	0.001%	0.2 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Duperreya commixta</i>	0.001%	0.4 m	YQ137-01
<i>Eremophila longifolia</i>	0.25%	5 m	n/a
<i>Lysiana casuarinae</i>	0.001%	0.5 m	YQ137-02
<i>Marsdenia australis</i>	0.001%	0.8 m	n/a
<i>Melaleuca interioris</i>	0.001%	0.03 m	n/a
<i>Melaleuca xerophila</i>	0.001%	1.7 m	n/a
<i>Muehlenbeckia florulenta</i>	6%	1.8 m	n/a
<i>Pittosporum angustifolium</i>	0.001%	1 m	n/a
Poaceae sp. (inadequate material)	0.2%	0.02 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.3 m	n/a
<i>Santalum lanceolatum</i>	0.05%	4.5 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site YQ138**Described by** Rebecca Graham**Date:** 16/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.9km north-east of 3 Mile Bore, 250m north-west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J208382 **mE**6983215 **mN****Vegetation Code:** PLAPoS**Landscape Association:** Playa system**Vegetation:** *Acacia Ptilotus obovatus* shrubland**Disturbance:** Minor animal scratchings and minor vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 8.024%; 4% leaf litter cover to a depth of 1 cm, 30 dead timber standing with 0.75% dead timber cover on ground, 50% cover of cryptogam crusting, 25% cover of clay, 15% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm	grey green		
	8%	6 m	n/a
<i>Acacia ayersiana</i>	0.01%	5 m	n/a
<i>Acacia effusifolia</i>	0.01%	5 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	2 m	n/a
<i>Amyema hilliania</i>	0.001%	0.3 m	n/a
<i>Eremophila longifolia</i>	OUT	3.5 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ139

Described by Jessie-Leigh Brown **Date:** 16/1/2010 **Type:** Quadrat **Size:** 50 x 50 m
Season: Poor

Location: 1.25km north-east of 3 Mile Bore, east of road, south-east Yeelirrie study area 1

MGA Zone: 51J 208299 **mE** 6982536 **mN**

Vegetation Code: PLAET

Landscape Association: Playa system

Vegetation: *Acacia Eremophila* thicket

Disturbance: n/a

Fire Age: Unknown

Notes: Total PFC 20.626%; 10% leaf litter cover to a depth of 3 cm, 13 dead timber standing with 4% dead timber cover on ground, 8% cover of cryptogam crusting, 60% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	4%	6 m	n/a
<i>Acacia pruinocarpa</i>	0.2%	3 m	n/a
<i>Acacia tetragonophylla</i>	14%	5 m	n/a
<i>Eremophila longifolia</i>	1.25%	6 m	n/a
<i>Lysiana casuarinae</i>	0.075%	0.4 m	YQ139-01
<i>Maireana pyramidata</i>	0.001%	0.6 m	n/a
Poaceae sp. (inadequate material)	1%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.1%	0.4 m	n/a

BHP Billiton Yeelirrie Site YQ140**Described by** Rebecca Graham**Date:** 17/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.2km south-east of Yeelirrie homestead, along Albion Downs-Yeelirrie Road, 300m south of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J215822 **mE**6976493 **mN****Vegetation Code:** PLEml**Landscape Association:** Playa system**Vegetation:** *Eremophila malacoides* shrubland**Disturbance:** Minor animal scratchings and tracks**Fire Age:** Long unburnt**Notes:** Total PFC 4.805%; 1% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.001% dead timber cover on ground, 15% cover of cryptogam crusting, 15% cover of clay, 60% cover of sand, 2% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.001%	0.4 m	n/a
<i>Acacia ayersiana</i>	0.2%	4 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	1.1 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.4 m	n/a
<i>Eremophila longifolia</i>	0.001%	1.4 m	n/a
<i>Eremophila malacoides</i>	4%	0.5 m	n/a
<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	0.001%	1.4 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.5%	1.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.1%	2 m	n/a

BHP Billiton Yeelirrie Site YQ141**Described by** Cheyne Jowett**Date:** 17/1/2010**Type:** Quadrat**Size:** 35 x 58 m**Season:** Poor**Location:** 4.5km south-east of Yeelirrie homestead, along Albion Downs-Yeelirrie Road, 100m south of road, eastern access of Yeelirrie study area 1**MGA Zone:** 51J

216123 mE

6976455 mN

Vegetation Code: PLEmc**Landscape Association:** Playa system**Vegetation:** *Eremophila maculata* shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 1.55%; 1% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 0.25% dead timber cover on ground, 5% cover of cryptogam crusting, 4% cover of clay, 80% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Quad	Name	Cover	Height	Collection
	<i>Acacia aneura</i> (indeterminate variant)	0.001%	0.5 m	n/a
	<i>Acacia ayersiana</i>	1.25%	5 m	n/a
	<i>Acacia burkittii</i>	0.001%	0.6 m	n/a
	<i>Acacia tetragonophylla</i>	0.3%	3 m	n/a
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.4 m	n/a
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	2.5%	0.6 m	n/a
	<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	0.25%	2 m	n/a
	<i>Rhagodia drummondii</i>	0.075%	0.6 m	n/a
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.1%	1 m	n/a
	<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ142**Described by** Cheyne Jowett**Date:** 18/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4.2km west-north-west of Midnight Bore, 250m south of road, north-west Yeelirrie study area 1**MGA Zone:** 50J718546 **mE**6998031 **mN****Vegetation Code:** PLCh**Landscape Association:** Playa system**Vegetation:** Chenopod shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 8.255%; 2% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 40% cover of cryptogam crusting, 40% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Dissocarpus paradoxus</i>	0.001%	0.3 m	n/a
<i>Maireana carnososa</i>	8%	0.1 m	n/a
<i>Maireana pyramidata</i>	0.001%	0.3 m	n/a
Poaceae sp. (inadequate material)	0.25%	0.02 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.15 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ143**Described by** Cheyne Jowett**Date:** 19/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 5.3km north-west of Midnight Bore, north of road, north-west Yeelirrie study area 1**MGA Zone:** 50J778053 **mE**7000131 **mN****Vegetation Code:** CRsS**Landscape Association:** Calcrete system**Vegetation:** *Rhagodia* sp. Yeelirrie Station shrubland**Disturbance:** Rill and tunnel erosion and sheet flow**Fire Age:** Unknown**Notes:** Total PFC 14.331%; 2% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 1% dead timber cover on ground, 1% cover of cryptogam crusting, 90% cover of clay, 3% cover of sand, 2% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	0.25%	1.8 m	n/a
<i>Eremophila longifolia</i>	0.575%	3 m	n/a
<i>Maireana pyramidata</i>	0.001%	0.2 m	n/a
Poaceae sp. (inadequate material)	1%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1.5%	0.3 m	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	8%	1.8 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.3 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.7 m	n/a
<i>Sida fibulifera</i>	0.001%	0.5 m	YQ143-01
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Teucrium racemosum</i>	3%	0.3 m	YQ143-02

BHP Billiton Yeelirrie Site YQ144**Described by** Cheyne Jowett**Date:** 20/1/2010**Type:** Quadrat**Size:** 50 x 40 m**Season:** Poor**Location:** 250m north of Core Farm, directly south of RFDS Airstrip, south-east Yeelirrie study area 1**MGA Zone:** 51J212063 **mE**6979470 **mN****Vegetation Code:** PLEsp**Landscape Association:** Playa system**Vegetation:** Poaceae sp. (inadequate material) grassland**Disturbance:** Fenceline and vehicle tracks**Fire Age:** Unknown**Notes:** Total PFC 32.136%; 0.5% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 1% dead timber cover on ground, 18% cover of cryptogam crusting, 40% cover of clay, 15% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.5%	4 m	n/a
<i>Acacia craspedocarpa</i>	0.25%	2.5 m	n/a
<i>Acacia effusifolia</i>	0.075%	1.3 m	n/a
<i>Acacia tetragonophylla</i>	0.2%	2.5 m	n/a
<i>Amyema hilliania</i>	0.001%	n/a	n/a
<i>Grevillea berryana</i>	1%	4 m	n/a
<i>Halgania integerrima</i>	0.001%	0.5 m	YQ144-02
<i>Lysiana casuarinae</i>	0.001%	n/a	YQ144-01
<i>Lysiana murrayi</i>	0.001%	n/a	n/a
<i>Pluchea dentex</i>	0.001%	0.1 m	n/a
Poaceae sp. (inadequate material)	30%	0.03 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.03%	0.8 m	n/a
<i>Rhagodia drummondii</i>	0.075%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site YQ145**Described by** Cheyne Jowett**Date:** 20/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 2.3km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 700m east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J212449 **mE**6981299 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Meleleuca xerophila*, *Acacia burkittii* and *Eragrostis* sp. Yeelirrie Station shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 10.006%; 3% leaf litter cover to a depth of 1 cm, 5 dead timber standing with 3% dead timber cover on ground, 7% cover of cryptogam crusting, 80% cover of clay, 1% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	4.5%	5 m	n/a
<i>Amyema hilliania</i>	0.001%	n/a	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	2.5%	0.02 m	n/a
<i>Eremophila longifolia</i>	0.001%	3 m	n/a
<i>Melaleuca xerophila</i>	3%	4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.5 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a
<i>Solanum nummularium</i>	0.001%	0.5 m	YQ145-01

BHP Billiton Yeelirrie Site YQ146**Described by** Cheyne Jowett**Date:** 20/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 1.45km north of Meekatharra-Yeelirrie Road and Albion Downs-Yeelirrie Road intersection, 200m west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J213932 **mE**6979239 **mN****Vegetation Code:** PLMf**Landscape Association:** Playa system**Vegetation:** *Muehlenbeckia florulenta* shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 3.003%; 0.25% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.25% dead timber cover on ground, 2% cover of cryptogam crusting, 95% cover of clay, 0.001% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Austrostipa elegantissima</i>	0.001%	0.9 m	n/a
<i>Calotis</i> sp. (inadequate material)	0.001%	0.01 m	YQ146-01
<i>Melaleuca interioris</i>	0.5%	1.8 m	n/a
<i>Muehlenbeckia florulenta</i>	2.5%	1.5 m	n/a
Poaceae sp. (inadequate material)	0.001%	0.03 m	n/a

BHP Billiton Yeelirrie Site YQ147**Described by** Cheyne Jowett**Date:** 20/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 3.5km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 1.1km west of road, south-east Yeelirrie study area 1**MGA Zone:** 51J210843 **mE**6980061 **mN****Vegetation Code:** GR**Landscape Association:** Granite system**Vegetation:** Scattered mulgas and *Ptilotus obovatus***Disturbance:** Sheet flow**Fire Age:** Unknown**Notes:** Total PFC 4.802%; 0.5% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 1% dead timber cover on ground, 5% cover of cryptogam crusting, 3% cover of clay, 65% cover of sand, 3% cover of gravel, 20% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.35%	4 m	n/a
<i>Acacia quadrimarginea</i>	0.75%	2 m	n/a
<i>Cymbopogon ambiguus</i>	1.5%	0.4 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	1.2 m	n/a
Poaceae sp. (inadequate material)	0.5%	0.03 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	1%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	0.1%	1.1 m	n/a
<i>Sida ectogama</i>	0.6%	1.3 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site YQ148**Described by** Cheyne Jowett**Date:** 20/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 400m north of South Gate, along North Gate-South Gate Road, 100m east of road, central Yeelirrie study area 1**MGA Zone:** 50J789454 **mE**6989262 **mN****Vegetation Code:** PLAPoS**Landscape Association:** PLaya system**Vegetation:** *Acacia* shrubland**Disturbance:** Animal activity**Fire Age:** Unknown**Notes:** Total PFC 19.164%; 4% leaf litter cover to a depth of 1 cm, 15 dead timber standing with 3% dead timber cover on ground, 8% cover of cryptogam crusting, 80% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.3%	5 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.25%	2 m	n/a
<i>Acacia tetragonophylla</i>	7%	4 m	n/a
<i>Austrostipa elegantissima</i>	1%	0.9 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.03 m	n/a
<i>Euphorbia drummondii</i>	0.001%	0.2 m	n/a
<i>Maireana</i> sp. (inadequate material)	0.001%	0.2 m	n/a
<i>Melaleuca interioris</i>	0.075%	3 m	n/a
<i>Pluchea dentex</i>	0.002%	0.1 m	n/a
Poaceae sp. (inadequate material)	10%	0.03 m	n/a
<i>Ptilotus exaltatus</i>	0.001%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.5%	0.5 m	n/a
<i>Santalum lanceolatum</i>	0.001%	3.5 m	n/a
<i>Sclerolaena cornishiana</i>	0.001%	0.4 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a
<i>Spartothamnella teucriflora</i>	0.03%	1 m	n/a

BHP Billiton Yeelirrie Site YQ149**Described by** Cheyne Jowett**Date:** 21/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** 4km north-west of 3 Mile Bore, along Core Farm Express, 1.7km north-east of road, south-east Yeelirrie study area 1**MGA Zone:** 51J205126 **mE**6984605 **mN****Vegetation Code:** PLCsMp**Landscape Association:** Playa system**Vegetation:** *Cratystylis subspinescens* and *Maireana pyramidata* shrubland**Disturbance:** Animal scratchings**Fire Age:** Unknown**Notes:** Total PFC 7.445%; 0.001% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 0.5% dead timber cover on ground, 7% cover of cryptogam crusting, 10% cover of clay, 80% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ayersiana</i>	0.04%	1 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.4 m	n/a
<i>Cratystylis subspinescens</i>	4%	1.5 m	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.001%	0.8 m	n/a
<i>Frankenia laxiflora</i>	0.2 %	0.4 m	YQ149-01
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Maireana pyramidata</i>	3%	1.3 m	n/a
Poaceae sp. (inadequate material)	0.1%	0.01 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.1%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a

Second Assessment of Quadrats

BHP Billiton Yeelirrie Site YQS001

Described by Daniel Brassington **Date:** 06/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 450m south of North Gate, along North Gate-South Gate Road, east of road, central Yeelirrie study area 1

MGA Zone: 50J

789453 mE

6990989 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain system

Vegetation: *Acacia ayersiana* over *Eremophila forrestii* subsp. *forrestii* with *Melaleuca interioris* over *Triodia basedowii*

Disturbance: Nearby access track approx. 3 m from quadrat.

Fire Age: Long unburnt

Notes: Total PFC 49.85%; 7% leaf litter cover to a depth of 1 cm, 2% dead timber standing with 4% dead timber cover on ground, 8% cover of cryptogam crusting, 7% cover of clay, 50% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	18	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.7	3	YQS001-01
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.001	1	YQS001-02
<i>Aristida contorta</i>	0.001	0.2	n/a
<i>Brachyscome ciliocarpa</i>	0.001	0.1	n/a
<i>Brunonia australis</i>	0.001	0.2	YQS001-05
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.6	YQS001-07
<i>Enneapogon caerulescens</i>	0.001	0.1	n/a
<i>Eragrostis eriopoda</i>	0.001	0.05	n/a
<i>Eremophila forrestii</i>	1	1.3	n/a
<i>Eremophila hygrophana</i>	0.001	0.5	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001	1.6	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.04	n/a
<i>Erodium crinitum</i>	0.001	0.1	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Goodenia occidentalis</i>	0.001	0.1	YQS001-04
<i>Goodenia peacockiana</i>	0.001	0.1	YQS001-06
<i>Grevillea berryana</i>	3	4.5	n/a
<i>Haloragis odontocarpa</i> forma <i>rugosa</i>	0.001	0.03	YQS001-03
<i>Melaleuca interioris</i>	2	2.2	n/a
<i>Monachather paradoxus</i>	0.001	0.05	n/a
<i>Paspalidium basicladium</i>	0.001	0.05	n/a
<i>Psydrax suaveolens</i>	0.001	1.4	n/a
<i>Ptilotus exaltatus</i>	0.001	0.03	n/a
<i>Ptilotus helipteroides</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.075	0.8	n/a
<i>Rhagodia drummondii</i>	0.001	1.4	n/a
<i>Rhyncharhena linearis</i>	0.001	0.2	n/a
<i>Salsola tragus</i>	0.001	0.1	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.2	n/a
<i>Sida fibulifera</i>	0.001	0.02	n/a
<i>Solanum lasiophyllum</i>	0.001	0.05	n/a
<i>Solanum nummularium</i>	0.001	0.8	n/a
<i>Spartothamnella teucriflora</i>	0.075	1	n/a
<i>Swainsona kingii</i>	0.001	0.06	n/a
<i>Tribulus terrestris</i>	0.001	0.1	n/a
<i>Triodia basedowii</i>	25	0.3	n/a

BHP Billiton Yeelirrie Site YQS003

Described by Daniel Brassington **Date:** 05/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.1km south-east of North Gate, along Albany Well-North Gate Road, south of road, central Yeelirrie study area 1

MGA Zone: 50J 790466 mE 6990950 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain system

Vegetation: *Eucalyptus trivalva* mallees and mixed *Acacia* over very scattered *Triodia basedowii* hummock Grassland

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 24.85%; 3% leaf litter cover to a depth of 1 cm, 2% dead timber standing with 3% dead timber cover on ground, 1% cover of cryptogam crusting, 1% cover of clay, 95% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	0.001	0.3	n/a
<i>Acacia colletioides</i>	0.5	1	n/a
<i>Acacia effusifolia</i>	0.4	4	YQS003-09
<i>Acacia prainii</i>	0.4	1	n/a
<i>Alyogyne pinoniana</i>	0.001	1	n/a
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.001	0.3	YQS003-08
<i>Bossiaea eremaea</i>	0.22	1.2	n/a
<i>Dodonaea adenophora</i>	0.001	0.4	YQS003-07
<i>Dysphania kalpari</i>	0.001	0.1	n/a
<i>Enneapogon caerulescens</i>	0.001	0.1	n/a
<i>Eragrostis eriopoda</i>	0.001	0.3	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.001	n/a	YQS003-05
<i>Eremophila platythamnus</i> subsp. <i>platythamnus</i>	0.001	0.5	YQS003-03
<i>Eucalyptus trivalva</i>	3	4	n/a
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	0.25	1.1	n/a
<i>Leptosema chambersii</i>	0.001	0.2	n/a
<i>Menkea australis</i>	0.001	0.01	YQS003-02
<i>Monachather paradoxus</i>	0.001	0.3	YQS003-06
<i>Olearia incana</i>	0.001	0.5	YQS003-01
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Ptilotus exaltatus</i>	0.001	0.1	n/a
<i>Ptilotus obovatus</i>	0.001	0.4	n/a
<i>Ptilotus polystachyus</i>	0.001	0.2	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.3	n/a
<i>Scaevola parvifolia</i> subsp. <i>acuminata</i>	0.001	0.3	YQS003-04
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001	1	n/a
<i>Solanum lasiophyllum</i>	0.001	0.4	n/a
<i>Sonchus oleraceus</i>	0.001	0.1	n/a
<i>Triodia basedowii</i>	16	0.3	n/a

BHP Billiton Yeelirrie Site YQS005

Described by Daniel Brassington **Date:** 16/08/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 300m west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1

MGA Zone: 50J 787625 mE 6991091 mN

Vegetation Code: CErG

Landscape Association: Calcrete system

Vegetation: *Eragrostis* sp. Yeelirrie Calcrete hummock grassland

Disturbance: Animal scratchings and droppings, vehicle tyre marks near SW corner.

Fire Age: Long unburnt

Notes: Total PFC 9.8%; 0.3% leaf litter cover to a depth of 1 cm, 0% dead timber standing with 0.01% dead timber cover on ground, 28% cover of cryptogam crusting, 27% cover of clay, 20% cover of sand, 25% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Dissocarpus paradoxus</i>	0.8	0.02	n/a
<i>Enneapogon caerulescens</i>	0.001	0.1	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770) 8		0.04	YQS005-01
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.2	0.01	n/a
<i>Rhodanthe sterilecens</i>	0.4	0.1	n/a
<i>Salsola tragus</i>	0.001	0.1	n/a
<i>Sclerolaena convexula</i>	0.4	0.2	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Zygophyllum apiculatum</i>	0.001	0.05	n/a

BHP Billiton Yeelirrie Site YQS006

Described by Daniel Brassington **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 250m north-north-west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1

MGA Zone: 50J 787907 **mE** 6991323 **mN**

Vegetation Code: CAbS

Landscape Association: Fine, pale, red-brown sand over calcrete, with discontinuous lag gravel

Vegetation: *Acacia burkittii* shrubland on calcrete

Disturbance: Vehicle tracks and animal diggings under *A. burkittii*

Fire Age: Long unburnt

Notes: Total PFC 8.229%; 2% leaf litter cover to a depth of 0.02 cm, 3 dead timber standing with 1.5% dead timber cover on ground, 12% cover of cryptogam crusting, 12% cover of clay, 8% cover of sand, 60% cover of gravel, 3% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	8	4	n/a
<i>Aristida contorta</i>	0.1	0.1	n/a
<i>Austrostipa elegantissima</i>	0.001	0.4	n/a
<i>Enneapogon caerulescens</i>	0.1	0.1	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.02	n/a
<i>Haloragis trigonocarpa</i>	0.01	0.1	n/a
<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	0.001	n/a	YQS006-01
<i>Maireana carnosa</i>	0.001	0.1	n/a
<i>Paspalidium basicladium</i>	0.001	0.2	n/a
<i>Ptilotus obovatus</i>	0.001	0.5	n/a
<i>Rhodanthe sterilecens</i>	0.001	0.1	n/a
<i>Salsola tragus</i>	0.001	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.04	n/a
<i>Zygophyllum apiculatum</i>	0.01	0.15	n/a

BHP Billiton Yeelirrie Site YQS007

Described by Cheyne Jowett **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 500m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 100m west of road, central Yeelirrie study area 1

MGA Zone: 50J

787496 mE

6990637 mN

Vegetation Code: CApS

Landscape Association: Calcrete system

Vegetation: Low *Atriplex* sp. Yeelirrie Station Shrubland, with occasional *Lycium australe* on self mulching clay

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 12.756%; 0.5% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 80% cover of clay, 0.001% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
Asteraceae sp. Indeterminate	0.001	0.05	YQS007-04
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	12	0.5	n/a
<i>Lawrenzia repens</i>	0.5	0.3	n/a
<i>Lycium australe</i>	0.25	1	n/a
<i>Sclerolaena cuneata</i>	0.001	0.2	n/a
<i>Sclerolaena diacantha</i>	0.001	0.1	n/a
<i>Senecio pinnatifolius</i>	0.001	0.2	YQS007-02
<i>Sonchus oleraceus</i>	0.001	0.15	YQS007-03
<i>Zygophyllum compressum</i>	0.001	0.1	YQS007-01

BHP Billiton Yeelirrie Site YQS008

Described by Cheyne Jowett **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 150m west of Central Baseline and Southern Baseline intersection, along Southern Baseline, 100m north of road, central Yeelirrie study area 1

MGA Zone: 50J

787361 mE

6990284 mN

Vegetation Code: CMxS

Landscape Association: Calcrete system

Vegetation: Open shrubland of *Melaleuca xerophila* with annual and perennial groundCover (%)s

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 21.307%; 0.5% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 2% dead timber cover on ground, 30% cover of cryptogam crusting, 30% cover of clay, 20% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Dissocarpus paradoxus</i>	0.75	0.05	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.001	0.01	YQS008-01
<i>Enneapogon caerulescens</i>	0.001	0.09	n/a
<i>Lepidium phlebopetalum</i>	0.001	0.5	n/a
<i>Lycium australe</i>	0.001	0.2	n/a
<i>Melaleuca xerophila</i>	20	3.5	n/a
<i>Salsola tragus</i>	0.001	0.11	n/a
<i>Sclerolaena fusiformis</i>	0.05	0.1	n/a
<i>Sclerolaena obliquicuspis</i>	0.5	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Zygophyllum compressum</i>	0.001	0.05	n/a

BHP Billiton Yeelirrie Site YQS009

Described by Jessie-Leigh Brown **Date:** 03/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 125m west of North Gate, along North Gate-Laydown Road, 50m north of road, central Yeelirrie study area 1

MGA Zone: 50J

789341 mE

6991553 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain system

Vegetation: Sand Plain with *Eucalyptus kingsmillii* scattered mallees over *Acacia effusifolia* scattered low shrubs over *Leptosema chambersii* and *Rulingia luteiflora* very open low shrubland over very open *Triodia basedowii* hummock grasses

Disturbance: Scratchings and scats of rabbits.

Fire Age: < 5 yrs

Notes: Total PFC 8.261%; 5% leaf litter cover to a depth of 3 cm, 16 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	0.5	1	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.4	0.8	n/a
<i>Amphipogon caricinus</i>	0.001	0.4	n/a
<i>Aristida contorta</i>	0.001	0.04	n/a
<i>Bonamia rosea</i>	0.05	0.2	n/a
<i>Brunonia australis</i>	0.001	0.1	YQS009-01
<i>Dianella revoluta</i>	0.1	0.8	n/a
<i>Enchylaena tomentosa</i>	0.001	0.4	n/a
<i>Eragrostis xerophila</i>	0.001	0.3	n/a
<i>Eremophila hygrophana</i>	0.5	0.5	n/a
<i>Eucalyptus kingsmillii</i>	2	2.3	n/a
<i>Goodenia mimuloides</i>	0.001	0.06	n/a
<i>Kennedia prorepens</i>	0.001	0.05	YQS009-03
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.8	0.5	n/a
<i>Leptosema chambersii</i>	0.3	0.2	n/a
<i>Ptilotus obovatus</i>	0.5	0.6	n/a
<i>Ptilotus polystachyus</i>	0.001	0.1	n/a
<i>Rulingia luteiflora</i>	1	0.3	n/a
<i>Solanum centrale</i>	0.001	0.15	YQS009-04
<i>Solanum lasiophyllum</i>	0.001	0.15	n/a
<i>Spartothamnella teucriflora</i>	0.1	0.6	n/a
<i>Swainsona microphylla</i>	0.001	0.02	YQS009-02
<i>Triodia basedowii</i>	2	0.3	n/a

BHP Billiton Yeelirrie Site YQS010

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 150m south-south-west of Central Baseline and Northern Baseline intersection, along Central Baseline, 350m west of road, central Yeelirrie study area 1

MGA Zone: 50J

787515 mE

6990932 mN

Vegetation Code: CEGW

Landscape Association: Calcrete system

Vegetation: *Eucalyptus gypsophila* woodland over *Templetonia incrassata* very open shrubland

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 35.5%; 90% leaf litter cover to a depth of 3 cm, 0 dead timber standing with 5% dead timber cover on ground, 0.01% cover of cryptogam crusting, 2% cover of clay, 4% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Eucalyptus gypsophila</i>	34	10	n/a
<i>Lycium australe</i>	0.001	0.7	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001	1.2	n/a
<i>Templetonia incrassata</i>	1.5	1.6	n/a

BHP Billiton Yeelirrie Site YQS011

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 700m north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 150m south of road, central Yeelirrie study area 1

MGA Zone: 50J

787375 mE

6991267 mN

Vegetation Code: CAbS

Landscape Association: Calcrete system with brown sandy clay, and surface gravel

Vegetation: *Acacia burkittii* shrubland on calcrete

Disturbance: Various vehicle tracks.

Fire Age: Long unburnt

Notes: Total PFC 26%; 4% leaf litter cover to a depth of 1 cm, 0.5% dead timber standing with 1% dead timber cover on ground, 35% cover of cryptogam crusting, 20% cover of clay, 20% cover of sand, 22% cover of gravel, 0.5% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	25	3.5	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Enneapogon caeruleus</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.15	n/a
<i>Ptilotus exaltatus</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i>	n/a	0.4	n/a
<i>Rhagodia drummondii</i>	n/a	0.2	n/a
<i>Rhodanthe sterileus</i>	0.7	0.1	n/a
<i>Salsola tragus</i>	n/a	0.05	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	0.3	n/a
<i>Sida fibulifera</i>	n/a	0.02	n/a
<i>Solanum lasiophyllum</i>	n/a	0.1	n/a
<i>Swainsona kingii</i>	n/a	0.02	n/a
<i>Zygophyllum apiculatum</i>	0.1	0.15	n/a

BHP Billiton Yeelirrie Site YQS013

Described by Cheyne Jowett **Date:** 16/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 250m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 200m west of road, central Yeelirrie study area 1

MGA Zone: 50J 787348 mE 6990410 mN

Vegetation Code: CApS

Landscape Association: Calcrete system with flat self-mulching clay.

Vegetation: *Atriplex* sp. Yeelirrie Station shrubland on calcrete

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 25.351%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	25	0.7	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.1	0.05	YQS013-03
<i>Lawrenca repens</i>	0.25	0.15	YQS013-01
<i>Senecio pinnatifolius</i>	0.001	0.3	YQS013-02

BHP Billiton Yeelirrie Site YQS014

Described by Daniel Brassington **Date:** 01/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 300m south-south-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 20m west of road, central Yeelirrie study area 1

MGA Zone: 50J

787309 mE

6989960 mN

Vegetation Code: WABS

Landscape Association: Reddish brown silty sand

Vegetation: Wandarrie banks shrubland

Disturbance: Minor animal diggings

Fire Age: Long unburnt

Notes: Total PFC 11.894%; 5% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 1.5% dead timber cover on ground, 1% cover of cryptogam crusting, 3% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	0.001	0.01	n/a
<i>Acacia ayersiana</i>	3.5	7	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1	2.5	n/a
<i>Aristida contorta</i>	4	0.15	n/a
<i>Brunonia australis</i>	0.001	0.15	n/a
<i>Calandrinia</i> sp. (inadequate material)	0.001	0.02	n/a
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Calotis plumulifera</i>	0.001	0.1	n/a
<i>Dysphania melanocarpa</i>	0.001	0.04	n/a
<i>Enchylaena tomentosa</i>	0.05	0.2	n/a
<i>Eragrostis eriopoda</i>	3	0.3	n/a
<i>Eremophila eriocalyx</i>	0.05	1.2	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.05	n/a
<i>Erodium cygnorum</i>	0.001	0.07	n/a
<i>Euphorbia australis</i>	0.001	0.01	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Goodenia occidentalis</i>	n/a	0.05	YQS014-03
<i>Goodenia peacockiana</i>	0.001	0.1	n/a
<i>Haloragis odontocarpa</i>	0.001	0.15	n/a
<i>Maireana pyramidata</i>	0.001	0.15	n/a
<i>Marsdenia australis</i>	0.001	0.5	n/a
<i>Monachather paradoxus</i>	0.01	0.2	n/a
<i>Paspalidium basicladium</i>	0.001	0.15	YQS014-01
<i>Ptilotus aervoides</i>	0.05	0.03	n/a
<i>Ptilotus exaltatus</i>	0.001	0.15	n/a
<i>Ptilotus gaudichaudii</i>	0.001	0.15	n/a
<i>Ptilotus obovatus</i>	0.05	0.4	n/a
<i>Rhagodia drummondii</i>	0.05	0.6	n/a
<i>Rhodanthe maryonii</i>	0.001	0.01	YQS014-02
<i>Sclerolaena densiflora</i>	0.001	0.1	n/a
<i>Sclerolaena diacantha</i>	0.001	0.03	n/a
<i>Sclerolaena fusiformis</i>	0.001	0.03	n/a
<i>Sida calyxhymenia</i>	0.001	0.2	n/a
<i>Sida fibulifera</i>	0.1	0.05	n/a
<i>Spartothamnella teucriflora</i>	0.01	0.7	n/a
<i>Swainsona kingii</i>	0.001	0.03	n/a
<i>Tribulus astrocarpus</i>	0.001	0.01	n/a

BHP Billiton Yeelirrie Site YQS015

Described by Cheyne Jowett **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 100m south-west of Central Baseline and Southern Baseline intersection, central Yeelirrie study area 1

MGA Zone: 50J 787411 mE 6990047 mN

Vegetation Code: PLAET

Landscape Association: Heaving clay in depressions and hardpan consolidated with large coarse sand grains elsewhere

Vegetation: *Acacia* and *Eremophila* Thicket Playa

Disturbance: Fauna diggings & scratchings

Fire Age: Unknown

Notes: Total PFC 27.046%; 4% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 2% dead timber cover on ground, 1% cover of cryptogam crusting, 70% cover of clay, 4% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon cryptopetalum</i>	0.001	0.1	YQS015-20
<i>Acacia tetragonophylla</i>	5	3	n/a
<i>Aristida contorta</i>	1	0.1	YQS015-01
<i>Brachyscome exilis</i>	0.001	0.1	YQS015-21
<i>Calandrinia ptychosperma</i>	0.03	0.02	YQS155-
<i>Calotis hispidula</i>	0.001	0.03	YQS015-07
<i>Calotis multicaulis</i>	0.001	0.1	n/a
<i>Centipeda thespidioides</i>	1	0.05	YQS015-14
<i>Cuscuta planiflora</i>	0.001	n/a	YQS015-19
<i>Dissocarpus paradoxus</i>	0.06	0.2	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.5	0.4	YQS015-18
<i>Eragrostis dielsii</i>	0.02	0.02	n/a
<i>Eragrostis tenellula</i>	6	0.12	YQS015-10
<i>Eremophila longifolia</i>	2	4	n/a
<i>Eriachne ovata</i>	1	0.8	YQS015-15
<i>Erodium cygnorum</i>	0.001	0.1	YQS015-17
<i>Euphorbia biconvexa</i>	0.001	0.04	YQS015-13
<i>Lepidium oxytrichum</i>	0.001	0.1	YQS015-12
<i>Maireana tomentosa</i>	0.06	0.3	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	0.001	0.06	YQS015-09
<i>Portulaca oleracea</i>	0.1	0.01	n/a
<i>Ptilotus aervoides</i>	0.75	0.03	n/a
<i>Ptilotus obovatus</i>	4	0.4	n/a
<i>Ptilotus polystachyus</i>	0.061	0.3	YQS015-02/03
<i>Rhagodia drummondii</i>	0.5	1	n/a
<i>Rhodanthe charsleyae</i>	2	0.25	n/a
<i>Salsola tragus</i>	0.001	0.11	n/a
<i>Santalum lanceolatum</i>	2.25	2	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.25	1.1	n/a
<i>Sclerolaena patenticuspis</i>	0.02	0.1	YQS015-22
<i>Sida</i> sp. (inadequate material)	0.001	0.04	YQS015-06
<i>Solanum lasiophyllum</i>	0.001	0.15	n/a
<i>Spartothamnella teucriflora</i>	0.25	1	n/a
<i>Swainsona kingii</i>	0.02	0.02	n/a
<i>Swainsona tenuis</i>	0.05	0.05	n/a
<i>Tetragonia eremaea</i>	0.5	0.04	YQS015-11
<i>Velleia hispida</i>	0.002	0.1	YQS015-04/16
<i>Vittadinia sulcata</i>	0.06	0.04	YQS015-08
<i>Zygophyllum iodocarpum</i>	0.001	0.03	YQS015-05

BHP Billiton Yeelirrie Site YQS016

Described by Cheyne Jowett **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 400m north-north-west of Central Baseline and Southern Baseline intersection, along Central Baseline, 120m east of road, central Yeelirrie study area 1

MGA Zone: 50J

787752 mE

6990422 mN

Vegetation Code: CApS

Landscape Association: Calcrete system, medium self-mulching clay

Vegetation: *Atriplex* sp. Yeelirrie Station shrubland on calcrete

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 6.822%; 0.75% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 95% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	4	0.5	n/a
<i>Enneapogon caeruleus</i>	0.001	0.2	n/a
<i>Lawrenzia repens</i>	0.03	0.2	n/a
<i>Lycium australe</i>	2.5	1.9	n/a
<i>Sclerolaena obliquicuspis</i>	0.02	0.15	n/a
<i>Swainsona kingii</i>	0.001	0.01	n/a
<i>Zygophyllum aurantiacum</i>	0.25	0.5	YQS016-01
<i>Zygophyllum compressum</i>	0.02	0.1	n/a

BHP Billiton Yeelirrie Site YQS017

Described by Daniel Brassington **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.1km south of North Gate, along North Gate-South Gate Road, west of road, central Yeelirrie study area 1

MGA Zone: 50J 789354 **mE** 6990321 **mN**

Vegetation Code: CCpW

Landscape Association: Calcrete system, fine, pale, red-brown sand over calcrete with discontinuous lag gravel

Vegetation: *Casuarina pauper* woodland on calcrete

Disturbance: Animal diggings, possible kangaroo sleeping spot

Fire Age: Long unburnt

Notes: Total PFC 18.583%; 16% leaf litter cover to a depth of 4 cm, 9 dead timber standing with 1% dead timber cover on ground, 12% cover of cryptogam crusting, 8% cover of clay, 3% cover of sand, 35% cover of gravel, 5% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	0.001	0.04	YQS017-01
<i>Acacia burkittii</i>	0.5	3	n/a
<i>Casuarina pauper</i>	17	8	n/a
<i>Dissocarpus paradoxus</i>	0.05	0.03	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.2	0.5	n/a
<i>Eremophila longifolia</i>	0.001	0.8	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Haloragis trigonocarpa</i>	0.001	0.1	n/a
<i>Lycium australe</i>	0.1	0.6	n/a
<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	0.001	n/a	n/a
<i>Ptilotus exaltatus</i>	0.001	0.03	n/a
<i>Ptilotus obovatus</i>	0.02	0.3	n/a
<i>Rhagodia drummondii</i>	0.1	0.4	n/a
<i>Rhodanthe sterilecens</i>	0.001	0.1	n/a
<i>Salsola tragus</i>	0.001	0.15	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.04	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.6	1.7	n/a
<i>Swainsona kingii</i>	0.001	0.05	n/a
<i>Zygophyllum apiculatum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS018

Described by Cheyne Jowett **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 850m south of road, central Yeelirrie study area 1

MGA Zone: 50J 785376 mE 6991913 mN

Vegetation Code: CEgW

Landscape Association: Calcrete loam system

Vegetation: *Eucalyptus gypsophila* woodland on calcrete

Disturbance: Animal diggings

Fire Age: Long unburnt

Notes: Total PFC 18.253%; 40% leaf litter cover to a depth of 5 cm, 2 dead timber standing with 12% dead timber cover on ground, 0.5% cover of cryptogam crusting, 0.001% cover of clay, 2% cover of sand, 1% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia oswaldii</i>	0.25	3.5	n/a
<i>Eragrostis eriopoda</i>	0.001	0.02	n/a
<i>Eucalyptus gypsophila</i>	18	8	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001	0.4	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.1	YQS018-01

BHP Billiton Yeelirrie Site YQS021

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 750m south-west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1

MGA Zone: 50J 787285 mE 6990718 mN

Vegetation Code: CEgW

Landscape Association: Calcrete system, reddish-brown, loamy sand with some calcrete rubble on the surface

Vegetation: *Eucalyptus gypsophila* woodland on calcrete

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 15%; 65% leaf litter cover to a depth of 3 cm, 0 dead timber standing with 8% dead timber cover on ground, 1% cover of cryptogam crusting, 4% cover of clay, 20% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	n/a	1.1	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.04	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.02	n/a
<i>Eucalyptus gypsophila</i>	15	7	n/a
<i>Lycium australe</i>	n/a	0.2	n/a
<i>Ptilotus exaltatus</i>	n/a	0.2	n/a
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sclerolaena diacantha</i>	n/a	0.3	n/a
<i>Sclerolaena fusiformis</i>	n/a	0.3	n/a
<i>Templetonia incrassata</i>	n/a	0.4	n/a

BHP Billiton Yeelirrie Site YQS023

Described by Daniel Brassington **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.1km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 100m south of road, central Yeelirrie study area 1

MGA Zone: 50J

783712 **mE**

6993703 **mN**

Vegetation Code: CEgW

Landscape Association: Calcrete system, with pale brown sandy silt

Vegetation: *Eucalyptus gypsophila* woodland on calcrete

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 40%; 40% leaf litter cover to a depth of 5 cm, 1 dead timber standing with 2% dead timber cover on ground, 4% cover of cryptogam crusting, 4% cover of clay, 14% cover of sand, 14% cover of gravel, 2% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	n/a	2	n/a
<i>Eucalyptus gypsophila</i>	40	7	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	1.8	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS024

Described by Cheyne Jowett **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 400m west of Central Baseline and Southern Baseline intersection, along Southern Baseline, 50m south of road, central Yeelirrie study area 1

MGA Zone: 50J 787069 mE 6990142 mN

Vegetation Code: CMxS

Landscape Association: Calcrete loam

Vegetation: *Melaleuca xerophila* shrubland on calcrete

Disturbance: Vehicle tracks

Fire Age: Unknown

Notes: Total PFC 36.358%; 1.5% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 1.3% dead timber cover on ground, 0.5% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Calotis multicaulis</i>	0.001	0.09	YQS024-04
<i>Dissocarpus paradoxus</i>	16	0.1	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.06	0.3	n/a
<i>Enneapogon caerulescens</i>	0.02	0.08	n/a
<i>Eragrostis dielsii</i>	0.001	0.01	YQS024-05
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Melaleuca xerophila</i>	20	3.5	n/a
<i>Portulaca oleracea</i>	0.001	0.01	YQS024-06
<i>Ptilotus aevoides</i>	0.001	0.02	YQS024-03
<i>Ptilotus obovatus</i>	0.25	0.4	n/a
<i>Sclerolaena densiflora</i>	0.02	0.1	YQS024-08
<i>Sclerolaena patentiuspis</i>	0.001	0.05	YQS024-01
<i>Swainsona kingii</i>	0.001	0.02	YQS024-02
<i>Tetragonia eremaea</i>	0.001	0.06	YQS024-07

BHP Billiton Yeelirrie Site YQS025

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.8km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 450m south of road, central Yeelirrie study area 1

MGA Zone: 50J

786374 **mE**

6991714 **mN**

Vegetation Code: CAbS

Landscape Association: Calcrete system, Brown silty clay with calcrete gravel

Vegetation: *Acacia burkittii* shrubland on calcrete

Disturbance: old tyre tracks through corner of plot, some small animal borrows and diggings

Fire Age: Long unburnt

Notes: Total PFC 11.1%; 1.5% leaf litter cover to a depth of 1 cm, 0.1% dead timber standing with 1% dead timber cover on ground, 30% cover of cryptogam crusting, 20% cover of clay, 15% cover of sand, 30% cover of gravel, 5% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	5	3.5	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.1	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.1	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.7	2	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i>	0.3	0.3	n/a
<i>Rhagodia drummondii</i>	n/a	0.4	n/a
<i>Salsola tragus</i>	n/a	0.1	n/a
<i>Sclerolaena densiflora</i>	n/a	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	5	2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.1	n/a
<i>Swainsona kingii</i>	n/a	0.05	n/a
<i>Zygophyllum apiculatum</i>	0.1	0.2	n/a

BHP Billiton Yeelirrie Site YQS026

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.25km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 50m north of road, central Yeelirrie study area 1

MGA Zone: 50J

786864 **mE**

6991855 **mN**

Vegetation Code: CCpW

Landscape Association: Calcrete system with fine, pale, red-brown coloured sand, with discontinuous lag gravel

Vegetation: *Casuarina pauper* woodland on calcrete

Disturbance: very old set of tyre tracks, kangaroo diggings, and what appears to be a scrape of a loader bucket

Fire Age: Long unburnt

Notes: Total PFC 36%; 4% leaf litter cover to a depth of 1 cm, 1.5% dead timber standing with 2% dead timber cover on ground, 12% cover of cryptogam crusting, 12% cover of clay, 8% cover of sand, 55% cover of gravel, 8% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	n/a	2.4	n/a
<i>Acacia synchronicia</i>	n/a	0.2	n/a
<i>Acacia tetragonophylla</i>	n/a	0.9	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Casuarina pauper</i>	20	6	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.1	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1	2	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Lepidium phlebopetalum</i>	n/a	0.1	YQS026-01
<i>Pittosporum angustifolium</i>	n/a	0.6	n/a
<i>Ptilotus helipteroides</i>	n/a	n/a	YQS026-03
<i>Ptilotus obovatus</i>	n/a	0.4	n/a
<i>Salsola tragus</i>	n/a	0.1	n/a
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	15	2	n/a
<i>Sida fibulifera</i>	n/a	0.02	n/a
<i>Velleia hispida</i>	n/a	0.04	YQS026-02
<i>Zygophyllum apiculatum</i>	n/a	0.15	n/a

BHP Billiton Yeelirrie Site YQS027

Described by Daniel Brassington **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.25km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 100m north of road, central Yeelirrie study area 1

MGA Zone: 50J

785621 mE

6992718 mN

Vegetation Code: CAbS

Landscape Association: Calcrete system, with brown sandy silt with high calcrete gravel proportion

Vegetation: *Acacia* and *Eremophila* shrubland on calcrete

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 9.65%; 1% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 2% dead timber cover on ground, 45% cover of cryptogam crusting, 20% cover of clay, 10% cover of sand, 13% cover of gravel, 10% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	n/a	0.03	n/a
<i>Acacia burkittii</i>	8	2.5	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.05	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	n/a	0.4	n/a
<i>Eriochiton sclerolaenoides</i>	n/a	0.01	YQS027-04
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.1	n/a
<i>Helipterum craspedioides</i>	n/a	0.1	YQS027-02
Indeterminate	n/a	0.05	YQS027-03
<i>Ptilotus helipteroides</i>	n/a	0.04	YQS027-01
<i>Ptilotus obovatus</i>	1.2	0.3	n/a
<i>Rhodanthe sterilecens</i>	n/a	0.08	n/a
<i>Salsola tragus</i>	n/a	0.03	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.2	0.4	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.2	0.4	n/a
<i>Solanum lasiophyllum</i>	n/a	0.1	n/a
<i>Swainsona kingii</i>	n/a	0.01	n/a
<i>Zygophyllum apiculatum</i>	0.05	0.1	n/a

BHP Billiton Yeelirrie Site YQS028

Described by Daniel Brassington **Date:** 05/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.9km south-east of North Gate, along Albany Well-North Gate Road, south of road, central Yeelirrie study area 1

MGA Zone: 50J

792148 **mE**

6990046 **mN**

Vegetation Code: SAMU

Landscape Association: Loamy Sand Plain system

Vegetation: Sand Plain Mulga Spinifex shrubland

Disturbance: None noted

Fire Age: > 10 years

Notes: Total PFC 47.24%; 15% leaf litter cover to a depth of 1 cm, 1.5% dead timber standing with 3% dead timber cover on ground, 0.3% cover of cryptogam crusting, 2% cover of clay, 95% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	6.5	4-5	n/a
<i>Acacia colletioides</i>	4.5	2.3	n/a
<i>Acacia prainii</i>	1.5	2	YQS028-04
<i>Dysphania kalpari</i>	n/a	0.08	YQS028-05
<i>Enchylaena tomentosa</i>	0.04	0.5	n/a
<i>Enneapogon caeruleus</i>	n/a	0.1	n/a
<i>Eragrostis eriopoda</i>	0.05	0.3	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.4	0.8	YQS028-03
<i>Erodium crinitum</i>	n/a	0.05	n/a
<i>Eucalyptus trivalva</i>	6	6	YQS028-01/02
<i>Monachather paradoxus</i>	n/a	0.1	YQS028-08
<i>Paspalidium basicladium</i>	n/a	0.1	YQS028-07
<i>Ptilotus exaltatus</i>	n/a	0.03	n/a
<i>Ptilotus obovatus</i>	0.05	0.5	n/a
<i>Ptilotus polystachyus</i>	n/a	0.1	YQS028-06
<i>Rhagodia drummondii</i>	n/a	1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.2	1.5	n/a
<i>Solanum lasiophyllum</i>	n/a	0.4	n/a
<i>Triodia basedowii</i>	28	0.3	n/a

BHP Billiton Yeelirrie Site YQS029

Described by Cheyne Jowett **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.6km west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie

MGA Zone: 50J 784939 mE 6990768 mN

Vegetation Code: PLCsMpS

Landscape Association: Loamy Clay

Vegetation: *Cratystylis subspinescens* and *Maireana pyramidata* shrubland on playa

Disturbance: Fauna scratchings

Fire Age: Unknown

Notes: Total PFC 20.252%; 0.06% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0.5% cover of cryptogam crusting, 1% cover of clay, 80% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Atriplex codonocarpa</i>	0.001	0.06	n/a
<i>Calandrinia Ptychosperma</i>	0.06	0.1	n/a
<i>Calotis multicaulis</i>	0.001	0.12	n/a
<i>Cratystylis subspinescens</i>	12	1.5	n/a
<i>Dissocarpus paradoxus</i>	0.75	0.2	n/a
<i>Enneapogon caerulescens</i>	0.001	0.15	n/a
<i>Eragrostis dielsii</i>	0.12	0.02	n/a
<i>Euphorbia drummondii</i>	0.001	0.1	n/a
<i>Maireana carnosae</i>	0.001	0.1	n/a
<i>Maireana pyramidata</i>	5.25	1	n/a
<i>Maireana triptera</i>	0.001	0.1	n/a
<i>Pogonolepis stricta</i>	0.001	0.02	YQS029-02
<i>Portulaca oleracea</i>	0.06	0.1	n/a
<i>Ptilotus aevoides</i>	0.001	0.2	n/a
<i>Ptilotus exaltatus</i>	0.001	0.06	n/a
<i>Ptilotus roei</i>	0.001	0.05	YQS029-01
<i>Sclerolaena bicornis</i>	0.5	0.2	n/a
<i>Sclerolaena cornishiana</i>	0.5	0.2	n/a
<i>Sclerolaena diacantha</i>	1	0.15	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS030

Described by Daniel Brassington **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.1km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 700m south of road, central Yeelirrie study area 1

MGA Zone: 50J

784601 **mE**

6992646 **mN**

Vegetation Code: CEGW

Landscape Association: Calcrete system, with fine, red-brown sandy loam

Vegetation: *Eucalyptus gypsophila* woodland on calcrete

Disturbance: Slight old track through edge of NW corner.

Fire Age: Unknown

Notes: Total PFC 13.502%; 25% leaf litter cover to a depth of 0.05 cm, 3 dead timber standing with 4% dead timber cover on ground, 5% cover of cryptogam crusting, 7% cover of clay, 6% cover of sand, 45% cover of gravel, 8% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Eucalyptus gypsophila</i>	12	6-8	n/a
<i>Salsola tragus</i>	0.001	0.02	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1.5	2	n/a
<i>Zygophyllum apiculatum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS031

Described by Daniel Brassington **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 3.3km west-north-west of Albany Well, along Albany Well-South Gate Road, 650m north of road, central Yeelirrie study area 1

MGA Zone: 50J 792182 **mE** 6988975 **mN**

Vegetation Code: CMpS

Landscape Association: Calcrete system, with reddish brown, sandy clay

Vegetation: *Maireana pyramidata* shrubland

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 14.6%; 0.5% leaf litter cover to a depth of 0.5 cm, 0.01% dead timber standing with 0.01% dead timber cover on ground, 25% cover of cryptogam crusting, 20% cover of clay, 55% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calandrinia Ptychosperma</i>	n/a	0.01	YQS031-01
<i>Calotis hispidula</i>	n/a	0.04	n/a
<i>Calotis multicaulis</i>	n/a	0.02	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.1	n/a
<i>Enneapogon caeruleus</i>	n/a	0.1	n/a
<i>Eragrostis dielsii</i>	4	0.05	YQS031-02
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.1	n/a
<i>Lawrenzia repens</i>	n/a	0.1	n/a
<i>Lemooria burkittii</i>	n/a	0.02	n/a
<i>Lycium australe</i>	0.5	1.4	n/a
<i>Maireana carnosa</i>	n/a	0.05	YQS031-03
<i>Maireana pyramidata</i>	10	0.8	n/a
<i>Paspalidium basicladium</i>	n/a	0.05	n/a
<i>Pogonolepis stricta</i>	n/a	n/a	YQS031-04
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus aervoides</i>	0.1	0.05	n/a
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	n/a	0.1	n/a
<i>Ptilotus obovatus</i>	n/a	0.5	n/a
<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	n/a	0.1	n/a
<i>Salsola tragus</i>	n/a	0.02	n/a
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sclerolaena diacantha</i>	n/a	0.1	n/a
<i>Sida fibulifera</i>	n/a	0.01	n/a
<i>Solanum lasiophyllum</i>	n/a	0.05	n/a
<i>Swainsona kingii</i>	n/a	0.05	n/a
<i>Tragus australianus</i>	n/a	0.1	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a

BHP Billiton Yeelirrie Site YQS032

Described by Daniel Brassington **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.4km west-north-west of Albany Well, along Albany Well-South Gate Road, 350m north of road, central Yeelirrie study area 1

MGA Zone: 50J

792125 mE

6988785 mN

Vegetation Code: CMxS

Landscape Association: Calcrete system, with pale brown, silty clay loam

Vegetation: *Melaleuca xerophila* shrubland on Calcrete

Disturbance: Old drilling clearance track running through the site.

Fire Age: Long unburnt

Notes: Total PFC 85%; 85% leaf litter cover to a depth of 2 cm, 0.20% dead timber standing with 3% dead timber cover on ground, 2% cover of cryptogam crusting, 6% cover of clay, 2.5% cover of sand, 0.5% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Amyema microphylla</i>	n/a	3	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.1	n/a
<i>Enchylaena tomentosa</i>	n/a	0.2	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Melaleuca xerophila</i>	85	5	n/a
<i>Salsola tragus</i>	n/a	0.1	n/a
<i>Solanum lasiophyllum</i>	n/a	0.02	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS033

Described by Daniel Brassington **Date:** 04/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.5km west-north-west of Albany Well, along Albany Well-South Gate Road, 800m north of road, central Yeelirrie study area 1

MGA Zone: 50J

791970 mE

6989195 mN

Vegetation Code: CMpS

Landscape Association: Calcrete system, with clay loam, sandy

Vegetation: *Maireana pyramidata* shrubland

Disturbance: Drill line through quadrat, affecting roughly 5%

Fire Age: Long unburnt

Notes: Total PFC 24.5%; 1% leaf litter cover to a depth of 1 cm, 0.01% dead timber standing with 0% dead timber cover on ground, 14% cover of cryptogam crusting, 20% cover of clay, 65% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calotis multicaulis</i>	n/a	0.1	YQS033-01
<i>Cratystylis subspinescens</i>	6	1.4	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.08	n/a
<i>Dysphania kalpari</i>	n/a	0.02	YQS033-05
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	2	0.02	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	2	0.03	YQS033-06
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Lycium australe</i>	0.5	1.5	n/a
<i>Maireana pyramidata</i>	14	1.3	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	n/a	0.1	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus aervoides</i>	n/a	0.02	YQS033-06
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	n/a	0.07	YQS033-02
<i>Ptilotus obovatus</i>	n/a	0.2	n/a
<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	n/a	0.1	YQS033-04
<i>Sclerolaena densiflora</i>	n/a	0.1	YQS033-03
<i>Sclerolaena diacantha</i>	n/a	0.2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.2	n/a
<i>Swainsona kingii</i>	n/a	0.01	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a

BHP Billiton Yeelirrie Site YQS034

Described by Daniel Brassington **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 700m north of South Gate, along North Gate-South Gate Road, 500m east of road, central Yeelirrie study area 1

MGA Zone: 50J

789888 **mE**

6989365 **mN**

Vegetation Code: CMxS

Landscape Association: Red-brown sandy loam

Vegetation: *Melaleuca xerophila* shrubland on calcrete

Disturbance: Animal diggings. Old, cleared drill line running north-south just impacting edge of quadrat

Fire Age: Unknown

Notes: Total PFC 93%; 78% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 2.5% dead timber cover on ground, 6% cover of cryptogam crusting, 8% cover of clay, 8% cover of sand, 0.01% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Amyema microphylla</i>	n/a	4	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.04	n/a
<i>Enchylaena tomentosa</i>	n/a	0.35	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Melaleuca xerophila</i>	93	5	n/a
<i>Rhagodia drummondii</i>	n/a	0.15	n/a
<i>Salsola tragus</i>	n/a	0.03	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.15	n/a

BHP Billiton Yeelirrie Site YQS038

Described by Daniel Brassington **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.3km east-south-east of South Gate, along Albany Well-South Gate Road, 400m north of road, central Yeelirrie study area 1

MGA Zone: 50J 790694 **mE** 6988974 **mN**

Vegetation Code: CMxS

Landscape Association: Calcrete system, with fine, light brown sandy clay

Vegetation: *Melaleuca xerophila* shrubland on calcrete

Disturbance: Animal diggings beneath *M. xerophila* and a dead tree pushed into quadrat from old track next to quadrat

Fire Age: Long unburnt

Notes: Total PFC 57.35%; 45% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 4% dead timber cover on ground, 12% cover of cryptogam crusting, 15% cover of clay, 20% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	n/a	0.1	n/a
<i>Abutilon</i> sp. (inadequate material)	n/a	0.05	n/a
<i>Amyema microphylla</i>	n/a	6	n/a
<i>Austrostipa elegantissima</i>	n/a	n/a	n/a
<i>Dissocarpus paradoxus</i>	0.35	0.1	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Erodium crinitum</i>	n/a	0.06	n/a
<i>Lycium australe</i>	n/a	0.5	n/a
<i>Marsdenia australis</i>	n/a	1.4	n/a
<i>Melaleuca xerophila</i>	50	7	n/a
<i>Nicotiana rotundifolia</i>	n/a	0.05	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Ptilotus exaltatus</i>	n/a	0.02	n/a
<i>Ptilotus obovatus</i>	6	0.4	n/a
<i>Rhagodia drummondii</i>	n/a	1	n/a
<i>Salsola tragus</i>	n/a	0.1	n/a
<i>Solanum lasiophyllum</i>	n/a	0.05	n/a
<i>Swainsona kingii</i>	n/a	0.03	n/a
<i>Tetragonia cristata</i>	n/a	0.05	n/a
<i>Tragus australianus</i>	n/a	0.05	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.2	n/a

BHP Billiton Yeelirrie Site YQS040

Described by Daniel Brassington **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.8km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 200m north of road, central Yeelirrie study area 1

MGA Zone: 50J

784398 mE

6993698 mN

Vegetation Code: CCpW

Landscape Association: Calcrete system, fine, pale, red-brown sand over calcrete with discontinuous lag gravel

Vegetation: *Casuarina pauper* woodland on calcrete

Disturbance: a few ancient tyre tracks, animal diggings, and grazing by kangaroos

Fire Age: Long unburnt

Notes: Total PFC 10.2%; 5% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 2% dead timber cover on ground, 35% cover of cryptogam crusting, 35% cover of clay, 25% cover of sand, 25% cover of gravel, 5% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Casuarina pauper</i>	10	6	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	n/a	0.15	n/a
<i>Paspalidium basicladium</i>	n/a	0.15	n/a
<i>Ptilotus obovatus</i>	n/a	0.3	n/a
<i>Salsola tragus</i>	n/a	0.04	n/a
<i>Sclerolaena cornishiana</i>	n/a	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.2	0.25	n/a
<i>Sida fibulifera</i>	n/a	0.2	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS041

Described by Cheyne Jowett **Date:** 05/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.9km south of Midnight Bore, 100m east of road, central Yeelirrie study area 1

MGA Zone: 50J 782921 mE 6994706 mN

Vegetation Code: CCpW

Landscape Association: Calcrete

Vegetation: *Casuarina pauper* woodland on calcrete

Disturbance: Minimal animal scratchings

Fire Age: Unknown

Notes: Total PFC 27.699%; 6% leaf litter cover to a depth of 3 cm, 7 dead timber standing with 2.5% dead timber cover on ground, 10% cover of cryptogam crusting, 5% cover of clay, 10% cover of sand, 20% cover of gravel, 20% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	1.25	2.2	n/a
<i>Acacia tetragonophylla</i>	0.075	1.6	n/a
<i>Austrostipa elegantissima</i>	0.04	0.5	n/a
<i>Casuarina pauper</i>	18	7	n/a
<i>Eragrostis</i> sp.	0.04	0.1	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	2.75	1.8	n/a
<i>Paspalidium basicladium</i>	0.001	0.15	YQS041-01
<i>Ptilotus obovatus</i>	0.04	0.3	n/a
<i>Salsola tragus</i>	0.001	0.15	n/a
<i>Scaevola spinescens</i> (broad form)	0.5	n/a	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	5	2	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.1	YQS041-02
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS042

Described by Rebecca Graham **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.8km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1

MGA Zone: 50J

773723 mE

7000011 mN

Vegetation Code: CCpW

Landscape Association: Calcrete system, with fine, pale red-brown sand covered by calcrete lag gravel

Vegetation: *Casuarina pauper* on woodland on calcrete

Disturbance: Minor animal scratching

Fire Age: Long unburnt

Notes: Total PFC 3.755%; 0.8% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 1.2% dead timber cover on ground, 1% cover of cryptogam crusting, 3% cover of clay, 12% cover of sand, 85% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Casuarina pauper</i>	2	8	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001	0.01	n/a
<i>Eremophea spinosa</i>	0.001	0.05	YQS042-02
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1	1.8	n/a
<i>Eremophila falcata</i>	0.001	0.4	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.5	0.4	n/a
<i>Salsola tragus</i>	0.001	0.03	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25	1.4	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.04	YQS042-01

BHP Billiton Yeelirrie Site YQS043

Described by Daniel Brassington **Date:** 26/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.9km west-north-west of Central Baseline and Southern Baseline intesection, central Yeelirrie

MGA Zone: 50J 784551 mE 6990861 mN

Vegetation Code: PLCsMp

Landscape Association: Reddish brown clay loam, sandy

Vegetation: *Cratystylis subspinescens* and *Maireana pyramidata* shrubland on playa system

Disturbance: A few animal scratchings

Fire Age: Unknown

Notes: Total PFC 66.12%; 30% leaf litter cover to a depth of 1 cm, 0.2% dead timber standing with 0.2% dead timber cover on ground, 30% cover of cryptogam crusting, 20% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Calandrinia Ptychosperma</i>	0.001	0.01	n/a
<i>Cratystylis subspinescens</i>	50	1.4	n/a
<i>Dissocarpus paradoxus</i>	0.001	0.2	n/a
<i>Eragrostis dielsii</i>	4	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Maireana carnososa</i>	0.001	0.15	n/a
<i>Maireana pyramidata</i>	8	1.2	n/a
<i>Portulaca oleracea</i>	0.02	0.01	n/a
<i>Ptilotus obovatus</i>	0.1	0.3	n/a
<i>Sclerolaena densiflora</i>	0.001	0.1	n/a
<i>Sclerolaena diacantha</i>	0.001	0.2	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	4	0.04	n/a

BHP Billiton Yeelirrie Site YQS044

Described by Jessie-Leigh Brown **Date:** 12/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 400m south-west of Midnight Bore, north-west Yeelirrie study area 1

MGA Zone: 50J 782507 mE 6997383 mN

Vegetation Code: HPMS

Landscape Association: Shallow silty sand over clayey hardpan

Vegetation: Hardpan Mulga Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 19.01%; 1% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 5% cover of cryptogam crusting, 25% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	4	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	10	2.2	n/a
<i>Acacia</i> sp. (inadequate material)	0.001	0.02	YQS044-03
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.4	n/a
<i>Eragrostis eriopoda</i>	0.001	0.06	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	3	0.9	n/a
<i>Erodium cygnorum</i>	0.001	0.02	n/a
<i>Haloragis odontocarpa</i>	0.001	0.02	n/a
<i>Melaleuca interioris</i>	2	1.2	n/a
<i>Rhagodia drummondii</i>	0.001	0.2	YQS044-01
<i>Rhyncharrhena linearis</i>	0.001	0.8	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001	0.02	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.04	YQS044-04
<i>Sida</i> sp. (inadequate material)	0.001	0.02	YQS044-02

BHP Billiton Yeelirrie Site YQS045

Described by Jessie-Leigh Brown **Date:** 13/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.9km south of Midnight Bore, central Yeelirrie study area 1

MGA Zone: 50J

782824 **mE**

6993924 **mN**

Vegetation Code: HPMS

Landscape Association: Shallow silty sand over clayey hardpan

Vegetation: Hardpan Mulga Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 13.586%; 5% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 3% dead timber cover on ground, 3% cover of cryptogam crusting, 15% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	10	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	3.5	2	n/a
<i>Aristida contorta</i>	0.05	0.1	YQS045-01
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.4	n/a
<i>Eragrostis eriopoda</i>	n/a	n/a	YQS045-06
<i>Euphorbia drummondii</i>	0.001	0.01	YQS045-03
<i>Monachather paradoxus</i>	0.001	0.03	n/a
<i>Psydrax suaveolens</i>	n/a	n/a	YQS045-07
<i>Ptilotus aervoides</i>	n/a	n/a	YQS045-04
<i>Ptilotus obovatus</i>	0.01	0.3	n/a
<i>Rhagodia drummondii</i>	0.02	0.6	YQS045-05
<i>Rhyncharrhena linearis</i>	0.001	0.07	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.05	n/a
<i>Tietkensia corrickiae</i>	OUT	n/a	YQS045-02
<i>Tribulus astrocarpus</i>	0.001	0.01	n/a

BHP Billiton Yeelirrie Site YQS046

Described by Daniel Brassington **Date:** 06/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 4.2km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1

MGA Zone: 50 773951 **mE** 7000732 **mN**

Vegetation Code: HPMS

Landscape Association: Reddish brown clay loam, sandy

Vegetation: Hardpan Mulga Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 8.75%; 6% leaf litter cover to a depth of 2 cm, 10 dead timber standing with 3% dead timber cover on ground, 10% cover of cryptogam crusting, 10% cover of clay, 71% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	7	6	n/a
<i>Enchylaena tomentosa</i>	0.001	0.2	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001	1.3	n/a
<i>Grevillea berryana</i>	1.5	5	n/a
<i>Marsdenia australis</i>	0.001	0.1	n/a
<i>Ptilotus obovatus</i>	0.25	0.3	n/a
<i>Sida calyxhymenia</i>	0.001	0.4	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS047

Described by Jessie-Leigh Brown **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.5km south of turnoff 4km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

767060 **mE**

7007219 **mN**

Vegetation Code: HPMS

Landscape Association: Shallow silty sand over clayey hardpan

Vegetation: Hardpan Mulga Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 18.252%; 5% leaf litter cover to a depth of 2 cm, 18 dead timber standing with 5% dead timber cover on ground, 10% cover of cryptogam crusting, 30% cover of clay, 35% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	10	6	n/a
<i>Acacia macraneura</i>	0.25	2	YQS047-01
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.3	2	n/a
<i>Acacia tetragonophylla</i>	0.2	1.5	n/a
<i>Eremophila flabellata</i>	7	0.6	YQS047-02
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.5	1	n/a
<i>Maireana planifolia</i>	0.001	0.05	YQS047-03
<i>Rhyncharrhena linearis</i>	0.001	0.3	YQS047-04

BHP Billiton Yeelirrie Site YQS049

Described by Cheyne Jowett **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.25km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 500m east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

763214 mE

7008965 mN

Vegetation Code: SDSH

Landscape Association: Sand Plain system. Red silty sand

Vegetation: Sand Plain shrubland

Disturbance: Animal diggings

Fire Age: Long unburnt

Notes: Total PFC 27.083%; 3.5% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green			
	4	2.5	n/a
<i>Acacia heteroneura</i> var. <i>prolixa</i>	4	2	n/a
<i>Bertya dimerostigma</i>	5	0.8	n/a
<i>Callitris columellaris</i>	4	2	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.001	0.03	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	2	2.2	n/a
<i>Hakea francisiana</i>	0.06	1.6	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.02	0.25	YQS049-01
<i>Leptosema chambersii</i>	0.001	0.2	n/a
<i>Rulingia luteiflora</i>	0.001	0.12	n/a
<i>Triodia basedowii</i>	8	0.25	n/a

BHP Billiton Yeelirrie Site YQS050

Described by Daniel Brassington **Date:** 9/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 1.5km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 800m west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 761829 mE 7008929 mN

Vegetation Code: SDSH

Landscape Association: Sand Plain system. Brownish red silty sandy loam

Vegetation: Sand Plain shrubland

Disturbance: None noted

Fire Age: 20 - 30 years

Notes: Total PFC 46.25%; 8% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.2% dead timber cover on ground, 10% cover of cryptogam crusting, 5% cover of clay, 65% cover of sand, 1% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	2.5	1.8	n/a
<i>Acacia burkittii</i>	2	2.2	n/a
<i>Acacia kempeana</i>	0.8	1.8	YQS050-01
<i>Amphipogon caricinus</i>	n/a	0.2	n/a
<i>Bertya dimerostigma</i>	9	1.4	n/a
<i>Callitris columellaris</i>	1.5	2.5	n/a
<i>Grevillea acacioides</i>	0.25	1.6	n/a
<i>Homalocalyx thryptomenoides</i>	0.1	0.4	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	n/a	0.3	n/a
<i>Rulingia luteiflora</i>	0.1	0.3	n/a
<i>Triodia basedowii</i>	30	0.3	n/a

BHP Billiton Yeelirrie Site YQS051

Described by Jessie-Leigh Brown **Date:** 11/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 800m north-north-west of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1

MGA Zone: 50J

774765 mE

7005232 mN

Vegetation Code: SAGS

Landscape Association: Sand Plain system

Vegetation: Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland

Disturbance: None noted

Fire Age: 10 - 15 years

Notes: Total PFC 22.454%; 5% leaf litter cover to a depth of 3cm, 3 dead timber standing with 4% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	1	2.5	n/a
<i>Acacia ligulata</i>	0.25	1.4	n/a
<i>Amphipogon caricinus</i>	0.02	0.4	n/a
<i>Bonamia rosea</i>	0.2	0.3	n/a
<i>Calandrinia eremaea</i>	0.001	0.02	n/a
<i>Dianella revoluta</i>	0.02	0.6	n/a
<i>Eucalyptus gongylocarpa</i>	7	8	n/a
<i>Eucalyptus kingsmillii</i>	1.2	3	n/a
<i>Hakea francisiana</i>	0.75	1.2	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)2		0.4	n/a
<i>Leptosema chambersii</i>	0.01	0.3	n/a
<i>Ptilotus obovatus</i>	0.001	0.15	n/a
<i>Ptilotus sessilifolius</i>	0.001	0.05	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Triodia basedowii</i>	10	0.5	n/a

BHP Billiton Yeelirrie Site YQS052

Described by Daniel Brassington **Date:** 09/07/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 8.2km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 1.4km east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

775352 mE

6996553 mN

Vegetation Code: SAGS

Landscape Association: Sand Plain system. Reddish brown sandy loam

Vegetation: Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland

Disturbance: Kangaroo and emu scratchings.

Fire Age: 10 - 15 years

Notes: Total PFC 33%; 15% leaf litter cover to a depth of 1 cm, 68 dead timber standing with 4% dead timber cover on ground, 0.25% cover of cryptogam crusting, 0.5% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	18	2.5	n/a
<i>Acacia ligulata</i>	2	2.5	n/a
<i>Amphipogon caricinus</i>	n/a	0.1	n/a
<i>Bossiaea eremaea</i>	n/a	0.2	n/a
<i>Calandrinia balonensis</i>	n/a	0.2	YQS052-01
<i>Eremophila forrestii</i>	n/a	0.4	n/a
<i>Eucalyptus gongylocarpa</i>	5	7	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	3	0.4	n/a
<i>Leptosema chambersii</i>	n/a	0.2	n/a
<i>Monachather paradoxus</i>	n/a	0.2	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Triodia basedowii</i>	5	0.3	n/a

BHP Billiton Yeelirrie Site YQS053

Described by Daniel Brassington **Date:** 07/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 6.75km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

773946 mE

6997887 mN

Vegetation Code: SAGS

Landscape Association: Sand Plain system. Reddish brown sandy loam

Vegetation: Spinifex hummock grassland with *Eucalyptus gongylocarpa* woodland

Disturbance: a few small animal diggings

Fire Age: 10 years

Notes: Total PFC 42.55%; 30% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 1.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 68% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ligulata</i>	15	1.8	YQS053-01
<i>Acacia thoma</i>	0.2	1.6	n/a
<i>Amphipogon caricinus</i>	n/a	0.2	n/a
<i>Bonamia rosea</i>	0.15	0.25	n/a
<i>Dianella revoluta</i>	n/a	0.8	n/a
<i>Eragrostis eriopoda</i>	n/a	0.3	n/a
<i>Eremophila forrestii</i>	0.5	1.1	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.25	0.5	YQS053-03
<i>Eremophila platycalyx</i> subsp. <i>platycalyx</i>	4	1.2	n/a
<i>Eucalyptus gongylocarpa</i>	20	6	n/a
<i>Hakea minyma</i>	n/a	0.3	YQS053-05
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.25	0.2	YQS053-04
<i>Jasminum calcareum</i>	0.5	1.1	YQS053-06
<i>Leptosema chambersii</i>	n/a	0.2	n/a
<i>Monachather paradoxus</i>	n/a	0.2	YQS053-02
<i>Rhyncharrhena linearis</i>	n/a	0.1	n/a
<i>Scaevola parviflora</i>	n/a	0.3	n/a
<i>Scaevola spinescens</i> (broad form)	0.5	1	n/a
<i>Sida ectogama</i>	0.2	0.3	n/a
<i>Solanum ellipticum</i>	n/a	0.1	n/a
<i>Solanum lasiophyllum</i>	n/a	0.15	n/a
<i>Triodia basedowii</i>	1	0.3	n/a

BHP Billiton Yeelirrie Site YQS055

Described by Cheyne Jowett **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 600m north of Midnight Bore, 100m west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 782826 mE 6998287 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain system, sandy loam

Vegetation: Mulga spinifex shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 45.303%; 8% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 3% dead timber cover on ground, 1% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	25	6	n/a
<i>Acacia effusifolia</i>	8	4.5	n/a
<i>Enchylaena tomentosa</i>	0.001	0.02	n/a
<i>Enekbatus eremaeus</i>	0.1	0.5	n/a
<i>Eriachne helmsii</i>	0.001	0.2	n/a
<i>Erodium cygnorum</i>	0.001	0.01	n/a
<i>Psyrax latifolia</i>	0.2	3	n/a
<i>Triodia basedowii</i>	12	0.3	n/a

BHP Billiton Yeelirrie Site YQS056

Described by Jessie-Leigh Brown **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.75km south of turnoff 4km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

767158 **mE**

7007938 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain system, sandy loam

Vegetation: Mulga spinifex shrubland

Disturbance: Animal diggings

Fire Age: Unknown

Notes: Total PFC 36.276%; 15% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0.001% cover of cryptogam crusting, 15% cover of clay, 35% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	5	6	n/a
<i>Aristida contorta</i>	0.001	0.2	n/a
<i>Dianella revoluta</i>	0.25	0.6	n/a
<i>Eremophila longifolia</i>	0.001	1.2	n/a
<i>Hakea lorea</i> subsp. <i>lorea</i>	3	5.5	n/a
<i>Halgania erecta</i>	0.001	0.05	YQS056-02
Indeterminate	0.001	0.05	YQS056-01
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.02	0.5	n/a
<i>Rhagodia drummondii</i>	0.001	1	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Triodia basedowii</i>	28	0.5	n/a

BHP Billiton Yeelirrie Site YQS057

Described by Daniel Brassington **Date:** 06/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 3km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 773812 mE 7001874 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain system, brownish red sandy loam

Vegetation: Mulga spinifex shrubland

Disturbance: Animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 30.5%; 5% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 1% dead timber cover on ground, 10% cover of cryptogam crusting, 20% cover of clay, 65% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	1	3.5	#110
<i>Acacia colletioides</i>	5	3	n/a
<i>Acacia effusifolia</i>	4.5	3.5	n/a
<i>Monachather paradoxus</i>	n/a	0.01	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	0.3	n/a
<i>Sida calyxhymenia</i>	n/a	0.6	n/a
<i>Spartothamnella teucriflora</i>	n/a	0.3	n/a
<i>Triodia basedowii</i>	20	0.3	n/a

BHP Billiton Yeelirrie Site YQS058

Described by Jessie-Leigh Brown **Date:** 13/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.5km south of Midnight Bore, east of road, central Yeelirrie study area 1

MGA Zone: 50J 782804 **mE** 6993086 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain system. Sandy loam

Vegetation: Mulga spinifex shrubland

Disturbance: Animal scratchings and scats.

Fire Age: Long unburnt

Notes: Total PFC 22.501%; 1% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 1% dead timber cover on ground, 0.001% cover of cryptogam crusting, 4% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. slightly curved flat 30-70x3-5mm grey green	4	4	n/a
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	8	4	#091
<i>Acacia ayersiana</i>	0.4	2	n/a
<i>Eriachne helmsii</i>	n/a	n/a	YQS058-01
<i>Eriachne mucronata</i>	0.1	0.3	n/a
<i>Monachather paradoxus</i>	0.001	0.04	n/a
<i>Triodia basedowii</i>	10	0.3	n/a

BHP Billiton Yeelirrie Site YQS059

Described by Daniel Brassington **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.5km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 250m west of road, north-west Yeelirrie study area 1

MGA Zone: 50J

762206 **mE**

7008080 **mN**

Vegetation Code: SAMA

Landscape Association: Brownish red silty sandy loam

Vegetation: Sand Plain *Acacia* spp. spinifex shrubland with mallee

Disturbance: None noted

Fire Age: Approx. 5 years

Notes: Total PFC 33.255%; 2% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 2% dead timber cover on ground, 8% cover of cryptogam crusting, 2% cover of clay, 74.564% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	1.2	0.9	YQS059-01/04
<i>Acacia ligulata</i>	1	0.7	n/a
<i>Amphipogon caricinus</i>	0.25	0.3	n/a
<i>Bonamia rosea</i>	0.001	0.3	n/a
<i>Dianella revoluta</i>	1	1	n/a
<i>Enekbatus eremaeus</i>	0.25	0.4	n/a
<i>Eriachne mucronata</i>	0.001	0.6	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	3	1.2	n/a
<i>Exocarpos sparteus</i>	0.3	0.5	n/a
<i>Grevillea acacioides</i>	3.15	0.8	YQS059-02
<i>Homalocalyx thryptomenoides</i>	4	0.6	n/a
<i>Leptosema chambersii</i>	0.1	0.3	n/a
<i>Pittosporum angustifolium</i>	0.001	0.8	n/a
<i>Prostanthera wilkieana</i>	0.001	0.4	n/a
<i>Stylidium induratum</i>	0.001	0.2	YQS059-03
<i>Triodia basedowii</i>	19	0.4	n/a

BHP Billiton Yeelirrie Site YQS060

Described by Jessie-Leigh Brown **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 800m south-west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1

MGA Zone: 50J

763508 **mE**

7009464 **mN**

Vegetation Code: SAHS

Landscape Association: Sand Plain with red, silty sand

Vegetation: Spinifex Hummock Grassland with Myrtaceous Heath

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 48.324%; 5% leaf litter cover to a depth of 2 cm, 18 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 20% cover of clay, 35% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	6	2.5	n/a
<i>Acacia heteroneura</i> var. <i>jutsonii</i>	3.5	3	YQS060-03
<i>Callitris columellaris</i>	1.8	3	n/a
<i>Daviesia grahamii</i>	0.01	0.3	n/a
<i>Dianella revoluta</i>	0.001	0.4	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.01	0.4	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	2	2	n/a
<i>Grevillea acacioides</i>	2.5	1.5	n/a
<i>Hakea francisiana</i>	1	3	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.001	0.1	n/a
<i>Micromyrtus flaviflora</i>	21.5	1	YQS060-01/02
<i>Poaceae</i> sp. (inadequate material)	0.001	0.2	n/a
<i>Prostanthera wilkieana</i>	0.001	0.2	n/a
<i>Triodia basedowii</i>	10	0.3	n/a

BHP Billiton Yeelirrie Site YQS061

Described by Daniel Brassington **Date:** 07/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 8.8km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 2km east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

775869 mE

6995863 mN

Vegetation Code: SASP

Landscape Association: Sand Plain, with brown sandy clay loam

Vegetation: Spinifex Shrubland

Disturbance: Animal Scratchings

Fire Age: Unknown

Notes: Total PFC 26.65%; 1% leaf litter cover to a depth of 0.5 cm, 46 dead timber standing with 0.5% dead timber cover on ground, 0.5% cover of cryptogam crusting, 2% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	0.3	0.4	n/a
<i>Amphipogon caricinus</i>	0.8	0.2	n/a
<i>Bonamia rosea</i>	0.1	0.3	n/a
<i>Daviesia grahamii</i>	0.2	0.3	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.25	1.1	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.001	0.3	n/a
<i>Euryomyrtus inflata</i>	6	0.4	n/a
<i>Hakea minyma</i>	0.001	0.45	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.001	0.03	n/a
<i>Leptosema chambersii</i>	0.001	0.2	n/a
<i>Prostanthera wilkieana</i>	4	0.4	n/a
<i>Solanum ellipticum</i>	0.001	0.03	n/a
<i>Swainsona microphylla</i>	0.001	0.01	n/a
<i>Triodia basedowii</i>	15	0.3	n/a

BHP Billiton Yeelirrie Site YQS062

Described by Daniel Brassington **Date:** 07/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 7.5km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, east of road, north-west Yeelirrie study area 1

MGA Zone: 50J

773868 mE

6997269 mN

Vegetation Code: SASP

Landscape Association: Sand Plain, with brown Sandy clay loam

Vegetation: Spinifex Shrubland

Disturbance: Animal scratchings, old tyre tracks thru plot.

Fire Age: 2-5 yrs

Notes: Total PFC 26.6%; 1% leaf litter cover to a depth of 0.5 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0.5% cover of cryptogam crusting, 5% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Amphipogon caricinus</i>	11	0.3	n/a
<i>Aristida contorta</i>	0.001	0.05	n/a
<i>Bonamia rosea</i>	1	0.2	n/a
<i>Eragrostis eriopoda</i>	0.25	0.25	n/a
<i>Eremophila spuria</i>	0.001	0.8	YQS062-01
<i>Eriachne helmsii</i>	0.25	0.4	YQS062-04
<i>Euryomyrtus inflata</i>	3	0.2	n/a
<i>Helipterum craspedioides</i>	0.001	0.04	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.001	0.3	n/a
<i>Leptosema chambersii</i>	4	0.2	n/a
<i>Monotaxis luteiflora</i>	0.001	0.02	YQS062-03
<i>Newcastelia hexarrhena</i>	0.001	0.02	n/a
<i>Rulingia loxophylla</i>	0.001	0.2	YQS062-02
<i>Sida ectogama</i>	0.1	0.6	n/a
<i>Swainsona microphylla</i>	0.001	0.01	YQS062-05
<i>Triodia basedowii</i>	7	0.2	n/a
<i>Wurmbea deserticola</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS063

Described by Daniel Brassington **Date:** 07/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 6km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 1.3km west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 772545 mE 6998759 mN

Vegetation Code: SAMA

Landscape Association: Brown sandy loam

Vegetation: Sand Plain Acacia Spinifex Shrubland with Mallee

Disturbance: Animal Scratchings

Fire Age: 5 years ago

Notes: Total PFC 25.163%; 3% leaf litter cover to a depth of 1 cm, 7 dead timber standing with 2% dead timber cover on ground, 0.5% cover of cryptogam crusting, 5% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	0.25	0.5	YQS063-02
<i>Amphipogon caricinus</i>	4	0.3	n/a
<i>Aristida contorta</i>	0.001	0.05	n/a
<i>Dianella revoluta</i>	0.001	0.2	n/a
<i>Enekbatus cryptandroides</i>	0.2	0.3	YQS063-05
<i>Enekbatus eremaeus</i>	0.001	0.4	YQS063-03
<i>Eriachne mucronata</i> (xerophytic form)	0.5	0.4	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>	0.8	1	n/a
<i>Grevillea berryana</i>	1	1	YQS063-01
<i>Hakea minyma</i>	0.1	0.7	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.3	0.5	n/a
<i>Homalocalyx thryptomenoides</i>	0.001	0.3	YQS063-04
<i>Leptosema chambersii</i>	0.001	0.02	n/a
<i>Rulingia luteiflora</i>	0.001	0.4	n/a
<i>Triodia basedowii</i>	18	0.3	n/a
<i>Wurmbea deserticola</i>	0.01	0.15	n/a

BHP Billiton Yeelirrie Site YQS064

Described by Daniel Brassington **Date:** 06/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.5km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, 125m east of road, north-west Yeelirre study area 1

MGA Zone: 50J 774019 mE 7001380 mN

Vegetation Code: PLAPoS

Landscape Association: Sandy clay loam, reddish brown with *Acacia aneura* open tall shrubland over *Ptilotus obovatus* low very open heath

Vegetation: *Acacia* and *Ptilotus obovatus* Shrubland on flats in Playa System

Disturbance: Rabbit Scratchings

Fire Age: Long unburnt

Notes: Total PFC 11.3%; 4% leaf litter cover to a depth of 1 cm, 8 dead timber standing with 1.5% dead timber cover on ground, 42% cover of cryptogam crusting, 10% cover of clay, 37% cover of sand, 2% cover of gravel, 2% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	9	5	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Calotis plumulifera</i>	0.001	0.03	n/a
<i>Enneapogon caerulescens</i>	0.001	0.1	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.3	1.7	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Goodenia peacockiana</i>	0.001	0.1	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aervoides</i>	0.001	0.02	n/a
<i>Ptilotus exaltatus</i>	0.001	0.05	n/a
<i>Ptilotus helipteroides</i>	0.001	0.1	YQS064-01
<i>Ptilotus obovatus</i>	2	0.4	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.3	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Swainsona kingii</i>	0.001	0.01	n/a
<i>Zygophyllum apiculatum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS065

Described by Daniel Brassington **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.75km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 400m west of road, north-west Yeelirrie study area 1

MGA Zone: 50J

762113 mE

7008555 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain with pale brown sandy loam

Vegetation: Spinifex Hummock Grassland with Myrtaceous Heath

Disturbance: A few animal diggings

Fire Age: 10-15 yrs

Notes: Total PFC 52.35%; 2% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 0.2% dead timber cover on ground, 25% cover of cryptogam crusting, 10% cover of clay, 50% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Bonamia rosea</i>	0.001	0.25	n/a
<i>Callitris columellaris</i>	0.25	1.5	n/a
<i>Daviesia grahamii</i>	0.25	0.6	n/a
<i>Enekbatas eremaeus</i>	30	1	YQS065-01
<i>Eriachne mucronata</i> (xerophytic form)	0.1	0.3	n/a
<i>Grevillea acacioides</i>	3	2	n/a
<i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i>	0.7	1.6	YQS065-02
<i>Grevillea juncifolia</i>	0.25	3.5	n/a
<i>Hakea francisiana</i>	0.6	1.6	n/a
<i>Homalocalyx thryptomenoides</i>	1.7	0.7	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	0.5	0.4	n/a
<i>Leptosema chambersii</i>	0.001	0.2	n/a
<i>Prostanthera wilkieana</i>	0.001	0.3	n/a
<i>Schoenus subaphyllus</i>	0.001	0.2	n/a
<i>Stylidium induratum</i>	0.001	0.03	n/a
<i>Triodia basedowii</i>	15	0.3	n/a

BHP Billiton Yeelirrie Site YQS066

Described by Cheyne Jowett **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.25km south of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, 100m west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 761851 mE 7006979 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain system, with red silty sand

Vegetation: *Acacia Spinifex* Shrubland with Mallees

Disturbance: None noted

Fire Age: 5 yrs +

Notes: Total PFC 27.94%; 3% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 0.25% dead timber cover on ground, 0.001% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks. Vegetation showing signs of water stress, *Acacia ligulata* phyllodes swollen, with water?

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ligulata</i>	0.1	1.1	YQS066-02
<i>Acacia prainii</i>	8	1.2	n/a
<i>Acacia</i> sp. (inadequate material)	0.25	0.2	YQS066-01
<i>Dianella revoluta</i>	1	0.7	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.5	1.1	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	4	2	n/a
<i>Grevillea acacioides</i>	0.04	0.4	n/a
<i>Hakea francisiana</i>	2	1.2	n/a
<i>Micromyrtus flaviflora</i>	0.05	0.3	n/a
<i>Triodia basedowii</i>	12	0.2	n/a

BHP Billiton Yeelirrie Site YQS068

Described by Jessie-Leigh Brown **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.5km north-north-west of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1

MGA Zone: 50J

775371 mE

7005451 mN

Vegetation Code: SASP

Landscape Association: Sand Plain system, with red silty sand

Vegetation: Spinifex Shrubland

Disturbance: None noted

Fire Age: 5 years

Notes: Total PFC 0%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	0.05	0.5	n/a
<i>Amphipogon caricinus</i>	0.25	0.4	n/a
<i>Aristida contorta</i>	0.001	0.3	n/a
<i>Bonamia rosea</i>	0.01	0.4	n/a
<i>Dianella revoluta</i>	0.05	0.8	n/a
<i>Eragrostis xerophila</i>	0.001	0.3	n/a
<i>Eremophila longifolia</i>	0.001	0.3	YQS068-03
<i>Eriachne mucronata</i>	2	0.4	n/a
<i>Eucalyptus kingsmillii</i>	2.5	2	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	1.5	0.4	n/a
<i>Leptosema chambersii</i>	4.5	0.4	n/a
<i>Maireana triptera</i>	0.001	0.3	n/a
<i>Monachather paradoxus</i>	0.25	0.5	YQS068-01
<i>Prostanthera wilkieana</i>	0.001	0.2	n/a
<i>Ptilotus sessilifolius</i>	0.001	0.15	YQS068-02
<i>Rulingia luteiflora</i>	0.25	0.5	n/a
<i>Triodia basedowii</i>	5	0.5	n/a

BHP Billiton Yeelirrie Site YQS069

Described by Cheyne Jowett **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.25km north of Midnight Bore, 100m east of road, north-west Yeelirrie study area 1

MGA Zone: 50J 782965 mE 6998865 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain system, with reddish brown silty sand

Vegetation: Heath Shrubland

Disturbance: None noted

Fire Age: >5yrs

Notes: Total PFC 23.402%; 2% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.8% dead timber cover on ground, 2% cover of cryptogam crusting, 4% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	2	3	n/a
<i>Amphipogon caricinus</i>	0.4	0.1	n/a
<i>Bonamia rosea</i>	0.001	0.15	n/a
<i>Enekbatus eremaeus</i>	9	1	YQS069-02
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	0.25	0.3	n/a
<i>Kennedia prorepens</i>	0.001	0.01	n/a
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	1	0.3	n/a
<i>Newcastelia hexarrhena</i>	1	0.5	n/a
<i>Rulingia loxophylla</i>	0.75	0.15	YQS069-01
<i>Triodia basedowii</i>	9	0.4	n/a

BHP Billiton Yeelirrie Site YQS070

Described by Cheyne Jowett **Date:** 20/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 800m west of Midnight Bore, north of road, north-west Yeelirrie study area 1

MGA Zone: 50J 782173 mE 6997734 mN

Vegetation Code: PLAPoS

Landscape Association: Red Sand

Vegetation: *Acacia-Ptilotus obovatus* Shrubland on Playa

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 16.573%; 4% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 4% dead timber cover on ground, 0.001% cover of cryptogam crusting, 1.25% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks. *Maireana georgei* juveniles make up all but one of the counts.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	9	5	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1.5	2.1	n/a
<i>Aristida contorta</i>	0.06	0.06	n/a
<i>Calandrinia pleiopetala</i>	0.001	0.04	n/a
<i>Eragrostis eriopoda</i>	1.25	0.1	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	3.25	1.2	n/a
<i>Eremophila spectabilis</i>	0.1	0.2	n/a
<i>Maireana georgei</i>	0.06	0.15	n/a
<i>Melaleuca interioris</i>	1	1.3	n/a
<i>Ptilotus obovatus</i>	0.1	0.2	n/a
<i>Rhagodia drummondii</i>	0.25	0.5	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.1	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS071

Described by Jessie-Leight Brown **Date:** 12/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.5km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1

MGA Zone: 50J

781293 mE

6998260 mN

Vegetation Code: WABS

Landscape Association: Red, silty sand

Vegetation: Wanderrie Bank Grassy Shrubland

Disturbance: None noted

Fire Age: long unburnt

Notes: Total PFC 19.042%; 8% leaf litter cover to a depth of 3 cm, 1 dead timber standing with 2% dead timber cover on ground, 0% cover of cryptogam crusting, 5% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	10	6	n/a
<i>Aristida contorta</i>	0.001	0.04	n/a
<i>Calotis multicaulis</i>	0.001	0.03	YQS071-04
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.4	n/a
<i>Eragrostis eriopoda</i>	0.001	0.3	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	4.5	1	n/a
<i>Erodium cygnorum</i>	0.001	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Haloragis odontocarpa</i>	0.001	0.08	n/a
<i>Haloragis odontocarpa</i> forma <i>rugosa</i>	0.001	0.08	YQS071-02
<i>Melaleuca interioris</i>	1	2	n/a
<i>Monachather paradoxus</i>	0.001	0.05	YQS071-01
<i>Ptilotus polystachyus</i>	0.001	0.06	YQS071-03
<i>Rhagodia drummondii</i>	0.03	0.6	n/a
<i>Rhyncharrhena linearis</i>	3.5	0.3	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.04	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a

BHP Billiton Yeelirrie Site YQS072

Described by Rebecca Graham **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.75km south of turnoff approximately 12km east of Meekatharra-Yeelirre Road and Sandstone-Wiluna Road intersection, west of road, north-west Yeelirrie study area 1

MGA Zone: 50J 773868 mE 7001154 mN

Vegetation Code: CCpW

Landscape Association: Calcrete system

Vegetation: *Casuarina pauper* Woodland on Calcrete

Disturbance: Animal scratchings, minor drainage channel

Fire Age: long unburnt

Notes: Total PFC 8.882%; 8% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 2% dead timber cover on ground, 2% cover of cryptogam crusting, 5% cover of clay, 15% cover of sand, 50% cover of gravel, 2% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	0.25	1.5	n/a
<i>Acacia quadrimarginea</i>	n/a	n/a	YQS072
<i>Acacia tetragonophylla</i>	0.001	0.3	n/a
<i>Austrostipa elegantissima</i>	0.001	0.7	n/a
<i>Casuarina pauper</i>	3.5	6	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.06	0.5	n/a
<i>Enneapogon caerulescens</i>	0.001	0.05	n/a
<i>Eremophea spinosa</i>	0.001	0.05	YQS072-04
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	2	2	n/a
<i>Eremophila falcata</i>	1	2.2	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.06	0.7	n/a
<i>Eremophila longifolia</i>	0.001	0.3	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Marsdenia australis</i>	0.001	0.2	n/a
<i>Ptilotus exaltatus</i>	0.001	0.05	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25	0.3	n/a
<i>Salsola tragus</i>	0.001	0.05	n/a
<i>Sclerolaena diacantha</i>	0.001	0.05	YQS072-03
<i>Sclerolaena patenticuspis</i>	0.25	0.15	YQS072-02
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1	1.5	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Templetonia incrassata</i>	0.5	1.8	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.1	YQS072-01

BHP Billiton Yeelirrie Site YQS074

Described by Daniel Brassington **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 200m east of South Gate, along Albany Well-South Gate Road, 50m north of road, central Yeelirrie study area 1

MGA Zone: 50J

789598 mE

6988865 mN

Vegetation Code: PLAPoS

Landscape Association: Reddish brown, sandy clay with a shallow sand layer on surface

Vegetation: *Acacia* and *Ptilotus obovatus* Shrubland on flats in Playa System

Disturbance: Animal diggings and droppings

Fire Age: long unburnt

Notes: Total PFC 10.5%; 3% leaf litter cover to a depth of 1 cm, 20 dead timber standing with 1.5% dead timber cover on ground, 10% cover of cryptogam crusting, 17% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	0.001	0.01	n/a
<i>Acacia ayersiana</i>	8	6	n/a
<i>Acacia tetragonophylla</i>	1	1.6	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Dissocarpus paradoxus</i>	0.001	0.01	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.4	n/a
<i>Eragrostis eriopoda</i>	0.001	0.2	n/a
<i>Erodium crinitum</i>	0.001	0.03	n/a
<i>Marsdenia australis</i>	0.001	0.2	n/a
<i>Paspalidium basicladium</i>	0.001	0.08	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i>	1.5	0.5	n/a
<i>Spartothamnella teucriflora</i>	0.001	0.5	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a

BHP Billiton Yeelirrie Site YQS075

Described by Cheyne Jowett **Date:** 10/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.2km south-east of South Gate, along Core Farm Express, 500m south of road, central Yeelirrie

MGA Zone: 50J 790083 mE 6987362 mN

Vegetation Code: WABS

Landscape Association: Clayey sand

Vegetation: Wanderrie Bank Grassy Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 19.39%; 4% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 3.25% dead timber cover on ground, 6% cover of cryptogam crusting, 4% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	10	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1	1.2	n/a
<i>Arabidella trisecta</i>	0.001	0.03	YQS075-03
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Brunonia australis</i>	0.001	0.05	n/a
<i>Calotis hispidula</i>	0.001	0.06	n/a
<i>Centipeda thespidioides</i>	0.001	0.04	n/a
<i>Dysphania kalpari</i>	0.001	0.01	n/a
<i>Eragrostis eriopoda</i>	5	0.25	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.25	0.5	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.06	1	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.02	n/a
<i>Erodium cygnorum</i>	0.06	0.1	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.03	n/a
<i>Haloragis odontocarpa</i>	0.001	0.15	n/a
<i>Maireana georgei</i>	0.06	0.3	n/a
<i>Maireana planifolia</i>	0.1	0.4	YQS075-01
<i>Monachather paradoxus</i>	0.3	0.1	n/a
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Ptilotus aervoides</i>	0.001	0.02	n/a
<i>Ptilotus exaltatus</i>	0.001	0.15	n/a
<i>Rhagodia drummondii</i>	0.06	1.3	n/a
<i>Rhodanthe maryonii</i>	0.001	0.06	YQS075-02
<i>Rhyncharrhena linearis</i>	0.001	0.3	n/a
<i>Sclerolaena diacantha</i>	0.001	0.04	n/a
<i>Sida calyxhymenia</i>	0.001	0.1	n/a
<i>Sida fibulifera</i>	0.001	0.05	n/a
<i>Swainsona kingii</i>	0.001	0.05	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Triodia basedowii</i>	2.5	0.3	n/a

BHP Billiton Yeelirrie Site YQS076

Described by Daniel Brassington **Date:** 26/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.5km west-north-west of Albany Well, along Albany Well-South Gate Road, 250m south of road, central Yeelirrie study area 1

MGA Zone: 50J

793040 **mE**

6987939 **mN**

Vegetation Code: PLAPoS

Landscape Association: Reddish brown sandy clay loam

Vegetation: *Acacia* and *Ptilotus obovatus* shrubland on flats in Playa system

Disturbance: Small animal diggings and a burrow

Fire Age: 10 - 15 years

Notes: Total PFC 11.55%; 7% leaf litter cover to a depth of 3 cm, 3 dead timber standing with 1% dead timber cover on ground, 11% cover of cryptogam crusting, 9% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	5	6	n/a
<i>Aristida contorta</i>	1	0.1	n/a
<i>Calandrinia eremaea</i>	n/a	0.05	n/a
<i>Calandrinia ptychosperma</i>	n/a	0.01	n/a
<i>Calotis multicaulis</i>	n/a	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.05	n/a
<i>Enchylaena tomentosa</i>	0.1	0.5	n/a
<i>Enneapogon caerulescens</i>	0.05	0.1	n/a
<i>Eragrostis dielsii</i>	n/a	0.01	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.1	n/a
<i>Erodium cygnorum</i>	n/a	0.07	YQS076-02
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Grevillea berryana</i>	2.5	4	n/a
<i>Malvaceae</i> sp. (CW13-16, WPI)	n/a	0.04	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Portulaca oleracea</i>	0.05	0.01	n/a
<i>Ptilotus aervoides</i>	0.05	0.02	n/a
<i>Ptilotus exaltatus</i>	n/a	0.05	n/a
<i>Ptilotus helipteroides</i>	n/a	0.03	YQS076-01
<i>Ptilotus obovatus</i>	2.5	0.3	n/a
<i>Rhagodia drummondii</i>	n/a	0.2	n/a
<i>Rhyncharrhena linearis</i>	n/a	0.3	n/a
<i>Sclerolaena densiflora</i>	0.05	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.1	0.5	n/a
<i>Solanum lasiophyllum</i>	n/a	0.03	n/a
<i>Solanum nummularium</i>	0.05	0.3	n/a
<i>Swainsona kingii</i>	0.1	0.03	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a
<i>Tripogon loliiformis</i>	n/a	0.04	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS079

Described by Cheyne Jowett **Date:** 13/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 6.5km north of Albany Well, 1.9km west of road, central Yeelirrie study area 1

MGA Zone: 50J 793604 mE 6994495 mN

Vegetation Code: GPoS

Landscape Association: Granite system, Loamy sand

Vegetation: *Ptilotus obovatus* shrubland on granite

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 9.134%; 0.001% leaf litter cover to a depth of 0.05 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 40% cover of cryptogam crusting, 10% cover of clay, 50% cover of sand, 0.001% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp.	0.02	0.06	YQS079-04
<i>Acacia ayersiana</i>	0.02	0.35	n/a
<i>Acacia tetragonophylla</i>	0.02	0.15	n/a
<i>Aristida contorta</i>	1	0.08	n/a
<i>Calandrinia Ptychosperma</i>	0.001	0.01	n/a
<i>Calotis multicaulis</i>	0.01	0.15	n/a
<i>Dysphania kalpari</i>	0.001	0.04	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.001	0.04	n/a
<i>Enneapogon caerulescens</i>	0.202	0.1	YQS079-02/07
<i>Eragrostis dielsii</i>	0.001	0.02	n/a
<i>Eragrostis eriopoda</i>	0.1	0.08	YQS079-05
<i>Eremophila compacta</i> subsp. <i>compacta</i>	1.5	0.35	n/a
<i>Eremophila galeata</i>	0.03	0.2	n/a
<i>Eremophila latrobei</i>	0.03	0.2	n/a
<i>Erymophyllum ramosum</i> subsp. <i>ramosum</i>	0.001	0.15	YQS079-08
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.01	0.01	n/a
<i>Goodenia occidentalis</i>	0.03	0.1	YQS079-01
<i>Isoetopsis graminifolia</i>	0.001	0.03	YQS079-06
<i>Lemooria burkittii</i>	0.02	0.01	n/a
<i>Maireana carnosa</i>	0.001	0.1	n/a
<i>Maireana georgei</i>	0.06	0.15	n/a
<i>Maireana pyramidata</i>	1.5	0.3	n/a
<i>Pogonolepis stricta</i>	0.1	0.02	n/a
<i>Portulaca oleracea</i>	0.03	0.01	n/a
<i>Ptilotus aervoides</i>	0.01	0.01	n/a
<i>Ptilotus obovatus</i>	3	0.35	n/a
<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	0.001	0.07	n/a
<i>Rhodanthe sterilecens</i>	0.001	0.04	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.02	n/a
<i>Salsola tragus</i>	0.001	0.06	n/a
<i>Sclerolaena densiflora</i>	0.07	0.2	n/a
<i>Sida</i> sp. (inadequate material)	0.03	0.06	YQS079-03
<i>Solanum lasiophyllum</i>	0.01	0.15	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	1.5	0.03	n/a

BHP Billiton Yeelirrie Site YQS080

Described by Cheyne Jowett **Date:** 15/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 6km north of Albany Well, 1.9km west of road, central Yeelirrie study area 1

MGA Zone: 50J

793614 mE

6993900 mN

Vegetation Code: SAES

Landscape Association: Loamy sand

Vegetation: Stoney *Acacia Eremophila* Shrubland

Disturbance: Sheet flow

Fire Age: Unknown

Notes: Total PFC 2.759%; 0.01% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.001% dead timber cover on ground, 25% cover of cryptogam crusting, 20% cover of clay, 5% cover of sand, 40% cover of gravel, 5% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. terete straight 30-110x1mm grey olive green	0.5	1.2	n/a
<i>Acacia tetragonophylla</i>	0.25	0.7	n/a
<i>Aristida contorta</i>	0.2	0.05	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.201	0.4	YQS080-04
<i>Eremophila galeata</i>	1.2	1.2	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.2	0.01	YQS080-02
<i>Goodenia tenuiloba</i>	0.001	0.03	YQS080-01
<i>Indeterminate</i>	0.001	0.03	YQS080-05
<i>Portulaca oleracea</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.2	0.3	n/a
<i>Rhodanthe sterilecens</i>	0.001	0.03	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.04	YQS080-06
<i>Solanum lasiophyllum</i>	0.001	0.05	n/a
<i>Spartothamnella teucriflora</i>	0.001	0.4	n/a

BHP Billiton Yeelirrie Site YQS081

Described by Daniel Brassington **Date:** 14/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.8km south of Midnight Bore, 100m east of road, central Yeelirrie study area 1

MGA Zone: 50J

782898 mE

6994057 mN

Vegetation Code: PLAET

Landscape Association: Water accumulating depression adjacent and south of *Casuarina pauper* woodland on calcrete.

Vegetation: *Acacia Eremophila* thicket on playa

Disturbance: Animal burrows - goanna, kangaroo droppings and scratchings.

Fire Age: Long unburnt

Notes: Total PFC 29.981%; 5.5% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 1% dead timber cover on ground, 40% cover of cryptogam crusting, 30% cover of clay, 15% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.01	0.1	n/a
<i>Acacia aneura</i> flat phyllode (30 mm x 2 mm)	0.05	0.5	n/a
<i>Acacia tetragonophylla</i>	3.5	3	n/a
<i>Amaranthus mitchellii</i>	0.001	0.2	n/a
<i>Aristida contorta</i>	0.1	0.08	n/a
<i>Austrostipa elegantissima</i>	0.5	0.9	YQS081-03
<i>Brachyscome ciliaris</i>	0.001	0.2	n/a
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Calocephalus knappii</i>	0.001	0.08	n/a
<i>Calocephalus multiflorus</i>	0.001	0.05	YQS081-07
<i>Calotis plumulifera</i>	0.001	0.1	n/a
<i>Centipeda thespidioides</i>	0.2	0.1	n/a
<i>Citrullus lanatus</i>	0.05	0.05	n/a
<i>Convolvulus angustissimus</i>	0.001	0.4	n/a
<i>Cotula australis</i>	0.001	0.06	n/a
<i>Dissocarpus paradoxus</i>	0.001	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.001	0.04	n/a
<i>Enchylaena tomentosa</i>	0.25	0.4	n/a
<i>Eragrostis dielsii</i>	0.001	0.01	n/a
<i>Eragrostis eriopoda</i>	0.5	0.1	n/a
<i>Eremophila eriocalyx</i>	0.001	1.6	YQS081-14
<i>Eremophila longifolia</i>	3.5	5	n/a
<i>Eriachne ovata</i>	8	0.2	YQS081-16
<i>Erodium cygnorum</i>	0.001	0.05	n/a
<i>Eucalyptus lucasii</i>	2	7	n/a
<i>Euphorbia australis</i>	0.02	0.01	YQS081-09
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Gnephosis arachnoidea</i>	4	0.18	YQS081-06
<i>Haloragis trigonocarpa</i>	0.25	0.15	n/a
<i>Iseilema membranaceum</i>	0.001	0.1	n/a
<i>Isoetopsis graminifolia</i>	0.001	0.03	n/a
<i>Lemooria burkittii</i>	0.001	0.01	n/a
<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	0.1	1	YQS081-02
<i>Marsdenia australis</i>	0.1	0.8	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	0.001	0.03	YQS081-12
<i>Ophioglossum lusitanicum</i>	0.25	0.02	YQS081-08
<i>Paspalidium basicladium</i>	0.001	0.2	n/a
<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	0.02	0.6	YQS081-01
<i>Portulaca oleracea</i>	0.25	0.02	n/a
<i>Ptilotus aervoides</i>	0.25	0.03	n/a
<i>Ptilotus obovatus</i>	4	0.5	n/a
<i>Ptilotus polystachyus</i>	0.2	0.4	YQS081-15

<i>Rhagodia drummondii</i>	0.4	1.1	n/a
<i>Rhodanthe charsleyae</i>	0.001	0.15	n/a
<i>Rhodanthe maryonii</i>	0.05	0.1	YQS081-11
<i>Salsola tragus</i>	0.001	0.15	n/a
<i>Santalum lanceolatum</i>	0.8	0.9	n/a
<i>Sclerolaena densiflora</i>	0.001	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.001	0.4	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001	0.2	n/a
<i>Sida calyxhymenia</i>	0.251	0.2	YQS081-05
<i>Sida</i> sp. (inadequate material)	0.15	0.05	YQS081-04
<i>Solanum lasiophyllum</i>	0.001	0.15	n/a
<i>Spartothamnella teucriflora</i>	0.2	0.75	n/a
<i>Streptoglossa cylindriceps</i>	0.001	0.02	YQS081-13
<i>Swainsona kingii</i>	0.001	0.03	n/a
<i>Tribulus</i> sp. (inadequate material)	0.001	0.01	YQS081-10
<i>Tribulus terrestris</i>	0.001	0.01	n/a

BHP Billiton Yeelirrie Site YQS082

Described by Daniel Brassington **Date:** 05/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.9km south of Midnight Bore, 250m west of road, central Yeelirrie study area 1

MGA Zone: 50J

782496 mE

6992567 mN

Vegetation Code: GRMS

Landscape Association: Granite system, Loamy sand

Vegetation: Mulga shrubland

Disturbance: Animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 33.33%; 1.5% leaf litter cover to a depth of 1 cm, 0.4% dead timber standing with 0.75% dead timber cover on ground, 25% cover of cryptogam crusting, 10% cover of clay, 55% cover of sand, 6% cover of gravel, 4% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. <i>terete</i> str. to sl. crv 15-30x1mm yellow olive green	0.03	3.5	#229
<i>Acacia ayersiana</i>	0.1	3.5	n/a
<i>Acacia craspedocarpa</i>	30	2.5	n/a
<i>Acacia tetragonophylla</i>	0.7	3	n/a
<i>Acacia thoma</i>	0.2	1.5	YQS082-02
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calotis multicaulis</i>	n/a	0.1	n/a
<i>Enchylaena tomentosa</i>	n/a	0.7	n/a
<i>Enneapogon caerulescens</i>	n/a	0.01	n/a
<i>Eragrostis dielsii</i>	n/a	0.01	n/a
<i>Eragrostis eriopoda</i>	n/a	0.1	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	n/a	0.4	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.3	2	n/a
<i>Eremophila longifolia</i>	n/a	2.2	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.05	n/a
<i>Erodium crinitum</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Maireana georgei</i>	n/a	0.2	YQS082-01
<i>Marsdenia australis</i>	n/a	1.7	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Psydrax suaveolens</i>	n/a	1.2	n/a
<i>Ptilotus helipteroides</i>	n/a	0.04	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	n/a	0.4	n/a
<i>Ptilotus polystachyus</i>	n/a	0.1	n/a
<i>Rhagodia drummondii</i>	n/a	1.5	YQS082-03
<i>Rhyncharrhena linearis</i>	n/a	0.2	n/a
<i>Scaevola spinescens</i> (broad form)	n/a	n/a	n/a
<i>Scaevola spinescens</i> (narrow form)	n/a	2	n/a
<i>Sclerolaena diacantha</i>	n/a	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	2	n/a
<i>Sida ectogama</i>	2	1.5	n/a
<i>Solanum lasiophyllum</i>	n/a	0.4	n/a
<i>Tripogon loliiformis</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS083

Described by Jessie-Leigh Brown **Date:** 13/09/2010 **Type:** Quadrat

Size: 20 x 20 m

Season: Excellent

Location: 4.2km south of Midnight Bore, 1km west of road, central Yeelirrie study area 1

MGA Zone: 50J

781788 **mE**

6993461 **mN**

Vegetation Code: GPoS

Landscap Association: Granite system. Stony quartz plain.

Vegetation: *Ptilotus obovatus* shrubland in the granite system

Disturbance: Kangaroo scratchings.

Fire Age: Unknown

Notes: Total PFC 13.787%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.25% dead timber cover on ground, 25% cover of cryptogam crusting, 50% cover of clay, 20% cover of sand, 0.001% cover of gravel, 1% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp.	0.001	0.05	YQS083-07
<i>Acacia tetragonophylla</i>	0.5	1.2	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Eragrostis</i> sp. (inadequate material)	5	0.01	n/a
<i>Eremophila battii</i>	0.02	0.2	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.05	0.3	n/a
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	3	0.3	n/a
<i>Erodium cygnorum</i>	0.001	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Goodenia mimuloides</i>	0.001	0.03	YQS083-06
<i>Goodenia occidentalis</i>	0.001	0.03	YQS083-04
<i>Maireana carnos</i>	0.001	0.1	n/a
<i>Maireana glomerifolia</i>	0.001	0.2	n/a
<i>Maireana pyramidata</i>	1	0.5	n/a
<i>Maireana villosa</i>	0.001	0.3	YQS083-03
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	3	0.3	n/a
<i>Rhagodia drummondii</i>	0.25	0.8	n/a
<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	0.001	0.1	YQS083-08
<i>Rhyncharrhena linearis</i>	0.001	0.2	n/a
<i>Sclerolaena densiflora</i>	0.2	0.1	n/a
<i>Senna charlesiana</i>	0.25	0.4	YQS083-01
<i>Senna</i> sp. Austin (A. Strid 20210)	0.5	0.5	YQS083-02
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Swainsona oroboides</i>	0.001	0.05	YQS083-09
<i>Velleia hispida</i>	0.001	0.03	YQS083-05

BHP Billiton Yeelirrie Site YQS084

Described by Daniel Brassington **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.4km west of Central Baseline and Northern Baseline intersection, central Yeelirrie study area 1

MGA Zone: 50J 786533 mE 6991024 mN

Vegetation Code: PLAET

Landscape Association: PLAYA system, water accumulating depression on calcrete rises.

Vegetation: *Acacia* spp. and *Eremophila longifolia* thicket on Playa

Disturbance: Animal scratchings, water erosion (tunnel).

Fire Age: Unknown

Notes: Total PFC 21.13%; 2.5% leaf litter cover to a depth of 0.01 cm, 3 dead timber standing with 2.5% dead timber cover on ground, 4% cover of cryptogam crusting, 80% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> aff. <i>oxycarpum</i> subsp. <i>prostratum</i>	0.001	0.05	YQS084-03
<i>Acacia burkittii</i>	0.25	3.5	n/a
<i>Acacia tetragonophylla</i>	1.5	2.5	n/a
<i>Acetosa vesicaria</i>	0.001	0.15	n/a
<i>Amaranthus mitchellii</i>	0.001	0.1	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Brachyscome ciliocarpa</i>	0.001	0.1	n/a
<i>Calandrinia Ptychosperma</i>	0.001	0.01	YQS084-02
<i>Calocephalus knappii</i>	0.001	0.06	n/a
<i>Calotis hispidula</i>	0.001	0.03	n/a
<i>Centipeda thespidioides</i>	0.4	0.1	n/a
<i>Convolvulus angustissimus</i>	0.001	0.02	YQS084-06
<i>Dissocarpus paradoxus</i>	0.001	n/a	n/a
<i>Dysphania kalpari</i>	0.001	0.03	n/a
<i>Eragrostis dielsii</i>	0.001	0.06	n/a
<i>Eragrostis eriopoda</i>	1	0.2	n/a
<i>Eragrostis tenellula</i>	0.001	0.15	YQS084-01
<i>Eremophila longifolia</i>	1.5	4	n/a
<i>Eriachne ovata</i>	2	0.3	YQS084-05
<i>Euphorbia australis</i>	0.001	0.01	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Goodenia peacockiana</i>	0.001	0.15	n/a
<i>Grevillea berryana</i>	5	5	n/a
<i>Haloragis trigonocarpa</i>	0.5	0.1	n/a
<i>Iseilema membranaceum</i>	0.8	0.04	n/a
<i>Nicotiana rotundifolia</i>	0.001	0.05	n/a
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Phyllanthus erwinii</i>	0.001	0.05	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aevoides</i>	0.001	0.15	n/a
<i>Ptilotus obovatus</i>	5	0.5	n/a
<i>Rhagodia drummondii</i>	0.25	1.5	n/a
<i>Rhodanthe charsleyae</i>	0.7	0.2	n/a
<i>Rhodanthe floribunda</i>	0.001	0.1	n/a
<i>Rhodanthe maryonii</i>	1	0.03	n/a
<i>Rhodanthe sterilecens</i>	0.001	0.1	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.05	n/a
<i>Santalum spicatum</i>	0.7	3	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.5	1.8	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.08	YQS084-04
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.05	n/a
<i>Vittadinia eremaea</i>	0.001	0.15	YQS084-07

<i>Vittadinia sulcata</i>	0.001	0.2	n/a
<i>Zygophyllum aurantiacum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS085

Described by Daniel Brassington **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4km west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, north-west Yeelirrie study area 1

MGA Zone: 50J

759037 mE

7009895 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain Brown sandy loam

Vegetation: *Acacia spinifex* shrubland with mallees

Disturbance: Some animal diggings

Fire Age: 5 - 10 years

Notes: Total PFC 32.1%; 2.5% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 1% dead timber cover on ground, 5% cover of cryptogam crusting, 10% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ligulata</i>	4	1.7	n/a
<i>Amphipogon caricinus</i>	n/a	0.2	n/a
<i>Austrostipa elegantissima</i>	0.15	0.3	n/a
<i>Bonamia rosea</i>	n/a	0.2	n/a
<i>Bossiaea eremaea</i>	1.5	0.6	n/a
<i>Dianella revoluta</i>	0.3	0.7	n/a
<i>Eremophila subfloccosa</i>	n/a	0.2	n/a
<i>Eriachne mucronata</i>	0.1	0.3	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	2.5	1.5	n/a
<i>Hakea minyma</i>	4	1.1	YQS085-01
<i>Homalocalyx thryptomenoides</i>	0.25	0.7	n/a
<i>Leptosema chambersii</i>	0.3	0.2	n/a
<i>Prostanthera wilkieana</i>	n/a	0.4	YQS085-02
<i>Ptilotus obovatus</i>	n/a	0.3	n/a
<i>Triodia basedowii</i>	19	0.4	n/a

BHP Billiton Yeelirrie Site YQS086

Described by Daniel Brassington **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.75km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 250m north of the RFDS Airstrip, west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

211851 mE

6979836 mN

Vegetation Code: WABS

Landscape Association: Reddish brown silty clay, sand layer on surface

Vegetation: Wanderrie Bank Grassy Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 10.05%; 1% leaf litter cover to a depth of 0.5 cm, 3 dead timber standing with 1% dead timber cover on ground, 15% cover of cryptogam crusting, 9% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	3	5	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.3	1.7	n/a
<i>Acacia tetragonophylla</i>	0.001	1.8	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Calotis hispidula</i>	0.001	0.03	n/a
<i>Dysphania kalpari</i>	0.001	0.08	n/a
<i>Eragrostis eriopoda</i>	1.5	0.3	n/a
<i>Eremophila battii</i>	0.001	0.3	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	5	1.6	n/a
<i>Eremophila latrobei</i>	0.001	0.3	n/a
<i>Eriachne helmsii</i>	0.001	0.3	YQS086-01
<i>Erodium cygnorum</i>	0.001	0.1	YQS086-0
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Haloragis trigonocarpa</i>	0.001	0.1	n/a
<i>Maireana thesioides</i>	0.001	0.3	n/a
<i>Maireana tomentosa</i>	0.001	0.2	n/a
<i>Monachather paradoxus</i>	0.001	0.1	YQS086-02
<i>Paspalidium basicladium</i>	0.001	0.15	n/a
<i>Psydrax suaveolens</i>	0.001	2.5	n/a
<i>Ptilotus obovatus</i>	0.001	0.3	n/a
<i>Solanum lasiophyllum</i>	0.001	0.03	n/a
<i>Swainsona kingii</i>	0.001	0.05	n/a
<i>Triodia basedowii</i>	0.25	0.6	n/a

BHP Billiton Yeelirrie Site YQS087

Described by Cheyne Jowett **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.55km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 850m west of road, south-east Yeelirrie study area 1

MGA Zone: 51J 210996 mE 6979992 mN

Vegetation Code: GRMS

Landscape Association: Coarse red silty sand covering archean granite sheet

Vegetation: Granite Mulga Shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 21.591%; 0.25% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 2.25% cover of cryptogam crusting, 2.25% cover of clay, 85% cover of sand, 4% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	8.25	0.8	n/a
<i>Acacia tetragonophylla</i>	3.5	3	n/a
<i>Eremophila oppositifolia</i> subsp. <i>oppositifolia</i>	6.5	2	YQS087-02
<i>Ptilotus aevoides</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i>	0.03	0.35	n/a
<i>Scaevola spinescens</i> (broad form)	2.25	1.1	n/a
<i>Senna charlesiana</i>	0.5	1	n/a
<i>Sida ectogama</i>	0.5	1	YQS087-01
<i>Spartothamnella teucriflora</i>	0.06	0.7	n/a

BHP Billiton Yeelirrie Site YQS088

Described by Daniel Brassington **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.1km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 650m west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

211263 mE

6980400 mN

Vegetation Code: GPoS

Landscape Association: Reddish, brown, silty sand

Vegetation: *Ptilotus obovatus* Shrubland in the Granite System

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 4.621%; 0.001% leaf litter cover to a depth of 0.01 cm, 2 dead timber standing with 0.1% dead timber cover on ground, 2.5% cover of cryptogam crusting, 2.5% cover of clay, 40% cover of sand, 40% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp.	0.001	0.06	YQS088-02
<i>Aristida contorta</i>	0.1	0.1	n/a
<i>Calandrinia</i> sp. (inadequate material)	0.001	0.01	n/a
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Cephalopterum drummondii</i>	0.001	0.1	n/a
<i>Chrysocephalum puteale</i>	0.001	0.15	n/a
<i>Eremophila compacta</i> subsp. <i>compacta</i>	0.5	0.5	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	2.5	0.02	n/a
<i>Erodium crinitum</i>	0.001	0.05	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Goodenia krauseana</i>	0.001	0.1	n/a
<i>Helipterum craspedioides</i>	0.001	0.1	n/a
<i>Lemooria burkittii</i>	0.001	0.02	n/a
<i>Maireana thesioides</i>	0.001	0.2	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aevroides</i>	0.001	0.03	n/a
<i>Ptilotus obovatus</i>	1.5	0.4	n/a
<i>Rhagodia drummondii</i>	0.001	0.4	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.001	0.4	n/a
<i>Sida ectogama</i>	0.001	0.5	n/a
<i>Sida fibulifera</i>	0.001	0.04	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Spartothamnella teucriflora</i>	0.001	0.2	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Wurmbea deserticola</i>	0.001	0.1	YQS088-01

BHP Billiton Yeelirrie Site YQS089

Described by Cheyne Jowett **Date:** 20/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.75km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, west of road, south-east Yeelirrie study area 1

MGA Zone: 51J 211747 mE 6980953 mN

Vegetation Code: PLEml

Landscape Association: Flat Sandy plain

Vegetation: *Eremophila malacoides* Shrubland on Playa System

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 8.567%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0.001% cover of cryptogam crusting, 2% cover of clay, 92% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Calandrinia Ptychosperma</i>	0.001	0.01	n/a
<i>Dysphania kalpari</i>	0.001	0.03	YQS089-02
<i>Eragrostis dielsii</i>	0.25	0.02	n/a
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	0.06	0.3	n/a
<i>Eremophila malacoides</i>	8	0.45	n/a
<i>Maireana triptera</i>	0.25	0.35	n/a
<i>Pogonolepis stricta</i>	0.001	0.01	YQS089-01
<i>Portulaca oleracea</i>	0.02	0.01	n/a
<i>Ptilotus aervoides</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.08	0.35	n/a
<i>Rhagodia drummondii</i>	0.06	0.4	n/a
<i>Rhodanthe charsleyae</i>	0.001	0.05	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.06	0.4	n/a
<i>Sclerolaena cornishiana</i>	0.03	0.15	n/a
<i>Sclerolaena eriacantha</i>	0.001	0.2	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a

BHP Billiton Yeelirrie Site YQS090

Described by Cheyne Jowett **Date:** 08/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.2km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 600m east of road, south-east Yeelirrie study area 1

MGA Zone: 51J 212095 mE 6982459 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain with coarse, red, silty sand

Vegetation: *Acacia spinifex* shrubland

Disturbance: Animal diggings

Fire Age: >5 years

Notes: Total PFC 36.012%; 0.001% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 0.001% cover of clay, 72% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	0.2	0.8	n/a
<i>Acacia ligulata</i>	0.25	1.2	n/a
<i>Alyogyne pinoniana</i>	0.001	0.1	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Brunonia australis</i>	0.001	0.03	YQS090-03
<i>Daviesia grahamii</i>	n/a	n/a	YQS090
<i>Eremophila platythamnos</i> subsp. <i>platythamnos</i>	1.25	1.1	n/a
<i>Goodenia peacockiana</i>	0.001	0.05	n/a
<i>Hakea francisiana</i>	0.06	0.5	n/a
<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	0.2	0.2	n/a
<i>Hibiscus burtonii</i>	0.04	0.2	YQS090-05
<i>Melaleuca interioris</i>	4	0.8	n/a
<i>Monotaxis luteiflora</i>	0.001	0.05	n/a
<i>Pimelea trichostachya</i>	0.001	0.12	YQS090-02
<i>Prostanthera wilkieana</i>	0.001	0.12	YQS090-07
<i>Scaevola parvifolia</i> subsp. <i>acuminata</i>	0.001	0.15	YQS090-04
<i>Solanum centrale</i>	0.001	0.05	YQS090-06
<i>Thysanotus manglesianus</i>	0.001	0.15	n/a
<i>Trachymene bialata</i>	0.001	0.1	n/a
<i>Triodia basedowii</i>	30	0.4	n/a
<i>Velleia glabrata</i>	0.001	0.08	YQS090-01

BHP Billiton Yeelirrie Site YQS091

Described by Daniel Brassington

Date: 08/09/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: 750m south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 350m west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

211056 mE

6982824 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain with reddish brown sandy loam

Vegetation: *Acacia spinifex* shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 41.3%; 2% leaf litter cover to a depth of 0.5 cm, 10 dead timber standing with 0.2% dead timber cover on ground, 2% cover of cryptogam crusting, 10% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia</i> sp. resprouter (G. Cockerton & R. Graham LCH 25490)	0.3	0.8	n/a
<i>Aristida contorta</i>	n/a	0.05	n/a
<i>Brunonia australis</i>	n/a	0.15	n/a
<i>Erodium cygnorum</i>	n/a	0.15	n/a
<i>Gonocarpus confertifolius</i> var. <i>confertifolius</i>	n/a	0.05	YQS091-03
<i>Goodenia peacockiana</i>	n/a	0.2	n/a
<i>Halganina cyanea</i> subsp. <i>Allambi</i> Stn (B. W. Strong 676)	n/a	0.4	YQS091-06
<i>Homalocalyx thryptomenoides</i>	n/a	n/a	n/a
Indeterminate	n/a	0.01	YQS091-01
<i>Kennedia prorepens</i>	n/a	0.2	n/a
<i>Leptosema chambersii</i>	n/a	0.1	n/a
<i>Lobelia winfridae</i>	n/a	0.15	YQS091-05
<i>Melaleuca interioris</i>	6	0.7	n/a
<i>Newcastelia hexarrhena</i>	n/a	0.03	n/a
<i>Paspalidium basicladium</i>	n/a	0.15	n/a
<i>Pimelea trichostachya</i>	n/a	0.12	YQS091-02
<i>Poranthera microphylla</i>	n/a	0.1	YQS091-07
<i>Thysanotus manglesianus</i>	n/a	0.2	n/a
<i>Trachymene bialata</i>	n/a	0.15	YQS091-04
<i>Triodia basedowii</i>	35	0.35	n/a
<i>Wurmbea deserticola</i>	n/a	0.08	n/a

BHP Billiton Yeelirrie Site YQS092

Described by Daniel Brassington **Date:** 08/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 2.3km north-east of 3 Mile Bore, 100m north-west of road, south-east Yeelirrie study area 1

MGA Zone: 51J 208763 mE 6983567 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain with reddish brown sandy loam

Vegetation: *Acacia spinifex* shrubland

Disturbance: Animal scratchings and droppings

Fire Age: 5 - 10 years

Notes: Total PFC 30.7%; 2% leaf litter cover to a depth of 1 cm, 14 dead timber standing with 4% dead timber cover on ground, 5% cover of cryptogam crusting, 1% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia heteroneura</i> var. <i>prolixa</i>	3	1	YQS092-01
<i>Acacia</i> sp. resprouter (G. Cockerton & R. Graham LCH 25490)	0.7	1.2	n/a
<i>Aristida contorta</i>	n/a	0.08	n/a
<i>Brunonia australis</i>	n/a	0.05	n/a
<i>Erodium cygnorum</i>	n/a	0.01	n/a
<i>Goodenia peacockiana</i>	n/a	0.1	n/a
<i>Halgania cyanea</i>	n/a	0.2	n/a
Indeterminate	n/a	0.01	n/a
<i>Kennedia prorepens</i>	n/a	0.02	n/a
<i>Leptosema chambersii</i>	n/a	0.1	n/a
<i>Newcastelia hexarrhena</i>	n/a	0.03	n/a
<i>Pimelea trichostachya</i>	n/a	0.2	n/a
<i>Poranthera microphylla</i>	n/a	0.01	n/a
<i>Rulingia loxophylla</i>	n/a	0.2	YQS092-02
<i>Solanum centrale</i>	n/a	0.2	YQS092-03
<i>Swainsona microphylla</i>	n/a	0.02	n/a
<i>Thysanotus manglesianus</i>	n/a	0.2	n/a
<i>Triodia basedowii</i>	27	0.3	n/a
<i>Wurmbea deserticola</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS093

Described by Daniel Brassington **Date:** 09/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2km west of Meekatharra-Yeelirrie Road and Sandstone-Wiluna Road intersection, south of road, north-west Yeelirrie study area 1

MGA Zone: 50J

761026 mE

7010108 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain, medium sand

Vegetation: *Acacia spinifex* shrubland with mallees

Disturbance: Animal scratchings and diggings, termite activity.

Fire Age: 20 - 30 years

Notes: Total PFC 43.35%; 6% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 13% cover of cryptogam crusting, 13% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	0.5	3	YQS093-02
<i>Amphipogon caricinus</i>	n/a	0.2	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Daviesia grahamii</i>	n/a	0.3	n/a
<i>Dianella revoluta</i>	n/a	0.4	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.25	0.3	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	0.5	1.8	n/a
<i>Euryomyrtus inflata</i>	0.3	0.3	n/a
<i>Glischrocaryon flavescens</i>	0.3	0.4	YQS093-03
<i>Grevillea acacioides</i>	3	0.2	n/a
<i>Hakea minyma</i>	5	3	n/a
<i>Homalocalyx thryptomenoides</i>	6	0.9	n/a
<i>Leptosema chambersii</i>	3	0.2	n/a
<i>Prostanthera wilkieana</i>	n/a	0.3	YQS093-01
<i>Triodia basedowii</i>	27	0.3	n/a

BHP Billiton Yeelirrie Site YQS094

Described by Daniel Brassington **Date:** 08/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.5km north-east of 3 Mile Bore, 1.25km east of road, south-east Yeelirrie study area 1

MGA Zone: 51J

210189 mE

6983766 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain with reddish brown sandy loam

Vegetation: Spinifex hummock grassland with heath

Disturbance: None noted

Fire Age: 20 - 30 years

Notes: Total PFC 37.1%; 2% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 6% cover of cryptogam crusting, 6% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	n/a	3	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Brunonia australis</i>	n/a	0.06	n/a
<i>Enekbatius eremaeus</i>	17	1.1	YQS094-01
<i>Goodenia triodiophila</i>	n/a	n/a	YQS094-02
Indeterminate	n/a	0.01	n/a
<i>Kennedia prorepens</i>	n/a	0.02	n/a
<i>Lobelia winfridae</i>	n/a	0.04	n/a
<i>Pimelea trichostachya</i>	n/a	0.15	n/a
<i>Poranthera microphylla</i>	n/a	0.02	n/a
<i>Rulingia loxophylla</i>	0.1	0.25	n/a
<i>Solanum lasiophyllum</i>	n/a	0.02	n/a
<i>Trachymene bialata</i>	n/a	0.15	n/a
<i>Triodia basedowii</i>	20	0.3	n/a
<i>Wurmbea deserticola</i>	n/a	0.2	n/a

BHP Billiton Yeelirrie Site YQS095

Described by Daniel Brassington **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.45km south of North Gate, along North Gate-South Gate Road, 350m east of road, central Yeelirrie study area 1

MGA Zone: 50J

789777 mE

6989887 mN

Vegetation Code: CMGbS

Landscape Association: Soft, red, sandy clay with calcrete gravel

Vegetation: Mulga and *Grevillea berryana* shrubland

Disturbance: Some animal diggings beneath *Grevillea berryana*

Fire Age: Long unburnt

Notes: Total PFC 18.815%; 3% leaf litter cover to a depth of 0.5 cm, 0.01% dead timber standing with 0.03% dead timber cover on ground, 35% cover of cryptogam crusting, 35% cover of clay, 25% cover of sand, 5% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	0.8	3	#091
<i>Acacia synchronicia</i>	1.5	2	n/a
<i>Acacia tetragonophylla</i>	1.5	1.2	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Austrostipa elegantissima</i>	n/a	1	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis eriopoda</i>	n/a	0.2	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.04	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1	2	n/a
<i>Eremophila longifolia</i>	n/a	0.3	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.02	n/a
<i>Grevillea berryana</i>	11	4	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.1	n/a
<i>Ptilotus exaltatus</i>	n/a	0.05	n/a
<i>Ptilotus obovatus</i>	n/a	0.5	n/a
<i>Rhagodia drummondii</i>	n/a	0.4	n/a
<i>Rhodanthe sterilecens</i>	0.015	0.1	n/a
<i>Salsola tragus</i>	n/a	0.05	n/a
<i>Santalum lanceolatum</i>	n/a	0.5	n/a
<i>Scaevola spinescens</i> (narrow form)	n/a	0.35	n/a
<i>Sclerolaena diacantha</i>	n/a	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3	1.3	n/a
<i>Swainsona kingii</i>	n/a	0.02	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.2	n/a

BHP Billiton Yeelirrie Site YQS096

Described by Daniel Brassington **Date:** 23/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.5km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1

MGA Zone: 50J 790922 mE 6989567 mN

Vegetation Code: CLaS

Landscape Association: Calcrete system, Soft, red, silty clay-loam

Vegetation: *Lycium australe* shrubland on calcrete

Disturbance: Grazing by kangaroos and rabbits

Fire Age: Long unburnt

Notes: Total PFC 0%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calandrinia</i> sp. (inadequate material)	n/a	0.01	n/a
<i>Dissocarpus paradoxus</i>	2	0.04	n/a
<i>Enneapogon caerulescens</i>	0.05	0.1	n/a
<i>Eragrostis pergracilis</i>	n/a	0.2	YQS096-01
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	12	0.03	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Lawrenzia repens</i>	n/a	0.07	n/a
<i>Lycium australe</i>	5	1.8	n/a
<i>Maireana tomentosa</i>	n/a	0.1	n/a
<i>Rhagodia drummondii</i>	0.4	0.5	n/a
<i>Sclerolaena patenticuspis</i>	0.5	0.2	n/a
<i>Swainsona kingii</i>	n/a	0.03	n/a
<i>Zygophyllum aurantiacum</i>	0.05	0.15	n/a
<i>Zygophyllum compressum</i>	n/a	0.15	n/a

BHP Billiton Yeelirrie Site YQS097

Described by Jessie-Leigh Brown **Date:** 12/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.8km north-west of Central Baseline and Northern Baseline intersection, along Northern Baseline, 500m north of road, central Yeelirrie study area 1

MGA Zone: 50J

786475 mE

6992581 mN

Vegetation Code: HPMS

Landscape Association: Coarse, red, silty sand

Vegetation: Hard pan mulga shrubland

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 17.841%; 5% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 2% dead timber cover on ground, 3% cover of cryptogam crusting, 5% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	6	7	n/a
<i>Acacia macraneura</i>	0.8	2.5	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	10	3.5	n/a
<i>Acacia tetragonophylla</i>	0.2	0.4	n/a
<i>Aristida contorta</i>	0.02	0.04	n/a
<i>Calotis multicaulis</i>	0.001	0.03	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.5	1	n/a
<i>Eragrostis eriopoda</i>	0.001	0.2	n/a
<i>Erodium cygnorum</i>	0.001	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Melaleuca interioris</i>	0.3	2	n/a
<i>Monachather paradoxus</i>	0.001	0.02	n/a
<i>Ptilotus aevroides</i>	0.001	0.02	n/a
<i>Ptilotus exaltatus</i>	0.001	0.05	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.01	0.3	n/a
<i>Rhagodia drummondii</i>	0.001	0.03	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.15	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.02	n/a
<i>Tribulus astrocarpus</i>	0.001	0.02	n/a

BHP Billiton Yeelirrie Site YQS099

Described by Jessie-Leigh Brown **Date:** 12/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.4km south-east along Northern Baseline, from turnoff 3.2km south of Midnight Bore, 800m south of road, central Yeelirrie study area 1

MGA Zone: 50J

784036 mE

6992738 mN

Vegetation Code: HPMS

Landscape Association: Red, silty sand

Vegetation: Hard pan mulga shrubland

Disturbance: Animal diggings and scratchings.

Fire Age: Unknown

Notes: Total PFC 14.078%; 6% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 2% dead timber cover on ground, 1.5% cover of cryptogam crusting, 5% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	12	6	n/a
<i>Acacia tetragonophylla</i>	0.01	0.6	n/a
<i>Aristida contorta</i>	0.5	0.08	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	1	1.2	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Monachather paradoxus</i>	0.001	0.03	n/a
<i>Polycarpha arida</i>	0.001	0.05	YQS099-01
<i>Ptilotus aevoides</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.06	0.4	n/a
<i>Rhagodia drummondii</i>	0.5	1.5	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.07	n/a
<i>Sclerolaena densiflora</i>	0.001	0.02	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.02	n/a
<i>Tribulus astrocarpus</i>	0.001	0.02	n/a

BHP Billiton Yeelirrie Site YQS101

Described by Jessie-Leigh Brown **Date:** 11/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.25km north of North Gate, 900m west of road, central Yeelirrie study area 1

MGA Zone: 50J

788709 **mE**

6995801 **mN**

Vegetation Code: DRMS

Landscape Association: Clay loam

Vegetation: Drainage line mulga shrubland

Disturbance: Animal droppings.

Fire Age: Long unburnt

Notes: Total PFC 43.862%; 70% leaf litter cover to a depth of 2 cm, 7 dead timber standing with 2% dead timber cover on ground, 10% cover of cryptogam crusting, 10% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	35	4	YQS101-05
<i>Acacia aneura</i>	5	3	YQS101-07
<i>Acacia aneura</i>	3.5	4.5	YQS101-08
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.001	0.8	n/a
<i>Acacia tetragonophylla</i>	0.25	1.2	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.01	0.05	n/a
Poaceae sp.	0.1	0.03	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.8	n/a

BHP Billiton Yeelirrie Site YQS102

Described by Cheyne Jowett **Date:** 20/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.1km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1

MGA Zone: 50J

778702 mE

6998541 mN

Vegetation Code: CRsS

Landscape Association: Heaving clay

Vegetation: *Rhagodia* sp. Yeelirrie Station on calcrete

Disturbance: Animal diggings and scratchings

Fire Age: Unknown

Notes: Total PFC 9.124%; 1% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0.25% cover of cryptogam crusting, 90% cover of clay, 0.25% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Calandrinia pumila</i>	0.02	0.01	YQS102-03
<i>Eragrostis tenellula</i>	5	0.01	n/a
<i>Eriachne ovata</i>	0.02	0.03	YQS102-06
<i>Marsilea hirsuta</i>	0.03	0.01	YQS102-05
<i>Myriocephalus rudallii</i>	0.75	0.03	YQS102-01
<i>Pluchea dentex</i>	0.75	0.03	n/a
<i>Portulaca oleracea</i>	0.02	0.01	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	2.5	1.5	YQS102-07
<i>Rhodanthe charsleyae</i>	0.001	0.05	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.1	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Trianthema oxycalyptra</i> var. <i>oxycalyptra</i>	0.03	0.01	YQS102-02
<i>Trigonella suavissima</i>	0.001	0.03	YQS102-04

BHP Billiton Yeelirrie Site YQS103

Described by Rebecca Graham

Date: 26/08/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: 600m north-west of Midnight Bore, north-west Yeelirrie study area 1

MGA Zone: 50J

782389 mE

6998086 mN

Vegetation Code: PLCh

Landscape Association: Sandy clay

Vegetation: Claypan with Chenopods in playa system

Disturbance: Kangaroo and emu droppings.

Fire Age: Unknown

Notes: Total PFC 3.999%; 4% leaf litter cover to a depth of 0.1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 5% cover of cryptogam crusting, 10% cover of clay, 75% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.05	0.05	n/a
<i>Eragrostis dielsii</i>	0.1	n/a	n/a
<i>Eremophila longifolia</i>	OUT	5	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.03	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Maireana carnos</i>	3	0.15	n/a
<i>Podolepis capillaris</i>	0.001	0.3	n/a
<i>Pogonolepis stricta</i>	0.001	0.01	YQS103-01
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aevroides</i>	0.02	0.02	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001	0.15	n/a
<i>Salsola tragus</i>	0.001	0.03	n/a
<i>Sclerolaena cornishiana</i>	0.25	0.15	n/a
<i>Sclerolaena diacantha</i>	0.001	0.15	n/a
<i>Solanum lasiophyllum</i>	0.05	0.2	n/a
<i>Swainsona kingii</i>	0.001	0.01	n/a
<i>Trianthema</i> sp.	0.02	0.01	n/a

BHP Billiton Yeelirrie Site YQS108

Described by Cheyne Jowett **Date:** 06/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.45km east-south-east of Albany Well, along Meekatharra-Yeelirrie Road, 100m north-east of road, south-east Yeelirrie study area 1

MGA Zone: 51J 204781 mE 6987002 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain, Red sand

Vegetation: Spinifex mixed Acacia shrubland

Disturbance: Fire

Fire Age: 5 years

Notes: Total PFC 3.478%; 0.001% leaf litter cover to a depth of 1 cm, 20 dead timber standing with 0.001% dead timber cover on ground, 0% cover of cryptogam crusting, 0.25% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia pachyacra</i>	0.05	0.6	YQS108-02
<i>Aristida contorta</i>	0.04	0.02	n/a
<i>Aristida contorta</i>	0.04	0.1	YQS108-17
<i>Bonamia rosea</i>	0.4	0.3	YQS108-07
<i>Dianella revoluta</i>	0.075	0.4	n/a
<i>Dicrastylis brunnea</i>	0.08	0.15	YQS108-19
<i>Diplopeltis stuartii</i> var. <i>stuartii</i>	0.001	0.01	YQS108-04
<i>Glischrocaryon flavescens</i>	0.2	0.4	YQS108-18
<i>Hakea francisiana</i>	0.3	1.1	YQS108-10
<i>Halgania erecta</i>	0.45	0.3	YQS108-14
<i>Helipterum craspedioides</i>	0.04	0.01	YQS108-11
Indeterminate	0.001	0.06	n/a
Indeterminate	0.001	0.2	YQS108-12
Indeterminate	0.001	0.1	YQS108-21
<i>Kennedia prorepens</i>	0.2	0.1	YQS108-09
<i>Keraudrenia velutina</i>	0.001	0.5	YQS108-22
<i>Leptosema chambersii</i>	0.4	0.2	YQS108-03
<i>Newcastelia hexarrhena</i>	0.001	0.3	YQS108-01
<i>Petalostylis cassioides</i>	0.125	0.5	YQS108-08
<i>Prostanthera wilkieana</i>	0.002	0.2	YQS108-16/23
<i>Ptilotus sessilifolius</i>	0.001	0.2	YQS108-05
<i>Rulingia loxophylla</i>	0.025	0.2	YQS108-06
<i>Schoenus subaphyllus</i>	0.04	0.2	YQS108-13
<i>Solanum</i> sp. (inadequate material)	0.001	0.1	YQS108-20
<i>Solanum</i> sp. (inadequate material)	0.001	0.2	YQS108-24
<i>Thysanotus manglesianus</i>	0.001	0.1	n/a
<i>Triodia basedowii</i>	1	0.3	n/a
<i>Wurmbea deserticola</i>	0.001	0.02	YQS108-15

BHP Billiton Yeelirrie Site YQS109

Described by Cheyne Jowett **Date:** 08/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 250m north of Meekatharra-Yeelirrie Road and Yeelirrie Road intersection, 120m east of road, south-east Yeelirrie study area 1

MGA Zone: 51J

213337 mE

6982241 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain, Clayey sand

Vegetation: *Acacia spinifex* shrubland

Disturbance: None noted

Fire Age: 2 - 3 years

Notes: Total PFC 16.049%; 0.001% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 0.5% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia longispinea</i>	n/a	0.6	YQS109-07
<i>Alyogyne pinoniana</i>	0.001	0.15	n/a
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.01	0.08	YQS109-09
<i>Aristida contorta</i>	0.001	0.15	n/a
<i>Bonamia rosea</i>	0.4	0.3	YQS109-06
<i>Dianella revoluta</i>	n/a	0.2	n/a
<i>Dicrastylis brunnea</i>	0.001	0.2	n/a
<i>Dicrastylis doranii</i>	0.06	0.3	n/a
<i>Eragrostis eriopoda</i>	0.001	0.15	YQS109-10
<i>Eriachne helmsii</i>	0.06	0.3	n/a
<i>Gonocarpus confertifolius</i> var. <i>confertifolius</i>	0.001	0.05	YQS109-02
<i>Goodenia peacockiana</i>	0.001	0.05	YQS109-04
<i>Goodenia triodiophila</i>	0.001	0.1	YQS109-08
<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	1.06	0.4	n/a
<i>Leptosema chambersii</i>	0.5	0.25	n/a
<i>Monotaxis luteiflora</i>	0.001	0.1	YQS109-01
<i>Newcastelia hexarrhena</i>	0.2	0.4	n/a
<i>Petalostylis cassioides</i>	0.75	0.6	n/a
<i>Rulingia loxophylla</i>	1	0.4	YQS109-05
<i>Trachymene bialata</i>	0.001	0.1	YQS109-03
<i>Triodia basedowii</i>	12	0.2	n/a

BHP Billiton Yeelirrie Site YQS110

Described by Jessie-Leigh Brown **Date:** 11/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 4km north of North Gate, 1.1km west of road, central Yeelirrie study area 1

MGA Zone: 50J 788511 mE 6995514 mN

Vegetation Code: DRMS

Landscape Association: Hardpan with sandy clay

Vegetation: Drainage tract mulga shrubland

Disturbance: Kangaroo droppings, scratchings.

Fire Age: Long unburnt

Notes: Total PFC 17.384%; 30% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 1.5% dead timber cover on ground, 20% cover of cryptogam crusting, 40% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	5	2	n/a
<i>Acacia aneura</i>	12	6	n/a
<i>Acacia tetragonophylla</i>	0.1	1.2	n/a
<i>Amyema hilliana</i>	0.001	n/a	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001	0.05	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.01	0.1	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.25	1.8	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001	0.3	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.5	n/a
<i>Spartothamnella teucriflora</i>	0.02	0.4	n/a

BHP Billiton Yeelirrie Site YQS111

Described by Jessie-Leigh Brown **Date:** 11/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.8km north of North Gate, 800m west of road, central Yeelirrie study area 1

MGA Zone: 50J

788716 mE

6995449 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain, Clayey sand

Vegetation: Mulga spinifex shrubland

Disturbance: Goanna diggings.

Fire Age: Long unburnt

Notes: Total PFC 28.152%; 10% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 2% dead timber cover on ground, 0.25% cover of cryptogam crusting, 1% cover of clay, 65% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	10	6.5	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Brunonia australis</i>	0.001	0.04	YQS111-04
<i>Calandrinia eremaea</i>	0.001	0.05	n/a
<i>Calandrinia</i> sp.	0.001	0.02	n/a
<i>Calotis hispidula</i>	0.001	0.05	YQS111-06
<i>Dysphania kalpari</i>	0.001	0.06	n/a
<i>Dysphania melanocarpa</i>	0.001	0.1	n/a
<i>Eragrostis eriopoda</i>	0.001	0.1	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.05	0.03	n/a
<i>Erodium cygnorum</i>	0.001	0.08	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Haloragis odontocarpa</i> forma <i>rugosa</i>	0.001	0.03	YQS111-07
<i>Ptilotus polystachyus</i>	0.001	0.08	YQS111-05
<i>Sida</i> sp. (inadequate material)	0.02	0.05	YQS111-01
<i>Swainsona canescens</i>	0.02	0.12	YQS111-02
<i>Tribulus astrocarpus</i>	0.001	0.03	YQS111-03
<i>Triodia basedowii</i>	18	0.5	n/a

BHP Billiton Yeelirrie Site YQS112

Described by Jessie-Leigh Brown **Date:** 11/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.3km north of North Gate, 450m west of road, central Yeelirrie study area 1

MGA Zone: 50J 789243 mE 6995817 mN

Vegetation Code: HPMS

Landscape Association: Sandy clay

Vegetation: Hardpan mulga shrubland

Disturbance: Animal scratchings, kangaroo and rabbit droppings.

Fire Age: Long unburnt

Notes: Total PFC 36.056%; 5% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 4% dead timber cover on ground, 40% cover of cryptogam crusting, 30% cover of clay, 8% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	12	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	20	6	n/a
<i>Aristida contorta</i>	0.001	0.05	n/a
<i>Eremophila flabellata</i>	1.5	1	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	2.5	1.2	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.5	2	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.001	0.8	n/a
<i>Erodium cygnorum</i>	0.001	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.5	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.02	YQS112-01

BHP Billiton Yeelirrie Site YQS113

Described by Rebecca Graham **Date:** 26/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.4km south of Midnight Bore, 750m west of road, central Yeelirrie study area 1

MGA Zone: 50J 782062 mE 6994155 mN

Vegetation Code: PLAMi

Landscape Association: Sandy clay

Vegetation: *Acacia aneura*, *A. ayersiana*, *Melaleuca interioris* shrubland fringing playa

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 10.505%; 15% leaf litter cover to a depth of 2 cm, 6 dead timber standing with 1% dead timber cover on ground, 0% cover of cryptogam crusting, 2% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	2	6	YQS113-02
<i>Acacia ayersiana</i>	3	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1.5	3	n/a
<i>Acacia tetragonophylla</i>	1	3	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Austrostipa elegantissima</i>	0.001	0.7	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.4	n/a
<i>Melaleuca interioris</i>	3	3	n/a
<i>Ptilotus obovatus</i>	0.001	0.4	n/a
<i>Tietkensia corrickiae</i>	0.001	0.1	YQS113-01

BHP Billiton Yeelirrie Site YQS114

Described by Daniel Brassington **Date:** 29/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.2km south of South Gate, 1.2km west of road, central Yeelirrie study area 1

MGA Zone: 50J

788888 mE

6986725 mN

Vegetation Code: DRMS

Landscape Association: Pale brown sandy clay loam

Vegetation: Drainage tract Mulga Shrubland

Disturbance: Minor animal scratchings.

Fire Age: Long unburnt

Notes: Total PFC 28.121%; 3% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 3% dead timber cover on ground, 60% cover of cryptogam crusting, 10% cover of clay, 24% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	19	6	n/a
<i>Acacia tetragonophylla</i>	3	4	n/a
<i>Aristida contorta</i>	0.02	0.1	n/a
Asteraceae sp. (inadequate material)	n/a	0.04	n/a
<i>Brachyscome ciliocarpa</i>	n/a	0.1	n/a
<i>Calotis hispidula</i>	n/a	0.05	n/a
<i>Enchylaena tomentosa</i>	0.8	0.7	n/a
<i>Eremophila gilesii</i> subsp. <i>variabilis</i>	0.05	0.15	YQS114-01
<i>Erodium cygnorum</i>	n/a	0.05	n/a
<i>Euphorbia drummondii</i>	n/a	0.02	n/a
<i>Goodenia occidentalis</i>	n/a	0.05	YQS114-02
Indeterminate	n/a	0.04	YQS114-05
<i>Isoetopsis graminifolia</i>	2	0.04	YQS114-03
<i>Lemooria burkittii</i>	n/a	0.02	n/a
<i>Monachather paradoxus</i>	n/a	0.1	n/a
<i>Psydrax suaveolens</i>	0.05	1.9	n/a
<i>Ptilotus obovatus</i>	0.001	0.3	n/a
<i>Rhagodia drummondii</i>	0.05	1	n/a
<i>Rhyncharrhena linearis</i>	n/a	1	n/a
<i>Sida fibulifera</i>	n/a	0.05	n/a
<i>Spartothamnella teucriflora</i>	0.15	0.4	n/a
<i>Swainsona kingii</i>	n/a	0.04	n/a
<i>Tietkensia corrickiae</i>	3	0.01	n/a

BHP Billiton Yeelirrie Site YQS115

Described by Daniel Brassington **Date:** 29/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.8km south of South Gate, 1.5m west of road, central Yeelirrie study area 1

MGA Zone: 50J

788506 mE

6986078 mN

Vegetation Code: DRMS

Landscape Association: Pale reddish brown sandy clay

Vegetation: Drainage tract Mulga Shrubland

Disturbance: Some animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 17.95%; 6% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 2.5% dead timber cover on ground, 30% cover of cryptogam crusting, 10% cover of clay, 52% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	n/a	0.1	n/a
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	0.1	0.5	n/a
<i>Acacia aneura</i> var. straight flat 30-50x3-4mm grey green	0.1	0.6	n/a
<i>Acacia aneura</i> var. straight flat 50-100x3mm olive green	0.2	0.9	n/a
<i>Acacia ayersiana</i>	14	6	n/a
<i>Acacia craspedocarpa</i>	n/a	0.2	n/a
<i>Acacia tetragonophylla</i>	1.5	3	n/a
<i>Aristida contorta</i>	0.1	0.15	n/a
<i>Brachyscome ciliocarpa</i>	n/a	0.1	YQS115-02
<i>Calotis hispidula</i>	n/a	0.05	n/a
<i>Enchylaena tomentosa</i>	n/a	0.3	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.3	1.2	YQS115-01
<i>Eremophila gilesii</i> subsp. <i>variabilis</i>	n/a	0.15	n/a
<i>Erodium cygnorum</i>	n/a	0.05	n/a
<i>Euphorbia drummondii</i>	n/a	0.02	n/a
Indeterminate	n/a	0.03	n/a
<i>Isoetopsis graminifolia</i>	0.5	0.01	n/a
<i>Monachather paradoxus</i>	n/a	0.1	n/a
<i>Psydrax suaveolens</i>	0.1	2.5	n/a
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	n/a	0.12	n/a
<i>Ptilotus obovatus</i>	n/a	0.3	n/a
<i>Rhagodia drummondii</i>	0.3	1.2	n/a
<i>Rhyncharrhena linearis</i>	n/a	1	n/a
<i>Santalum lanceolatum</i>	0.1	3.3	n/a
<i>Sida calyxhymenia</i>	n/a	0.25	n/a
<i>Sida ectogama</i>	0.15	1.3	n/a
<i>Solanum lasiophyllum</i>	n/a	0.05	n/a
<i>Swainsona kingii</i>	n/a	0.05	n/a
<i>Tietkensia corrickiae</i>	0.5	0.01	n/a

BHP Billiton Yeelirrie Site YQS116

Described by Cheyne Jowett **Date:** 15/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 5km north of Albany Well, west of road, south-east Yeelirrie study area 1

MGA Zone: 50J

795509 mE

6992984 mN

Vegetation Code: GRMS

Landscape Association: Red loamy sand under clay - cryptogam consolidated cover under quartz and granite sub angular rocks

Vegetation: Granite mulga shrubland

Disturbance: Animal run running North - South inside quadrat

Fire Age: Unknown

Notes: Total PFC 21.851%; 1% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 1.5% dead timber cover on ground, 40% cover of cryptogam crusting, 20% cover of clay, 5% cover of sand, 0.001% cover of gravel, 20% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	4.75	4	n/a
<i>Acacia aneura</i>	4	6	n/a
<i>Acacia ayersiana</i>	3	5	n/a
<i>Acacia tetragonophylla</i>	8	4	n/a
<i>Aristida contorta</i>	0.1	0.05	n/a
<i>Cheilanthes sieberi</i>	0.001	0.04	n/a
<i>Eremophila latrobei</i>	0.5	1.1	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.5	0.3	n/a
<i>Rhagodia drummondii</i>	0.25	1	n/a
<i>Sida ectogama</i>	0.5	0.6	n/a
<i>Spartothamnella teucriflora</i>	0.25	1	n/a

BHP Billiton Yeelirrie Site YQS117

Described by Rebecca Graham **Date:** 23/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.7km west-north-west of Midnight Bore, 750m north of road, north-west Yeelirrie study area 1

MGA Zone: 50J 778922 mE 6998517 mN

Vegetation Code: PLAMi

Landscape Association: Red, silty sand

Vegetation: *Acacia* spp. and *Melaleuca interioris* fringing playa, surrounded by HPMS vegetation

Disturbance: Animal diggings

Fire Age: Long unburnt

Notes: Total PFC 8.764%; 2% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0.001% cover of cryptogam crusting, 2% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	0.5	3	n/a
<i>Acacia ayersiana</i>	3	6	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.5	1.8	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.3	n/a
<i>Eragrostis eriopoda</i>	0.06	0.2	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	2.5	1.6	n/a
<i>Marsdenia australis</i>	0.001	0.15	YQS117-01
<i>Melaleuca interioris</i>	2	2.5	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001	0.3	n/a
<i>Rhagodia drummondii</i>	0.001	0.6	n/a
<i>Triodia basedowii</i>	0.2	0.2	n/a

BHP Billiton Yeelirrie Site YQS118

Described by Rebecca Graham

Date: 30/09/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: 3km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 1.25km west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

210650 mE

6980540 mN

Vegetation Code: GRMS

Landscape Association: Granite system, pale brown silty clay with quartz gravel

Vegetation: Granite mulga shrubland

Disturbance: Animal scratchings and droppings.

Fire Age: Long unburnt

Notes: Total PFC 21.8%; 3.5% leaf litter cover to a depth of 1 cm, 5 dead timber standing with 1% dead timber cover on ground, 40% cover of cryptogam crusting, 2% cover of clay, 20% cover of sand, 40% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	n/a	0.03	n/a
<i>Acacia aneura</i>	7	3.5	YQS118-02
<i>Acacia aneura</i>	1	3.5	YQS118-01
<i>Acacia aneura</i>	2.5	3.5	YQS118-03
<i>Aristida contorta</i>	0.2	0.1	n/a
<i>Brachyscome ciliaris</i>	n/a	0.15	n/a
<i>Calotis hispidula</i>	n/a	0.04	n/a
<i>Cheilanthes sieberi</i>	n/a	0.1	n/a
<i>Dysphania melanocarpa</i>	n/a	0.05	n/a
<i>Eragrostis dielsii</i>	n/a	0.02	n/a
<i>Eragrostis eriopoda</i>	n/a	0.15	n/a
<i>Eragrostis tenellula</i>	n/a	0.1	n/a
<i>Eremophila latrobei</i>	4	1.5	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	5	1.1	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.04	n/a
<i>Eriachne</i> sp. (inadequate material)	0.1	0.1	YQS118-05
<i>Erodium cygnorum</i>	n/a	0.2	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.04	n/a
<i>Haloragis odontocarpa</i>	n/a	0.15	n/a
<i>Helipterum craspedioides</i>	n/a	0.1	n/a
<i>Hibiscus solanifolius</i>	n/a	0.2	YQS118-07
<i>Isoetopsis graminifolia</i>	n/a	0.03	n/a
<i>Lemooria burkittii</i>	n/a	0.02	n/a
<i>Maireana planifolia</i>	n/a	0.3	YQS118-04
<i>Monachather paradoxus</i>	n/a	0.1	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Psydrax suaveolens</i>	0.1	1.3	n/a
<i>Ptilotus exaltatus</i>	n/a	0.02	n/a
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	n/a	0.2	n/a
<i>Ptilotus obovatus</i>	0.25	0.3	n/a
<i>Sclerolaena</i> sp. (inadequate material)	n/a	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	0.1	n/a
<i>Sida ectogama</i>	0.5	0.5	YQS118-08
<i>Sida fibulifera</i>	0.05	0.06	n/a
<i>Solanum lasiophyllum</i>	n/a	0.03	n/a
<i>Tripogon loliiformis</i>	1	0.06	n/a
<i>Velleia hispida</i>	n/a	0.08	YQS118-06

BHP Billiton Yeelirrie Site YQS119

Described by Daniel Brassington **Date:** 23/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.7km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1

MGA Zone: 50J 791098 mE 6989410 mN

Vegetation Code: CLaS

Landscape Association: Pale brown silty clay loam

Vegetation: *Lycium australe* shrubland on calcrete

Disturbance: Appears grazed by rabbits and kangaroos

Fire Age: Unknown

Notes: Total PFC 28.95%; 16% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.3% dead timber cover on ground, 23% cover of cryptogam crusting, 57% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calandrinia</i> sp. (inadequate material)	n/a	0.01	n/a
<i>Dissocarpus paradoxus</i>	7	0.05	n/a
<i>Enneapogon caerulescens</i>	0.05	0.1	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	1.5	0.05	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Lawrenzia repens</i>	n/a	0.1	YQS119-02
<i>Lepidium phlebopetalum</i>	n/a	0.1	YQS119-03
<i>Lycium australe</i>	17	1.7	n/a
<i>Minuria cunninghamii</i>	n/a	0.5	YQS119-06
<i>Sclerolaena cornishiana</i>	n/a	n/a	n/a
<i>Sclerolaena diacantha</i>	n/a	0.1	n/a
<i>Sclerolaena patentiscuspis</i>	3	0.06	YQS119-04
<i>Swainsona kingii</i>	0.2	0.04	n/a
<i>Zygophyllum aurantiacum</i> subsp. <i>aurantiacum</i>	0.1	0.2	YQS119-05
<i>Zygophyllum compressum</i>	0.1	0.15	YQS119-01

BHP Billiton Yeelirrie Site YQS122

Described by Daniel Brassington **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.8km north-west of 3 Mile Bore, along Core Farm Express, 600m north-east of road, south-east Yeelirrie study area 1

MGA Zone: 51J

205572 mE

6983210 mN

Vegetation Code: CMpS

Landscape Association: Calcrete system. Red clay under red silty sand with a small pebble surface layer

Vegetation: *Maireana* shrubland

Disturbance: A few animal diggings

Fire Age: Long unburnt

Notes: Total PFC 30.4%; 5% leaf litter cover to a depth of 0.5 cm, 0 dead timber standing with 0.2% dead timber cover on ground, 30% cover of cryptogam crusting, 15% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	n/a	0.08	n/a
<i>Acacia tetragonophylla</i>	0.5	1.5	n/a
<i>Aristida contorta</i>	2	0.1	n/a
<i>Calandrinia creethiae</i>	n/a	0.02	YQS122-04
<i>Calandrinia eremaea</i>	n/a	0.2	YQS122-05
<i>Calandrinia Ptychosperma</i>	n/a	0.01	n/a
<i>Calocephalus knappii</i>	n/a	0.1	n/a
<i>Calotis multicaulis</i>	n/a	0.1	n/a
<i>Dysphania kalpari</i>	n/a	0.6	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis dielsii</i>	7	0.01	n/a
<i>Eremophila battii</i>	n/a	0.2	n/a
<i>Eremophila hygrophana</i>	0.4	0.4	YQS122-01
<i>Eremophila latrobei</i>	n/a	0.4	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.05	n/a
<i>Erodium crinitum</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Frankenia pauciflora</i>	n/a	0.3	n/a
<i>Gnephosis arachnoidea</i>	n/a	0.4	YQS122-0?
<i>Goodenia occidentalis</i>	n/a	0.1	YQS122-02
Indeterminate	n/a	0.1	YQS122-03
<i>Lemooria burkittii</i>	n/a	0.01	n/a
<i>Maireana carnosa</i>	3	0.1	n/a
<i>Maireana georgei</i>	3	0.3	YQS122-0
<i>Maireana glomerifolia</i>	3	0.3	n/a
<i>Maireana pyramidata</i>	5	0.5	n/a
<i>Pogonolepis stricta</i>	n/a	0.02	n/a
<i>Portulaca oleracea</i>	2	0.01	n/a
<i>Ptilotus aervoides</i>	3	0.03	n/a
<i>Ptilotus exaltatus</i>	n/a	0.2	n/a
<i>Ptilotus obovatus</i>	1.5	0.3	n/a
<i>Sclerolaena densiflora</i>	n/a	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	n/a	0.3	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	0.3	n/a
<i>Sida ectogama</i>	n/a	0.3	n/a
<i>Sida</i> sp. (inadequate material)	n/a	0.1	n/a
<i>Solanum lasiophyllum</i>	n/a	0.2	n/a
<i>Swainsona kingii</i>	n/a	0.06	n/a
<i>Swainsona tenuis</i>	n/a	0.1	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a

BHP Billiton Yeelirrie Site YQS124

Described by Daniel Brassington

Date: 24/08/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: 750m south-east of Central Baseline and Northern Baseline intersection, along Northern Baseline, south of road, central Yeelirrie study area 1

MGA Zone: 50J

788597 **mE**

6990586 **mN**

Vegetation Code: CLaS

Landscape Association: Calcrete system, reddish brown, sandy clay loam

Vegetation: *Lycium australe* shrubland on calcrete

Disturbance: Animal burrows and diggings

Fire Age: Long unburnt

Notes: Total PFC 33.75%; 7% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.1% dead timber cover on ground, 45% cover of cryptogam crusting, 14% cover of clay, 34% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Dissocarpus paradoxus</i>	17	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.08	n/a
<i>Enchylaena tomentosa</i>	0.25	0.6	n/a
<i>Enneapogon caerulescens</i>	0.1	0.1	n/a
<i>Eragrostis dielsii</i>	6	0.02	YQS124-05
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
Indeterminate	0.1	0.02	n/a
<i>Lycium australe</i>	1	2	n/a
<i>Maireana</i> aff. <i>trichoptera</i>	n/a	0.05	YQS124-03
<i>Maireana carnosa</i>	0.5	0.15	n/a
<i>Maireana pyramidata</i>	n/a	0.5	n/a
<i>Pogonolepis stricta</i>	n/a	n/a	YQS124-04
<i>Portulaca oleracea</i>	0.15	0.01	n/a
<i>Ptilotus obovatus</i>	0.15	0.3	n/a
<i>Ptilotus roei</i>	n/a	0.03	n/a
<i>Rhagodia drummondii</i>	0.5	1	n/a
<i>Salsola tragus</i>	n/a	0.15	n/a
<i>Sclerolaena densiflora</i>	3	0.15	n/a
<i>Sclerolaena diacantha</i>	5	0.15	YQS124-01/02
<i>Solanum lasiophyllum</i>	n/a	0.2	n/a
<i>Swainsona kingii</i>	n/a	0.02	n/a
<i>Tripogon loliiformis</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS125

Described by Cheyne Jowett **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 750m west-north-west of Central Baseline and Southern Baseline intersection, central Yeelirrie, study area 1

MGA Zone: 50J 786794 **mE** 6990281 **mN**

Vegetation Code: CErG

Landscape Association: Calcrete loam

Vegetation: *Eragrostis* sp. Yeelirrie Station grassland on calcrete

Disturbance: Vehicle tracks

Fire Age: Unknown

Notes: Total PFC 2.809%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 35% cover of cryptogam crusting, 10% cover of clay, 50% cover of sand, 2.2% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.001	0.15	n/a
<i>Calocephalus knappii</i>	0.001	0.1	n/a
<i>Dissocarpus paradoxus</i>	0.05	0.06	n/a
<i>Enneapogon caerulescens</i>	0.001	0.05	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	2.5	0.05	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.02	YQS125-01
<i>Rhodanthe sterilecens</i>	0.25	0.15	n/a
<i>Salsola tragus</i>	0.002	0.1	YQS125-03
<i>Sclerolaena patenticuspis</i>	0.001	0.1	YQS125-02
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Zygophyllum ovatum</i>	0.001	0.05	YQS125-04

BHP Billiton Yeelirrie Site YQS127

Described by Daniel Brassington **Date:** 03/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.6km west-south-west of Central Baseline and Southern Baseline intersection, central Yeelirrie

MGA Zone: 50J 785832 mE 6989984 mN

Vegetation Code: PLAET

Landscape Association: Loamy sand

Vegetation: *Acacia* and *Eremophila* thicket on flats in playa system

Disturbance: Animal scratchings and diggings

Fire Age: Long unburnt

Notes: Total PFC 22.241%; 4% leaf litter cover to a depth of <3 cm, 26 dead timber standing with 3% dead timber cover on ground, 5% cover of cryptogam crusting, 5% cover of clay, 70% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon cryptopetalum</i>	0.075	0.1	YQS127-18
<i>Abutilon otocarpum</i>	0.4	0.05	n/a
<i>Acacia aneura</i>	1.25	4	n/a
<i>Acacia aneura</i>	0.075	2	n/a
<i>Acacia tetragonophylla</i>	2	4	n/a
<i>Amaranthus mitchellii</i>	0.001	0.1	n/a
<i>Aristida contorta</i>	1	0.2	n/a
<i>Austrostipa elegantissima</i>	1.5	1	n/a
<i>Brachyscome ciliaris</i>	0.005	0.2	YQS127-13
<i>Calocephalus knappii</i>	0.025	0.1	YQS127-16
<i>Calotis hispidula</i>	0.075	0.01	YQS127-09
<i>Cephalopterum drummondii</i>	0.001	0.1	YQS127-25
<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	0.002	1	YQS127-02/21
<i>Daucus glochidiatus</i>	0.001	0.1	YQS127-24
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.001	0.1	YQS127-22
<i>Emex australis</i>	0.001	0.02	YQS127-15
<i>Enchylaena tomentosa</i>	0.25	1.2	n/a
<i>Enneapogon caeruleascens</i>	0.075	0.3	n/a
<i>Eragrostis eriopoda</i>	0.075	10	n/a
<i>Eremophila longifolia</i>	3	4	n/a
<i>Erodium cygnorum</i>	0.075	0.1	YQS127
<i>Euphorbia australis</i>	0.001	0.01	YQS127-03
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	YQS127-05
<i>Gnephosis arachnoidea</i>	0.3	0.2	YQS127-08
<i>Hakea lorea</i>	3	6	n/a
Indeterminate	0.001	0.3	YQS127-20
Indeterminate	0.005	0.3	n/a
<i>Iseilema membranaceum</i>	0.075	0.2	YQS127-19
<i>Isoetopsis graminifolia</i>	0.001	0.1	YQS127-17
<i>Lemooria burkittii</i>	0.005	0.01	YQS127-26
<i>Lepidium oxytrichum</i>	0.001	0.03	YQS127-10
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	0.005	0.25	YQS127-11
<i>Paspalidium basicladium</i>	0.001	0.05	n/a
<i>Peplidium muelleri</i>	0.5	0.01	n/a
<i>Pluchea dentex</i>	0.1	0.1	n/a
<i>Portulaca oleracea</i>	0.1	0.01	YQS127-14
<i>Ptilotus aervoides</i>	0.1	0.01	YQS127-04
<i>Ptilotus obovatus</i>	3	0.3	n/a
<i>Rhagodia drummondii</i>	0.001	1	n/a
<i>Rhodanthe charsleyae</i>	0.75	0.05	YQS127-07
<i>Rhodanthe floribunda</i>	0.001	0.01	YQS127-12
<i>Rhodanthe sterilesens</i>	0.001	0.1	YQS127-23
<i>Salsola tragus</i>	n/a	n/a	YQS127

<i>Santalum lanceolatum</i>	2.3	3.5	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2	2	n/a
<i>Sida ectogama</i>	0.001	0.3	n/a
<i>Solanum lasiophyllum</i>	0.001	0.3	n/a
<i>Solanum nummularium</i>	0.001	0.6	n/a
<i>Spartothamnella teucriflora</i>	0.075	1	n/a
<i>Swainsona kingii</i>	0.001	0.2	YQS127-06
<i>Vitadinia sulcata</i>	0.025	0.03	YQS127-01
<i>Zygophyllum aurantiacum</i>	0.001	0.15	n/a

BHP Billiton Yeelirrie Site YQS128

Described by Daniel Brassington **Date:** 15/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.5km west of Goldfields Highway turnoff, along Yeelirrie-Albion Downs Road, 250m north-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J

250010 mE

6974355 mN

Vegetation Code: GFGr

Landscape Association: Granite System, pale brown, silty loam

Vegetation: Granite Foothill Grassland

Disturbance: Animal and Vehicle tracks

Fire Age: Unknown

Notes: Total PFC 27.65%; 0.25% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 75% cover of sand, 5% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	0.1	0.06	n/a
<i>Aristida contorta</i>	1	0.1	n/a
<i>Calotis plumulifera</i>	0.1	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.03	n/a
<i>Enneapogon caerulescens</i>	2	0.05	n/a
<i>Eragrostis dielsii</i>	n/a	0.01	n/a
<i>Eremophila galeata</i>	0.5	1.5	n/a
<i>Erodium cygnorum</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i>	0.1	0.1	n/a
<i>Helipterum craspedioides</i>	1.2	0.3	n/a
<i>Lemooria burkittii</i>	n/a	0.02	n/a
<i>Phyllanthus erwinii</i>	n/a	0.05	YQS128-01
<i>Pittosporum angustifolium</i>	n/a	0.2	n/a
<i>Podolepis capillaris</i>	n/a	0.3	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	n/a	0.2	n/a
<i>Salsola tragus</i>	0.2	0.25	n/a
<i>Sclerolaena densiflora</i>	2	0.15	n/a
<i>Sclerolaena diacantha</i>	0.25	0.08	n/a
<i>Sida fibulifera</i>	n/a	0.1	n/a
<i>Solanum lasiophyllum</i>	n/a	0.3	n/a
<i>Swainsona forrestii</i>	n/a	0.15	YQS128-02
<i>Swainsona oroboides</i>	0.1	0.1	YQS128-03
<i>Swainsona tenuis</i>	n/a	0.1	n/a
<i>Tragus australianus</i>	n/a	0.04	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a
<i>Tripogon loliiformis</i>	20.1	0.5	n/a

BHP Billiton Yeelirrie Site YQS129

Described by Daniel Brassington **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.75km west-north-west of Albany Well, along Albany Well-South Gate Road, 200m north of road, central Yeelirrie study area 1

MGA Zone: 50J 793813 mE 6988242 mN

Vegetation Code: CMiS

Landscape Association: Pale reddish brown, sandy clay

Vegetation: *Melaleuca interioris* shrubland on calcrete

Disturbance: Fauna activity

Fire Age: Unknown

Notes: Total PFC 59.1%; 2% leaf litter cover to a depth of 0.5 cm, 0.5% dead timber standing with 1% dead timber cover on ground, 25% cover of cryptogam crusting, 10% cover of clay, 40% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	n/a	0.2	n/a
<i>Abutilon</i> sp. (inadequate material)	1.5	0.1	YQS129-01
<i>Acacia tetragonophylla</i>	2	3.5	n/a
<i>Amaranthus mitchellii</i>	n/a	0.3	YQS129-09
<i>Aristida contorta</i>	0.5	0.15	n/a
<i>Austrostipa elegantissima</i>	n/a	0.6	n/a
<i>Brachyscome ciliocarpa</i>	n/a	0.25	n/a
<i>Calandrinia Ptychosperma</i>	n/a	0.02	n/a
<i>Calotis multicaulis</i>	n/a	0.2	YQS129-04
<i>Cephalopterum drummondii</i>	n/a	0.15	n/a
<i>Convolvulus angustissimus</i>	n/a	0.1	YQS129-08
<i>Cotula australis</i>	n/a	0.05	n/a
<i>Cuscuta planiflora</i>	n/a	0.1	YQS129-11
<i>Dissocarpus paradoxus</i>	n/a	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.05	YQS129-03
<i>Emex australis</i>	n/a	0.2	n/a
<i>Enchylaena tomentosa</i>	n/a	0.3	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis dielsii</i>	n/a	0.03	n/a
<i>Eremophila longifolia</i>	n/a	0.4	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.05	n/a
<i>Erodium crinitum</i>	n/a	0.1	n/a
<i>Erodium cygnorum</i>	n/a	0.2	n/a
<i>Euphorbia australis</i>	n/a	0.03	YQS129-10
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Lemooria burkittii</i>	n/a	0.01	n/a
<i>Lepidium phlebopetalum</i>	n/a	0.15	n/a
<i>Maireana tomentosa</i>	n/a	0.3	n/a
<i>Marsdenia australis</i>	n/a	0.2	n/a
<i>Melaleuca interioris</i>	50	3	n/a
<i>Nicotiana rotundifolia</i>	n/a	0.3	YQS129-02
<i>Paspalidium basicladium</i>	0.5	0.05	n/a
<i>Portulaca oleracea</i>	n/a	0.02	n/a
<i>Ptilotus aevoides</i>	0.5	0.05	n/a
<i>Ptilotus obovatus</i>	4	0.4	n/a
<i>Rhagodia drummondii</i>	n/a	1	n/a
<i>Rhagodia eremaea</i>	n/a	1.1	n/a
<i>Rhodanthe charsleyae</i>	n/a	0.2	n/a
<i>Rhodanthe maryonii</i>	n/a	0.08	n/a
<i>Rhodanthe sterilecens</i>	n/a	0.2	n/a
<i>Rhyncharrhena linearis</i>	n/a	1	n/a

<i>Salsola tragus</i>	n/a	0.3	n/a
<i>Sclerolaena diacantha</i>	n/a	0.3	n/a
<i>Solanum lasiophyllum</i>	n/a	0.2	n/a
<i>Swainsona kingii</i>	n/a	0.1	n/a
<i>Swainsona tenuis</i>	n/a	0.15	n/a
<i>Tetragonia cristata</i>	0.1	0.1	YQS129-07
<i>Tragus australianus</i>	n/a	0.1	n/a
<i>Tribulus terrestris</i>	n/a	0.01	YQS129-06
<i>Velleia hispida</i>	n/a	0.1	YQS129-05

BHP Billiton Yeelirrie Site YQS130

Described by Rebecca Graham **Date:** 19/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2.25km south-east of Eastern Baseline and North Gate-South Gate Road intersection, central Yeelirrie study area 1

MGA Zone: 50J

791617 mE

6989369 mN

Vegetation Code: CMGbS

Landscape Association: Granite system

Vegetation: Mulga and *Grevillea berryana* shrubland on calcrete

Disturbance: Very old pair tyre tracks through corner of plot, small animal diggings beneath *G. berryana*

Fire Age: Unknown

Notes: Total PFC 18.7%; 3% leaf litter cover to a depth of 1 cm, 9 dead timber standing with 0.5% dead timber cover on ground, 10% cover of cryptogam crusting, 17% cover of clay, 40% cover of sand, 30% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia burkittii</i>	0.5	1.8	n/a
<i>Acacia tetragonophylla</i>	n/a	1.2	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	n/a	1	YQS130-01
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Austrostipa elegantissima</i>	n/a	0.2	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.02	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.04	n/a
<i>Eremophila longifolia</i>	n/a	0.5	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Grevillea berryana</i>	12	5	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus aevroides</i>	n/a	0.02	n/a
<i>Ptilotus obovatus</i>	n/a	0.3	n/a
<i>Rhagodia drummondii</i>	n/a	0.4	n/a
<i>Rhodanthe sterilescens</i>	n/a	0.2	n/a
<i>Salsola tragus</i>	n/a	0.05	n/a
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sclerolaena patenticuspis</i>	n/a	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1.2	1.2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.15	n/a
<i>Solanum nummularium</i>	n/a	0.4	n/a
<i>Swainsona kingii</i>	n/a	0.05	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.15	n/a

BHP Billiton Yeelirrie Site YQS131

Described by Daniel Brassington **Date:** 20/08/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 4km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 100m west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 249320 mE 6974736 mN

Vegetation Code: GR

Landscape Association: Granit rise outcrop.

Vegetation: Granite rise

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 5.55%; 1% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0% cover of cryptogam crusting, 0% cover of clay, 25% cover of sand, 5% cover of gravel, 65% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia quadrimarginea</i>	4	3.5	n/a
<i>Amaranthus mitchellii</i>	0.3	0.4	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Cheilanthes brownii</i>	n/a	0.3	YQS131-04
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	n/a	0.3	n/a
<i>Chthonocephalus pseudevax</i>	n/a	0.1	YQS131-06
<i>Cymbopogon ambiguus</i>	1	0.4	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.2	n/a
<i>Eragrostis dielsii</i>	n/a	0.02	n/a
<i>Eremophila galeata</i>	n/a	0.3	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.1	n/a
<i>Erodium crinitum</i>	n/a	0.15	n/a
<i>Erodium cygnorum</i>	n/a	0.07	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.02	n/a
<i>Helipterum craspedioides</i>	n/a	0.3	n/a
<i>Lemooria burkittii</i>	n/a	0.03	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	n/a	0.4	YQS131-01
<i>Paspalidium basicladium</i>	0.05	0.2	n/a
<i>Phyllanthus erwinii</i>	n/a	0.05	YQS131-03
<i>Portulaca oleracea</i>	n/a	0.02	n/a
<i>Ptilotus aervoides</i>	n/a	0.5	n/a
<i>Ptilotus obovatus</i>	n/a	0.4	n/a
<i>Ptilotus polystachyus</i> var. <i>polystachyus</i>	n/a	0.2	n/a
<i>Ptilotus roei</i>	n/a	0.1	n/a
<i>Rhodanthe battii</i>	n/a	0.2	YQS131-02
<i>Rhyncharrhena linearis</i>	n/a	n/a	n/a
<i>Senna artemisioides</i> subsp. <i>x sturtii</i>	n/a	0.6	n/a
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.2	0.3	YQS131-05
<i>Solanum ellipticum</i>	n/a	0.2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.2	n/a
<i>Tragus australianus</i>	n/a	0.04	n/a
<i>Tribulus terrestris</i>	n/a	0.02	n/a
<i>Trichodesma zeylanicum</i>	n/a	0.8	n/a
<i>Tripogon loliformis</i>	n/a	0.03	n/a
<i>Wurmbea deserticola</i>	n/a	0.01	n/a

BHP Billiton Yeelirrie Site YQS132

Described by Daniel Brassington **Date:** 15/09/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 2.1km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 200m north-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 250986 mE 6973788 mN

Vegetation Code: BCLS

Landscape Association: Depositional plain south and west of granite breakaways (5-10km distance), sealed
Landscape Association: surface with a then covering of transported sand

Vegetation: Breakaway chenopod low shrubland

Disturbance: Animal scratchings, game trail through quadrat

Fire Age: Unknown

Notes: Total PFC 8.818%; 0.1% leaf litter cover to a depth of 0 cm, 8 dead timber standing with 0.2% dead timber cover on ground, 2% cover of cryptogam crusting, 2% cover of clay, 95% cover of sand, 1% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.2	0.1	n/a
<i>Atriplex semilunaris</i>	0.001	0.15	YQS132-06
<i>Calandrinia ptychosperma</i>	0.001	0.01	n/a
<i>Calotis hispidula</i>	0.001	0.07	n/a
<i>Calotis plumulifera</i>	0.15	0.1	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.15	0.1	n/a
<i>Enneapogon caerulescens</i>	0.301	0.1	YQS132-08
<i>Eragrostis dielsii</i>	0.001	0.01	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.03	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.2	0.01	n/a
<i>Goodenia occidentalis</i>	0.001	0.1	YQS132-01
<i>Helipterum craspedioides</i>	0.25	0.25	n/a
<i>Lemooria burkittii</i>	0.001	0.02	n/a
<i>Lepidium phlebopetalum</i>	0.001	0.1	YQS132-02
<i>Maireana georgei</i>	2	0.25	n/a
<i>Podolepis capillaris</i>	0.001	0.4	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aervoides</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.5	0.35	n/a
<i>Ptilotus roei</i>	0.001	0.04	YQS132-05
<i>Salsola tragus</i>	0.1	0.2	n/a
<i>Sclerolaena densiflora</i>	0.1	0.12	n/a
<i>Sclerolaena diacantha</i>	2.25	0.2	YQS132-09/10
<i>Sclerolaena eriacantha</i>	0.05	0.18	YQS132-11
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	0.001	0.15	n/a
<i>Sida fibulifera</i>	0.001	0.1	n/a
<i>Solanum lasiophyllum</i>	0.25	0.25	n/a
<i>Swainsona oroboides</i>	0.001	0.05	YQS132-04
<i>Thysanotus speckii</i>	0.001	0.15	YQS132-03
<i>Tragus australianus</i>	0.1	0.1	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	2.2	0.06	YQS132-07

BHP Billiton Yeelirrie Site YQS133

Described by Daniel Brassington **Date:** 15/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 600m north-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J

250422 mE

6974279 mN

Vegetation Code: Qtz

Landscape Association: Clayey sand

Vegetation: *Acacia* spp. and *Callitris columellaris* Shrubland on Quartz ridge

Disturbance: Minimal, animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 24.35%; 3% leaf litter cover to a depth of 1 cm, 6 dead timber standing with 1.5% dead timber cover on ground, 1% cover of cryptogam crusting, 1% cover of clay, 12% cover of sand, 20% cover of gravel, 65% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	1	3	n/a
<i>Acacia quadrimarginea</i>	n/a	0.1	n/a
<i>Amaranthus mitchellii</i>	n/a	0.2	YQS133-04
<i>Aristida contorta</i>	n/a	0.15	n/a
<i>Calandrinia eremaea</i>	n/a	0.1	n/a
<i>Calotis hispidula</i>	n/a	0.06	n/a
<i>Callitris columellaris</i>	2	2	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.05	0.2	n/a
<i>Crassula colorata</i> var. <i>acuminata</i>	n/a	0.03	YQS133-06
<i>Cuscuta planiflora</i>	n/a	0.2	n/a
<i>Cymbopogon ambiguus</i>	n/a	0.15	n/a
<i>Dodonaea petiolaris</i>	5	1.5	n/a
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	1	0.3	YQS133-03
<i>Eragrostis lacunaria</i>	n/a	0.1	YQS133-08
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	3	1.8	n/a
<i>Eriachne mucronata</i> (xerophytic form)	3	0.3	n/a
<i>Erodium cygnorum</i>	n/a	0.05	n/a
<i>Euphorbia boophthona</i>	0.1	2	YQS133-01
<i>Lepidium oxytrichum</i>	0.5	0.1	YQS133-05
<i>Marsdenia australis</i>	n/a	3	n/a
<i>Paspalidium basicladium</i>	0.5	0.1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	6	0.4	n/a
<i>Rhodanthe battii</i>	1	0.3	YQS133-02
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	n/a	0.2	YQS133-07
<i>Taplinia saxatilis</i>	1.2	0.4	YQS133-09
<i>Tragus australianus</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS134

Described by Daniel Brassington **Date:** 30/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 7.5km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 150m north-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J

247158 mE

6977833 mN

Vegetation Code: SAES

Landscape Association: Reddish brown sandy clay

Vegetation: Stony *Acacia* and *Eremophila* shrubland

Disturbance: Goanna diggings, kangaroo droppings

Fire Age: 15 - 20 years

Notes: Total PFC 22.85%; 1.2% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 2% dead timber cover on ground, 17% cover of cryptogam crusting, 13% cover of clay, 65% cover of sand, 0% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	3	4	n/a
<i>Acacia craspedocarpa</i>	1.5	2	n/a
<i>Aristida contorta</i>	0.05	0.1	n/a
<i>Calotis hispidula</i>	n/a	0.1	n/a
<i>Dysphania kalpari</i>	n/a	0.04	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.01	n/a
<i>Eragrostis eriopoda</i>	9	0.2	n/a
<i>Eremophila galeata</i>	2	n/a	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	6	1.1	n/a
<i>Erodium cygnorum</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i>	n/a	0.02	n/a
<i>Helipterum craspedioides</i>	n/a	0.15	n/a
Indeterminate	n/a	0.03	n/a
<i>Maireana planifolia</i>	n/a	0.2	YQS134-01
<i>Monachather paradoxus</i>	n/a	0.05	n/a
<i>Psydrax suaveolens</i>	n/a	1.9	n/a
<i>Ptilotus obovatus</i>	0.75	0.3	n/a
<i>Rhagodia drummondii</i>	0.25	1.7	n/a
<i>Rhodanthe maryonii</i>	n/a	0.05	YQS134-02
<i>Rhyncharhena linearis</i>	n/a	1.3	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	n/a	0.1	n/a
<i>Sida ectogama</i>	0.3	1.5	n/a
<i>Sida fibulifera</i>	n/a	0.02	n/a
<i>Spartothamnella teucriflora</i>	n/a	1.3	n/a

BHP Billiton Yeelirrie Site YQS135

Described by Daniel Brassington **Date:** 02/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 9km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 400m south-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 245942 mE 6978272 mN

Vegetation Code: GRMU

Landscape Association: Brown sandy clay loam

Vegetation: Grove mulga shrubland

Disturbance: Cattle tracks and grazing through quadrat

Fire Age: Long unburnt

Notes: Total PFC 51.284%; 35% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 2% dead timber cover on ground, 5% cover of cryptogam crusting, 2% cover of clay, 30% cover of sand, 0% cover of gravel, 2% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.05	0.1	n/a
<i>Acacia aneura</i>	35	7	YQS135-01
<i>Acacia pruinocarpa</i>	OUT	4	n/a
<i>Acacia tetragonophylla</i>	2	4	n/a
<i>Aristida contorta</i>	0.2	0.1	n/a
<i>Calotis hispidula</i>	0.001	0.02	n/a
<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	0.1	0.2	n/a
<i>Duperreya sericea</i>	0.001	0.3	n/a
<i>Enneapogon caerulescens</i>	0.001	0.1	n/a
<i>Eremophila galeata</i>	10	3.5	n/a
<i>Eremophila margarethae</i>	0.1	0.6	n/a
<i>Eriachne pulchella</i>	0.001	0.02	n/a
<i>Erodium cygnorum</i>	0.001	0.04	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.05	0.01	n/a
<i>Glycine canescens</i>	0.05	0.3	YQS135-04
<i>Goodenia peacockiana</i>	0.001	0.05	n/a
<i>Helipterum craspedioides</i>	0.001	0.05	n/a
Indeterminate	0.001	0.1	n/a
<i>Isoetopsis graminifolia</i>	0.001	0.03	n/a
<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	0.001	0.4	YQS135-05
<i>Paspalidium basicladium</i>	0.001	0.05	n/a
<i>Phyllanthus erwinii</i>	0.05	0.05	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Psydrax suaveolens</i>	0.001	1.6	n/a
<i>Ptilotus aervoides</i>	0.001	0.03	n/a
<i>Ptilotus helipteroides</i>	0.001	0.05	YQS135-03
<i>Ptilotus obovatus</i>	1.5	0.3	n/a
<i>Rhodanthe charsleyae</i>	0.001	0.05	n/a
<i>Rhodanthe maryonii</i>	0.001	0.05	n/a
<i>Rhyncharhena linearis</i>	0.001	0.4	n/a
<i>Salsola tragus</i>	0.001	0.05	n/a
<i>Sclerolaena</i> sp. (inadequate material)	0.001	0.05	n/a
<i>Senna artemisioides</i> subsp. <i>x artemisioides</i>	2	1.5	YQS135-02
<i>Sida ectogama</i>	0.1	0.8	n/a
<i>Sida fibulifera</i>	0.05	0.1	n/a
<i>Solanum lasiophyllum</i>	0.01	0.3	n/a
<i>Spartothamnella teucriflora</i>	0.001	0.7	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	0.001	0.02	n/a

BHP Billiton Yeelirrie Site YQS136

Described by Daniel Brassington **Date:** 30/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 7km west of Goldfields Highway turnoff, along Albion Downs-Yeelirrie Road, 250m south-west of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 247336 mE 6977428 mN

Vegetation Code: DRES

Landscape Association: Coarse sand in Drainage line

Vegetation: Drainage line with *Eucalyptus* and *Acacia* shrubland

Disturbance: Minor animal scratching and grazing

Fire Age: Long unburnt

Notes: Total PFC 64.319%; 12% leaf litter cover to a depth of 3 cm, 2 dead timber standing with 7% dead timber cover on ground, 0.1% cover of cryptogam crusting, 0.001% cover of clay, 50% cover of sand, 15% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	0.15	0.15	n/a
<i>Acacia aneura</i>	4	4	YQS136-01
<i>Acacia aneura</i> var. str. to sl. curved flat 30-80x2mm grey green	2	3.5	n/a
<i>Acacia quadrimarginea</i>	30	4	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	1.5	4	n/a
<i>Acacia tetragonophylla</i>	1	1.5	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Austrostipa elegantissima</i>	0.001	0.3	n/a
<i>Calandrinia eremaea</i>	0.001	0.2	n/a
<i>Calandrinia Ptychosperma</i>	0.01	0.15	n/a
<i>Calocephalus knappii</i>	0.001	0.06	n/a
<i>Calotis hispidula</i>	0.001	0.06	n/a
<i>Calotis multicaulis</i>	0.001	0.1	n/a
<i>Centipeda thespidioides</i>	0.1	0.1	n/a
<i>Cheilanthes sieberi</i>	0.001	0.2	n/a
<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	0.001	0.5	n/a
<i>Cymbopogon ambiguus</i>	6	0.4	n/a
<i>Dodonaea petiolaris</i>	5	2	n/a
<i>Duperreya sericea</i>	4	4	n/a
<i>Dysphania melanocarpa</i>	0.01	0.1	n/a
<i>Dysphania rhadinostachya</i>	0.001	0.2	n/a
<i>Emex australis</i>	0.001	0.1	n/a
<i>Eragrostis dielsii</i>	0.001	0.02	n/a
<i>Eragrostis tenellula</i>	0.001	0.15	YQS136-10
<i>Eremophila exilifolia</i>	0.25	0.3	YQS136-04
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.05	n/a
<i>Erodium cygnorum</i>	0.001	0.03	n/a
<i>Eucalyptus camaldulensis</i>	4	12	n/a
<i>Euphorbia boophthona</i>	0.01	0.2	YQS136-02
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.05	n/a
<i>Glycine canescens</i>	0.001	0.3	YQS136-05
<i>Gnephosis drummondii</i>	0.001	0.1	n/a
<i>Goodenia occidentalis</i>	0.001	0.01	n/a
<i>Haloragis trigonocarpa</i>	0.001	0.1	n/a
<i>Helipterum craspedioides</i>	0.001	0.1	n/a
Indeterminate	0.001	0.05	YQS136-08
<i>Indigofera georgei</i>	0.001	0.15	YQS136-06
<i>Lysimachia arvensis</i>	1	0.2	YQS136-09
<i>Marsdenia australis</i>	0.001	1.5	n/a
<i>Myriocephalus occidentalis</i>	0.001	0.1	n/a

<i>Nicotiana rotundifolia</i>	0.01	0.2	n/a
<i>Paspalidium basicladium</i>	0.001	0.2	n/a
<i>Phyllanthus erwinii</i>	0.01	0.1	YQS136-13
<i>Pluchea dentex</i>	0.4	0.3	YQS136-03
<i>Polycarpaea arida</i>	0.001	0.03	YQS136-11
<i>Portulaca oleracea</i>	0.001	0.03	n/a
<i>Ptilotus obovatus</i>	0.2	0.4	n/a
<i>Rhodanthe battii</i>	0.001	0.2	YQS136-14
<i>Santalum spicatum</i>	1.5	3	n/a
<i>Sclerolaena diacantha</i>	0.001	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	3	1.2	n/a
<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	0.075	4	YQS136
<i>Sida calyxhymenia</i>	0.001	1	n/a
<i>Sida fibulifera</i>	0.05	0.1	n/a
<i>Solanum ellipticum</i>	0.001	0.2	n/a
<i>Solanum lasiophyllum</i>	0.001	0.3	n/a
<i>Taplinia saxatilis</i>	0.001	0.12	YQS136-07
<i>Trichodesma zeylanicum</i>	0.001	0.4	n/a
<i>Wahlenbergia tumidifructa</i>	0.01	0.3	YQS136-12

BHP Billiton Yeelirrie Site YQS137

Described by Cheyne Jowett **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1km north of 3 Mile Bore, 300m north-west of road, south-east Yeelirrie study area 1

MGA Zone: 51J 207862 mE 6982350 mN

Vegetation Code: PLMf

Landscape Association: Sandy clay

Vegetation: *Muehlenbeckia florulenta* shrubland on playa

Disturbance: Drought affected

Fire Age: Unknown

Notes: Total PFC 16.841%; 1% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 0.001% cover of cryptogam crusting, 70% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia tetragonophylla</i>	0.5	n/a	n/a
<i>Dissocarpus paradoxus</i>	0.001	n/a	n/a
<i>Eragrostis dielsii</i>	0.001	n/a	n/a
<i>Eragrostis eriopoda</i>	0.02	n/a	n/a
<i>Eremophila longifolia</i>	0.001	n/a	n/a
<i>Erodium cygnorum</i>	0.001	n/a	YQS137-01
<i>Melaleuca xerophila</i>	0.5	n/a	n/a
<i>Muehlenbeckia florulenta</i>	15	n/a	n/a
<i>Nicotiana rotundifolia</i>	0.001	n/a	YQS137-02
<i>Portulaca oleracea</i>	0.01	n/a	n/a
<i>Ptilotus aevoides</i>	0.01	n/a	n/a
<i>Ptilotus obovatus</i>	0.02	n/a	n/a
<i>Rhodanthe charslleyae</i>	0.001	n/a	n/a
<i>Sclerolaena eriacantha</i>	0.02	n/a	n/a
<i>Solanum ellipticum</i>	0.001	n/a	n/a
<i>Solanum lasiophyllum</i>	0.002	n/a	n/a
<i>Swainsona kingii</i>	0.001	n/a	n/a
<i>Swainsona tenuis</i>	0.001	n/a	n/a
<i>Tetragonia eremaea</i>	0.75	n/a	n/a

BHP Billiton Yeelirrie Site YQS138

Described by: Cheyne Jowett **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.9km north-east of 3 Mile Bore, 250m north-west of road, south-east Yeelirrie study area 1

MGA Zone: 51J 208372 mE 6983279 mN

Vegetation Code: PLAPoS

Landscape Association: Sandy clay

Vegetation: *Acacia* and *Ptilotus obovatus* Shrubland on Playa System

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 70.676%; 1% leaf litter cover to a depth of 1 cm, 7 dead timber standing with 0.5% dead timber cover on ground, 0.02% cover of cryptogam crusting, 26% cover of clay, 4% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	n/a	n/a
<i>Acacia aneura</i>	5	n/a	n/a
<i>Calandrinia creethiae</i>	0.04	n/a	YQS138-02
<i>Calocephalus francisii</i>	0.001	n/a	n/a
<i>Eragrostis dielsii</i>	25	n/a	n/a
<i>Eragrostis tenellula</i>	0.01	n/a	n/a
<i>Helipterum craspedioides</i>	0.001	n/a	YQS138-04
Indeterminate	0.001	n/a	n/a
<i>Menkea villosula</i>	0.001	n/a	YQS138-03
<i>Myriocephalus rudallii</i>	40	n/a	n/a
<i>Pluchea dentex</i>	0.2	n/a	n/a
<i>Podolepis capillaris</i>	0.001	n/a	YQS138-01
<i>Portulaca oleracea</i>	0.01	n/a	n/a
<i>Rhodanthe charsleyae</i>	0.4	n/a	n/a
<i>Solanum lasiophyllum</i>	0.01	n/a	n/a

BHP Billiton Yeelirrie Site YQS139

Described by Cheyne Jowett **Date:** 21/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.25km north-east of 3 Mile Bore, east of road, south-east Yeelirrie study area 1

MGA Zone: 51J 208303 mE 6982531 mN

Vegetation Code: PLAET

Landscape Association: Clayey sand

Vegetation: *Acacia Eremophila* thicket on playa

Disturbance: Cattle tracks

Fire Age: Unknown

Notes: Total PFC 30.093%; 5% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 3% dead timber cover on ground, 2% cover of cryptogam crusting, 10% cover of clay, 40% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i> subsp. <i>prostratum</i>	0.03	0.02	YQS139-06
<i>Acacia tetragonophylla</i>	6	5	n/a
<i>Alternanthera angustifolia</i>	0.25	0.03	YQS139-08
<i>Austrostipa elegantissima</i>	0.001	0.4	YQS139-09
<i>Calandrinia ptychosperma</i>	8	0.01	n/a
<i>Calocephalus francisii</i>	0.06	0.14	YQS139-07
<i>Cuscuta planiflora</i>	0.001	n/a	YQS139-01
<i>Dissocarpus paradoxus</i>	0.5	0.08	n/a
<i>Dysphania kalpari</i>	0.001	0.06	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.06	0.04	YQS139-04
<i>Enneapogon caerulescens</i>	0.03	0.1	n/a
<i>Eragrostis dielsii</i>	2	0.01	n/a
<i>Eragrostis tenellula</i>	2	0.1	n/a
<i>Eremophila longifolia</i>	4	5	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.02	n/a
<i>Lepidium oxytrichum</i>	0.001	0.06	YQS139-03
<i>Maireana carnosae</i>	0.001	0.05	n/a
<i>Myriocephalus rudallii</i>	0.001	0.02	n/a
<i>Peplidium muelleri</i>	1.5	0.01	YQS139-10
<i>Peplidium</i> sp. C Evol. Fl. Fauna Arid Aust. (N.T. Burbidge & A. Kanis 8158)	1.25	0.01	YQS139-05
<i>Pluchea dentex</i>	1	0.06	n/a
<i>Portulaca oleracea</i>	3	0.001	n/a
<i>Ptilotus aervoides</i>	0.25	0.02	n/a
<i>Ptilotus obovatus</i>	0.03	0.3	n/a
<i>Rhagodia drummondii</i>	0.001	1.3	n/a
<i>Rhodanthe charslleyae</i>	0.03	0.2	n/a
<i>Salsola tragus</i>	0.001	0.1	n/a
<i>Sclerolaena cornishiana</i>	0.03	0.1	n/a
<i>Sclerolaena eriacantha</i>	0.001	0.1	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.01	n/a
<i>Swainsona tenuis</i>	0.001	0.04	n/a
<i>Tetragonia eremaea</i>	0.03	0.02	YQS139-02
<i>Tetragonia eremaea</i>	0.03	0.05	n/a

BHP Billiton Yeelirrie Site YQS140

Described by Daniel Brassington **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.2km south-east of Yeelirrie homestead, along Albion Downs-Yeelirrie Road, 300m south of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 215814 mE 6976510 mN

Vegetation Code: PLEml

Landscape Association: Reddish brown, sandy clay loam

Vegetation: *Eremophila malacoides* shrubland on playa

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 18.35%; 0.1% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0.1% dead timber cover on ground, 9% cover of cryptogam crusting, 2% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia tetragonophylla</i>	n/a	1	n/a
<i>Calandrinia eremaea</i>	n/a	0.2	YQS140-02
<i>Calandrinia</i> sp. (inadequate material)	n/a	0.01	YQS140-04
<i>Calotis hispidula</i>	n/a	0.05	YQS140-02
<i>Dissocarpus paradoxus</i>	n/a	0.03	n/a
<i>Dysphania kalpari</i>	n/a	0.03	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.08	n/a
<i>Eragrostis dielsii</i>	3	0.02	n/a
<i>Eremophila malacoides</i>	15	0.6	YQS140
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.04	n/a
<i>Maireana carnosa</i>	n/a	0.1	n/a
<i>Maireana planifolia</i>	n/a	0.25	n/a
<i>Maireana thesioides</i>	n/a	0.3	YQS140-01
<i>Paspalidium basicladium</i>	n/a	0.2	YQS140-05
<i>Pogonolepis stricta</i>	n/a	0.07	n/a
<i>Portulaca oleracea</i>	n/a	0.03	n/a
<i>Ptilotus aervoides</i>	n/a	0.02	n/a
<i>Ptilotus exaltatus</i>	n/a	0.2	n/a
<i>Ptilotus obovatus</i>	n/a	0.3	n/a
<i>Rhyncharrhena linearis</i>	n/a	0.2	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.35	0.6	n/a
<i>Sclerolaena cornishiana</i>	n/a	0.15	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	n/a	0.15	n/a
<i>Solanum lasiophyllum</i>	n/a	0.25	n/a
<i>Solanum nummularium</i>	n/a	0.25	n/a
<i>Swainsona kingii</i>	n/a	0.06	n/a
<i>Tetragonia cristata</i>	n/a	0.04	n/a

BHP Billiton Yeelirrie Site YQS141

Described by Daniel Brassington **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4.5km south-east of Yeelirrie homestead, along Albion Downs-Yeelirrie Road, 100m south of road, eastern access of Yeelirrie study area 1

MGA Zone: 51J 216123 mE 6976455 mN

Vegetation Code: PLEmc

Landscape Association: Brown sandy clay loam

Vegetation: *Eremophila maculata* subsp. *brevis* shrubland on playa

Disturbance: Cattle tracks

Fire Age: Long unburnt

Notes: Total PFC 6.882%; 0.6% leaf litter cover to a depth of 0.01 cm, 2 dead timber standing with 1% dead timber cover on ground, 8% cover of cryptogam crusting, 5% cover of clay, 80% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	1	3	n/a
<i>Acacia burkittii</i>	0.02	0.5	n/a
<i>Acacia tetragonophylla</i>	1	2.8	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Bulbostylis barbata</i>	0.001	0.04	YQS141-02
<i>Calandrinia pleiopetala</i>	0.001	0.01	n/a
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Calotis multicaulis</i>	0.001	0.1	n/a
<i>Dissocarpus paradoxus</i>	0.001	0.08	n/a
<i>Dysphania kalpari</i>	0.001	0.04	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	0.001	0.1	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001	0.6	n/a
<i>Enneapogon caeruleus</i>	0.001	0.08	n/a
<i>Eragrostis dielsii</i>	0.3	0.02	n/a
<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	4	0.6	YQS141
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.06	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Goodenia occidentalis</i>	0.001	0.03	YQS141-03
<i>Haloragis trigonocarpa</i>	0.001	0.04	n/a
<i>Lemooria burkittii</i>	0.001	0.02	n/a
<i>Lepidium phlebopetalum</i>	0.001	0.05	n/a
<i>Maireana carnosae</i>	0.001	0.05	n/a
<i>Maireana planifolia</i>	0.001	0.3	YQS141-01
<i>Maireana tomentosa</i>	0.001	0.25	n/a
<i>Paspalidium basicladium</i>	0.001	0.2	n/a
<i>Pogonolepis stricta</i>	0.001	0.02	n/a
<i>Portulaca oleracea</i>	0.05	0.02	n/a
<i>Ptilotus aevoides</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.001	0.2	n/a
<i>Rhagodia drummondii</i>	0.02	0.4	n/a
<i>Rhyncharhena linearis</i>	0.001	0.25	n/a
<i>Santalum spicatum</i>	0.15	2.3	n/a
<i>Scaevola spinescens</i> (narrow form)	0.001	0.3	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.05	n/a
<i>Sclerolaena densiflora</i>	0.001	0.15	n/a
<i>Sclerolaena diacantha</i>	0.001	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.3	0.5	n/a
<i>Sida platycalyx</i>	0.001	0.04	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Solanum nummularium</i>	0.001	0.3	n/a
<i>Swainsona kingii</i>	0.01	0.1	n/a

Tripogon loliiformis

0.001

0.03

n/a

BHP Billiton Yeelirrie Site YQS143

Described by Daniel Brassington **Date:** 23/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 5.3km north-west of Midnight Bore, north of road, north-west Yeelirrie study area 1

MGA Zone: 50J

778065 mE

7000121 mN

Vegetation Code: CRsS

Landscape Association: Calcrete system, loose, flaking brown sandy clay loam

Vegetation: *Rhagodia* sp. shrubland on calcrete

Disturbance: Rill & tunnel erosion and sheet flow, subsurface flow also evident

Fire Age: Unknown

Notes: Total PFC 7%; 1.2% leaf litter cover to a depth of 0 cm, 2 dead timber standing with 0.2% dead timber cover on ground, 0% cover of cryptogam crusting, 94% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Convolvulus angustissimus</i>	OUT	n/a	n/a
<i>Enneapogon caerulescens</i>	n/a	0.05	n/a
<i>Eragrostis eriopoda</i>	n/a	0.2	n/a
<i>Eragrostis tenellula</i>	n/a	0.15	n/a
<i>Eremophila longifolia</i>	n/a	1.1	n/a
<i>Ptilotus obovatus</i>	n/a	0.2	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	7	1.2	n/a
<i>Solanum lasiophyllum</i>	n/a	n/a	n/a
<i>Teucrium racemosum</i>	n/a	n/a	n/a

BHP Billiton Yeelirrie Site YQS144

Described by Cheyne Jowett **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 250m north of Core Farm, directly south of RFDS Airstrip, south-east Yeelirrie study area 1

MGA Zone: 51J 212060 mE 6979472 mN

Vegetation Code: PLEsp

Landscape Association: Sandy clay

Vegetation: Eragrostis sp. grassland on playa

Disturbance: Fence nearby, water drainage cutout from road leading towards quadrat

Fire Age: Unknown

Notes: Total PFC 76.696%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.2% dead timber cover on ground, 0.001% cover of cryptogam crusting, 15% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	0.03	YQS144-04
<i>Acacia craspedocarpa</i>	0.25	0.7	n/a
<i>Aristida contorta</i>	0.001	0.02	n/a
Asteraceae sp. Indeterminate	30	0.03	YQS144-01
<i>Brachyscome ciliocarpa</i>	0.001	0.05	n/a
<i>Calandrinia Ptychosperma</i>	0.3	0.01	n/a
<i>Calocephalus francisii</i>	0.01	0.08	n/a
<i>Calocephalus knappii</i>	0.02	0.12	YQS144-06
<i>Crassula colorata</i> var. <i>acuminata</i>	1	0.03	YQS144-03
<i>Dysphania kalpari</i>	0.001	0.07	n/a
<i>Dysphania melanocarpa</i>	0.001	0.03	n/a
<i>Enneapogon caeruleus</i>	0.001	0.03	n/a
<i>Eragrostis dielsii</i>	5	0.03	n/a
<i>Eragrostis tenellula</i>	15	0.05	n/a
<i>Erodium cygnorum</i>	0.001	0.03	YQS144-09
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.06	0.001	n/a
<i>Gnaphosia tenuissima</i>	0.001	0.08	YQS144-05
<i>Haloragis odontocarpa</i> forma <i>rugosa</i>	0.001	0.13	YQS144-07
Indeterminate	0.001	0.02	YQS144-08
<i>Myriocephalus rudallii</i>	0.001	0.02	n/a
<i>Pluchea dentex</i>	25	0.1	n/a
<i>Podolepis capillaris</i>	0.02	0.2	n/a
<i>Polygala</i> sp. (inadequate material)	0.001	0.07	YQS144-02
<i>Portulaca oleracea</i>	0.02	0.01	n/a
<i>Ptilotus aervoides</i>	0.001	0.02	n/a
<i>Rhodanthe charslleyae</i>	0.001	0.11	n/a
<i>Solanum lasiophyllum</i>	0.001	0.05	n/a
<i>Swainsona tenuis</i>	0.001	0.01	n/a

BHP Billiton Yeelirrie Site YQS146

Described by Cheyne Jowett **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.45km north of Meekatharra-Yeelirrie Road and Albion Downs-Yeelirrie Road intersection, 200m west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

213964 mE

6979217 mN

Vegetation Code: PLMf

Landscape Association: PLAYA system

Vegetation: *Muehlenbeckia florulenta* shrubland with heavy ground cover

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 78.313%; 1% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 10% cover of clay, 5% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
Asteraceae sp. Indeterminate	0.2	0.03	n/a
<i>Calocephalus knappii</i>	0.001	0.03	n/a
<i>Eriachne ovata</i>	0.1	0.06	YQS146-01
<i>Erodium cygnorum</i>	0.01	0.005	n/a
<i>Lachnagrostis filiformis</i>	0.001	0.04	YQS146-02
<i>Muehlenbeckia florulenta</i>	3	1.2	n/a
<i>Myriocephalus rudallii</i>	70	0.03	n/a
<i>Peplidium muelleri</i>	4	0.01	n/a
<i>Pluchea dentex</i>	1	0.11	n/a
<i>Polycarpha arida</i>	n/a	0.01	YQS146-04
<i>Wahlenbergia gracilentia</i>	0.01	0.05	YQS146-03

BHP Billiton Yeelirrie Site YQS147

Described by Cheyne Jowett **Date:** 22/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 3.5km south of Meekatharra-Yeelirrie Road and Core Farm-Meekatharra Road intersection, 1.1km west of road, south-east Yeelirrie study area 1

MGA Zone: 51J

210853 mE

6980052 mN

Vegetation Code: GR

Landscape Association: Sand

Vegetation: Granite rise

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 2.08%; 0.25% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.3% dead timber cover on ground, 1% cover of cryptogam crusting, 1.25% cover of clay, 20% cover of sand, 1% cover of gravel, 80% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	0.02	n/a
<i>Aristida contorta</i>	0.001	0.06	n/a
Asteraceae sp. Indeterminate	0.75	0.02	n/a
<i>Calandrinia ptychosperma</i>	0.01	0.01	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0.001	0.06	n/a
<i>Chrysocephalum puteale</i>	0.001	0.1	YQS147-04
<i>Cymbopogon ambiguus</i>	1	0.2	n/a
<i>Dysphania kalpari</i>	0.02	0.1	n/a
<i>Dysphania melanocarpa</i>	0.001	0.02	n/a
<i>Eragrostis dielsii</i>	0.03	0.02	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.02	0.2	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.03	0.02	YQS147-02
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Paspalidium basicladium</i>	0.05	0.12	YQS147-05
<i>Portulaca oleracea</i>	0.05	0.01	n/a
<i>Ptilotus aevoides</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i>	0.02	0.1	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.05	n/a
<i>Sida ectogama</i>	0.001	0.06	n/a
<i>Solanum lasiophyllum</i>	0.02	0.07	n/a
<i>Thysanotus manglesianus</i>	0.001	n/a	YQS147-03
<i>Tietkensia corrickiae</i>	0.1	0.02	YQS147-01

BHP Billiton Yeelirrie Site YQS149

Described by Daniel Brassington **Date:** 08/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 4km north-west of 3 Mile Bore, along Core Farm Express, 1.7km north-east of road, south-east Yeelirrie study area 1

MGA Zone: 51J

205123 mE

6984605 mN

Vegetation Code: PLCsMp

Landscape Association: Brown sandy clay

Vegetation: *Cratystylis subspinescens* and *Maireana pyramidata* shrublands

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 21.669%; 0.1% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.3% dead timber cover on ground, 15% cover of cryptogam crusting, 15% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.1	0.1	n/a
<i>Calandrinia eremaea</i>	0.001	0.06	YQS149-01
<i>Calandrinia Ptychosperma</i>	0.001	0.02	n/a
<i>Cratystylis subspinescens</i>	7	1.2	n/a
<i>Eragrostis dielsii</i>	2	0.01	n/a
<i>Eremophila forrestii</i>	0.2	0.8	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.25	0.03	n/a
<i>Erodium cygnorum</i>	0.001	0.1	n/a
<i>Frankenia laxiflora</i>	0.001	0.2	n/a
<i>Maireana carnosa</i>	0.001	0.08	n/a
<i>Maireana pyramidata</i>	4	1.3	n/a
<i>Portulaca oleracea</i>	0.01	0.01	n/a
<i>Ptilotus aevoides</i>	0.001	0.02	n/a
<i>Ptilotus obovatus</i>	0.001	0.4	n/a
<i>Rhagodia drummondii</i>	0.001	1	n/a
<i>Sclerolaena densiflora</i>	0.1	0.12	n/a
<i>Swainsona kingii</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	8	0.03	n/a

BHP Billiton Yeelirrie Site YQS150

Described by Daniel Brassington **Date:** 17/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 500m north of Baseline track, approximately 3km north west of North Gate, study area 1

MGA Zone: 50J

787175 mE

6991884 mN

Vegetation Code: CRsS

Landscape Association: Calcrete system, cracking clays with thin layer of wind blown sand on surface

Vegetation: *Rhagodia* sp. Yeelirrie station shrubland

Disturbance: Small animal burrows beneath one *Rhagodia*

Fire Age: >20 years

Notes: Total PFC 11.2%; 2% leaf litter cover to a depth of 1 cm, 1% dead timber standing with 1% dead timber cover on ground, 0.1% cover of cryptogam crusting, 52% cover of clay, 30% cover of sand, 15% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Atriplex codonocarpa</i>	n/a	0.1	n/a
<i>Atriplex semilunaris</i>	n/a	0.2	n/a
<i>Calandrinia eremaea</i>	n/a	0.03	YQS150-03
<i>Calotis hispidula</i>	n/a	0.01	n/a
<i>Calotis multicaulis</i>	n/a	0.1	YQS150-01
<i>Dissocarpus paradoxus</i>	0.1	0.2	n/a
<i>Emex australis</i>	n/a	0.05	n/a
<i>Enchylaena tomentosa</i>	n/a	0.4	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis dielsii</i>	n/a	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Lepidium phlebopetalum</i>	n/a	0.1	n/a
<i>Maireana pyramidata</i>	n/a	0.3	n/a
<i>Melaleuca interioris</i>	n/a	1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	YQS150-02
<i>Ptilotus exaltatus</i>	n/a	0.2	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	11	1.6	n/a
<i>Salsola tragus</i>	n/a	0.2	n/a
<i>Sclerolaena densiflora</i>	n/a	0.2	n/a
<i>Sclerolaena diacantha</i>	n/a	0.1	n/a
<i>Sclerolaena patentispis</i>	0.1	0.2	YQS150-04
<i>Solanum lasiophyllum</i>	n/a	0.03	n/a
<i>Swainsona kingii</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS151

Described by Daniel Brassington **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 150m SW of Northern baseline, approximately 3km NW of Communications Tower, study area 1

MGA Zone: 50J

786968 **mE**

6991481 **mN**

Vegetation Code: CAbS

Landscape Association: Pale brown sandy clay loam

Vegetation: *Acacia burkittii* shrubland on calcrete

Disturbance: A few old tyre tracks through plot

Fire Age: Unknown

Notes: Total PFC 13.25%; 2.5% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 0.8% dead timber cover on ground, 47% cover of cryptogam crusting, 8% cover of clay, 12% cover of sand, 16% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon</i> sp. (inadequate material)	n/a	0.02	n/a
<i>Acacia burkittii</i>	5	3	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.03	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	n/a	1.8	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i>	n/a	0.2	n/a
<i>Salsola tragus</i>	n/a	0.03	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	8	2	n/a
<i>Swainsona kingii</i>	n/a	0.01	n/a
<i>Zygophyllum apiculatum</i>	0.25	0.1	n/a

BHP Billiton Yeelirrie Site YQS152

Described by Daniel Brassington **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 500m west of Communications Tower, south of Northern Baseline, study area 1

MGA Zone: 50J

788833 mE

6990299 mN

Vegetation Code: CLaS

Landscape Association: Reddish brown, clay loam, sandy

Vegetation: *Lycium australe* shrubland on calcrete

Disturbance: A few animal scratchings, one small burrow

Fire Age: Unknown

Notes: Total PFC 14.2%; 7% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 0.2% dead timber cover on ground, 10% cover of cryptogam crusting, 12% cover of clay, 25% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calotis multicaulis</i>	n/a	0.03	n/a
<i>Dissocarpus paradoxus</i>	3	n/a	n/a
<i>Enneapogon caerulescens</i>	0.15	0.1	n/a
<i>Eragrostis dielsii</i>	n/a	0.01	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	0.03	n/a
<i>Eremophea spinosa</i>	0.1	0.15	YQS152-01
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.03	YQS152-03
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Gnephosis arachnoidea</i>	n/a	0.25	n/a
<i>Lycium australe</i>	5	1.5	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus exaltatus</i>	n/a	0.1	n/a
<i>Ptilotus obovatus</i>	1.5	0.3	n/a
<i>Rhagodia drummondii</i>	1	1.2	n/a
<i>Rhodanthe sterilis</i>	2	n/a	n/a
<i>Salsola tragus</i>	n/a	0.04	n/a
<i>Sclerolaena densiflora</i>	0.1	0.15	n/a
<i>Sclerolaena diacantha</i>	1	0.15	n/a
<i>Sclerolaena fusiformis</i>	0.1	0.15	n/a
<i>Sida</i> sp. (inadequate material)	n/a	0.02	n/a
<i>Solanum lasiophyllum</i>	n/a	0.15	n/a
<i>Swainsona kingii</i>	0.25	0.03	n/a
<i>Swainsona tenuis</i>	n/a	0.03	n/a
<i>Tragus australianus</i>	n/a	0.02	YQS152-02

BHP Billiton Yeelirrie Site YQS153

Described by Daniel Brassington **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Eastern baseline, roughly 400m south east of Communications Tower, study area 1

MGA Zone: 50J

789737 mE

6989767 mN

Vegetation Code: CLaS

Landscape Association: Calcrete sytem, loose, surface flaking, brown sandy clay loam

Vegetation: *Lycium australe* shrubland on calcrete

Disturbance: Animal scratchings

Fire Age: Unknown

Notes: Total PFC 3.5%; 3% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.2% dead timber cover on ground, 0% cover of cryptogam crusting, 95% cover of clay, 1% cover of sand, 1% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Dissocarpus paradoxus</i>	n/a	0.2	n/a
<i>Enneapogon caerulescens</i>	n/a	0.1	n/a
<i>Eragrostis dielsii</i>	n/a	0.01	n/a
<i>Erodium crinitum</i>	n/a	0.05	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	n/a	0.01	n/a
<i>Lawrenzia repens</i>	n/a	0.1	n/a
<i>Lycium australe</i>	3.5	1.2	n/a
<i>Ptilotus obovatus</i>	n/a	0.1	n/a
<i>Salsola tragus</i>	n/a	0.02	n/a
<i>Sporobolus australasicus</i>	n/a	0.04	n/a
<i>Swainsona kingii</i>	n/a	0.5	n/a
<i>Zygophyllum apiculatum</i>	n/a	0.2	n/a

BHP Billiton Yeelirrie Site YQS154

Described by Daniel Brassington **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: 1.2km NNE of 3 Mile Bore, study area 1

MGA Zone: 51J 208210 mE 6982473 mN

Vegetation Code: CMpS

Landscape Association: Dark reddish brown clay loam, sandy

Vegetation: *Maireana pyramidata* shrubland on calcrete

Disturbance: Old vehicle track through corner of quadrat

Fire Age: Unknown

Notes: Total PFC 43.5%; 10% leaf litter cover to a depth of 0.5 cm, 0 dead timber standing with 0.7% dead timber cover on ground, 16% cover of cryptogam crusting, 10% cover of clay, 63% cover of sand, 0.5% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Calandrinia eremaea</i>	n/a	n/a	YQS154-01
<i>Calandrinia ptychosperma</i>	0.1	0.02	n/a
<i>Calocephalus knappii</i>	n/a	0.1	n/a
<i>Calotis multicaulis</i>	n/a	0.1	n/a
<i>Dactyloctenium radulans</i>	0.05	0.08	n/a
<i>Dissocarpus paradoxus</i>	0.2	0.2	n/a
<i>Dysphania kalpari</i>	n/a	0.05	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.04	n/a
<i>Eragrostis dielsii</i>	2	0.02	n/a
<i>Eriachne pulchella</i>	n/a	0.04	n/a
<i>Erodium crinitum</i>	n/a	0.05	n/a
<i>Euphorbia drummondii</i>	0.1	0.05	n/a
<i>Gnephosis arachnoidea</i>	n/a	0.2	n/a
Indeterminate	n/a	0.05	YQS154-02
<i>Lemooria burkittii</i>	0.3	0.03	n/a
<i>Maireana carnososa</i>	n/a	0.15	n/a
<i>Maireana pyramidata</i>	40	1.1	n/a
<i>Paspalidium basicladium</i>	n/a	0.15	n/a
<i>Pogonolepis stricta</i>	n/a	0.04	n/a
<i>Portulaca oleracea</i>	0.3	0.01	n/a
<i>Ptilotus aervoides</i>	n/a	0.03	n/a
<i>Ptilotus obovatus</i>	n/a	0.2	n/a
<i>Ptilotus roei</i>	n/a	0.04	n/a
<i>Sclerolaena densiflora</i>	n/a	0.2	n/a
<i>Sclerolaena fusiformis</i>	n/a	0.2	n/a
<i>Sida</i> sp. (inadequate material)	0.05	0.1	n/a
<i>Swainsona kingii</i>	0.4	0.06	n/a
<i>Swainsona oliveri</i>	n/a	0.02	YQS154-03
<i>Tetragonia cristata</i>	n/a	0.1	n/a
<i>Tragus australianus</i>	n/a	0.08	n/a
<i>Tribulus terrestris</i>	n/a	0.02	n/a
<i>Tripogon loliiformis</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS155

Described by Cheyne Jowett **Date:** 18/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1km south of Northern Baseline, approximately 2km west of Western Resource Area, study area 1

MGA Zone: 50J 784829 mE 6990712 mN

Vegetation Code: PLCsMpS

Landscape Association: Loamy clay

Vegetation: *Cratystylis subspinescens* and *Maireana pyramidata* shrubland on playa

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 17.837%; 0.001% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0% dead timber cover on ground, 7% cover of cryptogam crusting, 5% cover of clay, 65% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.001	0.15	n/a
<i>Atriplex codonocarpa</i>	0.04	0.25	YQS155-03
<i>Calandrinia ptychosperma</i>	0.04	0.1	YQS155-04
<i>Cratystylis subspinescens</i>	12	1.2	n/a
<i>Dissocarpus paradoxus</i>	0.3	0.12	n/a
<i>Eragrostis dielsii</i>	0.04	0.02	n/a
<i>Euphorbia drummondii</i>	0.001	0.1	n/a
<i>Maireana carnosae</i>	0.001	0.1	n/a
<i>Maireana georgei</i>	0.001	0.2	YQS155-01
<i>Maireana pyramidata</i>	5	1.6	n/a
<i>Portulaca oleracea</i>	0.04	0.1	n/a
<i>Ptilotus aevoides</i>	0.001	0.2	n/a
<i>Ptilotus obovatus</i>	0.06	0.3	n/a
<i>Sclerolaena cornishiana</i>	0.001	0.2	n/a
<i>Sclerolaena diacantha</i>	0.25	0.2	n/a
<i>Sclerolaena eriacantha</i>	0.06	0.2	YQS155-02
<i>Swainsona kingii</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS156

Described by Rebecca Graham

Date: 23/08/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: study area 1

MGA Zone: 50J

782509 mE

6996659 mN

Vegetation Code: CRsS

Landscape Association: Silty sand over clay, on edge and 40cm raised above bare playa with cracking clay

Vegetation: *Rhagodia* sp. Yeelirrie Station shrubland

Disturbance: Animal scratchings

Fire Age: Unknown

Notes: Total PFC 2.005%; 0.001% leaf litter cover to a depth of 0.01 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 0.5% cover of cryptogam crusting, 10% cover of clay, 85% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Dissocarpus paradoxus</i>	0.001	n/a	n/a
<i>Ptilotus obovatus</i>	0.001	0.15	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	2	1.8	n/a
<i>Sclerolaena patentiuspis</i>	0.001	n/a	YQS156-01
<i>Sida</i> sp. (inadequate material)	0.001	n/a	n/a
<i>Swainsona kingii</i>	0.001	n/a	n/a

BHP Billiton Yeelirrie Site YQS157

Described by Rebecca Graham **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2nd western most Atriplex population in western resource area, study area 1

MGA Zone: 50J

788118 mE

6990373 mN

Vegetation Code: CApS

Landscape Association: Self-mulching clay

Vegetation: *Atriplex* sp. Yeelirrie Station shrubland

Disturbance: Adjacent to drill holes and drill lines

Fire Age: Unknown

Notes: Total PFC 40.003%; 0.001% leaf litter cover to a depth of 0.1 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 50% cover of clay, 10% cover of sand, 2% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acetosa vesicaria</i>	0.001	n/a	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	40	0.6	n/a
<i>Eragrostis dielsii</i>	0.001	n/a	n/a
<i>Lawrenzia repens</i>	0.001	n/a	YQS157-01

BHP Billiton Yeelirrie Site YQS158

Described by Rebecca Graham **Date:** 24/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2nd western most Atriplex population in western resource area, Yeelirrie study area 1

MGA Zone: 50J

788280 mE

6990445 mN

Vegetation Code: CApS

Landscape Association: Self-mulching clay

Vegetation: *Atriplex* sp. Yeelirrie Station shrubland

Disturbance: Within drilling footprint, old cow poo

Fire Age: Unknown

Notes: Total PFC 20.508%; 0.001% leaf litter cover to a depth of 0.05 cm, 0 dead timber standing with 0% dead timber cover on ground, 0% cover of cryptogam crusting, 60% cover of clay, 20% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
Asteraceae sp. Indeterminate	0.001	0.15	YQS158-02
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	20	0.6	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.5	0.6	n/a
<i>Eragrostis dielsii</i>	0.001	0.02	n/a
<i>Eremophea spinosa</i>	0.001	0.05	n/a
<i>Lawrencia repens</i>	0.001	0.15	n/a
<i>Ptilotus helipteroides</i>	n/a	n/a	YQS158-05
<i>Salsola tragus</i>	0.001	0.1	n/a
<i>Sclerolaena cuneata</i>	0.001	0.2	YQS158-01
<i>Senecio pinnatifolius</i>	0.001	0.1	YQS158-04
<i>Zygophyllum compressum</i>	0.001	0.2	YQS158-03

BHP Billiton Yeelirrie Site YQS159

Described by Rebecca Graham **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Western resource area along Southern Baseline track, Yeelirrie study area 1

MGA Zone: 50J 788046 mE 6990086 mN

Vegetation Code: CErG

Landscape Association: Fine silty clay sand with discontinuous calcrete gravel

Vegetation: *Eragrostis* sp. Yeelirrie Calcrete grassland

Disturbance: Adjacent to drill tracks and holes

Fire Age: Unknown

Notes: Total PFC 2.308%; 0.001% leaf litter cover to a depth of 0.1 cm, 0 dead timber standing with 0% dead timber cover on ground, 60% cover of cryptogam crusting, 25% cover of clay, 10% cover of sand, 5% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.8	0.1	YQS159-03
<i>Calocephalus knappii</i>	0.001	0.05	n/a
<i>Enneapogon caerulescens</i>	0.001	0.05	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.7	0.02	YQS159-02
<i>Eremophea spinosa</i>	0.001	0.02	n/a
<i>Eriochiton sclerolaenoides</i>	0.001	0.03	YQS159-01
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Rhodanthe sterilesceus</i>	0.8	0.1	n/a
<i>Salsola tragus</i>	0.001	0.05	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.08	n/a

BHP Billiton Yeelirrie Site YQS160

Described by Rebecca Graham **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Western resource area along Southern Baseline track, Yeelirrie study area 1

MGA Zone: 50J 786087 mE 6990386 mN

Vegetation Code: CErG

Landscape Association: Fine silty clay sand with discontinuous calcrete gravel

Vegetation: *Eragrostis* sp. Yeelirrie Calcrete grassland

Disturbance: Old vehicle tracks throughout area

Fire Age: Unknown

Notes: Total PFC 2.007%; 0.001% leaf litter cover to a depth of 0.1 cm, 0 dead timber standing with 0% dead timber cover on ground, 70% cover of cryptogam crusting, 15% cover of clay, 5% cover of sand, 7% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.6	0.1	n/a
<i>Calocephalus knappii</i>	0.001	0.05	n/a
<i>Enneapogon caerulescens</i>	0.001	0.05	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.6	0.02	n/a
<i>Eremophea spinosa</i>	n/a	0.03	YQS160-01
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Rhodanthe sterilecens</i>	0.8	0.1	n/a
<i>Salsola tragus</i>	0.001	0.05	n/a
<i>Swainsona kingii</i>	0.001	0.02	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.08	n/a

BHP Billiton Yeelirrie Site YQS161

Described by Rebecca Graham **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Western resource area, on Southern Baseline, Yeelirrie study area 1

MGA Zone: 50J 788420 mE 6990028 mN

Vegetation Code: CErG

Landscape Association: Calcrete system, fine silty clay sand with discontinuous calcrete gravel

Vegetation: *Eragrostis* sp. Yeelirrie Calcrete grassland

Disturbance: Signs of rabbit activity

Fire Age: Unknown

Notes: Total PFC 1.828%; 0.001% leaf litter cover to a depth of 0.01 cm, 2 dead timber standing with 0.001% dead timber cover on ground, 40% cover of cryptogam crusting, 40% cover of clay, 10% cover of sand, 1% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia synchronicia</i>	0.03	0.35	n/a
<i>Aristida contorta</i>	0.02	0.1	n/a
<i>Calocephalus knappii</i>	0.001	0.05	n/a
<i>Enneapogon caerulescens</i>	0.001	0.05	n/a
<i>Eragrostis dielsii</i>	0.001	0.02	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.5	0.02	n/a
<i>Eremophea spinosa</i>	1	0.03	n/a
<i>Euphorbia drummondii</i>	0.001	0.01	n/a
<i>Ptilotus obovatus</i>	0.001	0.25	n/a
<i>Rhodanthe sterilesceus</i>	0.25	0.1	n/a
<i>Salsola tragus</i>	0.001	0.05	n/a
<i>Solanum lasiophyllum</i>	0.001	0.2	n/a
<i>Swainsona kingii</i>	0.02	0.02	n/a
<i>Zygophyllum iodocarpum</i>	0.001	0.08	n/a

BHP Billiton Yeelirrie Site YQS162

Described by Rebecca Graham **Date:** 25/08/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: East of Core Farm Express Road, halfway between South Gate and Communications Tower, Yeelirrie study area 1

MGA Zone: 50J 789497 **mE** 6989186 **mN**

Vegetation Code: PLAPoS

Landscape Association: Silty, clayey sand

Vegetation: *Acacia* spp. and *Ptilotus obovatus* shrubland in playa system

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 10.412%; 1% leaf litter cover to a depth of 2 cm, 6 dead timber standing with 0.25% dead timber cover on ground, 0% cover of cryptogam crusting, 1% cover of clay, 85% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	0.06	0.5	n/a
<i>Acacia ayersiana</i>	10	6	n/a
<i>Acacia macraneura</i>	OUT	n/a	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Melaleuca interioris</i>	0.25	01.8	n/a
<i>Ptilotus obovatus</i>	0.1	0.25	n/a

BHP Billiton Yeelirrie Site YQS163

Described by Rebecca Graham

Date: 25/08/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: Adjacent to Core Express, Yeelirrie study area 1

MGA Zone: 50J

204192 mE

6983378 mN

Vegetation Code: PLCsMpS

Landscape Association:

Vegetation: Mixed *Maireana* shrubland on hardpan

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 5.363%; 0.25% leaf litter cover to a depth of 0.5 cm, 1 dead timber standing with 0.001% dead timber cover on ground, 10% cover of cryptogam crusting, 70% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia tetragonophylla</i>	0.001	0.5	n/a
<i>Aristida contorta</i>	0.2	0.15	n/a
<i>Calotis multicaulis</i>	0.001	0.15	YQS163-07
<i>Enneapogon caerulescens</i>	0.001	0.08	n/a
<i>Eragrostis dielsii</i>	0.75	0.02	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.06	0.03	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.01	n/a
<i>Frankenia</i> sp. (inadequate material)	1	0.4	YQS163-05
<i>Goodenia occidentalis</i>	0.001	0.05	YQS163-06
<i>Lemooria burkittii</i>	0.03	0.01	YQS163-08
<i>Maireana carnosae</i>	0.06	0.1	n/a
<i>Maireana georgei</i>	0.5	0.4	YQS163-04
<i>Maireana glomerifolia</i>	0.5	0.3	YQS163-10
<i>Maireana pyramidata</i>	2	0.8	n/a
<i>Marsdenia australis</i>	n/a	n/a	YQS163-09
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Pogonolepis stricta</i>	0.001	0.03	n/a
<i>Portulaca oleracea</i>	0.01	0.01	n/a
<i>Ptilotus aevoides</i>	0.06	0.02	n/a
<i>Ptilotus obovatus</i>	0.001	0.3	n/a
<i>Sclerolaena cornishiana</i>	0.06	0.05	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.001	0.1	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.03	YQS163-02
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Swainsona forrestii</i>	0.06	0.03	YQS163-01
<i>Tragus australianus</i>	0.001	0.04	YQS163-11
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Tripogon loliiformis</i>	0.06	0.03	YQS163-03

BHP Billiton Yeelirrie Site YQS164

Described by Daniel Brassington **Date:** 14/09/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Approximately 1.3km NW of Yeelirrie exploration campsite, Yeelirrie study area 1

MGA Zone: 51J 213021 mE 6980551 mN

Vegetation Code: PLAMi

Landscape Association: Thin sand layer over hard sandy clay

Vegetation: *Acacia, Melaleuca interioris* shrubland fringing a playa

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 28.7%; 10% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 1% dead timber cover on ground, 25% cover of cryptogam crusting, 10% cover of clay, 55% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	n/a	0.2	n/a
<i>Acacia ayersiana</i>	1	4	n/a
<i>Acacia tetragonophylla</i>	7	3.5	n/a
<i>Actinobole oldfieldianum</i>	n/a	0.01	YQS164-09
<i>Alternanthera angustifolia</i>	n/a	0.06	YQS164-10
<i>Amphipogon caricinus</i>	0.05	0.1	n/a
<i>Austrostipa elegantissima</i>	0.3	1	n/a
<i>Calandrinia creethiae</i>	0.1	0.01	YQS164-01
<i>Calocephalus francisii</i>	n/a	0.1	YQS164-03
<i>Calotis hispidula</i>	n/a	0.06	n/a
<i>Centipeda thespidioides</i>	0.05	0.06	n/a
<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	n/a	0.1	n/a
<i>Enchylaena tomentosa</i>	0.2	0.04	n/a
<i>Eragrostis dielsii</i>	n/a	0.02	n/a
<i>Eremophila longifolia</i>	n/a	0.8	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.05	0.03	n/a
<i>Erodium cygnorum</i>	n/a	0.1	n/a
<i>Haloragis trigonocarpa</i>	n/a	0.1	n/a
Indeterminate	0.2	0.01	YQS164-06
<i>Isoetopsis graminifolia</i>	n/a	0.02	YQS164-04
<i>Marsilea hirsuta</i>	1.5	0.05	YQS164-07
<i>Melaleuca interioris</i>	15	3.5	n/a
<i>Myriocephalus rudallii</i>	2	0.03	YQS164-05
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	n/a	0.3	n/a
<i>Paspalidium basicladium</i>	n/a	0.2	n/a
<i>Peplidium aithocheilum</i>	n/a	0.005	YQS164-02
<i>Ptilotus obovatus</i>	0.25	0.4	n/a
<i>Rhagodia drummondii</i>	1	2	n/a
<i>Rhyncharhena linearis</i>	n/a	0.3	n/a
<i>Scaevola spinescens</i> (narrow form)	n/a	0.2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.4	n/a
<i>Swainsona kingii</i>	n/a	0.03	n/a
<i>Tietkensia corrickiae</i>	n/a	0.01	YQS164-08
<i>Tripogon loliiformis</i>	n/a	0.01	n/a

BHP Billiton Yeelirrie Site YQS165

Described by Daniel Brassington **Date:** 01/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 2km north of Albany Well, Yeelirrie study area 1

MGA Zone: 50J

795595 **mE**

6989133 **mN**

Vegetation Code: SAMA

Landscape Association: Sand Plain system with red silty sand

Vegetation: Spinifex shrubland with mallee

Disturbance: Animal diggings

Fire Age: 5 - 10 years

Notes: Total PFC 36.061%; 3% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 0.5% dead timber cover on ground, 4% cover of cryptogam crusting, 1% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	1	1	YQS165-01
<i>Acacia longispinea</i>	0.75	1	YQS165-02
<i>Alyogyne pinoniana</i>	0.15	0.7	n/a
<i>Brunonia australis</i>	0.25	0.15	n/a
<i>Calotis plumulifera</i>	0.001	0.1	n/a
<i>Dianella revoluta</i>	0.3	1	YQS165-03
<i>Eucalyptus kingsmillii</i>	3.5	3.5	n/a
<i>Haloragis odontocarpa</i>	0.001	0.15	n/a
<i>Kennedia prorepens</i>	0.1	0.15	n/a
<i>Leptosema chambersii</i>	0.001	0.04	n/a
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Pimelea trichostachya</i>	0.001	0.15	YQS165-05
<i>Rulingia loxophylla</i>	0.001	0.25	n/a
<i>Solanum centrale</i>	0.001	0.2	YQS165-04
<i>Swainsona microphylla</i>	0.001	0.05	n/a
<i>Trachymene bialata</i>	0.001	0.15	n/a
<i>Triodia basedowii</i>	30	0.3	n/a
<i>Velleia connata</i>	0.001	0.1	YQS165-07
<i>Velleia glabrata</i>	0.001	0.1	YQS165-06

BHP Billiton Yeelirrie Site YQS166

Described by Daniel Brassington **Date:** 01/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: Meekatharra Road, north of Albany Well, Yeelirrie study area 1

MGA Zone: 50J 794258 mE 6990285 mN

Vegetation Code: HPMS

Landscape Association: Pale brown sandy clay loam

Vegetation: Hardpan mulga shrubland

Disturbance: Animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 17.501%; 6% leaf litter cover to a depth of 1 cm, 9 dead timber standing with 3.5% dead timber cover on ground, 20% cover of cryptogam crusting, 10% cover of clay, 60% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	13	6-8	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	4	3	n/a
<i>Aristida contorta</i>	n/a	0.03	n/a
<i>Calotis hispidula</i>	n/a	0.04	n/a
<i>Dysphania melanocarpa</i>	n/a	0.05	n/a
<i>Enchylaena tomentosa</i>	n/a	0.2	n/a
<i>Eragrostis eriopoda</i>	n/a	0.1	n/a
<i>Eremophila eriocalyx</i>	0.15	0.8	YQS166-01
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	n/a	0.03	n/a
<i>Erodium cygnorum</i>	n/a	0.04	n/a
<i>Euphorbia drummondii</i>	n/a	0.02	n/a
<i>Goodenia occidentalis</i>	0.001	0.03	n/a
<i>Maireana villosa</i>	0.2	0.2	YQS166-02
<i>Marsdenia australis</i>	n/a	1	n/a
<i>Monachather paradoxus</i>	0.15	0.1	n/a
<i>Paspalidium basicladium</i>	n/a	0.05	n/a
<i>Psyrax suaveolens</i>	n/a	3	n/a
<i>Rhyncharrhena linearis</i>	n/a	1.5	n/a
<i>Tribulus astrocarpus</i>	n/a	0.1	n/a

BHP Billiton Yeelirrie Site YQS167

Described by Rebecca Graham

Date: 01/10/2010

Type: Quadrat

Size: 20 x 20 m

Season: Excellent

Location: Northern side of the Core-Farm Express, Yeelirrie study area 1

MGA Zone: 51J

202974 mE

6984027 mN

Vegetation Code: GRMU

Landscape Association: Pale brown silty sandy loam

Vegetation: Grove mulga woodland

Disturbance: Some animal diggings

Fire Age: Long unburnt

Notes: Total PFC 37.85%; 16% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 9% dead timber cover on ground, 2% cover of cryptogam crusting, 13% cover of clay, 12% cover of sand, 55% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.15	0.15	YQS167-06
<i>Acacia aneura</i>	0.25	1.2	YQS167-08
<i>Acacia ayersiana</i>	25	8	n/a
<i>Acacia tetragonophylla</i>	0.25	1.4	n/a
<i>Aristida contorta</i>	n/a	0.1	n/a
<i>Boerhavia repleta</i>	n/a	0.07	YQS167-12
<i>Brachyscome ciliaris</i>	n/a	0.15	n/a
<i>Calotis hispidula</i>	n/a	0.1	n/a
<i>Calotis plumulifera</i>	n/a	0.08	n/a
<i>Dysphania kalpari</i>	n/a	0.05	n/a
<i>Enneapogon caerulescens</i>	n/a	0.15	n/a
<i>Eragrostis eriopoda</i>	0.3	0.3	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	10	1.3	YQS167-01
<i>Eremophila spectabilis</i>	0.1	0.7	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.1	0.2	n/a
<i>Erodium cygnorum</i>	n/a	0.1	n/a
<i>Euphorbia drummondii</i>	0.05	0.03	n/a
<i>Goodenia occidentalis</i>	n/a	0.1	YQS167-09
<i>Isoetopsis graminifolia</i>	n/a	0.03	YQS167-11
<i>Maireana planifolia</i>	0.15	0.3	YQS167-03
<i>Monachather paradoxus</i>	n/a	0.15	n/a
<i>Paspalidium basicladium</i>	n/a	0.1	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus aervoides</i>	n/a	0.02	n/a
<i>Ptilotus exaltatus</i>	n/a	0.04	n/a
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	n/a	0.15	n/a
<i>Ptilotus obovatus</i>	0.2	0.3	n/a
<i>Rhagodia drummondii</i>	0.15	1.2	n/a
<i>Rhodanthe maryonii</i>	n/a	0.05	n/a
<i>Rhyncharrhena linearis</i>	0.1	1.5	YQS167-07
<i>Schoenia cassiniana</i>	n/a	0.08	YQS167-10
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sida ectogama</i>	0.5	1.5	YQS167-05
<i>Sida</i> sp. dark green fruit (S. van Leeuwen 2260)	0.1	0.4	YQS167-04
<i>Solanum lasiophyllum</i>	n/a	0.02	n/a
<i>Spartothamnella teucriflora</i>	0.4	0.8	YQS167-02
<i>Swainsona kingii</i>	n/a	0.1	n/a
<i>Tribulus astrocarpus</i>	n/a	0.02	n/a
<i>Zygophyllum ovatum</i>	n/a	0.05	YQS167-12

BHP Billiton Yeelirrie Site YQS168

Described by Daniel Brassington **Date:** 02/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: North side of Albion Downs Road, 5km from the Goldfields Highway, study area 1

MGA Zone: 51J

247765 mE

6977410 mN

Vegetation Code: SAES

Landscape Association: Brown sandy clay loam

Vegetation: Stony *Acacia Eremophila* shrubland

Disturbance: Minor cattle disturbance

Fire Age: Long unburnt

Notes: Total PFC 5.253%; 0.001% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 0.6% dead timber cover on ground, 10% cover of cryptogam crusting, 10% cover of clay, 40% cover of sand, 20% cover of gravel, 20% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia aneura</i>	0.3	1.1	n/a
<i>Acacia aneura</i>	0.3	1.5	YQS168-01
<i>Acacia pruinocarpa</i>	0.5	1.7	n/a
<i>Aristida contorta</i>	0.25	0.1	n/a
<i>Eremophila galeata</i>	1	2	n/a
<i>Eremophila margarethae</i>	1.5	0.5	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.03	n/a
<i>Helipterus craspedioides</i>	0.001	0.1	n/a
<i>Ptilotus obovatus</i>	0.2	0.3	n/a
<i>Ptilotus roei</i>	1	0.05	n/a
<i>Ptilotus rotundifolius</i>	0.001	0.3	n/a
<i>Sida ectogama</i>	0.2	1.2	n/a

BHP Billiton Yeelirrie Site YQS169

Described by Daniel Brassington **Date:** 02/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: North side of Albion Downs Yeelirrie Road, near Goldfields Highway junction, study area 1

MGA Zone: 51J

248511 mE

6976586 mN

Vegetation Code: DRMS

Landscape Association: Sandy creek bed

Vegetation: Drainage mulga shrubland

Disturbance: Cattle movement and grazing

Fire Age: Long unburnt

Notes: Total PFC 71.888%; 20% leaf litter cover to a depth of 2 cm, 21 dead timber standing with 5% dead timber cover on ground, 30% cover of cryptogam crusting, 10% cover of clay, 40% cover of sand, 10% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	0.2	n/a
<i>Acacia aneura</i>	2	3.5	YQS169-06
<i>Acacia aneura</i>	12	5	YQS169-07
<i>Acacia aneura</i> x <i>craspedocarpa</i>	2	3	YQS169-03
<i>Acacia craspedocarpa</i>	0.75	2	YQS169-02
<i>Acacia quadrimarginea</i>	30	4	n/a
<i>Acacia tetragonophylla</i>	1.5	3	n/a
<i>Calandrinia eremaea</i>	0.001	0.15	n/a
<i>Calandrinia pleiopetala</i>	0.001	0.06	n/a
<i>Centipeda thespidioides</i>	0.001	0.1	n/a
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	1	0.2	n/a
<i>Crassula colorata</i> var. <i>acuminata</i>	0.001	0.05	n/a
<i>Cymbopogon ambiguus</i>	0.25	0.4	n/a
<i>Dodonaea petiolaris</i>	0.2	1.2	n/a
<i>Duperreya sericea</i>	0.001	0.6	n/a
<i>Dysphania melanocarpa</i>	0.001	0.05	n/a
<i>Dysphania rhadinostachya</i> subsp. <i>rhadinostachya</i>	0.001	0.2	YQS169-14
<i>Enchylaena tomentosa</i>	0.001	0.05	n/a
<i>Eragrostis tenellula</i>	0.001	0.12	n/a
<i>Eremophila exilifolia</i>	15	1.5	n/a
<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	0.2	1.2	n/a
<i>Eremophila galeata</i>	0.001	0.3	n/a
<i>Eremophila margarethae</i>	0.1	0.3	n/a
<i>Eriachne pulchella</i>	0.001	0.05	n/a
<i>Erodium cygnorum</i>	0.001	0.07	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.002	0.1	n/a
<i>Glycine canescens</i>	0.001	0.5	n/a
<i>Gnephosis drummondii</i>	0.001	0.05	n/a
<i>Goodenia occidentalis</i>	0.001	0.1	YQS169-08
<i>Helipterum craspedioides</i>	0.001	0.1	n/a
<i>Hibiscus gardneri</i>	0.001	0.4	YQS169-12
<i>Isoetopsis graminifolia</i>	0.001	0.03	n/a
<i>Lemooria burkittii</i>	0.001	0.02	n/a
<i>Lysimachia arvensis</i>	0.001	0.1	n/a
<i>Myriocephalus occidentalis</i>	0.001	0.08	n/a
<i>Nicotiana rotundifolia</i>	0.001	0.3	YQS169-15
<i>Ophioglossum lusitanicum</i>	0.001	0.04	n/a
<i>Paspalidium basicladium</i>	0.001	0.06	YQS169-05
<i>Phyllanthus erwinii</i>	0.001	0.1	n/a
<i>Pluchea dentex</i>	1	0.4	n/a
<i>Polycarpaea arida</i>	0.001	0.03	n/a
<i>Portulaca oleracea</i>	0.001	0.03	n/a
<i>Ptilotus aervoides</i>	0.001	0.2	n/a

<i>Ptilotus obovatus</i>	0.1	1	n/a
<i>Rhodanthe charsleyae</i>	0.001	0.1	n/a
<i>Rhyncharrhena linearis</i>	0.2	2	n/a
<i>Sclerolaena diacantha</i>	0.001	0.3	n/a
<i>Senna artemisioides</i> subsp. x <i>artemisioides</i>	1.5	1.6	YQS169-10
<i>Senna artemisioides</i> subsp. x <i>sturtii</i>	1.5	1.3	YQS169-11
<i>Sida ectogama</i>	0.05	0.7	n/a
<i>Sida</i> sp. (inadequate material)	0.001	0.3	YQS169-13
<i>Solanum lasiophyllum</i>	0.001	0.3	n/a
<i>Trichodesma zeylanicum</i>	0.001	1	n/a
<i>Tripogon loliiformis</i>	2.501	0.05	YQS169-01/04
<i>Wahlenbergia tumidifructa</i>	0.001	0.2	YQS169-09

BHP Billiton Yeelirrie Site YQS170

Described by Daniel Brassington **Date:** 02/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: South side of Albion Downs-Yeelirrie Road, study area 1

MGA Zone: 51J 237323 mE 6977791 mN

Vegetation Code: SAHS

Landscape Association: Red brown medium sand

Vegetation: Sand Plain spinifex shrubland

Disturbance: Minor animal diggings, cattle tracks

Fire Age: 5 years

Notes: Total PFC 45.214%; 5% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.25% dead timber cover on ground, 4% cover of cryptogam crusting, 1% cover of clay, 80% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	0.001	0.6	n/a
<i>Acacia pachyacra</i>	0.001	0.3	n/a
<i>Aristida contorta</i>	0.05	0.1	n/a
<i>Brunonia australis</i>	0.05	0.2	n/a
<i>Enekbatus eremaeus</i>	14	0.4	YQS170-02
<i>Euphorbia drummondii</i>	0.001	0.02	n/a
<i>Euryomyrtus inflata</i>	0.001	0.3	n/a
<i>Gnephosis drummondii</i>	0.001	0.05	n/a
<i>Gonocarpus confertifolius</i> var. <i>confertifolius</i>	0.001	0.2	YQS170-04
<i>Goodenia peacockiana</i>	0.001	0.05	n/a
<i>Homalocalyx thryptomenoides</i>	5.5	0.3	YQS170-03
<i>Kennedia prorepens</i>	0.001	0.02	n/a
<i>Micromyrtus flaviflora</i>	0.5	0.4	YQS170-01
<i>Prostanthera wilkieana</i>	0.001	0.3	n/a
<i>Ptilotus polystachyus</i>	0.001	0.1	YQS170-05
<i>Scaevola parviflora</i>	0.001	0.5	n/a
<i>Solanum plicatile</i>	0.001	0.2	n/a
<i>Swainsona</i> sp.	0.001	0.02	n/a
<i>Thysanotus manglesianus</i>	0.001	0.2	n/a
<i>Trachymene bialata</i>	0.1	0.4	n/a
<i>Triodia basedowii</i>	25	0.3	n/a

BHP Billiton Yeelirrie Site YQS171

Described by Daniel Brassington **Date:** 03/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: North side of Albion Downs-Yeelirrie Road near Goldfields Highway turn off, study area 1

MGA Zone: 51J 251491 mE 6973632 mN

Vegetation Code: GFGr

Landscape Association: Pale brown sandy loam

Vegetation: Grassland on footslope

Disturbance: Tyre tracks through corner of plot, animal scratchings and grazing

Fire Age: Long unburnt

Notes: Total PFC 9.5%; 4% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 2% cover of cryptogam crusting, 2% cover of clay, 60% cover of sand, 40% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	n/a	0.1	n/a
<i>Aristida contorta</i>	5	0.1	YQS171-08
<i>Calotis multicaulis</i>	n/a	0.4	YQS171-03
<i>Dysphania melanocarpa</i>	n/a	0.02	n/a
<i>Enneapogon caerulescens</i>	0.2	0.1	YQS171-05
<i>Eragrostis dielsii</i>	n/a	0.04	YQS171-06
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.2	0.01	n/a
<i>Goodenia tenella</i>	n/a	0.1	YQS171-02
<i>Heliotropium ammophilum</i>	n/a	0.04	YQS171-09
<i>Heliotropium heteranthum</i>	n/a	0.02	YQS171-01
<i>Helipterum craspedioides</i>	3	0.3	n/a
<i>Phyllanthus erwinii</i>	n/a	0.03	YQS171-07
<i>Podolepis capillaris</i>	n/a	0.25	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i>	0.2	0.3	n/a
<i>Rhagodia eremaea</i>	0.2	0.5	n/a
<i>Salsola tragus</i>	n/a	0.2	n/a
<i>Sclerolaena convexula</i>	n/a	0.15	YQS171-04
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sclerolaena diacantha</i>	n/a	0.15	n/a
<i>Sida fibulifera</i>	0.1	0.1	n/a
<i>Solanum lasiophyllum</i>	0.3	0.3	n/a
<i>Swainsona tenuis</i>	0.3	0.02	n/a
<i>Tribulus terrestris</i>	n/a	0.01	n/a
<i>Tripogon loliiformis</i>	n/a	0.07	n/a

BHP Billiton Yeelirrie Site YQS172

Described by Daniel Brassington **Date:** 03/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: South side Albion Downs Road near Goldfields Highway, study area 1

MGA Zone: 51J 250755 mE 6973741 mN

Vegetation Code: BCLS

Landscape Association: Pale grey-brown sandy clay

Vegetation: Breakaway Chenopod low shrubland

Disturbance: None noted

Fire Age: Unknown

Notes: Total PFC 15.85%; 3% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.5% dead timber cover on ground, 2% cover of cryptogam crusting, 5% cover of clay, 75% cover of sand, 10% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	1	0.1	n/a
<i>Atriplex semilunaris</i>	n/a	0.15	YQS172-05
<i>Calotis multicaulis</i>	0.25	0.05	n/a
<i>Enneapogon caerulescens</i>	0.1	0.05	n/a
<i>Eragrostis dielsii</i>	n/a	0.03	n/a
<i>Eremophila forrestii</i>	n/a	0.5	n/a
<i>Eremophila galeata</i>	n/a	0.5	n/a
<i>Euphorbia drummondii</i>	n/a	0.01	n/a
<i>Goodenia tenella</i>	n/a	0.05	n/a
<i>Helipterum craspedioides</i>	n/a	0.15	n/a
<i>Lepidium oxytrichum</i>	n/a	0.1	n/a
<i>Maireana carnosa</i>	n/a	0.15	n/a
<i>Maireana georgei</i>	n/a	0.2	YQS172-06
<i>Maireana triptera</i>	7	0.25	YQS172-07
<i>Maireana villosa</i>	n/a	0.2	YQS172-08
<i>Podolepis capillaris</i>	n/a	0.15	n/a
<i>Portulaca oleracea</i>	n/a	0.01	n/a
<i>Ptilotus obovatus</i>	1.5	0.4	n/a
<i>Salsola tragus</i>	0.15	0.25	n/a
<i>Sclerolaena burbidgeae</i>	0.1	n/a	YQS172-03
<i>Sclerolaena densiflora</i>	1.5	n/a	n/a
<i>Sclerolaena diacantha</i>	1	n/a	YQS172-01
<i>Sclerolaena eriacantha</i>	1.5	n/a	YQS172-02
<i>Sclerolaena lanicuspis</i>	1	n/a	YQS172-04
<i>Senna pleurocarpa</i>	0.5	1.2	n/a
<i>Sida calyxhymenia</i>	0.1	0.2	n/a
<i>Sida fibulifera</i>	n/a	0.2	n/a
<i>Solanum lasiophyllum</i>	0.15	0.4	n/a
<i>Swainsona</i> sp.	n/a	0.01	YQS172-09
<i>Tripogon loliiformis</i>	n/a	0.05	n/a

BHP Billiton Yeelirrie Site YQS173

Described by Daniel Brassington **Date:** 03/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: East side of Albion Downs-Yeelirrie Road, study area 1

MGA Zone: 51J 247611 mE 6977537 mN

Vegetation Code: DRES

Landscape Association: Pale orange sand

Vegetation: Drainage *Eucalyptus camaldulensis* and *Acacia* spp shrubland

Disturbance: Cattle usage, plastic and paper rubbish from roadside

Fire Age: Long unburnt

Notes: Total PFC 49.328%; 7% leaf litter cover to a depth of 3 cm, 0 dead timber standing with 2% dead timber cover on ground, 1% cover of cryptogam crusting, 6% cover of clay, 65% cover of sand, 10% cover of gravel, 15% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	0.05	n/a
<i>Acacia aneura</i>	2.5	4	YQS173-02
<i>Acacia aneura</i>	4	4	YQS173-03
<i>Acacia aneura</i>	1.5	6	YQS173-01
<i>Acacia quadrimarginea</i>	25	3.5	n/a
<i>Acacia ramulosa</i> var. <i>linophylla</i>	0.25	1.5	n/a
<i>Acacia tetragonophylla</i>	0.3	2	n/a
<i>Calandrinia eremaea</i>	0.001	0.05	n/a
<i>Calandrinia Ptychosperma</i>	0.001	0.06	n/a
<i>Callitris columellaris</i>	0.5	1.6	n/a
<i>Centaurium spicatum</i>	0.5	0.1	YQS173-06
<i>Centaurium spicatum</i>	0.5	0.1	YQS173-10
<i>Centipeda thespidioides</i>	0.5	0.1	n/a
<i>Cephalopterum drummondii</i>	0.001	0.15	n/a
<i>Cheilanthes sieberi</i>	0.1	0.15	n/a
<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	0.001	0.03	n/a
<i>Cuscuta planiflora</i>	0.1	0.15	YQS173-08
<i>Cymbopogon ambiguus</i>	4	0.6	n/a
<i>Cyperus</i> sp. (inadequate material)	0.001	0.3	n/a
<i>Dodonaea petiolaris</i>	0.3	1.2	n/a
<i>Duperreya sericea</i>	0.75	3.5	n/a
<i>Dysphania melanocarpa</i>	0.001	0.05	n/a
<i>Eragrostis kennedyae</i>	0.001	0.8	YQS173-07
<i>Eremophila exilifolia</i>	0.3	1.3	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.15	0.4	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.05	n/a
<i>Eucalyptus camaldulensis</i>	5	11	n/a
<i>Euphorbia boophthona</i>	0.001	0.1	n/a
<i>Euphorbia drummondii</i>	0.001	0.03	n/a
<i>Glycine canescens</i>	0.001	0.2	n/a
<i>Gnephosis drummondii</i>	0.001	0.06	n/a
<i>Goodenia occidentalis</i>	0.001	0.1	n/a
<i>Indigofera georgei</i>	0.001	0.15	n/a
<i>Isolepis congrua</i>	0.001	0.15	YQS173-09
<i>Lysimachia arvensis</i>	0.2	0.15	n/a
<i>Myriocephalus occidentalis</i>	0.001	0.08	n/a
<i>Paspalidium basicladium</i>	0.001	0.1	n/a
<i>Phyllanthus erwinii</i>	0.001	0.08	n/a
<i>Pluchea dentex</i>	2	0.4	n/a
<i>Pogonolepis stricta</i>	0.001	0.04	YQS173-05
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Rhodanthe charsleyae</i>	0.001	0.3	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.5	n/a

<i>Senecio glossanthus</i>	0.001	0.2	YQS173-04
<i>Senna artemisioides</i> subsp. x <i>artemisioides</i>	0.75	1.2	n/a
<i>Sida ectogama</i>	0.1	1.2	n/a
<i>Solanum lasiophyllum</i>	0.001	0.1	n/a
<i>Tietkensia corrickiae</i>	0.001	0.01	n/a
<i>Wahlenbergia tumidifructa</i>	0.001	0.2	n/a

BHP Billiton Yeelirrie Site YQS174

Described by Daniel Brassington **Date:** 03/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: North side of Albion Downs-Yeelirrie Road, study area 1

MGA Zone: 51J 251851 mE 6973585 mN

Vegetation Code: GR

Landscape Association: Pale orange brown sand

Vegetation: Granite rise/outcrop

Disturbance: Animal shelter

Fire Age: Long unburnt

Notes: Total PFC 25.321%; 8% leaf litter cover to a depth of 1 cm, 1 dead timber standing with 0.5% dead timber cover on ground, 45% cover of cryptogam crusting, 5% cover of clay, 12.5% cover of sand, 12.5% cover of gravel, 70% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon oxycarpum</i>	4	0.25	n/a
<i>Amaranthus mitchellii</i>	0.3	0.3	YQS174-01
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Calandrinia eremaea</i>	0.05	0.1	n/a
<i>Calandrinia Ptychosperma</i>	0.001	0.02	n/a
<i>Calotis hispidula</i>	0.001	0.05	n/a
<i>Calotis plumulifera</i>	0.001	0.05	n/a
<i>Cheilanthes brownii</i>	0.05	0.15	n/a
<i>Cheilanthes sieberi</i>	0.05	0.15	n/a
<i>Crassula colorata</i> var. <i>acuminata</i>	0.001	0.05	n/a
<i>Cymbopogon ambiguus</i>	2.5	1	n/a
<i>Dodonaea petiolaris</i>	1.5	1	n/a
<i>Dysphania melanocarpa</i>	4	0.1	n/a
<i>Dysphania rhadinostachya</i>	0.05	0.3	n/a
<i>Emex australis</i>	0.2	0.2	n/a
<i>Enneapogon caeruleascens</i>	0.101	0.1	n/a
<i>Eragrostis dielsii</i>	0.001	0.02	n/a
<i>Eremophila galeata</i>	1.5	1.8	n/a
<i>Erodium cygnorum</i>	1.5	0.2	n/a
<i>Euphorbia drummondii</i>	0.05	0.03	n/a
<i>Glycine canescens</i>	0.001	0.3	n/a
<i>Gnephosis drummondii</i>	0.001	0.2	n/a
<i>Helipterum craspedioides</i>	1	0.3	n/a
<i>Hibiscus solanifolius</i>	0.001	0.2	n/a
<i>Lemooria burkittii</i>	0.05	0.01	n/a
<i>Lepidium oxytrichum</i>	0.001	0.15	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	0.001	0.2	YQS174-02
<i>Paspalidium basicladium</i>	1.5	0.1	n/a
<i>Phyllanthus erwinii</i>	0.05	0.1	n/a
<i>Portulaca oleracea</i>	0.1	0.01	n/a
<i>Ptilotus obovatus</i>	2.5	0.5	n/a
<i>Ptilotus roei</i>	0.1	0.04	n/a
<i>Rhodanthe charsleyae</i>	0.3	0.2	n/a
<i>Rhodanthe maryonii</i>	0.1	0.2	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.1	n/a
<i>Salsola tragus</i>	0.001	0.3	n/a
<i>Sclerolaena densiflora</i>	0.001	0.2	n/a
<i>Senna pleurocarpa</i>	1	1.8	n/a
<i>Sida phaeotricha</i>	2.5	0.6	n/a
<i>Solanum ellipticum</i>	0.05	0.2	n/a
<i>Solanum lasiophyllum</i>	0.1	0.3	n/a
<i>Swainsona tenuis</i>	0.001	0.05	n/a
<i>Tragus australianus</i>	0.001	0.05	n/a

<i>Tribulus terrestris</i>	0.001	0.02	n/a
<i>Trichodesma zeylanicum</i>	0.1	0.7	n/a
<i>Tripogon loliiformis</i>	0.001	0.1	n/a
<i>Wahlenbergia tumidifructa</i>	0.001	0.2	n/a

BHP Billiton Yeelirrie Site YQS175

Described by Daniel Brassington **Date:** 04/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1km south east of Meekatharra Road and Sandstone-Wiluna Road intersection, Ullula Station, study area 1

MGA Zone: 50J 763440 **mE** 7009222 **mN**

Vegetation Code: SDSH

Landscape Association: Sand Plain, brownish red silty sand

Vegetation: *Acacia* shrubland on sandplain

Disturbance: Animal shelter

Fire Age: Approximately 20 years

Notes: Total PFC 35.75%; 18% leaf litter cover to a depth of 2 cm, 64 dead timber standing with 1.2% dead timber cover on ground, 1.5% cover of cryptogam crusting, 1.5% cover of clay, 70% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia effusifolia</i>	2	3.5	n/a
<i>Acacia heteroneura</i>	1	1.4	YQS175-01
<i>Acacia ligulata</i>	0.5	1.5	n/a
<i>Amphipogon caricinus</i>	0.2	0.3	n/a
<i>Bertya dimerostigma</i>	4	1.1	n/a
<i>Callitris columellaris</i>	5	4	n/a
<i>Dianella revoluta</i>	0.5	0.6	n/a
<i>Eriachne mucronata</i> (xerophytic form)	0.05	0.4	n/a
<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	0.5	2.5	n/a
<i>Hakea francisiana</i>	10	3	n/a
<i>Triodia basedowii</i>	12	0.3	n/a

BHP Billiton Yeelirrie Site YQS176

Described by Daniel Brassington **Date:** 04/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.2km south east of 3 Island Road and SB34 Bore Road intersection, study area 1

MGA Zone: 50J

774611 **mE**

6997739 **mN**

Vegetation Code: SASP

Landscape Association: Reddish brown sand with a bit of silt

Vegetation: Sand Plain spinifex grassland

Disturbance: Some animal diggings

Fire Age: 4-5 years

Notes: Total PFC 30.453%; 0.3% leaf litter cover to a depth of 1 cm, 51 dead timber standing with 1.2% dead timber cover on ground, 3% cover of cryptogam crusting, 2% cover of clay, 90% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia jamesiana</i>	0.25	0.5	YQS176-01
<i>Amphipogon caricinus</i>	0.001	0.2	n/a
<i>Aristida contorta</i>	0.001	n/a	n/a
<i>Bonamia rosea</i>	n/a	0.03	n/a
<i>Eragrostis eriopoda</i>	0.001	0.3	YQS176-02
<i>Eriachne mucronata</i> (xerophytic form)	0.1	0.3	n/a
<i>Euryomyrtus inflata</i>	10	0.3	YQS176-03
<i>Grevillea acacioides</i>	0.1	0.6	n/a
<i>Leptosema chambersii</i>	n/a	0.02	n/a
<i>Scaevola parviflora</i>	n/a	0.01	n/a
<i>Triodia basedowii</i>	20	0.3	n/a

BHP Billiton Yeelirrie Site YQS177

Described by Daniel Brassington **Date:** 04/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: SB34 Bore Road, study area 1

MGA Zone: 50J

779093 mE

6998124 mN

Vegetation Code: PLCh

Landscape Association: Red brown clayey sand

Vegetation: Chenopod very low shrubland on playa

Disturbance: Minor vehicle tracks

Fire Age: Long unburnt

Notes: Total PFC 28.069%; 15% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 50% cover of cryptogam crusting, 25% cover of clay, 25% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Aristida contorta</i>	0.05	0.1	n/a
<i>Atriplex semilunaris</i>	0.01	0.15	n/a
<i>Calotis plumulifera</i>	0.001	0.02	n/a
<i>Eragrostis dielsii</i>	3	0.01	n/a
<i>Euphorbia drummondii</i>	0.001	0.03	n/a
<i>Lemooria burkittii</i>	0.001	0.01	n/a
<i>Maireana carnososa</i>	20	0.15	n/a
<i>Podolepis capillaris</i>	0.001	0.15	n/a
<i>Pogonolepis stricta</i>	0.001	0.01	n/a
<i>Portulaca oleracea</i>	0.001	0.04	n/a
<i>Ptilotus aevoides</i>	0.001	0.2	n/a
<i>Ptilotus obovatus</i>	n/a	0.2	n/a
<i>Sclerolaena densiflora</i>	5	0.1	n/a
<i>Sclerolaena diacantha</i>	0.001	0.1	n/a
<i>Swainsona kingii</i>	0.001	0.06	n/a
<i>Tripogon loliiformis</i>	n/a	0.03	n/a

BHP Billiton Yeelirrie Site YQS178

Described by Daniel Brassington **Date:** 04/10/2010 **Type:** Quadrat **Size:** 20 x 20 m
Season: Excellent

Location: East side of road between airstrip and Meekatharra Road, study area 1

MGA Zone: 51J 211887 mE 6980672 mN

Vegetation Code: GRMU

Landscape Association: Red brown clayey sand

Vegetation: Grove mulga woodland

Disturbance: Minor vehicle tracks, dust from roadside, animal diggings

Fire Age: Long unburnt

Notes: Total PFC 74.333%; 20% leaf litter cover to a depth of 3 cm, 5 dead timber standing with 6% dead timber cover on ground, 50% cover of cryptogam crusting, 14% cover of clay, 10% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	1	0.5	n/a
<i>Abutilon oxycarpum</i>	0.1	0.15	n/a
<i>Acacia aneura</i>	30	8	YQS178-01
<i>Acacia ayersiana</i>	4	8	n/a
<i>Acacia tetragonophylla</i>	0.75	1.5	n/a
<i>Acetosa vesicaria</i>	0.001	0.1	n/a
<i>Amyema hilliana</i>	n/a	0.4	n/a
<i>Aristida contorta</i>	0.001	0.1	n/a
<i>Austrostipa elegantissima</i>	0.3	1	n/a
<i>Boerhavia repleta</i>	0.001	0.2	n/a
<i>Brachyscome ciliaris</i>	0.001	0.2	n/a
<i>Calandrinia eremaea</i>	0.001	0.1	n/a
<i>Calotis hispidula</i>	0.05	0.1	n/a
<i>Calotis multicaulis</i>	0.001	0.1	n/a
<i>Cephalopterum drummondii</i>	0.001	0.2	n/a
<i>Convolvulus angustissimus</i>	0.001	0.05	n/a
<i>Daucus glochidiatus</i>	0.001	0.04	n/a
<i>Duboisia hopwoodii</i>	0.001	0.3	n/a
<i>Dysphania kalpari</i>	0.001	0.05	n/a
<i>Enchylaena tomentosa</i>	0.1	0.4	n/a
<i>Eremophila eriocalyx</i>	0.2	1.2	n/a
<i>Eremophila gilesii</i>	1	0.3	n/a
<i>Eremophila hygrophana</i>	12	0.6	n/a
<i>Erodium cygnorum</i>	0.001	0.1	n/a
<i>Euphorbia boophthona</i>	0.001	0.2	n/a
<i>Euphorbia drummondii</i>	0.001	0.1	n/a
<i>Gnephosis arachnoidea</i>	0.001	0.2	YQS178-03
<i>Gnephosis drummondii</i>	0.001	0.1	n/a
<i>Goodenia peacockiana</i>	0.05	0.1	n/a
<i>Grevillea berryana</i>	3	4	n/a
<i>Haloragis trigonocarpa</i>	0.001	0.1	n/a
<i>Indigofera georgei</i>	0.1	0.2	YQS178-04
<i>Isoetopsis graminifolia</i>	0.001	0.03	n/a
<i>Maireana georgei</i>	0.1	0.4	n/a
<i>Maireana planifolia</i>	0.1	0.5	n/a
<i>Melaleuca interioris</i>	4	1.5	n/a
<i>Myriocephalus occidentalis</i>	0.001	0.1	n/a
<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	0.001	0.4	n/a
<i>Paspalidium basicladium</i>	0.2	0.2	n/a
<i>Portulaca oleracea</i>	0.001	0.03	n/a
<i>Psydrax suaveolens</i>	0.001	2	n/a
<i>Ptilotus aervoides</i>	0.3	0.02	n/a
<i>Ptilotus exaltatus</i>	0.001	0.25	n/a

<i>Ptilotus gaudichaudii</i>	0.001	0.2	n/a
<i>Ptilotus helipteroides</i>	0.001	0.2	n/a
<i>Ptilotus obovatus</i>	12	1	n/a
<i>Rhagodia drummondii</i>	1.5	1.2	n/a
<i>Rhodanthe charslleyae</i>	0.001	0.2	n/a
<i>Rhodanthe maryonii</i>	0.001	0.1	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.5	n/a
<i>Salsola tragus</i>	n/a	0.25	n/a
<i>Santalum lanceolatum</i>	0.15	2	n/a
<i>Sclerolaena densiflora</i>	n/a	0.1	n/a
<i>Sclerolaena diacantha</i>	n/a	0.2	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.2	1.2	YQS178-02
<i>Sida fibulifera</i>	1	0.2	n/a
<i>Spartothamnella teucriflora</i>	1.5	1.2	n/a
<i>Swainsona kingii</i>	0.3	0.05	n/a
<i>Swainsona tenuis</i>	0.3	0.2	n/a
<i>Tribulus terrestris</i>	0.001	0.01	n/a
<i>Velleia rosea</i>	0.001	0.1	n/a
<i>Wahlenbergia tumidifructa</i>	0.001	0.2	n/a
<i>Zygophyllum apiculatum</i>	0.001	0.1	n/a

BHP Billiton Yeelirrie Site YQS179

Described by Daniel Brassington **Date:** 05/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 700m east of Midnight Bore Road, 3.8km south of SB34 Bore Road, study area 1

MGA Zone: 50J 782142 mE 6994015 mN

Vegetation Code: PLMf

Landscpe Association: Occasional *Muehlenbeckia florulenta* shrubs over scattered white flower ground cover on gravel slope

Vegetation: Playa *Muehlenbeckia florulenta* shrubland

Disturbance: None noted

Fire Age: Long unburnt

Notes: Total PFC 2.974%; 0.3% leaf litter cover to a depth of 1 cm, 0 dead timber standing with 0.001% dead timber cover on ground, 25% cover of cryptogam crusting, 10% cover of clay, 40% cover of sand, 25% cover of gravel, 0.001% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon fraseri</i>	0.001	0.15	YQS179-04
<i>Alternanthera nodiflora</i>	0.001	0.02	n/a
<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	0.001	0.02	n/a
<i>Muehlenbeckia florulenta</i>	2.5	1.4	n/a
<i>Peplidium aithocheilum</i>	0.2	0.02	YQS179-01
<i>Peplidium muelleri</i>	OUT	0.01	n/a
<i>Peplidium</i> sp. C Evol. Fl. Fauna Arid Aust. (N.T. Burbidge & A. Kanis 8158)	OUT	0.01	n/a
<i>Sida cardiophylla</i>	0.25	0.15	YQS179-03
<i>Solanum lasiophyllum</i>	OUT	0.3	n/a
<i>Solanum plicatile</i>	OUT	0.2	YQS179-02
<i>Swainsona kingii</i>	0.02	0.04	n/a
<i>Swainsona tenuis</i>	0.001	0.06	n/a
<i>Trianthema oxycalyptra</i>	n/a	n/a	YQS179-01

BHP Billiton Yeelirrie Site YQS180

Described by Daniel Brassington **Date:** 05/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 500m west of Midnight Bore Road, 1.1km south of SB34 Bore Road, study area 1

MGA Zone: 50J

782272 mE

6996593 mN

Vegetation Code: CMiS

Landscape Association: Pale brown sandy clay with calcrete rubble

Vegetation: *Melaleuca interioris* shrubland on calcrete

Disturbance: Animal scratchings

Fire Age: Unknown

Notes: Total PFC 14.951%; 1.5% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 2% dead timber cover on ground, 6% cover of cryptogam crusting, 50% cover of clay, 32% cover of sand, 2% cover of gravel, 6% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia tetragonophylla</i>	1	3	n/a
<i>Enchylaena tomentosa</i>	0.25	0.5	n/a
<i>Eremophila longifolia</i>	0.5	2.5	n/a
<i>Grevillea berryana</i>	1	3	n/a
<i>Melaleuca interioris</i>	10	3	n/a
<i>Ptilotus obovatus</i>	2	0.6	n/a
<i>Rhagodia drummondii</i>	n/a	0.6	n/a
<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	n/a	1.5	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.4	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.2	0.8	n/a

BHP Billiton Yeelirrie Site YQS181

Described by Daniel Brassington **Date:** 05/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.2km east of Communications Tower, study area 1

MGA Zone: 50J 790570 mE 6990005 mN

Vegetation Code: CMGbS

Landscape Association: Brownish red sand with calcrete rubble

Vegetation: Mulga and *Grevillea berryana* shrubland on calcrete

Disturbance: Old tracks thru corner of plot, animal scratchings

Fire Age: Long unburnt

Notes: Total PFC 19.673%; 10% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 3% dead timber cover on ground, 9% cover of cryptogam crusting, 8% cover of clay, 70% cover of sand, 5% cover of gravel, 0.1% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Abutilon otocarpum</i>	0.001	0.05	n/a
<i>Acacia ayersiana</i>	1	7	n/a
<i>Acacia burkittii</i>	2	4	n/a
<i>Acacia tetragonophylla</i>	0.3	1.8	n/a
<i>Amyema gibberula</i> var. <i>gibberula</i>	0.5	n/a	n/a
<i>Aristida contorta</i>	0.3	0.2	n/a
<i>Calotis plumulifera</i>	0.001	0.1	n/a
<i>Cephalopterum drummondii</i>	0.001	0.15	n/a
<i>Dissocarpus paradoxus</i>	0.1	0.1	n/a
<i>Enchylaena tomentosa</i>	0.3	0.5	n/a
<i>Enneapogon caerulescens</i>	0.1	0.15	n/a
<i>Eremophila longifolia</i>	0.5	3	n/a
<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	0.001	0.04	n/a
<i>Erodium cygnorum</i>	0.001	0.06	n/a
<i>Euphorbia drummondii</i>	0.05	0.06	n/a
<i>Goodenia peacockiana</i>	0.001	0.1	n/a
<i>Grevillea berryana</i>	6	5	n/a
<i>Haloragis trigonocarpa</i>	0.001	0.15	n/a
<i>Lycium australe</i>	0.5	1	n/a
<i>Paspalidium basicladium</i>	0.001	0.05	n/a
<i>Portulaca oleracea</i>	0.001	0.01	n/a
<i>Ptilotus aervoides</i>	0.1	0.03	n/a
<i>Ptilotus exaltatus</i>	0.5	0.3	n/a
<i>Ptilotus helipteroides</i>	0.15	0.2	n/a
<i>Ptilotus obovatus</i>	0.5	0.6	n/a
<i>Rhagodia drummondii</i>	2.5	1	n/a
<i>Rhyncharrhena linearis</i>	0.001	0.2	n/a
<i>Salsola tragus</i>	0.2	0.25	n/a
<i>Sclerolaena densiflora</i>	0.2	0.15	n/a
<i>Sclerolaena diacantha</i>	0.001	0.1	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3.5	2.4	n/a
<i>Swainsona kingii</i>	0.05	0.1	n/a
<i>Tribulus astrocarpus</i>	0.1	0.01	n/a
<i>Tribulus terrestris</i>	0.01	0.02	n/a
<i>Zygophyllum apiculatum</i>	0.2	0.3	n/a
<i>Zygophyllum compressum</i>	0.001	0.15	n/a

BHP Billiton Yeelirrie Site YQS182

Described by Daniel Brassington **Date:** 05/10/2010 **Type:** Quadrat **Size:** 20 x 20 m

Season: Excellent

Location: 1.2km east of Yeelirrie Camp, study area 1

MGA Zone: 51J

213976 mE

6979291 mN

Vegetation Code: PLAMi

Landscape Association: Brown sandy clay loam

Vegetation: Playa *Melaleuca interioris* shrubland

Disturbance: Animal scratchings

Fire Age: Unknown

Notes: Total PFC 33.45%; 30% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 5% dead timber cover on ground, 30% cover of cryptogam crusting, 5% cover of clay, 30% cover of sand, 0% cover of gravel, 0% cover of rocks.

Species List:

Name	Cover (%)	Height (m)	Collection
<i>Acacia ayersiana</i>	2.5	5	n/a
<i>Alternanthera nodiflora</i>	n/a	0.1	n/a
<i>Amyema hilliana</i>	n/a	n/a	n/a
<i>Aristida contorta</i>	n/a	0.05	n/a
<i>Austrostipa elegantissima</i>	0.5	0.5	n/a
<i>Centipeda thespidioides</i>	0.05	0.07	n/a
<i>Dysphania melanocarpa</i>	n/a	0.01	n/a
<i>Eragrostis dielsii</i>	n/a	0.03	n/a
<i>Marsilea hirsuta</i>	n/a	0.04	n/a
<i>Melaleuca interioris</i>	30	3	n/a
<i>Myriocephalus occidentalis</i>	n/a	0.04	n/a
<i>Rhagodia drummondii</i>	0.4	1.2	n/a
<i>Solanum lasiophyllum</i>	n/a	0.1	n/a
<i>Tribulus astrocarpus</i>	n/a	0.03	n/a

Appendix 10. Vegetation mapping statistical verification

1.1. Purpose of statistical verification

The statistical program PATN v3.12 was employed for the verification of vegetation community groups described within the survey area based on analysis of information collected during the quadrat survey. The purpose of the analysis was to compare the vegetation communities that were defined by botanists in the field to the groupings created by PATN on the basis of the floristic composition of the quadrats. The vegetation communities (listed in Appendix 7) were each aligned and associated with one of five soil landscapes (described in Section 3.1): Calcrete System, Playa System, Sand Plain System, Hardpan and Drainage System, and Granite System. Suggestions made by PATN about the differences in community classification were further investigated.

1.2. Methods

The data used in the investigation consisted of flora species (216) recorded within 2500m² quadrats at 149 sites. Some species recorded in the quadrats were removed due to identification verification difficulties; however, most of these were annuals or herbaceous perennials. Unidentified species deemed as “important” to the classification were given temporary names and included in the investigation. The percentage foliage cover estimates (in terms of the total quadrat cover), for each species was converted into five cover classes. These are shown below in Table 5. This was in an effort to create a more equal weighting between abundant and non-abundant species. While presence/absence data is commonly used for this type of analysis, cover classes were chosen as they were found to be more representative of the community hierarchy (*ie* dominant versus non-dominant species).

Table 5: Percentage foliar cover conversions to Cover Class

Percentage (%) cover	Cover class
0.001	0.1
$0.001 < x \leq 2$	0.5
$2 < x \leq 10$	1
$10 < x < 30$	1.5
> 30	2

Five main functions of the PATN program were used in the investigation:

- Bray and Curtis association;
- Flexible UPGMA classification with results displayed in a dendrogram;
- SSH MDS (Semi-Strong Hybrid Multidimensional Scaling) algorithm to create a three-dimensional ordination, displayed with a minimum spanning tree (mst);
- Two-way Table created by classification of sites and species groups; and
- Kruskal-Wallis values to estimate the utility of species to discriminate between a set of groups.

Initially, the vegetation communities of all five soil landscapes were analysed together, including 149 sites and 216 species. The stress of the association was very high, meaning that the association values for these comparisons between sites cannot be considered accurate. For the purposes of this report, an acceptable stress value was considered to be anything below 0.1700. Elimination of outliers and data transformation techniques did not appreciably reduce the association stress value. It was believed that a large proportion of the sites across the soil landscapes had too little in common to form clear groupings. However, this analysis was still used to give a broad impression of the relationships of the vegetation communities between the soil landscapes, and indicated which systems contained sites with similar floristic compositions.

The dataset was then split, with communities from each soil landscape analysed individually. Species that had low discriminatory power between the PATN groups, defined on the basis of Kruskal-Wallis values, were removed from each analysis individually. This further reduced the stress of the association.

The correlation between the PATN classification and the vegetation communities was investigated visually using tables showing the number of sites of each vegetation community that appeared in each PATN group at the 2-group, 5-group and 10-group level.

The five soil landscapes were further investigated using a combination of the ordination, dendrogram and the two-way table. The ordination was used mostly to

interpret the levels of association between sites and PATN groupings in 3-dimensional space, and also to identify any sites that were outliers. The dendrogram was used to interpret the classification at the 5-group level, including the relationships between sites and groups for each soil landscape. The two-way table was used to interpret the influence of species on groupings and to interpret species assemblages common or uncommon to groups of sites.

Any PATN groupings that differed from the vegetation communities described by botanists were investigated closely, and their validity determined based on observations made in the field.

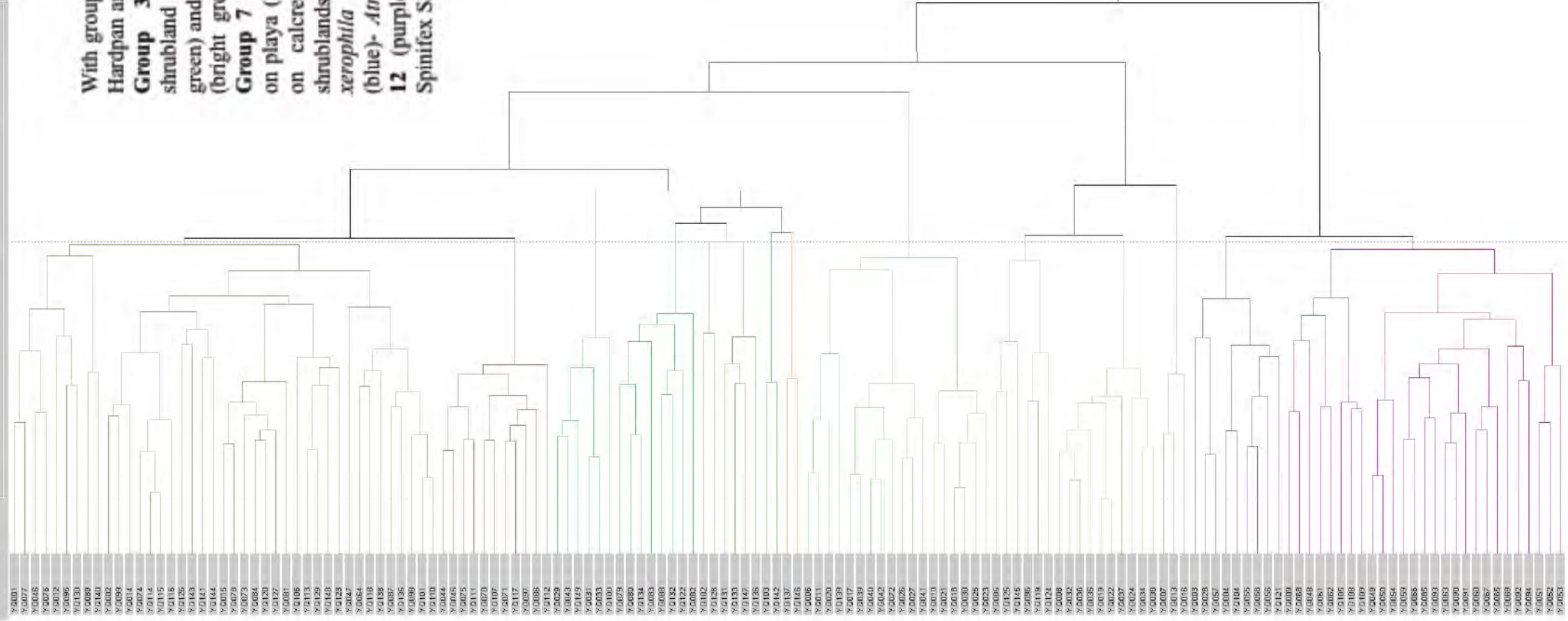
1.3. Results and Discussion

The very high stress of the association between all sites combined (0.2030) was likely to be a consequence of the lack of similarity between sites in different soil landscapes, and it was therefore not possible to get accurate association values for these comparisons. However, it was still possible to use the dendrogram (Figure 1) to interpret an estimation of the relationships between the vegetation communities and the five soil landscapes.

The initial separation in the dendrogram was made between sites in the Sand Plain System and all other sites. Sites in the Calcrete System and Granite System also separated distinctly in the dendrogram. The Playa System sites were mostly intermingled with Hardpan and Drainage System sites, and it is likely that this is due to these sites having similar floristic composition. It was acceptable to further analyse the systems individually, as they grouped separately in the dendrogram with few exceptions, and as no vegetation communities occur across more than one system.

Figure 1: Dendrogram showing classification of all sites in the five soil landscapes.

Row Fusion Dendrogram



With groups mostly equivalent to: **Group 1** (olive green)- Hardpan and Playa sites, **Group 2** (brown)- Hardpan sites, **Group 3** (emerald green)- *Maireana pyramidata* shrubland sites (on playa and calcrete), **Groups 4** (lime green) and **Group 5** (forest green)- Granite sites, **Group 6** (bright green)- Chenopod shrublands on playa (PLCh), **Group 7** (orange)- *Meuhlenbeckia florulenta* shrubland on playa (PLMf), **Group 8** (leaf green)- Tall shrublands on calcrete, **Group 9** (grey)- Grassland and low shrublands on calcrete, **Group 10** (yellow)- *Melaleuca xerophila* shrublands on calcrete (CMxS), **Group 11** (blue)- *Artiplex* sp. Yeelirrie Station on calcrete, **Group 12** (purple)- Mulga Sand plains, **Group 13** (pink)- Spinifex Sand plains.

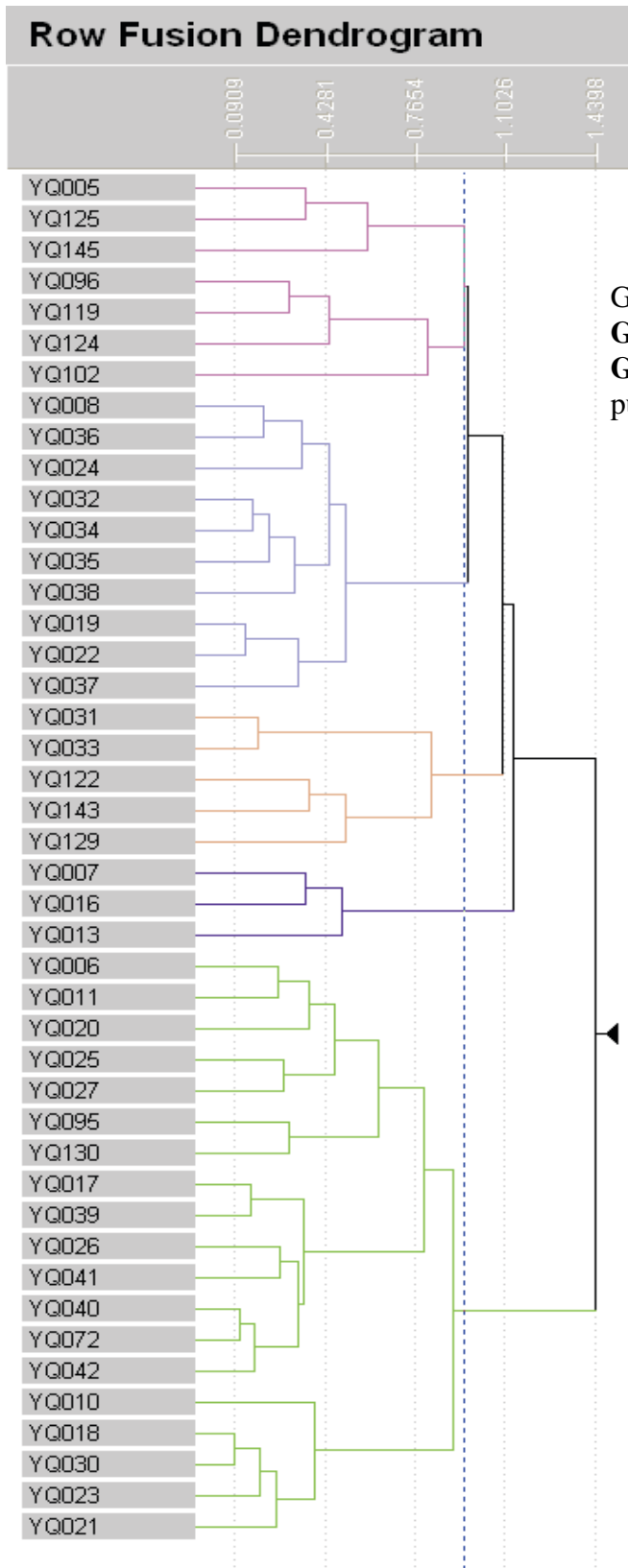
1.3.1. Calcrete System

The Calcrete System was represented by a total of 44 sites (quadrats) and 72 species. Using the 20 most discriminatory species only, the stress of the association was reduced to 0.1589. There is a strong relationship between the classification and most of the eleven vegetation communities determined to be present in the Calcrete System from the vegetation mapping (Table 6), however there were some outliers. Analysis at the 5-group level was most useful.

Table 6: Relationship between classification groups and vegetation communities in the Calcrete System

gp2	gp5	gp10	CErG	CLaS	CRsS	CMxS	CMpS	CMiS	CAPs	CABs	CGbS	CCpW	CEgW
1	1	1	2			1							
1	1	2		3									
1	1	3			1								
1	2	4		1		7			2				
1	3	5					2						
1	3	6			1		1	1					
1	4	7							3				
2	5	8								4	2		1
2	5	9										7	
2	5	10											5

Figure 2 shows a dendrogram representing the PATN classification of sites in the Calcrete System on the basis of floristic composition. Figure 3 shows a two-dimensional representation of the three-dimensional ordination of the sites and communities in the Calcrete System.



Groups described within the text:
Group 1= pink; **Group 2**= lilac;
Group 3= orange; **Group 4**=
purple; **Group 5**= green.

Figure 2: Dendrogram showing classification of all sites in the Calcrete System.

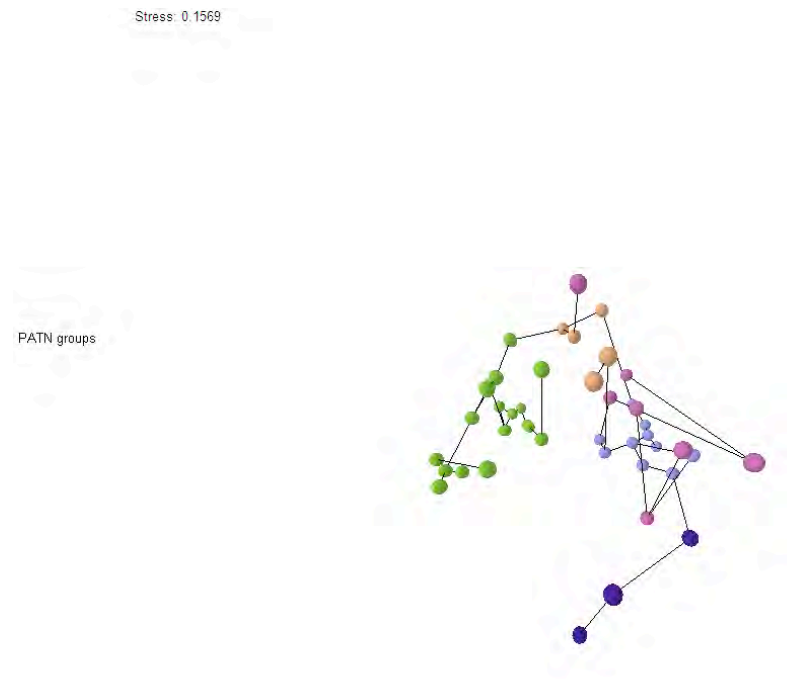


Figure 3: Ordination and mst showing association between sites in the Calcrete System (Colours corresponding to groups in dendrogram above)

Further investigation at the 5-group level using the dendrogram, allowed for each of the classification groups to be described in terms of the vegetation communities they contain, and the species that define them.

Group 1 contains two main calcrete vegetation communities, CErG and CLaS, with two additional sites, YQ145 and YQ102. Quadrat YQ145, was identified in the field as being within a CMxS community, but was grouped separately in the dendrogram to the other CMxS sites, and appeared in Group 1 rather than Group 2. This quadrat was grouped by PATN on the basis of having an absence of species common to CMxS, such as *Amyema microphylla*, *Dissocarpus paradoxus*, *Ptilotis obovatus* and *Salsola tragus*. Quadrat YQ145 was within more typical CMxS community, but due to the positioning of the quadrat on the boundaries of the community, it was not representative. It must be noted that in the ordination YQ145 was still within proximity to Group 2 (CMxS). Quadrat YQ102 was identified in the field as being

within a CRsS community. Only one other quadrat was within a CRsS community (YQ143), and it was classified into Group 3 (with CMpS) by PATN.

These quadrats were split in the analysis due to the defining species (*Rhagodia* sp. Yeelirrie Station) not being regarded as discriminatory by PATN and not included in the analysis. If more sites had been established in this vegetation community, it is likely that *Rhagodia* sp. Yeelirrie Station would have had higher discriminatory power between the PATN groupings.

Group 2 contains mostly sites within the CMxS community. They have been grouped together in the field and by PATN primarily by their large cover of *Melaleuca xerophila*. Two sites, YQ022 (CApS) and YQ037 (CLaS), were not described in the field as CMxS but appeared in the PATN classification in Group 2. This was due to a large cover of *Melaleuca xerophila* in these quadrats. One site, YQ019, was described in the field as being within CMxS, but further investigation of floristic composition led to a later description of it being within CApS. This quadrat was unintentionally located on the border of the CMxS and CApS communities. It must be noted that in the ordination, YQ019 (CApS) and YQ022 (CApS) were also associated in proximity to Group 4 (the main CApS group), and YQ037 (CLaS) was also associated closely to Group 1 (the CLaS group).

All three of these quadrats were located on boundaries of vegetation communities and were not representative of the community they were classified as being in. Each of these three quadrats were positioned such that they were influenced by an ecotone. Thus, with the exclusion of these three quadrats, Group 2 is a strong cohesive group representing the CMxS community.

Group 3 contains mostly sites within the CMpS community, with the exception of YQ143 (CRsS; discussed above as part of Group 1) and YQ129 (CMiS). Quadrat YQ129 was the only one surveyed for the CMiS community. That YQ129 grouped with the CMpS quadrats was likely to be due to the similarity in floristic composition between CMpS and CMiS, and also the relatively low association of sites in Group 3 (i.e. likely to pick up "outliers"). The CMiS community is distinguished from CMpS in the field by the lower density of *Maireana pyramidata* and the presence of *Melaleuca interioris*.

Group 4 contains the three most representative CAPS sites, strongly distinguished from other sites by dominance of *Atriplex* sp. Yeelirrie Station, with very few other species present.

Group 5 can be described as tall shrublands and contains CAbS, CMGbS, CCpW and CEgW vegetation communities. The distinction between these four vegetation communities can be seen at the 10-group level. The grouping together of these four communities at the 5-group level is due to having similar assemblages, with the distinction in the field being made by the species present in the highest stratum. This grouping corresponds with the Calcrete platform woodlands/ shrublands (CAPW) habitat group or site type described in land system mapping by Pringle *et al.* (1994) and Payne *et al.* (1998). Three of the four communities occur on calcrete rises, with the fourth, CMGbS, occurring in the calcrete outwash zone.

One quadrat (YQ020) in the tall shrubland group was identified as being influenced by an ecotone on the basis of both the analysis and field observations. This quadrat was classified in the field as being within the CEgW community, but PATN analysis associated it more closely with CAbS. PATN grouped this quadrat in this way due to the absence of *Eremophila arachnoides* subsp. *arachnoides* in the quadrat, and the presence of *Salsola tragus* and *Solanum lasiophyllum*. These are minor features typical of CAbS, but not of CEgW. The presence of *Eucalyptus gypsophila* is a defining feature of CEgW, but this species may also occur infrequently and at a lower cover within the CAbS community.

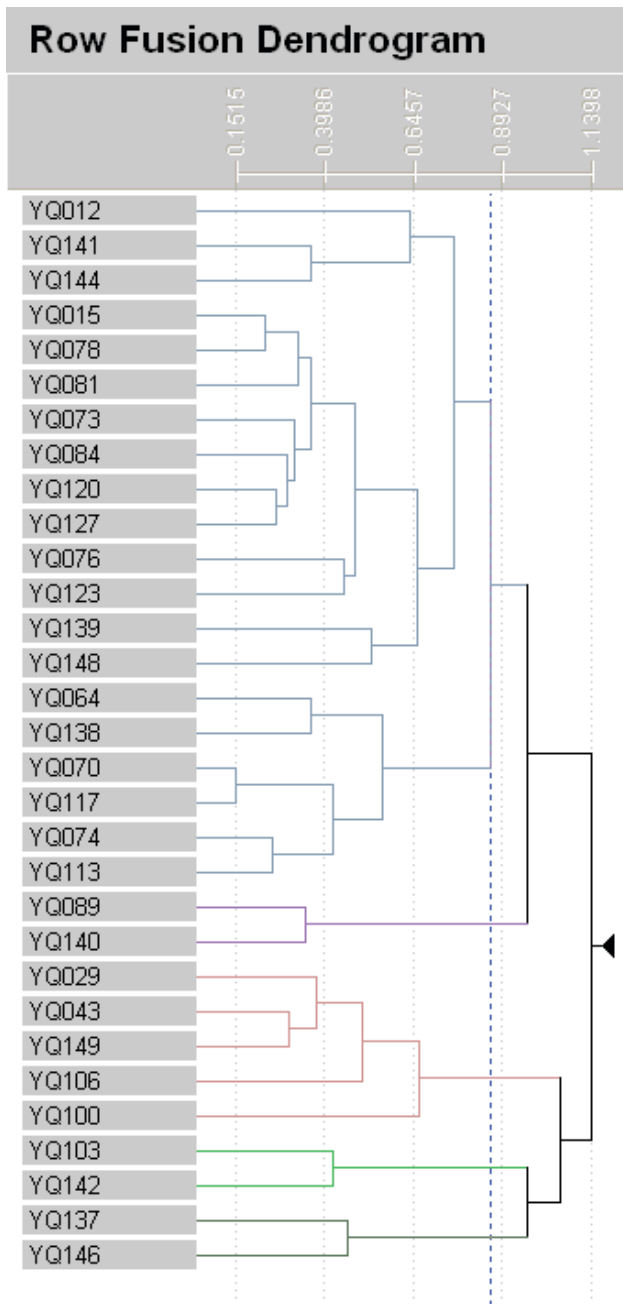
1.3.2. Playa System

The Playa System was represented by a total of 31 sites (quadrats) and 82 species. Using only the 24 most discriminatory species, the stress of the association was reduced to 0.1686. There is a strong relationship between the classification and most of the nine vegetation communities present in the Playa System (Table 3).

Table 3: Relationship between classification groups and vegetation communities in the Playa System

gp2	gp5	gp10	PLEmc	PLEsp	PLAET	PLAPoS	PLAMi	PLEml	PLCsMp	PLCh	PLMf
1	1	1	1								
1	1	2		1		1					
1	1	3			6	2	1				
1	1	4			1	1					
1	1	5				3	2				
1	2	6						2			
2	3	7							4		
2	3	8							1		
2	4	9								2	
2	5	10									2

Figure 4 shows a dendrogram representing the PATN classification of sites in the Playa System on the basis of floristic composition. Figure 5 shows a two-dimensional representation of the three-dimensional ordination of the sites and communities in the Playa System.



Groups described in the text:
Group 1= blue; **Group 2**= purple;
Group 3= orange; **Group 4**= light green;
Group 5= dark green.

Figure 4: Dendrogram showing classification of all sites in the Playa System.

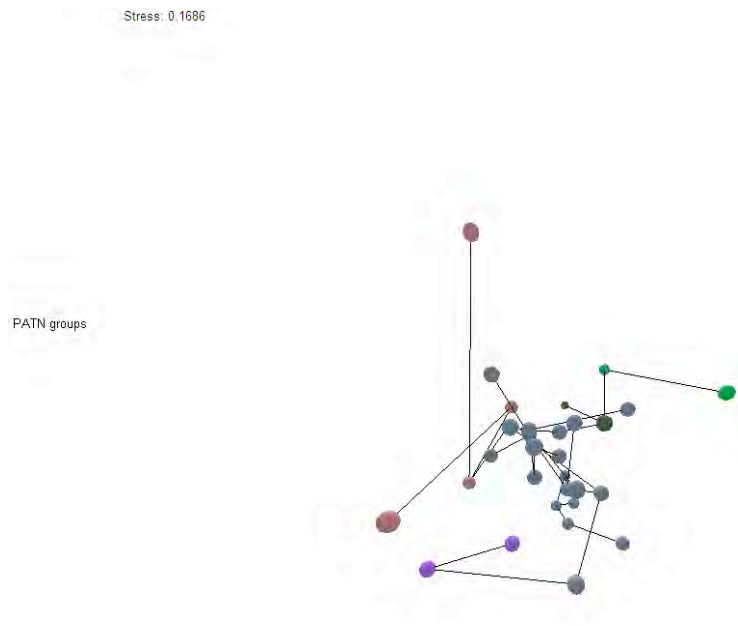


Figure 5: Ordination and mst showing association between sites in the Playa System (Colours corresponding to groups in dendrogram above)

Further investigation at the 5-group level using the dendrogram allowed for each of the classification groups to be described in terms of the vegetation communities they contain, and the species that define them.

Group 1 contains mostly sites from PLAET (eight sites), PLAPoS (six sites) and PLAMi (three sites), with the addition of PLEmc (YQ141), PLEsp (YQ144). These are the only sites representative of the PLEmc and PLEsp communities. PLAPoS, PLAET and PLAMi are floristically similar co-occurring communities. As well as each being defined by individual species occurrence, the differences can also be explained by the nature of these communities. PLAPoS forms a mosaic, within which the other minor vegetation communities occur fringing or within playa depressions, scalds and sink holes. PLAMi is defined by thickets of *Acacia* spp. and *Melaleuca interioris* that occur on banks fringing playas or water holding depressions. PLAMi forms a dense but narrow annular fringe around bare playas, surrounded by ecotones. Due to this pattern of occurrence it was difficult to represent this community in a 50

by 50 m square quadrat. PLAET is defined by thickets of tall shrubs dominated by *Acacia* spp. and *Eremophila longifolia* that occur in playas or water holding depressions, often with sink holes.

The remaining classification groups correlate well with the vegetation communities at this level, with Group 2 consisting of the two sites within the PLEml community, Group 3 consisting of the five sites within the PLCsMp community, Group 4 consisting of the two sites within the PLCh community, and Group 5 consisting of the two sites within the PLMf community. They are grouped quite distinctly as they are each defined by one or two dominant species, and most have low species richness' and few similarities between them.

1.3.3. Sand Plain System

The Sand Plain System was represented by a total of 38 sites (quadrats) and 106 species. Using only the 27 most discriminatory species, the stress of the association was reduced to 0.1710. The stress could not be further reduced to acceptable levels. A relationship between the classification and the seven vegetation communities is apparent (Table 4), but it is not a strong relationship.

Table 4: Relationship between classification groups and vegetation communities in the Sand Plain System

gp2	gp5	gp10	SAMU	SASP	SAWS	SDSH	SAMA	SAHS	SAGS
1	1	1	5		1		2		
1	2	2	2				1		
2	3	3		1	1				
2	3	4		1			1		
2	3	5			3				
2	4	6			2	2			
2	4	7		1				1	
2	4	8			1	1	2	4	
2	4	9					2	1	
2	5	10							3

Figure 6 shows a dendrogram representing the PATN classification of sites in the Sand Plain System on the basis of floristic composition, at the 3-group level. Figure 7

shows a two-dimensional representation of the three-dimensional ordination of the sites and communities in the Sand Plain System.

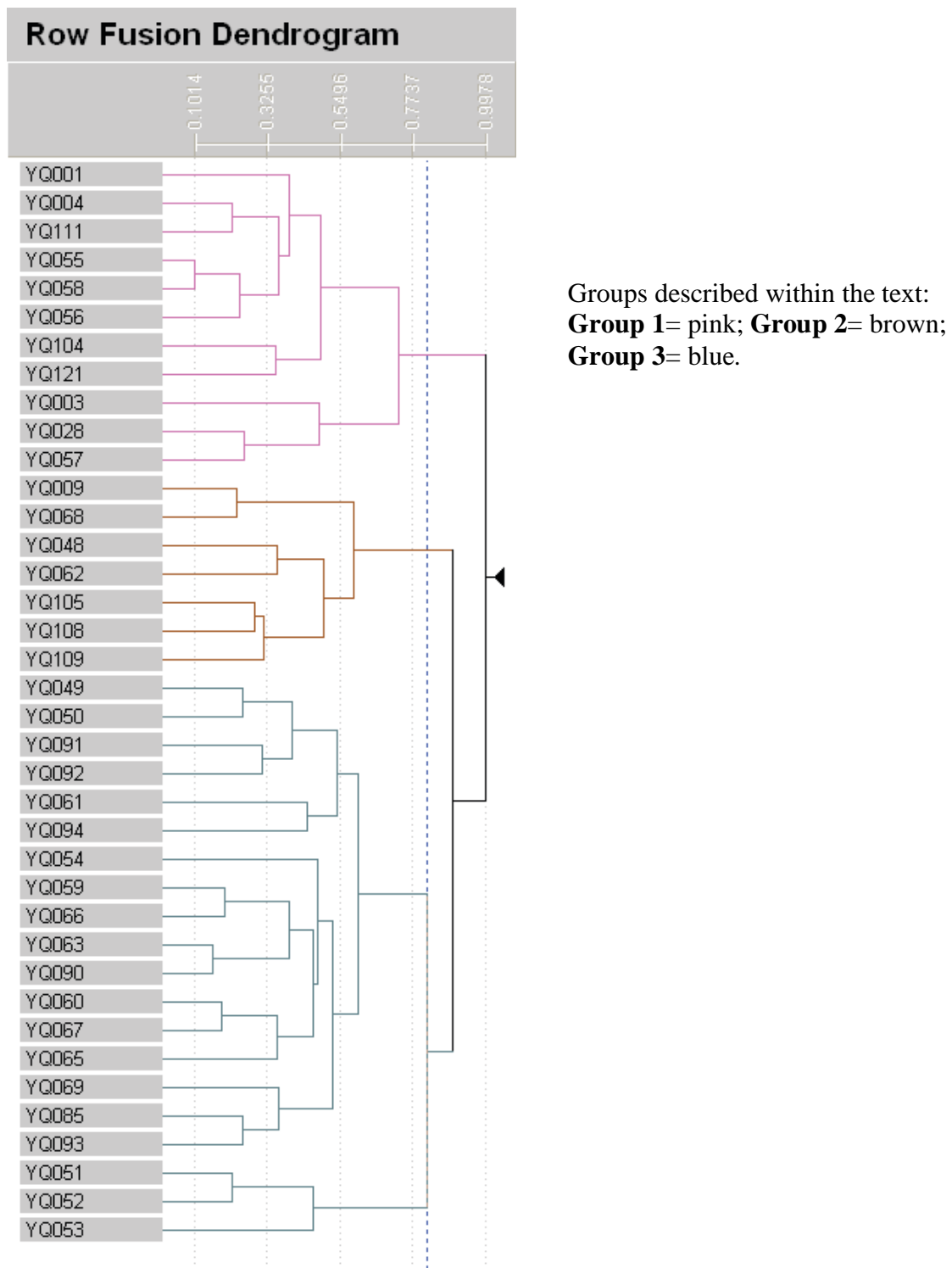


Figure 6: Dendrogram showing classification of all sites in the Sand Plain System.

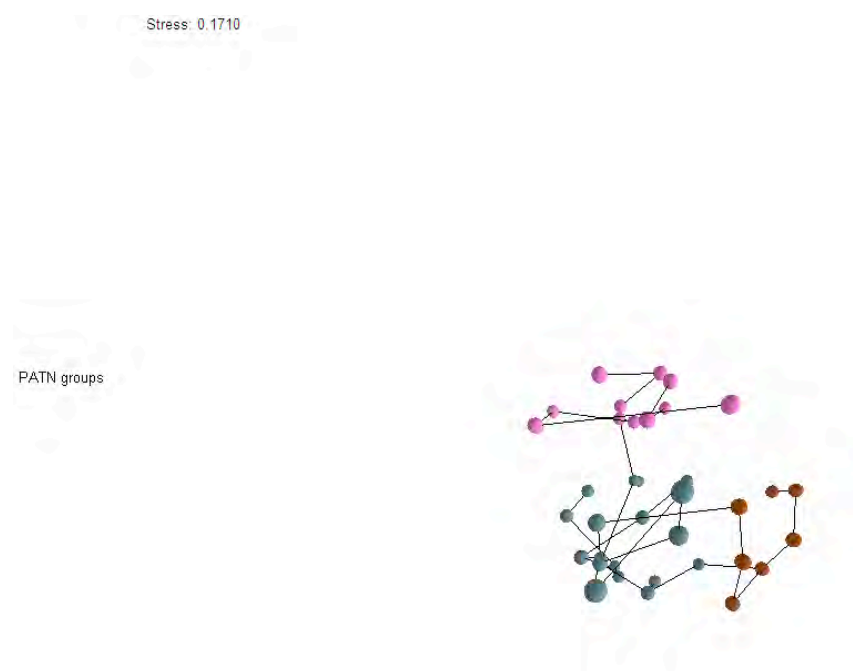


Figure 7: Ordination and mst showing association between all sites at the 3-group level in the Sand Plain System (Colours corresponding to groups in dendrogram above).

The 3-group level of classification was chosen for further investigation of the Sand Plain System due to the high stress of the association, and the groupings therefore only being used as an estimation.

Group 1 includes sites with a high cover of Mulga and Spinifex, and represents mostly the SAMU community. Group 2, representing mostly SAWS, and includes sites with an absence of Mulga and Spinifex and a presence of various sand plain-associated flora (such as *Bonamia rosea*, *Dianella revoluta*, *Keraudrenia velutina* subsp. *elliptica* and *Leptosema chambersii*). Group 3, representing SDSH, SAMA, SAHS and SAGS, consists of sites with a low presence of Mulga, presence of Spinifex, and a presence of various sand plain-associated flora including the above with the addition of *Daviesia* sp. aff. *grahamii* and *Homalocalyx thryptomenoides*.

It could be seen from the dendrogram and the ordination that the three SAGS sites within Group 3 were closely related to each other and positioned slightly away from the others in this group. In addition to including the species common to Group 3, the SAGS sites also had five species present that were not well represented in any other sites in the Sand Plain System. No clear distinctions could be made between the other three communities in Group 3, and this is likely to be due to similar species assemblages. Distinctions in the field were made on the basis of varying amounts of Eucalypt cover, Myrtaceous pea cover, and single species which were not regarded by PATN as “discriminatory”, but were regarded as discriminatory between vegetation communities in the field. An example of this is *Callitris columellaris*, a defining species present in SDSH that was not regarded as discriminatory by PATN and therefore not included in the final analysis.

The reason for the high stress and poorly defined groups could possibly be a consequence of the scale of the survey of the Sand Plain System in comparison to the other systems. The Sand Plain System is the most extensive system, but was not surveyed in great intensity due to only a small proportion of the system being present in the proposed impact area. Another consequence of the extensive nature of this system is that some sites classified within the same vegetation communities may be separated by approximately 80 km in distance. Fire history (fire age, season, intensity, frequency) will also influence the floristic composition and vegetation structure. A more detailed understanding of the Sand Plain System was not considered important for this project, as any sand plain communities present in the proposed impact area were well represented out of the impact area.

1.3.4. Hardpan and Drainage System

The Hardpan and Drainage System was represented by a total of 20 sites (quadrats) and 39 species. Using the nine most discriminatory species only, the stress of the association was reduced to 0.1403. There is a strong relationship between the classification and the four vegetation communities (Table 5), which is best seen at the 5-group level.

Table 5: Relationship between classification groups and vegetation communities in the Hardpan and Drainage System

gp2	gp5	gp10	WABS	HPMS	DRMS	DRES
1	1	1	2	2		
1	1	2	2	1		
1	2	3		2		
1	2	4		2		
1	3	5			2	
1	4	6		1		
1	4	7	1			
2	5	8		1		
2	5	9		1	2	
2	5	10				1

Figure 8 shows a dendrogram representing the PATN classification of sites in the Hardpan and Drainage System on the basis of floristic composition. Figure 9 shows a two-dimensional representation of the three-dimensional ordination of the sites and communities in the Hardpan and Drainage System.

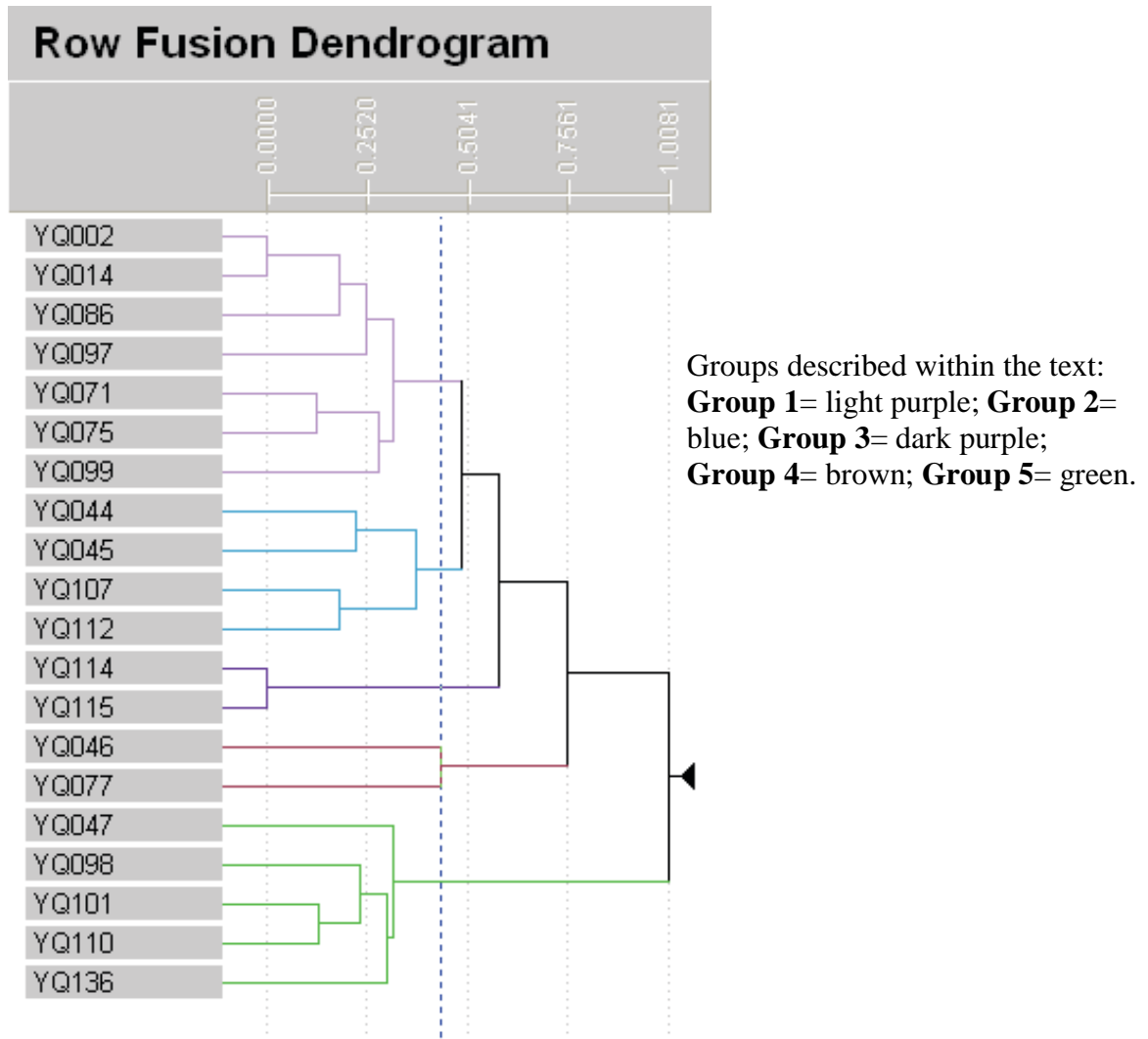


Figure 8: Dendrogram showing classification of all sites in the Hardpan and Drainage System.

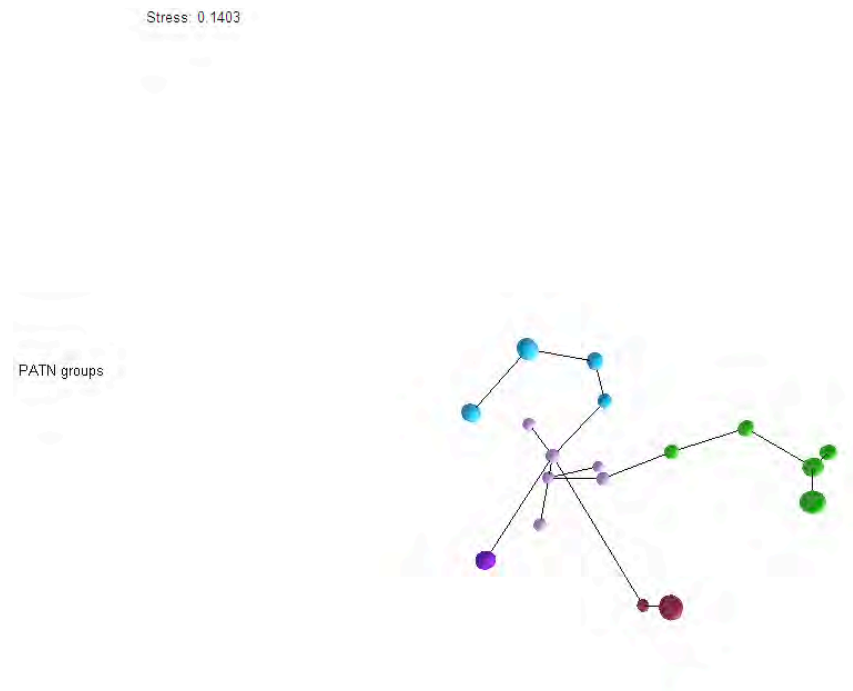


Figure 9: Ordination and mst showing association of all sites in the Hardpan and Drainage System (Colours corresponding to groups in dendrogram above)

Further investigation at the 5-group level using the dendrogram allowed for each of the classification groups to be described in terms of the vegetation communities they contain, and the species that define them.

Groups 1 and 2 represent the intermingled HPMS and WABS communities. A distinguishing feature between these two communities in the field was the density of *Eragrostis eriapoda*, which was much higher in WABS and was often absent from HPMS. These communities are also distinguished in the field by HPMS having visibly less low shrub and grass cover than WABS.

The sites representing Drainage communities were split in the PATN classification into Group 3 and Group 5. This is likely to be due to the sites of each group belonging to different drainage lines and therefore having slightly different species composition.

Two HPMS sites, YQ047 and YQ098, also appear with the Drainage sites in Group 5. These two HPMS sites had slightly different floristic assemblages to that typical of HPMS, due to an absence of common species (rather than an addition of uncommon species). However, these sites still fit the description of a HPMS community with the presence of Mulga, absence of Spinifex, and due to the nature of the ground surface.

Group 4 contains outlier HPMS (YQ046) and WABS (YQ077) sites. These sites are not typical of the communities they represent, and are missing many species often present. It is possible that this is due to the extensive nature of these two vegetation communities.

No quadrats were completed in GRMU, however it is expected that it would be very similar to HPMS, with a higher density of Mulga.

1.3.5. Granite System

The Granite System was represented by a total of 16 sites (quadrats) and 66 species. Using the 21 most discriminatory species only, the stress of the association was reduced to 0.1401. There is a strong relationship between the classification and most of the seven vegetation communities present in the Granite System (Table 6).

Table 6: Relationship between classification groups and vegetation communities in the Granite System

gp2	gp5	gp10	GPoS	SAES	BCLS	GRMS	GR	Qtz	GFGr
1	1	1	2						
1	1	2	1	1		1			
1	1	3			1				
1	1	4		1					
1	2	5					1		
2	3	6				2			
2	3	7				2			
2	4	8					2		
2	4	9						1	
2	5	10							1

Figure 10 shows a dendrogram representing the PATN classification of sites in the Granite System on the basis of floristic composition. Figure 11 shows a two-

dimensional representation of the three-dimensional ordination of the sites and communities in the Granite System.

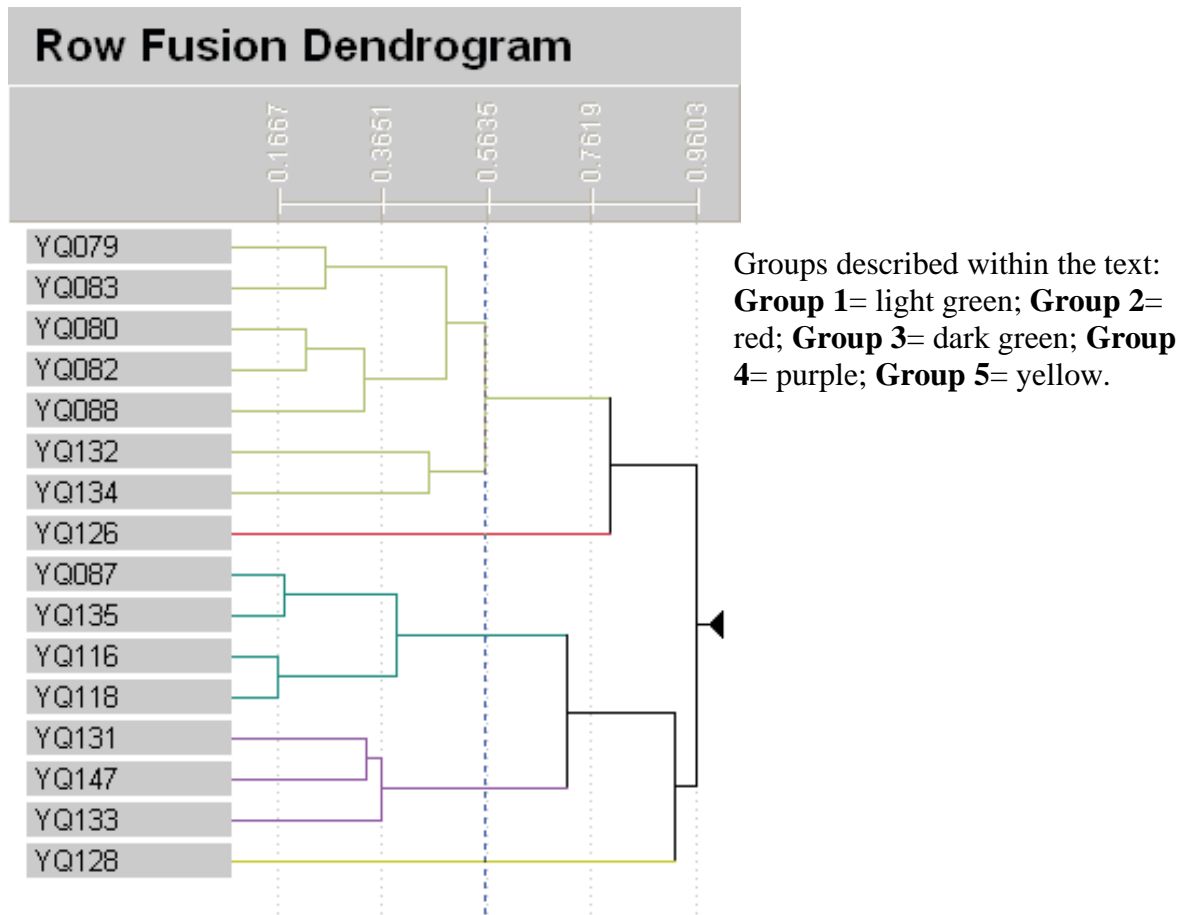


Figure 10: Dendrogram showing classification of all sites in the Granite System.

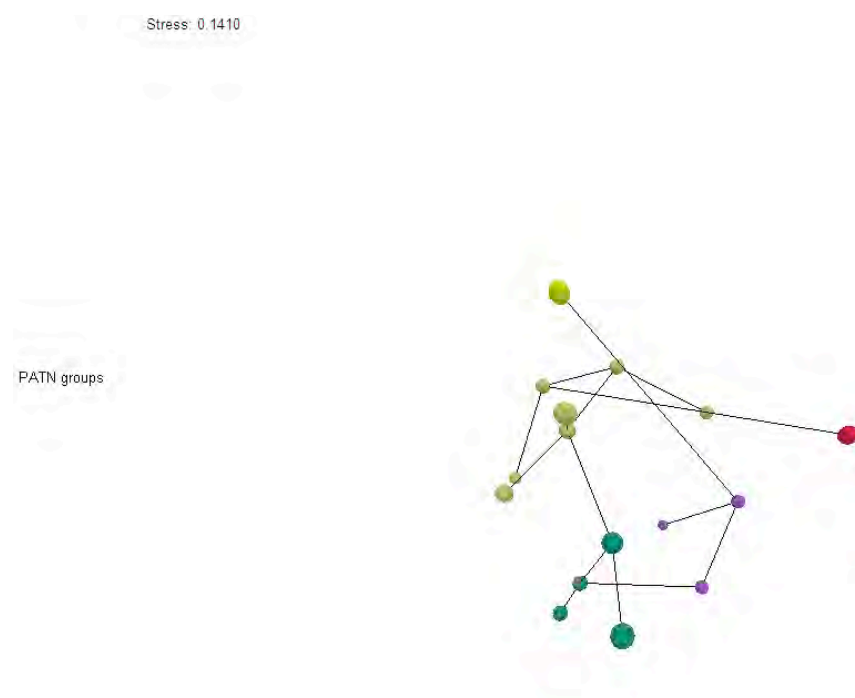


Figure 11: Ordination and mst showing association between all sites in the Granite System (Colours corresponding to groups in dendrogram above)

Further investigation at the 5-group level using the dendrogram allowed for each of the classification groups to be described in terms of the vegetation communities they contain, and the species that define them.

Group 1 represents GPoS, SAES, and BCLS communities. SAES and GPoS are often recorded adjacent to each other, with similar understorey, and the main distinction being made on the basis of the height and composition of the tallest strata. Only one BCLS site was sampled, as this community is only represented in a small area. This community has many similar species to GPoS and SAES, with the main distinction made by the presence of *Maireana triptera* and *Sclerolaena diacantha*, and absence of *Eremophila* spp.

Group 2 consists of a single quadrat, YQ126 (GR). It is likely that this quadrat appears in a distinct group due to it being located a great distance away from the other quadrats representing GR, and therefore containing a lot of species not found elsewhere in the Granite System, such as *Eremophila forrestii* subsp. *forrestii*, *Calandrinia eremaea*, *Aristida contorta*, *Eriachne pulchella* subsp. *pulchella*, *Podolepis capillaris* and *Lemooria burkittii*. Granit Rise has been described as having a variable vegetation component depending on the amount of exposed granite at the surface. It is still typical of GR community in that it has exfoliating granite, and associated small herbaceous annuals and perennials.

The GFGr community and GRMS communities group out quite distinctly in the classification with Group 5 representing GFGr and Group 3 representing GRMS. It must be noted that prior to PATN investigation, YQ138 had been described in the field as being within the GRMU community (A community of the Hardpan and Drainage System). This was an error, as it is clearly within the Granite System, and fits the description of GRMS. The change in description of YQ138 from GRMU to GRMS was supported by the PATN analysis, with YQ138 appearing within Group 3 with the other GRMS sites.

Group 4 contains two sites in GR and one site in Qtz. On the basis of the PATN analysis and floristic composition, these communities could be considered the same, but were treated differently throughout the report due to the distinction being made on surface features. The presence of Quartz stones is a defining feature of the Qtz community, and presence of exfoliating granite outcrops is a defining feature of the GR community.

1.4. Summary and Conclusions

The PATN classification, for the most part, supported the expected associations and relationships between sites and vegetation communities described in the field. Most of the inconsistencies between PATN classifications and the vegetation communities were due to:

- Errors of classification of sites in the field. Where errors in classification were clearly made, the classifications were changed. Examples are the initial classifications of YQ019 and YQ135.
- Species defining vegetation communities in the field not having very high discrimination power between PATN classification groups and therefore not being included in further analysis.
- Placement of quadrats in locations not entirely representative of the vegetation community, for reasons such as placement on boundary, or near to ecotones.
- Sites floristically similar that were differentiated on the basis of the presence of one or two species.
- Sites floristically similar and differentiated on the basis of vegetation structure and cover.
- Lower intensity of survey, both in mapping and number of quadrats for areas out of the proposed impact zone- *ie* Sand Plain System.

It must be noted that the relationships discussed between vegetation communities, defined in the field during vegetation mapping surveys, were made on the basis of the quadrats sampled, which are only a very small and selective representation of each of the vegetation communities identified in the vegetation mapping.

**Appendix 11. Species by vegetation community matrix
(study areas 1 and 2)**

Table 1. Vegetation community x species matrix – first quadrat assessment study area 1

FAMILY	NAME	CAbs	CAPs	CCpW	CEgW	CErG	CLAs	CMGbs	CMiS	CMpS	CMxS	CRsS	BCLS	GFGr	GPoS	GR	GRMS	Qtz	SAES	DRMS	HPMS	WABS	PLAET	PLAMi	PLAPoS	PLCh	PLCsMp	PLEmc	PLEml	PLEsp	PLMf	SAGS	SAHS	SAMA	SAMU	SASP	SAWS	SDSH													
Fabaceae	<i>Acacia aneura</i> var. very slightly curved flat 20-40x3mm grey green															1						1	1	1																											
Fabaceae	<i>Acacia ayersiana</i>							1	1						1	1	1				1	1	1	1				1	1	1									1												
Fabaceae	<i>Acacia burkittii</i>	1		1	1			1			1												1	1	1																1										
Fabaceae	<i>Acacia colletioides</i>																							1	1																1										
Fabaceae	<i>Acacia craspedocarpa</i>									1					1	1					1																														
Fabaceae	<i>Acacia craspedocarpa</i> (broad lanceolate leaf form)																																																		
Fabaceae	<i>Acacia effusifolia</i>																							1																											
Fabaceae	<i>Acacia heteroneura</i> var. <i>prolixa</i>																																																		
Fabaceae	<i>Acacia jamesiana</i>																																																		
Fabaceae	<i>Acacia ligulata</i>																																																		
Fabaceae	<i>Acacia longispinea</i>																																																		
Fabaceae	<i>Acacia oswaldii</i>				1																																														
Fabaceae	<i>Acacia pachyacra</i>																																																		
Fabaceae	<i>Acacia prairii</i>																																																		
Fabaceae	<i>Acacia pruinocarpa</i>																																																		
Fabaceae	<i>Acacia quadrimarginea</i>																																																		
Fabaceae	<i>Acacia ramulosa</i> var. <i>linophylla</i>																																																		
Fabaceae	<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)																																																		
Fabaceae	<i>Acacia</i> sp. inadequate material (B. Watkins LCH 26641)																																																		
Fabaceae	<i>Acacia</i> sp. inadequate material (R. Graham & A. Douglas LCH 26640)																																																		
Fabaceae	<i>Acacia</i> sp. resprouter (G. Cockerton & R. Graham LCH 25490)																																																		
Fabaceae	<i>Acacia synchronica</i>				1	1		1	1																																										
Fabaceae	<i>Acacia tetragonophylla</i>	1			1			1	1	1	1	1	1		1	1	1																																		
Fabaceae	<i>Acacia thoma</i>																																																		
Fabaceae	<i>Bossiaea eremaea</i>																																																		
Fabaceae	<i>Daviesia</i> sp. aff. <i>grahamii</i> (G. Cockerton & B. Watkins 25336)																																																		
Fabaceae	<i>Kennedia prorpens</i>																																																		
Fabaceae	<i>Leptosema chambersii</i>																																																		
Fabaceae	<i>Phyllota humilis</i>																																																		
Fabaceae	<i>Templetonia incrassata</i>				1	1					1																																								
Frankeniaceae	<i>Frankenia laxiflora</i>																																																		
Frankeniaceae	<i>Frankenia pauciflora</i>																																																		
Goodeniaceae	<i>Dampiera roycei</i>																																																		
Goodeniaceae	<i>Goodenia pinnatifida</i>																																																		
Goodeniaceae	<i>Scaevola parvifolia</i>																																																		
Goodeniaceae	<i>Scaevola spinescens</i> (broad form)				1	1																																													
Goodeniaceae	<i>Scaevola spinescens</i> (narrow form)																																																		
Goodeniaceae	<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)																																																		
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>																																																		
Haloragaceae	<i>Glischrocaryon flavescens</i>																																																		
Lamiaceae	<i>Prostanthera wilkieana</i>																																																		
Lamiaceae	<i>Spartothamnella teucriiflora</i>					1																																													
Lamiaceae	<i>Teucrium racemosum</i>																																																		
Loranthaceae	<i>Amyema gibberula</i> var. <i>gibberula</i>																																																		
Loranthaceae	<i>Amyema hilliania</i>																																																		
Loranthaceae	<i>Amyema microphylla</i>																																																		

**Table 2. Vegetation community x species matrix – spring quadrat assessment
study area 1**

Table 3. Vegetation community x species matrix – relevé assessment study area 2

FAMILY	NAME	GPoS	Qtz	GR	GRMS	BRX	GRMC	QMPs	SAWS	SAMA	SAHS	SAGS	SAMU	SDSH	SACSG	PLAPoS	DRMS	DRMpS	HPMS	CABs
Amaranthaceae	<i>Ptilotus aervooides</i>	1																1		
Amaranthaceae	<i>Ptilotus exultatus</i>												1							
Amaranthaceae	<i>Ptilotus gaudichaudii</i>																	1		
Amaranthaceae	<i>Ptilotus helipteroides</i>																			1
Amaranthaceae	<i>Ptilotus obovatus</i>	1	1	1	1	1	1	1				1	1	1	1	1	1	1		1
Amaranthaceae	<i>Ptilotus roei</i>			1	1															
Amaranthaceae	<i>Ptilotus schwartzii</i>				1	1		1												
Amaranthaceae	<i>Ptilotus sessilifolius</i>													1						
Apocynaceae	<i>Marsdenia australis</i>			1														1		
Apocynaceae	<i>Rhynchaerhena linearis</i>			1									1			1				
Araliaceae	<i>Trachymene bialata</i>									1										
Asteraceae	<i>Calocephalus multiflorus</i>																	1		
Asteraceae	<i>Centipeda thespedioides</i>																	1		
Asteraceae	<i>Gnephosis tenuissima</i>																	1		
Asteraceae	<i>Helipterum craspedioides</i>			1															1	
Asteraceae	<i>Lemooria burkittii</i>			1																
Asteraceae	<i>Olearia incana</i>																			
Asteraceae	<i>Olearia</i> sp. Sherwood Breakaway						1													
Asteraceae	<i>Podolepis capillaris</i>																		1	
Asteraceae	<i>Rhodanthe charsleyae</i>																	1		
Boraginaceae	<i>Halgania cyanea</i>													1						
Boraginaceae	<i>Halgania cyanea</i> var. Allambi Stn											1	1							
Boraginaceae	<i>Trichodesma zeylanicum</i>			1																
Celastraceae	<i>Stackhousia</i> sp. Mt Keith				1															
Chenopodiaceae	<i>Dysphania kalpari</i>			1									1							
Chenopodiaceae	<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>			1																
Chenopodiaceae	<i>Dysphania rhadinostachya</i>					1														
Chenopodiaceae	<i>Enchylaena tomentosa</i>																		1	
Chenopodiaceae	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>			1	1	1						1		1						
Chenopodiaceae	<i>Maireana carnosa</i>	1				1													1	
Chenopodiaceae	<i>Maireana georgei</i>					1	1									1			1	
Chenopodiaceae	<i>Maireana glomerifolia</i>				1														1	
Chenopodiaceae	<i>Maireana planifolia</i>															1				1
Chenopodiaceae	<i>Maireana pyramidata</i>					1	1												1	
Chenopodiaceae	<i>Maireana tomentosa</i>					1													1	
Chenopodiaceae	<i>Rhagodia drummondii</i>				1	1	1						1			1			1	
Chenopodiaceae	<i>Salsola tragus</i>																			1
Chenopodiaceae	<i>Sclerolaena densiflora</i>	1		1		1													1	
Chenopodiaceae	<i>Sclerolaena diacantha</i>				1	1	1									1			1	
Chenopodiaceae	<i>Sclerolaena eriacantha</i>																		1	
Colchicaceae	<i>Wurmbea deserticola</i>													1						
Convolvulaceae	<i>Bonamia rosea</i>								1	1					1					
Cupressaceae	<i>Callitris columellaris</i>													1						
Cuscutaceae	<i>Cuscuta planiflora</i>																	1		
Cyperaceae	<i>Schoenus subaphyllous</i>								1		1									
Euphorbiaceae	<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>			1																
Fabaceae	<i>Acacia aneura</i>		1	1		1							1			1	1		1	
Fabaceae	<i>Acacia aneura</i> (flat blue grey 5mm x 50mm)				1															
Fabaceae	<i>Acacia aneura</i> (flat blue grey curved 3x60mm)				1								1							
Fabaceae	<i>Acacia aneura</i> (flat blue grey falcate 4x30mm)						1													
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight 5x50mm)					1														
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to falcate 2x20mm)														1					
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 2x55mm)						1						1							1
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 2x80mm)																			1
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 3x20mm)				1											1				
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 3x50mm)				1	1	1													1
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 3x65mm)								1											
Fabaceae	<i>Acacia aneura</i> (flat blue grey straight to slightly curved 4.5x40mm)											1					1			

Appendix 12. Relevé descriptions (local study area)

Study areas 1 and 3 relevé descriptions

Study area 1

BHP Billiton Yeelirrie Site R001

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 788590 mE 6991512 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. *alata* (narrow phyllode)
Acacia aneura var. *macrocarpa*
Acacia aneura var. *tenuis*
Acacia ayersiana
Acacia ramulosa var. *linophylla*
Acacia macraneura
Acacia tetragonophylla
Eremophila eriocalyx
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Solanum lasiophyllum
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R002

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 788590 mE 6991712 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. *alata* (narrow phyllode)
Acacia aneura var. *argentea*
Acacia aneura var. *macrocarpa*
Acacia aneura var. *tenuis*
Acacia ayersiana
Acacia effusifolia
Acacia tetragonophylla
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Grevillea berryana
Melaleuca interioris
Triodia basedowii

BHP Billiton Yeelirrie Site R003

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 788984 mE 6991605 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. *argentea*
Acacia ayersiana
Acacia colletioides
Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia prainii
Dicrastylis flexuosa
Eucalyptus trivalva
Homalocalyx thryptomenoides
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Melaleuca leiocarpa
Micromyrtus flaviflora
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R004

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789359 mE 6991474 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia effusifolia
Acacia prainii
Dicrastylis flexuosa
Eucalyptus kingsmillii
Exocarpos sparteus
Grevillea eriostachya
Hakea minyma
Kennedia prorepens
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Melaleuca leiocarpa
Petalostylis cassioides
Ptilotus obovatus (Typical Goldfields form)
Rulingia loxophylla
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R005

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789492 mE 6991965 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia ligulata
Acacia prainii
Bossiaea eremaea
Eremophila glabra subsp. *tomentosa*
Eucalyptus kingsmillii
Hakea francisiana
Leptosema chambersii
Melaleuca leiocarpa
Olearia incana

BHP Billiton Yeelirrie Site R006

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789492 mE 6992239 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia ayersiana
Acacia effusifolia
Acacia ligulata
Alyogyne pinoniana
Bossiaea eremaea
Dicrastylis flexuosa
Eremophila glabra subsp. *tomentosa*
Eremophila platythamnos subsp. *platythamnos*
Eucalyptus kingsmillii
Exocarpos sparteus
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Leptosema chambersii
Micromyrtus flaviflora
Ptilotus obovatus (Typical Goldfields form)
Rulingia loxophleba
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R007

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789571 mE 6994352 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Unknown

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia ligulata
Acacia pachyacra
Dicrastylis flexuosa
Eucalyptus kingsmillii
Exocarpos sparteus
Kennedia prorepens
Leptosema chambersii
Micromyrtus flaviflora
Psyrax attenuata
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R008

Described by Geoff Cockerton **Date:** 14/03/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789312 mE 6996243 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. *tenuis*
Acacia ayersiana
Acacia ramulosa var. *linophylla*
Amyema hilliania
Eremophila forrestii subsp. *forrestii*
Psyrax attenuata
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *helmsii*
Triodia basedowii

BHP Billiton Yeelirrie Site R009

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 214142 mE 6977819 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Acacia tetragonophylla
Amyema hilliania
Eremophila latrobei subsp. *latrobei*
Grevillea berryana
Grevillea sarissa subsp. *sarissa*
Melaleuca interioris
Santalum lanceolatum
Senna artemisioides subsp. *filifolia*
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R010

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 215190 mE 6977163 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Triodia basedowii

BHP Billiton Yeelirrie Site R011

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 215191 mE 6977008 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana
Acacia colletioides
Duboisia hopwoodii
Grevillea berryana
Marsdenia australis
Santalum lanceolatum
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*
Triodia basedowii

BHP Billiton Yeelirrie Site R012

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 215210 mE 6076442 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia pachyacra
Acacia prainii
Alyogyne pinoniana
Dicrastylis sessilifolia
Eremophila glabra subsp. *tomentosa*
Eucalyptus trivalva
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R013

Described by Geoff Cockerton **Date:** 24/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 215784 mE 6976522 mN

Vegetation Code: PLEml

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *macrocarpa*

Acacia macraneura

Acacia tetragonophylla

Eragrostis sp. (inadequate material)

Eremophila longifolia

Eremophila malacoides

Grevillea sarissa subsp. *sarissa*

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *filifolia*

Solanum nummularium

BHP Billiton Yeelirrie Site R014

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 215754 mE 6976606 mN

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura (indeterminate variant)

Acacia tetragonophylla

Cheilanthes sp. (inadequate material)

Eremophila eriocalyx

Eremophila gilesii subsp. *variabilis*

Eremophila longifolia

Eriachne helmsii

Eucalyptus lucasii

Melaleuca interioris

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R015

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 215588 **mE** 6976747 **mN**

Vegetation Code: Bare

Landscape Association: Bare Playa

Fire Age: Unknown

Species List:

Name

Acacia ayersiana

Acacia tetragonophylla

Eremophila gilesii subsp. *variabilis*

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

BHP Billiton Yeelirrie Site R016

Described by Geoff Cockerton **Date:** 25/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 216107 **mE** 6976426 **mN**

Vegetation Code: PLEmc

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia tetragonophylla

Eremophila maculata

Grevillea berryana

Melaleuca interioris

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R017

Described by Geoff Cockerton

Date: 25/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

211870 **mE**

6977952 **mN**

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Burnt <1 year ago

Species List:

Name

Acacia ayersiana

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Eremophila battii

Eremophila latrobei subsp. *latrobei*

Eremophila maculata

Euphorbia drummondii subsp. *drummondii*

Grevillea berryana

Maireana georgei

Melaleuca interioris

Melaleuca xerophila

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Santalum lanceolatum

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Solanum lasiophyllum

Solanum nummularium

Templetonia incrassata

Triodia basedowii

BHP Billiton Yeelirrie Site R020

Described by Geoff Cockerton

Date: 25/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

213432 mE

6979227 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia burkittii

Acacia pruinocarpa

Acacia quadrimarginea

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Eremophila battii

Eremophila gilesii subsp. *variabilis*

Eremophila latrobei subsp. *latrobei*

Eremophila maculata

Grevillea berryana

Maireana georgei

Maireana pyramidata

Melaleuca interioris

Melaleuca xerophila

Psydrax suaveolens

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *filifolia*

Senna glutinosa subsp. *chatelainiana*

Solanum lasiophyllum

Spartothamnella teucriflora

Templetonia incrassata

BHP Billiton Yeelirrie Site R021

Described by Geoff Cockerton

Date: 26/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

212913 **mE**

6979170 **mN**

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Eremophila battii

Eremophila eriocalyx

Grevillea berryana

Maireana georgei

Melaleuca interioris

Opuntia sp. (inadequate material)

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Spartothamnella teucriflora

Triodia basedowii

BHP Billiton Yeelirrie Site R022

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 212503 mE 6978810 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia pachyacra
Acacia ramulosa var. *linophylla*
Acacia tetragonophylla
Amyema hilliania
Amyema sp. (inadequate material)
Eremophila battii
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Eremophila gilesii subsp. *variabilis*
Eremophila longifolia
Grevillea berryana
Grevillea sarissa subsp. *sarissa*
Melaleuca interioris
Micromyrtus flaviflora
Psyrax suaveolens
Rhagodia drummondii
Santalum lanceolatum
Senna artemisioides subsp. *filifolia*
Solanum nummularium
Triodia basedowii

BHP Billiton Yeelirrie Site R023

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 212237 mE 6978500 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia ayersiana
Eremophila forrestii subsp. *forrestii*
Eucalyptus kingsmillii
Psyrax attenuata
Psyrax suaveolens
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R024

Described by Geoff Cockerton

Date: 26/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

211812 mE

6978388 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*

Acacia ayersiana

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia minyura

Acacia pachyacra

Acacia prainii

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Amyema hilliana

Amyema miquelii

Dianella revoluta

Duboisia hopwoodii

Enekbatus eremaeus

Eucalyptus kingsmillii

Eucalyptus trivalva

Grevillea eriostachya

Hakea francisiana

Hakea minyma

Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Micromyrtus flaviflora

Newcastelia hexarrhena

Rulingia loxophylla

Triodia basedowii

BHP Billiton Yeelirrie Site R025

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211580 **mE** 6979148 **mN**

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Amyema hilliania

Eremophila spectabilis subsp. *brevis*

BHP Billiton Yeelirrie Site R026

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208385 **mE** 6980845 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia ayersiana

Acacia pachyacra

Eucalyptus kingsmillii

Hakea lorea subsp. *lorea*

Santalum spicatum

Triodia basedowii

BHP Billiton Yeelirrie Site R027

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208301 mE 6980875 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Acacia sp. (G. Cockerton & R. Graham LCH 25491)
Eucalyptus kingsmillii
Hakea lorea subsp. *lorea*
Triodia basedowii

BHP Billiton Yeelirrie Site R028

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 205719 mE 6982451 mN

Vegetation Code: GRMU

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, flat lanceolate 40 x 5 mm
Acacia aneura var. silver grey, subterete, 65 x 1.5 mm
Acacia ayersiana
Acacia craspedocarpa
Acacia tetragonophylla
Eremophila hygrophana
Rhyncharrhena linearis
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R029

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 205692 mE 6982413 mN

Vegetation Code: GRMU

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura x craspedocarpa
Acacia effusifolia
Acacia ramulosa var. *linophylla*
Acacia tetragonophylla
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Maireana pyramidata
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Solanum lasiophyllum
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R030

Described by Geoff Cockerton **Date:** 26/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 205546 mE 6982601 mN

Vegetation Code CMpS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia macraneura
Acacia tetragonophylla
Eremophila eriocalyx
Eremophila hygrophana
Eremophila longifolia
Hakea lorea subsp. *lorea*
Maireana georgei
Maireana pyramidata
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Senna glutinosa subsp. *chatelainiana*

BHP Billiton Yeelirrie Site R031

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 210975 mE 6979757 mN

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia tetragonophylla

Amyema hilliania

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *x sturtii*

Senna charlesiana

BHP Billiton Yeelirrie Site R032

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211054 mE 6979895 mN

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. *argentea*

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia quadrimarginea

Acacia tetragonophylla

Eremophila forrestii subsp. *forrestii*

Eremophila latrobei subsp. *latrobei*

Eremophila spectabilis subsp. *brevis*

Hakea arida

Psydrax attenuata

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Santalum spicatum

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *x sturtii*

Senna charlesiana

Sida ectogama

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R033

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211021 mE 6980247 mN

Vegetation Code: GR

Landscape Association: Granite System

Fire Age: Unknown

Species List:

Name

Acacia quadrimarginea
Cheilanthes sieberi subsp. *sieberi*
Chenopodium melanocarpum
Cymbopogon ambiguus
Eragrostis sp. (inadequate material)
Euphorbia drummondii subsp. *drummondii*
Phyllanthus erwinii
Senna artemisioides subsp. *x sturtii*
Sida ectogama
Solanum lasiophyllum
Tribulus astrocarpus

BHP Billiton Yeelirrie Site R034

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208258 mE 6981123 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia aneura var. *macrocarpa*
Acacia aneura var. silver grey, subterete, 65 x 1.5 mm
Acacia ayersiana
Acacia ramulosa var. *linophylla*
Dianella revoluta
Eremophila forrestii subsp. *forrestii*
Eremophila gilesii subsp. *variabilis*
Grevillea berryana
Grevillea sarissa subsp. *sarissa*
Hakea arida
Senna artemisioides subsp. *filifolia*
Triodia basedowii

BHP Billiton Yeelirrie Site R035

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208127 mE 6982202 mN

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Unknown

Species List:

Name

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia ayersiana

Acacia burkittii

Acacia ramulosa var. *linophylla*

Acacia synchronicia

Acacia tetragonophylla

Eragrostis eriopoda

Eremophila forrestii subsp. *forrestii*

Eremophila longifolia

Grevillea sarissa subsp. *sarissa*

Maireana georgei

Maireana pyramidata

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Santalum lanceolatum

Senna artemisioides subsp. *filifolia*

Senna glutinosa subsp. *chatelainiana*

Triodia basedowii

Triodia melvillei

BHP Billiton Yeelirrie Site R036

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208306 mE 6982566 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Unknown

Species List:

Name

Maireana pyramidata

Melaleuca xerophila

Salsola tragus subsp. *tragus*

Senna artemisioides subsp. *filifolia*

Solanum nummularium

Trianthema triquetra

BHP Billiton Yeelirrie Site R037

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208317 **mE** 6982455 **mN**

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Unknown

Species List:

Name

Acacia burkittii
Acacia tetragonophylla
Eremophila longifolia
Pittosporum angustifolium

BHP Billiton Yeelirrie Site R038

Described by Geoff Cockerton **Date:** 27/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208723 **mE** 6983257 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm
Acacia ayersiana
Acacia sp. resprouter (G. Cockerton & R. Graham LCH 25490)
Dianella revoluta
Eremophila platythamnos subsp. *platythamnos*
Hakea lorea subsp. *lorea*
Kennedia prorepens
Melaleuca leiocarpa
Newcastelia hexarrhena
Triodia basedowii
Triodia melvillei

BHP Billiton Yeelirrie Site R039

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 214081 mE 6980240 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia tetragonophylla
Daviesia grahamii
Dianella revoluta
Eremophila forrestii subsp. *forrestii*
Eucalyptus trivalva
Maireana georgei
Prostanthera wilkieana
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R040

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211918 mE 6980618 mN

Vegetation Code: GRMU

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Abutilon cryptopetalum
Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm
Acacia burkittii
Acacia tetragonophylla
Eremophila drummondii
Eremophila eriocalyx
Eremophila gilesii subsp. *variabilis*
Eremophila hygrophana
Grevillea berryana
Indigofera brevidens
Maireana georgei
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum
Sida sp. *Excedentifolia* (J.L. Egan 1925)
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R041

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211918 mE 6980618 mN

Vegetation Code: GRMU

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Acacia tetragonophylla
Amyema hilliania
Enneapogon avenaceus
Eremophila eriocalyx
Eremophila gilesii subsp. *variabilis*
Eremophila hygrophana
Grevillea berryana
Maireana georgei
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Rhyncharrhena linearis
Santalum lanceolatum
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R042

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211917 mE 6979965 mN

Vegetation Code: WABS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia ayersiana
Acacia tetragonophylla
Enneapogon avenaceus
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Eremophila latrobei subsp. *latrobei*
Maireana georgei
Psydrax suaveolens
Ptilotus obovatus (Typical Goldfields form)
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Solanum lasiophyllum
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R043

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 212084 **mE** 6979479 **mN**

Vegetation Code: PLEsp

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Eragrostis sp. LCH26982

Ophioglossum lusitanicum

BHP Billiton Yeelirrie Site R044

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211832 **mE** 6980878 **mN**

Vegetation Code: PLEml

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia burkittii

Acacia tetragonophylla

Eremophila malacoides

Maireana georgei

Melaleuca xerophila

Ptilotus obovatus (Typical Goldfields form)

Senna artemisioides subsp. *filifolia*

Senna charlesiana

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R045

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211927 **mE** 6981477 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years ago

Species List:

Name

Acacia ayersiana
Acacia colletioides
Acacia ligulata
Acacia prainii
Alyogyne pinoniana
Bossiaea eremaea
Eremophila glabra subsp. *tomentosa*
Eremophila platythamnos subsp. *platythamnos*
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Melaleuca interioris
Olearia incana
Rhagodia drummondii
Santalum lanceolatum
Triodia basedowii

BHP Billiton Yeelirrie Site R046

Described by Geoff Cockerton **Date:** 28/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 212479 **mE** 6981330 **mN**

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Citrullus lanatus
Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)
Eremophila longifolia
Grevillea berryana
Melaleuca interioris
Melaleuca xerophila
Templetonia incrassata

BHP Billiton Yeelirrie Site R047

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 207694 mE 6983020 mN

Vegetation Code: CMpS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia tetragonophylla

Dissocarpus paradoxus

Eragrostis sp. (inadequate material)

Eremophila longifolia

Grevillea berryana

Maireana pyramidata

Marsdenia australis

Melaleuca interioris

Melaleuca xerophila

Pittosporum angustifolium

Ptilotus obovatus (Typical Goldfields form)

Santalum lanceolatum

Senna artemisioides subsp. *filifolia*

Solanum lasiophyllum

Triodia basedowii

BHP Billiton Yeelirrie Site R048

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 207553 mE 6982517 mN

Vegetation Code: PLMf

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Eremophila longifolia

Melaleuca interioris

Melaleuca xerophila

Muehlenbeckia florulenta

Pittosporum angustifolium

Ptilotus obovatus (Typical Goldfields form)

Santalum lanceolatum

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R049

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 208865 mE 6981634 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia macraneura
Acacia tetragonophylla
Eremophila longifolia
Grevillea berryana
Melaleuca xerophila
Pittosporum angustifolium
Ptilotus obovatus (Typical Goldfields form)
Santalum lanceolatum

BHP Billiton Yeelirrie Site R050

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 209780 mE 6981690 mN

Vegetation Code: CMGbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Acacia tetragonophylla
Amyema gibberula var. *gibberula*
Amyema hilliana
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Eremophila longifolia
Grevillea berryana
Grevillea sarissa subsp. *sarissa*
Maireana triptera
Melaleuca interioris
Psydrax suaveolens
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R051

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211362 mE 6982974 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana
Acacia ligulata
Eremophila platythamnos subsp. *platythamnos*
Grevillea acacioides
Grevillea eriostachya
Hakea francisiana
Hakea lorea subsp. *lorea*
Leptosema chambersii
Melaleuca interioris
Newcastelia hexarrhena
Rulingia loxophylla
Santalum lanceolatum

BHP Billiton Yeelirrie Site R052

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211004 mE 6983318 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia heteroneura var. *prolixa*
Bonamia rosea
Dianella revoluta
Enekbatus eremaeus
Eucalyptus leptopoda subsp. *elevata*
Exocarpos aphyllus
Hakea minyma
Homalocalyx thryptomenoides
Kennedia prorepens
Melaleuca interioris
Melaleuca leiocarpa
Prostanthera wilkieana
Rulingia loxophylla
Solanum centrale
Triodia basedowii

BHP Billiton Yeelirrie Site R053

Described by Geoff Cockerton **Date:** 29/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211193 mE 6983616 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia heteroneura var. *prolixa*

Enekbatus eremaeus

Triodia basedowii

BHP Billiton Yeelirrie Site R054

Described by Geoff Cockerton **Date:** 30/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 214037 mE 6980974 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana

Acacia colletioides

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia minyura

Acacia pachyacra

Dianella revoluta

Enekbatus eremaeus

Eremophila glabra subsp. *tomentosa*

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus kingsmillii

Exocarpos sparteus

Grevillea eriostachya

Hakea lorea subsp. *lorea*

Hakea minyma

Homalocalyx thryptomenoides

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Micromyrtus flaviflora

Newcastelia hexarrhena

Petalostylis cassioides

Prostanthera wilkieana

Rulingia loxophylla

Triodia basedowii

BHP Billiton Yeelirrie Site R055

Described by Geoff Cockerton **Date:** 30/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 213532 **mE** 6981373 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 1 year

Species List:

Name

Acacia pachyacra
Bonamia rosea
Dicrastylis brunnea
Eragrostis eriopoda
Eucalyptus kingsmillii
Exocarpos sparteus
Hakea lorea subsp. *lorea*
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Kennedia prorepens
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Newcastelia hexarrhena
Petalostylis cassioides
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R056

Described by Geoff Cockerton **Date:** 30/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 212729 **mE** 6981994 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia colletioides
Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia prainii
Enekbatius eremaeus
Eremophila platythamnos subsp. *platythamnos*
Hakea francisiana
Micromyrtus flaviflora

BHP Billiton Yeelirrie Site R057

Described by Geoff Cockerton **Date:** 30/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211422 mE 6983494 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Enekbatus eremaeus
Grevillea acacioides
Hakea minyma
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R058

Described by Geoff Cockerton **Date:** 30/04/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 211978 mE 6983069 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia effusifolia
Enekbatus eremaeus
Grevillea acacioides
Hakea minyma
Homalocalyx thryptomenoides
Newcastelia hexarrhena
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R059

Described by Geoff Cockerton

Date: 30/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

213178 **mE**

6982406 **mN**

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Mosaic burnt 10 years and 1 year ago

Species List:

Name

Abutilon otocarpum

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia prainii

Acacia sp. (inadequate material)

Aristida contorta

Brachychiton gregorii

Daviesia grahamii

Dianella revoluta

Duboisia hopwoodii

Enekbatus eremaeus

Eucalyptus kingsmillii

Euryomyrtus inflata

Glischrocaryon aureum

Indigofera brevidens

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Newcastelia hexarrhena

Petalostylis cassioides

Phyllota humilis

Prostanthera wilkieana

Rulingia loxophylla

Schoenus sp. (inadequate material)

Sida sp. tiny glabrous fruit (A.A. Mitchell PRP1152)

Triodia basedowii

BHP Billiton Yeelirrie Site R060

Described by Geoff Cockerton **Date:** 01/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

205218 **mE**

6986742 **mN**

Landscape Association: Sand Plain System

Vegetation Code: SAWS

Fire Age: Mosaic burnt 10 yrs and 1 yrs ago

Species List:

Name

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia pachyacra

Daviesia grahamii

Dianella revoluta

Dicrastylis doranii

Grevillea acacioides

Halgania erecta

Leptosema chambersii

Melaleuca leiocarpa

Newcastelia hexarrhena

Prostanthera wilkieana

Rulingia loxophylla

Triodia basedowii

BHP Billiton Yeelirrie Site R061

Described by Geoff Cockerton **Date:** 01/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 203270 mE 6986929 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 1 year

Species List:

Name

Acacia effusifolia
Acacia pachyacra
Alyogyne pinoniana
Dicrastylis brunnea
Dicrastylis doranii
Dicrastylis sessilifolia
Eucalyptus kingsmillii
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Leptosema chambersii
Melaleuca interioris
Newcastelia hexarrhena
Petalostylis cassioides
Ptilotus sessilifolius var. *sessilifolius*
Rulingia loxophylla
Solanum plicatile
Triodia basedowii

BHP Billiton Yeelirrie Site R062

Described by Geoff Cockerton **Date:** 01/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 795560 mE 6986855 mN

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *macrocarpa*
Acacia ayersiana
Acacia synchronicia
Acacia tetragonophylla
Amyema microphylla
Amyema sp. (inadequate material)
Eremophila longifolia
Pittosporum angustifolium
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Solanum nummularium

BHP Billiton Yeelirrie Site R063

Described by Geoff Cockerton

Date: 01/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

203455 **mE**

6983669 **mN**

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia ayersiana

Acacia craspedocarpa

Acacia ramulosa var. *linophylla*

Acacia macraneura

Acacia tetragonophylla

Atriplex bunburyana

Eragrostis sp. (inadequate material)

Eremophila hygrophana

Eremophila latrobei subsp. *latrobei*

Maireana pyramidata

Psyrax attenuata

Psyrax latifolia

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R064

Described by Geoff Cockerton **Date:** 14/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 795320 mE 6991107 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia aneura var. *silver grey falcate* 80 x 6 mm
Acacia aneura var. *silver grey, subterete*, 65 x 1.5 mm
Acacia aneura var. *yellow green, subterete phyllodes* 60 x 1 mm
Acacia ayersiana
Acacia craspedocarpa
Acacia ramulosa var. *linophylla*
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eremophila spectabilis subsp. *brevis*
Maireana georgei
Psydrax suaveolens
Rhagodia drummondii
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R065

Described by Geoff Cockerton **Date:** 14/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 794578 mE 6991415 mN

Vegetation Code: WABS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *yellow green, subterete phyllodes* 60 x 1 mm
Acacia ayersiana
Acacia craspedocarpa
Eragrostis eriopoda
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Eremophila gilesii subsp. *variabilis*
Maireana georgei
Psydrax suaveolens
Rhagodia drummondii

BHP Billiton Yeelirrie Site R066

Described by Geoff Cockerton **Date:** 14/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 795637 mE 6993685 mN

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, flat lanceolate 40 x 5 mm

Acacia aneura var. *tenuis*

Acacia craspedocarpa

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Eremophila galeata

Eremophila gilesii subsp. *variabilis*

Eremophila latrobei subsp. *latrobei*

Ptilotus obovatus (Typical Goldfields form)

Senna charlesiana

BHP Billiton Yeelirrie Site R067

Described by Geoff Cockerton **Date:** 14/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 793650 mE 6994362 mN

Vegetation Code: GPoS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia craspedocarpa

Eremophila compacta subsp. *compacta*

Eremophila latrobei subsp. *latrobei*

Maireana pyramidata

Ptilotus obovatus (Typical Goldfields form)

BHP Billiton Yeelirrie Site R068

Described by Geoff Cockerton

Date: 15/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

782899 **mE**

7000150 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia pachyacra

Aristida contorta

Brachychiton gregorii

Dianella revoluta

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus kingsmillii

Eucalyptus leptopoda subsp. *elevata*

Grevillea eriostachya

Hakea francisiana

Hakea minyma

Homalocalyx thryptomenoides

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Micromyrtus flaviflora

Monachather paradoxus

Rulingia loxophylla

Triodia basedowii

BHP Billiton Yeelirrie Site R069

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782808 mE 6995841 mN

Vegetation Code: CAbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Acacia synchronicia
Acacia tetragonophylla
Amyema hilliania
Aristida contorta
Eremophila arachnoides subsp. *arachnoides*
Grevillea berryana
Ptilotus obovatus (Typical Goldfields form)
Santalum acuminatum
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R070

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782280 mE 6995750 mN

Vegetation Code: CCpW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Casuarina pauper
Eremophila arachnoides subsp. *arachnoides*
Ptilotus obovatus (Typical Goldfields form)
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R071

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782784 mE 6994781 mN

Vegetation Code: CCpW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm

Acacia oswaldii

Casuarina pauper

Eremophila arachnoides subsp. *arachnoides*

Ptilotus obovatus (Typical Goldfields form)

Scaevola spinescens (broad form)

Sclerolaena sp. (inadequate material)

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R072

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782781 mE 6994597 mN

Vegetation Code: CEgW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Acacia oswaldii

Casuarina pauper

Eucalyptus gypsophila

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R073

Described by Geoff Cockerton

Date: 15/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

782187 **mE**

6993979 **mN**

Vegetation Code: PLMf

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, flat lanceolate 40 x 5 mm

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia ramulosa var. *linophylla*

Acacia macraneura

Acacia tetanophylla

Asteraceae sp. (inadequate material)

Melaleuca interioris

Muehlenbeckia florulenta

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R074

Described by Geoff Cockerton

Date: 15/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

782740 **mE**

6992565 **mN**

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia ayersiana

Acacia craspedocarpa

Acacia quadrimarginea

Acacia tetragonophylla

Chrysocephalum puteale

Dodonaea rigida

Eragrostis mucronata

Eragrostis sp. (inadequate material)

Eremophila compacta subsp. *compacta*

Eremophila eriocalyx

Eremophila maculata

Grevillea berryana

Hakea arida

Podolepis capillaris

Psyrdrax attenuata

Ptilotus obovatus (Typical Goldfields form)

Santalum spicatum

Scaevola spinescens (narrow leaf form)

Senna artemisioides subsp. *artemisioides*

Senna artemisioides subsp. *x sturtii*

Senna charlesiana

Sida ectogama

BHP Billiton Yeelirrie Site R075

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782109 mE 6992630 mN

Vegetation Code: GRMU

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia aneura var. silver grey, subterete, 65 x 1.5 mm
Acacia kempeana
Acacia ramulosa var. *linophylla*
Eremophila compacta subsp. *compacta*
Eremophila eriocalyx
Eremophila forrestii subsp. *forrestii*
Psyrax attenuata
Psyrax latifolia
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R076

Described by Geoff Cockerton **Date:** 15/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 781676 mE 6993018 mN

Vegetation Code: GPoS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia kempeana
Acacia tetragonophylla
Eremophila compacta subsp. *compacta*
Eremophila maculata
Maireana glomerifolia
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *filifolia*
Senna charlesiana
Sida ectogama

BHP Billiton Yeelirrie Site R077

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782695 mE 6990090 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia ligulata

Eragrostis eriopoda

Eremophila forrestii subsp. *forrestii*

Eucalyptus longissima

Grevillea berryana

Rhagodia drummondii

Senna artemisioides subsp. *filifolia*

Triodia basedowii

BHP Billiton Yeelirrie Site R078

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782689 mE 6989706 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia colletioides

Eremophila forrestii subsp. *forrestii*

Eucalyptus lucasii

Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

Triodia basedowii

BHP Billiton Yeelirrie Site R079

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 781790 mE 6989999 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia colletioides
Eremophila forrestii subsp. *forrestii*
Eremophila longifolia
Eucalyptus longissima
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Senna artemisioides subsp. *filifolia*
Triodia basedowii

BHP Billiton Yeelirrie Site R080

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 779647 mE 6991596 mN

Vegetation Code: CAbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Grevillea berryana
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *filifolia*
Triodia basedowii

BHP Billiton Yeelirrie Site R081

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 779608 **mE** 6991682 **mN**

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *macrocarpa*

Acacia ayersiana

Ptilotus obovatus (Typical Goldfields form)

Triodia melvillei

BHP Billiton Yeelirrie Site R082

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J Unknown **mE** Unknown **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia effusifolia

Eucalyptus trivalva

Triodia basedowii

BHP Billiton Yeelirrie Site R083

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 777392 mE 6994033 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *tenuis*
Acacia ayersiana
Acacia ramulosa var. *linophylla*
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eremophila spectabilis subsp. *brevis*
Eucalyptus kingsmillii
Triodia basedowii

BHP Billiton Yeelirrie Site R084

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782440 mE 6996953 mN

Vegetation Code: CMiS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia macraneura
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Sclerolaena convexula

BHP Billiton Yeelirrie Site R085

Described by Geoff Cockerton **Date:** 16/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782429 **mE** 6996643 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Melaleuca interioris

Ptilotus obovatus (Typical Goldfields form)

Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)

BHP Billiton Yeelirrie Site R086

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 218620 **mE** 6976721 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 1-2 years

Species List:

Name

Acacia effusifolia

Alyogyne pinoniana

Dampiera wellsiana

Dicrastylis brunnea

Dicrastylis doranii

Dicrastylis sessilifolia

Duboisia hopwoodii

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus kingsmillii

Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

Leptosema chambersii

Melaleuca interioris

Newcastelia hexarrhena

Petalostylis cassioides

Scaevola parvifolia subsp. *parvifolia*

Solanum centrale

Solanum plicatile

Triodia basedowii

BHP Billiton Yeelirrie Site R087

Described by Geoff Cockerton

Date: 17/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

218620 **mE**

6976721 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia effusifolia

Eucalyptus kingsmillii

Melaleuca interioris

Triodia basedowii

BHP Billiton Yeelirrie Site R088

Described by Geoff Cockerton

Date: 17/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

219548 mE

6977345 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 1-2 years

Species List:

Name

Acacia effusifolia

Acacia sp. grey green terete still multi veined, resprouter

Alyogyne pinoniana

Codonocarpus cotinifolius

Dampiera wellsiana

Dicrastylis brunnea

Dicrastylis doranii

Dicrastylis sessilifolia

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus kingsmillii

Exocarpos sparteus

Glischrocaryon angustifolium

Goodenia mueckeana

Hakea minyma

Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

Kennedia prorepens

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Melaleuca interioris

Newcastelia hexarrhena

Petalostylis cassioides

Rulingia loxophylla

Scaevola parvifolia subsp. *parvifolia*

Senna pleurocarpa var. *angustifolia*

Solanum centrale

Triodia basedowii

BHP Billiton Yeelirrie Site R089

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 219548 **mE** 6977345 **mN**

Vegetation Code: SAGS

Landscape Association: Sand Plain System

Fire Age: 1-2 years

Species List:

Name

Acacia effusifolia

Acacia ligulata

Acacia sp. grey green terete still multi veined, resprouter

Alyogyne pinoniana

Dicrastylis doranii

Dicrastylis sessilifolia

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus gongylocarpa

Leptosema chambersii

Micromyrtus flaviflora

Triodia basedowii

BHP Billiton Yeelirrie Site R090

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 224393 **mE** 6979214 **mN**

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia macraneura

BHP Billiton Yeelirrie Site R091

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 224814 **mE** 6979131 **mN**

Vegetation Code: WABS

Landscape Association: Harpan and drainage system

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia tetragonophylla
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eremophila gilesii subsp. *variabilis*
Grevillea berryana
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R092

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 227817 **mE** 6978930 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia ayersiana
Acacia colletioides
Acacia minyura
Acacia pachyacra
Acacia prainii
Acacia tetragonophylla
Eremophila forrestii subsp. *forrestii*
Eucalyptus lucasii
Grevillea berryana
Triodia basedowii

BHP Billiton Yeelirrie Site R093

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 229815 **mE** 6978066 **mN**

Vegetation Code: PLAMi

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *argentea*
Acacia aneura var. silver grey falcate 80 x 6 mm
Acacia ayersiana
Acacia tetragonophylla
Eremophila longifolia
Hakea lorea subsp. *lorea*
Melaleuca interioris
Senna artemisioides subsp. *filifolia*
Senna pleurocarpa var. *angustifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R094

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 232680 **mE** 6977806 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia colletioides
Eremophila battii
Eremophila decipiens subsp. *decipiens*
Eremophila forrestii subsp. *forrestii*
Grevillea sarissa subsp. *sarissa*
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Triodia basedowii

BHP Billiton Yeelirrie Site R095

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 234358 mE 6977954 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana
Acacia effusifolia
Acacia ligulata
Acacia pachyacra
Acacia tetragonophylla
Eucalyptus kingsmillii
Grevillea eriostachya
Hakea lorea subsp. *lorea*
Melaleuca interioris
Melaleuca leiocarpa
Petalostylis cassioides
Triodia basedowii
Triodia melvillei

BHP Billiton Yeelirrie Site R096

Described by Geoff Cockerton **Date:** 17/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 234833 mE 6977996 mN

Vegetation Code: SASP

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia ayersiana
Acacia heteroneura var. *prolixa*
Acacia ligulata
Acacia pachyacra
Acacia prainii
Eremophila platythamnos subsp. *platythamnos*
Eremophila subfloccosa subsp. aff. *lanata* (G Cockerton & C Jowett 25337)
Exocarpos sparteus
Grevillea acacioides
Grevillea eriostachya
Newcastelia hexarrhena
Petalostylis cassioides
Prostanthera sp. Bullimore SandPlain (G. Cockerton & D. True 12813)
Wurmbea deserticola

BHP Billiton Yeelirrie Site R097

Described by Geoff Cockerton

Date: 17/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

235831 **mE**

6978078 **mN**

Vegetation Code: SAGS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia effusifolia

Acacia jamesiana

Acacia ligulata

Acacia tetragonophylla

Enekbatus eremaeus

Eremophila platythamnos subsp. *platythamnos*

Eucalyptus gongylocarpa

Euryomyrtus inflata

Hakea francisiana

Hakea minyma

Homalocalyx thryptomenoides

Leptosema chambersii

Micromyrtus flaviflora

Olearia incana

Triodia basedowii

Triodia melvillei

BHP Billiton Yeelirrie Site R098

Described by Geoff Cockerton

Date: 17/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

Unknown **mE**

Unknown **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia jamesiana

Acacia pachyacra

Dianella revoluta

Duboisia hopwoodii

Enekbatus eremaeus

Eremophila forrestii subsp. *forrestii*

Eremophila platythamnos subsp. *platythamnos*

Eremophila spuria

Exocarpos sparteus

Grevillea eriostachya

Hakea francisiana

Keraudrenia velutina subsp. *velutina*

Micromyrtus flaviflora

Olearia arida

Prostanthera sp. Bullimore SandPlain (G. Cockerton & D. True 12813)

Triodia basedowii

BHP Billiton Yeelirrie Site R099

Described by Geoff Cockerton

Date: 18/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

246066 **mE**

6978416 **mN**

Vegetation Code: SAES

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green terete 25 x 1 mm

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia aneura var. tenuis

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia ayersiana

Acacia craspedocarpa

Acacia pruinocarpa

Acacia tetanophylla

Eremophila galeata

Eremophila margarethae

Eremophila spuria

Grevillea striata

Ptilotus obovatus (Typical Goldfields form)

Santalum spicatum

Senna artemisioides subsp. *artemisioides*

Senna artemisioides subsp. *helmsii*

Senna artemisioides subsp. *x sturtii*

Senna glutinosa subsp. *chatelainiana*

Sida ectogama

BHP Billiton Yeelirrie Site R100

Described by Geoff Cockerton **Date:** 18/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 247518 mE 6977490 mN

Vegetation Code: DRES

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura grey green
Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia quadrimarginea
Callitris glaucophylla
Cheilanthes sp. (inadequate material)
Cymbopogon ambiguus
Eremophila exilifolia
Eremophila margarethae
Eucalyptus camaldulensis var. *obtusata*
Marsilea drummondii
Ophioglossum lusitanicum
Phyllanthus erwinii
Pluchea dentex
Trichodesma zeylanicum

BHP Billiton Yeelirrie Site R101

Described by Geoff Cockerton **Date:** 18/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 248463 mE 6976592 mN

Vegetation Code: DRMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm
Acacia craspedocarpa
Acacia quadrimarginea
Cheilanthes sp. (inadequate material)
Dodonaea petiolaris
Eremophila exilifolia
Eremophila longifolia
Pluchea dentex
Ptilotus sp. (inadequate material)
Santalum spicatum
Senna artemisioides subsp. *artemisioides*
Trichodesma zeylanicum

BHP Billiton Yeelirrie Site R102

Described by Geoff Cockerton **Date:** 18/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 248803 mE 6975778 mN

Vegetation Code: SAES

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia tetragonophylla

Cymbopogon ambiguus

Eremophila exilifolia

Eremophila galeata

Eremophila margarethae

Euphorbia drummondii subsp. *drummondii*

Hibiscus gardneri

Ptilotus rotundifolius

Senna artemisioides subsp. *helmsii*

BHP Billiton Yeelirrie Site R103

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 249015 mE 6975563 mN

Vegetation Code: GR

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. silver grey, subterete, 65 x 1.5 mm

Acacia quadrimarginea

Callitris glaucophylla

Cymbopogon ambiguus

Dodonaea petiolaris

Dodonaea viscosa subsp. *mucronata*

Eremophila latrobei subsp. *latrobei*

Euphorbia boophthona

Psyrdrax attenuata

Ptilotus sp. (inadequate material)

Santalum spicatum

BHP Billiton Yeelirrie Site R104

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 249329 mE 6974738 mN

Vegetation Code: GR

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia quadrimarginea

Cheilanthes sp. (inadequate material)

Cymbopogon ambiguus

Dodonaea petiolaris

Eremophila serrulata

Isotoma petraea

Senna artemisioides subsp. *x sturtii*

Sida sp. *Excedentifolia* (J.L. Egan 1925)

Sida phaeotricha

Trichodesma zeylanicum

BHP Billiton Yeelirrie Site R105

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 249844 mE 6974314 mN

Vegetation Code: GFGr

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Aristida contorta

Eremophila galeata

Hakea lorea subsp. *lorea*

Ptilotus obovatus (Typical Goldfields form)

Senna artemisioides subsp. *helmsii*

BHP Billiton Yeelirrie Site R106

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

Unknown **mE**

Unknown **mN**

Landscape Association: Granite System

Vegetation Code: Qtz

Fire Age: Long unburnt

Species List:

Name

Abutilon oxycarpum subsp. *prostratum*
Acacia quadrimarginea
Callitris glaucophylla
Cymbopogon ambiguus
Dodonaea petiolaris
Eremophila latrobei subsp. *latrobei*
Psyrax attenuata
Psyrax suaveolens
Ptilotus obovatus (Typical Goldfields form)
Ptilotus rotundifolius

BHP Billiton Yeelirrie Site R107

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

250332 **mE**

6973775 **mN**

Vegetation Code: BCLS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *alata* (narrow phyllode)
Acacia ayersiana
Acacia paraneura
Cymbopogon ambiguus
Eremophila forrestii subsp. *forrestii*
Eremophila longifolia
Hakea preissii
Maireana triptera
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Salsola tragus subsp. *tragus*
Senna artemisioides subsp. *x sturtii*
Senna glutinosa subsp. *chatelainiana*
Solanum ellipticum

BHP Billiton Yeelirrie Site R108

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 250499 mE 6973854 mN

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Cynanchum floribundum

Sida phaeotricha

BHP Billiton Yeelirrie Site R109

Described by Geoff Cockerton **Date:** 19/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 252197 mE 6973418 mN

Vegetation Code: GRMS

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green terete 25 x 1 mm

Acacia burkittii

Acacia craspedocarpa

Acacia paraneura

Acacia tetragonophylla

Cymbopogon ambiguus

Duperreya sericea

Eremophila galeata

Eremophila serrulata

Hakea lorea subsp. *lorea*

Hakea preissii

Indigofera georgei

Pluchea dentex

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Santalum lanceolatum

Senna artemisioides subsp. *artemisioides*

Senna artemisioides subsp. *helmsii*

Senna artemisioides subsp. *x sturtii*

Sida phaeotricha

Stemodia florulenta

BHP Billiton Yeelirrie Site R110

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 779612 mE 7003339 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia ligulata
Alyogyne pinoniana
Brachychiton gregorii
Eremophila platythamnos subsp. *platythamnos*
Eucalyptus kingsmillii
Eucalyptus trivalva
Exocarpos sparteus
Hakea minyma
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Triodia basedowii

BHP Billiton Yeelirrie Site R111

Described by Geoff Cockerton **Date** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 777720 mE 7003877 mN

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia aneura var. silver grey falcate 80 x 6 mm
Acacia ayersiana
Acacia colletioides
Eucalyptus trivalva
Senna artemisioides subsp. *filifolia*
Triodia basedowii

BHP Billiton Yeelirrie Site R112

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 774631 mE 7004760 mN

Vegetation Code: SAGS

Landscape Association: Sand Plain System

Fire Age: Mosaic

Species List:

Name

Acacia effusifolia
Acacia ligulata
Acacia prainii
Bonamia rosea
Cymbopogon ambiguus
Eragrostis eriopoda
Eremophila platythamnos subsp. *platythamnos*
Eucalyptus gongylocarpa
Eucalyptus kingsmillii
Hakea francisiana
Hakea minyma
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Leptosema chambersii
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R113

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 774583 mE 7004774 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia ligulata
Daviesia grahamii
Eucalyptus leptopoda subsp. *elevata*
Grevillea eriostachya
Hakea francisiana
Hakea minyma
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Micromyrtus flaviflora
Petalostylis cassioides
Rulingia loxophylla

BHP Billiton Yeelirrie Site R114

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773647 mE 7005043 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Acacia ligulata
Acacia pachyacra
Acacia prainii
Daviesia grahamii
Euryomyrtus inflata
Grevillea eriostachya
Hakea minyma
Homalocalyx thryptomenoides
Newcastelia hexarrhena
Poaceae sp. (inadequate material)
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R115

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 768455 mE 7008709 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: 10 years

Species List:

Name

Acacia heteroneura var. *prolixa*
Brachychiton gregorii
Dianella revoluta
Enekbatus eremaeus
Eucalyptus leptopoda subsp. *elevata*
Euryomyrtus inflata
Exocarpos sparteus
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Poaceae sp. (inadequate material)
Prostanthera wilkieana
Psydrax attenuata
Rulingia loxophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R116

Described by Geoff Cockerton

Date: 20/05/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

764620 mE

7010181 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 1 year (south), 15 years (north)

Species List:

Name

Acacia heteroneura var. *prolixa*
Acacia ligulata
Aristida contorta
Bonamia rosea
Brachychiton gregorii
Comesperma viscidulum
Daviesia grahamii
Dianella revoluta
Enekbatus eremaeus
Eremophila glabra subsp. *tomentosa*
Eriachne helmsii
Eucalyptus leptopoda subsp. *elevata*
Exocarpos sparteus
Glischrocaryon aureum
Grevillea acacioides
Hakea minyma
Kennedia prorepens
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Petalostylis cassioides
Phyllota humilis
Prostanthera wilkieana
Senna artemisioides subsp. *petiolaris*
Sida cardiophylla
Triodia basedowii

BHP Billiton Yeelirrie Site R117

Described by Geoff Cockerton **Date:** 20/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 758532 mE 7009875 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 15 years

Species List:

Name

Acacia ayersiana
Acacia effusifolia
Bonamia rosea
Calothamnus aridus
Dianella revoluta
Enekbatus eremaeus
Eremophila glabra subsp. *tomentosa*
Eremophila platythamnos subsp. *platythamnos*
Eucalyptus leptopoda subsp. *elevata*
Grevillea acacioides
Grevillea eriostachya
Hakea francisiana
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Poaceae sp. (inadequate material)
Rulingia loxophylla
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R118

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 793972 mE 6988146 mN

Vegetation Code: CMiS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia tetragonophylla
Melaleuca interioris
Melaleuca xerophila
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R119

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 792897 mE 6988021 mN

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia burkittii
Acacia tetragonophylla
Amyema gibberula var. *gibberula*
Dissocarpus paradoxus
Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)
Eremophila longifolia
Eremophila malacoides
Grevillea berryana
Lycium australe
Maireana pyramidata
Melaleuca interioris
Melaleuca xerophila
Pittosporum angustifolium
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R120

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 792365 mE 6988286 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Atriplex bunburyana
Dissocarpus paradoxus
Enchylaena tomentosa var. *tomentosa*
Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)
Lycium australe
Melaleuca xerophila
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R121

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 790420 mE 6988322 mN

Vegetation Code: WABS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia tetragonophylla
Eragrostis eriopoda
Eremophila eriocalyx
Eremophila gilesii subsp. *variabilis*
Eremophila latrobei subsp. *latrobei*
Psyrax suaveolens
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Solanum lasiophyllum
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R122

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789623 mE 6988371 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia tetragonophylla
Eragrostis eriopoda
Eremophila eriocalyx
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Sida ectogama
Solanum lasiophyllum
Spartothamnella teucriflora
Triodia basedowii

BHP Billiton Yeelirrie Site R123

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789916 **mE** 6982303 **mN**

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eremophila spectabilis subsp. *brevis*
Eucalyptus kingsmillii
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R124

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 796949 **mE** 6982550 **mN**

Vegetation Code: GPoS

Landscape Association: Granite System

Fire Age Long unburnt

Species List:

Name

Acacia aneura var. *tenuis*
Acacia tetanophylla
Maireana pyramidata
Psyrdrax attenuata
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *x sturtii*
Sida ectogama
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R125

Described by Geoff Cockerton **Date:** 21/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 784844 mE 6989220 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ramulosa var. *linophylla*
Eragrostis eriopoda
Eremophila compacta subsp. *compacta*
Eremophila eriocalyx
Grevillea berryana
Grevillea sarissa subsp. *sarissa*
Psyrax suaveolens
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum
Solanum lasiophyllum
Spartothamnella teucriflora

BHP Billiton Yeelirrie Site R126

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787930 mE 6991327 mN

Vegetation Code: CAbs

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Acacia tetragonophylla
Eremophila arachnoides subsp. *arachnoides*
Grevillea berryana
Ptilotus obovatus (Typical Goldfields form)
Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R127

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787820 mE 6991113 mN

Vegetation Code: CEgW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Eremophila arachnoides subsp. *arachnoides*

Eucalyptus gypsophila

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R128

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 788029 mE 6991607 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia ayersiana

Acacia burkittii

Acacia ramulosa var. *linophylla*

Acacia tetragonophylla

Eremophila battii

Eremophila longifolia

Grevillea berryana

Hakea lorea subsp. *lorea*

Hibiscus sp. (inadequate material)

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R129

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787890 **mE** 6991250 **mN**

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia burkittii

Acacia tetragonophylla

Eremophila longifolia

Grevillea berryana

Hakea lorea subsp. *lorea*

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R130

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787749 **mE** 6990982 **mN**

Vegetation Code: CERG

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Salsola tragus subsp. *tragus*

Sclerolaena convexula

Senna artemisioides subsp. *filifolia*

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R131

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787659 **mE** 6990811 **mN**

Vegetation Code: CEgW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Eremophila glabra subsp. *tomentosa*

Eucalyptus gypsophila

Frankenia laxiflora

Senna artemisioides subsp. *filifolia*

Templetonia incrassata

BHP Billiton Yeelirrie Site R132

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787517 **mE** 6990582 **mN**

Vegetation Code: CApS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Atriplex sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)

Haloragis sp. (inadequate material)

BHP Billiton Yeelirrie Site R133

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787502 mE 6990335 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Amyema microphylla

Atriplex sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)

Dissocarpus paradoxus

Lycium australe

Melaleuca xerophila

Sclerolaena fusiformis

BHP Billiton Yeelirrie Site R134

Described by Geoff Cockerton **Date:** 22/05/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787443 mE 6990080 mN

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Eragrostis setifolia

BHP Billiton Yeelirrie Site R135

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787351 mE 6990242 mN

Vegetation Code: CErG

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Cratystylis subspinescens

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Eremophila arachnoides subsp. *arachnoides*

Lycium australe

Sclerolaena fusiformis

BHP Billiton Yeelirrie Site R136

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 786175 mE 6990601 mN

Vegetation Code: CEgW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Acacia oswaldii

Eremophila arachnoides subsp. *arachnoides*

Eucalyptus gypsophila

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R137

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 786257 mE 6990997 mN

Landscape Association: Playa System

Vegetation Code: PLAPoS

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia burkittii
Acacia tetragonophylla
Eragrostis setifolia
Eremophila longifolia
Hakea lorea subsp. *lorea*
Maireana triptera
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum
Sclerolaena fusiformis
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R138

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 786459 mE 6991009 mN

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia burkittii
Acacia tetanophylla
Eragrostis setifolia
Grevillea berryana
Hakea lorea subsp. *lorea*
Maireana triptera
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R139

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 784893 mE 6992777 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura grey green
Acacia synchronicia
Acacia tetragonophylla
Maireana georgei
Maireana pyramidata
Ptilotus obovatus (Typical Goldfields form)
Santalum lanceolatum
Sclerolaena fusiformis
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R140

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 784658 mE 6992280 mN

Vegetation Code: HPMS

Landscape Association: Hardpan and Drainage System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia ligulata
Acacia tetragonophylla
Eremophila longifolia
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Sclerolaena fusiformis
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R141

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 784915 mE 6991979 mN

Vegetation Code: PLAPoS

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia macraneura
Acacia tetragonophylla
Dissocarpus paradoxus
Eremophila longifolia
Maireana pyramidata
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum

BHP Billiton Yeelirrie Site R142

Described by Rebecca Graham **Date:** 04/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 784794 mE 6992139 mN

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia ayersiana
Acacia macraneura
Acacia tetragonophylla
Cymbopogon ambiguus
Dissocarpus paradoxus
Eragrostis setifolia
Eremophila arachnoides subsp. *arachnoides*
Eremophila longifolia
Eucalyptus lucasii
Grevillea berryana
Hakea lorea subsp. *lorea*
Maireana triptera
Marsdenia australis
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Santalum lanceolatum
Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R143

Described by Rebecca Graham **Date:** 05/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 788481 mE 6990020 mN

Vegetation Code: CErG

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Acacia synchronicia

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Lycium australe

Santalum lanceolatum

Sclerolaena fusiformis

BHP Billiton Yeelirrie Site R144

Described by Rebecca Graham **Date** 05/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789409 mE 6989936 mN

Vegetation Code: CLaS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Atriplex sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Lycium australe

Santalum lanceolatum

Sclerolaena fusiformis

Templetonia incrassata

BHP Billiton Yeelirrie Site R145

Described by Rebecca Graham **Date:** 05/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789734 mE 6989300 mN

Vegetation Code: CMGbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia ayersiana
Acacia burkittii
Acacia synchronicia
Acacia tetragonophylla
Dissocarpus paradoxus
Eremophila arachnoides subsp. *arachnoides*
Grevillea berryana
Ptilotus obovatus (Typical Goldfields form)
Sclerolaena fusiformis
Senna artemisioides subsp. *filifolia*
Templetonia incrassata

BHP Billiton Yeelirrie Site R146

Described by Rebecca Graham **Date:** 05/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 787189 mE 6991784 mN

Vegetation Code: CRsS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia macraneura
Atriplex sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)
Dissocarpus paradoxus
Eremophila longifolia
Maireana glomerifolia
Maireana pyramidata
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R147

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 789172 mE 6989655 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia tetragonophylla
Dissocarpus paradoxus
Eremophila longifolia
Grevillea berryana
Maireana triptera
Melaleuca interioris
Melaleuca xerophila
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Sclerolaena fusiformis
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R148

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782692 mE 6997722 mN

Vegetation Code: PLCh

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia tetragonophylla
Dissocarpus paradoxus
Eragrostis sp. (inadequate material)
Eremophea spinosa
Maireana georgei
Sclerolaena diacantha
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R149

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 781377 mE 6998369 mN

Vegetation Code: PLCh

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia tetragonophylla
Eragrostis setifolia
Eragrostis sp. (inadequate material)
Eremophila battii
Eremophila forrestii subsp. *forrestii*
Maireana pyramidata
Ptilotus obovatus (Typical Goldfields form)
Santalum lanceolatum
Sclerolaena eriacantha
Senna charlesiana

BHP Billiton Yeelirrie Site R150

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 777887 mE 6999967 mN

Vegetation Code: CAbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia burkittii
Dissocarpus paradoxus
Eremophea spinosa
Eremophila arachnoides subsp. *arachnoides*
Eremophila longifolia
Hakea lorea subsp. *lorea*
Ptilotus obovatus (Typical Goldfields form)
Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)
Solanum lasiophyllum
Solanum nummularium

BHP Billiton Yeelirrie Site R151

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 778070 mE 7000127 mN

Vegetation Code: CRsS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura (indeterminate variant)
Dissocarpus paradoxus
Eremophila longifolia
Hakea lorea subsp. *lorea*
Ptilotus obovatus (Typical Goldfields form)
Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R152

Described by Rebecca Graham **Date:** 06/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773903 mE 7002631 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 15-20 years

Species List:

Name

Acacia effusifolia
Enekbatus eremaeus
Eremophila glabra subsp. *tomentosa*
Eucalyptus kingsmillii
Micromyrtus flaviflora
Triodia basedowii

BHP Billiton Yeelirrie Site R153

Described by Rebecca Graham

Date: 07/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

773917 mE

7004507 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia jamesiana

Acacia ligulata

Bonamia rosea

Daviesia grahamii

Eucalyptus kingsmillii

Hakea francisiana

Homalocalyx thryptomenoides

Kennedia prorepens

Keraudrenia velutina subsp. *velutina*

Leptosema chambersii

Newcastelia hexarrhena

Rulingia loxophleba

Solanum lasiophyllum

Triodia basedowii

BHP Billiton Yeelirrie Site R154

Described by Rebecca Graham

Date: 07/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

773892 **mE**

7001869 **mN**

Vegetation Code: SAMU

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *tenuis*
Acacia ayersiana
Acacia burkittii
Acacia colletioides
Acacia effusifolia
Acacia minyura
Acacia prainii
Acacia tetragonophylla
Brachychiton gregorii
Casuarina pauper
Dissocarpus paradoxus
Enchylaena tomentosa var. *tomentosa*
Eremophea spinosa
Eremophila arachnoides subsp. *arachnoides*
Eremophila eriocalyx
Eremophila glabra subsp. *tomentosa*
Eremophila latrobei subsp. *latrobei*
Eremophila longifolia
Eucalyptus trivalva
Grevillea berryana
Melaleuca interioris
Ptilotus obovatus (Typical Goldfields form)
Sclerolaena diacantha
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Templetonia incrassata
Triodia basedowii

BHP Billiton Yeelirrie Site R155

Described by Rebecca Graham **Date:** 07/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773882 mE 7001026 mN

Vegetation Code: CCpW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Acacia minyura
Acacia tetragonophylla
Casuarina pauper
Dissocarpus paradoxus
Eremophea spinosa
Eremophila arachnoides subsp. *arachnoides*
Eremophila longifolia
Ptilotus obovatus (Typical Goldfields form)
Sclerolaena diacantha
Solanum lasiophyllum
Templetonia incrassata

BHP Billiton Yeelirrie Site R156

Described by Rebecca Graham **Date:** 07/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 770493 mE 6998742 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 10-15 years

Species List:

Name

Acacia effusifolia
Acacia heteroneura var. *prolixa*
Baeckea sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)
Bonamia rosea
Daviesia grahamii
Dianella revoluta
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eucalyptus kingsmillii
Eucalyptus leptopoda subsp. *elevata*
Exocarpos sparteus
Leptosema chambersii
Prostanthera wilkieana
Triodia basedowii

BHP Billiton Yeelirrie Site R157

Described by Rebecca Graham **Date:** 07/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 772422 mE 6998713 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 10-15 years

Species List:

Name

Acacia ligulata
Dianella revoluta
Dodonaea microzyga var. *acrolobata*
Eremophila platythamnos subsp. *platythamnos*
Eucalyptus leptopoda subsp. *subluta*
Grevillea berryana
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Leptosema chambersii
Marsdenia australis
Sida ectogama
Solanum lasiophyllum
Triodia basedowii

BHP Billiton Yeelirrie Site R158

Described by Rebecca Graham **Date:** 08/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773999 mE 7000385 mN

Vegetation Code: CCpW

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii
Acacia minyura
Acacia oswaldii
Casuarina pauper
Eremophila arachnoides subsp. *arachnoides*
Maireana trichoptera
Ptilotus obovatus (Typical Goldfields form)
Sclerolaena fusiformis
Senna artemisioides subsp. *filifolia*
Templetonia incrassata

BHP Billiton Yeelirrie Site R159

Described by Rebecca Graham

Date: 08/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

775130 **mE**

6998533 **mN**

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: 5-10 years

Species List:

Name

Acacia effusifolia

Acacia jamesiana

Acacia ligulata

Acacia pachyacra

Dianella revoluta

Enekbatus eremaeus

Eragrostis eriopoda

Eremophila forrestii subsp. *forrestii*

Eucalyptus kingsmillii

Exocarpos sparteus

Hakea francisiana

Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

Keraudrenia velutina subsp. *velutina*

Micromyrtus flaviflora

Psyrax suaveolens

Ptilotus obovatus (Typical Goldfields form)

Rulingia loxophylla

Solanum lasiophyllum

Triodia basedowii

BHP Billiton Yeelirrie Site R160

Described by Rebecca Graham **Date:** 08/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773880 mE 6997373 mN

Vegetation Code: SASP

Landscape Association: Sand Plain System

Fire Age: 2-5 years

Species List:

Name

Acacia ayersiana
Acacia effusifolia
Acacia ramulosa var. *linophylla*
Acacia sp. (inadequate material)
Bonamia rosea
Eragrostis eriopoda
Eremophila forrestii subsp. *forrestii*
Eremophila glabra subsp. *tomentosa*
Eremophila spuria
Eriachne sp. (inadequate material)
Euryomyrtus inflata
Homalocalyx thryptomenoides
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Prostanthera wilkieana
Triodia basedowii

BHP Billiton Yeelirrie Site R161

Described by Rebecca Graham **Date:** 08/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 778666 mE 6998436 mN

Vegetation Code: CRsS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia ayersiana
Acacia tetragonophylla
Bergia perennis
Eremophila eriocalyx
Eremophila longifolia
Maireana pyramidata
Melaleuca interioris
Pluchea dentex
Ptilotus obovatus (Typical Goldfields form)
Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)
Solanum lasiophyllum

BHP Billiton Yeelirrie Site R162

Described by Rebecca Graham

Date: 09/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

782206 **mE**

6999005 **mN**

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura grey green

Acacia aneura var. silver grey falcate 80 x 6 mm

Acacia tetragonophylla

Amyema hilliania

Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

Eremophila longifolia

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Santalum lanceolatum

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R163

Described by Rebecca Graham

Date: 09/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

779052 **mE**

6995410 **mN**

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Abutilon otocarpum

Acacia aneura var. silver grey falcate 80 x 6 mm

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia burkittii

Acacia macraneura

Acacia tetragonophylla

Amaranthus mitchellii

Eragrostis setifolia

Eremophila arachnoides subsp. *arachnoides*

Eremophila longifolia

Eucalyptus lucasii

Grevillea berryana

Maireana georgei

Marsdenia australis

Melaleuca xerophila

Pimelea microcephala

Pluchea dentex

Ptilotus obovatus (Typical Goldfields form)

Rhagodia drummondii

Rhagodia eremaea

Santalum lanceolatum

Sclerolaena fusiformis

Senna artemisioides subsp. *filifolia*

Solanum lasiophyllum

Swainsona kingii

BHP Billiton Yeelirrie Site R164

Described by Rebecca Graham **Date:** 09/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 777935 mE 7000748 mN

Vegetation Code: CRsS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. yellow green, subterete phyllodes 60 x 1 mm

Acacia burkittii

Eragrostis setifolia

Eremophila longifolia

Pluchea dentex

Ptilotus obovatus (Typical Goldfields form)

Rhagodia sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)

Solanum lasiophyllum

Teucrium racemosum

BHP Billiton Yeelirrie Site R165

Described by Rebecca Graham **Date:** 10/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 782183 mE 6993995 mN

Vegetation Code: PLMf

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm

Acacia ayersiana

Acacia ramulosa var. *linophylla*

Melaleuca interioris

Muehlenbeckia florulenta

BHP Billiton Yeelirrie Site R166

Described by Rebecca Graham **Date:** 10/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 773929 mE 7006192 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia jamesiana
Acacia ligulata
Dianella revoluta
Enekbatus eremaeus
Eragrostis eriopoda
Euryomyrtus inflata
Grevillea eriostachya
Hakea francisiana
Triodia basedowii

BHP Billiton Yeelirrie Site R167

Described by Rebecca Graham **Date:** 10/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 769525 mE 7006724 mN

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ligulata
Acacia tetragonophylla
Brachychiton gregorii
Eremophila glabra subsp. *tomentosa*
Eremophila spuria
Hakea lorea subsp. *lorea*
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)
Keraudrenia velutina subsp. *velutina*
Pimelea microcephala
Ptilotus obovatus (Typical Goldfields form)
Rulingia loxophylla
Santalum acuminatum
Scaevola spinescens (broad leaf form)
Triodia basedowii
Triodia melvillei

BHP Billiton Yeelirrie Site R168

Described by Rebecca Graham **Date:** 10/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 766956 mE 7004609 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia effusifolia
Acacia jamesiana
Brachychiton gregorii
Enekbatus eremaeus
Eucalyptus leptopoda subsp. *subluta*
Homalocalyx thryptomenoides
Prostanthera wilkieana

BHP Billiton Yeelirrie Site R169

Described by Rebecca Graham **Date:** 11/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 762953 mE 7009867 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia heteroneura var. *prolixa*
Acacia ligulata
Bonamia rosea
Enekbatus eremaeus
Eragrostis mucronata
Eucalyptus leptopoda subsp. *elevata*
Euryomyrtus inflata
Hakea francisiana
Homalocalyx thryptomenoides
Keraudrenia velutina subsp. *velutina*
Leptosema chambersii
Micromyrtus flaviflora
Prostanthera wilkieana
Triodia basedowii

BHP Billiton Yeelirrie Site R170

Described by Rebecca Graham

Date: 11/06/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J

762577 mE

7008869 mN

Vegetation Code: SDHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. *tenuis*

Acacia ayersiana

Acacia burkittii

Acacia effusifolia

Acacia heteroneura var. *prolixa*

Acacia jamesiana

Acacia ligulata

Bertya dimerostigma

Callitris glaucophylla

Dianella revoluta

Eragrostis eriopoda

Eragrostis mucronata

Eremophila glabra subsp. *tomentosa*

Eucalyptus leptopoda subsp. *elevata*

Grevillea eriostachya

Hakea francisiana

Hakea lorea subsp. *lorea*

Keraudrenia velutina subsp. *velutina*

Micromyrtus flaviflora

Rulingia loxophylla

Santalum acuminatum

Triodia basedowii

Triodia melvillei

BHP Billiton Yeelirrie Site R171

Described by Rebecca Graham **Date:** 11/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 762488 mE 7008592 mN

Vegetation Code: SAHS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Enekbatus eremaeus
Grevillea acacioides
Hakea francisiana
Homalocalyx thryptomenoides
Keraudrenia velutina subsp. *velutina*
Rulingia loxophylla
Schoenus subaphyllus
Triodia basedowii

BHP Billiton Yeelirrie Site R172

Described by Rebecca Graham **Date:** 11/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 205777 mE 6983004 mN

Vegetation Code: PLAET

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm
Acacia ayersiana
Acacia tetragonophylla
Eragrostis sp. Yeelirrie Calcrete (S. Regan LCH 26770)

BHP Billiton Yeelirrie Site R173

Described by Rebecca Graham **Date:** 11/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 206560 mE 6982959 mN

Vegetation Code: PLMf

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm

Acacia ayersiana

Melaleuca interioris

Muehlenbeckia florulenta

BHP Billiton Yeelirrie Site R174

Described by Rebecca Graham **Date:** 12/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 210190 mE 6982044 mN

Vegetation Code: CAbS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia burkittii

Grevillea berryana

Ptilotus obovatus (Typical Goldfields form)

Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R175

Described by Rebecca Graham **Date:** 12/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J 205075 mE 6984582 mN

Vegetation Code: PLCsMp

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green, straight flat 30-80 x 2 mm

Acacia ayersiana

Acacia macraneura

Cratystylis subspinescens

Frankenia sp. (inadequate material)

Maireana georgei

Maireana pyramidata

Ptilotus obovatus (Typical Goldfields form)

BHP Billiton Yeelirrie Site R176

Described by Rebecca Graham **Date:** 12/06/2009 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 793582 mE 6993956 mN

Vegetation Code: SAES

Landscape Association: Granite System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey green terete 25 x 1 mm

Acacia ayersiana

Cheilanthes sieberi subsp. *sieberi*

Eremophila compacta subsp. *compacta*

Eremophila galeata

Eremophila latrobei subsp. *latrobei*

Ptilotus obovatus (Typical Goldfields form)

Santalum lanceolatum

Senna artemisioides subsp. *helmsii*

Sida ectogama

Solanum lasiophyllum

BHP Billiton Yeelirrie Site R177

Described by Rebecca Graham **Date:** 24/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 761882 mE 7009430 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia effusifolia
Bonamia rosea
Dianella revoluta
Enekbatus eremaeus
Eriachne helmsii
Eucalyptus leptopoda subsp. *elevata*
Grevillea berryana
Hakea francisiana
Homalocalyx thryptomenoides
Prostanthera wilkieana
Triodia basedowii

BHP Billiton Yeelirrie Site R178

Described by Rebecca Graham **Date:** 24/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 765601 mE 7008513 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia aneura var. grey flat straight phyllode 30 x 3 mm
Acacia burkittii
Acacia ligulata
Bertya dimerostigma
Brachychiton gregorii
Callitris glaucophylla
Eremophila glabra subsp. *tomentosa*
Eremophila longifolia
Eucalyptus leptopoda subsp. *elevata*
Hakea lorea subsp. *lorea*
Pimelea microcephala
Ptilotus obovatus (Typical Goldfields form)
Rulingia loxophylla
Scaevola spinescens (broad leaf form)
Senna artemisioides subsp. *filifolia*
Triodia basedowii
Triodia melvillei

BHP Billiton Yeelirrie Site R179

Described by Rebecca Graham **Date:** 24/06/2009 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 768497 mE 7003520 mN

Vegetation Code: SAMA

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia colletioides
Acacia effusifolia
Acacia ligulata
Acacia prainii
Bossiaea eremaea
Dianella revoluta
Eremophila glabra subsp. *tomentosa*
Eucalyptus leptopoda subsp. *elevata*
Eucalyptus trivalva
Hakea francisiana
Halgania cyanea subsp. Allambi Stn (B. W. Strong 676)

BHP Billiton Yeelirrie Site R180

Described by Rebecca Graham **Date:** 12/03/2010 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 50J 790696 mE 6989841 mN

Vegetation Code: CMGbs

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia burkittii
Acacia synchronicia
Dissocarpus paradoxus
Enchylaena tomentosa var. *tomentosa*
Eremophila arachnoides subsp. *arachnoides*
Eremophila longifolia
Grevillea berryana
Marsdenia australis
Ptilotus obovatus (Typical Goldfields form)
Rhagodia drummondii
Senna artemisioides subsp. *filifolia*
Solanum lasiophyllum
Templetonia incrassata

BHP Billiton Yeelirrie Site R192

Described by Geoff Cockerton

Date: 29/04/2009

Type: Releve

Season: Poor

Location: Yeelirrie study area 1

MGA Zone: 51J

211529 **mE**

6982223 **mN**

Vegetation Code: SAWS

Landscape Association: Sand Plain System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia burkittii

Acacia ligulata

Acacia prainii

Acacia macraneura

Amyema hiliiana

Bossiaea eremaea

Dianella revoluta

Hakea francisiana

Halgania cyanea

Keraudrenia velutina subsp. *velutina*

Maireana triptera

Santalum lanceolatum

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Senna artemisioides subsp. *filifolia*

Triodia basedowii

Triodia melvillei

Study area 3

BHP Billiton Yeelirrie Site R181

Described by Rebecca Graham **Date:** 13/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 226049 mE 6976558 mN

Vegetation Code: SPTLS

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Tecticornia sp. (inadequate material)

BHP Billiton Yeelirrie Site R182

Described by Rebecca Graham **Date:** 13/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 223840 mE 6972842 mN

Vegetation Code: CMxS

Landscape Association: Calcrete System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Maireana pyramidata

Melaleuca xerophila

Ptilotus obovatus

BHP Billiton Yeelirrie Site R183

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 224676 **mE** 6976925 **mN**

Vegetation Code: CsMp

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Acacia tetragonophylla

Chloris pectinata

Cratystylis subspinescens

Eremophila malacoides

Frankenia pauciflora

Maireana pyramidata

Scaevola spinescens (narrow leaf form)

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

BHP Billiton Yeelirrie Site R184

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 226674 **mE** 6976167 **mN**

Vegetation Code: SBMMS

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Atriplex bunburyana

Eremophila falcata

Frankenia pauciflora

Gunniopsis quadrifida

Lycium australe

Maireana pyramidata

Rhagodia drummondii

BHP Billiton Yeelirrie Site R185

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 226679 **mE** 6975984 **mN**

Vegetation Code: SPAbS

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Atriplex bunburyana
Frankenia cinerea
Gunnipopsis quadrifida
Lawrencia helmsii
Maireana pyramidata

BHP Billiton Yeelirrie Site R186

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve

Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 232031 **mE** 6972871 **mN**

Vegetation Code: SBMMS

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia macraneura
Atriplex bunburyana
Cratystylis subspinescens
Frankenia pauciflora
Maireana pyramidata
Rhagodia drummondii
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

BHP Billiton Yeelirrie Site R187

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 228948 mE 6972845 mN

Vegetation Code: SAES

Landscape Association: Granite System

Fire Age: 8-10 years

Species List:

Name

Acacia aneura var. straight flat 30-50x3-4mm grey green
Acacia ayersiana
Acacia ligulata
Acacia macraneura
Acacia tetragonophylla
Eremophila alternifolia
Eremophila falcata
Eremophila galeata
Eremophila malacoides
Hakea preissii
Maireana georgei
Maireana glomerifolia
Ptilotus obovatus
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*

BHP Billiton Yeelirrie Site R188

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 222470 mE 6974075 mN

Vegetation Code: SBMMS

Landscape Association: Saline Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana
Acacia macraneura
Atriplex bunburyana
Eragrostis eriopoda
Eremophila subfloccosa subsp. *lanata*
Maireana pyramidata
Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)
Senna artemisioides subsp. *filifolia*
Templetonia incrassata
Triodia basedowii

BHP Billiton Yeelirrie Site R189

Described by Rebecca Graham **Date:** 14/03/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 224498 mE 6976359 mN

Vegetation Code: SPAbS

Landscape Association: Saline playa system

Fire Age: Long unburnt

Species List:

Name

Atriplex bunburyana

Cratystylis subspinescens

Lycium australe

Tecticornia sp. (inadequate material)

BHP Billiton Yeelirrie Site R190

Described by Rebecca Graham **Date:** 15/04/2010 **Type:** Releve
Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J 230343 mE 6973137 mN

Vegetation Code: CsMp

Landscape Association: Playa System

Fire Age: Long unburnt

Species List:

Name

Acacia ayersiana

Atriplex bunburyana

Cratystylis subspinescens

Frankenia pauciflora

Maireana pyramidata

Melaleuca xerophila

Scaevola spinescens terete leaf form (G Cockerton & C Ringrose 14560)

Tecticornia sp. (inadequate material)

BHP Billiton Yeelirrie Site R191

Described by Rebecca Graham

Date: 15/03/2010

Type: Releve

Season: Poor

Location: Yeelirrie study area 3

MGA Zone: 51J

230206 **mE**

6973838 **mN**

Vegetation Code: SBMMS

Landscape Association: Saline Playa System

Fire Age: Unknown

Species List:

Name

Acacia ayersiana

Atriplex bunburyana

Cratystylis subspinescens

Grevillea sarissa subsp. *sarissa*

Maireana pyramidata

Study area 2 relevé descriptions

RELEVE	DATE	RECORDERS	ZONE	EASTING	NORTHING	VEGETATION CODE	VEGETATION COMMUNITY	SITE DESCRIPTION	FIRE AGE	NOTES
1	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	789001	6996590	SAMU	Sandplain Mulga Spinifex Hummock Grassland	Tall open Mulga shrubland of <i>Acacia aneura</i> (4-5m, PFC 10-15%) over <i>Triodia basedowii</i> grassland (0.3m, PFC 30-40%). Soils reddish brown clayey sands. Landform broad flat sandplain, very slight incline towards north	long unburned	
2	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	788825	6997923	HPMS	Hardpan Plain Mulga Shrubland	<i>Acacia aneura</i> and <i>A. ayersiana</i> Shrubland 6m 40-60% over occasional <i>A. ramulosa</i> subsp <i>linophylla</i> over <i>Eremophila flabellata</i> (YBM003) 0.5-0.7m (3-10%). Soils brownish red sand over reddish brown sandy clay. Landform is hardpan plain with sandsheet overlying very gently sloping downwards to south	long unburned	
3	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	789019	7001925	HPMS	Hardpan Plain Mulga Shrubland	<i>Acacia ayersiana</i> and <i>A. aneura</i> (4-6m, PFC 15-25%) with occasional <i>Acacia pruinocarpa</i> over <i>Eremophila foliosissima</i> and <i>E. forrestii</i> (0.5-1m, PFC 3-8%). Soils brownish red sand over reddish brown sandy clay. Landform hardpan with sand sheet, crest of low broad rise in plain.	long unburned	
4	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	789089	7005002	GRMS	Mulga Shrubland on Granite Rise	<i>Acacia quadrimarginea</i> and <i>A. aneura</i> (2-4m, PFC 4-10%) over <i>Eremophila exilifolia</i> (1-1.5m, PFC 10-15%). Soils brown gravelly sandy silty clay. Landform broad low exposed weathered granite hill with quartz gravel	long unburned	10 <i>Sauropis ramossissimus</i>
5	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	788068	7005304	Qtz	Quartz Ridge	<i>Acacia aneura</i> (3-5m, PFC 5-10%) with occasional <i>Callitris collumellaris</i> over <i>Thryptomene</i> sp Leinster shrubland (1.5-2.5m, PFC 10-15%) over <i>Ptilotus obovatus</i> low heath (0.3m, PFC 20%). Soils pale brown silty sand in quartz gravel. Landform exposed Quartz hill with Quartz cobbles to boulders (80%) covering slopes	long unburned	Thryptomene sp Leinster
6	3/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	784717	7005182	PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	<i>Acacia aneura</i> shrubland (4-5m, PFC 15-20%) over <i>Ptilotus obovatus</i> open heath (0.4m, PFC 5%) on hardpan. Soils reddish brown coarse silty sand. Landform hardpan plain on slope downhill of Quartz hills, gently sloping, occasionally dissected by minor drainage lines	long unburned	
7	4/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	793207	6996632	GRMS	Mulga Shrubland on Granite Rise	<i>Acacia aneura</i> and <i>A. ayersiana</i> open shrubland (5m, PFC 4%) over <i>Acacia aneura</i> shrubland (3m PFC 15%) over <i>Eremophila latrobei</i> , <i>Sida ectogama</i> and <i>Acacia tetragonophylla</i> low shrubland (0.8-1.4m, PFC 5-10%) over Scattered <i>Ptilotus obovatus</i> (0.3m), <i>Aristida contorta</i> open grassland (15cm, PFC 6%). Soils light brown silty coarse sand with extensive cryptogam crusting. Landform broad hardpan plain, gently declined to south, subject to sheet flow		poorly defined drainage line in GRMS
8	4/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	793409	6996612	DRMpS	Drainage Tract <i>Maireana pyramidata</i> shrubland	<i>Maireana pyramidata</i> low open heath (1m, PFC 10%). Soils coarse silty sand. Landform broad hardpan plain, gently declined to south, subject to sheet flow	long unburned	Lots of old dead <i>Acacia</i> stems, probs due to drought and shallow soils
9	4/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	794084	6996609	DRMpS	Drainage Tract <i>Maireana pyramidata</i> shrubland	<i>Maireana pyramidata</i> low open heath (1m, PFC 8%) over <i>Frankenia setosa</i> (0.4m, PFC 5%). Soils coarse silty sand. Landform broad hardpan plain, from base of weathered granite range, gently declining to south, subject to sheet flow	long unburned	
10	4/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	793956	6996594	GR	Granite Rise	<i>Scaevola spinescens</i> and assorted shrubs to (1.5m, PFC 4%) Weathered Granite Rise <1m high.	long unburned	Low weathered Granite outcropping
11	4/11/10	G. Cockerton, D. Brassington, S. Colwill	50J	794095	6996815	GR	Granite Rise	<i>Acacia quadrimarginea</i> (3-4m, PFC 15%) over <i>Ptilotus obovatus</i> (0.3m, PFC 3%) over <i>Aristida contorta</i> and annual herbs (0.14m, PFC 15%). Soils brown coarse silty sand. Landform outcropping exfoliating granite domes and boulders forming broad low ridge running east-west	long unburned	
12	5/11/10	D. Brassington, S. Colwill	50J	779367	6991872	SAMU	Sandplain Mulga Spinifex Hummock Grassland	<i>Eucalyptus longissima</i> Mallees (4m, PFC 8%) with <i>Acacia aneura</i> and <i>A. burkittii</i> open shrubland (2-4m, PFC 6%) over <i>Triodia melvillii</i> hummock grassland (0.3m, PFC 25%). Soils red aeolian sand with a little clay over calcrete. Landform is sand dune over calcrete approx 1-1.5m above surrounding sandplain.	long unburned	is a sand dune but community appears to be more SAMU
13	5/11/10	D. Brassington, S. Colwill	50J	780410	6986684	SAGS	Sand Plain Spinifex Hummock Grassland with <i>Eucalyptus gongylocarpa</i>	<i>Eucalyptus gongylocarpa</i> scattered trees (8m, PFC 2%) over <i>Acacia effusifolia</i> shrubland (2-4m, PFC 30%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 12%). Soils red silty sand. Landform slight rise/ low gentle hill in broad open sandplain	15yrs	
14	6/11/10	D. Brassington, S. Colwill	50J	766901	7001823	SACSG	Sand plain Spinifex Hummock Grassland with <i>Corymbia lenziana</i> Woodland	Scattered <i>Corymbia lenziana</i> trees and mallee (10m, PFC 1-2%) over <i>Acacia effusifolia</i> and myrtaceous low open shrubland (0.5-1m, PFC 5%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 30%). Soils pale reddish brown silty sand. Landform broad flat sandplain	~5yrs	possibly turn out to be SAMA
15	6/11/10	D. Brassington, S. Colwill	50J	767381	6997704	PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	<i>Acacia aneura</i> tall shrubland (6m, PFC 25%) over <i>Acacia ramulosa</i> var <i>linophylla</i> and <i>Eremophila forrestii</i> shrubland (1.5-3m, PFC 18%) over <i>Ptilotus obovatus</i> low open heath (0.3m, PFC 8%)	long unburned	
16	6/11/10	D. Brassington, S. Colwill	50J	754305	7007020	SDSH	Sand Dune Shrubland	<i>Callitris collumellaris</i> and <i>Hakea lorea</i> subsp <i>lorea</i> open shrubland (4-6m, PFC 9%) over <i>Acacia effusifolia</i> , <i>Melaleuca interioris</i> and <i>Grevillea berryana</i> scattered shrubs (0.7-1.2m, PFC 3%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 15%). Soils deep red silty sand. Landform is upper part of long sand dune rising 2-3m above surrounding plains.	~5yrs	

RELEVE	DATE	RECORDERS	ZONE	EASTING	NORTHING	VEGETATION CODE	VEGETATION COMMUNITY	SITE DESCRIPTION	FIRE AGE	NOTES
17	8/11/10	D. Brassington, S. Colwill	51J	207699	6989137	SAMA	Sand Plain Spinifex Hummock Grassland with Mallee	<i>Eucalyptus kingsmillii</i> mallees (1-3m, PFC 5-10%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 35%). Soils red loose silty sand. Landform is broad flat sandplain.	~5yrs	
18	9/11/10	D. Brassington, S. Colwill	50J	766614	7015883	SACSG	Sand plain Spinifex Hummock Grassland with <i>Corymbia lenziana</i> Woodland	<i>Corymbia lenziana</i> scattered trees (8-10m, PFC 5%) over <i>Acacia jamesiana</i> and <i>Grevillea acacioides</i> shrubland (1-1.5m, PFC 20%) over <i>Triodia basedowii</i> open hummock grassland (0.3m, PFC 15%). Soils reddish brown loose silty sand. Landform broad flat sandplain	5-10 yrs	microhabitats of species occurring beneath the <i>Corymbia</i>
19	9/11/10	D. Brassington, S. Colwill	50J	773783	7012067	SAWS	Sand Plain Spinifex Hummock Grassland with Wattles	<i>Acacia effusifolia</i> shrubland (2-3m, PFC 20%) over <i>Triodia basedowii</i> hummock grassland (0.4m, PFC 45%). Landform broad gently undulating sandplain	15yrs	
20	9/11/10	D. Brassington, S. Colwill	50J	774142	7006637	SAGS	Sand Plain Spinifex Hummock Grassland with <i>Eucalyptus gongylocarpa</i>	<i>Eucalyptus gongylocarpa</i> very open woodland (8-10m, PFC 5%) over <i>Acacia effusifolia</i> and <i>A. ligulata</i> shrubland (2-3m 20%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 15%). Soils yellowish-reddish brown silty sand. Landform Low sandy rise in broad, gently undulating sandplain.	10-20 yrs	very small community on low rise
21	10/11/10	D. Brassington, S. Colwill	50J	783695	7005215	PLAPoS	<i>Acacia</i> spp. and <i>Ptilotus obovatus</i> Shrubland	<i>Acacia aneura</i> tall shrubland (5-6m, PFC 18%) over <i>A. tetragonaphylla</i> , <i>Sida ectogama</i> and <i>A. aneura</i> open shrubland (1-2.5m, PFC 4%) over <i>Ptilotus obovatus</i> low shrubland (0.4m, PFC 8%). Soils reddish brown sandy clay with occasional quartz gravel (<0.1%). Landform flat plain sloping gently to south.	long unburned	
22	11/11/10	D. Brassington, S. Colwill	50J	791148	6997865	SAMU	Sandplain Mulga Spinifex Hummock Grassland	<i>Acacia aneura</i> tall shrubland (5-6m, PFC 10%) with scattered <i>Eucalyptus kingsmillii</i> and <i>A. pruinocarpa</i> , over <i>A. effusifolia</i> (only in burnt area) (PFC 30%), over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 25%). Soils deep red silty sand. Landform is broad flat sandplain.	5-10yrs in burnt, long unburned elsewhere	
23	11/11/10	D. Brassington, S. Colwill	50J	793562	6996602	GRMC	Mulga Shrubland with Chenopods on Granite Rise	<i>Acacia aneura</i> tall shrubland (4-5m, PFC 30%) with scattered <i>A. ramulosa</i> var <i>linophylla</i> (2-3m, PFC 1%) over low open mixed shrubland of <i>Eremophila latrobei</i> , <i>Maireana pyramidata</i> , <i>Rhagodia drummondii</i> and <i>Senna artemisioides</i> subsp <i>filifolia</i> (1-1.5m, PFC 4%) over <i>M. georgei</i> and <i>Ptilotus obovatus</i> low open shrubland (0.3m, PFC 3%) over <i>Aristida contorta</i> and <i>Tripogon loliiformis</i> open grassland (0.1m, PFC 7%). Soils pale reddish brown gravelly silty sand. Landform flat plain sloping gently to south west.	long unburned	
24	11/11/10	D. Brassington, S. Colwill	50J	793888	6997168	GRMC	Mulga Shrubland with Chenopods on Granite Rise	<i>Acacia aneura</i> tall shrubland (4-5m, PFC 20%) over <i>Maireana pyramidata</i> , with <i>Rhagodia drummondii</i> low shrubland (1m, PFC 15%) over <i>Aristida contorta</i> and <i>Tripogon loliiformis</i> open grassland (0.1m, PFC 7%). Soils pale reddish brown gravelly silty sand with cryptogams (30%). Landform flat plain sloping gently to SW.	long unburned	
25	11/11/10	D. Brassington, S. Colwill				BRX	Weathered Breakaway Pl	<i>Olearia</i> sp. Sherwood Breakaways, <i>Mirbelia rhagodioides</i> and <i>Ptilotus obovatus</i> low very open shrubland (0.4m, PFC 8%). Soils shallow greyish brown silty gravel. Landform rocky plateau of highly weathered granite	long unburned	numerous temporary rockpools
26	11/11/10	D. Brassington, S. Colwill				GR	Granite Rise	<i>Acacia quadrimarginea</i> with occasional <i>A. aneura</i> (3-4m, PFC 15%) over <i>Sida ectogama</i> and <i>Dodonaea petiolaris</i> (1-2m, PFC 10%) over scattered <i>Ptilotus obovatus</i> and <i>Cymbopogon ambiguus</i> . Landform exfoliating granite domes and boulders with shallow soils inbetween	long unburned	
27	17/11/10	D. Brassington, S. Colwill	51J	212889	6985986	SAWS	Sand Plain Spinifex Hummock Grassland with Wattles	<i>Acacia jamesiana</i> and <i>A. heteroneura</i> var <i>jutsonii</i> low shrubland (0.5-1m, PFC 20%) over mixed scattered low shrubs (0.3m, PFC 5%) with <i>Eriachne mucronata</i> scattered grasses (0.3m, PFC 2%) over <i>Triodia basedowii</i> open hummock grassland (0.2m, PFC 6%). Soils orange brown silty sand. Landform broad flat sandplain	~3yrs	
28	19/11/10	D. Brassington, S. Colwill	50J	777000	6983200	SAWS	Sand Plain Spinifex Hummock Grassland with Wattles	<i>Acacia effusifolia</i> shrubland (2-3m, PFC 20%) over <i>Triodia basedowii</i> hummock grassland (0.4m, PFC 45%) with scattered myrtaceous shrubs. Soils orange brown silty sand. Landform broad gently undulating sandplain.	5-10 yrs	
29	19/11/10	D. Brassington, S. Colwill	51J	214402	6981583	SAMA	Sand Plain Spinifex Hummock Grassland with Mallee	<i>Eucalyptus kingsmillii</i> mallees (1-3m, PFC 3-4%) over mixed low heath (0.3m, PFC 35%). Soils reddish brown loose silty sand. Landform is broad flat sandplain.	~3yrs	E kingsmillii over mixed heath of all other spp present.
30	19/11/10	D. Brassington, S. Colwill	51J	216733	6990301	HPMS	Hardpan Plain Mulga Shrubland	<i>Acacia aneura</i> and <i>A. ayersiana</i> tall open shrubland (4-6m, PFC 16%) over scattered <i>A. ramulosa</i> var <i>linophylla</i> (3m, PFC 4%) over <i>Eremophila forrestii</i> and <i>E. spectabilis</i> low shrubland (0.7-1.2m, PFC 10-20%). Soils reddish brown sandy clay. Landform hardpan plain with faint drainage lines running through.	long unburned	
31	20/11/10	D. Brassington, S. Colwill	51J	208278	6985941	SAHS	Sand Plain Spinifex Hummock Grassland with Heath	<i>Acacia effusifolia</i> , <i>A. longispinea</i> and <i>Hakea francissiana</i> shrubland (2-3m, PFC 10%) with scattered <i>Eucalyptus kingsmillii</i> , over <i>Enekbatus eremaeus</i> and <i>Homalocalyx thryptomenoides</i> low shrubland (1m, PFC 20%) over <i>Triodia basedowii</i> hummock grassland (0.4m, PFC 30%). Soils orange brown silty sand. Landform broad flat sandplain.	~15 Yrs	

RELEVE	DATE	RECORDERS	ZONE	EASTING	NORTHING	VEGETATION CODE	VEGETATION COMMUNITY	SITE DESCRIPTION	FIRE AGE	NOTES
32	20/11/10	D. Brassington, S. Colwill	50J	786770	6997308	SAHS	Sand Plain Spinifex Hummock Grassland with Heath	<i>Acacia effusifolia</i> , <i>A. heteroaneura</i> and <i>Grevillea acacioides</i> (2-3m, PFC 25%) with scattered <i>Eucalyptus kingsmillii</i> , over <i>Enekbatus eremaeus</i> and <i>Homalocalyx thryptomenoides</i> low shrubland (1m, PFC 15%) over <i>Triodia basedowii</i> hummock grassland (0.4m, PFC 35%). Soils orange brown silty sand. Landform broad flat sandplain.	10-15 Yrs	
33	22/11/10	D. Brassington, S. Colwill	50J	768000	7012190	SACSG	Sand plain Spinifex Hummock Grassland with <i>Corymbia lenziana</i> Woodland	<i>Corymbia lenziana</i> scattered trees or mallees (4-8m, PFC 2%) over <i>Acacia heteroaneura</i> open shrubland (1.5-2m, PFC 6%) over <i>Triodia basedowii</i> hummock grassland (0.3m, PFC 45%). Soils orange-brown silty sand. Landform broad gently undulating sandplain	~10yrs	
34	22/11/10	D. Brassington, S. Colwill	50J	778223	6993085	SAMA	Sand Plain Spinifex Hummock Grassland with Mallee	<i>Eucalyptus kingsmillii</i> scattered mallees (4-5m, PFC 3%) over <i>Acacia effusifolia</i> shrubland (2-3m, PFC 30%) over <i>Triodia basedowii</i> open hummock grassland (0.3m, PFC 15%). Soils reddish brown silty sand. Landform broad gently undulating sandplain	5-10yrs	
35	23/11/10	D. Brassington, S. Colwill	50J	793864	6998028	BRX	Weathered Granite Breakaway Complex	<i>Acacia aneura</i> shrubland (3-4m, PFC 20%) over <i>Sida ectogama</i> low shrubland (1-1.5m, PFC 15%). Soils white to greyish brown silty sand. Landform is base of Weathered granite breakaways	long unburned	
36	23/11/10	D. Brassington, S. Colwill	50J	793753	6997998	DRMpS	Drainage Tract <i>Maireana pyramidata</i> shrubland	<i>Maireana pyramidata</i> low scattered shrubs (0.4m, PFC 3%) over <i>Frankenia setosa</i> , <i>Maireana georgei</i> , <i>M. tomentosa</i> , <i>Sclerolaena densifolia</i> and <i>Ptilotus obovatus</i> low open heath (0.2m, PFC 12%). Soils pale greyish brown silty sand. Landform drainage plain near base of Weathered granite breakaways	long unburned	
37	23/11/10	D. Brassington, S. Colwill	50J	789280	6997050	DRMS	Drainage Tract Mulga Shrubland	<i>Acacia aneura</i> tall closed shrubland (6-8m, PFC 85%) over <i>Rhodanthe charsleyae</i> annual herbs (0.3m, PFC 5%) over annual herbland and grassland (0.2m, PFC 30%). Soils orange-brown sandy clay loam. Landform broad drainage line through hardpan plain	long unburned	
38	23/11/10	D. Brassington, S. Colwill	50J	779604	6991622	CABs	<i>Acacia burkittii</i> Shrubland on Calcrete	<i>Acacia burkittii</i> shrubland (4m, PFC 30%) over scattered <i>Ptilotus obovatus</i> low shrubs (0.3m, PFC 1%) and <i>Triodia basedowii</i> scattered hummock grasses (0.2m, PFC 1%). Soils brown silty sand with calcrete gravel. Landform low calcrete rise in landscape	long unburned	
39	23/11/10	D. Brassington, S. Colwill	50J	777647	6993299	HPMS	Hardpan Plain Mulga Shrubland	<i>Acacia ayersiana</i> and <i>A. aneura</i> tall open shrubland (5-6m, PFC 15%) over <i>A. ramulosa</i> subsp <i>linophylla</i> shrubland (2m, PFC 15%) over <i>Eremophila spectabilis</i> low shrubland (0.7-0.2m, PFC 8%). Soils reddish brown silty sand. Landform, broad flat hardpan plain	long unburned	
40	11/11/10	D. Brassington, S. Colwill	50J	777805	6985987	GR	Granite Rise	<i>Acacia quadrimarginea</i> open shrubland (4m, PFC 15-30%) over <i>Eremophila exilifolia</i> low shrubland (1-2m, PFC 10-50%) with occasional <i>Senna artemisioides</i> subsp <i>helmsii</i> and <i>Sida ectogama</i> over <i>Tripogon loliiformis</i> low grassland (0.03m, PFC 15%). Soils very shallow, grey-brown sand. Landform exfoliating granite domes and boulders	long unburned	
41	11/11/10	D. Brassington, S. Colwill	50J	777936	6985897	BRX	Weathered Granite Breakaway Complex	<i>Acacia burkittii</i> shrubland (2-3m, PFC 30%) over <i>Sida ectogama</i> and <i>Senna artemisioides</i> subsp <i>filifolia</i> low open shrubland (1m, PFC 3%). Soils pale grey-brown sand. Landform very narrow drainage between Exfoliating granite and Weathered Granite Breakaways	long unburned	
42	11/11/10	D. Brassington, S. Colwill	50J	777969	6985680	BRX	Weathered Granite Breakaway Complex	<i>Acacia aneura</i> shrubland (5m, PFC 60%) over <i>Sida ectogama</i> , <i>Eremophila latrobei</i> subsp <i>latrobei</i> and <i>E. exilifolia</i> low shrubland, (1.5m, PFC 40%). Soils pale grey-brown sand. Drainage line leading out of Weathered Granite Breakaways	long unburned	
43	11/11/10	D. Brassington, S. Colwill	50J	777962	6985585	BRX	Weathered Granite Breakaway Complex	<i>Acacia quadrimarginea</i> and <i>A. aneura</i> open shrubland (2m, PFC 10%), over <i>Psyrax rigidula</i> , <i>Dodonaea petiolaris</i> , <i>Eremophila latrobei</i> subsp <i>latrobei</i> and <i>E. exilifolia</i> shrubland (1-3m, PFC 40%). Landform gully between Weathered granite plateaus on Weathered granite breakaways	long unburned	
44	11/11/10	D. Brassington, S. Colwill	50J	777931	6985546	BRX	Weathered Granite Breakaway Complex	<i>Acacia quadrimarginea</i> , <i>A. aneura</i> and <i>A. balsamea</i> open shrubland (2m, PFC 5-15 %) over <i>Dodonaea petiolaris</i> , <i>Ptilotus schwartzii</i> , <i>Mirbelia rhagodioides</i> , <i>Calytrix eriosepetala</i> and <i>Eremophila latrobei</i> subsp <i>latrobei</i> low open shrubland (0.5-1.5m, PFC 3%). Landform weathered granite plateau with numerous small depressions in the rock collecting sand.	long unburned	
45	11/11/10	D. Brassington, S. Colwill	50J	777975	6985367	BRX	Weathered Granite Breakaway Complex	<i>Acacia quadrimarginea</i> scattered shrubs (4-6m, PFC 5%) over <i>Dodonaea petiolaris</i> scattered shrubs (2-3m, PFC 2%) over <i>Ptilotus obovatus</i> low open shrubland (0.4m 10%). Soil is white gravelly sand, Landform is southern slope of breakaways, jumbled weathered granite boulders	long unburned	
46	11/11/10	D. Brassington, S. Colwill	50J	777967	6985317	BRX	Weathered Granite Breakaway Complex	<i>Acacia quadrimarginea</i> and <i>A. aneura</i> open shrubland (2m, PFC 10%) with occasional <i>A. balsamea</i> over <i>Sida</i> sp. Wiluna, <i>Eremophila latrobei</i> subsp <i>latrobei</i> , <i>Mirbelia microphylla</i> , <i>Ptilotus obovatus</i> , <i>E. exilifolia</i> and <i>Dodonaea petiolaris</i> mixed low open shrubland (0.2-0.5m, PFC 5%) over <i>Eriachne mucronata</i> (xerophytic form), <i>Stylidium induratum</i> , <i>Eriachne mucronata</i> and <i>Neurachne minor</i> (0.1m, PFC 1%). Landform, plateau of weathered granite breakaways	long unburned	
47	11/11/10	D. Brassington, S. Colwill	50J	777986	6984490	BRX	Weathered Granite Breakaway Complex	<i>Acacia balsamea</i> and <i>A. quadrimarginea</i> shrubland (2-4m, PFC 20%) over <i>Ptilotus obovatus</i> , <i>Mirbelia rhagodioides</i> and <i>Calytrix eriosepetala</i> low open shrubland (0.3m, PFC 4%). Landform southern facing slope of weathered breakaways, consisting of granite outcroppings, breakaways and boulders.	long unburned	

RELEVE	DATE	RECORDERS	ZONE	EASTING	NORTHING	VEGETATION CODE	VEGETATION COMMUNITY	SITE DESCRIPTION	FIRE AGE	NOTES
48	21/11/10	D. Brassington, S. Colwill	50J	777283	7010192	GRMS	Mulga Shrubland on Granite Rise	<i>Acacia aneura</i> shrubland with occasional <i>A. quadrimarginea</i> (2-3m, PFC 15%) over <i>Eremophila latrobei</i> subsp <i>latrobei</i> , <i>Scaevola spinescens</i> (broad leaf, spiny form) and <i>Sida ectogama</i> low open shrubland (0.5-1m, PFC 4%). Soils pale brown gravelly sand. Landform quartz low ridge surrounded by gently slopes with dense quartz gravel	long unburned	just to the north, the quartz becomes weathered granite, but the veg type dosnt change
49	21/11/10	D. Brassington, S. Colwill	50J	777372	7010374	BRX	Weathered Granite Breakaway Complex	<i>Calytrix uncinata</i> and <i>Ptilotus obovatus</i> scattered low shrubs (0.4m, PFC 2%) over occasional <i>Ptilotus schwartzii</i> and <i>Eriachne mucronata</i> occasional herbs and grasses (0.2m, PFC 1%) over <i>Tripogon loliiformis</i> grasses (0.04m, PFC 4%). Soils shallow in depressions in and between rock, pale brown sandy silt. Landform low weathered granite plateau with numerous rockpool depressions in rock	long unburned	
50	21/11/10	D. Brassington, S. Colwill	50J	777347	7010351	BRX	Weathered Granite Breakaway Complex	<i>Acacia aneura</i> shrubland with occasional <i>A. quadrimarginea</i> (3-4m, PFC 35%) over <i>Sida ectogama</i> low shrubland (1-2m, PFC 15-20%) over <i>Ptilotus obovatus</i> low shrubland (0.4m, PFC 20%). Soils pale grey-brown silty sand with weathered granite gravel. Landform base of Weathered Granite slope and Plateau	long unburned	
51	21/11/10	D. Brassington, S. Colwill	50J	777547	7010240	GPoS	<i>Ptilotus obovatus</i> Shrubland	<i>Ptilotus obovatus</i> low shrubland (0.4m, PFC 15%) over <i>Maireana carnos</i> and <i>Sclerolaena densiflora</i> (0.05m, PFC 5%) over <i>Tripogon loliiformis</i> grasses (0.02m, PFC 6%). Soils pale brown silty sand. Landform gravelly plain leading way from base of Weathered granite breakaways	long unburned	
52	21/11/10	D. Brassington, S. Colwill	50J	779091	7009765	QMPS	Mulga Shrubland with <i>Prostanthera campbellii</i> on Quartz Ridge	<i>Acacia aneura</i> and <i>A. quadrimarginea</i> shrubland (4-6m, PFC 30%) over <i>Eremophila latrobei</i> subsp <i>glabra</i> and <i>Prostanthera campbellii</i> low shrubland (0.5-1m, PFC 20%) over scattered <i>Eriachne mucronata</i> (xerophytic form) (0.2m, PFC 1%). Soils in spaces between quartz boulders, orange brown sandy silt. Landform quartz ridge about 6m high, jumbled quartz boulders	long unburned	

Appendix 13. Systematic species list (local study area)

Systematic species list for study areas 1, 2 and 3

* - Introduced flora

Family	Species	Priority Status
Acanthaceae	<i>Harnieria kempeana</i> subsp. <i>muelleri</i>	
Aizoaceae	<i>Tetragonia cristata</i>	
Aizoaceae	<i>Tetragonia eremaea</i>	
Aizoaceae	<i>Trianthema triquetra</i>	
Amaranthaceae	<i>Alternanthera angustifolia</i>	
Amaranthaceae	<i>Alternanthera nodiflora</i>	
Amaranthaceae	<i>Amaranthus mitchellii</i>	
Amaranthaceae	<i>Ptilotus aervooides</i>	
Amaranthaceae	<i>Ptilotus exaltatus</i>	
Amaranthaceae	<i>Ptilotus gaudichaudii</i>	
Amaranthaceae	<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	
Amaranthaceae	<i>Ptilotus helipteroides</i>	
Amaranthaceae	<i>Ptilotus obovatus</i> "upright form" (G. Cockerton & G. O'Keefe 12281)	
Amaranthaceae	<i>Ptilotus obovatus</i> "typical Goldfields form"	
Amaranthaceae	<i>Ptilotus polystachyus</i> var. <i>polystachyus</i>	
Amaranthaceae	<i>Ptilotus roei</i>	
Amaranthaceae	<i>Ptilotus rotundifolius</i>	
Amaranthaceae	<i>Ptilotus schwartzii</i> var. <i>georgei</i>	
Amaranthaceae	<i>Ptilotus sessilifolius</i>	
Apiaceae	<i>Daucus glochidiatus</i>	
Apiaceae	Apiaceae sp. Indeterminate LCH28380	
Apocynaceae	<i>Cynanchum floribundum</i>	
Apocynaceae	<i>Marsdenia australis</i>	
Apocynaceae	<i>Rhyncharrhena linearis</i>	
Araliaceae	<i>Trachymene bialata</i>	
Asparagaceae	<i>Thysanotus manglesianus</i>	
Asparagaceae	<i>Thysanotus speckii</i>	
Asteraceae	* <i>Sonchus oleraceus</i>	
Asteraceae	<i>Actinobole oldfieldianum</i>	
Asteraceae	Asteraceae sp. Indeterminate	
Asteraceae	<i>Brachyscome ciliaris</i>	
Asteraceae	<i>Brachyscome ciliocarpa</i>	
Asteraceae	<i>Brachyscome exilis</i>	
Asteraceae	<i>Calocephalus francisii</i>	
Asteraceae	<i>Calocephalus knappii</i>	
Asteraceae	<i>Calocephalus multiflorus</i>	
Asteraceae	<i>Calotis hispidula</i>	
Asteraceae	<i>Calotis multicaulis</i>	
Asteraceae	<i>Calotis plumulifera</i>	
Asteraceae	<i>Centipeda thespidioides</i>	

Family	Species	Priority Status
Asteraceae	<i>Cephalipterum drummondii</i>	
Asteraceae	<i>Chondropyxis halophila</i>	
Asteraceae	<i>Chrysocephalum puteale</i>	
Asteraceae	<i>Chthonocephalus pseudevax</i>	
Asteraceae	<i>Cotula australis</i>	
Asteraceae	<i>Cratystylis subspinescens</i>	
Asteraceae	<i>Dielitzia tysonii</i>	
Asteraceae	<i>Erymophyllum ramosum</i> subsp. <i>ramosum</i>	
Asteraceae	<i>Gnephosis arachnoidea</i>	
Asteraceae	<i>Gnephosis drummondii</i>	
Asteraceae	<i>Gnephosis tenuissima</i>	
Asteraceae	<i>Helipterum craspedioides</i>	
Asteraceae	<i>Isoetopsis graminifolia</i>	
Asteraceae	<i>Lemooria burkittii</i>	
Asteraceae	<i>Mimuria cunninghamii</i>	
Asteraceae	<i>Myriocephalus occidentalis</i>	
Asteraceae	<i>Myriocephalus rudallii</i>	
Asteraceae	<i>Olearia arida</i>	P4
Asteraceae	<i>Olearia incana</i>	
Asteraceae	<i>Olearia</i> sp. Sherwood Breakaways (A. Taylor LCH25552)	Flora of Interest
Asteraceae	<i>Pluchea dentex</i>	
Asteraceae	<i>Podolepis capillaris</i>	
Asteraceae	<i>Pogonolepis stricta</i>	
Asteraceae	<i>Rhodanthe battii</i>	
Asteraceae	<i>Rhodanthe charsleyae</i>	
Asteraceae	<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	
Asteraceae	<i>Rhodanthe floribunda</i>	
Asteraceae	<i>Rhodanthe maryonii</i>	
Asteraceae	<i>Rhodanthe sterilesceus</i>	
Asteraceae	<i>Schoenia cassimiana</i>	
Asteraceae	<i>Senecio glossanthus</i>	
Asteraceae	<i>Senecio pinnatifolius</i>	
Asteraceae	<i>Senecio</i> sp. Indeterminate LCH27490	
Asteraceae	<i>Streptoglossa cylindriceps</i>	
Asteraceae	<i>Taplinia saxatilis</i>	
Asteraceae	<i>Tietkensia corrickiae</i>	
Asteraceae	<i>Vittadinia eremaea</i>	
Asteraceae	<i>Vittadinia</i> sp. Indeterminate LCH26755	
Asteraceae	<i>Vittadinia</i> sp. Indeterminate LCH26565	
Asteraceae	<i>Vittadinia sulcata</i>	
Boraginaceae	<i>Halgania cyanea</i> subsp. Allambi Stn (B. W. Strong 676)	
Boraginaceae	<i>Halgania erecta</i>	

Family	Species	Priority Status
Boraginaceae	<i>Halgania integerrima</i>	
Boraginaceae	<i>Heliotropium ammophilum</i>	
Boraginaceae	<i>Heliotropium heteranthum</i>	
Boraginaceae	<i>Trichodesma zeylanicum</i>	
Brassicaceae	<i>Arabidella trisecta</i>	
Brassicaceae	<i>Lepidium oxytrichum</i>	
Brassicaceae	<i>Lepidium phlebopetalum</i>	
Brassicaceae	<i>Menkea australis</i>	
Brassicaceae	<i>Menkea villosula</i>	
Cactaceae	* <i>Opuntia</i> sp. Indeterminate	
Campanulaceae	<i>Isotoma petraea</i>	
Campanulaceae	<i>Lobelia winfridae</i>	
Campanulaceae	<i>Wahlenbergia gracilentia</i>	
Campanulaceae	<i>Wahlenbergia tumidifructa</i>	
Caryophyllaceae	<i>Polycarpaea arida</i>	
Caryophyllaceae	<i>Polycarpaea</i> sp. aff. <i>corymbosa</i>	
Casuarinaceae	<i>Casuarina pauper</i>	
Celastraceae	<i>Stackhousia</i> sp. Mt Keith (G. Cockerton & G. O'Keefe 11017)	
Centrolepidaceae	<i>Centrolepis</i> sp.	
Chenopodiaceae	<i>Atriplex bunburyana</i>	
Chenopodiaceae	<i>Atriplex codonocarpa</i>	
Chenopodiaceae	<i>Atriplex semilunaris</i>	
Chenopodiaceae	<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas 25025)	P1
Chenopodiaceae	<i>Dissocarpus paradoxus</i>	
Chenopodiaceae	<i>Dysphania kalpari</i>	
Chenopodiaceae	<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	
Chenopodiaceae	<i>Dysphania rhadimostachya</i> subsp. <i>rhadimostachya</i>	
Chenopodiaceae	<i>Enchylaena lanata</i>	
Chenopodiaceae	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	
Chenopodiaceae	<i>Eremophea spinosa</i>	
Chenopodiaceae	<i>Eriochiton sclerolaenoides</i>	
Chenopodiaceae	<i>Maireana</i> aff. <i>trichoptera</i> LCH27428	
Chenopodiaceae	<i>Maireana carnosia</i>	
Chenopodiaceae	<i>Maireana eriosphaera</i>	
Chenopodiaceae	<i>Maireana georgei</i>	
Chenopodiaceae	<i>Maireana glomerifolia</i>	
Chenopodiaceae	<i>Maireana planifolia</i>	
Chenopodiaceae	<i>Maireana pyramidata</i>	
Chenopodiaceae	<i>Maireana</i> sp. Indeterminate LCH26610	
Chenopodiaceae	<i>Maireana thesioides</i>	
Chenopodiaceae	<i>Maireana tomentosa</i>	
Chenopodiaceae	<i>Maireana triptera</i>	
Chenopodiaceae	<i>Maireana villosa</i>	

Family	Species	Priority Status
Chenopodiaceae	<i>Rhagodia drummondii</i>	
Chenopodiaceae	<i>Rhagodia eremaea</i>	
Chenopodiaceae	<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd et al. KS 1396)	P1
Chenopodiaceae	<i>Salsola tragus</i> subsp. <i>tragus</i>	
Chenopodiaceae	<i>Sclerolaena convexula</i>	
Chenopodiaceae	<i>Sclerolaena cornishiana</i>	
Chenopodiaceae	<i>Sclerolaena cuneata</i>	
Chenopodiaceae	<i>Sclerolaena densiflora</i>	
Chenopodiaceae	<i>Sclerolaena diacantha</i>	
Chenopodiaceae	<i>Sclerolaena eriacantha</i>	
Chenopodiaceae	<i>Sclerolaena fusiformis</i>	
Chenopodiaceae	<i>Sclerolaena lanicuspis</i>	
Chenopodiaceae	<i>Sclerolaena obliquicuspis</i>	
Chenopodiaceae	<i>Sclerolaena patenticuspis</i>	
Chenopodiaceae	<i>Sclerolaena</i> sp. Indeterminate LCH26549	
Chenopodiaceae	<i>Sclerolaena</i> sp. Indeterminate LCH26551	
Colchicaceae	<i>Wurmbea deserticola</i>	
Convolvulaceae	<i>Bonamia rosea</i>	
Convolvulaceae	<i>Convolvulus angustissimus</i> subsp. <i>angustissimus</i>	
Convolvulaceae	* <i>Cuscuta planiflora</i>	
Convolvulaceae	<i>Duperreya commixta</i>	
Convolvulaceae	<i>Duperreya sericea</i>	
Crassulaceae	<i>Crassula colorata</i> var. <i>acuminata</i>	
Cucurbitaceae	* <i>Citrullus lanatus</i>	
Cupressaceae	<i>Callitris columellaris</i>	
Cupressaceae	<i>Callitris preissii</i>	
Cyperaceae	<i>Bulbostylis barbata</i>	
Cyperaceae	<i>Cyperus bulbosus</i>	
Cyperaceae	<i>Cyperus iria</i>	
Cyperaceae	<i>Isolepis congrua</i>	
Cyperaceae	<i>Schoenus subaphyllus</i>	
Dilleniaceae	<i>Hibbertia</i> sp. aff. <i>exasperata</i> (D. Brassington & S. Colwill LCH29097)	Flora of Interest
Elatinaceae	<i>Bergia perennis</i> subsp. <i>exigua</i>	
Euphorbiaceae	<i>Bertya dimerostigma</i>	Range extension
Euphorbiaceae	<i>Euphorbia australis</i>	
Euphorbiaceae	<i>Euphorbia biconvexa</i>	
Euphorbiaceae	<i>Euphorbia boophthona</i>	
Euphorbiaceae	<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	
Euphorbiaceae	<i>Monotaxis luteiflora</i>	
Euphorbiaceae	Euphorbiaceae sp. Indeterminate LCH27469	
Fabaceae	<i>Acacia aneura</i> var. <i>alata</i> (narrow phyllode variant)	
Fabaceae	<i>Acacia aneura</i> var. <i>argentea</i>	

Family	Species	Priority Status
Fabaceae	<i>Acacia aneura</i> var. <i>latifolia</i>	
Fabaceae	<i>Acacia aneura</i> var. <i>macrocarpa</i>	
Fabaceae	<i>Acacia aneura</i> var. <i>microcarpa</i>	
Fabaceae	<i>Acacia aneura</i> var. <i>tenuis</i>	
Fabaceae	<i>Acacia aneura</i> ?var. <i>intermedia</i>	
Fabaceae	<i>Acacia aneura</i> var. curved flat 40-90 x 4mm silver grey green phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey 5 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey curved 3 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey falcate 4 x 30mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight 5 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to falcate 2 x 20mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 2 x 55mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 2 x 80mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 3 x 20mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 3 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 3 x 65mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 4.5 x 40mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly curved 4 x 65mm) phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat blue grey straight to slightly falcate anastomosing veins 6 x 30mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green slightly curved 3 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green straight 1.5 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green straight to falcate 4 x 40mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green straight to falcate 4 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green straight to slightly curved 1.5 x 35mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat green straight to slightly curved 4.5 x 70mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green slightly curved 1 x 25mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green slightly curved 2 x 40mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green slightly curved 8 x 80mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green straight 8 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green straight to curved 2 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat grey green straight to slightly curved 2 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. flat 2 x 30 mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. subterete blue grey straight to slightly curved 1 x 30mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. subterete green straight 1 x 60mm phyllode	

Family	Species	Priority Status
Fabaceae	<i>Acacia aneura</i> var. subterete green straight to slightly curved 1 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. subterete grey green straight to curved 1 x 50mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. slightly curved flat 30-70 x 3-5mm grey green phyllode	
Fabaceae	<i>Acacia aneura</i> var. straight flat 30-50 x 3-4mm grey green phyllode	
Fabaceae	<i>Acacia aneura</i> var. straight to slightly curved flat 30-80 x 2mm grey green phyllode	
Fabaceae	<i>Acacia aneura</i> var. subterete slightly curved 50-70 x 1mm olive green phyllode	
Fabaceae	<i>Acacia aneura</i> var. subterete straight 20-80 x 1mm grey green phyllode	
Fabaceae	<i>Acacia aneura</i> var. terete green straight 1 x 60mm phyllode	
Fabaceae	<i>Acacia aneura</i> var. terete straight 30-110 x 1mm grey olive green phyllode	
Fabaceae	<i>Acacia aneura</i> x <i>craspedocarpa</i> (falcate phyllode form) phyllode	
Fabaceae	<i>Acacia aptaneura</i>	
Fabaceae	<i>Acacia ayersiana</i>	
Fabaceae	<i>Acacia balsamea</i>	
Fabaceae	<i>Acacia burkittii</i>	
Fabaceae	<i>Acacia caesaneura</i>	
Fabaceae	<i>Acacia caesaneura</i> ? narrow phyllode variant	
Fabaceae	<i>Acacia clelandii</i>	
Fabaceae	<i>Acacia colletioides</i>	
Fabaceae	<i>Acacia coolgardiensis</i> ?	
Fabaceae	<i>Acacia craspedocarpa</i> (broad lanceolate phyllode form)	
Fabaceae	<i>Acacia effusifolia</i>	
Fabaceae	<i>Acacia exocarpoides</i>	
Fabaceae	<i>Acacia fuscaneura</i>	
Fabaceae	<i>Acacia fuscaneura-pteraneura</i> integrade	
Fabaceae	<i>Acacia heteroneura</i> var. <i>jutsonii</i>	
Fabaceae	<i>Acacia heteroneura</i> var. <i>prolixa</i>	
Fabaceae	<i>Acacia incurvaneura</i>	
Fabaceae	<i>Acacia jamesiana</i>	
Fabaceae	<i>Acacia ligulata</i>	
Fabaceae	<i>Acacia longispinea</i>	
Fabaceae	<i>Acacia macraneura</i>	
Fabaceae	<i>Acacia minyura</i>	
Fabaceae	<i>Acacia oswaldii</i> (short phyllode variant)	
Fabaceae	<i>Acacia pachyacra</i>	
Fabaceae	<i>Acacia paraneura</i>	
Fabaceae	<i>Acacia prainii</i>	
Fabaceae	<i>Acacia pruinocarpa</i>	
Fabaceae	<i>Acacia pteraneura</i>	

Family	Species	Priority Status
Fabaceae	<i>Acacia pteraneura</i> x <i>incurvaneura</i> ?	
Fabaceae	<i>Acacia quadrimarginea</i>	
Fabaceae	<i>Acacia ramulosa</i> var. <i>linophylla</i> x <i>aneura</i>	
Fabaceae	<i>Acacia ramulosa</i> var. <i>linophylla</i>	
Fabaceae	<i>Acacia sibilans</i>	
Fabaceae	<i>Acacia subtessarogona</i>	
Fabaceae	<i>Acacia synchronicia</i>	
Fabaceae	<i>Acacia tetragonophylla</i>	
Fabaceae	<i>Acacia thoma</i>	
Fabaceae	<i>Acacia</i> sp. Yakabindie (G. Cockerton & G. O'Keefe 14274) aff. <i>kempeana</i>	Flora of Interest
Fabaceae	<i>Acacia</i> sp. (G. Cockerton & R. Graham LCH 25491)	
Fabaceae	<i>Acacia</i> sp. resprouter (G. Cockerton & R. Graham LCH 25490)	Flora of Interest
Fabaceae	<i>Acacia</i> sp. Indeterminate LCH28020	
Fabaceae	<i>Acacia</i> sp. Indeterminate LCH25449	
Fabaceae	<i>Acacia</i> sp. Indeterminate LCH28101	
Fabaceae	<i>Acacia</i> sp. Indeterminate LCH 26641	
Fabaceae	<i>Acacia</i> sp. Indeterminate LCH 26640	
Fabaceae	<i>Bossiaea eremaea</i>	P3
Fabaceae	<i>Daviesia grahamii</i>	
Fabaceae	<i>Glycine canescens</i>	
Fabaceae	<i>Indigofera brevidens</i>	
Fabaceae	<i>Indigofera georgei</i>	
Fabaceae	<i>Indigofera</i> sp. Indeterminate LCH28290	
Fabaceae	<i>Kennedia prorepens</i>	
Fabaceae	<i>Leptosema chambersii</i>	
Fabaceae	<i>Mirbelia rhagodioides</i>	
Fabaceae	<i>Petalostylis cassioides</i>	
Fabaceae	<i>Phyllota humilis</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. x <i>artemisioides</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. x <i>sturtii</i>	
Fabaceae	<i>Senna charlesiana</i>	
Fabaceae	<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	
Fabaceae	<i>Senna pleurocarpa</i> var. <i>angustifolia</i>	
Fabaceae	<i>Senna</i> sp. Austin (A. Strid 20210)	
Fabaceae	<i>Swainsona canescens</i>	
Fabaceae	<i>Swainsona formosa</i>	
Fabaceae	<i>Swainsona forrestii</i>	
Fabaceae	<i>Swainsona gracilis</i>	

Family	Species	Priority Status
Fabaceae	<i>Swainsona kingii</i>	
Fabaceae	<i>Swainsona microphylla</i>	
Fabaceae	<i>Swainsona oliveri</i>	
Fabaceae	<i>Swainsona oroboides</i>	
Fabaceae	<i>Swainsona tenuis</i>	
Fabaceae	<i>Swainsona</i> sp. Indeterminate LCH26827	
Fabaceae	<i>Swainsona</i> sp. Indeterminate LCH29965	
Fabaceae	<i>Templetonia incrassata</i>	Flora of Interest
Fabaceae	<i>Trigonella suavissima</i>	
Frankeniaceae	<i>Frankenia laxiflora</i>	
Frankeniaceae	<i>Frankenia pauciflora</i> var. <i>pauciflora</i>	
Frankeniaceae	<i>Frankenia setosa</i>	
Frankeniaceae	<i>Frankenia</i> sp. Indeterminate LCH28202	
Frankeniaceae	<i>Frankenia</i> sp. Indeterminate LCH26567	
Gentianaceae	<i>Centaurium spicatum</i>	
Geraniaceae	* <i>Erodium aureum</i>	
Geraniaceae	<i>Erodium crinitum</i>	
Geraniaceae	<i>Erodium cygnorum</i>	
Goodeniaceae	<i>Brunonia australis</i>	
Goodeniaceae	<i>Dampiera roycei</i>	
Goodeniaceae	<i>Dampiera wellsiana</i>	
Goodeniaceae	<i>Goodenia krauseana</i>	
Goodeniaceae	<i>Goodenia mimuloides</i>	
Goodeniaceae	<i>Goodenia mueckeana</i>	
Goodeniaceae	<i>Goodenia occidentalis</i>	
Goodeniaceae	<i>Goodenia peacockiana</i>	
Goodeniaceae	<i>Goodenia pinnatifida</i>	
Goodeniaceae	<i>Goodenia tenella</i>	
Goodeniaceae	<i>Goodenia tenuiloba</i>	
Goodeniaceae	<i>Goodenia triodiophila</i>	
Goodeniaceae	<i>Scaevola parvifolia</i> subsp. <i>acuminata</i>	
Goodeniaceae	<i>Scaevola spinescens</i> (broad leaf form)	
Goodeniaceae	<i>Scaevola spinescens</i> (narrow leaf form)	
Goodeniaceae	<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	New, Undescribed species
Goodeniaceae	<i>Velleia connata</i>	
Goodeniaceae	<i>Velleia glabrata</i>	
Goodeniaceae	<i>Velleia hispida</i>	
Goodeniaceae	<i>Velleia rosea</i>	
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>	
Haloragaceae	<i>Glischrocaryon angustifolium</i>	
Haloragaceae	<i>Glischrocaryon flavescens</i>	

Family	Species	Priority Status
Haloragaceae	<i>Gonocarpus confertifolius</i> var. <i>confertifolius</i>	
Haloragaceae	<i>Haloragis odontocarpa</i> forma <i>rugosa</i>	
Haloragaceae	<i>Haloragis trigonocarpa</i>	
Hemerocallidaceae	<i>Dianella revoluta</i>	
Lamiaceae	<i>Dicrastylis brunnea</i>	
Lamiaceae	<i>Dicrastylis doranii</i>	
Lamiaceae	<i>Dicrastylis flexuosa</i>	
Lamiaceae	<i>Dicrastylis sessilifolia</i>	
Lamiaceae	<i>Newcastelia cephalantha</i>	
Lamiaceae	<i>Newcastelia hexarrhena</i>	
Lamiaceae	<i>Prostanthera albiflora</i>	
Lamiaceae	<i>Prostanthera campbellii</i>	
Lamiaceae	<i>Prostanthera campbellii</i> intermediate <i>althoferi</i>	
Lamiaceae	<i>Prostanthera</i> sp. Bullimore Sandplain (G. Cockerton & D. True 12813)	Flora of Interest
Lamiaceae	<i>Prostanthera wilkieana</i>	
Lamiaceae	<i>Spartothamnella teucriiflora</i>	
Lamiaceae	<i>Teucrium racemosum</i>	
Loranthaceae	<i>Anyema gibberula</i> var. <i>gibberula</i>	
Loranthaceae	<i>Anyema hilliana</i>	
Loranthaceae	<i>Anyema microphylla</i>	
Loranthaceae	<i>Lysiana casuarinae</i>	
Loranthaceae	<i>Lysiana exocarpi</i> subsp. <i>exocarpi</i>	
Loranthaceae	<i>Lysiana murrayi</i>	
Malvaceae	<i>Abutilon</i> aff. <i>oxycarpum</i> subsp. <i>prostratum</i>	
Malvaceae	<i>Abutilon cryptopetalum</i>	
Malvaceae	<i>Abutilon fraseri</i>	
Malvaceae	<i>Abutilon otocarpum</i>	
Malvaceae	<i>Abutilon oxycarpum</i>	
Malvaceae	<i>Abutilon oxycarpum</i> subsp. <i>prostratum</i>	
Malvaceae	<i>Abutilon malvifolium</i>	
Malvaceae	<i>Abutilon</i> sp. Indeterminate LCH27801	
Malvaceae	<i>Abutilon</i> sp. Indeterminate LCH27839	
Malvaceae	<i>Abutilon</i> sp. Indeterminate LCH28248	
Malvaceae	<i>Abutilon</i> sp. Indeterminate LCH28256	
Malvaceae	<i>Abutilon</i> sp. Indeterminate LCH28258	
Malvaceae	<i>Alyogyne pinoniana</i>	
Malvaceae	<i>Brachychiton gregorii</i>	
Malvaceae	<i>Hibiscus burtonii</i>	
Malvaceae	<i>Hibiscus gardneri</i>	
Malvaceae	<i>Hibiscus solanifolius</i>	
Malvaceae	<i>Keraudrenia velutina</i> subsp. <i>elliptica</i>	
Malvaceae	<i>Lawrenzia repens</i>	

Family	Species	Priority Status
Malvaceae	<i>Lawrenzia squamata</i>	
Malvaceae	<i>Rulingia loxophylla</i>	
Malvaceae	<i>Rulingia luteiflora</i>	
Malvaceae	<i>Sida calyxhymenia</i>	
Malvaceae	<i>Sida cardiophylla</i>	
Malvaceae	<i>Sida ectogama</i>	
Malvaceae	<i>Sida fibulifera</i>	
Malvaceae	<i>Sida phaeotricha</i>	
Malvaceae	<i>Sida platycalyx</i>	
Malvaceae	<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260)	
Malvaceae	<i>Sida</i> sp. Excedentifolia (J.L. Egan 1925)	
Malvaceae	<i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32)	
Malvaceae	<i>Sida</i> sp. Mt Keith (G. Cockerton & G. O' Keefe LCH10489)	Flora of Interest
Malvaceae	<i>Sida</i> sp. tiny glabrous fruit (A.A. Mitchell PRP1152)	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH19675	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH26813	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH26814	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH28249	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH24817	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27800	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27830	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27833	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27837	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27213	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27807	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27834	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH27850	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH28254	
Malvaceae	<i>Sida</i> sp. Indeterminate LCH28517	
Marsileaceae	<i>Marsilea hirsuta</i>	
Molluginaceae	<i>Mollugo cerviana</i>	
Myrtaceae	<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3
Myrtaceae	<i>Calothamnus aridus</i>	
Myrtaceae	<i>Calytrix amethystina</i>	
Myrtaceae	<i>Calytrix erosipetala</i>	P3
Myrtaceae	<i>Calytrix uncinata</i>	P3
Myrtaceae	<i>Corymbia lenziana</i>	
Myrtaceae	<i>Enekbatus cryptandroides</i>	
Myrtaceae	<i>Enekbatus eremaeus</i>	
Myrtaceae	<i>Eucalyptus camaldulensis</i>	
Myrtaceae	<i>Eucalyptus gongylocarpa</i>	
Myrtaceae	<i>Eucalyptus gypsophila</i>	

Family	Species	Priority Status
Myrtaceae	<i>Eucalyptus kingsmillii</i>	
Myrtaceae	<i>Eucalyptus leptopoda</i> subsp. <i>elevata</i>	
Myrtaceae	<i>Eucalyptus leptopoda</i> subsp. <i>subluta</i>	
Myrtaceae	<i>Eucalyptus longissima</i>	
Myrtaceae	<i>Eucalyptus lucasii</i>	
Myrtaceae	<i>Eucalyptus mannensis</i> subsp. <i>mannensis</i>	
Myrtaceae	<i>Eucalyptus trivalva</i>	
Myrtaceae	<i>Euryomyrtus inflata</i>	P3
Myrtaceae	<i>Homalocalyx thryptomenoides</i>	
Myrtaceae	<i>Melaleuca interioris</i>	
Myrtaceae	<i>Melaleuca leiocarpa</i>	
Myrtaceae	<i>Melaleuca xerophila</i>	
Myrtaceae	<i>Micromyrtus flaviflora</i>	
Myrtaceae	<i>Thryptomene</i> sp. Leinster (B.J. Lepschi & L.A. Craven 4362)	P1
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Nyctaginaceae	<i>Boerhavia repleta</i>	
Oleaceae	<i>Jasminum calcareum</i>	
Oleaceae	<i>Jasminum didymum</i> subsp. <i>lineare</i>	
Ophioglossaceae	<i>Ophioglossum lusitanicum</i>	
Phrymaceae	<i>Peplidium aithocheilum</i>	
Phrymaceae	<i>Peplidium muelleri</i>	
Phrymaceae	<i>Peplidium</i> sp. C Evol. Fl. Fauna Arid Aust. (N.T. Burbidge & A. Kanis 8158)	
Phyllanthaceae	<i>Phyllanthus erwinii</i>	
Phyllanthaceae	<i>Poranthera microphylla</i>	
Phyllanthaceae	<i>Sauropus ramosissimus</i>	P3
Pittosporaceae	<i>Pittosporum angustifolium</i>	
Plantaginaceae	<i>Stemodia florulenta</i>	
Poaceae	<i>Amphipogon caricinus</i> var. <i>caricinus</i>	
Poaceae	<i>Aristida contorta</i>	
Poaceae	<i>Aristida holathera</i> var. <i>latifolia</i>	
Poaceae	<i>Austrostipa elegantissima</i>	
Poaceae	<i>Austrostipa scabra</i>	
Poaceae	* <i>Cenchrus ciliaris</i>	
Poaceae	<i>Chloris pectinata</i>	
Poaceae	<i>Cymbopogon ambiguus</i>	
Poaceae	<i>Dactyloctenium radulans</i>	
Poaceae	<i>Digitaria brownii</i>	
Poaceae	<i>Enneapogon caerulescens</i>	
Poaceae	<i>Eragrostis australasica</i>	
Poaceae	<i>Eragrostis dielsii</i>	
Poaceae	<i>Eragrostis eriopoda</i>	
Poaceae	<i>Eragrostis kennedyae</i>	

Family	Species	Priority Status
Poaceae	<i>Eragrostis lacunaria</i>	
Poaceae	<i>Eragrostis leptocarpa</i>	
Poaceae	<i>Eragrostis pergracilis</i>	
Poaceae	<i>Eragrostis setifolia</i>	
Poaceae	<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	Flora of Interest
Poaceae	<i>Eragrostis tenellula</i>	
Poaceae	<i>Eragrostis xerophila</i>	
Poaceae	<i>Eriachne helmsii</i>	
Poaceae	<i>Eriachne mucronata</i> (xerophytic form)	
Poaceae	<i>Eriachne ovata</i>	
Poaceae	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	
Poaceae	<i>Iseilema membranaceum</i>	
Poaceae	<i>Lachnagrostis filiformis</i>	
Poaceae	<i>Monachather paradoxus</i>	
Poaceae	<i>Neurachne lanigera</i>	P1
Poaceae	<i>Neurachne minor</i>	
Poaceae	<i>Paspalidium basicladum</i>	
Poaceae	<i>Paspalidium clementii</i>	
Poaceae	<i>Paspalidium gracile</i>	
Poaceae	<i>Perotis rara</i>	
Poaceae	<i>Sporobolus australasicus</i>	
Poaceae	<i>Sporobolus caroli</i>	
Poaceae	<i>Thyridolepis mitchelliana</i>	
Poaceae	<i>Tragus australianus</i>	
Poaceae	<i>Triodia basedowii</i>	
Poaceae	<i>Triodia melvillei</i>	
Poaceae	<i>Tripogon loliiformis</i>	
Polygalaceae	<i>Comesperma integerrimum</i>	
Polygalaceae	<i>Comesperma viscidulum</i>	P4
Polygalaceae	<i>Polygala</i> sp. Indeterminate LCH27730	
Polygalaceae	<i>Polygala</i> sp. Prostrate (P.K. Latz 490)	
Polygonaceae	* <i>Acetosa vesicaria</i>	
Polygonaceae	* <i>Emex australis</i>	
Polygonaceae	<i>Muehlenbeckia florulenta</i>	
Portulacaceae	* <i>Portulaca oleracea</i>	
Portulacaceae	<i>Calandrinia balonensis</i>	
Portulacaceae	<i>Calandrinia creethiae</i>	
Portulacaceae	<i>Calandrinia eremaea</i>	
Portulacaceae	<i>Calandrinia pleiopetala</i>	
Portulacaceae	<i>Calandrinia ptychosperma</i>	
Portulacaceae	<i>Calandrinia pumila</i>	
Portulacaceae	<i>Calandrinia</i> sp. Indeterminate LCH27778	

Family	Species	Priority Status
Primulaceae	<i>*Lysimachia arvensis</i>	
Proteaceae	<i>Grevillea acacioides</i>	
Proteaceae	<i>Grevillea berryana</i>	
Proteaceae	<i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i>	
Proteaceae	<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	
Proteaceae	<i>Grevillea nematophylla</i> subsp. <i>supraplana</i>	
Proteaceae	<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	
Proteaceae	<i>Hakea francisiana</i>	
Proteaceae	<i>Hakea lorea</i> subsp. <i>lorea</i>	
Proteaceae	<i>Hakea minyma</i>	
Proteaceae	<i>Hakea preissii</i>	
Pteridaceae	<i>Cheilanthes brownii</i>	
Pteridaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	
Rubiaceae	<i>Psydrax rigidula</i>	
Rubiaceae	<i>Psydrax latifolia</i>	
Rubiaceae	<i>Psydrax suaveolens</i>	
Santalaceae	<i>Exocarpos aphyllus</i>	
Santalaceae	<i>Exocarpos sparteus</i>	
Santalaceae	<i>Santalum acuminatum</i>	
Santalaceae	<i>Santalum lanceolatum</i>	
Santalaceae	<i>Santalum spicatum</i>	
Sapindaceae	<i>Diplopeltis stuartii</i> var. <i>stuartii</i>	
Sapindaceae	<i>Dodonaea adenophora</i>	
Sapindaceae	<i>Dodonaea microzyga</i> var. <i>acrolobata</i>	
Sapindaceae	<i>Dodonaea petiolaris</i>	
Sapindaceae	<i>Dodonaea rigida</i>	
Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	
Scrophulariaceae	<i>Eremophila alternifolia</i>	
Scrophulariaceae	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3
Scrophulariaceae	<i>Eremophila battii</i>	
Scrophulariaceae	<i>Eremophila clarkei</i>	
Scrophulariaceae	<i>Eremophila compacta</i> subsp. <i>compacta</i>	
Scrophulariaceae	<i>Eremophila conglomerata</i>	
Scrophulariaceae	<i>Eremophila decipiens</i> subsp. <i>decipiens</i>	
Scrophulariaceae	<i>Eremophila eriocalyx</i>	
Scrophulariaceae	<i>Eremophila exilifolia</i>	
Scrophulariaceae	<i>Eremophila falcata</i>	
Scrophulariaceae	<i>Eremophila flabellata</i>	
Scrophulariaceae	<i>Eremophila foliosissima</i>	
Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	
Scrophulariaceae	<i>Eremophila galeata</i>	
Scrophulariaceae	<i>Eremophila georgei</i>	
Scrophulariaceae	<i>Eremophila gilesii</i> subsp. <i>variabilis</i>	

Family	Species	Priority Status
Scrophulariaceae	<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	
Scrophulariaceae	<i>Eremophila granitica</i>	
Scrophulariaceae	<i>Eremophila hygrophana</i>	
Scrophulariaceae	<i>Eremophila jucunda</i> subsp. <i>jucunda</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>filiformis</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>glabra</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
Scrophulariaceae	<i>Eremophila longifolia</i>	
Scrophulariaceae	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	
Scrophulariaceae	<i>Eremophila malacoides</i>	
Scrophulariaceae	<i>Eremophila margarethae</i>	
Scrophulariaceae	<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>	
Scrophulariaceae	<i>Eremophila oppositifolia</i>	
Scrophulariaceae	<i>Eremophila platycalyx</i> subsp. <i>platycalyx</i>	
Scrophulariaceae	<i>Eremophila platythamos</i> subsp. <i>platythamos</i>	
Scrophulariaceae	<i>Eremophila serrulata</i>	
Scrophulariaceae	<i>Eremophila shonae</i> subsp. <i>shonae</i>	
Scrophulariaceae	<i>Eremophila</i> sp. Wiluna (G. Cockerton & K. Stratford 1983)	Flora of Interest
Scrophulariaceae	<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	
Scrophulariaceae	<i>Eremophila spuria</i>	
Scrophulariaceae	<i>Eremophila subfloccosa</i> subsp. aff. <i>lanata</i> (G Cockerton & C Jowett 25337)	Flora of Interest
Solanaceae	<i>Duboisia hopwoodii</i>	
Solanaceae	<i>Lycium australe</i>	
Solanaceae	<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>	
Solanaceae	<i>Nicotiana rotundifolia</i>	
Solanaceae	<i>Nicotiana rosulata</i>	
Solanaceae	<i>Nicotiana simulans</i>	
Solanaceae	<i>Solanum centrale</i>	
Solanaceae	<i>Solanum ellipticum</i>	
Solanaceae	<i>Solanum lasiophyllum</i>	
Solanaceae	<i>Solanum nummularium</i>	
Solanaceae	<i>Solanum plicatile</i>	
Solanaceae	<i>Solanum</i> sp. Indeterminate LCH27173	
Stylidiaceae	<i>Stylidium induratum</i>	
Thymelaeaceae	<i>Pimelea microcephala</i>	
Thymelaeaceae	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	
Thymelaeaceae	<i>Pimelea trichostachya</i>	
Zygophyllaceae	<i>Tribulus astrocarpus</i>	
Zygophyllaceae	<i>Tribulus</i> sp. Indeterminate LCH27811	
Zygophyllaceae	* <i>Tribulus terrestris</i>	
Zygophyllaceae	<i>Zygophyllum apiculatum</i>	

Family	Species	Priority Status
Zygophyllaceae	<i>Zygophyllum aurantiacum subsp. aurantiacum</i>	
Zygophyllaceae	<i>Zygophyllum compressum</i>	
Zygophyllaceae	<i>Zygophyllum iodocarpum</i>	
Zygophyllaceae	<i>Zygophyllum ovatum</i>	

Appendix 14. Locations of introduced flora recorded in the local study area

Location of some introduced flora recorded in survey area

Species	Date recorded	Zone	Easting	Northing	Comment
<i>Cenchrus ciliaris</i>	13.03.2010	51J	224049	6979242	Potential to be spread when road is widened. In sheep yard on Albion Downs - Yeelirrie Road adjacent to Bore.
<i>Citrullus lanatus</i>	16.03.2010	50J	791039	6989441	16 plants recorded at rehabilitated sump NE13, on baseline track. These plants were flowering and fruiting and were removed.
	17.03.2010	50J	795572	6987873	One plant fruiting at Albany Well, removed
	19.05.2009	51J	250054	6974113	Few plants on road edge
	18.05.2009	51J	246268	6978291	Few plants on road edge
	17.05.2009	51J	236079	6977955	One plant on south side
	26.04.2009	51J	214050	6979170	One plant
		50	782898	6994057	In quadrat 81
<i>Opuntia</i> sp.	26.04.2009	51J	212465	6978895	Widespread near homestead. Mature plants and many dropped branchlets.
<i>Carrichtera annua</i>					General observation in Rehabilitation areas
<i>Acetosa vesicaria</i>		50J	786489	6991053	In quadrat 84
		50J	788118	6990373	In quadrat 157
		51J	211887	6980672	In quadrat 178
<i>Sonchus oleraceus</i>		50	790466	6990950	In quadrat 3
		50	787547	6990586	In quadrat 7
<i>Tribulus terrestris</i>	31.08.2009	51J	235929	6966651	Widespread
		50	789453	6990989	In quadrat 1
		50	792153	6988982	In quadrat 31
		50	791970	6989195	In quadrat 33
		50	784551	6990861	In quadrat 43
		50	790050	6987364	In quadrat 75
		50	793033	6987954	In quadrat 76
		50	793601	6994491	In quadrat 79
		50	782898	6994057	In quadrat 81
		51	211263	6980400	In quadrat 88

Species	Date recorded	Zone	Easting	Northing	Comment
		51	205572	6983226	In quadrat 122
		51	249984	6974377	In quadrat 128
		50	793813	6988242	In quadrat 129
		51	249355	6974723	In quadrat 131
		51	250986	6973788	In quadrat 132
		51	245948	6978261	In quadrat 135
		51	208210	6982473	In quadrat 154
		50	204192	6983378	In quadrat 163
		51	251491	6973632	In quadrat 171
		51	251851	6973585	In quadrat 174
		51	211887	6980672	In quadrat 178
		50	790570	6990005	In quadrat 181
<i>Lysimachia arvensis</i>		51	247336	6977428	In quadrat 136
		51	248511	6976586	In quadrat 169
		51	247611	6977537	In quadrat 173
<i>Cuscuta planiflora</i>		50	787440	6990093	In quadrat 15
		50	793813	6988242	In quadrat 129
		51	250422	6974279	In quadrat 133
		51	208299	6982536	In quadrat 139
		51	247611	6977537	In quadrat 173
<i>Erodium aureum</i>		51	223030	6976391	In study area 3
<i>Portulaca oleracea</i>		50	787440	6990093	In quadrat 15
		50	787068	6990194	In quadrat 24
		50	784925	6990764	In quadrat 29
		50	792153	6988982	In quadrat 31
		50	791970	6989195	In quadrat 33
		50	784551	6990861	In quadrat 43
		50	773991	7001380	In quadrat 64
		50	789598	6988865	In quadrat 74
		50	793033	6987954	In quadrat 76
		50	793601	6994491	In quadrat 79
		50	793564	6993953	In quadrat 80
		50	782898	6994057	In quadrat 81

Species	Date recorded	Zone	Easting	Northing	Comment
		50	782496	6992567	In quadrat 82
		50	781788	6993461	In quadrat 83
		50	786489	6991053	In quadrat 84
		51	211263	6980400	In quadrat 88
		51	211754	6980981	In quadrat 89
		50	778703	6998541	In quadrat 102
		50	782350	6998098	In quadrat 103
		51	205572	6983226	In quadrat 122
		50	788599	6990620	In quadrat 124
		50	785832	6989984	In quadrat 127
		51	249984	6974377	In quadrat 128
		50	793813	6988242	In quadrat 129
		50	791632	6989313	In quadrat 130
		51	249355	6974723	In quadrat 131
		51	250986	6973788	In quadrat 132
		51	250422	6974279	In quadrat 133
		51	245948	6978261	In quadrat 135
		51	247336	6977428	In quadrat 136
		51	207862	6982280	In quadrat 137
		51	208382	6983215	In quadrat 138
		51	208299	6982536	In quadrat 139
		51	215822	6976493	In quadrat 140
		51	216123	6976455	In quadrat 141
		51	212063	6979470	In quadrat 144
		51	210843	6980061	In quadrat 147
		51	205126	6984605	In quadrat 149
		50	787175	6991884	In quadrat 150
		50	788833	6990299	In quadrat 152
		51	208210	6982473	In quadrat 154
		50	784829	6990712	In quadrat 155
		50	204192	6983378	In quadrat 163
		51	202974	6984027	In quadrat 167
		51	248511	6976586	In quadrat 169
		51	251491	6973632	In quadrat 171

Species	Date recorded	Zone	Easting	Northing	Comment
		51	250755	6973741	In quadrat 172
		51	247611	6977537	In quadrat 173
		51	251851	6973585	In quadrat 174
		50	779093	6998124	In quadrat 177
		51	211887	6980672	In quadrat 178
		50	790570	6990005	In quadrat 181
<i>Emex australis</i>		50	785832	6989984	In quadrat 127
		50	793813	6988242	In quadrat 129
		51	247336	6977428	In quadrat 136
		50	787175	6991884	In quadrat 150
		51	251851	6973585	In quadrat 174





Plate 1. *Opuntia* sp. recorded growing near Yeelirrie Homestead

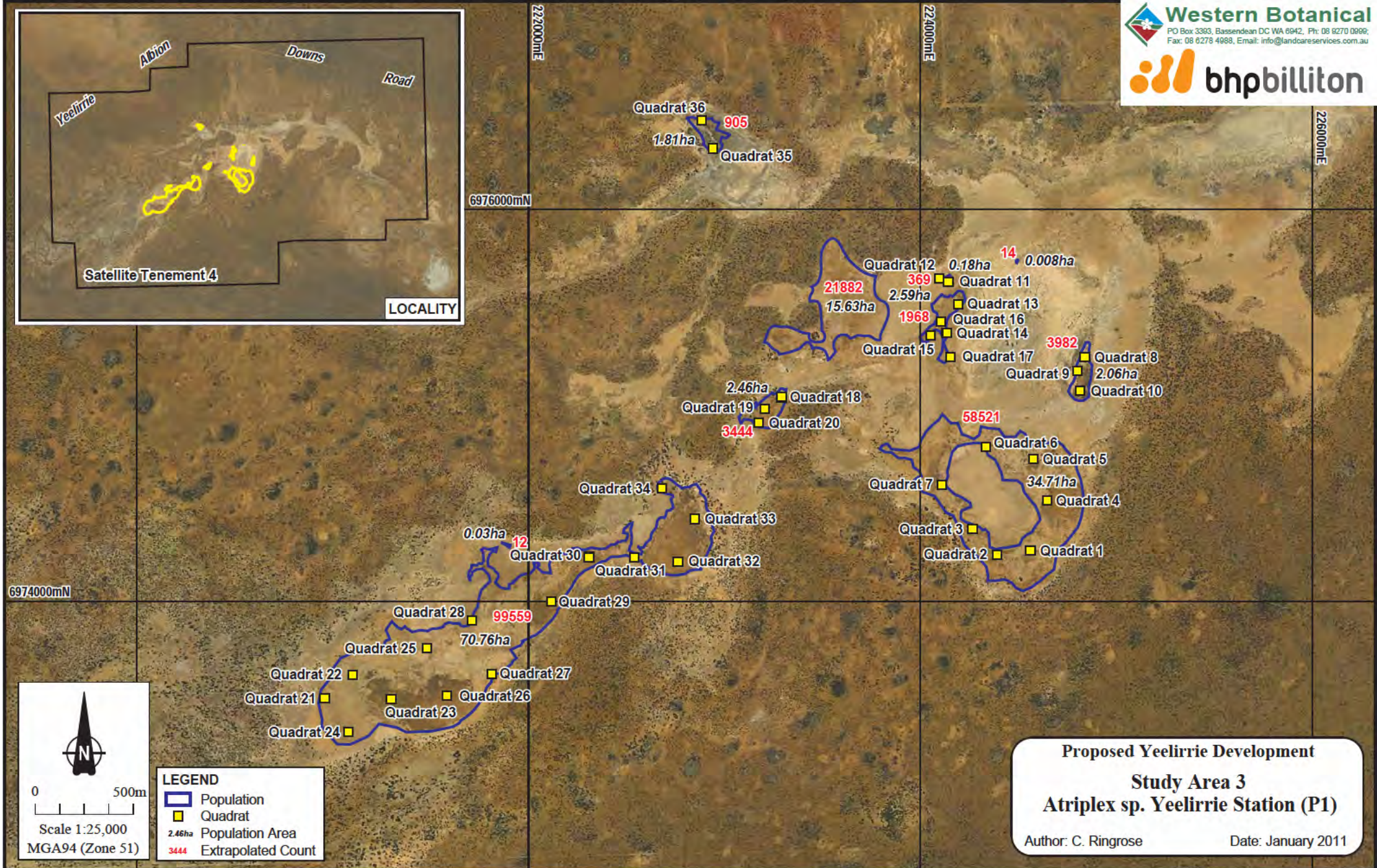
Appendix 15. Locations of significant flora and species of interest recorded in study area 3

Coordinates of significant flora and species of interest recorded in study area 3, excluding those recorded during the regional survey of study area 4

Species	# plants	Zone	Easting	Northing
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025) P1	190,656*	51J	224752	6974469
<i>Bossiaea eremaea</i> P3	1	51J	218668	6974306
	1	51J	218720	6974330
	3	51J	222182	6976680
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i> P3	2	51J	217938	6972593
	1	51J	218636	6972794
	1	51J	218685	6974332
	3	51J	218720	6974330
	2	51J	218998	6972078
	2	51J	219122	6974476
	10	51J	219162	6971697
	8	51J	219298	6973294
	2	51J	219307	6974133
	2	51J	219533	6971629
	12	51J	219630	6972938
	6	51J	219638	6972862
	1	51J	219798	6973499
	4	51J	220218	6972486
	1	51J	220253	6972442
	4	51J	220430	6972206
	1	51J	220508	6972136
	1	51J	220542	6972089
	1	51J	220633	6972662
	4	51J	220671	6971985
	6	51J	222177	6974314
	1	51J	222627	6974051
	4	51J	222977	6974527
	1	51J	223093	6974649
	3	51J	223097	6974682
	6	51J	223102	6974534
5	51J	223221	6974745	
3	51J	223631	6974623	
<i>Scaevola spinescens</i> (terete leaf form) (G. Cockerton & C. Ringrose LCH 14560)	3	51J	219389	6975880
	1	51J	222047	6975093
	2	51J	222984	6974816
	1	51J	224056	6975724
	1	51J	224068	6975731
	1	51J	224075	6975713
	1	51J	224511	6976539
<i>Templetonia incrassata</i>	2	51J	225616	6974039
	5	51J	219174	6975945
	5	51J	219389	6975880
	12	51J	221537	6976479
	9	51J	222627	6974051

* The co-ordinate for *Atriplex* sp. Yeelirrie Station is a representative point within the population. The population boundary is shown in Figure 41, Section 3.7.1.

Appendix 16. *Atriplex* sp. Yeelirrie Station quadrat locations within study area 3



Appendix 17. Regional vegetation quadrats

Quadrat locations and associated vegetation communities recorded at Yeelirrie Palaeochannel and Lake Miranda (MI), Lake Way (WA), Lake Noondie (NO), and Lake Mason (MA)

Quadrat #	Zone	Easting	Northing	Vegetation Community
MI-01	51J	221501	6972863	CCpW
MI-02	51J	221496	6973161	CAPs
MI-03	51J	222099	6973786	CAPs
MI-04	51J	222877	6974146	CAPs
MI-05	51J	222919	6974118	CMxS
MI-06	51J	256547	6931650	CMxS
MI-07	51J	233667	6971722	CCpW
MI-08	51J	235928	6966317	CMxS
MI-09	51J	234294	6959804	CCpW
MI-10	51J	233764	6970258	CABs
MI-11	51J	233531	6974164	CABs
MI-12	51J	233805	6970553	CMGbs
MI-13	51J	233689	6970167	CMGbs
MI-14	51J	220164	6972427	CEgW
MI-15	51J	219811	6972079	CEgW
MI-16	51J	219345	6972206	CEgW
MI-17	51J	219339	6972460	CABs
MI-18	51J	233853	6970816	CMGbs
WA-01	51J	232950	7045283	CEgW
WA-02	51J	230720	7045514	CMxS
MA-01	50J	734935	6932778	CCpW
MA-02	50J	737464	6932481	CCpW
MA-03	50J	734739	6932290	CCpW
MA-04	50J	761346	6950816	CMxS
MA-05	50J	758759	6947388	CMxS
MA-06	50J	776272	6950065	CMxS
MA-07	50J	759324	6950425	CEgW
MA-09	50J	758044	6947448	CEgW
MA-11	50J	757225	6950127	CCpW
NO-01	50J	699684	6834416	CEgW
NO-02	50J	700466	6834547	CCpW
NO-03	50J	698927	6832406	CCpW

BHP Billiton Yeelirrie Site MA-01

Described by Jessie-Leigh Brown **Date:** 10/2/2010 **Type:** Quadrat **Size:** 50 x 50 m
Season: Poor

Location: Lake Mason

MGA Zone: 50J 734935 mE 6932778 mN

Vegetation Code: CCpW

Landscape Association: Calcrete system

Vegetation: *Casuarina pauper* woodland

Disturbance: n/a

Fire Age: Unknown

Notes: Total PFC 21.629%; 12% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 4% dead timber cover on ground, 20% cover of cryptogam crusting, 15% cover of clay, 60% cover of sand, 8% cover of gravel, 1% cover of rocks.

Species List:

Name	Cover	Height	Collection
<i>Acacia tetragonophylla</i>	0.75%	1.3 m	n/a
<i>Atriplex bunburyana</i>	0.075%	0.4 m	MA01-01
<i>Austrostipa elegantissima</i>	0.075%	1 m	n/a
<i>Casuarina pauper</i>	20%	7 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.6 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.75%	1.3 m	n/a
<i>Eremophila longifolia</i>	0.001%	1.5 m	n/a
<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	0.1%	1.1 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.075%	0.7 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.075%	0.2 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.075%	0.6 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.075%	1 m	n/a

BHP Billiton Yeelirrie Site MA-02**Described by** Rebecca Graham**Date:** 10/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason, near homestead.**MGA Zone:** 50J737464 **mE**6932481 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Minor animal grazings and scratchings.**Fire Age:** Long unburnt**Notes:** Total PFC 14.805%; 9% leaf litter cover to a depth of 3 cm, 5 dead timber standing with 1% dead timber cover on ground, 3% cover of cryptogam crusting, 3% cover of clay, 70% cover of sand, 15% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.001%	1.2 m	n/a
<i>Acacia synchronicia</i>	0.001%	0.3 m	n/a
<i>Acacia tetragonophylla</i>	0.003%	1.2 m	n/a
<i>Atriplex vesicaria</i>	0.001%	0.8 m	MA02-01
<i>Casuarina pauper</i>	9%	12 m	n/a
<i>Chenopodium curvispicatum</i>	0.001%	0.3 m	MA02-02
<i>Dissocarpus paradoxus</i>	0.001%	0.3 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.003%	0.5 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	4%	0.02 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1%	1.8 m	n/a
<i>Eremophila longifolia</i>	0.01%	1 m	n/a
<i>Frankenia laxiflora</i>	0.001%	0.4 m	n/a
<i>Lycium australe</i>	0.003%	1.2 m	n/a
<i>Pittosporum angustifolium</i>	0.02%	4 m	n/a
<i>Ptilotus exaltatus</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.003%	0.4 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.25%	0.25 m	n/a
<i>Scaevola spinescens</i>	0.001%	0.2 m	n/a
<i>Sclerolaena convexula</i>	0.001%	0.2 m	MA02-04
<i>Sclerolaena diacantha</i>	0.5%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.001%	0.6 m	n/a
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.001%	0.1 m	MA02-03
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Solanum nummularium</i>	0.001%	0.5 m	n/a

BHP Billiton Yeelirrie Site MA-03

Described by Cheyne Jowett

Date: 10/2/2010

Type: Quadrat

Size: 50 x 50 m

Season: Poor

Location: Lake Mason north-west

MGA Zone: 50J

734740 mE

6932465 mN

Vegetation Code: CCpW

Landscape Association: Calcrete system

Vegetation: *Casuarina pauper* woodland

Disturbance: Sheet flow

Fire Age: Unknown

Notes: Total PFC 16.067%; 7% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 5% dead timber cover on ground, 10% cover of cryptogam crusting, 18% cover of clay, 60% cover of sand, 30% cover of gravel, 0.075% cover of rocks.

Species List:

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	4%	2.3 m	n/a
<i>Atriplex bunburyana</i>	0.075%	1.1 m	MA01-01=
<i>Austrostipa elegantissima</i>	0.001%	1.2 m	n/a
<i>Casuarina pauper</i>	8%	6 m	n/a
<i>Dissocarpus paradoxus</i>	0.075%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.5%	0.03 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.075%	0.6 m	n/a
<i>Eremophila longifolia</i>	0.075%	1.6 m	n/a
<i>Marsdenia australis</i>	0.001%	0.6 m	n/a
<i>Paspalidium basicladum</i>	0.001%	0.15 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.01%	0.2 m	n/a
<i>Scaevola spinescens</i> (broad form)	1%	1.5 m	n/a
<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	1.2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a
<i>Solanum nummularium</i>	0.001%	0.4 m	n/a

BHP Billiton Yeelirrie Site MA-04**Described by** Rebecca Graham**Date:** 15/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason**MGA Zone:** 50J761346 **mE**6950816 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Minor vehicle tracks**Fire Age:** Long unburnt**Notes:** Total PFC 20.329%; 7% leaf litter cover to a depth of 1 cm, 2 dead timber standing with 0.25% dead timber cover on ground, 50% cover of cryptogam crusting, 30% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rock**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.003%	0.3 m	n/a
<i>Atriplex vesicaria</i>	0.001%	0.6 m	MA04-01
<i>Dissocarpus paradoxus</i>	2%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.075%	0.1 m	n/a
<i>Melaleuca xerophila</i>	15%	5 m	n/a
<i>Rhagodia drummondii</i>	0.25%	0.6 m	n/a
<i>Sclerolaena</i> sp. (inadequate material)	3%	0.05 m	n/a

BHP Billiton Yeelirrie Site MA-05**Described by** Cheyne Jowett**Date:** 2/15/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason central north shore**MGA Zone:** 50J758758 **mE**6947562 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Animal activity**Fire Age:** Unknown**Notes:** Total PFC 80.303%; 55% leaf litter cover to a depth of 3 cm, 45 dead timber standing with 15% dead timber cover on ground, 8% cover of cryptogam crusting, 16% cover of clay, 20% cover of sand, 1% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia colletioides</i>	0.075%	1.1 m	n/a
<i>Acacia synchronicia</i>	0.075%	1.4 m	n/a
<i>Austrostipa elegantissima</i>	0.075%	0.6 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Eucalyptus gypsophila</i>	0.075%	4 m	n/a
<i>Lycium australe</i>	0.001%	1.1 m	n/a
<i>Marsdenia australis</i>	0.001%	0.3 m	n/a
<i>Melaleuca xerophila</i>	80%	6 m	n/a

BHP Billiton Yeelirrie Site MA-07**Described by** Cheyne Jowett**Date:** 15/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason central north shore**MGA Zone:** 50J759324 **mE**6950425 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Animal and vehicle activity**Fire Age:** Unknown**Notes:** Total PFC 11.579%; 15% leaf litter cover to a depth of 5 cm, 3 dead timber standing with 5% dead timber cover on ground, 8% cover of cryptogam crusting, 10% cover of clay, 50% cover of sand, 15% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia colletioides</i>	2.75%	2.2 m	n/a
<i>Acacia steedmanii</i>	0.75%	2.2 m	n/a
<i>Acacia synchronicia</i>	0.075%	1.5 m	n/a
<i>Austrostipa elegantissima</i>	0.001%	0.8 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	1%	0.03 m	n/a
<i>Eucalyptus gypsophila</i>	7%	10 m	n/a
<i>Lycium australe</i>	0.001%	1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.1 m	n/a

BHP Billiton Yeelirrie Site MA-09**Described by** Cheyne Jowett**Date:** 15/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason central north shore**MGA Zone:** 50J758044 **mE**6947448 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Animal and vehicle activity**Fire Age:** Unknown**Notes:** Total PFC 13.831%; 12% leaf litter cover to a depth of 5 cm, 6 dead timber standing with 4% dead timber cover on ground, 10% cover of cryptogam crusting, 30% cover of clay, 30% cover of sand, 2% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia colletioides</i>	3.25%	2.2 m	n/a
<i>Acacia synchronicia</i>	0.075%	1.1 m	n/a
<i>Dissocarpus paradoxus</i>	0.001%	0.1 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.5%	0.05 m	n/a
<i>Eucalyptus gypsophila</i>	10%	8 m	n/a
<i>Lycium australe</i>	0.001%	0.9 m	n/a
<i>Pittosporum angustifolium</i>	0.001%	0.8 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	n/a
<i>Sclerolaena</i> sp. (inadequate material)	0.001%	0.1 m	n/a
<i>Zygophyllum compressum</i>	0.001%	0.15 m	MA08-01

BHP Billiton Yeelirrie Site MA-11**Described by** Cheyne Jowett**Date:** 16/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Mason central north shore**MGA Zone:** 50J757225 **mE**6950127 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Animal and vehicle activity**Fire Age:** Unknown**Notes:** Total PFC 12.175%; 4% leaf litter cover to a depth of 2 cm, 4 dead timber standing with 2.5% dead timber cover on ground, 10% cover of cryptogam crusting, 15% cover of clay, 30% cover of sand, 40% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.4%	2 m	n/a
<i>Acacia colletioides</i>	2%	2.4 m	n/a
<i>Acacia ligulata</i>	0.5%	3 m	n/a
<i>Austrostipa elegantissima</i>	0.075%	1 m	n/a
<i>Casuarina pauper</i>	6%	6 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.02 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.12%	1.2 m	n/a
<i>Eremophila longifolia</i>	0.001%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.05 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.001%	0.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	3%	1.6 m	n/a

BHP Billiton Yeelirrie Site MI-01**Described by** Rebecca Graham**Date:** 3/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Southern shoreline of north-west Lake Miranda**MGA Zone:** 51J221516 **mE**6973035 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Cattle grazing**Fire Age:** Unknown**Notes:** Total PFC 11.049%; 5% leaf litter cover to a depth of 1 cm, 3 dead timber standing with 2% dead timber cover on ground, 1% cover of cryptogam crusting, 10% cover of clay, 5% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1.5%	2.5 m	n/a
<i>Amyema linophylla</i> subsp. <i>linophylla</i>	0.002%	n/a	MI01-01
<i>Casuarina pauper</i>	11%	8-12 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	n/a	n/a	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1%	2.5 m	n/a
<i>Maireana triptera</i>	0.001%	0.1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	2.5 m	n/a

BHP Billiton Yeelirrie Site MI-02**Described by** Rebecca Graham**Date:** 3/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North-west Lake Miranda**MGA Zone:** 51J221512 **mE**6973333 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete system**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** Cattle grazing and activity.**Fire Age:** Unknown**Notes:** Total PFC 20.5%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber on ground, 0% cover of cryptogam crusting, 80% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	12%	0.3-0.5 m	n/a
<i>Frankenia laxiflora</i>	7%	0.1 m	MI02-01
<i>Lycium australe</i>	1.5%	1.8 m	n/a

BHP Billiton Yeelirrie Site MI-03**Described by** Rebecca Graham**Date:** 3/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North-west Lake Miranda**MGA Zone:** 51J222115 **mE**6973959 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete system**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 14.351%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber on ground, 0% cover of cryptogam crusting, 90% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	14%	0.5 m	MI03-01
<i>Frankenia laxiflora</i>	0.001%	0.1 m	MI02-01=
<i>Lycium australe</i>	0.1%	1.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	2.5 m	n/a

BHP Billiton Yeelirrie Site MI-04**Described by** Rebecca Graham**Date:** 3/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** South-west Lake Miranda**MGA Zone:** 51J222877 **mE**6974146 **mN****Vegetation Code:** CApS**Landscape Association:** Calcrete system**Vegetation:** *Atriplex* sp. Yeelirrie Station shrubland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 14.501%; 0% leaf litter cover to a depth of 0 cm, 0 dead timber standing with 0% dead timber on ground, 0% cover of cryptogam crusting, 85% cover of clay, 0% cover of sand, 0% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	13%	0.5 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Lycium australe</i>	1.5%	1.6 m	n/a

BHP Billiton Yeelirrie Site MI-05**Described by** Rebecca Graham**Date:** 3/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North-west Lake Miranda**MGA Zone:** 51J222934 **mE**6974290 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Some channelisation.**Fire Age:** Unknown**Notes:** Total PFC 20.008%; Covers for leaf litter, dead timber, cryptogams, clay, sand, gravel and rocks were not recorded.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.001%	0.4 m	n/a
<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas LCH 25025)	0.001%	0.2 m	n/a
<i>Atriplex vesicaria</i>	0.001%	0.5 m	MI05-01
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Maireana triptera</i>	0.001%	0.3 m	n/a
<i>Melaleuca xerophila</i>	20%	4-8 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.6 m	n/a
<i>Sclerolaena cuneata</i>	0.001%	0.2 m	n/a
<i>Sclerolaena diacantha</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site MI-06**Described by** Rebecca Graham**Date:** 5/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Miranda south**MGA Zone:** 51J256547 **mE**6931650 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Cattle grazing.**Fire Age:** Unknown**Notes:** Total PFC 30.405%; 10% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 1% dead timber on ground, 30% cover of cryptogam crusting, 2% cover of clay, 60% cover of sand, 0.5% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.001%	3 m	n/a
<i>Atriplex vesicaria</i>	0.075%	0.4 m	MI06-01=
<i>Dissocarpus paradoxus</i>	0.001%	0.2 m	n/a
<i>Frankenia laxiflora</i>	0.001%	0.15 m	n/a
Indeterminate	0.25%	3 m	n/a
<i>Maireana triptera</i>	0.001%	0.4 m	n/a
<i>Marsdenia australis</i>	0.001%	1 m	n/a
<i>Melaleuca xerophila</i>	30 %	5 m	n/a
<i>Rhagodia eremaea</i>	0.075%	0.7 m	n/a

BHP Billiton Yeelirrie Site MI-07**Described by** Rebecca Graham**Date:** 6/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North Lake Miranda**MGA Zone:** 51J

233667 mE

6971722 mN

Vegetation Code: CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Rabbit, herbivore grazing.**Fire Age:** Unknown**Notes:** Total PFC 14.002%; 5% leaf litter cover to a depth of 3 cm, 1 dead timber standing with 3% dead timber on ground, 2.5% cover of cryptogam crusting, 4% cover of clay, 70% cover of sand, 8% cover of gravel, 0.25% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1.5%	3 m	n/a
<i>Casuarina pauper</i>	7%	6-8 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.25%	0.01 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.25%	2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.05 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	5%	1-2.5 m	n/a

BHP Billiton Yeelirrie Site MI-08**Described by** Rebecca Graham**Date:** 6/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North Lake Miranda**MGA Zone:** 51J235928 **mE**6966317 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Rabbits, cattle and other herbivores grazing.**Fire Age:** Unknown**Notes:** Total PFC 31.081%; 1% leaf litter cover to a depth of 1 cm, 4 dead timber standing with 1.5% dead timber on ground, 15% cover of cryptogam crusting, 3% cover of clay, 75% cover of sand, 2% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.075%	2.5 m	n/a
<i>Amyema microphylla</i>	0.001%	n/a	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.05 m	n/a
Indeterminate	0.001%	0.1 m	n/a
<i>Maireana georgei</i>	0.001%	0.4 m	n/a
<i>Melaleuca xerophila</i>	30%	2-6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Rhagodia eremaea</i>	0.001%	0.5 m	n/a
<i>Sclerolaena obliquicuspis</i>	1%	0.1 m	n/a

BHP Billiton Yeelirrie Site MI-09**Described by** Rebecca Graham**Date:** 7/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** South-west Lake Miranda**MGA Zone:** 51J

234307 mE

6959976 mN

Vegetation Code: CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Animal tracks, runs and grazing.**Fire Age:** Unknown**Notes:** Total PFC 9.906%; 4% leaf litter cover to a depth of 2 cm, 3 dead timber standing with 2.5% dead timber on ground, 5% cover of cryptogam crusting, 2% cover of clay, 60% cover of sand, 20% cover of gravel, 0.25% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.001%	2 m	n/a
<i>Atriplex vesicaria</i>	0.001%	0.1 m	MI06-01=
<i>Austrostipa elegantissima</i>	0.001%	0.5 m	n/a
<i>Casuarina pauper</i>	6%	6 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1%	2 m	n/a
<i>Eremophila falcata</i>	0.75%	1.5 m	n/a
Indeterminate	0.5%	4 m	n/a
<i>Maireana georgei</i>	0.001%	0.5 m	n/a
<i>Maireana triptera</i>	0.25%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.05 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.075%	1.5 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	2 m	n/a
<i>Templetonia incrassata</i>	0.25%	1.5 m	n/a

BHP Billiton Yeelirrie Site MI-10**Described by** Rebecca Graham**Date:** 7/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North Lake Miranda**MGA Zone:** 51J233778 **mE**6970431 **mN****Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Cattle tracks**Fire Age:** Unknown**Notes:** Total PFC 7.704%; 2% leaf litter cover to a depth of 2 cm, 2 dead timber standing with 2% dead timber on ground, 2.5% cover of cryptogam crusting, 2.5% cover of clay, 70% cover of sand, 20% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	5%	2-5 m	n/a
<i>Duboisia hopwoodii</i>	0.001%	1.5 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.5%	1.2 m	n/a
Indeterminate	0.075%	3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.05%	0.3 m	n/a
<i>Rhagodia eremaea</i>	0.001%	1 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Santalum lanceolatum</i>	0.001%	3 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.075%	1.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	2 m	n/a

BHP Billiton Yeelirrie Site MI-11**Described by** Rebecca Graham**Date:** 7/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North Lake Miranda**MGA Zone:** 51J

233547 mE

6974337 mN

Vegetation Code: CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Animal tracks and runs.**Fire Age:** Unknown**Notes:** Total PFC 9.006%; 2% leaf litter cover to a depth of 2 cm, 5 dead timber standing with 2% dead timber on ground, 20% cover of cryptogam crusting, 5% cover of clay, 50% cover of sand, 20% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	6%	5 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.5 m	n/a
<i>Enneapogon caerulescens</i>	0.001%	0.2 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.1 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1%	2 m	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	1.8 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Tribulus terrestris</i>	0.001%	Prostrate	n/a

BHP Billiton Yeelirrie Site MI-12**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North-east Lake Miranda**MGA Zone:** 51J233819 **mE**6970725 **mN****Vegetation Code:** CMGbs**Landscape Association:** Calcrete system**Vegetation:** Mulga *Grevillea berryana* shrubland**Disturbance:** Sheet flow, animal activity.**Fire Age:** Unknown**Notes:** Total PFC 17.656%; 3% leaf litter cover to a depth of 2 cm, 7 dead timber standing with 1.5% dead timber on ground, 4% cover of cryptogam crusting, 5% cover of clay, 75% cover of sand, 5% cover of gravel, 0.5% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.001%	0.2 m	n/a
<i>Acacia burkittii</i>	8%	4 m	n/a
<i>Acacia</i> sp. Fragrant (G. Cockerton & C. Ringrose 14561)	0.25%	2.5 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.3 m	n/a
<i>Enneapogon caerulescens</i>	0.001%	0.1 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.075%	1.8 m	n/a
<i>Grevillea berryana</i>	7%	5 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.75%	0.4 m	n/a
<i>Rhagodia eremaea</i>	0.075%	0.4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1.5%	1.8 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site MI-13**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North-west Lake Miranda**MGA Zone:** 51J

233689 mE

6970167 mN

Vegetation Code: CMGbS**Landscape Association:** Calcrete system**Vegetation:** Mulga *Grevillea berryana* shrubland**Disturbance:** Animal activity**Fire Age:** Unknown**Notes:** Total PFC 16.205%; 2% leaf litter cover to a depth of 2 cm, 7 dead timber standing with 3% dead timber on ground, 4% cover of cryptogam crusting, 4% cover of clay, 80% cover of sand, 6% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	1.5%	2 m	n/a
<i>Acacia burkittii</i>	6%	5 m	n/a
<i>Acacia tetragonophylla</i>	2%	3 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.8 m	n/a
<i>Enneapogon caerulescens</i>	0.001%	0.15 m	n/a
<i>Eremophila decipiens</i>	0.001%	1.5 m	MI12-01
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.075%	2.5 m	n/a
<i>Eremophila longifolia</i>	0.5%	5 m	n/a
<i>Grevillea berryana</i>	3%	5 m	n/a
<i>Lycium australe</i>	0.075%	1.5 m	n/a
<i>Maireana georgei</i>	0.075%	0.3 m	n/a
<i>Maireana pyramidata</i>	0.5%	1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.3 m	n/a
<i>Rhagodia eremaea</i>	0.075%	0.6 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.1 m	n/a
<i>Santalum lanceolatum</i>	0.075%	3 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.25%	1.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2%	2 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site MI-14**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Miranda**MGA Zone:** 51J220178 **mE**6972599 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Animal activity, cattle runs.**Fire Age:** Unknown**Notes:** Total PFC 18.579%; 9% leaf litter cover to a depth of 5 cm, 8 dead timber standing with 4% dead timber on ground, 1% cover of cryptogam crusting, 2% cover of clay, 70% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.001%	1.2 m	n/a
<i>Casuarina pauper</i>	0.25%	5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.075%	2 m	n/a
<i>Eucalyptus gypsophila</i>	18%	2-12 m	n/a
<i>Maireana georgei</i>	0.001%	0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.05 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.001%	1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.25%	1.5 m	n/a

BHP Billiton Yeelirrie Site MI-15**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Miranda**MGA Zone:** 51J219811 **mE**6972079 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Animal scratchings**Fire Age:** Unknown**Notes:** Total PFC 11.728%; 11% leaf litter cover to a depth of 5 cm, 7 dead timber standing with 4% dead timber on ground, 2% cover of cryptogam crusting, 2% cover of clay, 75% cover of sand, 5% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.075%	2 m	n/a
<i>Acacia</i> sp. fragrant (G. Cockerton & C. Ringrose 14561)	0.075%	1.5 m	n/a
<i>Acacia synchronicia</i>	0.075%	1.5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.001%	0.7 m	n/a
<i>Eucalyptus gypsophila</i>	10%	12 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1.5%	1.8 m	n/a

BHP Billiton Yeelirrie Site MI-16**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North Lake Miranda**MGA Zone:** 51J

219359 mE

6972379 mN

Vegetation Code: CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Cattle runs.**Fire Age:** Unknown**Notes:** Total PFC 12.411%; 10% leaf litter cover to a depth of 6 cm, 5 dead timber standing with 4% dead timber on ground, 0.75% cover of cryptogam crusting, 0.5% cover of clay, 50% cover of sand, 15% cover of gravel, 2% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Casuarina pauper</i>	0.075%	5 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.25%	2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.01%	0.5 m	n/a
<i>Eucalyptus gypsophila</i>	11%	12 m	n/a
<i>Maireana georgei</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.3 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	2 m	n/a

BHP Billiton Yeelirrie Site MI-17**Described by** Rebecca Graham**Date:** 8/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Miranda north-west**MGA Zone:** 51J219339 **mE**6972460 **mN****Vegetation Code:** CAbS**Landscape Association:** Calcrete system**Vegetation:** *Acacia burkittii* shrubland**Disturbance:** Cattle run, old track.**Fire Age:** Unknown**Notes:** Total PFC 6.577%; 4% leaf litter cover to a depth of 1 cm, 15 dead timber standing with 2% dead timber on ground, 5% cover of cryptogam crusting, 4% cover of clay, 75% cover of sand, 20% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	6%	4 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.001%	0.6 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.5%	1.2 m	n/a

BHP Billiton Yeelirrie Site MI-18**Described by** Cheyne Jowett**Date:** 9/12/2009**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Miranda**MGA Zone:** 51J233869 **mE**6970989 **mN****Vegetation Code:** CMGbS**Landscape Association:** Calcrete system**Vegetation:** Mulga *Grevillea berryana* shrubland**Disturbance:** Animal scratchings**Fire Age:** Unknown**Notes:** Total PFC 13.329%; 2.5% leaf litter cover to a depth of 2 cm, 6 dead timber standing with 2% dead timber on ground, 2.5% cover of cryptogam crusting, 3% cover of clay, 80% cover of sand, 4% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	5%	4 m	n/a
<i>Acacia</i> sp. Fragrant (G. Cockerton & C. Ringrose 14561)	0.075%	2 m	n/a
<i>Acacia tetragonophylla</i>	0.075%	2 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.075%	1.3 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.1%	2 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.1%	1.8 m	n/a
<i>Grevillea berryana</i>	4%	5 m	n/a
<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	0.075%	1.8 m	n/a
<i>Maireana pyramidata</i>	0.001%	0.8 m	n/a
<i>Maireana triptera</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.25%	0.3 m	n/a
<i>Rhagodia drummondii</i>	0.001%	1 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.3 m	n/a
<i>Santalum lanceolatum</i>	0.075%	2.6 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	2.5%	1.8 m	n/a
<i>Triodia basedowii</i>	1%	0.3 m	n/a

BHP Billiton Yeelirrie Site NO-01**Described by** Cheyne Jowett**Date:** 11/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Noondie, calcrete north-west of lake system**MGA Zone:** 50J699683 **mE**6834597 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Animal scratchings**Fire Age:** Unknown**Notes:** Total PFC 30.305%; 50% leaf litter cover to a depth of 4 cm, 5 dead timber standing with 5% dead timber cover on ground, 8% cover of cryptogam crusting, 15% cover of clay, 10% cover of sand, 0.001% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.001%	0.4 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.05 m	n/a
<i>Eremophila longifolia</i>	0.075%	0.5 m	n/a
<i>Eucalyptus gypsophila</i>	30%	10 m	n/a
Indeterminate	0.001%	0.2 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.075%	0.2 m	n/a
<i>Scaevola spinescens</i> (broad form)	0.075%	0.6 m	n/a
<i>Senna artemisioides</i> subsp. <i>artemisioides</i>	0.001%	0.4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0.075%	1.8 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site NO-02**Described by** Rebecca Graham**Date:** 11/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Noondie west**MGA Zone:** 50J

700466 mE

6834547 mN

Vegetation Code: CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Kangaroo resting site.**Fire Age:** Long unburnt**Notes:** Total PFC 18.51%; 40% leaf litter cover to a depth of 2 cm, 1 dead timber standing with 3% dead timber cover on ground, 15% cover of cryptogam crusting, 25% cover of clay, 5% cover of sand, 10% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.001%	0.2 m	n/a
<i>Atriplex vesicaria</i>	0.001%	0.2 m	n/a
<i>Casuarina pauper</i>	14%	10 m	n/a
<i>Eragrostis dielsii</i>	0.001%	0.01 m	NO02-06
<i>Eremophila longifolia</i>	0.001%	0.3 m	n/a
<i>Frankenia laxiflora</i>	0.001%	0.3 m	NO02-03
<i>Frankenia pauciflora</i>	4%	0.1 m	NO02-01
<i>Grevillea paradoxa</i>	0.001%	0.1 m	NO02-05
<i>Maireana amoena</i>	0.5%	0.2 m	NO02-02
<i>Ptilotus exaltatus</i>	0.001%	0.01 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.4 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.3 m	n/a
<i>Tecticornia undulata</i>	0.001%	0.4 m	NO02-04

BHP Billiton Yeelirrie Site NO-03

Described by Jessie-Leigh Brown **Date:** 12/2/2010 **Type:** Quadrat **Size:** 50 x 50 m
Season: Poor

Location: Lake Noondie calcrete, north-west shoreline on Yuinmery Station

MGA Zone: 50J 698930 **mE** 6832587 **mN**

Vegetation Code: CCpW

Landscape Association: Calcrete system

Vegetation: *Casuarina pauper* woodland

Disturbance: Animal activity

Fire Age: Unknown

Notes: Total PFC 17.077%; 15% leaf litter cover to a depth of 3 cm, 7 dead timber standing with 3% dead timber cover on ground, 4% cover of cryptogam crusting, 5% cover of clay, 50% cover of sand, 35% cover of gravel, 1% cover of rocks.

Species List:

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	1.25%	6 m	n/a
<i>Casuarina pauper</i>	15%	8 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.75%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.075%	1 m	n/a
<i>Solanum lasiophyllum</i>	0.001%	0.2 m	n/a
<i>Solanum nummularium</i>	0.001%	0.3 m	n/a

BHP Billiton Yeelirrie Site NO-04**Described by** Rebecca Graham**Date:** 12/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Noondie west**MGA Zone:** 50J707684 **mE**6841157 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** Minor cattle grazing**Fire Age:** Long unburnt**Notes:** Total PFC 33.241%; 25% leaf litter cover to a depth of 2 cm, 6 dead timber standing with 1% dead timber cover on ground, 20% cover of cryptogam crusting, 5% cover of clay, 10% cover of sand, 40% cover of gravel, 0.5% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.25%	2.5 m	n/a
<i>Alyxia tetanifolia</i>	0.2%	2 m	N004-01
<i>Casuarina pauper</i>	20%	10 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.5 m	n/a
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.1 m	n/a
<i>Eremophila falcata</i>	0.001%	1.2 m	n/a
<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	0.001%	0.2 m	n/a
<i>Eremophila longifolia</i>	0.001%	0.3 m	n/a
<i>Grevillea berryana</i>	0.03%	2.5 m	n/a
<i>Maireana</i> sp. (inadequate material)	0.001%	0.1 m	n/a
<i>Marsdenia australis</i>	0.001%	0.1 m	n/a
<i>Ptilotus exaltatus</i>	0.001%	0.3 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.75%	0.4 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.5 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Scaevola spinescens</i> (broad form)	4%	1.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	8%	2.5 m	n/a
<i>Senna</i> sp. (inadequate material)	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site NO-05**Described by** Cheyne Jowett**Date:** 13/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Eastern Lake Noondie, North Shore**MGA Zone:** 51J251287 **mE**6866029 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* wodland**Disturbance:** Animal activity**Fire Age:** Unknown**Notes:** Total PFC 27.526%; 15% leaf litter cover to a depth of 4 cm, 3 dead timber standing with 3% dead timber cover on ground, 2% cover of cryptogam crusting, 6% cover of clay, 5% cover of sand, 45% cover of gravel, 1% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia ligulata</i>	0.075%	1.8 m	n/a
<i>Atriplex bunburyana</i>	5 %	1.2 m	MA01-01=
<i>Austrostipa elegantissima</i>	0.001%	1 m	n/a
<i>Dissocarpus paradoxus</i>	0.075%	0.4 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.2%	1.3 m	n/a
<i>Eucalyptus gypsophila</i>	20%	9 m	n/a
<i>Maireana pentatropis</i>	0.075%	1 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	2%	0.3 m	n/a
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.1%	0.2 m	n/a

BHP Billiton Yeelirrie Site NO-06**Described by** Rebecca Graham**Date:** 14/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Pinnacles Station**MGA Zone:** 51J235539 **mE**6868864 **mN****Vegetation Code:** CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Kangaroo scratchings, minor vehicle tracks.**Fire Age:** Long unburnt**Notes:** Total PFC 18.38%; 30% leaf litter cover to a depth of 4 cm, 2 dead timber standing with 2% dead timber cover on ground, 10% cover of cryptogam crusting, 40% cover of clay, 10% cover of sand, 1% cover of gravel, 0.001% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia synchronicia</i>	0.075%	3 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	2%	3 m	n/a
<i>Eucalyptus gypsophila</i>	15%	14 m	n/a
<i>Lycium australe</i>	0.25%	1.2 m	n/a
<i>Pittosporum angustifolium</i>	0.001%	0.7 m	n/a
<i>Ptilotus obovatus</i> (Typical Goldfields form)	0.001%	0.2 m	n/a
<i>Ptilotus schwartzii</i>	0.001%	0.3 m	NO06-01
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.001%	0.2 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1%	3 m	n/a
<i>Templetonia incrassata</i>	0.05%	1.5 m	NO06-02
<i>Zygophyllum</i> sp. (inadequate material)	0.001%	0.2 m	n/a

BHP Billiton Yeelirrie Site NO-08**Described by** Rebecca Graham**Date:** 14/2/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** Lake Noondie**MGA Zone:** 51J221404 **mE**6870832 **mN****Vegetation Code:** CCpW**Landscape Association:** Calcrete system**Vegetation:** *Casuarina pauper* woodland**Disturbance:** n/a**Fire Age:** Unknown**Notes:** Total PFC 33.956%; 15% leaf litter cover to a depth of 2 cm, 0 dead timber standing with 3% dead timber cover on ground, 8% cover of cryptogam crusting, 40% cover of clay, 15% cover of sand, 15% cover of gravel, 0.25% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia burkittii</i>	0.075%	1.2 m	n/a
<i>Acacia oswaldii</i>	4%	8 m	NO08-04
<i>Acacia tetragonophylla</i>	0.075%	1.3 m	n/a
<i>Atriplex bunburyana</i>	5%	0.7 m	NO08-01
<i>Casuarina pauper</i>	15%	12 m	n/a
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	0.001%	0.4 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	6%	2.5 m	n/a
<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	0.75%	2 m	n/a
<i>Eremophila longifolia</i>	0.25%	2.5 m	n/a
<i>Maireana georgei</i>	0.001%	0.4 m	n/a
<i>Maireana pentatropis</i>	0.075%	0.5 m	NO08-05
<i>Maireana pyramidata</i>	0.075%	1 m	n/a
<i>Paspalidium basicladum</i>	0.001%	0.15 m	n/a
<i>Pittosporum angustifolium</i>	0.075%	1.5 m	n/a
<i>Ptilotus schwartzii</i>	0.001%	0.2 m	n/a
<i>Rhagodia drummondii</i>	1%	0.8 m	NO08-02
<i>Salsola tragus</i> subsp. <i>tragus</i>	0.075%	0.1 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	1.5%	2 m	n/a
<i>Sida platycalyx</i>	0.001%	0.02 m	NO08-08
<i>Solanum lasiophyllum</i>	0.001%	0.4 m	n/a

BHP Billiton Yeelirrie Site WA-01**Described by** Rebecca Graham**Date:** 26/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North shore Lake Way**MGA Zone:** 51J

232965 mE

7045450 mN

Vegetation Code: CEgW**Landscape Association:** Calcrete system**Vegetation:** *Eucalyptus gypsophila* woodland**Disturbance:** Old vehicle tracks, cattle tracks.**Fire Age:** Long unburnt**Notes:** Total PFC 18.494%; 40% leaf litter cover to a depth of 5 cm, 9 dead timber standing with 1.5% dead timber cover on ground, 5% cover of cryptogam crusting, 6% cover of clay, 20% cover of sand, 5% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Acacia aneura</i> (indeterminate variant)	0.001%	1.2 m	n/a
<i>Acacia ayersiana</i>	0.04%	1.6 m	n/a
<i>Acacia colletioides</i>	0.1%	1 m	n/a
<i>Acacia synchronicia</i>	0.25%	2 m	n/a
<i>Acacia tetragonophylla</i>	0.001%	0.4 m	n/a
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	0.1%	1.3 m	n/a
<i>Eucalyptus gypsophila</i>	12%	9 m	n/a
<i>Maireana georgei</i>	0.001%	0.1 m	n/a
<i>Rhagodia drummondii</i>	0.001%	0.4 m	n/a
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	6%	1.5 m	n/a

BHP Billiton Yeelirrie Site WA-02**Described by** Rebecca Graham**Date:** 26/1/2010**Type:** Quadrat**Size:** 50 x 50 m**Season:** Poor**Location:** North shore of Lake Way**MGA Zone:** 51J230734 **mE**7045681 **mN****Vegetation Code:** CMxS**Landscape Association:** Calcrete system**Vegetation:** *Melaleuca xerophila* shrubland**Disturbance:** Animal tracks**Fire Age:** Long unburnt**Notes:** Total PFC 11.928%; 3.5% leaf litter cover to a depth of 1 cm, 15 dead timber standing with 1% dead timber cover on ground, 20% cover of cryptogam crusting, 20% cover of clay, 50% cover of sand, 1% cover of gravel, 0% cover of rocks.**Species List:**

Name	Cover	Height	Collection
<i>Amyema microphylla</i>	0.001%	0.3 m	n/a
<i>Atriplex vesicaria</i>	0.075%	0.4 m	WA02-01
<i>Eragrostis</i> sp. Yeelirrie Calcrete (S. Regan LCH 26770)	0.001%	0.03 m	n/a
<i>Maireana georgei</i>	0.1%	0.05 m	n/a
<i>Melaleuca interioris</i>	1%	1.2 m	n/a
<i>Melaleuca xerophila</i>	10%	5 m	n/a
<i>Rhagodia drummondii</i>	0.75%	0.4 m	n/a
<i>Sclerolaena obliquicuspis</i>	0.001%	0.3 m	n/a

Quadrat #	Zone	Easting	Northing	Vegetation Community
NO-04	50J	707684	6841157	CCpW
NO-05	51J	251274	6865850	CEgW
NO-06	51J	235539	6868864	CEgW
NO-08	51J	221404	6870832	CCpW

Appendix 18. Systematic species list (regional surveys)

Systematic species list recorded during regional surveys

✂ - Pending identification

Family	Species	Priority Status
Aizoaceae	<i>Gummiopsis quadrifida</i>	
Amaranthaceae	<i>Amaranthus mitchellii</i>	
Amaranthaceae	<i>Ptilotus exaltatus</i>	
Amaranthaceae	<i>Ptilotus obovatus</i> (Typical Goldfields form)	
Amaranthaceae	<i>Ptilotus schwartzii</i>	
Apocynaceae	<i>Alyxia tetanifolia</i>	
Apocynaceae	<i>Marsdenia australis</i>	
Asteraceae	<i>Chrysocephalum puteale</i>	
Asteraceae	<i>Pluchea dentex</i>	
Asteraceae	<i>Podolepis capillaris</i>	
Asteraceae	<i>Vittadinia</i> sp. (inadequate material)	
Casuarinaceae	<i>Casuarina pauper</i>	
Chenopodiaceae	<i>Atriplex bumburyana</i>	
Chenopodiaceae	<i>Atriplex</i> sp. Yeelirrie Station (L. Trotter & A. Douglas 25025)	P1
Chenopodiaceae	<i>Atriplex semilunaris</i>	
Chenopodiaceae	<i>Atriplex vesicaria</i>	
Chenopodiaceae	<i>Chenopodium curvispicatum</i>	
Chenopodiaceae	<i>Dissocarpus paradoxus</i>	
Chenopodiaceae	<i>Dysphania kalpari</i>	
Chenopodiaceae	<i>Dysphania melanocarpa</i> forma <i>melanocarpa</i>	
Chenopodiaceae	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	
Chenopodiaceae	<i>Maireana amoena</i>	
Chenopodiaceae	<i>Maireana georgei</i>	
Chenopodiaceae	<i>Maireana pentatropis</i>	
Chenopodiaceae	<i>Maireana pyramidata</i>	
Chenopodiaceae	<i>Maireana</i> sp. (inadequate material)	
Chenopodiaceae	<i>Maireana trichoptera</i>	
Chenopodiaceae	<i>Maireana triptera</i>	
Chenopodiaceae	<i>Rhagodia drummondii</i>	
Chenopodiaceae	<i>Rhagodia eremaea</i>	
Chenopodiaceae	<i>Rhagodia</i> sp. Yeelirrie Station (K.A. Shepherd KS1396)	P1
Chenopodiaceae	<i>Salsola tragus</i> subsp. <i>tragus</i>	
Chenopodiaceae	<i>Sclerolaena convexula</i>	
Chenopodiaceae	<i>Sclerolaena cuneata</i>	
Chenopodiaceae	<i>Sclerolaena diacantha</i>	
Chenopodiaceae	<i>Sclerolaena obliquicuspis</i>	
Chenopodiaceae	<i>Sclerolaena</i> sp. (inadequate material)	
Chenopodiaceae	<i>Tecticornia pterygosperma</i> subsp. <i>ptyrygosperma</i>	
Chenopodiaceae	<i>Tecticornia undulata</i>	
Colchicaceae	<i>Wurmbea deserticola</i>	
Cyperaceae	<i>Bulbostylis barbata</i>	
Euphorbiaceae	<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>	
Fabaceae	<i>Acacia aneura</i> (indeterminate variant)	
Fabaceae	<i>Acacia aneura</i> var. slightly curved 10-20x2mm yellow green	
Fabaceae	<i>Acacia aneura</i> var. straight to slightly curved flat 30-80x2mm grey green	
Fabaceae	<i>Acacia ayersiana</i>	
Fabaceae	<i>Acacia burkittii</i>	
Fabaceae	<i>Acacia colletioides</i>	
Fabaceae	<i>Acacia jamesiana</i>	
Fabaceae	<i>Acacia jennerae</i>	
Fabaceae	<i>Acacia ligulata</i>	

Family	Species	Priority Status
Fabaceae	<i>Acacia macraneura</i>	
Fabaceae	<i>Acacia oswaldii</i>	
Fabaceae	<i>Acacia paraneura</i>	
Fabaceae	<i>Acacia</i> sp. Yakabindie (G. Cockerton & G. O'Leefe LCH 14274) aff. <i>kempeana</i>	Flora of Interest
Fabaceae	<i>Acacia</i> sp. resprouter (G. Cockerton & R. Graham LCH 15490)	Flora of Interest
Fabaceae	<i>Acacia steedmanii</i>	
Fabaceae	<i>Acacia synchronicia</i>	
Fabaceae	<i>Acacia tetanophylla</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	
Fabaceae	<i>Senna artemisioides</i> subsp. x <i>artemisioides</i>	
Fabaceae	<i>Senna</i> sp. (inadequate material)	
Fabaceae	<i>Senna stowardii</i>	
Fabaceae	<i>Swainsona</i> sp. (inadequate material)	
Fabaceae	<i>Templetonia incrassata</i>	Flora of Interest
Frankeniaceae	<i>Frankenia cinerea</i>	
Frankeniaceae	<i>Frankenia laxiflora</i>	
Frankeniaceae	<i>Frankenia pauciflora</i>	
Geraniaceae	<i>Erodium cygnorum</i>	
Goodeniaceae	<i>Goodenia maideniana</i>	
Goodeniaceae	<i>Scaevola spinescens</i> (broad form)	
Goodeniaceae	<i>Scaevola spinescens</i> terete leaf form (G Cockerton & C Ringrose 14560)	New, Undescribed Species
Loranthaceae	<i>Amyema linophylla</i> subsp. <i>linophylla</i>	
Loranthaceae	<i>Amyema microphylla</i>	
Malvaceae	<i>Abutilon malvifolium</i>	
Malvaceae	<i>Abutilon otocarpum</i> subsp. <i>prostratum</i>	
Malvaceae	<i>Sida ectogama</i>	
Malvaceae	<i>Sida platycalyx</i>	
Malvaceae	<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	
Molluginaceae	<i>Mollugo cerviana</i>	
Myrtaceae	<i>Calytrix amethystina</i>	
Myrtaceae	<i>Eucalyptus gypsophila</i>	
Myrtaceae	<i>Eucalyptus longissima</i>	
Myrtaceae	<i>Melaleuca interioris</i>	
Myrtaceae	<i>Melaleuca xerophila</i>	
Myrtaceae	<i>Verticordia</i> sp. (inadequate material)	
Nyctaginaceae	<i>Boerhavia coccinea</i>	
Phrymaceae	<i>Peplidium muelleri</i>	
Pittosporaceae	<i>Pittosporum angustifolium</i>	
Poaceae	<i>Aristida contorta</i>	
Poaceae	<i>Aristida holathera</i>	
Poaceae	<i>Austrostipa elegantissima</i>	
Poaceae	<i>Chloris pectinata</i>	
Poaceae	<i>Cymbopogon ambiguus</i>	
Poaceae	<i>Dactyloctenium radulans</i>	
Poaceae	<i>Enneapogon caeruleascens</i>	
Poaceae	<i>Eragrostis dielsii</i>	
Poaceae	<i>Eragrostis eriopoda</i>	
Poaceae	<i>Eragrostis exigua</i>	
Poaceae	<i>Eragrostis</i> sp. Yeelirrie Station (S. Regan LCH 26770)	Flora of

Family	Species	Priority Status
		interest
Poaceae	<i>Eriachne helmsii</i>	
Poaceae	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>	
Poaceae	<i>Paspalidium basicladum</i>	
Poaceae	<i>Perotis rara</i>	
Poaceae	Poaceae sp. (inadequate material)	
Poaceae	<i>Sporobolus australasicus</i>	
Poaceae	<i>Sporobolus caroli</i>	
Poaceae	<i>Tragus australianus</i>	
Poaceae	<i>Triodia basedowii</i>	
Polygalaceae	<i>Polygala</i> sp. Prostrate (P.K. Latz 4900)	
Portulacaceae	<i>Portulaca oleracea</i>	
Proteaceae	<i>Grevillea berryana</i>	
Proteaceae	<i>Grevillea paradoxa</i>	
Proteaceae	<i>Grevillea sarissa</i> subsp. <i>sarissa</i>	
Proteaceae	<i>Hakea preissii</i>	
Santalaceae	<i>Exocarpos aphyllus</i>	
Santalaceae	<i>Santalum lanceolatum</i>	
Scrophulariaceae	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3
Scrophulariaceae	<i>Eremophila battii</i>	
Scrophulariaceae	<i>Eremophila decipiens</i>	
Scrophulariaceae	<i>Eremophila exilifolia</i>	
Scrophulariaceae	<i>Eremophila galeata</i>	
Scrophulariaceae	<i>Eremophila falcata</i>	
Scrophulariaceae	<i>Eremophila glabra</i> subsp. <i>albicans</i> x <i>glabra</i>	
Scrophulariaceae	<i>Eremophila glabra</i> subsp. <i>tomentosa</i>	
Scrophulariaceae	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	
Scrophulariaceae	<i>Eremophila longifolia</i>	
Scrophulariaceae	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>	
Scrophulariaceae	<i>Eremophila malacoides</i>	
Scrophulariaceae	<i>Eremophila pantonii</i>	
Scrophulariaceae	<i>Eremophila spectabilis</i> subsp. <i>brevis</i>	
Scrophulariaceae	<i>Eremophila subfloccosa</i> subsp. <i>lanata</i>	
Solanaceae	<i>Duboisia hopwoodii</i>	
Solanaceae	<i>Lycium australe</i>	
Solanaceae	<i>Nicotiana simulans</i>	
Solanaceae	<i>Solanum ellipticum</i>	
Solanaceae	<i>Solanum lasiophyllum</i>	
Solanaceae	<i>Solanum nummularium</i>	
Zygophyllaceae	* <i>Tribulus terrestris</i>	
Zygophyllaceae	<i>Zygophyllum compressum</i>	
Zygophyllaceae	<i>Zygophyllum</i> sp. (inadequate material)	

Appendix 19. Locations of significant flora and species of interest recorded at regional lake systems

Locations of significant flora and species of interest recorded at regional lake systems

Lake System	Species	# Plants	Zone	Easting	Northing
Yeelirrie Paleochannel Lake Miranda	<i>Atriplex</i> sp. Yeelirrie Station	150	51J	223261	6974752
	<i>Atriplex</i> sp. Yeelirrie Station	145	51J	223631	6975151
	<i>Atriplex</i> sp. Yeelirrie Station	500	51J	224014	6974358
	<i>Atriplex</i> sp. Yeelirrie Station	1200	51J	224752	6974469
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	14	51J	233283	6974317
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	14	51J	233619	6972969
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	21	51J	221501	6972863
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	16	51J	233664	6971732
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	28	51J	234447	6966875
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	10	51J	234983	6966456
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	14	51J	233926	6966317
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	51	51J	233997	6966704
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	16	51J	235152	6967164
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	15	51J	235004	6960306
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	6	51J	219255	6972458
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	15	51J	219792	6972469
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	11	51J	234689	6960302
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	10	51J	235933	6959312
	<i>Templetonia incrassata</i>	3	51J	222919	6974118
	<i>Templetonia incrassata</i>	6	51J	221801	6973321
<i>Templetonia incrassata</i>	7	51J	249554	6927247	

Lake System	Species	# Plants	Zone	Easting	Northing
	<i>Templetonia incrassata</i>	25	51J	249328	6927469
	<i>Templetonia incrassata</i>	5	51J	254940	6929406
	<i>Templetonia incrassata</i>	5	51J	256101	6931037
	<i>Templetonia incrassata</i>	5	51J	233835	6959698
	<i>Templetonia incrassata</i>	16	51J	234689	6960302
	<i>Scaevola spinescens</i> (terete leaf form)	23	51J	222206	6973684
	<i>Scaevola spinescens</i> (terete leaf form)	5	51J	233634	6972660
	<i>Scaevola spinescens</i> (terete leaf form)	5	51J	233714	6970192
	<i>Scaevola spinescens</i> (terete leaf form)	5	51J	242150	6958098
	<i>Grevillea berryana</i>	N/A	51J	233714	6970192
Lake Way	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1	51J	230113	7045486
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	7	51J	232707	7045338
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	15	51J	233977	7045360
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	25	51J	234640	7044683
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	14	51J	234939	7045380
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	17	51J	235614	7045397
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5	51J	235660	7046667
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	12	51J	234969	7046357
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	15	51J	233377	7045642
	<i>Templetonia incrassata</i>	27	51J	233977	7045360
	<i>Templetonia incrassata</i>	3	51J	235614	7045397
Lake Mason	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	4	50J	737073	6932842
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5	50J	756373	6949584
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	10	50J	757532	6950340

Lake System	Species	# Plants	Zone	Easting	Northing
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	12	50J	773345	6949811
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	6	50J	781557	6948601
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5	50J	738577	6931420
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	6	50J	738200	6931651
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	30	50J	734932	6932601
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	33	50J	735166	6932846
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	7	50J	736037	6932393
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	3	50J	757875	6949294
Lake Noondie	<i>Rhagodia</i> sp. Yeelirrie Station (K. Shepherd 1396)	100+	51J	218290	6869783
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	30	51J	235161	6870240
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	42	51J	235311	6868855
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	5	51J	227000	6869182
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	12	51J	227779	6868676
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	20	51J	221230	6870884
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	22	51J	218240	6871078
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	86	51J	218440	6870013
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	36	51J	252024	6864786
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	26	51J	251392	6865688
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	60	51J	250795	6866496
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	12	51J	250545	6866949
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	10	51J	210700	6873948
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	18	51J	210090	6872110
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	32	51J	210162	6870572
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	7	50J	790661	6860577
	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	70	50J	790594	6861537

Lake System	Species	# Plants	Zone	Easting	Northing
	<i>arachnoides</i>				
	<i>Templetonia incrassata</i>	3	50J	719441	6808104
	<i>Templetonia incrassata</i>	1	50J	701539	6830880
Lake Nabberu	<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	1	51J	210391	7149922
Lake Irwin	<i>Templetonia incrassata</i>	3	51J	420669	6849444

Appendix 20. Regional records of Priority Flora

Records of localities of Priority Flora (data obtained from FloraBase, May 2010)

Species	Cons code	Latitude	Longitude	Date Collected	Location	Interpreted number of individuals
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	29° 12' 32.8"	124° 30' 7.4"	19-Nov-08	Tropicana	1
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	27° 51' 43.1"	118° 56' 58.5"	12-Oct-07	Barrambie	5
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	28° 8' 13.2"	120° 51' 8.1"	24-Jun-04	Leinster	50
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	27° 57' 44"	120° 25' 39"	26-Oct-96	Agnew - Sandstone	1
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	28° 0' 32"	118° 59' 37"	30-Oct-94	30km west of Sandstone	10
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	26° 54' 10"	119° 17' 36"	26-Oct-63	75miles north of Sandstone	1
<i>Baeckea</i> sp. Sandstone (C.A. Gardner s.n. 26 Oct. 1963)	P3	26° 59' 8"	119° 48' 19"	26-Oct-63	75miles north of Sandstone	1
<i>Bossiaea eremaea</i>	P3	28° 57' 10.5"	122° 51' 54.3"	25-Jul-07	60km SE Laverton	30
<i>Bossiaea eremaea</i>	P3	28° 0' 38"	118° 59' 55"	21-Sep-98	129km E Mt Magnet	50
<i>Bossiaea eremaea</i>	P3	28° 0' 38"	118° 59' 55"	21-Sep-98	129km E Mt Magnet	50
<i>Bossiaea eremaea</i>	P3	27° 48'	119° 34'	23-May-95	Lake Mason Stn, O'Connor Bore	10
<i>Bossiaea eremaea</i>	P3	28° 47'	122° 39'	20-Jul-89	SE Merolia Stn	10

Species	Cons code	Latitude	Longitude	Date Collected	Location	Interpreted number of individuals
<i>Bossiaea eremaea</i>	P3	28° 28'	123° 15'	2-Jul-63	E Laverton	1
<i>Bossiaea eremaea</i>	P3	28° 1'	119° 1'	17-Aug-31	17miles W Sandstone	1
<i>Bossiaea eremaea</i>	P3	27° 59' 18"	119° 7'	15-Aug-31	16km W Sandstone	1
<i>Bossiaea eremaea</i>	P3	27° 59' 18"	119° 7'	14-Aug-31	16km W Sandstone	1
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	28° 16' 46.1"	120° 18' 7.3"	14-Feb-10	Pinnacles Station, Lake Noondie	50
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	28° 16' 2"	120° 18' 1"	13-Feb-10	Lake Noondie	1
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	28° 19' 9.2"	114° 28' 19.7"	21-Nov-09	Lake Noondie	1
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	27° 32' 27.2"	119° 37' 6.2"	18-Sep-04	12 km NE of Lake Mason Homestead	50
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	24° 49' 45"	120° 39' 53"	10-Feb-06	Little Sandy Desert 8km NNE of Bullen Hill	50
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	25° 44' 15.0"	120° 6' 48.0"	11-Sep-95	11.9km N of Cunyu-Mew Springs Road, vermin fence	1
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	27° 12'	118° 54'	15-Sep-86	15.2 km SE of Yarrabubba Homestead	50
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	27° 12'	118° 52'	15-Sep-77	16.6 km S of Yarrabubba	50
<i>Eremophila arachnoides</i> subsp. <i>arachnoides</i>	P3	27° 12'	118° 52'	15-Sep-77	16.6 km S of Yarrabubba	50
<i>Euryomyrtus inflata</i>	P3	27° 0' 12.9"	119° 39' 2.3"	2-Jul-08	24km NE of Gidgee	1
<i>Euryomyrtus inflata</i>	P3	27° 24' 28"	119° 49' 50.6"	18-Sep-05	50.3km NE Lake Mason Station homestead	50
<i>Euryomyrtus inflata</i>	P3	27° 30' 45"	119° 50' 10"	20-Mar-05	Lake Mason 55km nth Sandstone	50
<i>Euryomyrtus inflata</i>	P3	27° 17'	120° 9'	30-Jul-96	11km east of Yeelirrie turnoff to Mt Keith	50

Species	Cons code	Latitude	Longitude	Date Collected	Location	Interpreted number of individuals
<i>Euryomyrtus inflata</i>	P3	27° 4'	119° 25'	21-Jul-83	Youno Downs	10
<i>Euryomyrtus inflata</i>	P3	26° 43'	120° 7'	3-Jun-82	Wiluna Sandstone Rd	1
<i>Euryomyrtus inflata</i>	P3	26° 43'	120° 7'	4-Jun-82	Wiluna Sandstone Rd	1
<i>Euryomyrtus inflata</i>	P3	26° 43'	120° 7'	3-Jun-82	Wiluna Sandstone Rd	1
<i>Euryomyrtus inflata</i>	P3	26° 58' 31"	119° 17' 36"	29-Jul-63	N of Sandstone on Road to Wiluna	1
<i>Euryomyrtus inflata</i>	P3	27° 3' 11"	120° 13' 30"	29-Jul-63	S of Wiluna on Road to Sandstone	1
<i>Comesperma viscidulum</i>	P4	29° 33' 46.4"	124° 13' 55.5"	7-May-09	Anglo Gold Tropicana	5
<i>Comesperma viscidulum</i>	P4	30° 8' 50.8"	124° 29' 39.8"	17-Jul-07	Tropicana	1
<i>Comesperma viscidulum</i>	P4	29° 46' 37.2"	123° 54' 2.6"	3-May-07	Plumridge Lake Nature Reserve	1
<i>Comesperma viscidulum</i>	P4	29° 47' 21.4"	123° 53' 57.4"	15-Feb-06	Tropicana, Sandy Desert Region	1
<i>Comesperma viscidulum</i>	P4	24° 46'	120° 42'	5-Sep-02	Bullen Hill, Little Sandy Desert	50
<i>Comesperma viscidulum</i>	P4	24° 36' 27"	120° 24' 44"	19-Aug-01	17.8km WNW Lake Sunshine, Little Sandy Desert	50
<i>Comesperma viscidulum</i>	P4	25° 14' 43.2"	120° 39' 28.9"	7-Aug-01	Carnavon Range, Little Sandy Desert	1
<i>Comesperma viscidulum</i>	P4	27° 54' 29.2"	123° 8' 38"	22-Apr-01	Cosmo Newbery	50
<i>Comesperma viscidulum</i>	P4	27° 55' 27.7"	123° 33' 44.2"	26-Jan-01	Officer basin NE of Laverton	1
<i>Comesperma viscidulum</i>	P4	27° 54' 53"	123° 14' 35"	31-May-00	Cosmo Newbery	50
<i>Comesperma viscidulum</i>	P4	25° 8' 55.2"	120° 41' 51.9"	25-Aug-99	Carnavon Range, Little Sandy Desert	1
<i>Comesperma viscidulum</i>	P4	25° 20'	130° 32'	22-Sep-74	30km WSW Mt Olga, NT	5
<i>Comesperma viscidulum</i>	P4	24° 58' 30"	128° 15' 5"	20-Jun-58	Rawlinson Range	1
<i>Olearia arida</i>	P4	29° 4' 39"	124° 34' 51.4"	1-Aug-09	Near Plumridge Lakes Nature Reserve	5
<i>Olearia arida</i>	P4	29° 27' 46.8"	124° 27' 52.4"	7-May-09	30 km SW Anglo Gold Tropicana Site	5
<i>Olearia arida</i>	P4	29° 11' 0.7"	124° 32' 46.4"	13-Nov-08	Tropicana	1
<i>Olearia arida</i>	P4	28° 16' 42"	125° 49' 31"	1-Oct-08	Neal Junction	5
<i>Olearia arida</i>	P4	30° 35' 5.8"	124° 21' 56"	18-Jul-07	Tropicana	1
<i>Olearia arida</i>	P4	29° 15' 8.2"	124° 32' 30.3"	13-Jul-06	Anglogold Ashanti Project	1
<i>Olearia arida</i>	P4	29° 14' 13.4"	124° 31' 1.2"	13-Jun-06	Tropicana	25

Species	Cons code	Latitude	Longitude	Date Collected	Location	Interpreted number of individuals
<i>Olearia arida</i>	P4	29° 14' 13.4"	124° 31' 1.2"	13-Jun-06	Tropicana	25
<i>Olearia arida</i>	P4	29° 13' 38.9"	124° 31' 19.8"	13-Jun-06	Tropicana	25
<i>Olearia arida</i>	P4	29° 14' 1.1"	124° 33' 17.1"	9-Jun-06	Tropicana	25
<i>Olearia arida</i>	P4	29° 33' 16.6"	124° 2' 28.2"	13-Feb-06	Tropicana	1
<i>Olearia arida</i>	P4	29° 34' 23.2"	124° 11' 59.4"	26-Oct-05	Plumridge Nature Reserve	10
<i>Olearia arida</i>	P4	29° 14' 42"	124° 32' 46"	16-Aug-05	50-100km W/NW Plumridge Nature Reserve	1
<i>Olearia arida</i>	P4	29° 25' 49.2"	125° 5' 23.4"	Apr-05	Plumridge Nature Reserve	1
<i>Olearia arida</i>	P4	29° 58'	123° 46' 14"	27-Sep-91	Officer Basin airstrip	50
<i>Olearia arida</i>	P4	29° 22'	124° 51'	15-Sep-79	9km WNW Salt Creek Airstrip	1
<i>Olearia arida</i>	P4	28° 25'	125° 48'	16-Jul-74	Great Vic Desert	1
<i>Templetonia incrassata</i>	N/A	29° 44' 23"	122° 31' 11"	13-Jul-89	500m E of Lake Raeside, Kirgella Rocks Station	10
<i>Templetonia incrassata</i>	N/A	29° 48'	119° 51'	5-Nov-83	38 km E of Mt Jackson-Diemals Rd & Diemals-Menzies Rd	1
<i>Templetonia incrassata</i>	N/A	29° 47' 55"	121° 4' 54"	21-Aug-61	8 miles S of Menzies	1
<i>Templetonia incrassata</i>	N/A	29° 47' 55"	121° 4' 54"	21-Aug-61	8 miles S of Menzies	1

Conversion table used to calculate individual numbers of Priority Flora when weak qualitative population size descriptions were listed in FloraBase records

Interpreted number of individuals	Qualitative descriptor
1	No information
5	Rare
	In one small area
10	Isolated plants
	Very sparse
	Locally uncommon
	Uncommon
	Occasional
	Scattered
	Uneven distribution
	Sparse
	Infrequent
	Very localized
25	20+
	10+
	Scattered in small populations
50	Moderate sized population
	Common
	Fairly common
	Locally frequent
	Frequent
	44+
150	Populations quite large
	Lots of plants
	Plentiful
	100+
	Dominant/abundant
300	Hundreds of plants
	200+
2000	Thousands