SOUTHDOWN MAGNETITE PROPOSAL

REGIONAL FLORA AND VEGETATION ASSESSMENT



May 2008



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Table of Contents

1.0	Introduction	10
2.0	Project Scope	10
3.0	Regional Setting	11
3.1	Climate	11
3.2	Geology and Landforms	
3.3	Biogeography	
4.0	Background to the Current Regional Floristic Survey	16
4.1	Base line survey of Minesite and Pipeline – April 2005 to October 2006	
4.2	Regional surveys – March 2006 – February 2008	
5.0	Survey Methods	30
5.1	Guiding Principles	
5.2	Specific Objectives	
5.3	Flora Sampling, Vegetation Description and Classification	
5.4	Survey Limitations and Constraints	
6.0	Flora of the Regional Survey Sites	
6.1	Flora of Conservation Significance	
	6.1.1 Environment Protection and Biodiversity Conservation Act, 1999 (Commons of Australia)	
	6.1.2 Wildlife Conservation Act, 1950 (Western Australia)	
	6.1.3 Priority Flora	38
	6.1.4 Flora of Conservation Significance Found during this Regional Survey6.1.5 Other flora of conservation significance as defined by EPA (2004)	
6.2	Naturalized Alien Flora	
7.0	Floristic Classification of the Mine Site and Regional Survey Vegetation	
7.1	Threatened and Priority Community Types	
7.1 7.2	Multivariate analysis of Minesite and Regional Vegetation Quadrats During the Reg	
	Survey	
7.3	Representation of Minesite Vegetation Units During the Regional Survey	58
7.4	Representation of Minesite Vegetation Units within ITC Tree Farms	
7.5	Overall Assessment of Vegetation Clearing	
8.0	Discussion and Conclusions	85
8.1	Extent and Conservation Value of Remnant Vegetation within the Regional Survey	85
9.0	Recommendations	91
10.0	Study Team	92
11.0	Permits	92
12.0	Acknowledgements	93
13.0	References	93





Tables

Table 3.1 F	Rainfall Variability from Albany to Wellstead	11
Table 3.2 F	Remnant Vegetation in Good to Excellent Condition on ITC Tree Farms betwee	n
the Kalg	an and Pallinup Rivers	15
Table 4.1 Are	eas visited during reconnaissance surveys in March and October 2006 (quadrate	ts
	n a subset of these locations as detailed in Appendix G)	
Table 5.1 \	egetation Structure Classification (adapted from Keighery, 1994)	32
	Flora and Vegetation Survey Constraints.	
	General Comparison of the Vascular Flora of the Regional Survey Sites with the	
	odate on Percentages of Known Populations of Flora of Conservation Significar	
	npact Footprint	
	axa of Conservation Significance Recorded in Surveys of the Pallinup Sand Pl	
between	Manypeaks and the Pallinup River	46
Table 7.1 Prid	ority Ecological Community Types in the proposed minesite	52
Table 7.6 The	e area of the vegetation units similar to the mine site vegetation units at ITC tre	e 70
Table 7.7 101	al Remnant vegetation and its Reservation Status in Three Sub-catchments of	tne
Table 7.6 TTE	etween Manypeaks and the Pallinup River	
Table 7.0 Par		
Last Gal	Tall Out Catolinoit.	00
Figures	S	
3 3		
Figure 2.1	Mine Site Location	10
Figure 3.1	Vegetation systems of Beard (1979) between Albany and Wellstead	13
Figure 4.1	Vegetation units mapped at the Proposed Southdown Magnetite Mine	19
Figure 4.2		
Figure 4.3	Location of quadrats surveyed from October 2006 to February 2008	25
Figure 4.4	Areas visually assessed from October 2006 to February 2008	27
Figure 4.5	Location of Sites within Remnant Vegetation of the Minesite	29
Figure 6.1	Locations of Priority Flora Recorded at the Southdowns Mine Site and During	the
Regiona	I Assessment	39
Figure 6.2	Locations of Priority Flora Recorded at the Southdowns Mine Site and During	g
the Regi	onal Assessment	49
Figure 7.2	Multivariate analysis of presence / absence weighted data using YSTAT 2	
	te linkage)	
Figure 7.3	E. staeri and E. pleurocarpa locations.	
Figure 7.4	Location of areas searched for E. occidentalis	
Figure 7.5	Sub-catchments and Conservation Reserves on the Pallinup Sand Plain in the	
\/icinity/	of the proposed Southdown Mine	83





Appendices

Appendix A	Complete Species List
Appendix B	Descriptions of the Mine Site Vegetation Units

Appendix C Priority and Rare Flora Desktop Study

Appendix D Wetlands searched for Commersonia sp Mt Groper

Appendix E Definitions and Criteria for Priority Ecological Communities

Appendix F Site x Species Matrix

Appendix G Regional Survey Site Sheets





Executive Summary

Grange Resources Limited (Grange) proposes to construct and operate a magnetite mine near Wellstead (east of Albany) as part of the Southdown Magnetite Proposal. The environmental impact of the proposal is currently being assessed by the Environmental Protection Authority of Western Australia at the level of Public Environmental Review (PER).

The PER included desktop studies and field surveys of the flora and vegetation of the project footprint (mine area, pipeline corridor and port facility) and an assessment of the conservation values to be impacted by the proposed project. Flora and vegetation with potential conservation values were found within the proposed mine site footprint. A regional field reconnaissance survey of the Pallinup Sand Plain in the vicinity of the mine site found the sand plain to be extensively cleared (79.4%) of native vegetation due to farming and agroforestry.

Important regional biodiversity resources (closely comparable to some of the resources present at the proposed mine site) were identified in several of the bush remnants sampled in this regional survey.

This report details the results of a regional vegetation survey, which sampled floristic data from remnant bushland blocks and conservation estate outside the footprint and in the sub-catchment of the proposed mine site (the East Sand Plain sub-catchment) that were considered likely to support similar vegetation.

It also reviews the literature regarding the tree farms of the region and their remnant vegetation. A floristic classification of the regional vegetation was carried out on the combined data of the mine site and that of the regional survey blocks. This provided a comparison of the remnant vegetation at the mine site with the remainder of the bush in the sub-catchment. The results of this analysis with respect to the vegetation types found at the mine site are summarized below.

The five vegetation units mapped on the minesite with corresponding priority status as of January 2008 are:

Vegetation	Description	PEC listing	
type			
Type1 a.	Eucalyptus staeri mallee heath to scrub heath on lateritic ridges	Priority 1	
Type 1b.	Chittick (Lambertia inermis) and other scrub-heath on NA seasonally-waterlogged laterite.		
Type 2	Eucalyptus spp. mallee-heath on shallow sand over laterite. NA		
Type 3	Eucalptus staeri malle heath on deep sand Priority 1		
Type 4	Eucalyptus pleurocarpa mallee heath on heavy soils Priority 1		
Type 5	Eucalyputs occidentalis woodlands on seasonally inundated clay	Priority 1	
	basins		

The extensive work undertaken and compiled in this report, provides evidence for the reclassification of Type 1a and Type 3 vegetation type from Priority 1 to Priority 3 in the Priority Ecological Community (PEC) listing, with Type 5 also indicating reclassification, while evidence exists for Types 4 5 PEC listing to remain.





1. The *Eucalyptus staeri* mallee heath to scrub heath found on lateritic ridges of the mine site is uncommon in this region of predominantly low, sandy relief. However; laterite, as a patchy mosaic of small low outcrops, is quite common over the sand plain. The former widespread occurrence of the lateritic vegetation is still evident in small roadside and farm remnants, as laterite areas on farms are less suitable for tilling. Analysis showed that, regionally, there was similarity between a range of sites grading from sites on the high laterite ridge of the mine site (Veg Unit 1a and 1b; *ecologia*, 2007) through to the laterite outcrops sampled in the regional survey on the undulating plains, the lower laterite with shallow sand at the mine site (Veg Unit 2; *ecologia*, 2007) and some of the more sandy (and possibly more degraded) sites away from the main ridge of the mine site (Veg Unit 3; *ecologia*, 2007).

The total extent of this vegetation type recorded within remnant vegetation is difficult to accurately quantify, since it typically occurs as a patchy mosaic, often in areas dominated by Type 3 vegetation, at a scale finer than 1:25,000. Aerial photography and ground truthing were used to estimate the proportion of areas encompassed, but these estimates were compromised to varying degrees by vehicle accessability. On the basis of the revised estimates, including representation with the conservation estate, it seems that the degree of reservation of this vegetation type is considerably higher than originally thought, and therefore its current status as a Prority 1 Ecological Community, that is to say, "known from few, small occurrences, all or most not actively managed for conservation...." should be reviewed. Given the representation within the Stirling Range National Park and the South Stirling Nature Reserve, plus the more limited representation in the Hassel National Park, this vegetation would seem to be more suitable for inclusion on the PEC list as Priority 3 (i) i.e. "Communities that are known from several to many occurrences, a significant number or area of which is not under threat of habitat destruction or degradation"

2. The *Eucalyptus staeri* mallee heath on deep sands that was found at the mine site is characteristic of landforms and soils that are very common on the Pallinup Sand Plain and can still be seen as remnants throughout the sand plain. It was probably abundant, widespread and present as large expanses in the past. As it is present on infertile sands, some of this vegetation has been left uncleared on farms. However, many remnants on farms are degraded to varying degrees due to grazing, burning, trampling and nutrient enrichment by livestock. It is currently reserved in Mettler Lake Nature Reserve and Hassell National Park. Substantial areas of this type of vegetation were found on most of the blocks sampled in the 2006 regional survey. The tree farms of the region are also known to include remnants of this vegetation.

Approximately 1,800 to 2,000 ha, of which approximately 10% is reserved, were identified in the regional bush blocks surveyed that were directly comparable to the 96.7 ha of this vegetation in good condition at the mine site. The relatively low level of reservation is a reflection of the large amounts of this land on private land rather than the small size of areas on conservation estate, as this vegetation type is estimated to be more abundant within the South Stirling Nature Reserve and Hassell National Park than is Type 1 above.





On the basis of the revised estimates of this vegetation type's occurrence, a revision of its Priority status to Priority 3(i) should be considered.

3. The Eucalyptus pleurocarpa mallee-heath on seasonally-waterlogged colluvium that is found at the mine site was probably originally present adjacent to most of the laterite formations of the plain. Most occurrences have been cleared as the heavier, relatively fertile and water-retentive soils are agriculturally valuable. This vegetation type has been found at the Stirling Range National Park, Chillinup Nature Reserve and South Stirling Nature Reserve as well as at Boat Harbour Road Reserve and at two private bush blocks. As this vegation type is consistently associated with lower points in the landscape it would be expected that even prior to pastoral clearing, this type would have covered a relatively small percentage of the sandplains. This vegetation type can be differentiated relatively clearly on aerial photography, and it was therefore possible to quantify the polygon areas and achieve quite accurate estimates of area. The total area estimated to be outside of the minesite is 28.44 ha of which 31% is within the conservation estate.

On the basis of this vegetation community currently being inadequaltey reserved in conservation estate, this vegetation type would appear to merit its current status as a Priority 1 Ecological Community. The acquisition of further private landholdings to supplement areas within the conservation estate are a consideration. Acquisition of both the Boat Harbour Reserve area and the private landholding L6787 are desirable. The latter of these areas has the added advantage of extending the area of the South Stirling Nature Reserve, to which it is adjacent.

4. The results of the current survey indicate that the Eucalyptus occidentalis vegetation of the basin wetlands that were surveyed is quite varied floristically. Significant floristic variation appears to occur in the vegetation of the fringes of the basin wetlands of the region. Some of these differences could be ascribed to the varying history and current vegetation condition of these wetlands. During the surveys conducted in March 2006, October 2006, October 2007 and November 2007 searching for populations of the DRF taxon Commersonia sp. Mt. Groper, which is associated with wetland habitats, a number of additional locations have been identified, the condition of which was noted. These surveys demonstrated that a relatively large number of locations remain in excellent or good condition, although the majority are within the road reserve or privately owned rather than within the conservation estate. Eucalyptus occidentalis woodlands in the three sub-catchments of the Pallinup Sand Plain are currently reserved in Mettler Lake Nature Reserve and Hassell NP. Mailalup Nature Reserve immediately to the north east of the East Sand Plain also supports this vegetation type. The wetlands at the base of the Stirling Ranges in the National Park differ more significantly to the above in terms of understorey vegetation. The tree farms of the region are also known to include remnants of this broad class of vegetation.

On the basis of the large numbers of locations of this vegetation type in good to excellent condition, the conservation status of this community should be revised.





Recommendations

- 1 Consideration be given for the acquistion of private landholdings of Type 4, *Eucalyptus pleurocarpa* mallee heath on seasonally waterlogged colluvium are highly recommended. The two most suitable areas are a portion of Boat Harbour Road and L6787 immediately west and contiguous with South Stirling Nature Reserve.
- The Priorty Status of Community Types 1 and 3 should be reevaluated in the light of additional representation as detailed above. Notwithstanding the extension to distributions, aquistions to the conservation estate as detailed are desirable, particularly for Type 1 vegetation.
- The Priority Status of Community Type 5 should also be reevaluated, notwithstanding the absence of quantitative data.





1.0 Introduction

Grange Resources Limited (Grange) proposes to construct and operate an open pit Magnetite mine as part of the Southdown Magnetite Project. The proposed Southdown mine site is located on the Pallinup Sand Plain, approximately 90 km north-east of Albany, just west of Wellstead (Figure 2.1). The mine site covers 1,712 ha on freehold farming property and a 104 km long slurry pipeline is planned to run between the mine site and the Port of Albany. The environmental impact of the proposed project is being assessed by the Environmental Protection Authority of Western Australia at the level of Public Environmental Review (PER).

The PER included desktop studies and field surveys of the flora and vegetation of the project footprint (mine area, pipeline corridor and port facility) and an assessment of the conservation values to be impacted by the proposed project (*ecologia*, 2007). Significant flora and vegetation conservation values were found within the proposed mine site footprint. Due to the incompleteness of regional vegetation data, needed to place the mine site values in context, the Department of Environment and Conservation (DEC) requested further field studies of other remnant bushland and conservation estate in the region outside the project footprint to enable comparison of these bushlands with the mine site flora and vegetation.

2.0 Project Scope

The scope of the project was to survey any remnant bushland blocks near the mine site considered likely to support similar vegetation. Survey methods were designed to conform to Guidance Statement No. 51 (Terrestrial Flora Surveys for Environmental Impact Assessment in Western Australia; EPA, 2004) and any further requirements raised by DEC during the consultation process. The results of these surveys were then statistically compared with those from the mine site to evaluate the level of similarity between the vegetation of the mine site and the regional remnant bushland blocks.

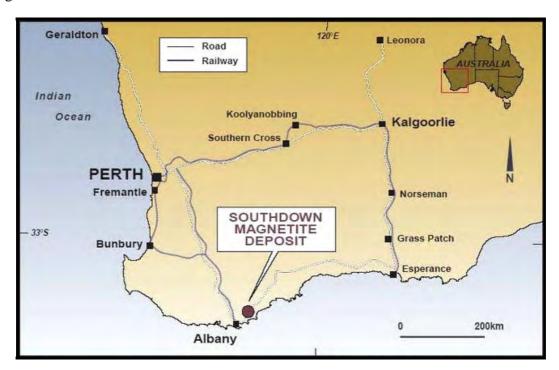


Figure 2.1 Mine Site Location.





3.0 Regional Setting

A summary of the biophysical setting information previously presented in the PER flora and vegetation survey (*ecologia*, 2007) is provided in this section.

3.1 Climate

The Albany region has a warm, sub-humid Mediterranean climate. On average, approximately 74% of Albany's annual rain falls between May and October (Bureau of Meteorology, 2005). A major factor in the regional rainfall and wind patterns is the eastward migrating, anti-cyclonic pressure cells (Gentilli, 1972) that bring rain bearing fronts over the region in a seasonal pattern. In general, a gradient of declining rainfall occurs from Albany to Wellstead. Concurrently, rainfall also tends to decrease somewhat in a northerly direction from the coastal zone to the foot-slopes of the Stirling Ranges. In the coastal zone, south of the proposed mine site, where the topography is quite varied, mean precipitation can vary significantly over short distances (Table 3.1).

Table 3.1 Rainfall Variability from Albany to Wellstead.

Weather station (1973-2005)	Mean annual rainfall	Mean annual evaporation
Albany airport	796.3 mm	800 mm
Wellstead (90 km east of Albany)	491.9 mm	n/a
Mettler (10 km SW of Wellstead)	611.9 mm	n/a

The temperatures in the region peak in summer with a mean maximum of almost 25°C in January and February at Albany, and a mean minimum temperature during the same period of about 14°C. Northerly summer winds can also result in daily temperatures above 35°C. Winter temperatures in July and August (the coldest months) reach a mean maximum of approximately 16°C and a mean minimum of approximately 7.5°C. Daily minimum temperatures below 5°C can be expected about once or twice a month in winter.

3.2 Geology and Landforms

The proposed mine site is located on the Pallinup Sand Plain, about 30 km west of the Pallinup River. This plain was developed on layers of marine sedimentary rock (mainly Pallinup Siltstone of the Plantagenet group, consisting of siltstone and spongelite) that were laid down over the basement Proterozoic rock in the Eocene period, when sea levels were much higher than the present day and much of the Albany region lay under an inland sea (Beard 1981). The plain is now an extensive, flat to gently undulating landscape that is generally devoid of channel wetlands. However; small, more-or-less circular, wetland basins are frequent. Superficial reworked sands are prevalent over the plain in the form of sand sheets and low dunes. The plain is also capped in some places by patchy, largely-eroded laterite. These lateritic patches can extend nearly 100 km inland. There are also rare outcrops of granitic-gneissic basement rocks on the plain in the form of low monadnocks such as the North Sister and South Sister hills. Around 30 million years ago a regional southward down-tilting of the landscape occurred that





resulted in the formation of the Kalgan and Pallinup Rivers that border the Pallinup Sand Plain in the west and the east respectively and drain south to the coast.

The southern part of the Pallinup Sand Plain was modified in the Quaternary era by the deposition of beach sands and limestone. Compared to the subdued drainage and low relief that characterizes the Pallinup Sand Plain, this coastal area (termed the Hassell Beach to Bremer Bay Coastal Zone; V & C Semeniuk Research Group, 1998) is differentiated by topography of relatively greater relief. It is dissected by many small rivers and creeks and includes extensive calcareous sand dunes and some large impounded wetlands.

3.3 Biogeography

Few systematic flora surveys or fine-scale vegetation mapping studies have been undertaken in the Albany hinterland outside the national parks of the Stirling Ranges and the Porongorup Range and the national parks and nature reserves of the near-coastal zone. Apart from the flora and vegetation studies of Sandiford (2003 a-h, 2004 & 2005) and the Southdown Magnetite Proposal PER Flora and Vegetation Report (*ecologia*, 2007), the vegetation of the Pallinup Sand Plain (between the Kalgan River in the west, the Pallinup River in the east and south of the Stirling Range) has previously only been described in very broad terms.

The Southdown Magnetite Proposal area lies within the Darling and Eyre botanical districts. These Botanical Districts were divided by Beard (1979) into vegetation systems occurring in particular physical settings and encompassing characteristic vegetation types. The vegetation types of these systems were mapped at a scale of 1:250,000. The Southdown mine site thus occurs on the border between the Cape Riche and Qualup vegetation systems of Beard. Beard's vegetation systems and 1:250,000 scale vegetation units of relevance to the Southdown Magnetite Proposal (Figure 3.1) are:

- 1. The Cape Riche vegetation system of the Eyre Botanical District on the Pallinup Sand Plain, defined as being predominantly *Eucalyptus marginata* mallee-heath with occasional patches of Jarrah-Marri woodland in valleys, *E. decipiens* or *E. occidentalis* in small numerous depressions and a small area of *Eucalyptus staeri* mallee-heath in the Hassell Beach to Bremer Bay Coastal Zone near the mouth of the Waychinicup River;
- 2. The Qualup vegetation system of the Eyre Botanical District on the Pallinup Sand Plain defined as being composed predominantly of *Eucalyptus pleurocarpa* mallee heath. (Note: *Eucalyptus pleurocarpa* is the current nomenclature for the taxon that Beard referred to as *Eucalyptus tetragona*; WA Herbarium, 2007.)

Thus at a scale of 1:250,000, the mine site encompasses three of Beard's broad vegetation types:

- a) Eucalyptus marginata mallee heath;
- b) Eucalyptus pleurocarpa mallee heath; and
- c) Eucalyptus occidentalis woodland.

The Biogeographical Regionalization of Australia (Environment Australia, 2000) defined Australian bioregions on a continental scale on the basis of climate, geology, landforms, vegetation and fauna. In south-west Western Australia, the definition of bioregions was largely based on the data of the Vegetation Survey of Western Australia (Beard, 1973 - 1981). The





Southdown Magnetite Proposal is located in the South-west Botanical Province and the Western Esperance Plains (ESP-1) subregion of the Esperance Plains Biogeographical Region.

Environment Australia (2000) defined the vegetation of the Western Esperance Plains Biogeographical Region as;"...proteaceous scrub and mallee heaths rich in endemic species on sand plain overlying Eocene sediments" (this describes the Pallinup Sand Plain);"...herb fields and heaths rich in endemics on abrupt granite and quartzite ranges that rise from the sand plain" (this describes the Stirling and Porongorup Ranges and other granite hills); and "...eucalypt woodlands in gullies and alluvial foot-slopes" (this describes the areas closely adjoining the ranges and rivers).

The major threatening processes to these areas were considered to be the loss and fragmentation of habitat due to land clearing, feral fauna, naturalised alien flora, plant and animal diseases, salinity, altered hydrological regimes and an increased incidence of wildfire and/or inappropriate fire regimes.



KEY	Botanical nomenclature of Beard's vegetation units updated to conform with WA Herbarium
e2SZc	Eucalyptus marginata mallee heath.
e26SZc	E. pleurocarpa mallee heath
e65SZc	Eucalyptus staeri mallee heath
e23Mi	E. marginata – E. calophylla woodland.
e67Mi	E. occidentalis woodland.
e27Si	E. redunca mallee
e235Mi	E. calophylla – E. wandoo-E. marginata woodland.
ecLi	E. marginata- Allocasuarina fraseriana low woodland
e2Li	E. marginata low woodland.
e2Lc	E. marginata low forest
e3738Si	E. cornuta and E. lehmannii mallee with teatree understorey.
e23Mc	E. marginata – E. calophylla forest.
ecLi/ eSZc	E. marginata - Allocasuarina fraseriana low woodland/ mallee
e38Lc	E. lehmannii low forest.

Figure 3.1 Vegetation systems of Beard (1979) between Albany and Wellstead.



The Town of Albany commissioned a vegetation inventory Albany hinterland (ATA, 2001) to provide strategic direction and guidelines to enhance future management of native vegetation. This study compiled a GIS database of the distribution (based largely on the broad scale mapping of Beard as detailed above) and condition of native vegetation in the area. It concluded that 43% of the original vegetation remained within the Albany hinterland. This remnant vegetation was distributed as:

- 1. Several large coastal blocks (Torndirrup National Park, Gull Rock National Park, Two Peoples Bay Nature Reserve, Mount Manypeaks Nature Reserve and Waychinicup National Park);
- 2. Many small isolated fragments over the central plains.

Despite the abundance of mountainous and coastal national parks and reserves, ATA (2001) concluded that about 50% of the broadscale vegetation units of the Albany hinterland were very poorly represented in the conservation estate (<10% in ICUN reserves). A further 25% (approximately) of the vegetation complexes of the Albany hinterland were reported to be unrepresented in conservation reserves. However, as this study was conducted at a very broad scale it did not accurately assess the representation of fine scale vegetation types.

Apart from the Southdown PER flora and vegetation surveys (*ecologia*, 2007), Sandiford (2003 a-h, 2004 & 2005) and Hickman (2007) provide the only reliable, fine scale data of the Pallinup Sand Plain in the vicinity of the project footprint. Sandiford's studies mapped the vegetation of almost all of the Integrated Tree Crops (ITC) agroforestry properties on the Pallinup Sand Plain between the Kalgan and the Pallinup rivers. They also provided a short description of the vegetation types mapped. These studies are taxonomically reliable as many voucher specimens from the surveys were lodged with the WA Herbarium. In total, Sandiford (2003 a-h, 2004 & 2005) mapped and described about 2,240 ha of bushland in good to excellent condition. These privately owned tree farms account for a high proportion of the remnant bushland of the Pallinup Sand Plain (Table 3.2). The vegetation assemblages found on the tree farms by Sandiford are discussed in more detail in later sections of this report. However, quadrat-based floristic data from these studies is not available and direct comparison with the floristic data obtained during the current survey is therefore not possible.





Table 3.2 Remnant Vegetation in Good to Excellent Condition on ITC Tree Farms between the Kalgan and Pallinup Rivers.

Tree farm	Area of remnant vegetation (ha)
Aprilla	120.8
Benmore	542.87
Gidget	28.41
Gunnamatta	51.37
Jindalee	103.68
Kilchatten	203.07
Komodo	113.95
Pfeiffer	63.13
Salopia	143.92
Sunnyside	733.77
Wimbush	134.42
TOTAL (ha)	2,239.99

[ESRI® shapefiles provided by Sandiford (2003 a-h, 2004 & 2005) were utilised as input data for remnant vegetation area calculations. ArcGISTM 9.2 was used to calculate area in hectares based on polygon geometry.]

More recently, Hickman (2007) mapped the vegetation of two small bush blocks (numbers 43 and 46, with a combined area of 5.7 ha) proposed for residential and industrial sub-division at Wellstead. Four vegetation types were described and assessed as being in excellent or good condition. These vegetation types, described as Albany Blackbutt woodland, Blue Mallee, Banksia heath and Proteaceous-Myrtaceous shrubland were located on well-drained shallow to deep white or grey sands with underlying laterite on an undulating plain.



4.0 Background to the Current Regional Floristic Survey

4.1 Base line survey of Minesite and Pipeline – April 2005 to October 2006

The Southdown Magnetite Proposal PER flora and vegetation survey (*ecologia*, 2007) provided detailed floristic data, a floristic classification of the vegetation and fine scale mapping (1:20,000) of the vegetation types within the proposed Southdown Magnetite mine site. Structural descriptions of the vegetation of the proposed pipeline and port sites for the project were presented. The survey confirmed the very high diversity of the flora and vegetation of the footprint areas. A total of 822 vascular flora species (up to 78 species per 100 m² quadrat) including 10 Priority Flora species (one of which has subsequently been upgraded to DRF status) were recorded from approximately 258 ha of the mine site, pipeline and port development areas. Thirteen structural vegetation associations, many in less than optimum condition, were described for the areas to be impacted on the pipeline route and at the port. It was considered possible to avoid or minimise impact to all of the vegetation of conservation significance within the pipeline and port footprint through appropriate management and planning.

At the mine site, multivariate floristic analysis was used to classify the vegetation into five vegetation units, all of which are in good to excellent condition. These five vegetation units mapped on the minesite (Figure 4.1) are:

- **1a.** Albany Blackbutt (Eucalyptus staeri) mallee-heath on well-drained lateritic ridges.
- **1b.** Chittick (Lambertia inermis) and other scrub-heath on seasonally-waterlogged laterite.
- **2.** Eucalyptus spp. mallee-heath on shallow sand over laterite.
- **3.** Albany Blackbutt (*Eucalyptus staeri*) mallee-heath on deep sand.
- **4.** Tallerack (*Eucalyptus pleurocarpa*) mallee-heath on seasonally-waterlogged colluvium.
- **5.** Swamp Yate (*Eucalyptus occidentalis*) woodland in seasonally-inundated basins.

A detailed description of the structure and floristic composition of these vegetation types is included in Appendix A.

4.2 Regional surveys – March 2006 – February 2008

As it is proposed to clear most of the vegetation and flora of the proposed mine site (Figure 4.2), more information was needed to understand its conservation significance within a regional context. The main aim was to establish, in general terms, the regional distribution and extent of remnant bushland which is comparable to the vegetation mapped on the Southdown mine site (Figure 4.1). A small amount of regional work had been conducted during the preparation of the baseline assessment, targeting areas likely to be impacted by infrastructure (port facilities and water resources). A regional field reconnaissance of vegetation within the conservation estate and other remnant bushland in the three Pallinup Sand Plain sub-catchments that were represented in the proposed mine site (and other relevant areas nearby) was conducted in March 2006 (ecologia, 2007) and October 2006. Locations visited during the reconnaissance included





14 within the conservation estate, 16 which are privately owned, 4 road reserves and all wetlands within a 7 km radius of the mine site (Table 4.1). An additional 48 quadrats were surveyed during October 2006.

Statistical comparison of the floristic composition of these 48 quadrats compared to quadrats previously surveyed at the minesite suggested that Types 1 and 4 were particularly restricted. Four further surveys were conducted in September 2007, October 2007, January 2008 and February 2008, primarily focussed on assessing the occurrence of these two types with a lesser number of quadrats also placed in Types 2 and 3. The regional survey for the DRF taxon *Commersonia* sp. Mt. Groper that was conducted during spring 2007 located a significant number of locations of Type 5 and therefore the post October 2006 regional surveys did not focus on this vegetation type. A further 52 quadrats were surveyed including sixteen which were located within the largest polygon of remnant vegetation within the minesite to test for seasonal influences across the duration of the regional survey and to refine the mapping boundaries within this area

Thus, a total of 100 quadrats were surveyed during the regional survey with the following land tenure: 59 privately owned, 7 Shire of Albany, 15 conservation estate, 3 roadside reserves and 16 within the proposed minesite.

Figure 4.3 details the location of quadrats surveyed regionally from October 2006 to February 2008 whilst Figure 4.4 describes the areas visually assessed. Figure 4.5 shows the location of sites within remnant vegetation on the minesite across the two year period in which the regional survey was conducted.



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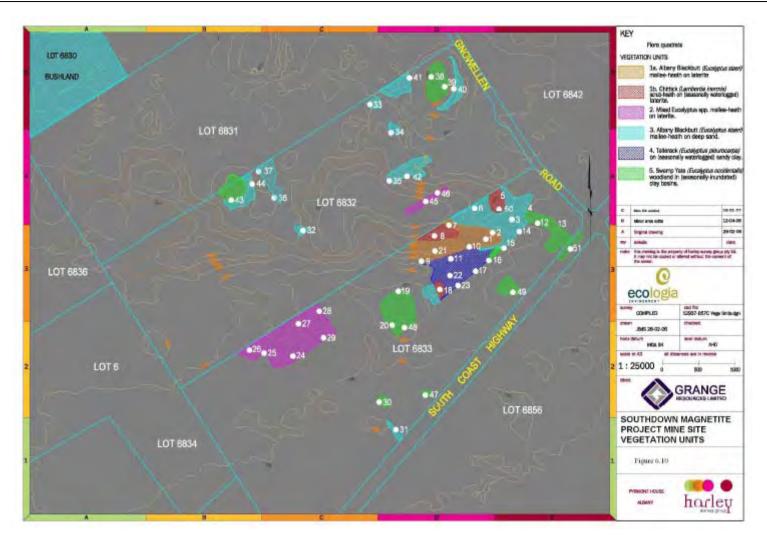


Figure 4.1 Vegetation units mapped at the Proposed Southdown Magnetite Mine





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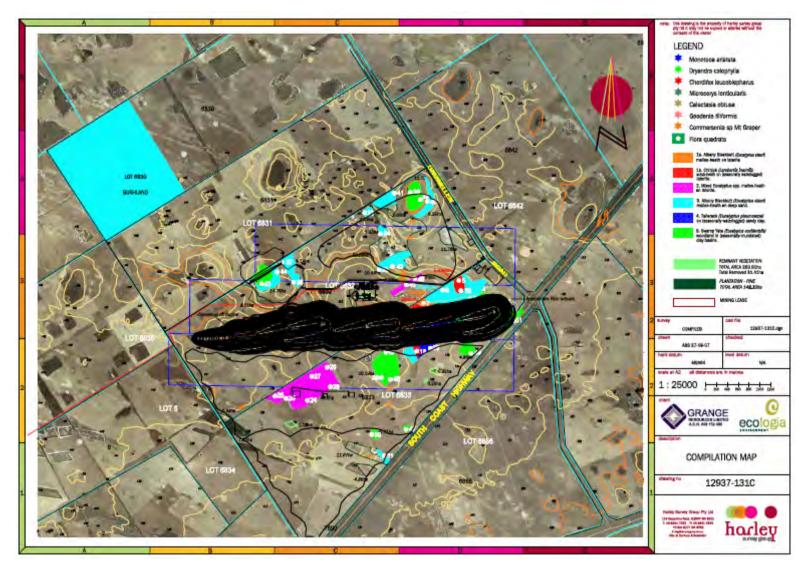


Figure 4.2 Vegetation to be Impacted at the Proposed Southdown Magnetite Mine





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Table 4.1 Areas visited during reconnaissance surveys in March and October 2006 (quadrats placed in a subset of these locations as detailed in Appendix G).

Status	Title/location
Conservation	Reserve No. 28325 (City of Albany) on the corner of Chillinup Rd and Gnowellen Rd
estate	Mettler Lake Nature Reserve;
	Basil Rd Nature Reserve;
	Hassell National Park along South Coast Hwy and Mettler Lake Rd;
	North and South Sister Nature Reserves;
	Lake Corimup Reserve;
	Lake Pleasant View Nature Reserve;
	South Stirling Nature Reserve;
	Cheyne Rd Reserve;
	Waychinicup National Park;
	Stirling Range National Park;
	Mailalup Nature Reserve;
	Chillinup Nature Reserve; and
	Tinkelup Nature Reserve.
Private land	Lot 6830 (on farmland north of the mine site);
	Lot 2 on the corner of Old Boundary Rd and South Coast Hwy;
	Wetlands on Lot 6857 off Mettler Rd;
	Lot 4 on South Coast Hwy adjacent to the Wellstead grain bins;
	Lot 6859 west of Sandalwood Rd;





Status	Title/location		
	Lot 6466, on South Coast Hwy		
	Plantagenet Location 6787, on Chillinup Rd		
	Lot 5951, Gunnamata Tree Farm		
	Lot 6836, on South Coast Hwy		
	Lot 6859, on the corner of Sandalwood and Mettler Lake Rds		
	Lot 6234, on Chillinup Rd		
	Plantagenet Location 6471, on Venns Rd		
	Plantagenet Location 7018, Sunnyside Tree Farm		
	Lot 6460, off Kojaneerup West Rd		
	Lot 6232, off Chillinup Rd		
	Lot 6233, off Chillinup Rd		
Road	Chillinup Rd		
reserves	Kojaneerup Rd		
	Pfeiffer Rd		
	Palmdale Rd		
	Boat Harbour Reserve		
Various	All wetlands within an approximate 7 km radius of the Southdown mine site		
Crown Land	Corner of Borden-Bremer Bay Rd and South Coast Hwy		





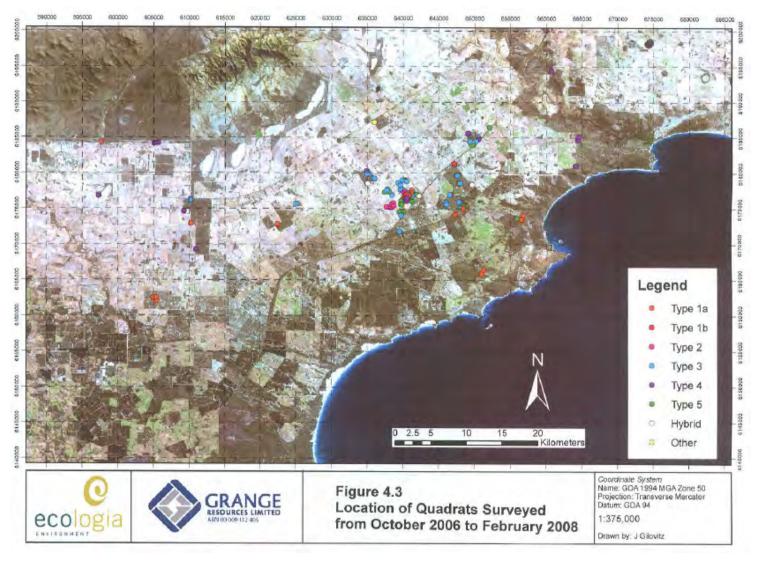


Figure 4.3 Location of quadrats surveyed from October 2006 to February 2008





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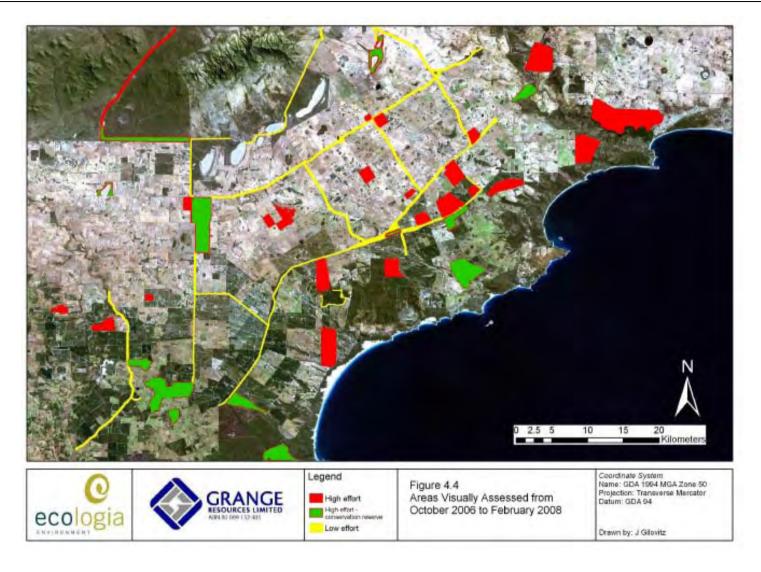


Figure 4.4 Areas visually assessed from October 2006 to February 2008





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Figure 4.5 Location of Sites within Remnant Vegetation of the Minesite





5.0 Survey Methods

5.1 Guiding Principles

The survey methods adopted by *ecologia* for this survey were based on:

- The Western Australian Environmental Protection Authority's position paper with regard to terrestrial biological surveys as an element of biodiversity protection (EPA, 2002);
- The guidance statement with regard to terrestrial flora and vegetation surveys for environmental impact assessment (EPA, 2004); and
- Consultation with regional Department of Environment and Conservation staff and other relevant government officers.

The project area occurs in the South-west Botanical Province in the Western Esperance Plains (ESP-1) Biogeographical Sub-region (Environment Australia, 2000). Based on the existing regional modification and loss of biodiversity, degree of threat and high sensitivity of these bioregions to further loss, a Level 2 survey (including background research, reconnaissance survey, detailed and comprehensive survey) was required (EPA, 2004). With regard to the current regional survey project, the four components of the Level 2 search were fulfilled as below.

- Background research. The literature review and rare flora and threatened ecological community searches of both Federal and WA databases carried out in *ecologia* (2007) were directly applicable to this survey (Appendix A). In addition the Sandiford reports (2003a-h, 2004 & 2005) and Hickman (2007) were sourced.
- Reconnaissance. To verify the accuracy of the background information and to further characterise the flora and range of vegetation units present, a reconnaissance survey was carried out in autumn 2006 as part of *ecologia* (2007).
- Detailed Survey. The level of knowledge of the flora and vegetation at the local scale and its local context or significance was greatly enhanced by the detailed quadrat-based flora and vegetation surveys (*ecologia*, 2007) and the current full floristic survey and classification of the bush remnants identified above.
- Comprehensive Survey. The current survey floristic data, analysed together with the floristic data of the mine site floristic survey *ecologia* (2007) and the descriptive data of Sandiford (2003a-h, 2004 & 2005) enhanced the knowledge of the context and significance of the flora and vegetation found in the target areas at the sub-regional scale.
- The current regional survey required one or more visits to the sites in the main flowering season. Replication of plots was required in each vegetation unit to thoroughly sample the flora and all the vegetation units over their full extent in the target areas.





5.2 Specific Objectives

The survey aimed to provide the following:

- 1. An assessment of the abundance and condition of the small-scale vegetation units located within the proposed minesite within other bushland remnants in the East Sand Plain Sub –catchments (or nearby).
- 2. An inventory of the vascular flora within these vegetation units within bushland remnants in the East Sand Plain Sub-catchment (or nearby), including flora of conservation significance and naturalized alien taxa.
- 3. A comparison of data from quadrats placed in the bushland remnants with those placed in mine site vegetation using multivariate floristic classification of the combined datasets.
- 4. A review of the flora of conservation significance and vegetation units relevant to the Southdown Magnetite Proposal as recorded and mapped on the ITC Tree Farms of the Pallinup Sand Plain (2003a-h, 2004 & 2005).
- 5. An assessment of the conservation significance of the flora, vegetation units and related ecological values of the areas considered above.
- 6. Broad recommendations as to suitability of surveyed bush remnants as offsets against the loss of biodiversity proposed by the development of the Southdown Magnetite mine.

5.3 Flora Sampling, Vegetation Description and Classification

The regional site-based floristic surveys and vegetation description were undertaken in March and October 2006, September and October 2007, January and February 2008. A total of 57 person days were expended.

The survey entailed a series of field traverses to compile a preliminary assessment of the distribution of the targeted vegetation types in the blocks surveyed, followed by systematic flora sampling in quadrats in areas assessed as similar to minesite vegetation types. Wherever possible two replicate quadrats of each vegetation type were surveyed, in each bushland remnant. Forty eight quadrats were located in remnant vegetation during the October 2006 survey. A further 52 quadrats were surveyed including sixteen which were located within the largest polygon of remnant vegetation within the minesite to test for seasonal influences across the duration of the regional survey and to refine the mapping boundaries within this area

Thus, a total of 100 quadrats were surveyed during the regional survey with the following land tenure: 59 privately owned, 7 City of Albany, 15 conservation estate, 3. roadside reserves and 16 within the proposed minesite.

Aerial photographs and soil maps were used to assist in predicting the occurrence of the vegetation types of the minesite elsewhere within the survey area. These interpretations were then verified using linked ground based assessment of dominant species and vegetation structure. Site selection was also biased towards vegetation in good to pristine condition, as the discrimination between vegetation types becomes progressively diminished as species diversity declines.

At each quadrat, details on the following parameters were recorded:

• Location of sites, including GPS coordinates;





- Topography, soils and surface lithology;
- A vegetation structure description using height, cover and life-form of the dominant species in each vegetation layer (Table 5.1);
- Height and foliage projective cover for each vascular flora taxon within the site (including naturalized alien taxa). Overstorey abundance was estimated over a larger area (approximately 400 m²) which encompassed the marked quadrat in each case;
- Vegetation condition based on criteria described by Keighery (1994) (Table 5.1); and
- An estimation of the time since the last fire.

Table 5.1 Vegetation Structure Classification (adapted from Keighery, 1994).

LIFE FORM / HEIGHT	CANOPY COVER				
CLASS	DENSE 70% - 100%	MID DENSE 30% - 70%	SPARSE 10% - 30%	VERY SPARSE 2% - 10%	
Trees > 30 m	Tall Closed Forest	Open Forest	Tall Woodland	Open Tall Woodland	
Trees 10 – 30 m	Closed Forest	Open Forest	Woodland	Open Woodland	
Trees < 10 m	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland	
*Mallee	Closed Mallee	Mallee	Open Mallee	Very Open Mallee	
Shrubs > 2 m	Closed Scrub	Scrub	Open Scrub	Tall Open Shrubs	
Shrubs <2m	Closed Heath	Heath	Open Heath	Low Open Shrubs	
Grasses	Closed Grasses	Grasses	Open Grasses	Sparse Gasses	
Herbs	Closed Herbs	Herbs	Open Herbs	Sparse Herbs	
Rushes/ sedges					
> 0.5 m	Closed Tall Sedges	Tall Sedges	Open Tall Sedges	Sparse Tall Sedges	
< 0.5 m	Closed Sedges	Sedges	Open Sedges	Sparse Sedges	

• In agreement with current usage by *Eucalyptus* specialists (Brooker *et al.*, 2002), "mallee" in this study is defined as *Eucalyptus* spp. that are multistemmed from the ground level and usually less than 10 m in height, whilst "tree" is defined as being single-stemmed although possibly branching a short distance above ground level.

Multivariate analysis of the site vs. species (coverage-ranked) matrix was performed using the complete linkage mode in the SYSTAT software package. The analysis provides a means of objectively verifying the patterns observed in the field in this complex and species-rich vegetation. The boundaries of the vegetation within the bushland remnants thus confirmed as consistent with the relevant vegetation within the minesite were estimated using aerial photography derived from Landgate. This permitted an estimate of the area of some relevant vegetation types known within other remnants.

5.4 Survey Limitations and Constraints

The EPA Guidance Statement for Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004), has identified the main factors that can limit and constrain flora and vegetation surveys, and the current project was evaluated against these factors (Table 5.2).

A moderate constraint in this study was the lack of quadrat-based data for the tree farm flora and vegetation surveys. Without this data it was not possible to include the tree farm vegetation in





the numerical analysis that was used to compare the mine site and regional study sites and so fully complete the analysis of all relevant bush remnants.

It should also be noted that preliminary visual assessment of blocks of remnant vegetation was largely confined to areas that could be accessed by tracks. In many cases this meant that only the perimeters of vegetation polygons could be checked. Because the boundries between many of the vegetation types (1a, 1b, 3 and to some extent 2) are difficult to detect using aerial photography without intensive ground truthing, it remains likely that additional areas of relevant vegetation occur in inaccessible areas. Many of the road reserves in the area are relatively broad, but again, only the area adjacent to the road was investigated. Because these road reserves offer less potential as offsets the degree of scrutiny was also less intense. Finally, there was a small subset of privately owned remnants which were not accessed because permission from land owners was not granted. Thus the survey, whilst extensive, was not exhaustive.

Table 5.2 Flora and Vegetation Survey Constraints.

Aspect	Constraint	Comment
Scope	None	A detailed level of survey was used to gather data from areas accessible in the vicinity of the mine site that could include relevant vegetation types. The methods employed enabled different locations to be objectively compared using multivariate analysis.
Proportion of flora identified, recorded and/or collected	Negligible	The survey was conducted in spring and summer and most of the flora expected (on the basis of the previous comprehensive multi-season survey of the mine site in 05-06) was evident. Annuals were excluded from the data sets used for statistical analysis to remove any seasonal bias.
Availability of contextual information (pre-existing background versus new material)	Moderate	Abundant local data were available from the mine site survey. Only descriptive data (not quadrat-based data) were available from ITC bush remnants so could not be included in the multivariate analysis. However fine-scale mapping of vegetation areas from the latter and communication with E. Sandiford provided valuable assistance in qualitative interpretation of the information.
Completeness and further work which might be needed	Moderate	A subset of sizable remnant areas under private tenure was not evaluated, either because owners refused access or could not be contacted. Detection of vegetation comparable to the mine site was limited to areas which could be readily accessed (in some cases the perimeters only of polygons), as aerial photography was of limited value in discriminating between some vegetation types. Proportionally less time/unit area was spent evaluating land within road reserves than land under other tenure as this land is considered less suitable for offsets than privately owned land. It is highly likely that additional areas of the relevant vegetation types are present, given their highly fragmented occurrence, however an exhaustive search of all areas would require high density foot traverses and be prohibitively time consuming.
Timing/weather/ season/cycle	Negligible	The surveys were conducted in spring and summer after winters with average rainfall. Most vegetation was vigorous and flowering and the species richness of quadrats located within the minesite was consistent across the different survey times. Some wetland fringes were temporarily in poor condition in October 2006 as unusually high floodwaters had inundated vegetation types that do not tolerate wetland conditions well.
Disturbances which affected results of survey	Negligible	The fire history of some of the locations surveyed (frequent fires and short time since last fire) differed from that of the long unburnt mine site bushland. This would be expected to introduce some variation in both floristic composition and vegetation structure across the sites



Aspect	Constraint	Comment	
Intensity (in retrospect, was the intensity adequate?)	Negligible	The detailed, quadrat -based survey provided meaningful regional context for the vegetation of the mine site. 503 flora taxa (inc. 1 DRF and 13 Priority species) were recorded in a total of 100 (10 m x10 m) quadrats. This compares satisfactorily with 439 taxa (including 1 DRF and 9 P species) in 50 quadrats and exhaustive opportunistic sampling (4 seasons) in the mine site survey. Although more sample sites in most blocks surveyed would be preferable for more precise and extensive mapping of the vegetation of the regional bushland remnants, the sample taken significantly enhanced regional knowledge and was adequate for a rigorous floristic analysis of the mine site vs. regional quadrats.	
Resources	Negligible	Resources were adequate. More time spent to access more areas by foot, for a more detailed appraisal of road reserves and to sample more quadrats would obviously provide more detail and would certainly resulte in an increase in the estimates of areas of each vegetation type. However the data collected was sufficient to evaluate the conservation significance of the vegetation units found earlier on the mine site.	
Remoteness and/or access problems	Moderate	As dicussed above under the Completeness criterion, access was limited in many cases to the perimeter of land polygons, as there was insufficient time to evaluate large areas by foot. At some locations, due to fencing or dieback limitations, portions of the remnant vegetation could not be accessed at all. Access was not possible to some privately owned areas.	
Competency/ experience of the consultant carrying out the survey	None	The field staff involved all had significant experience and relevant qualifications. Both senior botanists have over 15 years experience in ecological survey. The final statistical analysis of vegetation was evaluated by a senior botanist with more than 15 years of evaluation of vegetation using multivariate techniques. Taxonomic identifications of collections made during the regional survey were completed by suitably experienced taxonomists and cross referenced to the EIA floristic inventory to ensure consistent nomenclature.	





6.0 Flora of the Regional Survey Sites

Six hundred and seventy six vascular flora taxa (including 40 introduced taxa) were recorded from 150 sites located at the minesite and other regional vegetation remnants (Appendix A). This total includes 503 taxa recorded from the 100 sites during the regional survey (16 of which were within the minesite and 84 in other areas of remnant vegetation) and an additional 167 taxa from 50 sites surveyed within the minesite during the EIA survey. Since thirty one collections were identified to genus level only, due to an absence of reproductive material, the total number of taxa collected is between 645 and 676 (i.e. some records identified to genus may be replicates of records identified to species level.) The flora data from each of the 101 sites is presented in Appendix G.

A comparison of the composition of the flora within the minesite and the locations surveyed regionally, in terms of the plant families and genera recorded (Table 6.1), reveals that the proportion of weeds was much higher in the EIA minesite. This is to be expected as all remnant vegetation irrespective of condition was surveyed within the minesite, whereas the regional survey primarily focussed on vegetation in good to excellent condition. The most noticeable difference in composition between the surveys is the higher proportion of Proteaceous taxa recorded within the regional survey. Indeed most of the dominant families are proportionally more highly represented in the regional survey. Again, the regional survey was focussed on remnants in good to excellent condition (and therefore with a correspondingly lower representation of Poaceae taxa, many of which are introduced) and in particular on remnants with representation of the minesite vegeatation Types 1, 3 and 4. Types 1 and 3 are rich in Proteaceous taxa, particularly when in good condition. Comparison of the most represented genera similarly reveals a higher proportion of Proteaceious genera were present.



Table 6.1 General Comparison of the Vascular Flora of the Regional Survey Sites with the Southdown Minesite Survey.

	EIA MINE SITE SURVEY (51 Sites plus comprehensive opportunistic sampling)	REGIONAL SURVEY OF MINESITE VEGETATION COMMUNITIES (100 Sites plus limited opportunistic sampling)
Species Total	431	503
Families	53	45
Genera		
DRF species	1	1
Priority Species	10	12
Weed species (% of total species)	8.6	1.6
Most represented families (%	Proteaceae 12.8%	Proteaceae 19.9%
of total species)	Myrtaceae 10.4%	Myrtaceae 13.7%
	Cyperaceae 8.1%	Papilionaceae 9.1%
	Papilionaceae 7.9%	Cyperaceae 8.5%
	Poaceae 5.1%	Epacridaceae 5.0%
		Restionaceae 4.6%
		Poaceae 2.0%
Most represented genera (% of	Hakea 2.6%	Hakea 3.4%
total species)	Schoenus 2.6%	Eucalyptus 3.0%
	Stylidium 2.6%	Petrophile 2.8%
	Eucalyptus 2.4%	Dryandra 2.8%
	Acacia 2.2%	Banksia 2.8%
		Schoenus 2.6%
		Melaleuca 2.6%
		Isopogon 2.6%
		Acacia 2.6%
		Stylidium 2.4%



6.1 Flora of Conservation Significance

6.1.1 Environment Protection and Biodiversity Conservation Act, 1999 (Commonwealth of Australia)

At a National level, flora and Threatened Ecological Communities are protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). This lists species and communities that are considered Critically Endangered, Endangered, Vulnerable, Conservation Dependent, Extinct or Extinct in the Wild (Table A1, Appendix C).

Forty-one species of nationally threatened flora are known from the vicinity of the Southdown Magnetite Proposal area (Table A2, Appendix C) (Dept of Environment and Heritage database, 2006). No nationally listed Threatened Ecological Communities have been recorded within the project area.

No flora species or ecological communities currently listed under the EPBC Act were found during the regional field survey.

6.1.2 Wildlife Conservation Act, 1950 (Western Australia)

Declared Rare Flora (DRF) taxa are protected under the Western Australian Wildlife Conservation (Rare Flora) Notice 2006 of the *Wildlife Conservation Act 1950*. The notice lists taxa that are extant and considered likely to become extinct or rare. These taxa are legally protected and removal or impact to their surroundings cannot be conducted without ministerial approval obtained specifically on each occasion for each population.

One DRF taxon, *Commersonia* sp. Mt Groper, has been recorded during the EIA and regional surveys.

Commersonia sp. Mt Groper (R.G. Cranfield & D. Kabay 9157) Declared Rare Flora

Commersonia sp. Mt Groper R.G. Cranfield & D. Kabay 9157 (Sterculiaceae) is a shrub that grows to about 40 cm in height and carries small, cream-coloured flowers in October. (This taxon is due to be formally published under the species name *perlaria*, alluding to its rounded luminous pearly flowers, in the near future by Dr Carol Wilkins of the University of Western Australia.)

It occurs on sandy-clay soils in seasonally-waterlogged sites with rushes and sedges (e.g. *Anarthria laevis, Baumea juncea, Lepidosperma striatum* and the grass *Cyperochloa hirsuta*) adjacent to *Eucalyptus occidentalis* sumplands.

An extensive search of 125 wetlands within a 50 km radius of Wellstead was conducted during spring 2006 and 2007 (ecologia, 2007). Details of wetlands searched for *Commersonia* sp. Mt Groper are included in Appendix D. However to date only six populations of this taxon have been recorded:

- 1. 4 km north of Mt Groper (1993). This population has not been relocated since 1993;
- 2. The proposed Southdown mine site (2005). This population has not been relocated since 2005;





- 3. Two populations in close proximity on road reserve approximately 7 km east of Wellstead (2006) near Boat Harbour Road;
- 4. On private land approximately 2 km south east of Wellstead (2007); and
- 5. On private land between Boat Harbour Road and the Pallinup River.

The taxon is therefore known to be extant at only three locations. However, the seeds of this taxon may still be present in the soil seed bank of the wetlands where it previously grew on the proposed mine site, near Mt Groper and at other wetlands. A quadrat (Site 81) was established in the one of the wetlands where *Commersonia* sp. Mt Groper was found (population 3 above) and the data from it was included in the current floristic analysis.

6.1.3 Priority Flora

The Western Australian Department of Environment and Conservation (DEC) also maintains a list of taxa which are considered to be poorly known, uncommon, or under threat, but for which there is insufficient justification on the basis of known distribution and population sizes for inclusion on the DRF schedule. These taxa are classified as Priority Flora and defined by specific criteria. A search of the databases of the DEC and WA Herbarium databases for DRF and Priority taxa known to occur in the broad vicinity of the Southdown Magnetite Proposal area. Seventeen DRF taxa and 89 Priority taxa (Appendix C) have previously been recorded.

The surveys of Sandiford of remnant vegetation within ITC tree farms (Sandiford, 2003 a-h,2004, 2005) recorded 21 taxa within the sandplains subcatchments, six of which were also recorded during the ecologia EIA survey of the mine site and pipeline, in which a total of seven Priority taxa were recorded (Table 6.3)

Twelve Priority taxa and one Declared Rare taxa were recorded in the current survey, three of which were not recorded in the previous surveys (Table 6.2). A total of 27 Priority flora and one Declared Rare Flora have thus been recorded from all of these detailed surveys on the sandplain subcatchments (Figure 6.1).





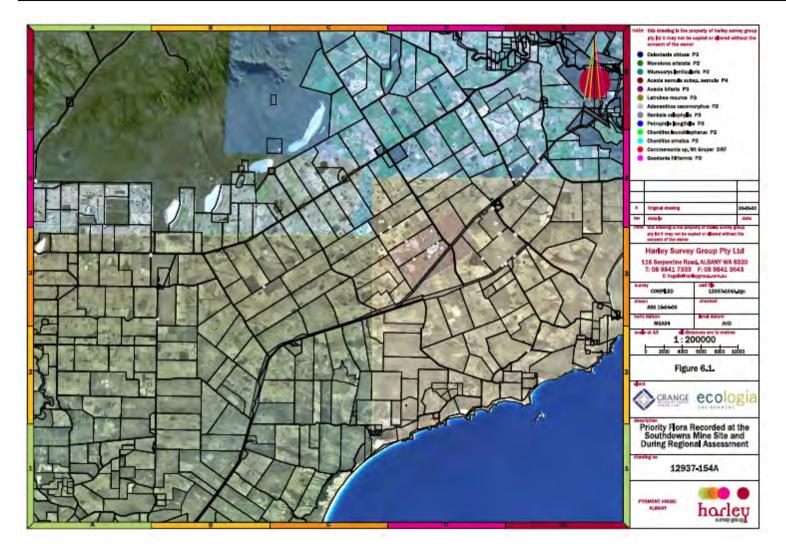


Figure 6.1 Locations of Priority Flora Recorded at the Southdowns Mine Site and During the Regional Assessment





6.1.4 Flora of Conservation Significance Found during this Regional Survey

Adenanthos cacomorphus, Priority 2

Adenanthos cacomorphus (Proteaceae) is a low, spreading shrub growing to less than 1 m in height with small bright pink flowers. It was previously known from three populations; two in the Fitzgerald National Park and one other south of Jerramungup.

A small population of this species (two individuals) was located in heath in a low-lying, sandy area that may be prone to occasional waterlogging in privately owned land off Sandalwood Rd near Wellstead. This collection represents a significant western range extension and is therefore considered to be an important population with regard to the genetic integrity of the species. *Adenanthos cacomorphus* may be more prevalent in the remnant block where it was located. It is likely to be sensitive to frequent fire and thus a further search of this block and appropriate management strategies will be needed to define its boundaries and to protect the population.

Chordifex leucoblepharus, Priority 2

Chordifex leucoblepharus (Restionaceae) is a perennial, rhizomatous twine rush that is restricted to the Esperance Sand Plains Bioregion (WA Herbarium, 2007). It occurs in sandy soils with heath, mallee and scrub.

Chordifex leucoblepharus was previously known from fewer than 10 populations in and around the Stirling Ranges National Park, South Stirling Nature Reserve, Camel Lake Nature Reserve and on the ITC Cheyne Tree Farm.

During the current survey it was recorded at three populations:

- Two small populations were located at the mine site; and
- one population on Lot 4 (Wellstead Grain bins).

Chordifex ornatus, Priority 2

Chordifex ornatus (Restionaceae) is a perennial, rhizomatous twine rush that is restricted to a relatively small area of the Esperance Sand Plains Bioregion and the extreme south of the Avon Wheatbelt Bioregion (WA Herbarium, 2007). It occurs in sandy–gravelly soils over clay (sometimes in damplands), sometimes with scrub of *Lambertia inermis*.

Chordifex ornatus was previously known from seven populations between Tambellup, Marra Bridge and the South Stirling Nature Reserve (including at least two populations in the Stirling Range National Park).

Three populations were located during the current survey:

- in a dampland at Block 6859 (Site 87) north of Mettler Rd;
- on the minesite (Sites 142 and 144); and





• in a dampland adjacent to South Stirling Nature Reserve (Site 148).

Microcorys lenticularis, Priority 2

Microcorys lenticularis is a small slender plant to 60 cm with small white flowers with a hairy calyx. The leaves are hairless and broadly ovate to obicular. Flowering occurs from November to January. It favours sandy soils and sandy soils on laterite, on slopes, plains or valley floors.

It has been recorded from approximately 12 populations, from Arthur River, Hyden, Tarin Rock, Ongerup, Beaufort Inlet and Quairading.

During the current survey, two populations were recorded:

- Sunnyside Tree Farm; and
- South Stirling Nature Reserve.

Monotoca aristata, Priority 2

Monotoca aristata (Epacridaceae) is a medium shrub that grows to over 1 m in height and is restricted to the Esperance Bioregion (WA Herbarium, 2007). It occurs in sandy soils in mallee, scrub and heath.

Monotoca aristata was previously known from approximately seven populations (Wellstead to Fitzgerald River National Park)

During the current survey it was located in 5 populations as follows:

- Three populations within the mine site (S37);
- One population on Lot 6830 privately-owned land to the immediate north (Sites 67,68,69,70). This population is particularly large and extensive; and
- On private land (a tree farm) near Mettler Lake (S91, 97). This population is also extensive.

Acacia bifaria, Priority 3

Acacia bifaria is a prostrate or semi-prostrate, usually domed shrub, to 60 cm and up to 2 m wide, with yellow, globular flowerheads, flexuose branchlets and winged stems. Flowering occurs from August to December. It occurse on clay, rocky loam, sandy soils on undulating plains, roadsides and low-lying areas.

Acacia bifaria is previously known from Ravensthorpe and the Fitzgerald Ranges.

During the current survey it was recorded at two locations:

- Within the minesite; and
- On private land at the corner of Sandalwood and Mettler Lake Road.

Calectasia obtusa, Priority 3





Calectasia obtusa (Dasypogonaceae) is a sparse, perennial herb growing to about 30 cm in height. It produces stiff, papery, star-shaped flowers in spring that are a bright blue-purple colour. The species generally inhabits poorly-drained laterite or clay situations where it occurs as scattered individuals.

It has previously been recorded from approximately 14 collections from Kojonup to Newdegate and the Fitzgerald River National Park.

During the current survey, a single specimen was recorded opportunistically from a road verge just south of the minesite.

Banksia calophylla (previously Dryandra calophylla), Priority 3

Banksia calophylla (Proteaceae) is a low shrub less than 0.5 m in height with thick, long prostrate stems with long pinnate leaves and large terminal flowerheads from September to November. It is is usually found on rocky, sandy clay or white sand with gravel.

Due to the reclassification of this taxon to the *Banksia* genus previous records are currently under review and its distribution under this identity is being redetermined, but it known to be restricted to the Esperance and Jarrah Forest Bioregions. Under the previous determination of *D. calophylla*, it has been recorded from about 28 populations (many on private lands).

During the current survey, the nine populations were recorded:

- Two sparse but extensive populations on the minesite, on the main laterite ridge (Vegetation Unit 1b: *Lambertia inermis* and other tall shrubs scrub-heath on waterlogged laterite) and also in a small bush remnant in the north of the mine footprint (Vegetation Unit 3: *Eucalyptus staeri* mallee heath on deep sand);
- Lot 6859 off Sandalwood and Mettler Rd;
- Lot 4, Wellstead Wheat Bins;
- Lot 6830 to the north of the minesite;
- Stirling Range National Park;
- South Stirling Nature Reserve;
- Lot 6460, between Kojanneerup West and Kojanerup Spring Roads; and
- Gunnamatta Tree Farm.

Lasiopetalum parvuliflorum, Priority 3

Lasiopetalum parvuliflorum (Sterculiaceae) is a low shrub growing to less than 1 m in height. It has long, narrow leaves and small cream-coloured flowers.

Prior to the current survey it was known from seven collections spanning a large range from the Stirling Range National Park, Pallinup River Nature Reserve through Fitzgerald National Park, the Oldfield River east of Ravensthorpe and Howick Hill just east of Esperance. The preferred





habitat of this species appears to be damp areas on loam or clay soils near granite outcrops, along river and creek banks and around sumplands.

A small population of this species (about 10 plants) was located within the road reserve in a dampland (with *Eucalyptus occidentalis* low woodland over sedges and grasses) approximately 8 kilometres east of Wellstead during the current survey.

Latrobea recurva Chappill & C.F. Wilkins ms, Priority 3

Latrobea recurva Chappill & C.F. Wilkins ms, (Papilionaceae) is a sparse low shrub less than about 0.5m in height with yellow-orange pea type flowers.

Prior to the current survey it was known from seven locations extending over a wide range from Drawbin Rd near Manypeaks and the Stirling Range National Park to Bremer Bay and Lake Grace. It is an inconspicuous plant when not in flower and because its flowers are superficially similar to those of many other native peas that inhabit this area, it has probably been misidentified in the past, until recent taxonomic studies by J. Chappill in 2006. It is probably a widespread and common species that has been poorly understood and therefore poorly collected in the past.

During the current survey, this species was observed to be very common in the vicinity of Wellstead area where it the following populations, many of them extensive, were located:

- Very extensively within the main polygon of remnant vegetation on the mine site;
- A small remnant of vegeation at the northern perimeter of the mine footprint;
- Block 6830 to the north of the minesite;
- Private Land at the corner of Old Boundary Road and the South Coast Highway;
- Extensively within Block 4 on the Wellstead Wheat Bin site;
- Off Mettler Lake Road;
- Gunnamatta Tree Farm; and
- South Stirling Nature Reserve.

Petrophile longifolia, Priority 3

Petrophile longifolia (Proteaceae) is a low shrub less than 0.5 m in height with long needle-shaped leaves and heads of pale yellow flowers. It inhabits sandy woodland and mallee heath. It is probably fire sensitive as it appears to lack a lignotuber.

Petrophile longifolia was previously known from a limited range (approx. 10 populations) in Stirling Range NP, Cheyne Bay NR, Granite Hill NR and Millbrook NR. Superficially it is very similar in habit, leaves and flowers to the much more common Petrophile media. The differences between these two species have become more apparent only as a result of recent taxonomic studies and it is likely that its similarity to P. media has resulted in it being poorly collected in the past.





During the current survey the following populations were recorded:

- On the minesite at multiple sites in the largest polygon of remnant vegetation;
- Block 4, Wellstead Wheat Bin Site;
- Off Mettler Lake Road;
- Gunnamatta Tree Farm; and
- Basil Road Nature Reserve.

Acacia aemula subsp. aemula, Priority 4

Acacia aemula subsp. aemula (Mimosaceae) is a low, very sparse shrub that inhabits clay soil often around the fringes of wetlands.

It is relatively common near coastal areas from Albany to east of Esperance (including 10 records from tree farms on the Pallinup Sand Plain). As it is an inconspicuous shrub (except when in flower) it has probably been poorly collected in the past

Table 6.2 Update on Percentages of Known Populations of Flora of Conservation Significance within Impact Footprint

Priority Species	P Status	Mine Site Populations	Pipeline and Port Populations	Populations Outside Footprint	% KNOWN Populations Impacted
Commersonia	DRF	1 population area (0 extant)	-	3 populations and 1 population area	20 %
Chordifex leucoblepharus	2	2	-	21	8.69 %
Chordifex ornatus	2	2	-	10	16.67 %
Microcorys lenticularis	2	1	-	22	435 %
Monotoca aristata	2	2	-	25	7.41 %
Acacia bifaria	3	1	-	21	4.55 %
Calectasia obtusa	3	2	1	15	11.11 %
Dryandra calophylla	3	2	-	42	4.55 %
Latrobea recurva	3	1	-	37	2.70 %
Petrophile longifolia	3	3	-	25	10.71 %





6.1.5 Other flora of conservation significance as defined by EPA (2004)

Apart from the DRF and Priority Flora species detailed above and found during the regional survey, a number of other flora species of conservation significance were found in this survey that are not currently protected under the Federal EPBC Act or the Western Australian Wildlife Conservation Act. These taxa are considered to be significant under the Western Australian Environmental Protection Authority Guidance Statement 51 (EPA, 2004).

One taxon found in the current survey, *Platytheca* aff. *Galioides* (Tremandraceae) differed significantly in its vegetative and floral characters from previously described taxa of *Platytheca*, thus suggesting that it may be a new species. Collection of this taxon were made at in bushland remnants, one a road reserve and one privatly owned (Sites 84 and 90).

Tricostularia sp. South coast (R.T. Wills 1423), found within private land at the corner of Old Boundary Road (Site 55) is a poorly-known and uncommon sedge was previously recorded from about five populations between Walpole, the Stirling Range NP, Manypeaks and one nearby collection at Gunnamatta Tree Farm. The scarcity of records in the locality suggest this taxon may be at the eastern limits of its range.

Several occurrences of taxa found in the regional survey were important regionally as they are occurring at the edge of the known range of occurrence or were range extensions, i.e. isolated records beyond the known main range.





Table 6.3 Taxa of Conservation Significance Recorded in Surveys of the Pallinup Sand Plain between Manypeaks and the Pallinup River.

					E. Sandifor	d (2003, a-h, 20	04, 2005)					e	cologia (200	7)
Taxon name and status	Apprilla	Benmore	Gidget	Gunnamatta	Jindaleee	Kilchatten	Komodo	Pfeiffer	Salopia	Sunnyside	Wimbush	Mine site	Pipeline	Current regional survey
Acacia aemula subsp. aemula P4	recorded	recorded	recorded	recorded	recorded	recorded	recorded	possibly recorded	recorded	recorded				recorded
Acacia bifaria														recorded
Adenanthos cacomorphus P2														recorded
Calectasia obtusa P3										recorded		recorded	recorded	recorded
Calothamnus robustus P3		recorded								recorded				
Chordifex isomorphus P4	recorded	recorded												
Chordifex leucoblepharus P2										recorded		recorded		recorded
Chordifex ornatus P2														recorded
Chorizema reticulatum P3	recorded													
Commersonia sp Mt Groper DRF	•											recorded		recorded
Conostylis misera DRF									recorded					
Drosera fimbriata P4													recorded	
Dryandra calophylla P4				recorded	recorded					recorded		recorded	recorded	recorded
Eucalyptus acies P4		recorded												
Eucalyptus newbeyi P3										recorded				
Goodenia filiformis P3						possibly recorded	possibly recorded		possibly recorded	recorded	possibly recorded	recorded		
Hakea lasiocarpha P3							recorded	recorded	recorded	recorded				
Hakea tuberculata P3		recorded				recorded								
Jacksonia calycina P4		recorded												
Kunzea pauciflora P4										recorded				
Lasiopetalum parvuliflorum P3														recorded
Latrobea recurva P3														recorded





		E. Sandiford (2003, a-h, 2004, 2005)							e	ecologia (2007)				
Taxon name and status	Apprilla	Benmore	Gidget	Gunnamatta	Jindaleee	Kilchatten	Komodo	Pfeiffer	Salopia	Sunnyside	Wimbush	Mine site	Pipeline	Current regional survey
Leucopogon tamariscinus P4					recorded					recorded				
Microcorys lenticularis P2		recorded				recorded					recorded	recorded		recorded
Monotoca aristata P2					recorded							recorded		recorded
Petrophile longifolia P3	possibly recorded	possibly recorded												recorded
Stylidium daphne P2	recorded	recorded	recorded		recorded		recorded							
Stylidium gloeophyllum P3	recorded													
Total Priority taxa	6	8	2	2	5	4	4	2	4	10	2	7	3	12
Total DRF taxa		1												1

NB: Stenanthemum aff sublineare recorded by Sandiford from Apprilla, Gidget, Salopia and Wimbush is not included above as its conservation status is unknown. Possibly recorded indicates uncertainty in specimen determination due to insufficient material available at time of survey etc. (Several taxa that were not fully determinable at least once in these surveys were not included in this listing.).



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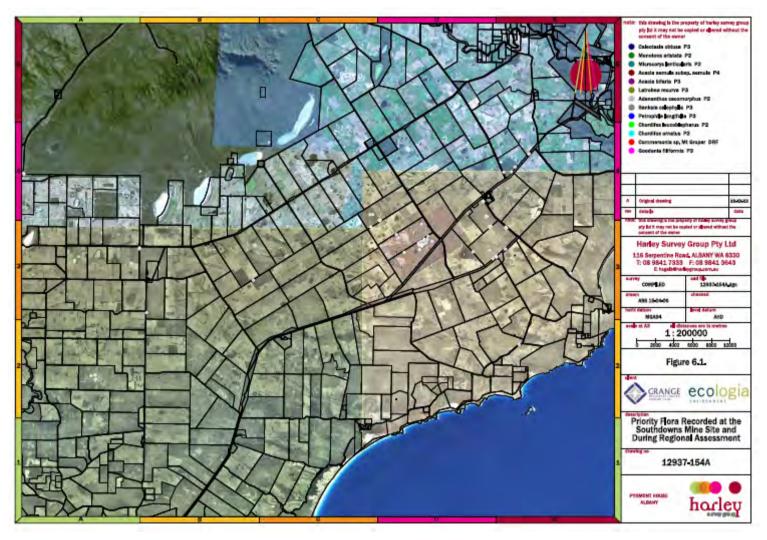


Figure 6.2 Locations of Priority Flora Recorded at the Southdowns Mine Site and During the Regional Assessment.





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6.2 Naturalized Alien Flora

The National Weeds Strategy (1999) defines a weed as "a plant which has, or has the potential to have, a detrimental effect on economic, social or conservation values". Botanically, weeds are also usually referred to as naturalized alien species.

Weeds that are, or have the potential to become, pests to agriculture may be formally declared under the Agriculture and Related Resources Protection Act, 1976. No species listed under the ARRP Act (1976) were recorded during the regional survey.

The Weed Plan for Western Australia (State Weed Plan Steering Group, 2001) outlines three Weeds of National Significance as occurring in the Albany region. The City of Albany Environmental Weeds Strategy (City of Albany Works & Services Team, 2001) has identified 15 priority environmental weeds for the Albany municipality.

Only one weed of national significance (also listed as High Priority in the Albany Weeds Strategy) was found in the current survey. This weed, Bridal Creeper (*Asparagus asparagoides) was recorded on the fringes of the bush block on the corner of Old Boundary Rd and South Coast Highway. The occurrence of Bridal Creeper at this site was significant as it was the only occurrence of a highly invasive weed noted in the extensive surveys of the Wellstead district conducted by ecologia (2007). Bridal Creeper is highly invasive because it tolerates long hot summers and its red berries are attractive food for native birds. The seeds are usually rapidly dispersed by birds through undisturbed bushland. If not eliminated in the near future, the early infestation of Bridal Creeper noted at the above site can be expected to proliferate rapidly through the district.



7.0 Floristic Classification of the Mine Site and Regional Survey Vegetation

7.1 Threatened and Priority Community Types

The Western Australian Department of Environment and Conservation (DEC) also maintains a list of Threatened Ecological Communities that are considered to be Critically Endangered, Endangered or Vulnerable (using the same criteria as TECs in the EPBC Act 1999).

No state-listed Threatened Ecological Communities have been recorded within the project area.

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Department's Priority Ecological Community Lists under Priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as threatened ecological communities. Ecological Communities that area adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5. The criteria used to rank Priorities 1, 2 and 3 are detailed in Appendix E.

As of January 2008, the DEC listed the vegetation types within the proposed minesite under the following priority codes:

Table 7.1 Priority Ecological Community Types in the proposed minesite

Vegetation	Description	PEC listing
type		
Type1a.	Eucalyptus staeri mallee heath to scrub heath on lateritic ridges	Priority 1
Type 3	Eucalptus staeri malle heath on deep sand	Priority 1
Type 4	Eucalyptus pleurocarpa mallee heath on heavy soils	Priority 1
Type 5	Eucalyputs occidentalis woodlands on seasonally inundated	Priority 1
	clay basins	

Priority 1 communities are defined as communities "with apparently few, small occurrences, all or most not actively managed for conservation (e.g. witin agricultural or pastoral lands, urban areas, active mining leases) and for which current threats exist. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and/or are not well defined and appear to be under immediate threat from known threatening processes across their range" (DEC, 2008).





7.2 Multivariate analysis of Minesite and Regional Vegetation Quadrats During the Regional Survey

During the reconnaissance field studies small remnants of native vegetation similar to the vegetation types recorded at the mine site were observed to be widely distributed over the plain from Manypeaks to the Pallinup River. This suggested that the mine site vegetation types were probably abundant in the past but are now highly fragmented. The representation of the vegetation types within the conservation estate was unknown. Thus the regional survey aimed to assess the size and distribution of the vegetation types, both within the conservation estate and on other landholdings.

The vegetation data from the 100 regional survey sites assessed was analysed in combination with the mine site vegetation data (51 sites) using SYSTATTM. Annuals, singletons and taxa not determinable to species rank were excluded from the analysis (Appendix F). Analyses were conducted with both presence/absence and coverage-ranked data. The dendograms resulting from these analyses are included as Figures 7.1 and 7.2 (coverage weighted and presence/absence) respectively. The arrangements of quadrats within each of these supergroups gives an indication of how homogenous the vegetation type is and, importantly, how representative vegetation in quadrats on other remnants is to the vegetation of the minesite. Quadrats clustered within the range of sites from the minesite are obviously more similar then those subgroups which do not contain any minesite quadrats.

Whilst the general trends were comparable in both analyses, the clearest separation of sites into the broad vegetation types previously observed in the EIA mapping and within the Priority Ecological Communities was observed using coverage-ranked data (Figure 7.1). This is to be expected, providing there has been consistency in attribution of rankings throughout the field sampling effort, as the dominance of particular taxa, is a contributing factor in the classification of vegetation types, as well as species composition, however only the latter attribute is used in presence/absence analysis (Figure 7.2). The other notable distinction between the two analyses is that within the presence/absence dendogram the dominant clustering trend is on the basis of locality. Almost all mine site quadrats have grouped together regardless of survey timing or vegetation types, whereas mine regional survey quadrats are dispersed throughout the dendogram within the vegetation supergroups in the coverage-weighted dendogram. Again, when only composition is factored into the analysis, the localisation of particular taxa is of course a more powerful influence.

It can be seen (Figure 7.1) that at the first level of dichotomisation, quadrats previously classified as *Eucalyptus occidentalis* woodlands, within the EIA mapping of the minesite and outside the mine site, were isolated as a supergroup from all other quadrats. Non mine site quadrats clustered within the spectrum of mine site quadrats and thus can be inferred as within the mine site Type 5 group.

At the next level of dichotomisation, quadrats previously mapped as Albany Blackbutt (*Eucalyptus staeri*) mallee-heath on laterite and shallow sands, including mine site quadrats mapped as Type 3, were isolated into another supergroup from all other quadrats. A subgroup of non mine site quadrats, in general occurring on sandier soils, was isolated at the next level of dichotimisation. However the other subgroup incorporates all mine site quadrats mapped as Type 3, with additional regional quadrats falling within the spectrum of diversity of mine site quadrats.





At the next level of dichotomisation, quadrats formerly mapped as Types 2 and 1 were separated from those mapped as *Eucalyptus pleurocarpa* mallee-heath or scrub heath, incorporation those quadrats mapped as Type 4, Tallerack (*Eucalyptus pleurocarpa*) mallee-heath on seasonally-waterlogged colluvium. At the next level of dichotomisation within this group, a subset of regional sites only was isolated from the larger group containing both mine site quadrats and regional quadrats. This subset contains *Eucalyptus pleurocarpa* with other mallees, with a *Taxandria spathulata* dominated understorey relatively common at these sites. Whilst this superficially resembles Group C3 above in dominant species and structure, it is floristically very different (at the six group level) to Vegetation Unit 4 (*ecologia*, 2007) at the mine site.

Within the other subset of this group, all mine site quadrats clustered together, with quadrats from the private landholdings at Old Boundary Road, L6787 (adjacent to South Stirling Nature Reserve), Chillinup Nature Reserve and Stirling Range National Park within the same subset. Quadrats located at Boat Harbour Reserve are intermediate in composition between this subset and the *E. pleurocarpa/E* spp over *Taxandria spathulate* discussed abover.

Mine site quadrats mapped as Type 2, *Eucalyptus* spp. mallee-heath on shallow sand over laterite, isolated from all other quadrats. The other subgroup incorporates all mine site quadrats mapped as Type 1a, Albany Blackbutt (*Eucalyptus staeri*) mallee-heath on well-drained lateritic ridges, and some sites mapped as Type 1b, Chittick (*Lambertia inermis*) and other scrub-heath on seasonally-waterlogged laterite. Again, a subset of the regional quadrats lie within the spectrum of 1a mine site quadrats.



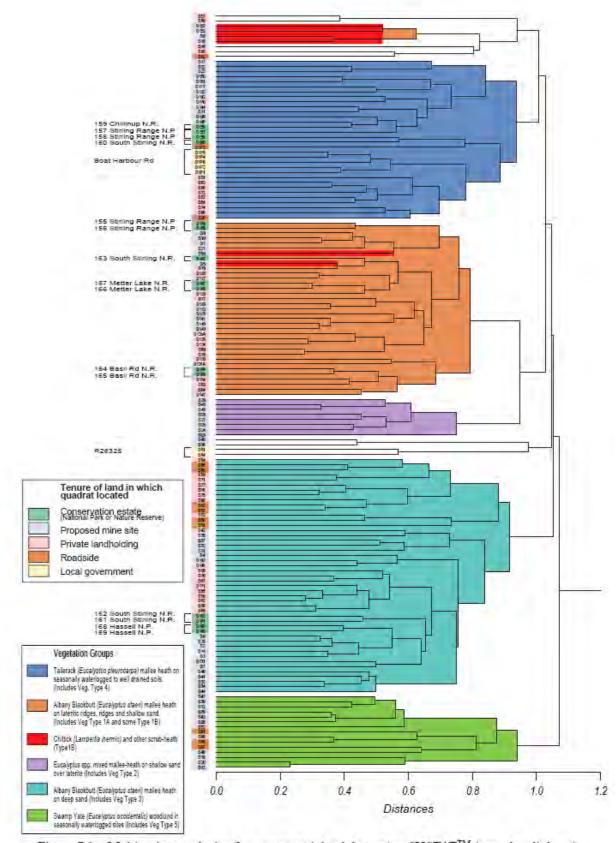


Figure 7.1. Multivariate analysis of coverage weighted data using SYSTATTM (complete linkage)

Figure 7.1 Multivariate analysis of coverage weighted data using SYSTAT (complete linkage)





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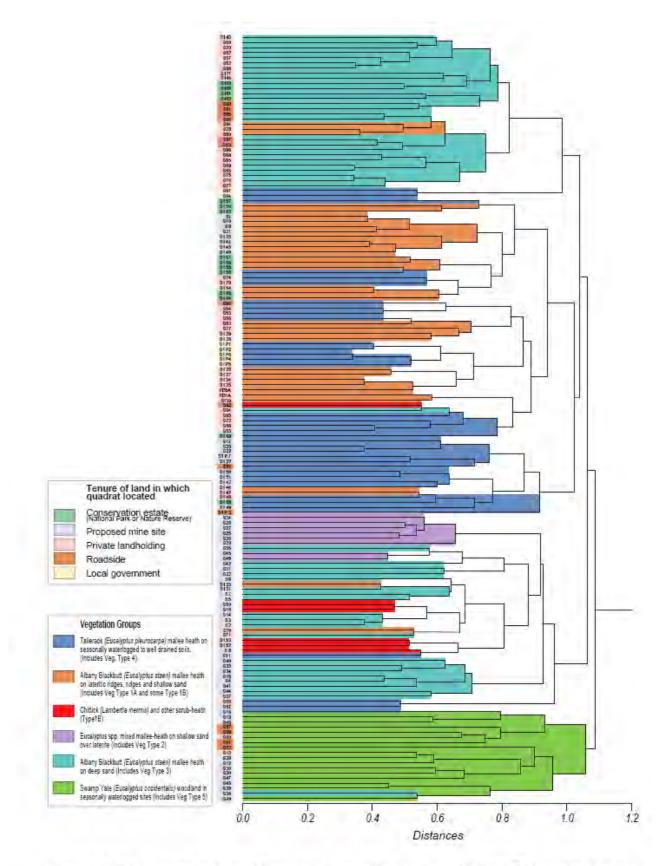


Figure 7. 2. Multivariate Analysis of Presence / Absence Weighted Using SYSTATTM (complete linkage)

Figure 7.2 Multivariate analysis of presence / absence weighted data using YSTAT 2 (complete linkage)





7.3 Representation of Minesite Vegetation Units During the Regional Survey

1a. Albany Blackbutt (Eucalyptus staeri) mallee-heath on well-drained lateritic ridges.

The analysis above shows that regionally, there is a similarity between a range of sites grading from sites on the high laterite ridge of the mine site (Veg Unit 1a and 1b; *ecologia*, 2007) through to the lateritic outcrops sampled in the regional survey on the undulating plains, the lower laterite with shallow sand at the mine site (Veg Unit 2; *ecologia*, 2007) and some of the more sandy (and possibly more degraded) sites away from the main ridge of the mine site (Veg Unit 3; *ecologia*, 2007).

During the reconnaissance Type 1 vegetation was observed to occur at a number of locations as a mosaic of small patches interspersed with Type 3 vegetation. Because these two vegetation types are not easily discriminated in aerial photography, accurate assessment of the relative areas of each would not be possible without a much higher density of quadrat-based or linear traverse data. However; estimates based on the size of the remnant land holding and an estimate of the proportion encompassed by vegetation of this type, are presented in Table 7.2. Locations at which this vegetation type are present are detailed in Figure 7.3.

1b. Lambertia inermis and other scrub heaths on shallow, seasonally waterlogged laterite.

This vegetation occurs on elevated flats or gentle slopes characterised by poorly drained shallow soils with gravel over laterite, generally in proximity to 1a above. This vegetation type is very difficult to map from aerial photography and so the exact area is difficult to discern without detailed study. However comparable vegetation has been mapped in some of the private agroforestry estates in the region (Sandiford, pers. Comm..) Within the multivariate analysis several of the mine site quadrats mapped as this vegetation type clustered in subgroups with sites mapped as 1a, whilst another mine site quadrat near the southern boundary clustered with Type 4, suggesting that this type may not be well defined.

Table 7.2 Representation of Type 1 Vegetation within remnants other than the minesite

Quadrat nos	Location	Tenure	Condition	Estimate of extent
156 &157	Stirling Range National Park, eastern edge of Chester Pass Road, near southern boundary	Cons.	Excellent	Difficult to estimate due to limited access but does not appear to extend northward significantly. May extend patchily further east quite significantly but no vehicle access was possible to confirm. Estimate 50 – 100 hectares, possibly significantly more.
163	South Stirling Nature Reserve, southwestern corner	Cons.	Excellent	This relatively large reserve contains multiple areas of this vegetation type. Access could only be obtained at the perimeters and through one cross section so it is likely that other areas remain undetected. Quadrat location has greater affinity to 1b than 1a, but 1a also well represented. Many





Quadrat nos	Location	Tenure	Condition	Estimate of extent
				areas have been more recently burnt, resulting in lower similarity to the long unburnt mine site vegetation. Estimate at least 50 - 100 hectares, possibly significantly more.
166 & 167	Mettler Lake Nature Reserve	Cons.	Excellent	Difficult to estimate the total extent of the vegetation community due to limited access through the interior of the reserve. Type 1a vegetation occurs patchily along the northern boundary of the reserve, in pockets of approximately 5-10 ha, for a total area of approximately 20-40 ha. Possible Type 3 vegetation occurring in the south-east corner, but no sites were established to confirm this. Fragmented, estimate 20 to 40 hectares.
129	Gunnamatta Tree Farm	Private	Good to excellent	Very small remnant surrounded by tree farm with significant edge effects, however central area intact. Estimate 20 hectares in total, with the central portion of the remnant (approximately 5 hectares) more representative than the perimeter.
77 & 79	Lot 4 Sandalwood Road, adj. Wellstead Wheat Bin,	Private	Pristine to excellent	Mosaic with Type 3, difficult to quantitate but as a relatively large remnant, estimate at approximately 20-40 hectares as Type 3 more abundant
127 & 128	PL6460	Private	Good to excellent	Fine scale mosaic with Type 3, which predominates. Some grazing historically and old fires, but now fenced and diversity still high Estimate at least 20 - 40 hectares in small fragments
134, 135, 135 A	Sunnyside Tree Farm	Private	Good to excellent	Large southern remnant accessible only by foot except at southern perimeter. At coastal boundary of vegetation type, but estimate at least 50 hectares, possibly significantly more.
Total area	Total area estimated outside of minesite			200-350 hectares, of which at least 50% is within the conservation estate.
Total area	Total area witin the proposed mine site			40.3 ha or approximately 10-16% of total vegetation type estimated to be present

2. Eucalyptus spp. mixed mallee heath on shallow sand over laterite.

This vegetation is a variant of the *Eucalyptus staeri* malle heath on lateritic ridges (Type 1) clustering as a separate entity within the Type 1 supergroup. Again it is





difficult to distinguish from this type without quantitative analysis combined with foot traverses to determine boundaries, therefore the extent of this unit could not be estimated in the reconnaissance survey. However; it is considered widespread but highly fragmented.





Figure 7.3 E. *staeri* and E. *pleurocarpa* locations.



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3. Eucalyptus staeri mallee heath on deep sands – Priority 1 PEC

This vegetation is characteristic of landforms and soils that are very common on the Pallinup Sand Plain and can still be seen as remnants throughout the sand plain. It was probably abundant, widespread and present as large expanses in the past. As it is present on infertile sands, some of this vegetation has been left uncleared on farms. However, many remnants on farms are degraded to varying degrees due to grazing, burning, trampling and nutrient enrichment by livestock.

Table 7.3 Representation of Type 3 Vegetation within remnants other than the minesite

Quadrat nos	Location	Tenure	Condition	Estimate of extent
162,161	South Stirling Nature Reserve	Cons	Excellent	Appears to be more common than Type 1. However access constraints prevented accurate assessment of the whole of this relatively large reserve. Estimate at least 100 hectares, with large fragments on the north western boundary
168, 169	Hassell National Park	Cons	Excellent	Dominant in the eastern portion of this National Park, therefore estimate at least 50-100 hectares. Hassel National Park is comprised of narrow polygons approximately 200 to 1000 metres in depth, bordering both edges of the South Coast Highway. Given this conifiguration, it is vulnerable to edge effects and degradation. However, the condition of vegetation surveyed was excellent.
146	PL6234	Private	Excellent	Contiguous with a large remnant divided between multiple landowners, this portion of the remnant is relatively narrow and bordered by pasture on three sides but is fenced and appears undisturbed. Only one edge could be assessed due to fencing, however estimate 10 to 30 hectares.
65,67,68, 69,70, 71	PL6830	private	Excellent	Present extensively in this large remnant, therefore estimate 300 hectares. As with the remnants within the mine footprint, some areas have not been burnt for an extensive time period



Quadrat nos	Location	Tenure	Condition	Estimate of extent
73,75,76, 82, 94	Lot No 4 (adj. Wellstead grain silos)	Private	Good to Excellent	Present extensively, estimate 500 hectares
55,56,59, 62,171	Corner Old Boundary Rd & South Coast Hwy	Private	Good to excellent	Present extensively, estimate 200-250 hectares
No quadrats	PL6460	Private	Good to excellent	A mosaic of Type 1 and Type 3 but dominated by Type 3, estimate at least 50-100 hectares, possibly more. A large block of land which is fenced but has been grazed historically
90,91,93, 97	Block 6859 north and west of Mettler Lake Road	Private	Excellent	Some areas recently burnt, estimate 350-450 hectares.
98	6857, west of Sandalwood Road	Private	Excellent	Long unburnt, estimate 150 hectares.
No Quadrats	Gunnamatta Tree Farm	Private	Good	Estimated at 22 hectares by Sandiford
No quadrats	Sunnyside Tree Farm	Private	Excellent	Estimated at 65 hectares by Sandiford
Total area	estimated outside	of minesite	1700-2000 hectares, of which less than 20% is within the conservation estate.	
Total area	witin the propose	d mine site	96.7 ha or approximately 5-6% of total vegetation type estimated to be present	



4. Eucalyptus pleurocarpa mallee-heath on seasonally-waterlogged colluvium – Priority 1 PEC

This vegetation was probably originally present adjacent to most of the laterite formations of the plain. Most occurrences have been cleared as the heavier, relatively fertile and water-retentive soils are agriculturally valuable. As this vegation type is consistently associated with lower points in the landscape it would be expected that even prior to pastoral clearing, this type would have covered a relatively small percentage of the sandplains.

In contrast to Types 1 and 3, Type 4 vegetation can be differentiated relatively clearly on aerial photography, and it was therefore possible to quantitated the polygons and achieve quite accurate estimates of area. The distribution of quadrats classified at this vegetation type are detailed in Figure 7.3.

Table 7.4 Representation of Type 4 Vegetation within remnants other than the minesite

Quadrat nos	Location	Tenure	Condition	Estimate of extent	
157,158	Stirling Range National Cons. Park		Excellent Recently burnt	3.07 hectares	
159	Chillinup Nature Reserve	Cons	Good to Poor Dieback	5.52 hectares	
160	South Stirling Nature Reserve	Cons	Excellent	0.33	
S1P1,S1P3,S1P4 , S1P5, S1P6	Boat Harbour Reserve	Shire	Excellent	10.96	
170	Corner Old Boundary Road and South Coast Hwy	Private	Excellent	0.68	
148,149	L6787, west of South Stirling Nature Reserve	Private	Good to Excellent	7.88	
Total area estima	ted outside of minesite	28.44 ha of which 31% is within the conservation estate			
Total area witin the proposed mine site			29.4 ha or approximately 50% of total vegetation type estimated to be present		

5. Eucalyptus occidentalis woodlands in seasonally-inundated clay basins- P1 PEC.

Although these wetlands are clearly visible and relatively abundant on aerial photographs as apparently extant vegetation, many of the wetlands are degraded due to grazing, soil erosion, trampling and nutrient enrichment by livestock.





Significant floristic variation appears to occur in the vegetation of the fringes of the basin wetlands of the region. Some of these differences could be ascribed to the varying history and current vegetation condition of these wetlands. For example, the wetlands of the mine site were mostly quite heavily grazed and nutrient-enriched. Conversely, many of the wetlands of the regional survey had a history of more frequent fire than those of the mine site. The wetland vegetation probably varies quite significantly with regard to the depth to the water table, hydroperiod and other environmental variables. A stratigraphic/hydrological study and a larger sample of wetlands than above would be required to adequately classify the vegetation of these wetlands and to draw meaningful conclusions about vegetation pattern.

During the surveys conducted in March 2006, October 2006, October 2007 and November 2007 searching for additional populations of the DRF taxon *Commersonia* sp. Mt. Groper, which is associated with wetland habitats, a number of additional locations have been identified, the condition of which was noted. The location and condition of areas considered to match this vegetation type are summarised in Table 7.5 and detailed in Figure 7.4. These additional surveys demonstrated that a relatively large number of locations remain in excellent or good condition, although the majority are within the road reserve or privately owned rather than within the conservation estate. Due to the additional locations of Type 5 vegetation located during the surveys for *Commersonia* sp. Mt. Groper, no quadrats were placed in this type during the regional vegetation survey.

Eucalyptus occidentalis woodlands in the three sub-catchments of the Pallinup Sand Plain are currently reserved in Mettler Lake Nature Reserve and Hassell NP. Mailalup Nature Reserve immediately to the north east of the East Sand Plain also supports this vegetation type. The wetlands at the base of the Stirling Ranges in the National Park differ more significantly to the above in terms of understorey vegetation.

Table 7.5 Location of Type 5, Eucalyptus occidentalis vegetation in Good to Excellent condition recorded during search for Commersonia sp. Mt. Groper

Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
1	28.3.06	641965 E 6177157N	Minesite wetland	Eucalyptus occidentalis/Melaleuca cuticularis low woodland. An over open Melaleuca scrub over sparse shrubs (Acacia pulchella) on mid- dense Sedge on grey sandy loam. Good. Burnt >>5years ago
12	29.03.06	644992E 6173754N	Nyman's off Mettler Lake Rd	Melaleuca cuticularis central zone, Banksia littoralis over Kunzea recurva and Lepidosperma striatum zone and Pericalymma ellipticum closed heath . No Anarthria laevis sedgeland fringe. Very good. Burnt >>5years ago
13	29.03.06	644540E 6174077N	Nyman's off Mettler Lake Rd	Eucalyptus occidentalis/Melaleuca cuticularis low forest in centre with Anarthria laevis/ Cyperochloa hirsuta / Lepidosperma striatum sedgeland zone with low shrubs of Conothamnus aureus, Thomasia sp and Lasiopetalum sp. Eucalyptus decipiens subsp adesmophloia outer zone. Excellent.





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
110				Burnt >>5years ago
14	29.03.06	645108E 6175722N	Nyman's off Mettler Lake Rd	Eucalyptus occidentalis/Melaleuca cuticularis forest in centre, Kunzea recurva closed scrub zone and Lepidosperma striatum zone and Pericalymma ellipticum closed heath. No Anarthria laevis sedgeland fringe. Very healthy upland sand assemblage and laterite rim vegetation Excellent – near to pristine. Burnt >>20 years ago
15	29.03.06	646284E 6171744N	Mettler Lake Nature Reserve	Eucalyptus occidentalis/Melaleuca cuticularis low closed forest in centre with Anarthria laevis/ Lepidosperma striatum sedgeland zone with low shrubs of Sterculiaceae spp, Dodonaea sp., Pimelea sp. Very good . Burnt >5years ago
16	29.03.06	637444E 6171353N	North side of road verge South Coast Hwy between Kojaneerup Rd and Kojaneerup Springs Rd	Eucalyptus occidentalis low forest over Chorizandra enodis sparse sedges. Very good. Burnt >5years ago
17	7.10.06	652743E 6187008N	50m from South Coast Hwy along Boat Harbour Rd	Melaleuca cuticularis scrub in centre, Kunzea recurva/ Lepidosperma striatum scrub with emergent Eucalyptus occidentalis and Anarthria laevis sedgeland fringe. Eucalyptus decipiens subsp adesmophloia outer zone. Very good. Burnt >>5 years ago
18	7.10.06	653416E 6186217N	1km from South Coast Hwy along Boat Harbour Rd	Pericalymma ellipticum closed heath . Eucalyptus decipiens subsp adesmophloia over Anarthria laevis sedgeland fringe. Very good. Burnt >>5years ago
19	7.10.06	661767E 6184600N	10.3 km from South Coast Hwy along Boat Harbour Rd	Hakea sp. heath with Anarthria laevis sedgeland. Eucalyptus decipiens subsp adesmophloia outer zone. Very good. Burnt >>5years ago
20	7.10.06	667110E 6183966N	10.3 km from South Coast Hwy along Boat Harbour Rd	Eucalyptus occidentalis low closed forest in centre with Kunzea recurva heath Anarthria laevis/ Lepidosperma striatum sedgeland zone. Proteaceae shrubs in zone above sedgeland dead from waterlogging after the last year's record rains. Very good. Burnt 5years ago</td
21	7.10.06	667917E 6183595N	17.2 km from South Coast Hwy along road to Groper Bluff.	Melaleuca cuticularis scrub in centre, Kunzea recurva/ Lepidosperma striatum /Anarthria laevis closed heath and Eucalyptus decipiens subsp adesmophloia outer zone. Excellent. Burnt >5 years ago
22	7.10.06	669775E 6183212N	300m approx. west of road to Groper Bluff.	Eucalyptus occidentalis open forest over tall open shrubs of Acacia cyclops, Dodonaea sp, Templetonia ?retusa, and sparse sedges Chorizandra enodis. Excellent to near pristine. Burnt >20 years
23	7.10.06	637442E 6171255N	South Coast Hwy east of Kojaneerup Springs Rd (south side of	Eucalyptus occidentalis / Melaleuca cuticularis low forest in centre with Kunzea recurva heath / Lepidosperma striatum zone. Wetland dammed at roadside so hydrology altered and no





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
			road)	Anarthria laevis zone. Deeply inundatgd. Good. Burnt > 10years ago
24	7.10.06	646753E 6181593N	South Coast Hwy just west of Wellstead (north side of road)	Astartea aspera open heath with Anarthria laevis sedgeland and Eucalyptus decipiens subsp adesmophloia outer zone. Very good Burnt >5 years ago
25	8.10.06	642359E 6176930N	South Coast Hwy just south of minesite (north side of Hwy potential drawdown area	Melaleuca cuticularis shrubs. Small constructed drainage depression Good. Burnt 5years ago</td
26	8.10.06	642396E 6176910N	South Coast Hwy just south of minesite (south side of Hwy)	Kunzea recurva/ Pericalymma ellipticum heath. Drainage channel dug through natural wetland. Good. Burnt 5years ago</td
27	8.10.06	631152E 6194531N	Gnowellen Rd north of Chillinup Rd	Actinodium calocephalum open heath with Anarthria laevis sedgeland and Eucalyptus decipiens subsp adesmophloia outer zone. Very good Burnt >5 years ago
28	8.10.06	619802E 6184236N	Quarderwardup Lake Stirling Range National Park	Eucalyptus occidentalis / Melaleuca cuticularis low forest over Acacia sp., Aizoaceae and sparse sedges Lepidosperma striatum / Gahnia trifida. Very infrequently a narrow Anarthria laevis zone occasionally with Guichenotia spp. Excellent. Burnt > 10 years ago
29	8.10.06	637122E 6197684N	Mailalup Nature Reserve	Eucalyptus occidentalis low forest over tall open shrubs of Acacia cyclops, Melaleuca sp, Bossiaea sp, low shrub Guichenotia sp. and sparse sedges Schoenus sp with Austrostipa elegantissima. Excellent. Burnt >10 years
30	8.10.06	637048E 6197063N	Mailalup Nature Reserve	Calytrix spp./ Conothamnus aureus open heath with Anarthria laevis sedgeland. Very good Burnt >5 years ago
31	8.10.06	637078E 6196809N	Mailalup Nature Reserve	Conothamnus aureus open heath with Anarthria laevis sedgeland. Very good Burnt >5 years ago
32	8.10.06	644704E 6192978N	Old Boundary Rd south of Chillinup Rd	Eucalyptus occidentalis low closed forest over Anarthria laevis sedgeland with Conothamnus aureus. Excellent. Burnt >20years
33	8.10.06	663946E 6184455N	12.5 km from South Coast Hwy along Boat Harbour Rd	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland with and Eucalyptus decipiens subsp adesmophloia and Conothamnus aureus outer zone. Good –some grazing and woody weeds. Burnt >20years
34	8.10.06	670042E 6183121N	Along Boat Harbour Rd	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland. Good –some grazing and woody weeds. Burnt >20years
35	8.10.06	667541E 6183691N	Along Boat Harbour Rd	Kunzea recurva heath over Anarthria laevis sedgeland. Very good Burnt >5years





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
36	8.10.06	672985E 6190465N	Off Miller's Point Rd, south of the Bremer Bay Rd east of the Pallinup River	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland with Lasiopetalum sp. Good –some grazing Burnt >10years
37	8.10.06	652202E 6186439N	On South Coast Hwy east of Wellstead, about 300m before Boat Harbour Rd turnoff (south side of hwy)	Eucalyptus occidentalis / Melaleuca cuticularis low woodland over Lepidosperma striatum / Cyperochloa hirsuta / Patersonia occidentalis swamp form . Fringe of Eucalyptus decipiens subsp adesmophloia over Anarthria laevis. Very good Burnt 5-10 years ago. Burnt old trunks of Euc. occidentalis with resprouts < 10m.
38	8.10.06	652084E 6186444N	On South Coast Hwy 6.9 km east of Wellstead, before Boat Harbour Rd turnoff (north side of hwy)	Eucalyptus occidentalis low woodland (with occasional tall shrubs of Melaleuca cuticularis, Acacia cyclops) over low open shrubs of Commersonia sp Mt Groper Lasiopetalum sp and Actinodium calocephalum with Lepidosperma striatum /Cyperochloa hirsuta / Schoenus sp closed sedgeland. Very good condition. Hydrology altered by culvert under highway channelling water out of swamp on south side of road into this wetland. Burnt 5-10 years ago. Burnt old trunks of Euc. occidentalis with resprouts <10m.
39	9.10.06	618401E 6165200N	Kingscliffe Tree Farm	Eucalyptus occidentalis forest fringed with Eucalyptus decipiens subsp adesmophloia over Anarthria laevis. Very good. Burnt >10years
40	11.10.06	652225E 6176376N	Sandalwood Rd south of Mettler Lake Rd intersection	Eucalyptus occidentalis low woodland (with occasional tall shrubs of Melaleuca cuticularis and Banksia littoralis) over low open shrubs of Kunzea recurva and Gastrolobium bracteolosum and Anarthria laevis sedgeland. Very good. Burnt >5years
41	11.10.06	655921E 6173674N	Sandalwood Rd south of Mettler Lake Rd intersection. Wetland about 300m west of road	Eucalyptus occidentalis low closed forest over tall open shrubs of Melaleuca cuticularis, Acacia sp. Melaleuca sp, and sparse sedges of Gahnia sp. and Lepidosperma striatum. Excellent to near pristine condition with bushland surrounding wetland also in same condition. Burnt 5>20 years ago.
42	11.10.06	648527E 6175282N	North of Mettler Lake Rd near Sandalwood Rd intersection.	Eucalyptus occidentalis tall open shrubs < 6m in height over Kunzea recurva open heath with Actinodium calocephalum and Anarthria laevis closed sedgeland Very good. Burnt <5 years ago.
43	11.10.06	648747E 6175218N	North of Mettler Lake Rd near Sandalwood Rd intersection. South side of road.	Eucalyptus occidentalis tall open shrubs < 6m in height over Kunzea recurva open heath with Actinodium calocephalum and Anarthria laevis closed sedgeland Very good. Burnt <5 years ago.
44	11.10.06	646971E 6174091N	Both sides of Mettler Rd	Eucalyptus occidentalis /Melaleuca cuticularis woodland over Kunzea recurva scrub. Extensive basin, deeply inundated after last year's record rains. Dead shrubs prevalent especially





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
TWO				amongst Proteaceae at edges. Most probably dead due to record levels of water after many years of below average annual rain. Pattern evident this year throughout deeper basins of the region. Otherwise condition very good. Burnt >10 years ago.
45	11.10.06	647237E 6181984N	Opposite side of South Coast Hwy to Wellstead turnoff.	Anarthria laevis/Lepidosperma striatum sedgeland with low open shrubs of Astartea aspera and Eucalyptus occidentalis /Melaleuca cuticularis fringe. Very good. Burnt >5years ago.
46	11.10.06	649895E 6183831N	South side of South Coast Hwy .	Eucalyptus occidentalis over Lepidosperma striatum sedgeland with low open shrubs of Astartea aspera/Kunzea recurva. Very good. Burnt >5 years ago.
47	11.10.06	650537E 6184563N	South Coast Hwy .	Melaleuca cuticularis woodland over Lepidosperma striatum sedgeland. Margins Anarthria laevis sedgeland with Actinodium calocephalum. Good. Burnt <3 years ago.
48	11.10.06	650888E 6185022N	South Coast Hwy	Heath of <i>Pericalymma ellipticum</i> with <i>Mesomelaena tetragona</i> sedgeland
49	11.10.06	663593E 6184489N	South Coast Hwy	Eucalyptus occidentalis forest over Anarthria laevis closed sedgeland. Very good. Burnt >5 years ago.
50	11.10.06	662343E 6184684N	?South Coast Hwy	Eucalyptus occidentalis low closed forest over Anarthria laevis/Lepidosperma striatum sedgeland Very good. Burnt >5years ago.
51	11.10.06	661914E 6184623N	Boat Harbour Rd	Eucalyptus occidentalis /Melaleuca cuticularis low closed forest over leaf litter. Anarthria laevis sedgeland fringing the Swamp Yate zone. Excellent condition Burnt >10 years ago.
52	11.10.06	644198E 6179146N	South Coast Hwy west of Wellstead	Low open shrubs of Kunzea recurva and Pericalymma ellipticum over sedgeland of Anarthria laevis/Lepidosperma striatum with occasional emergent trees of Eucalyptus occidentalis and Melaleuca cuticularis to 10m in height
53	11.10.06	643757E 6192603N	Road verge of Chillinup Rd just east of Kojaneerup Rd	Eucalyptus occidentalis low forest over heath of Astartea sp., Bossiaea sp, Guichenotia sp., Lasiopetalum sp., and sedgeland of Lepidosperma striatum. Excellent condition Burnt 3-4years ago. Eucalyptus resprouts <6m in height
54	13.10.06	649594E 6183959N	Bushblock corner Old Boundary Rd and South Coast Hwy	Eucalyptus occidentalis low woodland over Kunzea recurva low shrubs and Anarthria laevis closed sedgeland. Very good. Burnt >10 years ago.
55	13.10.06	649865E 6184198N	Bushblock corner Old Boundary Rd and South Coast Hwy	Astartea sp heath and sedgeland of Mesomelaena tetragona. Very good. Burnt >10 years ago.
56	16.10.06	648519E 6175397N	Mettler Lake Rd near Cape Riche Homestead Rd	Eucalyptus occidentalis low woodland over Hakea trifurcata/Kunzea recurva open heath and Anarthria laevis sedgeland. Excellent condition





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
NU				Burnt <5yrs ago
58	05.10.07	618071E 6164254N	Kingscliffe tree farm	Tall open Eucalyptus occidentalis trees, over scattered Hakea corymbosa / Melaleuca sp. tall shrubs, over mixed sedgeland, including Anarthria laevis. Some Elythranthera brunonis herbs also present. Very good condition. Burnt in patches, >5 years ago.
59	05.10.07	639550E 6166206N	Mettler's Lake tree farm	Mixed moderately dense <i>Eucalyptus</i> spp. trees, over moderately dense <i>Melaleuca cuticularis</i> tall shrubs, over moderately dense mixed sedgeland. Very good condition.
60	05.10.07	640777E 6166740N	Mettler's Lake tree farm	Open Eucalyptus occidentalis tall trees, over mixed moderately dense sedgeland. Good condition, although weeds prevalent. Burnt >10 years ago.
61	05.10.07	640734E 6166892N	Mettler's Lake tree farm	Eucalyptus marginata open tall trees, over moderately dense mixed sedgeland. Good condition. Burnt 5 – 10 years ago.
62	05.10.07	641717E 6168588N	Mettler's Lake tree farm	Eucalyptus staeri, Melaleuca striata, Adenanthos cuneata around edges. Anarthria laevis / Anarthria scabra in center. Excellent condition. No evidence of fire.
63	06.10.07	646509E 6168175N	Embry tree farm	Low open Eucalyptus sp. mallee, over scattered Lambertia inermis / Hakea cucullata shrubs, over Dryandra mucronulata var. mucronulata / Taxandria spathulata / Xanthorrhoea platyphylla open low shrubs, over mixed herbs. Very good condition. No sign of fire.
64	06.10.07	656138E 6169249N	Roadside of Cape Riche Road	Tall open Eucalyptus occidentalis trees, over open Allocasuarina sp. tall shrubs around the edges, over moderately dense mixed sedgeland. Good condition. Burnt >5 years ago.
65	06.10.07	648928E 6181741N	Block 6849 on P209414	Eucalyptus occidentalis tall moderately dense trees, over moderately dense Kunzea recurva medium shrubs, over moderately dense mixed sedgeland, including Anarthria laevis. Very good condition, some weeds and signs of grazing. Burnt >10 years ago.
66	06.10.07	649572E 6182279N	Block 6849 on P209414	Open mixed Eucalyptus spp. mallees, over moderately dense Anarthria laevis sedgeland. Excellent condition. Fire >5 years ago.
67	06.10.07	635862E 6170730N	Williss tree farm	Eucalyptus occidentalis low forest with understorey of Anarthria laevis sedgeland. Condition good No evidence of fire
68	06.10.07	643856E 6173092N	Mitchell tree farm	Mixed open mallees, over dense sedgeland. Too wet for Commersonia. Good condition, weedy edges.
72	07.10.07	659248E 6185476N	Block 6927 on P169879	Mixed Eucalyptus spp. low woodland (with occasional tall shrubs of





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
				Melaleuca cuticularis, Acacia cyclops and Hakea corymbosa) over low open shrubs of Commersonia sp Mt Groper, and Actinodium calocephalum with Lepidosperma striatum / Anarthria laevis closed sedgeland. Good condition. Burnt 5-10 years ago.
73	07.10.07	660641E 6186795N	Bushland	Thick Eucalyptus occidentalis low forest in centre, surrounded by thick low shrubland and sedgeland. Excellent condition. Burnt 2-5 years ago.
77	08.10.07	651593E 6178061N	Block 6854 on P209409	Scattered mixed Eucalyptus spp. tall mallees, over scattered Adenanthos cuneata medium shrubs, over dense Anarthria laevis sedges. Good condition. Burnt 5-10 years ago.
78	08.10.06	652728E 6178461N	Block 6854 on P209409	Sparse Eucalyptus occidentalis medium mallees, over sparse Acacia cyclops tall shrubs, over moderately dense Anarthria laevis sedges. Good condition, although grazed and weedy. No signs of burning.
79	08.10.07	656354E 6179434N	Block 6854 on P209409.	Seasonal wetland – not right, too much <i>Banksia</i> . Excellent condition. No signs of burning.
80	08.10.07	648932E 6187299N	Block 1 on D55418	Eucalyptus spp. mixed low forest, over scattered mixed sedges and moderately dense mixed grasses. Degraded, unfenced. Stock run through it. Burnt 5-10 years ago.
82	08.10.07	658617E 6191194N	Roadside, South Coast Hwy	Open Eucalyptus occidentalis low forest, over mixed low open Acacia spp. shrubs, over sparse mixed sedge spp. Good condition. Burnt >5 years ago.
84	08.10.07	676165E 6192642N	Jennella tree farm	Open mixed Eucalyptus spp. mallees, over mixed low shrubs, over open mixed sedges. Good to poor condition. Burnt >5 years ago.
87	09.10.07	646517E 6181145N	Wheatbins block	Sparse Eucalyptus sp. mallees, over sparse Hakea corymbosa shrubs, over moderately dense mixed sedges. Excellent condition, no sign of fire.
88	09.10.07	651200E 6177253N	Roadside, Sandalwood Road	Eucalyptus occidentalis tall sparse trees, over sparse Kunzea recurva medium shrubs, over mixed moderately dense sedges. Good condition. Burnt 2-5 years ago.
91	09.10.07	654060E 6181944N	Block 6850 on P209414	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland. Good – fenced off for approx 15 years. Burnt >20years
92	10.10.07	664378E 6184778N	Boat Harbour Reserve	Open Eucalyptus spp. tall malleea, over sparse Grevillea concinna / Hakea cucullata tall shrubs, over moderately dense mixed sedges.
93	10.10.07	662448E 6184789N	Nyman's off Mettler Lake Rd, marked as wetland 15 in	Eucalyptus occidentalis / Melaleuca cuticularis forest in center, Kunzea recurva closed scrub zone and Lepidosperma striatum zone and





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
			previous survey.	Pericalyma ellipticum closed heath. No Anarthria laevis sedgeland fringe. Excellent condition, almost pristine. Burnt >>20 years ago.
96	11.10.07	654864E 6183157N	Block 6851 on P209409	Moderately dense Eucalyptus decipiens subsp. adesmophloia, over mixed moderately dense sedges along the edge of the wetland; E. decipiens replaced with Eucalyptus occidentalis in the center of the wetland. Almost pristine condition. Fenced off, never cleared.
98	05.11.07	645667E 6182455N	Diprose's block	Moderately dense Anarthria laevis and other mixed sedges, fringed by Eucalyptus decipiens subsp. adesmophloia. Good condition, on brown sandy loam.
99	05.11.07	619922E 6154402N	Roadside, South Coast Highway	Moderately dense Melaleuca cuticularis / Eucalyptus occidentalis medium trees, over dense mixed sedges. Sandy loam, with thick humus (approx. 10 cm) surface layer. Excellent condition.
103	06.11.07	629875E 6170179N	Kilchatten C	Moderately dense Eucalyptus occidentalis, over open Anarthria laevis and other dense mixed sedges. Light brown sand with a surface layer of humus. Good condition, but weedy fringe.
104	06.11.07	627227E 6169876N	Kilchatten D	Dense Eucalyptus occidentalis medium trees, over moderately dense tall sedges (to 1.5 m), over open mixed sedges, fringed by moderately dense Eucalyptus decipiens / Eucalyptus over moderately dense grasses. On loose grey sand.
105	06.11.07	625986E 6170059N	Kilchatten E	Open water body, fringed by moderately dense <i>Eucalyptus</i> occidentalis medium trees, over moderately dense tall sedges, over sparse native violet ground cover, fringed by mixed grass species and other weeds. Good condition towards centre, i.e.
106	06.11.07	628510E 6168882N	Kilchatten F	within 30 m of open water body. Moderately dense Eucalyptus occidentalis medium trees, over open Eucalyptus decipiens, over moderately dense tall sedges, over moderately dense mixed grass species and other weeds (dandelion and clover).
107	06.11.07	649110E 6177741N	Leighton's A	Moderately dense Beaufortia sp. tall shrubs, over open Adenanthos cuneatus medium shrubs, over moderately dense Mesomelaena stygia / Caustis diocia, and other mixed sedges, fringed by Eucalyptus occidentalis in places. On loamy sand. Excellent condition.
108	06.11.07	648715E 6178059N	Leighton's B	Moderately dense Eucalyptus occidentalis medium trees, over open Melaleuca sp low trees in centre. Western side is cleared to the centre and weedy. On light brown loamy sand. Good to excellent condition.
	i	1	1	U. U. U. U. I. U.





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
		6176659N		occidentalis, over Beaufortia sp. moderately dense tall shrubs, over open mixed sedges. On grey loose sand. Good condition, some weeds. Next to tree farm.
110	07.11.07	647067E 6184825N	Davy A	Open to moderately dense Eucalyptus occidentalis medium trees, over open grass species, over moderately dense terete sedges. No evidence of fire, on compacted light brown silty sand. Good condition, some weeds.
111	07.11.07	645118E 6183979N	Davy B	Open Eucalyptus staeri low mallees over moderately dense in places Melaleuca thymoides medium tall shrubs, over moderately dense Anarthria laevis and other mixed sedges. Light grey loose sand. Very good condition.
112	07.11.07	645475E 6184038N	Davy C	Open Eucalyptus decipiens medium to low mallees, over open Banksia baueri medium tall shrubs, over moderately dense Anarthria laevis and other mixed sedges (including Mesomelaena stygia). On light grey loose sand. Very good condition – some weeds at edge near track.
113	07.11.07	645654E 6183533N	Davy D	Open Eucalyptus decipiens and other mallees, over moderately dense Anarthria laevis, over mixed low shrubs (including Verticordia sp and Beaufortia sp). On damp, light brown sand. Good condition.
114	07.11.07	645968E 6183573N	Davy E	Open (to dense in patches) Eucalyptus occidentalis medium trees, over open to moderately dense Anarthria laevis and other mixed sedges. On light grey to brown fine sand. Excellent condition, few weeds.
115	07.11.07	645968E 6183382N	Davy F	Open Eucalyptus occidentalis medium trees, fringed by Eucalyptus decipiens medium mallees, over open Anarthria laevis, over open terete sedges. On light brown loose sand. Good condition, few weeds.
116	07.11.07	654111E 6181569N	Gilmore A	Open to moderately dense Eucalyptus occidentalis medium trees, over open Melaleuca sp low trees, over open Anarthria laevis and other mixed sedges. Loose fine light grey sand. Very good condition – signs of rabbits present.
122	07.11.07	685599E 6193688N	Thomas A	Moderately dense Eucalyptus occidentalis medium trees, over sparse Eucalyptus pleurocarpa / Melaleuca sp. low trees, over moderately dense terete sedges, over mixed herbs. Spot fires approx. 5 years ago – possible soil fire in places, soil cracking from organic matter loss and underground root burning. Very good condition – some weeds.
123	07.11.07	686189E 6194520N	Thomas B	Sparse Eucalyptus occidentalis medium trees, over open Melaleuca sp. low trees, over dense terete





Wetland No	Date	GPS (WGS 84)	Location	Vegetation status and condition
				sedges. On fine sandy light brown loam. Evidence of fire >> 5years. Good to excellent condition – no weeds.



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Figure 7.4 Location of areas searched for E. occidentalis



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7.4 Representation of Minesite Vegetation Units within ITC Tree Farms

As previously discussed Sandiford (2003 a-h, 2004 & 2005) and Hickman (2007) provide the only reliable, fine scale data of the Pallinup Sand Plain in the vicinity of the project footprint. Sandiford's studies mapped the vegetation of almost all of the Integrated Tree Crops (ITC) agroforestry properties on the Pallinup Sand Plain between the Kalgan and the Pallinup rivers. They also provided a short description of the vegetation types mapped. In the absence of quadrat based data, it is impossible to directly compare the vegetation within these areas. However, the areas estimated are, with the exception of Sunnyside and Gunnamatta, additional to estimates obtained within the Southdowns regional survey.

Table 7.6 The area of the vegetation units similar to the mine site vegetation units at ITC tree farms.

(Determined from descriptive data and mapping of Sandiford; 2003 a-h, 2004 & 2005.)

Tree farm	1. **Albany Blackbutt mallee - heath on laterite (ha)	2. **Chittick scrub-heath on laterite (ha)	3. Albany Blackbutt mallee heath on deep sand (ha)	4. **Mixed open mallee (inc. Tallerack) over tall open shrubs and open heath (ha)	5. Swamp Yate woodland (ha)
Apprilla	-	1.00	15.56	-	2.70
Benmore	-	-	187.59	-	-
Gidget	-	1	0.66	-	12.20
Gunnamatta	21.35	•	22.00	-	0.48
Jindalee	-	•	99.40	-	-
Kilchatten	-	•	-	-	12.17
Komodo	-	•	64.12	-	22.35
Pfeiffer	-	•	28.87	-	7.00
Salopia	-	-	25.25	-	20.22
Sunnyside	58.94	-	65.70	321.58	3.52
Wimbush	-	-	51.40	-	18.70
TOTAL (ha)	**80.29	**1.00	560.65	**321.58	99.34

^{**} These tree farm vegetation types have descriptions similar to the mine site vegetation types. Whilst some of the flora components of this vegetation (as described by Sandiford) do not occur at the mine site, these areas should be further investigated for similarity with the mine site vegetation via quadrat - based survey and multivariate analysis.





7.5 Overall Assessment of Vegetation Clearing

The region has been extensively (79.4%) cleared of native vegetation due to farming and agroforestry and the reservation status of the remnant vegetation as a whole (4.6%) is very poor (Figure 4.2). Overall, and in each of the three individual sub-catchments of the sand plain between Manypeaks and Wellstead, the percentages of total vegetation remaining and of vegetation reserved are well below threshold values that have been determined as critical for biodiversity conservation (EPA ,2000).

Table 7.7 Total Remnant Vegetation and its Reservation Status in Three Sub-catchments of the Pallinup Sand Plain

SUB- CATCHME NT (ATA, 2001)	TOTAL AREA OF SUBCATCH MENTS	TOTAL REM VEG as area; and % of total area	REM VEG IN RESERVES as area; and % of total area
Sand Plain West	15,239 ha	3,953 ha; 25.8%	1710.5 ha; 11.2%
Mountains to Coast	25,942 ha	3,910 ha; 15.1%	1234.6 ha; 4.8%
East Sand Plain	37,824 ha	8,431 ha; 22.3%	684.7 ha; 1.8%³
Total	79,005 ha ¹ =100%	16,276 ha; 20.6% ¹	3629.8 ha; 4.6%²

¹ (ATA, 2001); ² (CALM 1992). ³The reserve area calculated for the East Sand Plain included Mettler Lake Nature Reserve, although this reserve lies just outside the official boundary of the sub-catchment, because the nature reserve is located near the border of the sand plain regional geomorphic and hydrological setting (rather than fully within the coastal zone setting). Without the inclusion of Mettler Lake Nature Reserve, the reservation of vegetation in East Sand Plain would be 0.75%, comprising the City of Albany Reserve (253 ha) and a portion of the Hassell National Park road verge (30 ha).

In the East Sand Plain sub-catchment (where the mine site is located), remnant vegetation persists at about the same level as in the Sand Plain West sub-catchment (ATA, 2001). The Mountains to Coast sub-catchment encompass significantly less remnant vegetation.

The reservation of native vegetation in all of the sub-catchments is very low. The East Sand Plain remnant vegetation reservation (as a percentage of the total area that was formerly vegetated in this sub-catchment) is the lowest of the three areas (1.8%). The latter is equal to or lower than the most poorly reserved areas of native vegetation in Australia such as the Avon Wheatbelt (EPA, 2000). The level of reservation in the Mountains to Coast is slightly higher than in East Sand Plain. However, the only reserve is the area known as Hassell National Park, a long narrow polygon, spanning the South Coast Highway. This configuration increases the vulnerability of the area to edge effects, although at present the vegetation appears to be in good to excellent condition.

The scope of the survey was to examine the regional representation of vegetation present at the proposed minesite, rather than to map the extent of all vegetation types present within the area. Given the extent of clearing within the region, it is entirely conceivable that additional vegetation types within the region may be even less conserved than those present on the proposed mine site. Without further investigation of the current extent of all





vegetation types, it is considered that (in terms of biodiversity conservation) that all remaining native vegetation in good condition contained within the three sand plain subcatchments is of high conservation value and worthy of protection.

Apart from road verges, some of which are comparatively broad (30 to 50 metres is relatively common, and 100 metres breadth is also present in some areas) and a valuable component of the total remnant vegetation, most of the remnant vegetation of the three sub-catchments of the Pallinup Sand Plain between the Kalgan and Pallinup Rivers is privately-owned. Accurate data on the condition and floristic composition of privately owned remnant vegetation is only available for the ITC tree farms (Sandiford 2003 a-h, 2004 & 2005). Although these tree farm remnant vegetation areas constitute only a small proportion of the total area of the sand plain (Table 7.8), they now account for a significant proportion of remaining native vegetation (

Table 7.9). This is particularly so in the East Sand Plain sub-catchment where more native vegetation remains in tree farms (9.9%) than in reserves (8.2%) Figure 7.5.

Table 7.8 Tree farm Remnant Vegetation in Three Sub-catchments of the Pallinup Sand Plain.

SUB- CATCHME NT (ATA, 2001)	TOTAL AREA	TREE FARM REM VEG	TREE FARM REM VEG as % of total area
Sand Plain West	15,239 ha	Salopia 143.92 ha	0.33%
Mountains to Coast	25, 942 ha	Kilchatten 203.07 ha	0.54%
East Sand Plain	37,824 ha	Sunnyside 733.77 ha Jindalee 103.68 ha	1.94% 0.27%
Total	79,005 ha ¹ =100%	1184.44 ha ²	1.44%

¹ (ATA, 2001); ²Sandiford (2003 a-h, 2004 & 2005) ³ Tree farms at the extreme southern edge of the sand plain (i.e. Sunnyside and Jindalee in the headwaters of the Eyre River) are included in the East Sand Plain calculations; however the similarity of the vegetation at these two tree farms to that of the mine site is unresolved.]





Table 7.9 Partitioning of Remnant Vegetation between Reserves and Tree Farms in Three Subcatchments of the Pallinup Sand Plain.

SUB- CATCHMENT (ATA, 2001)	TOTAL REM VEG AREA (ha)	REM VEG IN RESERVES (ha)	REM VEG IN RESERVES (as % of total rem veg area)	TREEFARM REM VEG (ha)	TREEFARM REM VEG (as % of total rem veg area)
Sand Plain West	3,953 ha	1710.5 ha	43.3%	Salopia 143.92	3.6%
Mountains to Coast	3,910 ha	1234.6 ha	31.6%	Kilchatten 203.07	5%
East Sand Plain	8,431 ha	684.7 ha	8.2%	Sunnyside 733.77 Jindalee 103.68	8.7% 1.2%
Total	16,276 ha ¹ = 100%	3629.8 ha ³	22.3%	1184.44 ha²	7.3%

¹(ATA, 2001); ²Sandiford (2003 a-h, 2004 & 2005); ³(CALM 1992).

Many taxa (particularly those in the families Proteaceae, Epacridaceae and other die-back prone flora) found in the regional survey form significant populations in the bush remnants surveyed. Examples of such flora include Eucalyptus staeri (located in 63% of regional sites, 65% of mine sites), Banksia baueri (located in 38% of regional sites, 27% of mine sites), Hakea baxteri (located in 6% of regional sites, 25% of mine sites), Banksia dryandroides (located in 6% of regional sites, 4% of mine sites), Adenanthos apiculatus (located in 38% of regional sites, 16% of mine sites), Chordifex capillaceus (located in 13% of regional sites, 2% of mine sites), Dryandra plumosa subsp. plumosa (located in 43% of regional sites, 2% of mine sites) and others. (Most of these are also significant because of their range characteristics.) Since the Pallinup Sand Plain is extensively cleared, the mine site and other bush remnants are effectively isolated islands of biodiversity in a large sea of species-depauperate cropland and tree plantations. Thus the populations of most native species found in the remnants are significant because elsewhere in the region these species often persist as scattered individuals along roadsides rather than as viable populations of significant size. Given the prevalence of dieback disease and other soil pathogens in the region, the fragmented populations of all dieback-prone flora remaining in the various bush remnants assume even higher significance.



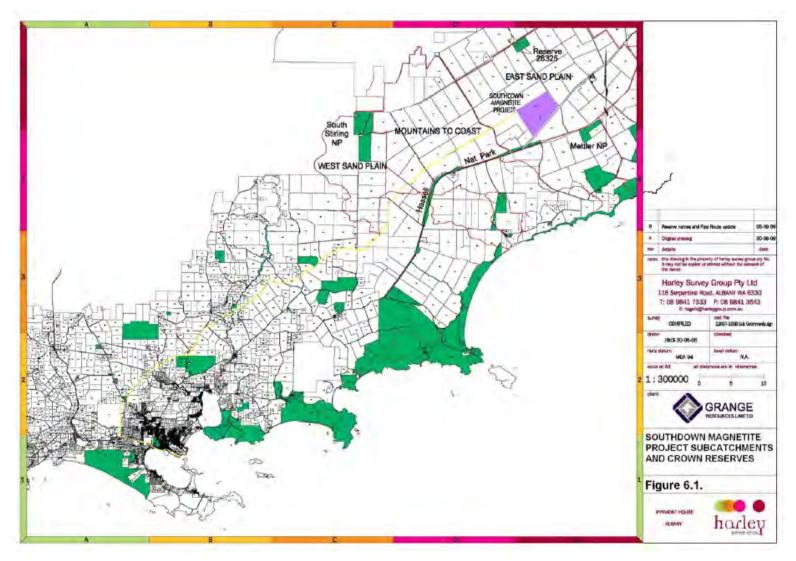


Figure 7.5 Sub-catchments and Conservation Reserves on the Pallinup Sand Plain in the Vicinity of the proposed Southdown Mine.





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8.0 Discussion and Conclusions

8.1 Extent and Conservation Value of Remnant Vegetation within the Regional Survey

Important regional biodiversity resources (closely comparable to some of the resources present at the proposed mine site) were identified in several of the bush remnants sampled in this regional survey.

The approximate areas of the vegetation units identified at the mine site (*ecologia*, 2007) and in the regional bush blocks surveyed is summarised in Table 8.1. The extent of the vegetation types on the tree farms that were assesses as similar to those of the mine site (Sandiford; 2003 a-h, 2004 & 2005) are also included as indicated.

The regional extent of the various vegetation types of conservation significance identified at the mine site is discussed, in relation to the findings of the regional survey and the tree farm vegetation, more fully below.





Table 8.1 The areas of the mine site vegetation units at the bushland remnants surveyed on the East Sand Plain Sub-catchment.

Location	1a. Albany Blackbutt mallee - heath laterite ridge (ha)	1b. Chittick scrub-heath waterlogged laterite(ha)	3. *Albany Blackbutt mallee heath on deep sand (ha)	4. Tallerack on seasonally waterlogged sandy mud (ha)	5. Swamp Yate woodland in clay basins (ha)
Southdown mine site	40.3	3.7	96.7	29.4	63.5
1. Hwy verge south of mine site	n/a	n/a	n/a	approx 0.01	n/a
2. Reserve 31240 west of Sandalwood Rd	n/a	n/a	n/a	n/a	12.8
3. Bushland cnr. Old Boundary Rd and South Coast Hwy	-	-	200-250	0.68	Less than 0.1
4. Shire of Albany Res. 28325 cnr. Chillinup-Gnowellen Rd	-	-	-	-	-
5. Block No 6830 north of mine site	-	-	300	-	-
6. Block No 4 (adj. Wellstead grain silos)	20-40	-	500	-	-
7. South Coast Hwy east of Wellstead	-	-	-	-	Less than 0.1
8. Block No 6859 north of Mettler Rd.	-	-	350-450	-	-
9. Block No 6857 north of Mettler Rd	n/a	n/a	150	n/a	30.9
10. Stirling Range National Park	50-100			3.07	
11. South Stirling Nature Reserve	50-100		100	0.33	
12. Mettler Lake Nature Reserve	20-40				
13. Gunnamatta Tree Farm	20		22		
14. PL6460	20-40				
15. Sunnyside Tree Farm	50		65		
16. Hassell National Park			50-100		
17. PL6234			10-30		
18. Boat Harbour Reserve				10.96	
19. PL6787				7.88	
20. Chillinup Nature Reserve				5.52	
Total area on conservation estate	120-240		180-200	19.88	
Total area on private land	110-190		1647-1867	8.57	
TOTAL area on regional survey blocks (ha)	230-430	nil	1797 - 2067	28.45	approx 44 (in good





			excellent
			condition)

^{*}Estimates only as the vegetation patterns were fine scale mosaics, individual units could not be mapped a (except for the larger Swamp Yate wetlands).

Type 1: Eucalyptus staeri mallee heath on laterite ridges.

Lateritic ridges comparable in size and elevation to that at the mine site are uncommon in this region of predominantly low, sandy relief. However, laterite, as a patchy mosaic of small low outcrops, is quite common over the sand plain. The former widespread occurrence of the lateritic vegetation is still evident in small roadside and farm remnants, as laterite areas on farms are less suitable for tilling. However, unless fenced, the lateritic vegetation areas are used as shelter belts for livestock and degradation of this vegetation is probably widespread within privately owned remnants.

The total extent of this vegetation type recorded within remnant vegetation is difficult to accurately quantitated, since it typically occurs as a patchy mosaic, often in areas dominated by Type 3 vegetation, at a scale finer than 1:25,000. Aerial photography and ground truthing were used estimate the proportion of areas encompasses, but these estimates were compromised to varying degrees by the degree of vehicular access, as transects through large blocks to the degree required to establich all occurrences would be prohibitively time consuming. Hence it is likely that estimates on the larger remnants, in particular the Stirling Range National Park and South Stirling Nature Reserve, have tended towards the conservative, based only on what was seen, and are likely to be an underestimate of the true area of occurrence.

On the basis of these revised estimates, it seems that the degree of reservation of this vegetation type is considerably higher than originally thought, and therefore its current status as a Prority 1 Ecological Community, that is to say, "known from few, small occurrences, all or most not actively managed for conservation..." should be reviewed. Given the representation within the Stirling Range National Park and the South Stirling Nature Reserve, plus the more limited representation in the Hassel National Park, this vegetation would seem to be more suitable for inclusion on the PEC list as Priority 3(i) i.e. "Communities that are known from several to many occurrences, a significant number or area of which is not under threat of habitat destruction or degradation"

The areas present in private landholdings which most closely represented this vegetation type within the minesite were present of Lot 4, adjacent to the Wellstead Wheat Bins, Gunnamatta Tree Farm and Lot 6460. However the area of Gunnamatta Tree Farm which most closely resembles the vegetation is extremely small and this area is regarded as too vulnerable to edge effects to merity consideration for offsets, although obviously retention of it as a private landholding is desirable. Both Lot 4 and Lot 6460 are desirably inclusions into the conservation estate, particularly as both support other Priority Ecological Communities.

Type 3: *Eucalyptus staeri* mallee heath on deep sand.

The vegetation of deep sandy habitats in the current regional survey was abundant, extensive and widespread. It formed a readily recognisable unit in the field due to its distinctive floristic indicator species (such as *Banksia baxteri*, *B. attenuata*, *B. coccinea* and *Adenanthos cuneatus*). All of the medium-sized bush blocks in the regional survey included substantial areas of this type





of vegetation. However the various bush blocks in the regional study differed in their fire history and thus exhibited a range in vegetation structure and to a lesser extent in floristic composition.

Approximately 1,800 to 2,000 ha, of which approximately 10% is reserved, were identified in the regional bush blocks surveyed that were directly comparable to the 96.7 ha of this vegetation in good condition at the mine site. About 561 ha of this type of vegetation were also mapped by Sandiford on the tree farms of the area (Table 8.2). This vegetation type also occurred at one of the sites at Wellstead surveyed by Hickman (2007). The relatively low level of reservation is a reflection of the large amounts of this land on private land rather than the small size of areas on conservation estate, as this vegetation type is estimated to be more abundant within the South Stirling Nature Reserve and Hassell National Park than is Type 1 above.

Extensive areas of this vegetation in very good to excellent condition occur at three of the remnant bushlands surveyed in this study (Block 6830, Block 6857 and 6959). This vegetation also occurred at Block 4 and the bushland on the corner of Old Boundary Rd but had slightly lower conservation values (due to factors such as weed invasion, frequency of fire and prevalence of Priority flora species) than Blocks 6830, 6857 and 6959.

Most of Block 6830 was extremely species-rich, in excellent condition and included large populations of four Priority flora species (*Monotoca aristata* P2, *Chordifex leucoblepharus* P2, *Dryandra calophylla* P3 and *Latrobea recurva* P3). The vegetation of this block has not been burnt for several decades and is thus somewhat dry and senescent in places. (The latter does not detract from its very high conservation values and the vegetation in this state provides excellent fauna habitat.) This block, although an island of native vegetation surrounded by totally cleared farmland, forms a very important regional biodiversity resource. Unfortunately the block is unfenced on the western end and so grazing (although limited by the very thick vegetation structure) is occurring on this margin of the bushland.

Block 6857 (if considered in combination with the immediately-adjacent bushland Block 6959) forms very species-rich vegetation of even higher conservation value. Block 6857 encompasses a fenced, large and near-to-pristine *Eucalyptus occidentalis* forest wetland, small areas of lateritic breakaway vegetation (that were not able to be surveyed in this study due to time restraints) and near-to-pristine, long-unburnt, very species-rich sand plain vegetation. The vegetation of this block has not been burnt for many decades and is therefore extremely thick, tall and somewhat dry and senescent in places. (The latter does not detract from its very high conservation values.) This vegetation also provides excellent and diverse fauna habitat, as it includes many mature vegetation types and a variety of hydrological, soil and landscape features. Block 6959 encompasses a large expanse of recently-burnt, species rich sand plain in excellent condition, Swamp Yate wetland and large populations of the Priority flora species *Monotoca aristata* (P2), *Dryandra calophylla* (P3) and *Latrobea recurva* (P3), and a small population of *Chordifex ornatus* (P2).

The above bushlands also directly adjoin Mettler Lake Nature Reserve (south of Mettler Rd) and if managed for conservation would complement and enhance the viability of this small nature reserve.

On the basis of the revised estimates of this vegetation type's occurrence, a revision of its Priority status to Priority 3(i) should be considered.





Type 4: Eucalyptus pleurocarpa mallee heath on seasonally waterlogged colluvium

The distribution of this vegetation type, whilst not as restricted as originally thought, still remains the least widespread of all the vegetation types on the mine site. This lack of abundance is probably a product of lower representation pre-clearance, due to the specific topographic and soil requirements, and of the value of such habitat for pastoral activities.

The total known occurrence of this vegetation type outside the mine site has been mapped at only 28.45 hectares, thus the area of 29.4% on the mine site represents approximately 51% of the total area. Remnants on the conservation estate represent only 15% of the total area with Chillingup Reserve, the largest representation within reserves, appearing to be significantly affected by dieback.

On the basis of the current known representation within the conservation estate, this vegetation type would appear to merit its current status as a Priority 1 Ecological Community. The acquisition of further private landholdings to supplement areas within the conservation estate are a consideration. Acquisition of both the Boat Harbour Reserve area and the private landholding L6787 are desirable. Lot 6787 is a closer representation of the vegetation at the mine site and has the added advantage of extending the area of the South Stirling Nature Reserve, to which it is adjacent. This landholding also contains areas of Type 3 vegetation not surveyed in the current survey.

Type 5: Eucalyptus occidentalis low woodlands and forest in clay basins

The results of this regional survey indicate a significant floristic variation in the vegetation of the basin wetlands of the region. This can be attributed in part to the widely varying vegetation condition of the wetlands and to the small-scale zonation in their vegetation (that is usually poorly sampled in floristic studies involving a wide range of upland vegetation types). A detailed floristic, hydrological and stratigraphic study and a much larger sample of wetlands would be required to adequately classify the varied habitats and vegetation of these wetlands and to survey their poorly-known and rare flora. Such a study was beyond the scope of this regional survey but should be of high priority to the Department of Environment and Conservation considering the regional scarcity of wetlands in good condition and their very poorly-reserved status.

Over 99 ha of such wetlands in very good to excellent condition occur on tree farms in the region (Table 8.1). These wetlands have been searched for *Commersonia* sp. Mt Groper, revealing a significant number of Type 5 communities in good to excellent condition. It should be noted that the areas included in Table 8.1 above only encapsulates those areas quadratically surveyed. The total area of this vegetation type is likely to be significantly higher were the areas surrounding those wetlands, qualitatively surveyed in the *Commersonia* sp. Mt. Groper regional survey, to be mapped in detail.

Of the 44 ha of such wetlands in very good to excellent condition in the current regional survey, three wetlands had outstanding conservation values with regard to the general concept of *Eucalyptus occidentalis* wetland vegetation (as determined by the limited floristic classification in this study). The first of these was Reserve 31240 (west of Sandalwood Rd) that included near-to-pristine wetlands, which included that of Site 52. The second was Site 81, a totally unprotected roadside wetland that included a population of the Declared Rare Flora





Commersonia sp. Mt Groper. The third wetland of outstanding conservation value was on Block 6857. Although the latter wetland was not sampled in the floristic survey, it included near-to-pristine vegetation and was adjacent to (surveyed) high conservation value bushlands (see above).





9.0 Recommendations

- 1. Consideration be given to the acquistion of private landholdings, particularly to increase the representation of Type 4 within the conservation estate. For Type 4, *Eucalyptus pleurocarpa* mallee heath on seasonally waterlogged colluvium, the most suitable areas is L6787 immediately west and contiguous with South Stirling Nature Reserve. A broader number of options is available
- 2. The Priorty Status of Community Types 1 and 3 should be reevaluated in the light of additional representation as detailed above. Notwithstanding the extension to distributions, acquistions to the conservation estate as detailed above are desirable, particularly for Type 1 vegetation.
- 3. The Priority Status of Community Type 5 should also be reevaluated, notwithstanding the absence of quantitative data.





10.0 Study Team

The Southdown Regional Flora and Vegetation Assessment described in this document was planned, coordinated and executed by:



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11.0 Permits

The Southdown Regional Flora and Vegetation Assessment was conducted under the authorisation of the following licenses issued by DEC to:

A. Capobianco "Licence to take flora for scientific or other prescribed purposes"

Licence Number: SL005707, valid to 2nd April 2007

Regulation 4 Entry Permit: Number CE001905.

C. M^cCormick "Licence to take flora for scientific or other prescribed purposes"

Licence Number: SL007548, valid to 17th May 2007.

C. Tauss "Licence to take flora for scientific or other prescribed purposes"

Licence Number: SL007601, valid to 4th October 2007

C. Macpherson "Licence to take flora for scientific or other prescribed purposes"

Licence Number: SL007957, valid to 14th December 2008

Regulation 4 Entry Permit: Number CE001905.

J. Gilovitz "Licence to take flora for scientific or other prescribed purposes"

Licence Number: SL008036, valid to 4th April 2008

Regulation 4 Entry Permit: Number CE001905





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Appendix A: Species List





Family	Species	EIA	Ph.	Ph.	Ph.	Ph.	Ph. 5
	Agrostocrinum scabrum subsp. scabrum	Х	Χ				
	Chamaescilla corymbosa var. corymbosa	Х		X			
	Chamaescilla spiralis	Х					
	Johnsonia acaulis	Х	Χ	Х			
	Johnsonia lupulina		Χ				
	Johnsonia teretifolia	Х	Χ			X X X X	
	Laxmannia brachyphylla		Χ	Х	Х		Х
	Laxmannia omnifertilis	Х					
	Laxmannia ramosa		Χ				
	Laxmannia ramosa subsp. ramosa	Х					
Anthericaceae	Laxmannia sessiliflora	Х	Χ				
	Laxmannia sessiliflora subsp. australis	Х					
	Laxmannia sp.		Χ				
	Laxmannia squarrosa	Х					
	Thysanotus dichotomus						Х
	Thysanotus glaucifolius		Χ				
	Thysanotus sp.		X			3 4 X X X X X	
	Thysanotus sparteus	Х	Χ				Х
	Thysanotus tenellus		,				
	Tricoryne elatior	Х	Х			4	
	Tricoryne tenella						Х
	Platysace filiformis	Х	Х				X
	Trachymene pilosa	X					
	Xanthosia candida	Х	X				
Apiaceae	Xanthosia huegelii		Х			4	Х
	Xanthosia singuliflora	Х	Χ				X
	Xanthosia tasmanica	X	,				
Asteraceae	Angianthus preissianus	X					
7.0.0.0000	*Arctotheca calendula	X					
	*Cirsium vulgare	X					
	*Conyza parva	X					
	*Conyza sumatrensis	X					
	Cotula australis	X					
	*Gamochaeta calviceps	X	Х				
	Gnephosis tenuissima	X			X X X		
	Helichrysum luteoalbum	X	Х				
	Hyalosperma demissum	X	 ^			X X X X	<u> </u>
	Hyalosperma simplex				Χ		<u> </u>
	*Hypochaeris glabra	X					<u> </u>
	Millotia myosotidifolia		Х				
	Millotia tenuifolia var. tenuifolia	X				-	
	Quinetia urvillei	X					
	Quirieua urviilei	_ ^	I	1	i		1



	Senecio quadridentatus	X					
	Siloxerus filifolius	X					
	*Sonchus oleraceus	X					
	*Ursinia anthemoides	X					
	*Vellereophyton dealbatum	X	Х				
	Vittadinia gracilis	X		Х			
Boraginaceae	?*Echium plantagineum		Х	- / (
	*Raphanus raphanistrum			Х			
	*Cerastium glomeratum	Х					
	Allocasuarina?thuyoides	7.			Х		
	Allocasuarina huegeliana	X					
	Allocasuarina humilis	X	Х	Х	Х	Х	Х
Boraginaceae Brassicaceae Caryophyllaceae Casuarinaceae Casuarinaceae Centrolepidaceae Colchicaceae Crassulaceae Cupressaceae Cyperaceae	Allocasuarina microstachya	7.				X	
	Allocasuarina thuyoides	X	Х			X	Х
	Aphelia cyperoides	X					
	Centrolepis aristata	X					
Centrolepidaceae	Centrolepis mutica	X					
	Centrolepis polygyna	X					
Colchicaceae	Burchardia congesta	X	Х	Х	Х	Х	Х
	Crassula colligata	X					
Crassulaceae	Crassula colorata	X					
	Crassula decumbens var. decumbens	X					
	Crassula exserta	Х					
Cupressaceae	Callitris roei		Χ				
-	?Schoenus sp.		Χ				
, ,	Baumea articulata	Х	Χ				
	Baumea juncea	Х					
	Caustis dioica	Х	Χ	Χ	Х	Х	Χ
	Chorizandra enodis	Х	Χ				
	Chorizandra enodis Cyathochaeta avenacea	X	X	X		X	X
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans	X X X	Χ	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus	X	X X X	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla	X X X X	X X X	X			X
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata	X X X X	X X X	X			X
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp.	X X X X	X X X X	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida	X X X X X	X X X X	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua	X X X X	X X X X	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua	X X X X X	X X X X X	X			Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua Isolepis stellata Lepidosperma brunonianum	X X X X X	X X X X	X		X	Х
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua Isolepis stellata Lepidosperma brunonianum Lepidosperma carphoides	X X X X X X	X X X X X	X			X
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua Isolepis stellata Lepidosperma brunonianum Lepidosperma leptostachyum	X X X X X X X	X X X X X	X		X	X
	Chorizandra enodis Cyathochaeta avenacea Cyathochaeta equitans *Cyperus tenellus Gahnia ancistrophylla Gahnia aristata Gahnia sp. Gahnia trifida Isolepis cernua var. cernua Isolepis stellata Lepidosperma brunonianum Lepidosperma carphoides	X X X X X X	X X X X X	X		X	X



	Lepidosperma squamatum	Х	Х	Х	Х	Х	Х
	Lepidosperma striatum	X	X	- / (X
	Lepidosperma tenue		X	Х			
	Lepidosperma ustulatum		X				Х
	Mesomelaena graciliceps	Х	X	Х			X
	Mesomelaena pseudostygia		X				
	Mesomelaena stygia	Х	X	Х	X		Х
	Mesomelaena stygia subsp. stygia		<u> </u>	X	X	X	
	Mesomelaena tetragona	Х	Х	X			Х
	Schoenus ?brevisetis	X	<u> </u>				
	Schoenus ?caespititius		Х			X X X X X X X X X X X X X X X X X X X	
	Schoenus?sesquispiculus	X					
	Schoenus aff. curvifolius	+ ^-	Х				
	Schoenus brevisetis		X				
	Schoenus caespititius	X	X				Х
	Schoenus curvifolius	X	X			Y	X
	Schoenus laevigatus	X	X				
	Schoenus nanus	X					
	Schoenus obtusifolius	X	Х				
	Schoenus pleiostemoneus	X	X			Y	Х
	Schoenus sp.		X	X			
	Schoenus subbarbatus	X	X				
	Schoenus subbalbatus Schoenus subbulbosus	X					
	Schoenus subfascicularis	X	Х				
	Schoenus sublateralis	X	X	Х			Х
	Schoenus sublaxus	X	X				_^_
Cyperaceae	Tetraria capillaris	X					
	Tetraria octandra	X	Х	Х		X	Х
	Tetraria sp.						
	Tricostularia compressa	X	Х				
	Tricostularia neesii		X				
	Tricostularia neesii var. elatior	X	X				Х
	Tricostularia neesii var. neesii	^	X	Х	Y	Y	X
	Tricostularia sp. south coast (R. T. Wills 1423)		X				
Dasypogonaceae	?Lomandra sp.		X				
Dasypogonaceae	Calectasia gracilis	X	X	Х	Y		
	Pacalectasia gracins Pacalectasia obtusa (P3)	X	X				
	Dasypogon bromeliifolius	X	X	Х			Х
	Kingia australis	X	X	X		X	
	Lomandra ? nutans	X					
	Lomandra caespitosa	X				<u> </u>	
	Lomandra hastilis	X	Х			Х	Х
	Lomandra micrantha subsp. micrantha	X					
	Lomandra nigricans	X	Х				Х
	Lumanura myntans		_ ^			1	^



	Lomandra pauciflora	Х	Х				
	Lomandra preissii		X				
	Lomandra purpurea				Х	Х	
	Lomandra rupestris	Х			1		Х
	Lomandra sericea						X
	Lomandra sonderi						X
	Lomandra sp.		Х				X
	Hibbertia acerosa						X
	Hibbertia amplexicaulis						X
	Hibbertia gracilipes	Х	Х	Х	Х	Х	X
	Hibbertia ?hibbertioides var. meridionalis	X					
Dilleniaceae	Hibbertia lineata	X					
	Hibbertia recurvifolia	X	Х	Х	Х	Х	Χ
	Hibbertia rupicola		X	X	X		
	Hibbertia sp.			X	X		
	Drosera erythrorhiza	X					
	Drosera erythrorhiza subsp. erythrorhiza			Х			
	Drosera glanduligera	X		 ^			
	Drosera huegelii		X	Х			
	Drosera leucoblasta	X		 ^			
Droseraceae	Drosera menziesii		X	X	Х		Х
Diosciaccac	Drosera menziesii subsp. menziesii	X					
	Drosera paleacea subsp. paleacea	X	Х				
	Drosera paleacea subsp. trichocaulis	X	X				
	Drosera pallida	X		X			
	Drosera platypoda	X					
	Drosera pulchella	^	Х				Х
Droseraceae	Drosera scorpioides			Х			
Dioseraceae	Drosera sp.	X					
Epacridaceae	Acrotriche cordata	^	X				
Ераспиасеае	Andersonia caerulea		<u> </u>				Х
			Х	Х			
	Andersonia caerulea subsp. caerulea Andersonia simplex	X	X	X		Х	Х
	Andersonia simplex Andersonia sprengelioides	X	X	X		_^	X
		^	X			Х	
	Astroloma baxteri		X			^	Х
	Astroloma drummondii	X	^				
	Astroloma pallidum	^					
	Astroloma sp.	X	X	X			Х
	Astroloma tectum		Α.				
	Brachyloma geissoloma				-		Х
	Leucopogon conostephioides	X	V	V	V	V	
	Leucopogon corynocarpus		X	X	X	X	X
	Leucopogon cucullatus	X	X	X	X	X	Х
	Leucopogon distans	Х	Χ	Χ	Χ		



	T		1	1			
	Leucopogon elatior	X	X				
	Leucopogon elegans		Х				
	Leucopogon aff. elegans	X					
	Leucopogon flavescens var. flavescens						Χ
	Leucopogon gibbosus	X	Χ	Χ	X	Χ	Χ
	Leucopogon glabellus						Χ
	Leucopogon penicillatus	X					
	Leucopogon reflexus					Χ	Х
	Leucopogon woodsii	Х	Χ		X		Х
	Lysinema ciliatum	X	Х	X	Х	Х	X
	₱ Monotoca aristata (P2)	Х	Х				
	Monotoca tamariscina	X	Х				
	Oligarrhena micrantha	X	Х				Х
	Sphenotoma capitata			Х		Х	
	Sphenotoma dracophylloides	Х					
	Monotaxis grandiflora var. grandiflora	Х					
	Poranthera ericoides	Х					
	Poranthera microphylla	Х	Х				
Euphorbiaceae	Stachystemon polyandrus	Х	Х				
	Stachystemon vermicularis	Х					
	Stachystemon virgatus	X					
	Erodium cygnorum	X	Х				
Geraniaceae	Pelargonium littorale subsp. littorale	X					
	Anthotium humile	X					
	Dampiera juncea	X	Х	Х	Х		Х
	Dampiera linearis		X			Χ	Χ
	Dampiera pedunculata	Х					
	Dampiera sacculata	X					
Goodeniaceae	Goodenia affinis	X					
	Goodenia concinna	, ,	Х				
	Pa Goodenia filiformis (P3)	Х					
	Goodenia incana	X	Х	Х			Х
	Goodenia pterigosperma	X	X		Х		X
	Goodenia pulchella	X					
Goodeniaceae	Lechenaultia formosa	X	Х	Х	Х		
Coodornacoac	Velleia trinervis	X					
Haemodoraceae	Anigozanthos humilis	X					
- Idomodoladoda	Anigozanthos rufus	X					
	Conostylis hiemalis		Х				
	Conostylis ruelliais Conostylis pusilla	X	X	Х	Х	Х	Х
	Conostylis pasilia Conostylis serrulata	^	X				
	Conostylis setigera subsp. setigera		X				Х
	Conostylis vaginata	X	X	Х			X
	Haemodorum discolor	^					X
	า เลษาที่บันบานที่ที่ นิเจบบเป้						_ ^



	Haemodorum laxum	Х					
	Haemodorum sp.	Х	Х				
	Haemodorum spicatum	Х		Х			
	Glischrocaryon aureum			Х			
Halogoraceae	Glischrocaryon aureum var. angustifolium	Х					
· ·	Glischrocaryon aureum var. aureum			Х			
	Patersonia juncea	Х	Χ				Х
	Patersonia lanata		Χ	Х		Х	
lui-la a a a a	Patersonia lanata forma lanata	Х	Χ				Χ
Iridaceae	Patersonia occidentalis	Х	Χ	Х	Х		Χ
	Patersonia occidentalis var. latifolia		Χ				
	Patersonia occidentalis var. occidentalis	Х	Χ	Х		Х	Χ
Isoetaceae	Isoetes tripus					Х	Χ
l	*Juncus bufonius	Х					
Juncaceae	Juncus pallidus	Х					
	Hemiandra pungens	Х					
Lamiaceae	Hemigenia humilis						Χ
	िMicrocorys lenticularis (P2)	Х		Χ			Χ
	Cassytha?micrantha		Χ				
	Cassytha flava					Х	
	Cassytha glabella						Χ
1	Cassytha micrantha		Χ	Х		Х	Х
Lauraceae	Cassytha pomiformis			Х			
	Cassytha racemosa		Χ	Χ		Х	Х
	Cassytha racemosa forma pilosa	Х					
	Cassytha sp.		Χ				Х
Lentibulariaceae	Utricularia simplex	Х					
	Logania campanulata					Χ	
	Logania micrantha						Х
Loganiaceae	Logania serpyllifolia subsp. serpyllifolia	Х	Χ				
	Logania stenophylla	Х					
	Phyllangium paradoxum	Х					
Loranthaceae	Nuytsia floribunda	Х	Χ	X			X
Lythraceae	*Lythrum hyssopifolia	Х					
Menyanthaceae	Villarsia parnassifolia	Х	Χ				
	∄ <i>Acacia aemula</i> subsp. <i>aemula</i> (P4)		Χ				Х
	Acacia applanata					X	
Mimosaceae	ਰਿAcacia bifaria (P3)						Х
	Acacia biflora	X X X X	X	X	Χ		
	Acacia browniana var. browniana		Χ				Χ
Mimosaceae	Acacia crispula	X	Χ		Χ		
	Acacia cupularis		Χ				
	Acacia cyclops	X	Χ				Χ
	Acacia delphina	X	Χ	X		X	Χ



	Acacia leioderma			Χ			Χ
	Acacia luteola	Х	Х	Х	Χ	Χ	Х
	Acacia moirii subsp. moirii		Х				
	Acacia pulchella var. glaberrima	Х					
	Acacia pulchella var. goadbyi	X					
	Acacia pycnocephala		Х				
	Acacia saligna	Х					
	Acacia sp.	X					
	Acacia subcaerulea	X	Х	Х	Χ	Χ	Χ
	Acacia sulcata var. planoconvexa				X		
	Acacia tetragonocarpa	X					
Myrtaceae	Actinodium calocephalum	X	Х	Х	Χ		
,	Actinodium cunninghamii		Х				
	Agonis theiformis	X	Х	Х	Χ	Χ	Χ
	Astartea aspera	X					X
	Astartea glomerulosa	X					
	Baeckea camphorosmae					Х	
	Baeckea crispiflora						Х
	Baeckea preissiana				Х		
	Beaufortia anisandra	X	Х	Х	X	Х	Х
	Beaufortia empetrifolia	X	X	X	X	X	X
	Beaufortia micrantha var. micrantha			- / (X		
	Beaufortia schaueri		Х				Х
	Calothamnus gracilis	Х	X	Х	Х	Х	X
	Calothamnus sanguineus					Χ	Χ
	Calothamnus schaueri	Х	Х				
	Calytrix depressa			Х	Х		
	Calytrix flavescens	X	Х	,		Х	Х
	Calytrix leschenaultii	X	X	Х	Х	X	
	Calytrix similis	X	X			X	Х
	Calytrix sp.		X				
	Conothamnus aureus	X	X	Х	Х	Х	Х
	Darwinia diosmoides	X	X				
	Darwinia vestita	X	X	Х		Х	Х
	Eremaea pauciflora var. pauciflora	X					
	Eucalyptus ? occidentalis				Х		
	Eucalyptus ?yilgarnensis				X		
	Eucalyptus angulosa	X	Х		- , ,		Х
	Eucalyptus buprestium	X	<u> </u>				X
	Eucalyptus decipiens subsp. adesmophloia	X	Х	Х	Х	Х	X
	Eucalyptus decurva	X	X	<u> </u>	<u> </u>	<u> </u>	X
	Eucalyptus falcata	X	X			Х	X
	Eucalyptus incrassata		<u> </u>			X	X
	Eucalyptus marginata		Х			<u> </u>	

- * Introduced (Alien) Species Priority Species



	Eucalyptus marginata subsp. marginata	Х					
	Eucalyptus loxophleba subsp. loxophleba	Х					
	Eucalyptus occidentalis	Х	Х		Χ		
Myrtaceae	Eucalyptus pachyloma						Х
,	Eucalyptus pleurocarpa	Х	Х	Х	Х	Χ	Х
	Eucalyptus preissiana	Х					
	Eucalyptus preissiana subsp. preissiana				Χ		
	Eucalyptus staeri	Х	Х	Х		Х	Х
	Eucalyptus uncinata	Х	Х			Х	Χ
	Hypocalymma strictum		Х				
	Hypocalymma strictum subsp. elongatum	Х	Х	Х			
	Hypocalymma strictum subsp. strictum		Х			Х	Х
	Kunzea affinis	Х	Х				
	Kunzea preissiana	X	Х		Χ		
	Kunzea recurva	X	X	Х	X		
	Kunzea rostrata				X		
	Leptospermum spinescens						Х
	Melaleuca ?bracteosa			Х			
	Melaleuca bracteosa		Х				
	Melaleuca concinna	Х					
	Melaleuca cuticularis	X	Х				
	Melaleuca pentagona var. latifolia				Х		
	Melaleuca pentagona var. pentagona				X		
	Melaleuca spathulata		Х				
	Melaleuca striata	Х	X	Х	Χ	Х	Х
	Melaleuca subalaris					Х	
	Melaleuca suberosa	Х	Х	Х	Χ		Х
	Melaleuca subtrigona	Х	Х	Х	Χ	Х	Х
	Melaleuca thymoides	Х	Х	Х	Х	Χ	Х
	Melaleuca tuberculata						X
	Melaleuca tuberculata var. tuberculata						Х
	Pericalymma ellipticum	Х	Х			Χ	
	Pericalymma ellipticum var. floridum	Х					
	Pericalymma sp.				Χ		
İ	Regelia inops		Х				Х
	Rinzia schollerifolia	Х	Х	Х			
	Taxandria parviceps		Х				
	Taxandria spathulata	Х	Х	Х	Χ	Х	Х
	Verticordia densiflora var. ?cespitosa	X					
	Verticordia densiflora var. cespitosa						Х
	Verticordia habrantha	Х	Х	Х	Χ	Х	X
	Verticordia plumosa var. grandiflora		X				
	Verticordia plumosa var. plumosa	Х					
	Verticordia sieberi var. lomata	X	Х			Х	Х

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	Verticordia subulata		Х		Х		
	Caladenia cairnsiana	Х		Χ			
	Caladenia flaccida				Χ		Х
	Caladenia flava	X	Χ		Х		
	Caladenia fuscolutescens	X					
Orchidaceae	Caladenia graminifolia		Χ	Χ			Х
	Caladenia heberlaena	X	Χ				
	Caladenia latifolia	Х					
	Caladenia longicauda subsp. australora		Χ	Χ			
	Caladenia nana subsp. nana	Х					
	Corybas sp.		Χ				
	*Disa bracteata	X		Χ	Х		
	Diuris corymbosa	Х					
	Diuris longifolia	Х					
	Elythranthera brunonis	X	Χ	Х			
	Leporella fimbriata	X					
	Lyperanthus serratus	Х					
	Microtis media subsp. media	Х	Χ				
	Paracaleana nigrita	Х					
Orchidaceae	Praecoxanthus aphyllus	Х					
	Pterostylis recurva	Х	Χ	Х			
	Pterostylis turfosa	Х					
	Pterostylis vittata	Х					
	Pyrorchis nigricans		Χ				
	Thelymitra benthamiana				Х		
	Thelymitra canaliculata	Х	Χ				
	Thelymitra crinita		Χ				
	Thelymitra sp.	X	Χ				
Orobanchaceae	*Orobanche minor	Х					
Oxalidaceae	Oxalis perennans	X					
Papilionaceae	?Bossiaea eriocarpa	Х					
	Bossiaea eriocarpa						Х
	Bossiaea ornata	Х	Χ		Х		Х
	Bossiaea praetermissa	Х	Χ	Χ			Х
	Bossiaea rufa		Χ	Χ		Х	Х
	Callistachys lanceolata						Х
	Chorizema cytisoides	X	Χ				
	Chorizema diversifolium	X					
	Chorizema glycinifolium	X	Χ	Χ	Χ	Χ	Χ
	Chorizema nanum	X					
	Daviesia alternifolia		Χ				
	Daviesia emarginata		Χ	Χ	Χ		Χ
	Daviesia gracilis	X	Χ				
	Daviesia incrassata		Χ				Χ

- * Introduced (Alien) Species Priority Species



	Daviesia incrassata subsp. incrassata	X	Х	Х	Х	Х	Х
	Daviesia inflata	Х					
	Daviesia lancifolia				Χ		
	Daviesia oppositifolia				, ,	Х	Χ
	Daviesia preissii	Х					
	Daviesia trigonophylla					Х	
	Eutaxia neurocalyx subsp. neurocalyx		Х	Х	Χ		
	Gastrolobium bracteolosum	Х	X				Х
	Gastrolobium reticulatum						X
	Gastrolobium retusum	Х	Х	Х	Х	Х	
	Gastrolobium spinosum				X		
	Gompholobium baxteri	X					
	Gompholobium burtonioides	X	Х			Х	Χ
	Gompholobium capitatum	X	,,				
	Gompholobium confertum	X	Х			Х	Х
	Gompholobium knightianum	X	X	Х	Х		X
	Gompholobium marginatum	X	X				
	Gompholobium polymorphum	X					
	Gompholobium scabrum	X	Х	Х			
	Gompholobium tomentosum	X	X	X			Х
	Gompholobium venustum	X	X	X	Х	Х	X
	Hovea chorizemifolia		X				
	Hovea trisperma	X	X	Х		Х	Х
	Jacksonia capitata	X	X	X	Х		
	Jacksonia grevilleoides	X	X	X	X	Х	
	Jacksonia spinosa			X			Х
	Kennedia coccinea	X	Х				
	Latrobea ?diosmifolia	X					
	© Latrobea recurva (P3)		Х	Х			Х
	Latrobea sp.						X
Papilionaceae	*Ornithopus compressus	X		Х			
	Phyllota barbata		Х			Х	X
	Pultenaea empetrifolia		X		Х		
	Pultenaea verruculosa	X	X	Х	X	Х	X
	Sphaerolobium alatum	X	X				
	Sphaerolobium drummondii	X	X	Х			
	Sphaerolobium macranthum	^	X				Х
	Sphaerolobium medium		X				
	Sphaerolobium scabriusculum		X				Х
	Sphaerolobium sp.						X
	*Trifolium campestre var. campestre	X					
	*Trifolium subterraneum	X		Х			
Phormiaceae	Dianella brevicaulis	^	Х				
1 HOHHIACEAE	Dianella revoluta var. divaricata		X				<u> </u>
	Dialiella levolula val. Ulvalicala		_ ^	<u> </u>		1	<u> </u>

- * Introduced (Alien) Species Priority Species



	Stypandra glauca	X					
	?Billardiera fraseri		Χ				
	Billardiera fraseri				Х		
Pittosporaceae	Billardiera sp.	X					
	Billardiera variifolia	X					
	Billardiera venusta		Χ			Χ	Х
	?Austrodanthonia pilosa	X					
	*Aira caryophyllea	X					
	*Aira cupaniana	X					
	Amphipogon amphipogonoides	X					
	Amphipogon avenaceus	X		Х		Χ	
	Amphipogon setaceus			,,			Х
	Amphipogon sp.		Х				
	Amphipogon turbinatus		X				Х
	Austrodanthonia caespitosa	X	X			Х	X
Poaceae	Austrostipa flavescens	X					
1 000000	Austrostipa hemipogon	X					
	*Avellinia michelii	X					
	*Avena barbata	X					
	*Bromus diandrus	X					
	Cyperochloa hirsuta	X	Х				
	Deyeuxia quadriseta	X					
	*Ehrharta calycina	X					
	*Ehrharta longiflora	X					
	Elymus scabrus var. scabrus						Х
	*Hordeum leporinum	X					
	Lachnagrostis filiformis						Х
	*Lagurus ovatus	X					
	*Lolium perenne	X					
	*Lolium rigidum	X					
Poaceae	Neurachne alopecuroidea	X	Х		Х		Х
	*Pennisetum clandestinum	X					 ^
	*Pentaschistis airoides					Х	
	POACEAE sp.		Х	Х			
	*Vulpia myuros var. megalura	X					
	Comesperma calymega	X				Х	
	Comesperma confertum	X	Х				
Polygalaceae	Comesperma flavum	X	X				
. Jiygalaoodo	Comesperma navam Comesperma sp.					<u> </u>	Х
	Comesperma sp.					Х	X
	*Acetosella vulgaris	Х				 ^	
Polygonaceae	Muehlenbeckia adpressa	X					
1 diyyonaddad	*Rumex crispus	X					1
Primulaceae	*Anagallis arvensis var. caerulea	X					-

- * Introduced (Alien) Species Priority Species



	Adenanthos apiculatus	Х	Х	Х	Х	Х	Х
	Padenanthos cacomorphus (P2)		Х				
	Adenanthos cuneatus	Х	Х	Х		Χ	Х
	Adenanthos sp.		Х				
	Banksia attenuata	X	Х	Х		Χ	Χ
	Banksia baueri	Х	Х	Х	Х	Χ	Χ
	Banksia baxteri	Х	Х	Х		Χ	Χ
	Banksia coccinea	Х	Х	Χ			Χ
	Banksia dryandroides	Х	Х				Χ
	Banksia gardneri var. gardneri	X	Х	Х	Х	Χ	Х
	Banksia grandis	X	Х	X		X	X
	Banksia littoralis	X	X				, ,
	Banksia nutans		X				Х
	Banksia nutans var. cernuella		X	Х	Χ	Х	X
	Banksia nutans var. nutans	Х	X				
	Banksia repens	X	X	Х	Х	Х	Х
Proteaceae	Banksia seminuda			X			
Trotodocae	Banksia sphaerocarpa var. sphaerocarpa			X			Х
	Conospermum caeruleum		Х	X			
	Conospermum caeruleum subsp. caeruleum	X	X	X			
	Conospermum flexuosum subsp. flexuosum		X				
	Conospermum floribundum		X				
	Conospermum teretifolium	X	X			Х	
	Dryandra arctotidis	X	X	Х		X	Х
	Dryandra armata	X	X	X			X
	Dryandra armata Dryandra armata var. armata	X			Х	Х	X
	Dryandra amata vat. amata Dryandra blechnifolia	^	Х				
	Dryandra brechmiola Dryandra brownii	X					
	ि Dryandra calophylla (P3)	X	Х	Х			Х
		X	X	X	Х	Х	X
	Dryandra cuneata	X	X	X	X	X	
	Dryandra falcata	^	X	X	X	X	Х
	Dryandra mucronulata subsp. mucronulata		X	X			X
Drotococo	Dryandra nivos subsp. nivos		X	X	Х	Х	X
Proteaceae	Dryandra nivea subsp. nivea		X			_^	_^
	Dryandra plumosa		X				
	Dryandra plumosa subsp. plumosa Dryandra pteridifolia subsp. pteridifolia	X	^			Х	X
	• • • • • • • • • • • • • • • • • • • •						
	Dryandra sp.	X					
	Dryandra tenuifolia		X				
	Dryandra tenuifolia var. tenuifolia	X	X	X	Х	X	X
	Franklandia fucifolia	X	X		V	X	X
	Grevillea concinna subsp. lemanniana		\ <u>\</u>	X	Х		
	Grevillea fasciculata	Х	X	Х			Х
	Grevillea nudiflora		Χ				

- * Introduced (Alien) Species Priority Species



	Grevillea pulchella subsp. pulchella			Х			
	Hakea baxteri	Х	Χ	Χ	Χ		Χ
	Hakea ceratophylla		Χ				
	Hakea corymbosa		X	Х	Х	Х	Х
	Hakea corymbosa subsp. corymbosa	Х	X	7.			
	Hakea cucullata	X	X	Х	Х	Х	Х
	Hakea denticulata	X	X	X	X	X	X
	Hakea ferruginea	X	X	X	X		X
	Hakea florida		X	7.			
	Hakea laurina	X					
	Hakea marginata		Х				Х
	Hakea nitida	Х	X	Х	Х		
	Hakea pandanicarpa		X	_ ^_			Х
	Hakea pandanicarpa subsp. crassifolia	X	X	Х	Х	Х	X
	Hakea pandanicarpa subsp. crassilolia Hakea pandanicarpa subsp. pandanicarpa		X				
	Hakea prostrata	X	X	Х		Х	Х
	Hakea ruscifolia	X		X		X	X
	Hakea sulcata	X					
	Hakea trifurcata	X	Х	Х	Х	Х	Х
	Hakea varia	X	X				_^
		X	^				Х
	Isopogon attenuatus	^		Х			^
	Isopogon baxteri		Х				
	Isopogon buxifolius var. obovatus		_ ^				
	Isopogon buxifolius var. spathulatus			V	Х		
	Isopogon cuneatus			X			
	Isopogon formosus subsp. formosus			X	Х		
	Isopogon heterophyllus	X	X	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		X	
	Isopogon longifolius		Х	Х	Х	Х	Х
	Isopogon sp.		X				
	Isopogon teretifolius		X			Х	
	Isopogon teretifolius subsp. petrophiloides	X	X				X
	Isopogon teretifolius subsp. teretifolius	X	Х	Х		X	Х
	Isopogon trilobus	X	Χ	Χ	Χ	Х	Х
	Lambertia echinata subsp. citrina		Χ	Х			
	Lambertia inermis		Χ				
	Lambertia inermis var. inermis	X	Χ	Χ	Χ	Χ	Χ
	Persoonia striata	X	Χ	Χ		Χ	Χ
	Petrophile circinata						Χ
	Petrophile crispata		Χ				Χ
	Petrophile divaricata	X	Χ	Χ		Χ	Χ
Proteaceae	Petrophile diversifolia		Χ				
	Petrophile ericifolia		Χ				
	Petrophile ericifolia subsp. ericifolia	Х	Χ	X			Χ
	₽ Petrophile longifolia (P3)		Χ	Χ		Χ	Χ

- * Introduced (Alien) Species Priority Species



	Petrophile media	Х	Х	Х			
	Petrophile rigida		X	X	Х	Х	Х
	Petrophile seminuda	X	X				X
	Petrophile serruriae						X
	Petrophile sp.		Х				
	Petrophile squamata					Х	Х
		X	Х	Х	Х	X	
	Petrophile squamata subsp. squamata	X	X	X	X	X	Х
	Petrophile teretifolia	X	X	X		X	X
	Stirlingia anethifolia	^		X			X
	Stirlingia latifolia		V	_ ^			
	Stirlingia simplex		X				
	Stirlingia tenuifolia		X	Χ			Х
	Synaphea favosa		X				
	Synaphea petiolaris		Χ			ļ.,,	L
	Synaphea petiolaris subsp. petiolaris	X		Χ	Х	Χ	Χ
	Synaphea polymorpha		Х	Х	Х	Х	Χ
	Anarthria gracilis	X	Х	Х	Χ	Χ	Χ
	Anarthria laevis	Х	Χ				Χ
	Anarthria prolifera	Х	Χ	Χ		Χ	Χ
	Anarthria scabra	Х	Χ	Χ		Χ	Χ
	Chaetanthus aristatus		Χ				
	Chaetanthus tenellus	Х	Χ				
	Chordifex capillaceus	Х	Χ	X			Χ
	Chordifex crispatus	Х	Χ				
	Chordifex laxus						Х
	ि Chordifex leucoblepharus (P2)	X	Χ				
	⊕ Chordifex ornatus (P2)		Χ			Х	
	Chordifex sphacelatus	X	Х	Х	Х	Х	Х
D. effective and a	Desmocladus austrinus					Χ	Х
Restionaceae	Desmocladus fasciculatus	Х	Χ	Χ	Х	Χ	Χ
	Harperia confertospicata	Х	Χ	Χ		Χ	Χ
	Harperia lateriflora		Χ	Х	Χ	Χ	Χ
	Hypolaena exsulca	Х	Х			Χ	Χ
	Hypolaena fastigiata	X	X	Х		X	X
	Lepyrodia drummondiana	X					
	Lepyrodia hermaphrodita	7.	Х				
	Lepyrodia macra	Х	,,				
	Loxocarya striata	X					
	Lyginia barbata	X	Х	Х			Х
	Lyginia imberbis	X	X			Х	X
	Meeboldina kraussii	^	X				- ^-
	Onychosepalum laxiflorum						Х
	Spyridium majoranifolium	X	Х				
Rhamnaceae	Spyridium microcephalum	^	X				\vdash
	эрупшин тисгосерпашт		_ ^	<u> </u>			

Key:

- * Introduced (Alien) Species Priority Species



D. Harris	Opercularia hispidula	Χ					
Rubiaceae	Opercularia vaginata	Х	Χ	Х	Χ		
D (Boronia albiflora	Х	Χ	Χ	Х		Х
Rutaceae	Boronia crassifolia	Х	Χ	Х		Х	Χ
	Boronia crenulata						Х
	Boronia crenulata subsp. crenulata		Х	Х			Х
	Boronia ramosa subsp. anethifolia		Χ	Χ	Х		Х
Rutaceae	Boronia sp.						Χ
	Boronia spathulata	Х	Χ	Χ	Х	Х	Χ
	Boronia subsessilis	Х					
	Philotheca nodiflora subsp. lasiocalyx	Х	Χ				
	Exocarpos aphyllus	Х					
	Exocarpos sparteus	Х	Χ				
Santalaceae	Leptomeria lehmannii	X					
	Leptomeria pauciflora			Х			
	Leptomeria squarrulosa		Χ	Χ			
	Gratiola pubescens	Х					
Scrophulariaceae	*Parentucellia latifolia	X					
Solanaceae	*Solanum nigrum	X					
	Stackhousia monogyna				Χ		
Stackhousiaceae	Stackhousia scoparia		Х				
	© Commersonia sp. Mt Groper (R.G. Cranfield &						
	D. Kabay 9157) (DRF)	Х	X				
Sterculiaceae	Lasiopetalum microcardium		Χ				
Stercullaceae	∄Lasiopetalum parvuliflorum (P3)		Χ				
	Thomasia rhynchocarpa		Χ				
	Thomasia stelligera	X					
Stylidiaceae	Levenhookia dubia	X					
	Levenhookia pauciflora	X		X			
	Stylidium brunonianum	X					
	Stylidium caespitosum	X					
	Stylidium calcaratum	X					
	Stylidium corymbosum var. corymbosum	X					
	Stylidium diuroides		Х				
	Stylidium diversifolium		Χ				
	Stylidium glandulosissimum		Χ	Х	Х		Х
	Stylidium hirsutum					Х	
	Stylidium imbricatum	Х	Χ	Х		Χ	Х
	Stylidium luteum	Х	Χ				
	Stylidium piliferum	Х	Χ	Х	Χ		
	Stylidium preissii			Х			
	Stylidium repens	Х	Χ	Χ		Χ	Χ
	Stylidium rupestre	Х					
	Stylidium scandens	Х	Χ				Χ

Key:



	Stylidium schoenoides	X	Χ	Χ	Χ		
	Stylidium sp.	X					
	Stylidium spathulatum	X			Χ		
	Pimelea angustifolia	Х	Χ				
	Pimelea brevifolia subsp. brevifolia	Х					
	Pimelea hispida	Х	Χ				
	Pimelea lehmanniana subsp. lehmanniana				Х		
Thymelaceae	Pimelea longiflora subsp. longiflora				Х		
	Pimelea rosea	Х					
	Pimelea sp.						Χ
	Pimelea suaveolens subsp. suaveolens						
	Pimelea sulphurea	Х			Х		
Thymelaceae	Pimelea tinctoria	Х	Χ	Х	Х		
	Platytheca aff. galioides		Χ				
Tremandraceae	Platytheca galioides	Х					
Tremanuraceae	Tetratheca pubescens	Х		Х	Х	Х	Χ
	Tetratheca setigera						Χ
Typhaceae	*Typha orientalis	Х					
Xanthorrhoeaceae	Xanthorrhoea gracilis			Χ			
	Xanthorrhoea platyphylla	Х	Χ	Х	Х	Х	Χ

Key:

- * Introduced (Alien) Species Priority Species



Appendix B: Descriptions of the Mine Site Vegetation Units





Unit 1a. Albany Blackbutt (*Eucalyptus staeri*) mallee-heath on well-drained lateritic ridges.

This assemblage (Table 4.2) was restricted to the large bushland remnant situated in the east of the mining lease (Figure 4.2). It occurred on the tallest ridge of the area (from about 140 to 160 AHD) on shallow, well-drained soils with outcropping ferrugineous rocks.

The structure of the vegetation was generally very open mallee with open tall shrubs over closed heath. *Eucalyptus staeri* (to about 4-5 m in height) was usually the only mallee (Plate 4.1) within a layer of tall open shrubs over 2 m in height dominated by *Agonis theiformis, Lambertia inermis* and sometimes *Hakea pandanicarpa* subsp. *crassifolia*.

The thickest layer of vegetation in this unit generally comprised shrubs from 1-2 m in height with a foliage cover of 30-70%. Dominant species were generally *Agonis theiformis, Banksia nutans* var. *nutans, Beaufortia empetrifolia, Dryandra mucronulata* subsp. *mucronulata, Melaleuca striata, Petrophile divaricata* or *Taxandria spathulata*. Other shrubs characteristic of this assemblage in this height class included *Calothamnus gracilis, Dryandra cuneata, Hakea corymbosa* subsp. *corymbosa* and *Xanthorrhoea platyphylla*.

Low shrubs below 1 m in height were very species-rich but not abundant and there were no clearly dominant species in this layer. These shrubs commonly included *Isopogon attenuatus*, *Acacia delphina*, *Astroloma drummondii*, *Andersonia simplex*, *Calytrix flavescens*, *Gompholobium knightianum*, *Gompholobium venustum*, *Hibbertia lineata*, *Hovea trisperma*, *Isopogon attenuatus*, *Pultenaea verruculosa* and *Tetratheca pubescens*.

Sedges and herbs were a minor component in the sparse lower layer. Most abundant were Anarthria prolifera, Mesomelaena stygia and Tricostularia neesii var. elatior. Other characteristic taxa of this assemblage were Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata and Lepidosperma squamatum.

The mean species richness of these sites was 61.25 taxa per 10 m x 10 m quadrat, with a total of 115 taxa recorded within the assemblage. These sites were all in excellent condition. No Priority Species were recorded in this assemblage. Only two naturalised alien taxa were recorded within this assemblage.





Flora Recorded in Unit 1a (Sites 1, 9, 10, 21).

Bolded = dominant taxa from at least one site Underlined = common taxa showing high similarity between sites

STRATUM	COVER	SPECIES WITHIN STRATUM
Mallee	2-10%	Eucalyptus staeri, Eucalyptus decurva
Tree-like monocot	<2%	Kingia australis, Xanthorrhoea platyphylla
Shrubs > 2.0 m	2-30%	<u>Lambertia inermis</u> , <u>Agonis theiformis</u> , Hakea cucullata, Hakea ferruginea, Hakea baxteri, Banksia grandis, Hakea pandanicarpa subsp. crassifolia
Shrubs 1.0-2.0 m	10-70%	Acacia subcaerulea, Agonis theiformis, Allocasuarina humilis, Allocasuarina thuyoides, Banksia nutans var. nutans, Beaufortia anisandra, Beaufortia empetrifolia, Calothamnus gracilis, Dryandra cuneata, Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Hakea corymbosa subsp. corymbosa, Hakea cucullata, Hakea ferruginea, Hakea ruscifolia, Hakea trifurcata, Isopogon trilobus, Lambertia inermis, Melaleuca striata, Petrophile divaricata, Petrophile seminuda, Petrophile teretifolia, Taxandria spathulata
Shrubs 0.0-1.0 m	30-70%	Acacia delphina, Acacia luteola, Acacia subcaerulea, Andersonia simplex, Astroloma drummondii, Astroloma pallidum, Banksia baueri, Banksia baxteri, Banksia gardneri var. gardneri, Boronia crassifolia, Boronia spathulata, Bossiaea praetermissa,? Bossiaea sp, Calothamnus gracilis, Calytrix flavescens, Darwinia vestita, Daviesia incrassata, Dryandra arctotidis, Dryandra cuneata, Dryandra falcata, Dryandra tenuifolia, Gompholobium knightianum, Gompholobium venustum, Goodenia incana Hibbertia hibbertioides var. meridionalis, Hibbertia lineata, Hypocalymma strictum subsp. elongatum, Hovea trisperma, Isopogon attenuatus, Jacksonia grevilleoides, Lambertia inermis, Latrobea ?diosmifolia Leucopogon corynocarpus, Leucopogon cucullatus, Leucopogon distans subsp. distans, Leucopogon woodsii, Lysinema ciliatum, Melaleuca subtrigona, Melaleuca thymoides, Monotoca tamariscina, Opercularia vaginata, Persoonia striata, Petrophile teretifolia, Platysace filiformis, Pultenaea verruculosa, Sphaerolobium alatum, Sphenotoma dracophylloides, Taxandria spathulata, Tetratheca pubescens, Xanthosia singuliflora.
Herbs	<2%	Anigozanthos rufus, Burchardia umbellata, Caladenia sp., Crassula decumbens var. decumbens, *Cyperus tenellus, Drosera erythrorhiza, Drosera pallida, Haemodorum sp., *Hypochaeris glabra, Laxmannia sessiliflora, Leporella fimbriata, Lomandra rupestris, Levenhookia pauciflora, Patersonia occidentalis, Pyrorchis nigricans, Stylidium calcaratum, Stylidium imbricatum, Stylidium piliferum subsp. minor, Stylidium repens, Stylidium schoenoides,
Grasses	<2%	Austrodanthonia caespitosa
Climbers	<2%	Cassytha racemosa forma pilosa, Drosera menziesii subsp. menziesii, Stylidium scandens,
Rushes/ Sedges	<2%	Anarthria gracilis, <u>Anarthria prolifera</u> , <u>Anarthria scabra</u> , Chordifex sphacelatus, Cyathochaeta avenacea, <u>Desmocladus fasciculatus</u> , <u>Harperia confertospicata</u> , <u>Hypolaena fastigiata</u> , <u>Lepidosperma squamatum</u> , Lyginia imberbis, Mesomelaena graciliceps, <u>Mesomelaena stygia</u> , Schoenus subbulbosus, Tetraria capillaris, Tetraria octandra, <u>Tricostularia neesii var</u> , <u>elatior</u>





Unit 1b. Chittick (*Lambertia inermis* subsp. *inermis*) and other scrub-heath on seasonally-waterlogged laterite.

This vegetation unit was recorded on elevated flats or gentle slopes characterised by poorly-drained shallow soils with gravel over laterite, generally in proximity to Unit 1a (Figure 4.2). Waterlogging of soils at these sites was evident throughout spring into late summer due to the perching of rainfall by the shallow laterite layer. In contrast to Unit 1a, this unit was defined by its dense and extremely species-rich shrub, herb, rush and sedge layers. Mallee eucalypts present were usually very sparse or patchy.

The tall shrub layer was dominated by Lambertia inermis or Agonis theiformis with Hakea pandanicarpa subsp. crassifolia and Hakea cucullata also common (Table 4.3; Plate 4.2). Beaufortia anisandra, Dryandra mucronulata subsp. mucronulata, Taxandria spathulata or Melaleuca striata were generally the most abundant shrubs in the mid-shrub layer (1-2 m in height with cover of 30-70%). Other shrubs characteristic of this unit included Acacia subcaerulea, Agonis theiformis, Beaufortia empetrifolia, Hakea corymbosa subsp. corymbosa, Hakea pandanicarpa subsp. crassifolia and Isopogon trilobus.

The low shrub layer was generally very open, due to the dominance of the taller shrubs, with the exception of Site 50 that was recovering from a recent wildfire. There were no clear dominants in this extremely species-rich layer. Characteristic species common to this assemblage (and not found in Unit 1a) were Adenanthos apiculatus, Conothamnus aureus, Conospermum caeruleum subsp. caeruleum, Dryandra calophylla, Gastrolobium bracteolosum, Logania stenophylla, Melaleuca suberosa and Verticordia habrantha.

The ground cover was open, yet extremely rich in herbs, rushes and sedges. The rush/sedge layer was dominated by Anarthria prolifera, Caustis dioica, Chordifex leucoblepharus or Lyginia imberbis. Other characteristic species in this layer were Cyathochaeta avenacea and Desmocladus fasciculatus.

The mean species richness of these sites was 69.8 taxa per 10 m x 10 m quadrat, with a total of 167 taxa recorded within the assemblage. These sites were all in excellent condition. Only six naturalised alien taxa were recorded within this assemblage. Priority species recorded in this assemblage were *Microcorys lenticularis* (P2) (Lamiaceae), *Chordifex leucoblepharus* (P2) (Restionaceae), *Calectasia obtusa* (P3) (Dasypogonaceae), *Dryandra calophylla* (P3) (Proteaceae) and *Goodenia filiformis* (P4) (Goodeniaceae).

Flora Recorded in Unit 1b (Sites 5, 7, 8, 18, 50).

Bolded = dominant taxa from at least one site

Underlined = common taxa showing high similarity between sites

STRATUM	COVER	SPECIES WITHIN STRATUM
Mallee	<2%	Eucalyptus staeri, Eucalyptus decipiens subsp. adesmophloia, Eucalyptus pleurocarpa
Shrubs > 2.0 m	10-70%	Agonis theiformis, Banksia grandis, Dryandra mucronulata subsp. mucronulata, Hakea baxteri, <u>Hakea cucullata</u> , <u>Hakea pandanicarpa subsp.</u> crassifolia, <u>Lambertia inermis</u> , Nuytsia floribunda, Acacia cyclops
Tree-like monocot	<2%	<u>Xanthorrhoea platyphylla</u>
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea, Acacia sp., Agonis theiformis. Allocasuarina humilis, Allocasuarina thuyoides, Banksia nutans var. nutans, Beaufortia anisandra, Beaufortia empetrifolia, Dryandra cuneata, Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Dryandra sp., Gastrolobium retusum, Hakea corymbosa subsp. corymbosa, Hakea cucullata, Hakea denticulata, Hakea pandanicarpa subsp. crassifolia, Hakea trifurcata, Isopogon attenuatus, Isopogon trilobus, Lambertia inermis, Melaleuca concinna, Melaleuca striata, Petrophile ericifolia subsp. ericifolia, Petrophile seminuda, Petrophile squamata subsp. squamata, Taxandria spathulata





STRATUM	COVER	SPECIES WITHIN STRATUM
Shrubs 0.0-1.0m	2-10%	Acacia biflora, Acacia cyclops, Acacia delphina, Acacia subcaerulea, Adenanthos apiculatus, Adenanthos cuneatus, Allocasuarina humilis, Astroloma drummondii, Andersonia simplex, Banksia baueri, Banksia gardneri var. gardneri, Banksia repens, Beaufortia empetrifolia, Boronia spathulata, Bossiaea praetermissa, Calothamnus gracilis, Calytrix flavescens, Calytrix similis, Comesperma calymega, Conothamnus aureus, Conospermum caeruleum subsp. caeruleum, Dampiera juncea, Dampiera sp., Daviesia incrassata, Dryandra arctotidis, Dryandra brownii, Dryandra calophylla, Dryandra tenuifolia var. tenuifolia, Gastrolobium bracteolosum, Gastrolobium retusum, Gompholobium confertum, Gompholobium scabrum, Gompholobium tomentosum, Gompholobium venustum, Goodenia filiformis, Goodenia incana, Hibbertia hibbertioides var. meridionalis, Hibbertia lineata, Hovea trisperma, Isopogon attenuatus, Jacksonia capitata, Jacksonia grevilleoides, Latrobea ?diosmifolia, Leucopogon corynocarpus, Leucopogon cucullatus, Leucopogon distans subsp. distans, Leucopogon aff. elegans, Leucopogon gibbosus, Leucopogon woodsii, Logania stenophylla, Lysinema ciliatum, Melaleuca suberosa, Melaleuca subtrigona, Microcorys lenticularis, Opercularia vaginata. Persoonia striata, Petrophile divaricata, Petrophile ericifolia subsp. ericifolia, Petrophile seminuda, Petrophile squamata subsp. squamata, Petrophile teretifolia, Philotheca nodiflora subsp. lasiocalyx, Pimelea sulphurea, Pultenaea verruculosa, Stachystemon polyandrus, Stirlingia anethifolia, Synaphea polymorpha, Taxandria spathulata, Tetratheca pubescens, Verticordia habrantha, Xanthosia tasmanica
Herbs	<2%	Anigozanthos humilis, Anigozanthos rufus, <u>Burchardia umbellata</u> , Calectasia obtusa, Caladenia cairnsiana, Caladenia heberleana, Chamaescilla corymbosa var. corymbosa, <u>Conostylis pusilla</u> , Crassula decumbens var. decumbens, *Cyperus tenellus, *Disa bracteata, Diuris longifolia, <u>Drosera erythrorhiza</u> , Drosera glanduligera, Drosera huegelii, <u>Drosera leucoblasta</u> , Drosera paleacea subsp. paleacea, Drosera pallida, <u>Elyanthera brunonis</u> , Haemodorum spicatum, * <u>Hypochaeris glabra</u> , Johnsonia acaulis, Laxmannia sessiliflora, Leporella fimbriata, Levenhookia dubia, Levenhookia pauciflora, Lomandra hastilis, Lomandra nigricans, Lomandra rupestris, Millotia tenuifolia var tenuifolia, Patersonia sp., *Pseudognaphalium luteoalbum, Pterostylis recurva, Pterostylis vittata, Pyrorchis nigricans, <u>Stylidium repens</u> , Stylidium sp.
Grasses	<2%	Austrodanthonia caespitosa, Austrostipa mollis, *Briza minima, *Briza maxima
Climbers	<2%	Billardiera variifolia, Chorizema cytisoides, <u>Drosera menziesii subsp.</u> menziesii.
Rushes/ Sedges	<2%	Anarthria prolifera, Anarthria gracilis, Anarthria scabra, Caustis dioica, Chordifex leucoblepharus, Chordifex sphacelatus, Cyathochaeta avenacea, Cyathochaeta equitans, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma carphoides, Lepidosperma squamatum, Lyginia barbata, Lyginia imberbis, Mesomelaena stygia, Mesomelaena tetragona, Schoenus caespititius, Schoenus curvifolius, Schoenus pleiostemoneus, Schoenus subbarbatus, Schoenus sublateralis, Schoenus sublaxus, Tetraria capillaris, Tetraria? octandra, Tricostularia neesii var. elatior

N.B: Site 37 was also included in this assemblage by SYSTAT but after further examination of constituent species and abiotic conditions at this site, it was decided that the site was more akin to Unit 3.





Unit 2. Eucalyptus spp. mallee-heath on shallow sand over laterite.

This assemblage occurred on shallow sand and gravelly soils overlying laterite on a low rise at about 140 m AHD located in the west of the survey area (Figure 4.2). Another two sites (Sites 45 & 46) on the main ridge were classified with the above in the multivariate analysis. The latter were located in a narrow strip of bushland on high ground just north of the largest bushland remnant. The native shrub assemblage of this vegetation unit was floristically very similar to that of Unit 1a. However Unit 2 differed markedly from Unit 1a as it had a considerably more species-rich herb and grass layer, less dense and species-depauperate shrub layers and a profusion of mallee *Eucalyptus* species.

The structure of this vegetation assemblage generally comprised a very open mallee of *Eucalyptus staeri*, in association with up to seven other mallee eucalypt species (*Eucalyptus angulosa*, *E. decipiens* subsp. *adesmophloia*, *E. decurva*, *E. falcata*, *E. pleurocarpa*, *E. buprestium*, *E. preissiana*) to about 4 -5 m in height over tall open shrubs, open heath and open rushes and sedges (Table 4.4; Plate 4.3). At one site (Site 26) the mallees formed an unusual closed structure (70% cover) however this was probably related to the degradation of the understorey by heavy grazing and nutrient enrichment.

Agonis theiformis was the dominant component of the tall open shrub layer in this vegetation unit along with Hakea cucullata, Lambertia inermis and Nuytsia floribunda. (However at Site 29, Agonis theiformis occurred as a closed scrub.) The low shrub layer of this vegetation unit was an open heath dominated by a suite of species that had high similarity between sites (Acacia subcaerulea, Melaleuca striata, Dryandra mucronulata subsp. mucronulata and Xanthorrhoea platyphylla). Dryandra falcata was generally the dominant shrub less than 0.5 m in height, along with Acacia biflora, Beaufortia anisandra, Banksia gardneri var. gardneri, Banksia repens, Dryandra arctotidis, Dryandra falcata, Hibbertia lineata, Hovea trisperma, Lechenaultia formosa, Opercularia vaginata and Tetratheca pubescens.

The open ground cover comprised a variety of sedges and herbs that included *Chordifex sphacelatus*, *Lepidosperma carphoides*, *Lepidosperma squamatum*, *Mesomelaena stygia*, *Mesomelaena tetragona*, *Schoenus laevigatus* and *Tetraria capillaris*. There was a species-rich assemblage of native grasses and herbs consistently present in many of these sites and this included *Amphipogon amphipogonoides*, *Austrodanthonia caespitosa*, *Austrostipa flavescens*, *Crassula* spp., *Drosera* spp. and *Stylidium* spp. There were also many naturalised alien grasses and herbs present, some of which dominated the understorey of the more degraded sites (e.g.**Ehrharta longiflora*, **Acetosella vulgaris* and **Hypochaeris glabra*).

The mean species richness of these sites was 56 taxa per 10 m x 10 m quadrat, with a total of 169 taxa recorded within the assemblage. The sites located in the east of the large western block had the highest species richness and vegetation in the best condition. A total of 19 naturalised alien taxa was recorded. One Priority 2 Species *Chordifex leucoblepharus* (Restionaceae) was also present in this assemblage. Most of the sites in this assemblage (except Site 26 and 46) were in good condition. However there was always some degradation evident in these sites (when compared to the excellent condition bushland of the largest remnant nearby). This degradation included soil disturbance due to rabbits and stock, disruption and thinning of the woody vegetation structure, large numbers of weed species and nutrient enrichment.





Flora Recorded in Unit 2 (Sites 24, 25, 26, 27, 28, 29, 45, 46).

Bolded = dominant taxa from at least one site Underlined = common taxa showing high similarity between sites

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus angulosa, Eucalyptus decipiens subsp. adesmophloia, Eucalyptus decurva,
Manee nees	2-10%	Eucalyptus angutosa, Eucalyptus aecupiens saosp. adesmopniota, Eucalyptus aecurva, Eucalyptus falcata, Eucalyptus pleurocarpa, Eucalyptus staeri, Eucalyptus buprestium,
		Eucalyptus preissiana Eucalyptus preissiana
Tree-like monocot	2 10%	Xanthorrhoea platyphylla
Shrubs > 2.0 m	2-10%	
Silluds > 2.0 ili	2-10%	Acacia cyclops, Agonis theiformis, Banksia grandis, Dryandra mucronulata
		subsp. mucronulata, Hakea baxteri, <u>Hakea cucullata</u> , <u>Hakea denticulata</u> , <u>Hakea</u>
gi 1 1 0 0 0	10.000/	nitida, Lambertia inermis, Nuytsia floribunda
Shrubs 1.0-2.0 m	10-30%	Acacia subcaerulea, Agonis theiformis, Allocasuarina humilis, Allocasuarina thuyoides, Beaufortia empetrifolia, Comesperma virgatum, Dryandra cuneata, Dryandra falcata,
		Dryandra mucronulata subsp. mucronulata, Hakea corymbosa, Hakea denticulata, Hakea
		ruscifolia, Hakea trifurcata, Lambertia inermis, Melaleuca striata, Petrophile seminuda,
		Taxandria spathulata
Shrubs 0.0-1.0 m	10-30%	Acacia biflora, Acacia delphina, Acacia luteola, Acacia subcaerulea, Acacia sp.,
5111 dos 0.0-1.0 m	10-3070	Adenanthos apiculatus, Allocasuarina humilis, Astroloma drummondii, Astroloma
		_
		pallidum, Banksia baueri , <u>Banksia gardneri var. gardneri</u> , <u>Banksia repens</u> ,
		Beaufortia anisandra, Boronia crassifolia, Boronia crenulata, Boronia spathulata,
		Boronia subsessilis, <u>Calothamnus gracilis</u> , Chorizema nanum, <u>Dampiera</u>
		sacculata, Darwinia diosmoides, <u>Daviesia incrassata</u> , Daviesia inflata, <u>Dryandra</u>
		arctotidis, <u>Dryandra falcata</u> , Dryandra mucronulata subsp. mucronulata, Dryandra
		tenuifolia var. tenuifolia, Gastrolobium bracteolosum, Gastrolobium retusum,
		Goodenia incana, Gompholobium confertum, Gompholobium knightianum,
		Hibbertia hibbertioides var. meridionalis, <u>Hibbertia lineata</u> , <u>Hovea trisperma,</u>
		<u>Lechenaultia formosa</u> , Leucopogon gibbosus, Lysinema ciliatum, Melaleuca
		suberosa, Melaleuca subtrigona, Melaleuca thymoides, <u>Opercularia hispidula,</u>
		Opercularia vaginata, Petrophile divaricata, Petrophile seminuda, Petrophile teretifolia,
		Pimelea brevifolia var. brevifolia, Pimelea rosea, Pimelea suaveolens subsp. suaveolens,
		<u>Tetratheca pubescens</u>
Herbs	<2%	*Acetosella vulgaris, Anigozanthos humilis, *Arctotheca calendula, Burchardia
		<u>umbellata</u> , Caladenia cairnsiana, <u>Caladenia flava</u> , Caladenia latifolia, <u>Centrolepis</u>
		<u>aristata,</u> *Cerastium glomeratum, <u>Conostylis pusilla, Crassula colorata, Crassula</u>
		<u>decumbens var. decumbens</u> , Crassula exserta, *Crassula glomerata, * <u>Disa</u>
		<u>bracteata, Drosera erythrorhiza,</u> Drosera glanduligera, <u>Drosera leucoblasta</u> ,
		Drosera paleacea subsp. paleacea, Drosera paleacea subsp. trichocaulis, <u>Drosera</u>
		<u>pallida</u> , Drosera platypoda, <u>Elyanthera brunonis</u> , Gnephosis tenuissima,
		Haemodorum laxum, *Hypochaeris glabra, Isolepis stellata, *Juncus bufonius,
		<u>Leporella fimbriata</u> , ?Lomandra nutans, <u>Lomandra hastilis</u> , <u>Lomandra nigricans</u> ,
		Lyperanthus serratus, Millotia tenuifolia var. tenuifolia, *Ornithopis compressus,
		Poranthera microphylla, *Pseudognaphalium luteoalbum, Pterostylis vittata,
		Pyrorchis nigricans, Quinetia urvillei, Siloxerus filifolius, *Sonchus oleraceus,
		Stylidium piliferum subsp. minor, <u>Stylidium repens</u> , Stylidium sp., Stylidium
		rupestre, Thelymitra villosa, Tricoryne elatior, *Trifolium subterraneum, *Ursinia
		<u>anthemoides</u>
Climbers	<2%	Billardiera sericea, Cassytha racemosa forma pilosa, Chorizema diversifolium,
		Drosera menziesii subsp. menziesii
Grasses	<2%	*Aira cupaniana, Amphipogon amphipogonoides, Austrodanthonia caespitosa,
Clabbob	270	Austrostipa flavescens, *Avellinia mitchellii, *Avena barbata, *Ehrharta calycina,
		- "
Duahaa/Cadaa	10.200/	*Ehrharta longiflora, *Lolium perenne, *Vulpia myuros var. megalura
Rushes/Sedges	10-30%	Anarthria gracilis, Anarthria prolifera, Caustis dioica, Chordifex crispatus,
		Chordifex leucoblepharus, Chordifex sphacelatus, Cyathochaeta avenacea,
		Cyathochaeta equitans, <u>Desmocladus fasciculatus</u> , Harperia confertospicata,
		Hypolaena exsulca, <u>Hypolaena fastigiata</u> , <u>Loxocarya striata</u> , <u>Lepidosperma</u>
		<u>carphoides</u> , <u>Lepidosperma squamatum</u> , Lepyrodia drummondiana, Lepyrodia
		macra, Lyginia imberbis, Mesomelaena stygia, Mesomelaena tetragona, Tetraria
		<u>capillaris</u> , Schoenus laevigatus, Schoenus ?obtusifolius, Schoenus ?sesquispiculus,



Schoenus subbarbatus, Schoenus sublateralis, Schoenus sublaxus, Tricostularia neesii
var. elatior

Unit 3. Albany Blackbutt (Eucalyptus staeri) mallee-heath on deep sand.

This assemblage was the most common and widespread vegetation unit within the proposed mine site area and it also covered Block 6830 on an adjoining farm north-west of the mine site. It occurred on the deep sands of dune crests and slopes (Figure 4.2).

The structure of the vegetation was mallee heath. *Eucalyptus staeri* to about 4-5 m in height was the most common mallee (Table 4.5, Plate 4.4) within a tall open shrub layer consistently dominated by *Agonis theiformis* and *Banksia baxteri*. *Banksia attenuata*, *Banksia coccinea*, *Hakea pandanicarpa* subsp. *crassifolia* and *Lambertia inermis* were also dominant in some places. *Banksia attenuata* dominated this assemblage on the sites with the deepest sand (e.g. Site 4). *Hakea baxteri* and *Nuytsia floribunda* were other common species in the tall shrub layer. *Banksia baxteri* in the tall shrubs layer was a conspicuous indicator species of this unit as it was not present in the other vegetation units of the mine site.

The heath layer between 1 and 2 m in height was almost always very dense (30-70% foliage cover) and was dominated in many sites by Banksia baueri, Beaufortia empetrifolia, Dryandra mucronulata subsp. mucronulata, Dryandra plumosa subsp. plumosa, Hakea pandanicarpa subsp. crassifolia, Melaleuca striata or Taxandria spathulata. Other common associates included Acacia subcaerulea, Banksia nutans var. nutans, Melaleuca thymoides, Agonis theiformis, Hakea corymbosa subsp. corymbosa, Nuytsia floribunda and Petrophile divaricata.

The shrubs less than 1 m in height were also very dense and extremely species rich but, with the exception of the dominants *Beaufortia empetrifolia* and *Adenanthos cuneatus*, most individual species occurred at very low abundance amongst the mid-dense cover of sedges and herbs. Characteristic low shrubs of this assemblage included *Bossiaea praetermissa*, *Calytrix flavescens*, *Franklandia fucifolia*, *Stachystemon polyandrus* and *Verticordia sieberi* var. *lomata*. Sites that had been recently burnt (Sites 35 and 42) were dominated by *Acacia luteola*, *Grevillea fasciculata*, *Jacksonia capitata* and *Kennedia coccinea*. (The latter species were however rare or absent in the long unburnt sites.) *Adenanthos cuneatus* in the low shrub layer was a conspicuous indicator species of this unit as it was rarely present in the other vegetation units of the mine site.

The ground cover was generally open sedges and herbs, particularly Anarthria scabra but it also included Chordifex crispatus, Cyathochaeta equitans, Lomandra hastilis, Lepidosperma squamatum, Schoenus caespititius, S. curvifolius, S. sublateralis and Tricostularia neesii var. elatior In addition a variety of native and exotic grasses occurred in this complex, including Amphipogon amphipogonoides, Amphipogon avenaceus, Austrodanthonia caespitosa, *Aira caryophyllea, *Ehrharta longiflora, *Hordeum leporinum and *Lagurus ovatus.

The mean species richness of these sites was 54.3 taxa per 10 m x 10 m quadrat, with a total of 226 taxa recorded within the assemblage. A total of 22 naturalised alien taxa was recorded. Two Priority 2 Species *Monotoca aristata* (Epacridaceae) and *Chordifex leucoblepharus* (Restionaceae) and one Priority 3 Species *Dryandra calophylla* (Proteaceae) and one were present in this assemblage. About half the sites in this assemblage were in excellent condition with the remainder in good condition. Only Site 31 was in poor condition, being a very small, heavily grazed remnant surrounded by paddocks.





Flora Recorded in Unit 3 (Sites 2, 3, 4, 6, 14, 15, 31, 32, 33, 34, 35, 37, 40, 41, 42, 44)

Bolded = dominant taxa from at least one site

Underlined = common taxa showing high similarity between sites

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri, Eucalyptus falcata, Eucalyptus decipiens subsp.
Wanee trees	2 1070	adesmophloia,
Shrubs > 2.0 m	2-10%	Agonis theiformis, Banksia attenuata, Banksia baxteri, Banksia coccinea,
		Banksia grandis, Hakea baxteri, Hakea nitida, Hakea pandanicarpa subsp.
		crassifolia, Isopogon trilobus, Lambertia inermis, Nuytsia floribunda
Shrubs 1.0-2.0 m	30-70%	Acacia subcaerulea, Acacia saligna, Agonis theiformis, Allocasuarina thuyoides,
		Banksia nutans var. nutans, Banksia baueri, Beaufortia anisandra, Beaufortia
		empetrifolia, Dryandra falcata, Dryandra mucronulata subsp. mucronulata,
		<u>Dryandra plumosa subsp. plumosa,</u> Eremaea pauciflora var. pauciflora, <u>Hakea</u>
		<u>corymbosa</u> , Hakea denticulata, Hakea ferruginea, Hakea pandanicarpa subsp.
		crassifolia, Hakea ruscifolia, <u>Isopogon trilobus</u> , Isopogon attenuatus, <u>Melaleuca</u>
		striata, Melaleuca subtrigona, Melaleuca thymoides, Monotoca aristata, Nuytsia
		floribunda, Petrophile divaricata, Petrophile ericifolia subsp. ericifolia,
G1 1 0 0 1 0	20.700/	Petrophile seminuda, <u>Taxandria spathulata</u>
Shrubs 0.0-1.0 m	30-70%	Acacia biflora, Acacia delphina, Acacia pulchella var. glaberrima, Acacia
		subcaerulea, Acacia luteola, Acacia tetragonocarpa, Adenanthos cuneatus,
		Allocasuarina humilis, Andersonia simplex, Astroloma drummondii, Banksia
		<u>baueri, Banksia baxteri,</u> Banksia gardneri vat. gardneri, Banksia repens, <u>Beaufortia empetrifolia, Boronia albiflora, Boronia crassifolia, Boronia ramosa</u>
		subsp. anethifolia, <u>Bossiaea praetermissa</u> , <u>Calothamnus gracilis</u> , <u>Calytrix</u>
		flavescens, Calytrix similis, Comesperma calymega, Dampiera pedunculata,
		<u>Darwinia vestita, Dasypogon bromeliifolius, Daviesia incrassata, Dryandra</u>
		brownii, Dryandra calophylla, Dryandra cuneata, Dryandra mucronulata subsp.
		mucronulata, Dryandra sp., Dryandra tenuifolia, Franklandia fucifolia,
		Gompholobium burtonioides, Gompholobium scabrum, Gompholobium
		tomentosum, Gompholobium venustum, Grevillea fasciculata, Goodenia affinis,
		Goodenia incana, Grevillea fasciculata, Hemiandra pungens, <u>Hibbertia</u>
		hibbertioides var. meridionalis, Hibbertia lineata, Hypocalymma strictum subsp.
		elongatum, Isopogon attenuatus, Jacksonia capitata, Jacksonia grevilleoides,
		Kunzea preissiana, <u>Latrobea ?diosmifolia,</u> Leptomeria lehmanni, Leucopogon
		aff. elegans, Leucopogon cucullatus, <u>Leucopogon distans</u> subsp. <u>distans</u> ,
		Leucopogon gibbosus, Logania serpyllifolia, Logania stenophylla, <u>Lysinema</u>
		<u>ciliatum</u> , Monotaxis grandiflora var. grandiflora, <u>Monotoca tamariscina</u> ,
		Oligarrhena micrantha, Opercularia vaginata, <u>Petrophile seminuda</u> , <u>Petrophile</u>
		teretifolia, Phyllota barbata, Pimelea brevifolia subsp brevifolia, Pimelea
		suaveolens, Platysace filiformis, <u>Platytheca galioides</u> , Poranthera ericoides,
		Pultenaea verruculosa, Sphaerolobium drummondii, Stachystemon polyandrus,
		<u>Stirlingia anethifolia</u> , Synaphea polymorpha, <u>Taxandria spathulata</u> , <u>Tetratheca pubescens</u> , Verticordia plumosa var. plumosa, <u>Verticordia sieberi var lomata</u> ,
		Verticordia sp.
Climbers		Drosera menziesii subsp. menziesii, Chorizema cytisoides, Stylidium scandens,
		Gompholobium polymorphum, Kennedia coccinea , Muehlenbeckia adpressa,
		Chorizema glycinifolium
Herbs		*Acetosella vulgaris, *Arctotheca calendula, Anigozanthos rufus, <u>Burchardia</u>
		umbellata, Caladenia flava, Caladenia fuscolutescens, Caladenia heberleana,
		Caladenia nana subsp. nana, Caladenia pectinata, Caladenia sp., Centrolepis
		aristata, Centrolepis polygyna, <u>*Cirsium vulgare,</u> *Conyza sumatrensis,
		Crassula colligata, Crassula colorata, <u>Crassula decumbens var.</u>
		decumbens,*Disa bracteata, Drosera erythrorhiza, Drosera huegelii, Drosera
		leucoblasta, <u>Drosera paleacea</u> subsp. <u>paleacea</u> , <u>Drosera pallida</u> , <u>Elyanthera</u>
		<u>brunonis</u> , Haemodorum sp., Haemodorum spicatum, * <u>Hypochaeris glabra</u> ,
		Johnsonia acaulis, <u>Johnsonia lupulina</u> , Laxmannia brachyphylla, <u>Laxmannia</u>
		<u>sessiliflora</u> , Laxmannia squarrosa, <u>Leporella fimbriata</u> , Levenhookia dubia,



STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
		Levenhookia pauciflora, Lomandra caespitosa, Lomandra hastilis, Lomandra nigricans, Lomandra rupestris, Lyperanthus serratus, *Lythrum hyssopifolia, Microtis media subsp. media, Millotia tenuifolia var. tenuifolia, *Orobanche minor, *Ornithopus compressus, Paracaleana nigrita, Patersonia lanata forma. lanata, Patersonia occidentalis, Poranthera microphylla, *Pseudognaphalium luteoalbum, Pterostylis recurva, Pterostylis turfosa, Pyrorchis nigricans, *Rumex crispus, Senecio quadridentatus, *Solanum nigrum, *Sonchus oleraceus, Stylidium imbricatum, Stylidium repens, Stylidium schoenoides, Stylidium sp., Trachymene pilosa, *Trifolium subterraneum
Grasses		*Aira caryophyllea, *Aira cupaniana, Amphipogon amphipogonoides, Amphipogon avenaceus, Austrodanthonia caespitosa, ?Austrodanthonia pilosa, Austrostipa flavescens, Austrostipa ?hemipogon, *Avena barbata, *Bromus diandrus, *Ehrharta calycina, *Ehrharta longiflora, *Hordeum leporinum, *Lagurus ovatus, *Vulpia myuros var. megalura
Rushes/Sedges	30-70%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Anarthria laevis, Caustis dioica, Chordifex crispatus, Chordifex leucoblepharus, Chordifex sphacelatus, Cyathochaeta equitans, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena exsulca, Hypolaena fastigiata, Juncus pallidus, Lepidosperma longitudinale, Lepidosperma squamatum, Loxocarya striata, Lyginia barbata, Lyginia imberbis, Mesomelaena graciliceps Mesomelaena stygia, Mesomelaena tetragona, Schoenus caespititius, Schoenus curvifolius, ?Schoenus laevigatus, Schoenus nanus, Schoenus subbarbatus, Schoenus sublateralis, Schoenus sublaxus, Tricostularia neesii var. elatior
Tree like monocot	<2 %	Xanthorrhoea platyphylla





Unit 4. Tallerack (*Eucalyptus pleurocarpa*) mallee-heath on seasonally-waterlogged, heavy soils at base of ridge.

This vegetation unit occurred in the south-west corner of the largest native remnant on the mine site (to the east of the proposed mine). It also occurred in the South Coast Highway road reserve, immediately adjoining the south-east end of the propose minesite (Figure 4.2). It was restricted to seasonally-waterlogged, muddy sand, or sandy- mud colluvium (sometimes over shallow laterite) around the base of the main ridge at the mine site. The small, isolated remnant, of this vegetation that occurred in the road reserve of the South Coast Highway was surveyed in October 2006 (Site 51) because it was an area that potentially could be affected by groundwater drawdown]

The vegetation was a mallee-heath in which the conspicuous *Eucalyptus pleurocarpa* was the dominant eucalypt species in an open mallee or very open formation that typically also included abundant *E. decipiens* subsp. *adesmophloia* and *E. falcata* (Table 4.6; Plate 4.5). *Eucalyptus buprestium, Eucalyptus decurva* and *Eucalyptus uncinata* were also sometimes present. *Hakea cucullata, H. nitida* and *H. pandanicarpa* subsp. *crassifolia* were usually present as tall open shrubs.

Unlike the other mallee units that all had quite dense layers of tall shrubs, the most dense layer in this vegetation unit was either the shrubs between 1-2 m in height or alternatively the shrubs less than 1 m in height. Commonly, these heaths or closed heaths were dominated by *Acacia biflora*, *Beaufortia empetrifolia*, *Dryandra mucronulata* subsp. *mucronulata*, *Dryandra tenuifolia* var. *tenuifolia*, *Hakea denticulata*, *Isopogon trilobus*, *Melaleuca striata*, *Rinzia schollerifolia* or *Taxandria spathulata*. Other characteristic species of this layer were *Allocasuarina thuyoides*, *Andersonia sprengelioides*, *Conothamnus aureus*, *Leucopogon gibbosus*, *Melaleuca suberosa*, *Melaleuca subtrigona* and *Verticordia habrantha*.

A distinctive herb assemblage was apparent in this unit and this included *Chamaescilla sprialis*, *Drosera glanduligera*, *Patersonia juncea*, *Stylidium calcaratum*, *Stylidium rupestre*, *Stylidium schoenoides*, *Stylidium spathulatum* and *Utricularia simplex*.

A relatively dense cover of rushes and sedges was generally present and this included *Anarthria gracilis*, *Chordifex sphacelatus*, *Desmocladus fasciculatus* and *Mesomelaena stygia* along with the grasses *Amphipogon amphipogonoides* and *Neurachne alopecuroidea*.

The mean species richness of these sites was 62.5 taxa per 10 m x 10 m quadrat, with a total of 135 taxa recorded within the assemblage. The sites in this vegetation unit were all in excellent or very good condition but there were a number of areas that had been recently cleared of vegetation as part of the mine exploration and drilling process.





Flora Recorded in Unit 4 (Sites 11, 17, 22, 23, 51)

Bolded = dominant taxa from at least one site Underlined = common taxa showing high similarity between sites

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-30%	Eucalyptus buprestium, Eucalyptus decipiens subsp. adesmophloia, Eucalyptus
		decurva, Eucalyptus falcata, Eucalyptus pleurocarpa, Eucalyptus uncinata
Shrubs $> 2.0 \text{ m}$	2-10%	Banksia littoralis, Hakea pandanicarpa subsp. crassifolia, Hakea nitida, <u>Hakea</u>
		<u>cucullata</u> , Lambertia inermis
Shrubs 1.0-2.0 m	10-70%	Acacia sp., Acacia subcaerulea, Allocasuarina thuyoides, Banksia dryandroides,
		Banksia nutans var. nutans, <u>Beaufortia empetrifolia</u> , Dryandra falcata, <u>Dryandra</u>
		<u>mucronulata subsp mucronulata,</u> Dryandra plumosa subsp. plumosa, <u>Hakea</u>
		<u>corymbosa</u> , <u>Hakea denticulata</u> , Hakea nitida, Hakea pandanicarpa subsp.
		crassifolia, Hakea prostrata, Hakea trifurcata, <u>Isopogon</u> <u>trilobus</u> , <u>Melaleuca</u>
		<u>striata</u> , <u>Petrophile divaricata</u> , <u>Petrophile squamata</u> subsp. squamata, Pultenaea
		verruculosa, <u>Taxandria spathulata</u>
Shrubs 0.0-1.0 m	10-70%	Acacia biflora, Acacia delphina, Acacia subcaerulea, Adenanthos apiculatus,
		Andersonia sprengelioides, Astroloma drummondii, Banksia gardneri var.
		gardneri, Banksia repens, Boronia crenulata, Boronia subsessilis, Bossiaea
		ornata, <u>Calothamnus gracilis</u> , <u>Conothamnus aureus</u> , <u>Darwinia diosmoides</u> ,
		Daviesia incrassata, Daviesia inflata, <u>Dryandra arctotidis</u> , Dryandra falcata,
		<u>Dryandra tenuifolia</u> var. tenuifolia, Gompholobium ?burtonioides,
		Gompholobium confertum, Gompholobium knightianum, Hibbertia hibbertioides
		var. meridionalis, <u>Hibbertia lineata,</u> Leucopogon corynocarpus, <u>Leucopogon</u>
		cucullatus, Leucopogon gibbosus, Leucopogon woodsii, Melaleuca concinna,
		<u>Melaleuca suberosa, Melaleuca subtrigona,</u> Opercularia vaginata, Persoonia striata, Petrophile ericifolia subsp. ericifolia, Petrophile media, <u>Petrophile</u>
		strata, Fetrophile ericijotta subsp. ericijotta, Fetrophile media, <u>Fetrophile</u> seminuda, <u>Petrophile squamata subsp. squamata</u> , <u>Petrophile teretifolia</u> , <u>Pimelea</u>
		brevifolia var. brevifolia, Rinzia schollerifolia , Synaphea petiolaris subsp.
		petiolaris, Spyridium majoranifolium, Tetratheca pubescens, <u>Verticordia</u>
		habrantha
Climbers	<2%	Billardiera variifolia, Cassytha racemosa forma pilosa, Drosera menziesii subsp.
Cimiocis	\270	menziesii
Herbs		Burchardia umbellata, Caladenia flava, Caladenia heberleana, Caladenia
		pectinata, Centrolepis polygyna, Chamaescilla sprialis, Conostylis pusilla,
		Crassula decumbens var. decumbens, *Cyperus tenellus, *Disa bracteata, <u>Drosera</u>
		erythrorhiza, Drosera glanduligera, Drosera leucoblasta, Drosera paleacea subsp.
		paleacea, Drosera pallida, Elyanthera brunonis, Haemodorum laxum,
		*Hypochaeris glabra, Leporella fimbriata, <u>Levenhookia pauciflora</u> , ?Lomandra
		nutans, Lomandra pauciflora, Lyperanthus serratus, Millotia tenuifolia var.
		tenuifolia, Patersonia juncea, Patersonia occidentalis, Patersonia lanata forma
		lanata, <u>Poranthera microphylla</u> , Pterostylis recurva, Pyrorchis nigricans,
		Stylidium calcaratum, Stylidium piliferum subsp. minor, Stylidium repens,
	2-10%	Stylidium rupestre, Stylidium schoenoides, <u>Stylidium spathulatum</u> , Stypandra
		glauca, Tricoryne elatior, Utricularia simplex
Soft grasses	<2%	<u>Amphipogon amphipogonoides</u> , Austrodanthonia caespitosa, <u>*Ehrharta longiflora</u> ,
		Neurachne alopecuroidea,
Rushes/ Sedges	30-50%	<u>Anarthria gracilis</u> , Chaetanthus tenellus, Chordifex crispatus, <u>Chordifex</u>
		<u>sphacelatus</u> , Cyathochaeta equitans, <u>Desmocladus fasciculatus</u> , Harperia
		confertospicata, Hypolaena fastigiata, Lepidosperma carphoides, Loxocarya
		striata, <u>Lepidosperma squamatum,</u> Lyginia imberbis, Mesomelaena graciliceps,
		Mesomelaena stygia, Schoenus sesquispiculus, Schoenus subbulbosus,
T 111		Tricostularia neesii var. elatior
Tree like monocot	<2%	





Unit 5. Swamp Yate (*Eucalyptus occidentalis*) woodland or low woodland in seasonally-inundated, clay basins.

This vegetation unit occurred frequently on the valley floor of the survey area as small, more-or-less circular basins filled with clay that were inundated from winter until mid summer or longer (Figure 4.2). The centre of these sumplands was usually inhabited by Swamp Yate (*Eucalyptus occidentalis*) low woodland (Table 4.7, Plate 4.6) often with an understorey of the Saltwater Paperbark (*Melaleuca cuticularis*). Peripheral to the central seasonally-inundated basin of these wetlands there was often a waterlogged zone of *E. occidentalis* associated with *Kunzea recurva* heath to open scrub and/or the small trees *Melaleuca preissiana* and *Banksia littoralis* and a number of mallees (primarily *Eucalyptus decipiens* subsp. *adesmophloia*). Fringing the wetland there was usually an *Anarthria laevis* sedgeland. However in the wetlands where there was shallow laterite, the sedgeland was usually replaced with a *Pericalymma ellipticum* heath. The Swamp Yate was not present in Site 16; however the vegetation and floristics of this wetland were otherwise very similar to that of the Swamp Yate sites.

The understorey shrubs of this vegetation were typically very open. Melaleuca cuticularis, Kunzea recurva and Hakea nitida generally formed an open tall shrub layer. Hakea denticulata, Hakea laurina, Hakea varia, Exocarpos sparteus, Agonis theiformis, Lambertia inermis and Nuytsia floribunda were also sometimes present in the seasonally waterlogged areas fringing the sumplands. Other common shrub taxa, recorded at low density across the sampled sites were Isopogon trilobus, Acacia pulchella var. glaberrima, Taxandria spathulata, Astartea glomerosa, Astartea aspera, Beaufortia empetrifolia, Melaleuca concinna and Conothamnus aureus. Other mid and low shrub species recorded at lower abundance included Acacia biflora, Acacia luteola, A. subcaerulea, Adenanthos cuneatus, Banksia baueri, Banksia dryandroides, Bossiaea praetermissa, Daviesia inflata, Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Dryandra tenuifolia var. tenuifolia, Gompholobium confertum, Hibbertia lineata, Leucopogon conostephioides, Melaleuca subtrigona, Petrophile squamata subsp. squamata, Petrophile media, Spyridium majoranifolium, Stirlingia anethifolia and Thomasia stelligera.

The perennial herbs Villarsia parnassifolia, Anthotium humile, Stylidium corymbosum, Goodenia filiformis and Velleia trinervis were abundant in the wetlands in good condition. These herbs inhabited the shallowly-inundated zone of the wetland and were most apparent when the water receded and the herbs were in flower in late summer.

A dense ground layer was generally present in the seasonally waterlogged fringe of the sumplands and this was dominated by rushes and sedges including Anarthria laevis, Baumea juncea, Gahnia ancistrophylla, Lepidosperma striatum, Schoenus laevigatus, Schoenus subfascicularis and Tricostularia compressa. A suite of native grasses was also recorded including Amphipogon amphipogonoides, Austrostipa hemipogon, Cyperochloa hirsuta, Deyeuxia quadriseta and Neurachne alopecuroidea. Naturalised alien grasses and herbs were prevalent in the more disturbed wetlands and these included *Aira caryophyllea, *Cirsium vulgare, *Conyza parva, *Conyza sumatrensis, *Hordeum leporinum, *Hypochaeris glabra, Juncus pallidus,*Lagurus ovatus, *Pennisetum clandestinum, *Pseudognaphalium luteoalbum, *Rumex crispus, *Solanum nigrum and *Vulpia myuros var. megalura.

The mean species richness of these sites was 23.5 taxa per 10 m x 10 m quadrat, with a total of 166 taxa recorded within the assemblage (including 24 naturalised alien taxa). One rare species, *Commersonia* sp. Mt Groper R.G. Cranfield & D. Kabay (Sterculiaceae), that has been recently listed as Priority One Flora, and one Priority 4 species, *Goodenia filiformis* (Goodeniaceae), were collected in this vegetation unit.

This vegetation was generally in fair to poor condition with reduced species richness in degraded sites associated with uncontrolled grazing by domestic stock, altered surface drainage patterns and increased nutrient run-off. The increased salinity of the water in these sites and presence of indicator species such as *Melaleuca cuticularis* was probably due to the natural accumulation of salt due to evaporation of the rainwater (ponded by the clay fill in summer) rather than anthropogenically-induced salinity.





Only two of the wetlands (Sites 12, 13, 19, 20 and 48) were in good condition. During the current survey, the district experienced unusually high rainfall that persisted beyond the typical winter wet period into the spring and summer. The unusually high water level in the wetlands and the long hydroperiod during this year were probably responsible for the poor condition of some of the *Beaufortia empetrifolia* shrubs observed in the standing water under the Swamp Yates. It is also likely that some herb assemblages that are normally present in the clay sumplands late in summer (after the waters recede completely) may have gone unrecorded due to this inundation.

Flora Recorded at Unit 5 (Sites 12, 13, 16, 19, 20, 30, 36, 38, 39, 43, 47, 48 & 49).

Bolded = dominant taxa from at least one site

Underlined = common taxa showing high similarity between sites

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15 m	Up to	Eucalyptus occidentalis, Melaleuca cuticularis, Banksia littoralis, Melaleuca
	70%	preissiana.
Trees <5 m	2-10%	Melaleuca cuticularis, Banksia littoralis
Mallee	Up to	Eucalyptus angulosa, Eucalyptus decipiens subsp. adesmophloia, Eucalyptus
	70%	falcata, Eucalyptus preissiana, Eucalyptus uncinata, Eucalyptus staeri, Eucalyptus
		pleurocarpa, Eucalyptus uncinata
Shrubs > 2.0 m	2-10%	Agonis theiformis, Banksia littoralis, Hakea denticulata, Hakea laurina, <u>Hakea</u>
		nitida, Hakea varia, <u>Isopogon trilobus</u> , Lambertia inermis , Melaleuca cuticularis ,
		Nuytsia floribunda
Shrubs 1.0-2.0m	2-10%	Acacia cyclops, Acacia subcaerulea, Adenanthos cuneatus, Banksia nutans var.
		nutans, Beaufortia empetrifolia, Dryandra falcata, Dryandra mucronulata subsp.
		mucronulata, Exocarpos sparteus, Hakea nitida, Isopogon trilobus, Kunzea
		recurva, Melaleuca concinna, Melaleuca cuticularis
Shrubs 0.0-1.0 m		Acacia biflora, Acacia luteola, Acacia pulchella var. glaberrima, Acacia pulchella
Sindos 0.0 1.0 in		var. goadbyi, Adenanthos apiculatus, Astartea aspera, Astartea glomerosa,
		Banksia baueri, ?Bossiaea sp., Banksia dryandroides, Banksia repens, Beaufortia
		empetrifolia, Bossiaea praetermissa, Calytrix flavescens, Comesperma flava,
		Commersonia sp. Mt Groper, <u>Conothamnus aureus</u> , Darwinia diosmoides,
		Daviesia inflata, Dryandra falcata, <u>Dryandra tenuifolia</u> var. tenuifolia,
		Gastrolobium bracteolosum, Gompholobium confertum, Gompholobium
		tomentosum, Hibbertia hibbertioides var. meridionalis, Hibbertia lineata, Latrobea
		?diosmifolia, Leucopogon conostephioides, Leucopogon cucullatus, Leucopogon
		distans subsp. distans, Lysinema ciliatum, Melaleuca striata, Melaleuca suberosa,
		Melaleuca subtrigona, Pericalymma ellipticum subsp. ellipticum, Petrophile
		ericifolia subsp. ericifolia, <u>Petrophile media</u> , <u>Petrophile squamata</u> subsp.
		squamata, Petrophile media,, Petrophile seminuda, Petrophile teretifolia,
		Pultenaea verruculosa, Spyridium majoranifolium, Stachystemon polyandrus,
		Stachystemon vermicularis, Stirlingia anethifolia, Tetratheca pubescens, <u>Thomasia</u>
Herbs		stelligera, Verticordia densiflora var. ?cespitosa
neros		*Acetosella vulgaris, Anigozanthos rufus, Anthotium humile, *Arctotheca
		calendula, Burchardia umbellata, Caladenia cairnsiana, Caladenia flava,
		Caladenia heberleana, *Cirsium vulgare, *Conyza parva, *Conyza sumatrensis,
		Crassula decumbens var. decumbens, *Disa bracteata, Drosera erythrorhiza,
		Drosera glanduligera,* Drosera paleacea subsp. paleacea, Elyanthera brunonis,
		Goodenia filiformis, Haemodorum sp., *Hypochaeris glabra, Isolepis cernua,
		Lomandra hastilis, *Lythrum hyssopifolia, Microtis media subsp media, Millotia
		tenuifolia var. tenuifolia, *Ornithopus compressus, Oxalis perennans, Patersonia
		occidentalis (swamp form), Pelargonium littorale subsp littorale,
		*Pseudognaphalium luteoalbum, Phyllangium paradoxum, Poranthera
		microphylla, Pterostylis vittata, Pyrorchis nigricans, *Rumex crispus, Senecio
		quadridentatus, *Solanum nigrum, Stylidium corymbosum, Stylidium piliferum
		subsp. minor, Stylidium schoenoides, Stylidium repens, Trifolium campestre var
CI: 1	20/	campestre,*Trifolium subterraneum., Velleia trinervis, <u>Villarsia parnassifolia</u>
Climbers	<2%	Cassytha racemosa forma pilosa



STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Grasses	2-10%	*Aira caryophyllea, *Aira cupaniana, Amphipogon amphipogonoides,
		Austrodanthonia caespitosa Austrostipa hemipogon,*Bromus diandrus, *Cirsium
		vulgare, *Conyza sumatrensis, Cyperochloa hirsuta, Deyeuxia quadriseta,
		*Ehrharta longiflora, *Hordeum leporinum, *Lagurus ovatus, Neurachne
		alopecuroidea, *Pennisetum, clandestinum, *Trifolium sp.,*Vulpia myuros var.
		megalura,
Sedge	10-30%	Anarthria laevis, Baumea juncea, Caustis dioica, Chordifex crispatus, Chordifex
		sphacelatus, Cyathochaeta avenacea, Gahnia ancistrophylla , <u>Harperia</u>
		<u>confertospicata</u> , Hypolaena fastigiata, <u>Juncus pallidus,</u> Lepidosperma squamatum,
		<u>Lepidosperma striatum,</u> Lepyrodia macra, Lepidosperma sp., Lyginia imberbis,
		Schoenus cruentus, Mesomelaena stygia, Mesomelaena tetragona, Schoenus
		?brevisetis, Schoenus laevigatus, Schoenus subbarbatus, <u>Schoenus</u>
		subfascicularis, Tetraria capillaris, Tricostularia neesii var. elatior, Tricostularia
		compressa









Appendix C: Priority and Rare Flora Desktop Study





Table C1: Definition of categories of conservation flora described under the Federal 1999 EPBC Act

CONSERVATION	DESCRIPTION
CATEGORY	
Extinct	A species is extinct if there is no reasonable doubt that the last member of the
	species has died.
Extinct in the wild	A species is categorised as extinct in the wild if it is only known to survive in
	cultivation, in captivity or as a naturalised population well outside its past range; or
	if it has not been recorded in its known/expected habitat, at appropriate seasons,
	anywhere in its past range, despite exhaustive surveys over a time frame appropriate
	to its life cycle and form.
Critically Endangered	The species is facing an extremely high risk of extinction in the wild in the
	immediate future.
Endangered	The species is likely to become extinct unless the circumstances and factors
	threatening its abundance, survival or evolutionary development cease to operate; or
	its numbers have been reduced to such a critical level, or its habitats have been so
	drastically reduced, that it is in immediate danger of extinction.
Vulnerable	Within the next 25 years, the species is likely to become endangered unless the
	circumstances and factors threatening its abundance, survival or evolutionary
	development cease to operate.
Conservation Dependent	The species is the focus of a specific conservation program, the cessation of which
•	would result in the species becoming vulnerable, endangered or critically
	endangered within a period of 5 years.

Table C2: Federal 1999 EPBC Act -listed flora known from the Wellstead-Albany area.

Species	Status
Adenanthos cunninghamii	Endangered
Adenanthos pungens subsp. pungens	Vulnerable
Andersonia pinaster	Vulnerable
Banksia brownie	Endangered
Banksia goodie	Vulnerable
Banksia verticillate	Vulnerable
Caladenia christineae	Vulnerable
Caladenia dorrienii	Endangered
Caladenia harringtoniae	Vulnerable
Caladenia sp. Jarrah Forest	Vulnerable
Centrolepis caespitose	Endangered
Chordifex abortivus	Endangered
Conostylis misera	Endangered
Corybas limpidus	Vulnerable
Darwinia meeboldii	Vulnerable
Darwinia wittwerorum	Endangered
Daviesia pseudaphylla	Endangered
Diuris drummondii	Vulnerable
Drakaea confluens	Endangered
Drakaea elastica	Endangered
Drakaea micrantha	Vulnerable
Dryandra ionthocarpa	Endangered
Isopogon uncinatus	Endangered





Species	Status
Kennedia glabrate	Vulnerable
Kunzea pauciflora	Vulnerable
Lambertia fairallii	Endangered
Lambertia orbifolia	Endangered
Laxmannia jamesii	Vulnerable
Meziella trifolia	Vulnerable
Microtis globula	Vulnerable
Myoporum cordifolium	Vulnerable
Orthrosanthus muelleri	Endangered
Pleurophascum occidentale	Vulnerable
Sphenotoma drummondii	Endangered
Thelymitra psammophila	Vulnerable
Tribonanthes purpurea	Vulnerable
Verticordia carinata	Vulnerable
Verticordia fimbrilepis subsp. australis	Vulnerable
Verticordia helichrysantha	Endangered
Villarsia calthifolia	Endangered
Xyris exilis	Vulnerable

Note: Flora listed as extinct are not included in the table above.

Table C3 Definition of Declared Rare and Priority Categories (WA Herbarium, 2007)

CODE	DEFINITION
DRF	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.
1: Priority One	Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations which are under threat.
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.
3: Priority Three	Poorly Known Taxa. Taxa which are known from several populations, at least some of which are not believed to be under immediate threat.
4: Priority Four	Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.





Table C4: DEC Western Australian Declared Rare & Priority Flora (Atkins, 2006) known from the vicinity of the Southdown Project footprint

SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Andersonia pinaster	DRF	Albany, coastal heath	Grey/white sand, hills.	Not likely
Banksia brownii	DRF	Albany-Stirling Range	Sand over laterite, granite.	Moderate
Banksia goodii	DRF	Albany, Narricup, Redmond	White or grey sand over laterite.	Moderate
Calectasia cyanea	DRF	Albany	White, grey or yellow sand, gravel.	Moderate
Centrolepis caespitosa	DRF		White sand, clay. Salt flats, wet areas.	Very High
Chordifex abortivus	DRF			Moderate
Conostylis misera	DRF		White-grey sand, loam. Winter-wet flats.	Moderate - High
Drakaea elastica	DRF	Gingin-Bussleton, Lake Guraga, East of Albany, Narrikup, Gull Rock NP	White or grey sand. Low-lying situations adjoining winter-wet swamps.	Moderate
Drakaea micrantha	DRF	Perth-Augusta-Albany	White-grey sand.	Moderate
Isopogon uncinatus	DRF	Albany	Loam or sand on granite, peaty sand. Swampy depressions, hillslopes.	Moderate
Meziella trifida	DRF	Scott River Plains, Pingerup Plains, Black Pt Rd, Mt Roe, D'Entrecasteaux NP, Northcliffe, Windy Harbour	Sandy clay. Winter-wet flats.	Moderate
Microtis globula	DRF	Walpole-Albany	Peaty soils. Winter-wet swamps.	Moderate - High
Myoporum cordifolium	DRF		Sandy loam or clay loam. Flat plains.	Moderate - High
Scaevola macrophylla	DRF	Cape Riche		Moderate



SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Tribonanthes purpurea	DRF	Pingaring, Hillman T/S, Mt Dale, Albany	Seasonally wet soils in moss swards & herbfields among granite rocks. Also wetlands.	Moderate
Verticordia fimbrilepis australis	DRF	Kent River, Albany	Gravelly sandy or clayey soils. Flats, road verges.	Moderate
Verticordia helichrysantha	DRF	Cape Riche		Moderate
Acrotriche sp. Bremer Bay	P1	Bremer Bay	Dunes, limestone, stony ridges.	Low
Baeckea arbuscula	P1	Warren Beach, Albany		High
Caladenia evanescens	P1		Sand. Consolidated sand dunes.	Moderate
Commersonia sp Mt Groper	P1	Boat Harbour to Wellstead	Clay sumplands	High
Dampiera sericantha	P1		Sand, sometimes with gravel. Plains.	High
Grevillea aff. paniculata	P1	Cape Riche		Unknown
Melaleuca similis	P1	East of Ravensthorpe	Margins of saline drainage lines.	Low
Microcorys sp. Boxwood	P1	Pallinup Nature Reserve and Kamballup		Moderate
Prasophyllum paulineae	P1	Albany	Black, peaty soils. Swamps.	Moderate
Stackhousia sp. Stirling Range	P1	Near Wellstead Store		High
Synaphea incurva	P1	Albany, Denmark, Cheyne Beach	Gravelly loam, sandy soils. Slopes.	Moderate
Thomasia multiflora	P1	Albany, Warriup Hill	Black sand. Seasonally wet areas, granite outcrops.	Moderate - High
Andersonia auriculata	P2		Grey or peaty sand, often over laterite. Swampy areas, granite outcrops.	Moderate
Astroloma sp. Grass Patch	P2	Grass patch, Cascade, Albany	White/grey sand. Edge old salt lakes.	Moderate
Caladenia granitora	P2		Shallow soil crevices on granite. Coastal areas.	Moderate
Calothamnus microcarpus	P2		Lateritic clay, sandy soils.	Moderate





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Chamelaucium aorocladus	P2		Rocky or peaty loam, granite. Rocky shelf, near creek.	Moderate
Chamelaucium juniperinum	P2		White/brown sand, gravelly loam, clay.	Moderate
Chordifex leucoblepharus	P2	NE of Albany, Stirling Range Area, Wellstead	Sand. Dry heath.	High
Comesperma lanceolatum	P2		White sand. Marine plains, sand dunes, quartzite ridges.	High
Conospermum quadripetalum	P2	Scott River, Albany, Torndirrup	Sandy clay, grey sand. Flats behind coastal hills.	Moderate
Diuris heberlei	P2	Lake Seppings, Albany, Two- Peoples Bay, D'Entrecasteaux, Scott Plains	Clay. Winter-wet flats.	High
Jacksonia intricata	P2	Fitzgerald NP	Granite slopes, spongelite	Low
Leucopogon bracteolaris	P2	Stirling Range NP, Albany	Stony sand, gravelly loam.	Moderate
Leucopogon durus	P2	NE Pallinup Nature Reserve		High
Melaleuca pritzelii	P2		Sandy or clayey soils. Swampy areas.	Moderate
Microcorys lenticularis	P2		Sandy soils.	High
Monotoca aristata	P2	Mettlers Lake Nature Reserve		High
Pithocarpa corymbulosa	P2		Gravelly or sandy loam. Amongst granite outcrops.	High
Stenanthemum aff. sublineare	P2		Littered white sand. Coastal plain.	High
Stylidium articulatum	P2	Albany, Mermaid Point	Sandy loam. Granite hills.	Moderate
Stylidium daphne	P2		Sand. Low heath, summit of lateritic hill.	Moderate
Verticordia endlicheriana angustifolia	P2		Sandy clay. Granite outcrops.	Moderate
Acacia ataxiphylla ataxiphylla	Р3	Albany, Cranbrook, Jingalup, Kojonup, Chillerup, Bokal	Gravelly clay loam, white/grey sand. Flats, roadsides.	Moderate





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Acacia declinata	P3		Loamy or sandy clay.	Moderate
Amperea protensa	P3	Perth, Walpole, Scott River, Albany, Gardner Lake,	Sandy soils. Seasonally wet flats, depressions, swampy areas.	High
Andersonia setifolia	Р3	Manypeaks, Gordon River, Albany, Cape Le Grande NP, Two Peoples Bay, Ongerup	Sandy & gravelly soils. Hillslopes & breakaways.	Moderate
Boronia crassipes	P3	Albany, Millbrook, Gledhow	Sand, peaty sand. Winter-wet swamps, creeklines.	High
Bossiaea divaricata	P3		Sandy lateritic soils.	Moderate
Calectasia obtusa	P3	Cape Riche		High
Calothamnus robustus	Р3		Rocky quartzite or granitic soils. Low hills.	Moderate
Calytrix pulchella	P3		Grey or white sand over laterite. Ridges, flats.	Moderate
Chorizema carinatum	P3		Sand, sandy clay.	Moderate
Chorizema reticulatum	P3	Albany, Mt Barker, Porongerups, Manypeaks, Denbarker, Denmark, Cowaramup, Meelup-Eagle Bay	Sand over laterite.	High
Dryandra calophylla	P3	Wellstead, South Sirlings,	Rocky sandy clay, white sand with gravel.	High
Gonocarpus pusillus	P3	Albany, Walpole-Nornalup, Mt Frankland, Augusta, Scott River, Yelverton	Grey sandy clay. Winter-wet swamps.	Moderate
Gonocarpus trichostachyus	P3		Sandy soils.	Moderate
Goodenia filiformis	P3	Millbrook, Albany, Hassel Hwy, Gingilup Swamp	Sandy soils. Winter-wet depressions.	High





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Goodenia South Coast	Р3	Albany, Nanarup, Porongurup NP, Kentdale, Mt Lindsay	Gravelly loams, sandy clays. Edge granite outcrop, roadside.	Moderate
Hakea lasiocarpha	Р3		Sandy loam soils, organic litter over sand, clay or gravel. Hill tops, valleys.	Moderate
Hakea oldfieldii	Р3		Red clay or sand over laterite. Seasonally wet flats.	Moderate
Hakea tuberculata	Р3		Shallow red loam over ironstone. Winter-wet flats.	Moderate
Melaleuca diosmifolia	P3	Bald Island, Mt Manypeaks, Waychinicup	Coastal slopes, granite/gneiss.	Low
Olax scalariformis	P3		Sand, sandy loam.	Moderate
Sphaerolobium pubescens	Р3	Walpole, Albany, My Lindsay, Ledge Beach	Sand over clay. Winter-wet flats, undulating plains.	Moderate
Sphenotoma parviflorum	Р3	Albany, Millbrook, Scott River, Esperance, Mt Lindesay	Grey or white sand. Swampy areas, granite hills.	High
Stylidium gloeophyllum	P3			Moderate
Stylidium lepidum	P3	Wagin, Albany, Kojonup, Mt Barker, Between Stirling Range, Albany and Two Peoples Bay	Gravelly sand or loam, clay. Winter-wet depressions.	Moderate
Synaphea preissii	Р3	Torndirrup NP, Albany, Mt Barker, Stirling Range NP, Gnowangerup, Narrikup, Rocky Gully	Sand, gravelly loam.	Moderate
Thomasia discolor	Р3	Albany area	Gravel, loam, sand often over granite. Moist places, hill slopes & tops.	Moderate
Thysanotus gageoides	P3		Sand, clay, granite, sandstone, laterite.	Moderate





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Thysanotus isantherus	P3	Mt Melville, Mt Clarence, Torndirrup NP, Albany	Granite.	Moderate
Thysanotus tenuis	P3		Clay, sandy clay, sand.	Moderate
Acacia aemula aemula	P4	South coast between Esperance and Albany	White/grey sand, sandy clay. Granite outcrops, low-lying flats, sandplains.	Moderate
Adenanthos x cunninghamii	P4	Albany	Grey sand. Coastal dunes & sandplains.	Moderate
Anthotium junciforme	P4	Wattle Grove, Midland, Bayswater, Serpentine, Upper Swan, Kenwick, Bussleton, Scott River Plain, Albany	Sandy clay, clay. Winter-wet depressions, drainage lines.	Moderate
Astartea arbuscula	P4	Albany, D'Entrecasteaux, Wilson Inlet	Grey-yellow sand, peaty or silty sand, black sandy clay. Flats, plains, valley floors, seasonal wetlands.	Moderate
Caladenia plicata	P4		Sand, gravel.	Moderate
Chordifex isomorphus	P4		Sandy soils, grey sand, wet ironstone. Swamps, seasonally wet flats.	Recorded
Drosera fimbriata	P4	NE of Manypeaks, Lake William, Albany, Leeuwin Naturaliste NP	White sand, granite.	Moderate
Dryandra serra	P4		Gravel, sand or clay loam over laterite. Hillslopes.	Moderate
Eucalyptus acies	P4		Sand, skeletal soils. Quartzite hills, granite boulders.	Moderate
Eucalyptus buprestium x staeri	P4	N of Albany	Sand or loam with lateritic gravel, sandy loam. Steep slopes.	Moderate
Eucalyptus goniantha goniantha	P4		Sand, sandy clay, often over weathered granite & laterite. Coastal areas.	Moderate
Eucalyptus preissiana x staeri	P4		Grey peaty or gravelly sand.	Moderate





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Eucalyptus x erythrandra	P4		Sand, clayey sand or sandy loam with gravel. Clay flats, mallee scrub.	Moderate
Eucalyptus x kalganensis	P4		Sand/sandy clay over laterite/limestone.	Moderate
Laxmannia jamesii	P4	Albany-Mt Barker, Narrikup, Denmark, Bussleton, Yelverton	Grey sand. Winter-wet locations.	High
Lepidium pseudotasmanicum	P4	Yanchep, Wongan Hills, Denmark, Albany, Porongerup R, Jerramungup, Munglinup, Stirling Range, Lake Clifton	Loam, sand.	Moderate
Leucopogon tamariscinus	P4		Deep grey sand, lateritic gravelly sand. Sandplains, lateritic ridges.	Moderate
Lysinema lasianthum	P4	Porongerup Range, Albany, Collis Block, Millbrook, Nornalup, Cheyne Beach, West Cape Howe	Swamps, seasonally wet areas.	Moderate - High
Microtis media	P4	Albany-Augusta, Pinjarra, Jandakot	Peat, sandy clay loam. Swamps.	Moderate (under-collected orchid)
Microtis pulchella	P4	Northcliffe, Walpole, Albany, Donnelly River	Peaty sand. Winter-wet swamps.	Moderate (under-collected orchid_
Pleurophascum occidentale	P4	Two Peoples Bay, N of Albany, Cape Le Grand NP, Hay River, Walpole		Moderate - High (an under- collected moss from a common habitat)
Rumex drummondii	P4		Winter-wet disturbed areas.	Moderate
Sollya drummondii	P4		Sand over laterite or granite. River banks, slopes.	Moderate
Stylidium plantagineum	P4	Between Stirling Range, Albany and Two Peoples Bay	Sandy, often gravelly soils. Stony country.	Moderate





SPECIES	PRIORITY	LOCATION	HABITAT	LIKELIHOOD OF OCCURRENCE
Tegicornia uniflora	P4		Clay, sandy clay, loam. Salt lakes & creeks.	Moderate
Verticordia harveyi	P4		White sand. Low hills.	High



Appendix D: Wetlands searched for Commersonia sp Mt Groper





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
1	28.3.06	641965 E 6177157N	Minesite wetland	Eucalyptus occidentalis/Melaleuca cuticularis low woodland. An over open Melaleuca scrub over sparse shrubs (Acacia pulchella) on mid- dense Sedge on grey sandy loam. Good. Burnt >>5years ago	Collected here in Sept 05. Current no extant plants but could still be present in soil seed bank
2	28.3.06	640449E 6178971N	Minesite wetland	Eucalyptus occidentalis low forest with degraded understorey. Condition good to fair Burnt >5years ago	No
3	28.3.06	637649E 6177575N	Minesite wetland	Eucalyptus occidentalis low forest with degraded understorey. Condition good to fair Burnt >5 years ago	No
4	28.3.06	641371E 6176280N	Minesite wetland	Eucalyptus occidentalis low forest with degraded understorey. Condition good to fair Burnt >5years ago	No
5	28.3.06	637982E 6180957N	Wetland on Nyman's farm north of minesite	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
6	28.3.06	637842E 6179515N	Wetland on McLennan's farm north of minesite	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
7	28.3.06	638885E 6181060N	Wetland on McLennans farm north of minesite	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
8	28.3.06	641248E 6181131N	Block 6842	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
9	28.3.06	633292E 6171796N	Block 7	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
10	28.3.06	630299E 6173367N	Block 6529	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
11	28.3.06	627648E 6169653N	Block 6529	Eucalyptus occidentalis low forest with degraded understorey of pasture grasses and herbs. Condition poor Burnt >>5years ago	No
12	29.03.06	644992E 6173754N	Nyman's off Mettler Lake Rd	Melaleuca cuticularis central zone, Banksia littoralis over Kunzea recurva and Lepidosperma striatum zone and Pericalymma ellipticum closed heath. No Anarthria laevis sedgeland fringe. Very good.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
				Burnt >>5years ago	
13	29.03.06	644540E 6174077N	Nyman's off Mettler Lake Rd	Eucalyptus occidentalis/Melaleuca cuticularis low forest in centre with Anarthria laevis/ Cyperochloa hirsuta / Lepidosperma striatum sedgeland zone with low shrubs of Conothamnus aureus, Thomasia sp and Lasiopetalum sp. Eucalyptus decipiens subsp adesmophloia outer zone. Excellent. Burnt >>5years ago	No
14	29.03.06	645108E 6175722N	Nyman's off Mettler Lake Rd	Eucalyptus occidentalis/Melaleuca cuticularis forest in centre, Kunzea recurva closed scrub zone and Lepidosperma striatum zone and Pericalymma ellipticum closed heath. No Anarthria laevis sedgeland fringe. Very healthy upland sand assemblage and laterite rim vegetation Excellent – near to pristine. Burnt >>20 years ago	No
15	29.03.06	646284E 6171744N	Mettler Lake Nature Reserve	Eucalyptus occidentalis/Melaleuca cuticularis low closed forest in centre with Anarthria laevis/ Lepidosperma striatum sedgeland zone with low shrubs of Sterculiaceae spp, Dodonaea sp., Pimelea sp. Very good . Burnt >5 years ago	No
16	29.03.06	637444E 6171353N	North side of road verge South Coast Hwy between Kojaneerup Rd and Kojaneerup Springs Rd	Eucalyptus occidentalis low forest over Chorizandra enodis sparse sedges. Very good. Burnt >5years ago	No
17	7.10.06	652743E 6187008N	50m from South Coast Hwy along Boat Harbour Rd	Melaleuca cuticularis scrub in centre, Kunzea recurva/ Lepidosperma striatum scrub with emergent Eucalyptus occidentalis and Anarthria laevis sedgeland fringe. Eucalyptus decipiens subsp adesmophloia outer zone. Very good. Burnt >>5 years ago	No
18	7.10.06	653416E 6186217N	1km from South Coast Hwy along Boat Harbour Rd	Pericalymma ellipticum closed heath . Eucalyptus decipiens subsp adesmophloia over Anarthria laevis sedgeland fringe. Very good. Burnt >>5years ago	No
19	7.10.06	661767E 6184600N	10.3 km from South Coast Hwy along Boat Harbour Rd	Hakea sp. heath with Anarthria laevis sedgeland. Eucalyptus decipiens subsp adesmophloia outer zone. Very good. Burnt >>5years ago	No
20	7.10.06	667110E 6183966N	10.3 km from South Coast Hwy along Boat Harbour Rd	Eucalyptus occidentalis low closed forest in centre with Kunzea recurva heath Anarthria laevis/ Lepidosperma striatum sedgeland zone. Proteaceae shrubs in zone above sedgeland dead from waterlogging after the last year's record rains. Very good.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
21	7.10.06	667917E 6183595N	17.2 km from South Coast Hwy along road to Groper Bluff.	Burnt 5years ago Melaleuca cuticularis scrub in centre, Kunzea recurva/ Lepidosperma striatum /Anarthria laevis closed heath and Eucalyptus decipiens subsp adesmophloia outer zone. Excellent. Burnt 5 years ago	No
22	7.10.06	669775E 6183212N	300m approx. west of road to Groper Bluff.	Eucalyptus occidentalis open forest over tall open shrubs of Acacia cyclops, Dodonaea sp, Templetonia ?retusa, and sparse sedges Chorizandra enodis. Excellent to near pristine. Burnt >20 years	No
23	7.10.06	637442E 6171255N	South Coast Hwy east of Kojaneerup Springs Rd (south side of road)	Eucalyptus occidentalis / Melaleuca cuticularis low forest in centre with Kunzea recurva heath / Lepidosperma striatum zone. Wetland dammed at roadside so hydrology altered and no Anarthria laevis zone. Deeply inundatgd. Good. Burnt > 10years ago	No
24	7.10.06	646753E 6181593N	South Coast Hwy just west of Wellstead (north side of road)	Astartea aspera open heath with Anarthria laevis sedgeland and Eucalyptus decipiens subsp adesmophloia outer zone. Very good Burnt >5 years ago	No
25	8.10.06	642359E 6176930N	South Coast Hwy just south of minesite (north side of Hwy potential drawdown area	Melaleuca cuticularis shrubs. Small constructed drainage depression Good. Burnt 5years ago</td <td>No</td>	No
26	8.10.06	642396E 6176910N	South Coast Hwy just south of minesite (south side of Hwy)	Kunzea recurva/ Pericalymma ellipticum heath. Drainage channel dug through natural wetland. Good. Burnt 5years ago</td <td>No</td>	No
27	8.10.06	631152E 6194531N	Gnowellen Rd north of Chillinup Rd	Actinodium calocephalum open heath with Anarthria laevis sedgeland and Eucalyptus decipiens subsp adesmophloia outer zone. Very good Burnt >5 years ago	No
28	8.10.06	619802E 6184236N	Quarderwardup Lake Stirling Range National Park	Eucalyptus occidentalis / Melaleuca cuticularis low forest over Acacia sp., Aizoaceae and sparse sedges Lepidosperma striatum / Gahnia trifida. Very infrequently a narrow Anarthria laevis zone occasionally with Guichenotia spp. Excellent. Burnt > 10 years ago	No
29	8.10.06	637122E 6197684N	Mailalup Nature Reserve	Eucalyptus occidentalis low forest over tall open shrubs of Acacia cyclops, Melaleuca sp, Bossiaea sp, low shrub Guichenotia sp. and sparse sedges Schoenus sp with Austrostipa elegantissima. Excellent. Burnt >10 years	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
30	8.10.06	637048E 6197063N	Mailalup Nature Reserve	Calytrix spp./ Conothamnus aureus open heath with Anarthria laevis sedgeland. Very good Burnt >5 years ago	No
31	8.10.06	637078E 6196809N	Mailalup Nature Reserve	Conothamnus aureus open heath with Anarthria laevis sedgeland. Very good Burnt >5 years ago	No
32	8.10.06	644704E 6192978N	Old Boundary Rd south of Chillinup Rd	Eucalyptus occidentalis low closed forest over Anarthria laevis sedgeland with Conothamnus aureus. Excellent. Burnt >20years	No
33	8.10.06	663946E 6184455N	12.5 km from South Coast Hwy along Boat Harbour Rd	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland with and Eucalyptus decipiens subsp adesmophloia and Conothamnus aureus outer zone. Good –some grazing and woody weeds. Burnt >20years	No
34	8.10.06	670042E 6183121N	Along Boat Harbour Rd	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland. Good –some grazing and woody weeds. Burnt >20years	No
35	8.10.06	667541E 6183691N	Along Boat Harbour Rd	Kunzea recurva heath over Anarthria laevis sedgeland. Very good Burnt >5 years .	No
36	8.10.06	672985E 6190465N	Off Miller's Point Rd, south of the Bremer Bay Rd east of the Pallinup River	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland with Lasiopetalum sp. Good –some grazing Burnt >10years	No
37	8.10.06	652202E 6186439N	On South Coast Hwy east of Wellstead, about 300m before Boat Harbour Rd turnoff (south side of hwy)	Eucalyptus occidentalis / Melaleuca cuticularis low woodland over Lepidosperma striatum / Cyperochloa hirsuta / Patersonia occidentalis swamp form . Fringe of Eucalyptus decipiens subsp adesmophloia over Anarthria laevis. Very good Burnt 5-10 years ago. Burnt old trunks of Euc. occidentalis with resprouts <10m.	One adult flowering shrub of Commersonia sp. Mt Groper at roadside at height <0.4m
38	8.10.06	652084E 6186444N	On South Coast Hwy 6.9 km east of Wellstead, before Boat Harbour Rd turnoff (north side of hwy)	Eucalyptus occidentalis low woodland (with occasional tall shrubs of Melaleuca cuticularis, Acacia cyclops) over low open shrubs of Commersonia sp Mt Groper Lasiopetalum sp and Actinodium calocephalum with Lepidosperma striatum /Cyperochloa hirsuta / Schoenus sp closed sedgeland. Very good condition. Hydrology altered by culvert under highway channelling water out of swamp on south side of road into this wetland. Burnt 5-10 years ago. Burnt old trunks of Euc. occidentalis with resprouts <10m.	At least 50 adult flowering and fruiting shrubs of Commersonia sp. Mt Groper at height <1 m.
39	9.10.06	618401E 6165200N	Kingscliffe Tree Farm	Eucalyptus occidentalis forest fringed with Eucalyptus decipiens subsp adesmophloia over Anarthria laevis. Very good. Burnt >10years	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
40	11.10.06	652225E 6176376N	Sandalwood Rd south of Mettler Lake Rd intersection	Eucalyptus occidentalis low woodland (with occasional tall shrubs of Melaleuca cuticularis and Banksia littoralis) over low open shrubs of Kunzea recurva and Gastrolobium bracteolosum and Anarthria laevis sedgeland. Very good. Burnt >5 years	No
41	11.10.06	655921E 6173674N	Sandalwood Rd south of Mettler Lake Rd intersection. Wetland about 300m west of road	Eucalyptus occidentalis low closed forest over tall open shrubs of Melaleuca cuticularis, Acacia sp. Melaleuca sp, and sparse sedges of Gahnia sp. and Lepidosperma striatum. Excellent to near pristine condition with bushland surrounding wetland also in same condition. Burnt 5>20 years ago.	No
42	11.10.06	648527E 6175282N	North of Mettler Lake Rd near Sandalwood Rd intersection.	Eucalyptus occidentalis tall open shrubs < 6m in height over Kunzea recurva open heath with Actinodium calocephalum and Anarthria laevis closed sedgeland Very good. Burnt <5 years ago.	No
43	11.10.06	648747E 6175218N	North of Mettler Lake Rd near Sandalwood Rd intersection. South side of road.	Eucalyptus occidentalis tall open shrubs < 6m in height over Kunzea recurva open heath with Actinodium calocephalum and Anarthria laevis closed sedgeland Very good. Burnt <5 years ago.	No
44	11.10.06	646971E 6174091N	Both sides of Mettler Rd	Eucalyptus occidentalis /Melaleuca cuticularis woodland over Kunzea recurva scrub. Extensive basin, deeply inundated after last year's record rains. Dead shrubs prevalent especially amongst Proteaceae at edges. Most probably dead due to record levels of water after many years of below average annual rain. Pattern evident this year throughout deeper basins of the region. Otherwise condition very good. Burnt >10 years ago.	No
45	11.10.06	647237E 6181984N	Opposite side of South Coast Hwy to Wellstead turnoff.	Anarthria laevis/Lepidosperma striatum sedgeland with low open shrubs of Astartea aspera and Eucalyptus occidentalis/Melaleuca cuticularis fringe. Very good. Burnt >5 years ago.	No
46	11.10.06	649895E 6183831N	South side of South Coast Hwy .	Eucalyptus occidentalis over Lepidosperma striatum sedgeland with low open shrubs of Astartea aspera/Kunzea recurva. Very good. Burnt >5 years ago.	No
47	11.10.06	650537E 6184563N	South Coast Hwy .	Melaleuca cuticularis woodland over Lepidosperma striatum sedgeland. Margins Anarthria laevis sedgeland with Actinodium calocephalum. Good. Burnt <3 years ago.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
48	11.10.06	650888E 6185022N	South Coast Hwy	Heath of <i>Pericalymma ellipticum</i> with <i>Mesomelaena tetragona</i> sedgeland	No
49	11.10.06	663593E 6184489N	South Coast Hwy	Eucalyptus occidentalis forest over Anarthria laevis closed sedgeland Very good. Burnt >5 years ago.	No
50	11.10.06	662343E 6184684N	?South Coast Hwy	Eucalyptus occidentalis low closed forest over Anarthria laevis/Lepidosperma striatum sedgeland Very good. Burnt >5 years ago.	No
51	11.10.06	661914E 6184623N	Boat Harbour Rd	Eucalyptus occidentalis /Melaleuca cuticularis low closed forest over leaf litter. Anarthria laevis sedgeland fringing the Swamp Yate zone. Excellent condition Burnt >10 years ago.	No. Although accounts vary and original GPS cords probably unreliable, this may be the wetland where Ray Cranfield collected the original specimen of this taxon in 1993. But no extant plants here although soil seed bank may contain seeds.
52	11.10.06	644198E 6179146N	South Coast Hwy west of Wellstead	Low open shrubs of Kunzea recurva and Pericalymma ellipticum over sedgeland of Anarthria laevis/Lepidosperma striatum with occasional emergent trees of Eucalyptus occidentalis and Melaleuca cuticularis to 10m in height	No
53	11.10.06	643757E 6192603N	Road verge of Chillinup Rd just east of Kojaneerup Rd	Eucalyptus occidentalis low forest over heath of Astartea sp., Bossiaea sp, Guichenotia sp., Lasiopetalum sp., and sedgeland of Lepidosperma striatum. Excellent condition Burnt 3-4years ago. Eucalyptus resprouts <6m in height	No
54	13.10.06	649594E 6183959N	Bushblock corner Old Boundary Rd and South Coast Hwy	Eucalyptus occidentalis low woodland over Kunzea recurva low shrubs and Anarthria laevis closed sedgeland. Very good. Burnt >10 years ago.	No
55	13.10.06	649865E 6184198N	Bushblock corner Old Boundary Rd and South Coast Hwy	Astartea sp heath and sedgeland of Mesomelaena tetragona. Very good. Burnt >10 years ago.	No
56	16.10.06	648519E 6175397N	Mettler Lake Rd near Cape Riche Homestead Rd	Eucalyptus occidentalis low woodland over Hakea trifurcata/Kunzea recurva open heath and Anarthria laevis sedgeland. Excellent condition Burnt <5yrs ago	No
57	05.10.07	619026E 6963933N	Kingscliffe tree farm	Moderately dense Eucalyptus occidentalis trees, over open Melaleuca sp. low trees, over moderately dense mixed sedges and Patersonia occidentalis swamp form. Poor to good condition.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition.	Commersonia present?
				Last Burn. Thistles present, has been grazed and bulldozed in patches.	
58	05.10.07	618071E 6164254N	Kingscliffe tree farm	Tall open Eucalyptus occidentalis trees, over scattered Hakea corymbosa / Melaleuca sp. tall shrubs, over mixed sedgeland, including Anarthria laevis. Some Elythranthera brunonis herbs also present. Very good condition. Burnt in patches, >5 years ago.	No
59	05.10.07	639550E 6166206N	Mettler's Lake tree farm	Mixed moderately dense <i>Eucalyptus</i> spp. trees, over moderately dense <i>Melaleuca cuticularis</i> tall shrubs, over moderately dense mixed sedgeland. Very good condition.	No
60	05.10.07	640777E 6166740N	Mettler's Lake tree farm	Open Eucalyptus occidentalis tall trees, over mixed moderately dense sedgeland. Good condition, although weeds prevalent. Burnt >10 years ago.	No
61	05.10.07	640734E 6166892N	Mettler's Lake tree farm	Eucalyptus marginata open tall trees, over moderately dense mixed sedgeland. Good condition. Burnt 5 – 10 years ago.	No
62	05.10.07	641717E 6168588N	Mettler's Lake tree farm	Eucalyptus staeri, Melaleuca striata, Adenanthos cuneata around edges. Anarthria laevis / Anarthria scabra in center. Excellent condition. No evidence of fire.	No
63	06.10.07	646509E 6168175N	Embry tree farm	Low open Eucalyptus sp. mallee, over scattered Lambertia inermis / Hakea cucullata shrubs, over Dryandra mucronulata var. mucronulata / Taxandria spathulata / Xanthorrhoea platyphylla open low shrubs, over mixed herbs. Very good condition. No sign of fire.	No
64	06.10.07	656138E 6169249N	Roadside of Cape Riche Road	Tall open Eucalyptus occidentalis trees, over open Allocasuarina sp. tall shrubs around the edges, over moderately dense mixed sedgeland. Good condition. Burnt >5 years ago.	No
65	06.10.07	648928E 6181741N	Block 6849 on P209414	Eucalyptus occidentalis tall moderately dense trees, over moderately dense Kunzea recurva medium shrubs, over moderately dense mixed sedgeland, including Anarthria laevis. Very good condition, some weeds and signs of grazing. Burnt >10 years ago.	Yes – 18 flowering adult specimens of <i>Commersonia</i> sp. Mt Groper.
	06.10.07	649572E 6182279N	Block 6849 on P209414	Open mixed <i>Eucalyptus</i> spp. mallees, over moderately dense <i>Anarthria laevis</i> sedgeland.	No
66		010227311	. 200	Excellent condition. Fire >5 years ago.	





No	Date	GPS (WGS 84)	Location	Vegetation. Condition.	Commersonia present?
				Last Burn.	present
		6170730N	farm	with understorey of <i>Anarthria laevis</i> sedgeland. Condition good No evidence of fire	
68	06.10.07	643856E 6173092N	Mitchell tree farm	Mixed open mallees, over dense sedgeland. Too wet for Commersonia. Good condition, weedy edges.	No
69	07.10.07	663337E 6185295N	Block 7019 on P210338	Open Eucalyptus occidentalis low forest, over open Hakea pandanicarpa / Acacia cyclops tall shrubs, over open Melaleuca striata shrubs, over open Anarthria spp. sedges. Poor condition, grazed heavily, weedy. Burnt >5 years ago.	No
70	07.10.07	663903E 6185675N	Block 7019 on P210338	Mixed Eucalyptus spp. tall moderately dense mallees, over mixed sedgeland, including Anarthria laevis. Poor condition, heavily grazed, now fenced. Burnt >5 years ago.	No
71	07.10.07	662448E 6184789N	Block 7019 on P210338	Moderately dense tall mixed Eucalyptus spp. over open Acacia cyclops / Hakea corymbosa tall shrubs, over moderately dense Anarthria laevis sedges. Poor condition.	No
72	07.10.07	659248E 6185476N	Block 6927 on P169879	Mixed Eucalyptus spp. low woodland (with occasional tall shrubs of Melaleuca cuticularis, Acacia cyclops and Hakea corymbosa) over low open shrubs of Commersonia sp Mt Groper, and Actinodium calocephalum with Lepidosperma striatum / Anarthria laevis closed sedgeland. Good condition. Burnt 5-10 years ago.	Yes – approximately 30 flowering and fruiting adult specimens of <i>Commersonia</i> sp. Mt Groper.
73	07.10.07	660641E 6186795N	Bushland	Thick Eucalyptus occidentalis low forest in centre, surrounded by thick low shrubland and sedgeland. Excellent condition. Burnt 2-5 years ago.	No
74	08.10.07	650780E 6185618N	Block 2 on D55418	Sparse Eucalyptus occidentalis medium trees, over mixed moderately dense sedges. Unfenced, heavily grazed, weedy. Degraded. Burnt >5 years ago.	No
75	08.10.07	651829E 6176748N	Roadside, Sandalwood Rd	Mixed Eucalyptus spp. tall mallees, over scattered Hakea corymbosa tall shrubs, over sparse Xanthorrhoea platyphylla, over moderately dense mixed sedgeland. Poor to good condition. Weedy. Burnt > 10 years ago.	No
76	08.10.07	651344E 6177193N	Block 6854 on P209409	Sparse Eucalyptus occidentalis tall trees, over open Melaleuca cuticularis tall shrubs, over dense mixed sedgeland.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
				Degraded in middle (which lies along fenceline), better condition on edges. No evidence of burning.	
77	08.10.07	651593E 6178061N	Block 6854 on P209409	Scattered mixed Eucalyptus spp. tall mallees, over scattered Adenanthos cuneata medium shrubs, over dense Anarthria laevis sedges. Good condition. Burnt 5-10 years ago.	No
78	08.10.06	652728E 6178461N	Block 6854 on P209409	Sparse Eucalyptus occidentalis medium mallees, over sparse Acacia cyclops tall shrubs, over moderately dense Anarthria laevis sedges. Good condition, although grazed and weedy. No signs of burning.	No
79	08.10.07	656354E 6179434N	Block 6854 on P209409.	Seasonal wetland – not right, too much <i>Banksia</i> . Excellent condition. No signs of burning.	No
80	08.10.07	648932E 6187299N	Block 1 on D55418	Eucalyptus spp. mixed low forest, over scattered mixed sedges and moderately dense mixed grasses. Degraded, unfenced. Stock run through it. Burnt 5-10 years ago.	No
81	08.10.07	649801E 6188752N	Block 1 on D55418	Eucalyptus spp. mixed low forest, over scattered mixed sedges and moderately dense mixed grasses. Degraded, unfenced. Stock run through it. Burnt 5-10 years ago.	No
82	08.10.07	658617E 6191194N	Roadside, South Coast Hwy	Open Eucalyptus occidentalis low forest, over mixed low open Acacia spp. shrubs, over sparse mixed sedge spp. Good condition. Burnt >5 years ago.	No
83	08.10.07	676728E 6194573N	Jennella tree farm	Eucalyptus occidentalis low forest, over sparse mixed sedge spp., over moderately dense pasture grasses. Degraded, has been grazed, weedy. Burnt >5 years ago.	No
84	08.10.07	676165E 6192642N	Jennella tree farm	Open mixed Eucalyptus spp. mallees, over mixed low shrubs, over open mixed sedges. Good to poor condition. Burnt >5 years ago.	No
85	08.10.07	676524E 6195570N	Jennella tree farm	Moderately dense Eucalyptus spp. tall trees, over dense mixed sedge spp. Degraded, very weedy. Burnt <5 years ago.	No
86	08.10.07	677533E 6190142N	Jennella tree farm	Moderately dense Eucalyptus spp. tall trees, over dense mixed sedge spp. Degraded, very weedy. Burnt <5 years ago.	No
87	09.10.07	646517E 6181145N	Wheatbins block	Sparse Eucalyptus sp. mallees, over sparse Hakea corymbosa shrubs, over moderately dense mixed sedges. Excellent condition, no sign of fire.	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
88	09.10.07	651200E 6177253N	Roadside, Sandalwood Road	East Buril. Eucalyptus occidentalis tall sparse trees, over sparse Kunzea recurva medium shrubs, over mixed moderately dense sedges. Good condition. Burnt 2-5 years ago.	No
89	09.10.07	652300E 6185686N	Block 6850 on P209414	Eucalyptus occidentalis low closed forest over Anarthria laevis sedgeland with pasture grasses. Degraded (unfenced, heavily grazed, weedy). Burnt >20years	No
90	09.10.07	654273E 6185077N	Block 6850 on P209414	Eucalyptus occidentalis low forest over Melaleuca cuticularis tall shrubs, over moderately dense mixed sedge spp. Good to poor condition –some grazing and woody weeds. Burnt >20years	No
91	09.10.07	654060E 6181944N	Block 6850 on P209414	Eucalyptus occidentalis low forest over Anarthria laevis sedgeland. Good – fenced off for approx 15 years. Burnt >20years	No
92	10.10.07	664378E 6184778N	Boat Harbour Reserve	Open Eucalyptus spp. tall malleea, over sparse Grevillea concinna / Hakea cucullata tall shrubs, over moderately dense mixed sedges.	No
93	10.10.07	662448E 6184789N	Nyman's off Mettler Lake Rd, marked as wetland 15 in previous survey.	Eucalyptus occidentalis / Melaleuca cuticularis forest in center, Kunzea recurva closed scrub zone and Lepidosperma striatum zone and Pericalyma ellipticum closed heath. No Anarthria laevis sedgeland fringe. Excellent condition, almost pristine. Burnt >>20 years ago.	No
94	11.10.07	644951E 6183422N	Diprose's block	Eucalyptus occidentalis open forest, over mixed moderately dense sedge spp. One side fenced, other side unfenced. Poor to good condition. No sign of fire.	No
95	11.10.07	645130E 6183380N	Diprose's block	Eucalyptus occidentalis open forest, over sparse Conothamnus aureus low shrubs, over mixed moderately dense sedge spp. Poor condition – unfenced, grazed, and weedy. No sign of fire.	No
96	11.10.07	654864E 6183157N	Block 6851 on P209409	Moderately dense Eucalyptus decipiens subsp. adesmophloia, over mixed moderately dense sedges along the edge of the wetland; E. decipiens replaced with Eucalyptus occidentalis in the center of the wetland. Almost pristine condition. Fenced off, never cleared.	No
97	05.11.07	645664E 6182805N	Diprose's block	Sparse Eucalyptus staeri / Nuytsia floribunda trees, over sparse Adenanthos cuneatus medium shrubs, over open Banksia bauri low shrubs, over moderately dense	No





No	Date	GPS (WGS 84)	Location	Vegetation. Condition.	Commersonia present?
				Last Burn. mixed sedges. Good to poor condition – recently fenced, previously grazed, weedy.	
98	05.11.07	645667E 6182455N	Diprose's block	Moderately dense Anarthria laevis and other mixed sedges, fringed by Eucalyptus decipiens subsp. adesmophloia. Good condition, on brown sandy loam.	No
99	05.11.07	619922E 6154402N	Roadside, South Coast Highway	Moderately dense Melaleuca cuticularis / Eucalyptus occidentalis medium trees, over dense mixed sedges. Sandy loam, with thick humus (approx. 10 cm) surface layer. Excellent condition.	No
100	06.11.07	618020E 6155600N	Aprillia A	Open Melaleuca sp medium to low trees, over moderately dense mixed sedges, including sparse Anarthria laevis. On sandy loam. Good to poor condition.	No
101	06.11.07	629601E 6169210N	Kilchatten A	Open tall sedges, over dense grass species and other weeds (including clover and dandelions), fringed by moderately dense <i>Eucalyptus occidentalis</i> and sparse <i>Melaleuca</i> sp medium trees, over dense weeds as above. On grey loose sand. Good to poor condition – many weeds present, wetland degraded.	No
102	06.11.07	628896E 6170353N	Kilchatten B	Moderately dense mixed grass species, fringed by moderately dense <i>Melaleuca</i> sp., over weeds. On dark brown peat soil. Poor condition – very weedy and degraded.	No
103	06.11.07	629875E 6170179N	Kilchatten C	Moderately dense Eucalyptus occidentalis, over open Anarthria laevis and other dense mixed sedges. Light brown sand with a surface layer of humus. Good condition, but weedy fringe.	No
104	06.11.07	627227E 6169876N	Kilchatten D	Dense Eucalyptus occidentalis medium trees, over moderately dense tall sedges (to 1.5 m), over open mixed sedges, fringed by moderately dense Eucalyptus decipiens / Eucalyptus occidentalis, over moderately dense grasses. On loose grey sand.	No
105	06.11.07	625986E 6170059N	Kilchatten E	Open water body, fringed by moderately dense <i>Eucalyptus</i> occidentalis medium trees, over moderately dense tall sedges, over sparse native violet ground cover, fringed by mixed grass species and other weeds. Good condition towards centre, i.e. within 30 m of open water body.	No
106	06.11.07	628510E 6168882N	Kilchatten F	Moderately dense Eucalyptus occidentalis medium trees, over open Eucalyptus decipiens, over moderately dense tall sedges, over moderately dense mixed grass	No





O	Date	GPS (WGS 84)	Location	Vegetation. Condition. Last Burn.	Commersonia present?
				species and other weeds (dandelion and clover).	
07	06.11.07	649110E 6177741N	Leighton's A	Moderately dense Beaufortia sp. tall shrubs, over open Adenanthos cuneatus medium shrubs, over moderately dense Mesomelaena stygia / Caustis diocia, and other mixed sedges, fringed by Eucalyptus occidentalis in places. On loamy sand. Excellent condition.	No
08	06.11.07	648715E 6178059N	Leighton's B	Moderately dense Eucalyptus occidentalis medium trees, over open Melaleuca sp low trees in centre. Western side is cleared to the centre and weedy. On light brown loamy sand. Good to excellent condition.	No
09	06.11.07	650005E 6176659N	Leighton's C	Moderately dense Eucalyptus occidentalis, over Beaufortia sp. moderately dense tall shrubs, over open mixed sedges. On grey loose sand. Good condition, some weeds. Next to tree farm.	No
10	07.11.07	647067E 6184825N	Davy A	Open to moderately dense Eucalyptus occidentalis medium trees, over open grass species, over moderately dense terete sedges. No evidence of fire, on compacted light brown silty sand. Good condition, some weeds.	No
11	07.11.07	645118E 6183979N	Davy B	Open Eucalyptus staeri low mallees over moderately dense in places Melaleuca thymoides medium tall shrubs, over moderately dense Anarthria laevis and other mixed sedges. Light grey loose sand. Very good condition.	No
12	07.11.07	645475E 6184038N	Davy C	Open Eucalyptus decipiens medium to low mallees, over open Banksia baueri medium tall shrubs, over moderately dense Anarthria laevis and other mixed sedges (including Mesomelaena stygia). On light grey loose sand. Very good condition – some weeds at edge near track.	No
13	07.11.07	645654E 6183533N	Davy D	Open Eucalyptus decipiens and other mallees, over moderately dense Anarthria laevis, over mixed low shrubs (including Verticordia sp and Beaufortia sp). On damp, light brown sand. Good condition.	No
14	07.11.07	645968E 6183573N	Davy E	Eucalyptus occidentalis medium trees, over open to moderately dense Anarthria laevis and other mixed sedges. On light grey to brown fine sand. Excellent condition, few weeds.	No
14	07.11.07		Davy E	Open (to dense in patches) Eucalyptus occidentalis metrees, over open to moderat Anarthria laevis and other no sedges. On light grey to bro sand.	dium tely dense nixed own fine eds.





No	Date	GPS (WGS 84)	Location	Vegetation. Condition.	Commersonia present?
		6183382N		Last Burn. medium trees, fringed by Eucalyptus decipiens medium mallees, over open Anarthria laevis, over open	
				terete sedges. On light brown loose sand. Good condition, few weeds.	
116	07.11.07	654111E 6181569N	Gilmore A	Open to moderately dense Eucalyptus occidentalis medium trees, over open Melaleuca sp low trees, over open Anarthria laevis and other mixed sedges. Loose fine light grey sand. Very good condition – signs of rabbits present.	No
117	07.11.07	689960E 6193739N	Wishart A	Moderately dense Eucalyptus occidentalis medium trees, over moderately dense terete sedges. On light brown fine sand. Poor condition, weedy (grasses and clover), foxes.	No
118	07.11.07	690696E 6194042N	Wishart B	Moderately dense Eucalyptus occidentalis medium trees, over open tall sedges, over mixed grass species and other weeds. Poor condition – very weedy.	No
119	07.11.07	691522E 6192986N	Wishart C	Moderately dense <i>Eucalyptus</i> occidentalis medium trees, over open mixed grass species. Poor condition – very weedy.	No.
120	07.11.07	692276E 6193012N	Wishart D	Moderately dense <i>Eucalyptus</i> occidentalis medium trees, over sparse <i>Melaleuca</i> sp. low trees, over open grass species and other weeds. Poor condition – very weedy.	No
121	07.11.07	690247E 6192809N	Wishart E	Moderately dense Eucalyptus occidentalis medium trees, over open Melaleuca sp. saplings, over moderately dense grass species. Fenced off. Poor condition, weedy. No Anarthria laevis.	No
122	07.11.07	685599E 6193688N	Thomas A	Moderately dense Eucalyptus occidentalis medium trees, over sparse Eucalyptus pleurocarpa / Melaleuca sp. low trees, over moderately dense terete sedges, over mixed herbs. Spot fires approx. 5 years ago — possible soil fire in places, soil cracking from organic matter loss and underground root burning. Very good condition — some weeds.	No
123	07.11.07	686189E 6194520N	Thomas B	Sparse Eucalyptus occidentalis medium trees, over open Melaleuca sp. low trees, over dense terete sedges. On fine sandy light brown loam. Evidence of fire >> 5years. Good to excellent condition – no weeds.	No
124	08.11.07	625045E 6157273N	Benmore A	Open <i>Melaleuca</i> sp. tall shrubs, over dense grass species and other weeds, fringed by moderately dense	No





No	Date	GPS (WGS 84)	Location	Vegetation.	Commersonia
				Condition.	present?
				Last Burn.	
				Eucalyptus occidentalis medium	
				trees, over grass and weeds, with	
				open sedges in patches.	
				Recent fire.	
				Poor condition, very degraded.	
				Vegetation at Benmore is too coastal	
				and scrubby to be the right habitat for	
				Commersonia sp. Mt Groper.	





Appendix E: Definitions and Criteria for Priority Ecological Communities





Definitions and Criteria for Priority Ecological Communities

Priority One

Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (E.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known Threatening Processes across their range.

Priority Two

Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State Forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities, but do not meet adequacy of survey requirements, and or are not well defined, and appear to be under threat from known threatening processes.

Priority Three

- i. Communities that are known from several to many occurrences, a significant number or area of which are not under threat of Habitat destruction or degradation or:
- ii. communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;
- iii. communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Communities may be included if they are comparatively well known from several localities, but do not meet adequacy of survey requirements and or are not well defined, and known threatening processes exist that could affect them.

Priority Four

Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.





- a. *Rare*. Ecological communities known from few occurrences that are considered to have been Adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change These communities are usually represented on conservation lands.
- b. *Near Threatened*. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
- c. Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five

Conservation Dependent Ecological Communities

Ecological Communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.





Appendix F: Site x Species Matrix





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Species	S1 S2	S3 S4 S5 S	6 S7 S8 S9	9 S10 S1	1 S12 S13	3 S14 S15 S16	S17 S18 S19	9 S20	S21	S22 S23	S24 S	S25 S	526 S27 S	28 S2	S29 S30 S31 S32 S33	S34	S35 S36 S37	S38	S39 S40	S41	S42 S43	S44 S45	S46 S	S47 S4	8 S49	S50	S51
Acacia aemula subsp. aemula																											
Acacia applanata																											
Acacia bifaria																											-
Acacia biflora		1	4 5	3		1 2	5		1			1					1		1		1	1	1			1	
Acacia browniana var. browniana			1 5			1 2			•			-					1		-		-	•	-				
Acacia crispula																										+-+	1
Acacia cupularis																										+-+	1
Acacia cyclops			1			1																1				+-+	
Acacia delphina	1 1	1 1 1	-	1 1			1 1		1					1	1 1	1				1							
	1 1	1 1 1	1 1 1	1 1		1	1 1		1					1	1 1	1			1	1		1				1	
Acacia leioderma																					_					++	
Acacia luteola	1														1		2 1				2		1			\longrightarrow	
Acacia moirii subsp. moirii																										\longrightarrow	
Acacia pulchella var. glaberrima					1 1		1	1											1		1				1	$\perp \perp \downarrow$	
Acacia pulchella var. goadbyi					1																			1			
Acacia pycnocephala																											
Acacia saligna															1												
Acacia sp.			1				1					1		1													
Acacia subcaerulea	1 1	1 1 1 1	1 1 1	1	1	1 1	1 1 1		1	1	1	1	1 1	1 2	2 1 2	1	2 1		1	1	1	1	1			1	1
Acacia sulcata var. planoconvexa																											
Acacia tetragonocarpa																					1						-
Acetosella vulgaris															1		1		1			1	1				\neg
Acrotriche cordata																	-		-							+	
Actinodium calocephalum			1	+ +				+																	+	+	-
Actinodium cunninghamii		 	1	+ +		+ + + -	+ + -	+																	+	+	
Adenanthos apiculatus	+	1	1 1	1		1	1	+				_		1											+	1	\dashv
Adenanthos cacomorphus	+	1	1 1	1			1	+						1											+	1	-
Adenanthos cuneatus	-	1 2	+ + +	+ +	-	1 1	1	+				-+			1 1	1			4	-1	1				-	+++	-
		1 3 1		1	1		1	+	_			_	1 1		1 1	I	1		1	1	1				-	1	
Agonis theiformis	2 2	2 1 2	2 2 2 2	. 2		2 1	2		3			2	1 1	1 4	4 1 2						1	2	2	1		2	
Agrostis avenacea																											
Aira caryophyllea															1	1	1		1	1	1 1	1			1		
Aira cupaniana						1							1	1				1					1				
Allocasuarina ?thuyoides																											
Allocasuarina huegeliana														1													
Allocasuarina humilis	1 1	1 1	1			1	1		1		1				1		1					1				1	
Allocasuarina microstachya																											-
Allocasuarina thuyoides			1 1	1			1		1	1 1	1		1						1				1				1
Amphipogon amphipogonoides				1	1		-		-	1			1 1	1 1	1 1	1	1 1	1				1	-	1	1	+	
Amphipogon avenaceus					-					1	-						1 1	•	-			•			1		_
Amphipogon sericeus																									1	+-+	
Amphipogon setaceus																										+-+	
																										++	
Amphipogon sp.																										\longrightarrow	
Amphipogon turbinatus																										++	
Anarthria gracilis		1	1 1	1			1 1			1 1	1											1					2
Anarthria laevis		1			1 2			3												1				1 2			
Anarthria prolifera	2 1	1 1 1 1	2 1 1	1		1 1	1 1		2					1	1 1	1	1 1		1	1	1	1				1	
Anarthria scabra	2 4	1 1 1 2	2 3 1 2	2		2 3									1		1 1										
Andersonia caerulea subsp. caerulea																											
Andersonia simplex	1	1 1 1	1 1	1		1			1										1	1		1				1	1
Andersonia sprengelioides										1 1																	
Anigozanthos humilis			1				1	+ +			1															+	\neg
Anigozanthos rufus		 	1			+ + + -	1	+	1		1	+		-							1			1	+	+	-
Arctotheca calendula			1	+ +		+ + + -	+ + -	+	1		1		1	-	1	1			1	1	1			1		+	-
Astartea aspera	+	 		+ +	1 1	+ + + -	+ + -	+			1	-+	1	-	1	1			1	1				1	+	+-+	
Asterolasia drummondii	+		+++	+ +	1 1			+																1	-	+	
Astroloma baxteri	+		+++	+				+						-											+	+	-
			+					+																	_	+	<u> </u>
Astroloma drummondii	1 1	1	1	1			1 1	\perp	1	1				1 1	1		1									$\perp \perp \perp$	1
Astroloma sp.			\bot					\perp																		1	
Astroloma pallidum									1					1	1											$\perp \perp \perp$	
Astroloma tectum														\perp													
Austrodanthonia caespitosa	1	1 1	1	1		1 2		$\perp =$					1	1	1	1	1		1	1		1				1	7
Austrostipa flavescens												1			1												
Austrostipa hemipogon																	1		1		1 1						
Avellinia michelii			1 1 1					+						1												+	
Avena barbata								+ +						-	1							1				+	
Baeckea camphorosmae			+ + +	+ +		+ + + -	+ + -	+ +														1			+	+	-
Baeckea crispiflora	+		+ + +	+ +		+ + + -	+ + -	+				-+		-											-	++	\dashv
Baeckea crispijiora Baeckea preissiana		+ + + +	+++	+ +		+ + + -	+ + -	+				-+													-	+-+	\dashv
	+	1 2 1	+++	+				+						-		4				^	1				+	+	\dashv
Banksia attenuata		2	\bot			1		\perp						\perp	1 1 1	1	2									+	
Banksia baueri		1 1	1				1 1	\perp									1 2		1	1	1	2 2	2			1	
Banksia baxteri	2	2 1		1		1 2	1								1 1	1	1		1		1	1				$\perp \perp \downarrow$	
Banksia coccinea															1	1											
Banksia dryandroides										1														1			
t .			<u> </u>																1		1						





Species	S1 S2	2 S3	S4 S5 S6	6 S7	S8 S9	S10 S	S11 S12	S13 S14	S15	S16	S17 S1	8 S19 S2	S21 S2	22 S	S23 S24	S25 S26	S27 S28	S29	S30	S31 S	S32 S3	3 S34	S35 S	36 S37 S38 S	39 S40 S	841 S	42 S43 S44	S45 S46	5 S47 S48 S49 S50 S
Banksia gardneri var. gardneri	1		1	1	1		1			_	1			_	1 1		1 1								1			1 1	
Banksia grandis	1		1	1	1		-	1	+ +		-		1 1	-	1	. 1	1 1	1		1		+ +	1	++++	1		-	1 1	1
Banksia littoralis					1			1		1							1	1		1			1					1 1	1
Banksia nutans								1		1				_					1										
Banksia nutans var. cernuella																													
Banksia nutans var. nutans	1 1	. 1	1 1		1			1	1	1	1		2																
Banksia repens var. repens				1	1		1			1	1		1		1 2										1				
Banksia seminuda																													
Banksia sphaerocarpa var. sphaerocarpa																													
Baumea articulata																													
Beaufortia anisandra	1		1		1	1							1		1		1 1	1					1	1					2
Beaufortia empetrifolia	3	3 3	1 1 3	3 2	1 2		4	3	3	4	2 2	2	3	3	1						1	2		1	1	1	2	1	1
Beaufortia micrantha var. micrantha																													
Beaufortia schaueri																													
Billardiera fraseri																													
Billardiera variifolia			1								1		1			1 1	1												
Billardiera venusta			1								1		1			1 1	1												
Boronia albiflora	1		1									+		_															
Boronia crassifolia	1		1	-									1												1			1	
Boronia cranstyotta Boronia crenulata	1						1						1					1							1			1	
	+						1		+				+	-				1			-+	+							
Boronia crenulata subsp. crenulata									1																		.		
Boronia ramosa subsp. anethifolia				\perp										_													1		
Boronia sp.																													
Boronia spathulata			1	\perp		1										1													
Boronia subsessilis			\perp	\perp					\perp		1							1			-								
Bossiaea eriocarpa			\perp	\perp					\perp												-								
Bossiaea ornata													1																1
Bossiaea praetermissa	1 1	. 1	1 1			1	1		1		1										1		1			1	1		1
Bossiaea rufa																													
Brachyloma geissoloma																													
Bromus diandrus																				2	2				1				
Burchardia umbellata	1	1	1 1 1	. 1	1 1		1	1			1 1		1		1 1	1	1 1			1	1	1		1		1	1	1	
Caladenia cairnsiana			1														1							1	1	1			1
Caladenia flaccida																													
Caladenia flava							1	1							1	1 1	1	1		1				1 1	1	1	1	1	
Caladenia fuscolutescens																											1		
Caladenia graminifolia																													
Caladenia heberleana			1 1		1		1						1		1														1
Caladenia latifolia																	1												
Caladenia longicauda subsp. australora																													
Caladenia nana subsp. nana																										1			
Caladenia pectinata							1													1									
Caladenia reptans subsp reptans																	1												
Caladenia sp.			1	. 1	1																					1			
Calectasia gracilis																													
Callitris roei																													
Calothamnus gracilis	1 1	. 1	1 1	. 1	2 1	1	1	1			1 1		1		1 1					1				1			1	1	1
Calothamnus sanguineus		11		1							1		+ -	-															
Calothamnus schaueri														-															
Calytrix depressa														_								+ +		+ + +					
Calytrix flavescens	1	1	1	1	1	1		1		1			1	_								+ +		+ + +		1			2
Calytrix leschenaultii		1 1	-	+*		1				- +			1 -	-												-			1
Calytrix similis	1		1						1		1			_								+ +		+ + +	1	1			
Calytrix sp.	+ + 1		-								1													+ + +	1	-			
Cassytha flava	+ +								+ +				+ +									+ +							
Cassytha glabella		+		+					+ +											-		+ +		++++					
Cassytha micrantha	+ +	+					+		+ +				+ +	-						-	-	+ +		++++					
Cassytha pomiformis	+ +	+					+		+ +				+ +	-						-	-	+ +		++++					
Cassytha racemosa	+ +			+					+ +			+ +	+ +							-	-	+ +		++++					
Cassytha racemosa forma pilosa	1			1	1	1	1	1	1	1		+ +	1				1	1		-	1	+ +		++++	1	1		1	
Cassytha sp.	1			1	1	1	1	1	1	1		+ +	1				1	1		-	1	+ +		++++	1	1		1	
Caustis dioica	1	. 1	1	2			+	1	1	1	1		+ +	+						-	-	+ +	1	+ + +		1	1 1	1	
Centrolepis aristata	1	1	1	-			+	1	1	1	1		+ +	+	1		1			-	-	+ +	1	+ + +		1	1	1	
Centrolepis aristata Centrolepis polygyna	+ +								+								1			-		+							
	+ +		1	-					+						1					-		+							
Chartanthus guistatus	+								+				+ +	-							-+	+						1	
Chaetanthus aristatus	+								+				+ +	-							-+	+							
Chapten thus tenellus				\perp					1		-						1				-	+							
Chamescilla corymbosa var. corymbosa				\perp					1		1			\perp	_		1				-	+							
Chamescilla spiralis				\perp			1		1				1	l	1						-	+							
Chordifex capillaceus			\perp						\perp												-	\perp							1
Chordifex crispatus	1 1	3					1	1		1						1			3		1			1	1	1	1		
Chordifex laxus																							1						





a .	G1 G2	00 0	05 06	GE GO GO G10	011 010	G12 G14	015	014 015	010	010 0	200	21 0	100 000	004	005	G2.c	G25 G20 G20	020	021	022	G22 G24 G25 G26 G25	COO	G20 G40	0.41	G42 G44	045 046	G45 G40 G40	050 051
Species	S1 S2	2 S3 S4	S5 S6	S7 S8 S9 S10	S11 S12	S13 S14	S15	S16 S17		S19 S	520 S	21 S	S22 S23	S24	S25	S26		S30	S31	S32	S33 S34 S35 S36 S37	S38	S39 S40	S41	S42 S43 S44	S45 S46	S47 S48 S49	S50 S51
Chordifex leucoblepharus									2								2											
Chordifex ornatus																												
Chordifex sphacelatus			1	1 1	1			1	1			1	1 1	1	2	1	2 2 1				1				2	2 2		1 3
Chorizandra enodis																												1
Chorizema cytisoides		1		1																			1					
Chorizema diversifolium															1													
Chorizema glycinifolium														1							1							1
Chorizema nanum																	1											
Cirsium vulgare																		1	1	1	1 1 1		1		1 1			
Comesperma calymega																									1			1
Comesperma confertum																												1
Comesperma flavum						1																						
Comesperma virgatum																	1											
Commersonia sp. Mt Groper																												
Conospermum caeruleum																												
Conospermum caeruleum subsp. caeruleum				1					1																			1
Conospermum flexuosum subsp. flexuosum																												
Conospermum floribundum																												
Conospermum teretifolium																												
Conostylis aurea																												
Conostylis hiemalis																												
Conostylis pusilla			1	1	1			1					1 1	1	1	1	1 1									1		1 1
Conostylis serrulata								-						•	-	-												
Conostylis setigera subsp. setigera																												+
Conostylis vaginata		+ +		 																								+ + - 1
Conothamnus aureus			1	1				1		1	1		1 1														1	1
Conyza parva			1		1	1		-		-	-		_ 1															+ + + -
Conyza sumatrensis		+ +	+ + -		1	1												1	1	1	1				1 1 1			+ + -
Corybas sp.																		1	1	1					1 1 1			+
Cotula australis														1														+ + + + + + + + + + + + + + + + + + + +
Crassula colligata														1										2				+ + + + + + + + + + + + + + + + + + + +
Crassula colorata														1		1	1 1					1		2		1 1		+ + + + + + + + + + + + + + + + + + + +
Crassula decumbens var. decumbens			1	1 1			1	1						1	1	-	1 1		1	1	1	_	1 1			1 1		1
Crassula exserta			1	1 1			1	1						1	1	1	1 1		1	1	1	1	1 1			1 1		1
Crassula glomerata														1			1											
Cyathochaeta avenacea			1	1 1 1				1	1			1		1			1 1									1	1	1
Cyathochaeta equitans		1	1	1 1 1	1	1	1	1	1			1					1 1		2		1 2 1 1		1		1 1	_	1	1
Cyperochloa hirsuta		1			1	1	1												2		1 2 1 1		1		1 1	2		+
Cyperus tenellus						1						1	1															
Dampiera juncea												1	1										-					
				1																			1					
Dampiera linearis Dampiera pedunculata																												
														1											1			
Dampiera sacculata														1			1											
Dampiera sp.																												1
Darwinia diosmoides								1 1									1			1					1			
Darwinia vestita	1	1			1		I																1					1
Dasypogon bromeliifolius																			1									
Daviesia alternifolia																												
Daviesia emarginata																												1
Daviesia gracilis																												
Daviesia incrassata subsp. incrassata	1	1 1	1	1 1								1	1 1		1		1								1	1		1
Daviesia inflata		\perp				1		1																				+
Daviesia lancifolia		\perp																										+
Daviesia oppositifolia		$\perp \perp$																										\bot
Daviesia trigonophylla		$\perp \perp$																										\bot
Desmocladus austrinus																												\bot
Desmocladus fasciculatus	1		1	1 1 1	1	1		1				1					2 1				1							2
Deyeuxia quadriseta						1																						
Dianella brevicaulis																												
Dianella revoluta var. divaricata																												
Disa bracteata		1		1									1	1	1		1 1 1		1		1 1	1	1	1	1	1 1		
Diuris longifolia			1																									
Drosera erythrorhiza	1 1	1 1	1 1	1 1	1	1	1	1	1			1	1 1	1	1	1	1 1	<u>↓</u>		L 1	1 1 1 1	1	1	1	1	1 1		1
Drosera glandulifera				1									1 1				1						1					
Drosera huegelii		1																						1				1
Drosera leucoblasta			1 1	1					1				1		1		1				1							
Drosera menziesii subsp. menziesii	1 1	1	1 1	1	1	1	1	1	1				1 1	1	1		1 1				1 1			1		1		1
Drosera micrantha subsp. micrantha												1																
Drosera paleacea subsp. paleacea		1		1				1					1	1							1							1
Drosera paleacea subsp. trichocaulis																	1											
Drosera pallida		1	1		1				1				1	1		1	1 1 1		1		1 1		1			1 1		+
Drosera platypoda		1	1		1				-				1	1					-				1			. 1		+ + -
	1 1	1		<u> </u>	1 1													ı	1						<u>ı I I I </u>			





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Species	S1 S2	S3 S4 S5 S6	S7 S8 S9	S10 S11	l S12 S13	8 S14 S15 S16	S17 S18 S	319 S20	S21	S22 S23	3 S24	S25	S26	S27 S28	S29 S	S30 S31 S32 S33	S34	S35 S36 S37	S38	S39 S40	S41	S42 S43	S S44 S	45 S	46 S47	S48 S	349 S5	0 S51
Drosera pulchella																												
Drosera scorpioides																												
Dryandra arctotidis			1 1	1					1	1	1	1															-	
Dryandra armata			1 1						-	1	-	-																1
Dryandra blechnifolia										+																	-+	
Dryandra brownii																		1									1	
Dryandra calophylla																											1	
																		1									2	
Dryandra cuneata	1		1	1					1						1			1 1						1 1	l		1	
Dryandra falcata		1	1	1			_	1	1			2	1	1 1	1			1									1 1	
Dryandra mucronulata subsp. mucronulata	2	1 4	1 1	3			3 2	2	2		1			3 2	1			1 2						1 1	1		2	
Dryandra nervosa																												
Dryandra nivea subsp. nivea		1 1	1 1																									
Dryandra plumosa subsp. plumosa	1																											3
Dryandra pteridifolia subsp. pteridifolia																												
Dryandra tenuifolia var. tenuifolia	1 1		1			1	1	1		2 1	1			1												1		2
Ehrharta calycina																		1			1	1		1 2	,			
Ehrharta longiflora										1						1 1		1			1			1	-			
Elymus scabrus var. scabrus																1 1		1			1		1				-+	_
Elythranthera brunonis		1 1 2	1	1						1 1	1	1				1	1		1		1							+
Eremaea pauciflora var. pauciflora	+ +	1 1 2	1	1						1 1	1	1			-	1	1		1		1		+-+		+		-	+
Eremaea paucijiora var. paucijiora Erodium cygnorum		1	+									\vdash												-	-		-	+
															-								+		-		+	+
Eucalyptus ?yilgarnesis																								_				
Eucalyptus angulosa													1	2		1		3									2	3
Eucalyptus buprestium							2							2														
Eucalyptus decens																												
Eucalyptus decipiens subsp. adesmophloia			2	2	1	1	1	3		2		2	1	1	1	1 1			1	2	1			1	1	1	1 1	1
Eucalyptus decurva	1		1	1										1	1													3
Eucalyptus falcata					1					2 2		2		1 1				3 1					1	1	1		2	
Eucalyptus marginata																												
Eucalyptus occidentalis					3 2			1 2								3			4	2		4			3	2	1	+
Eucalyptus pachyloma					3 2			1 2								3			-	2					3			+
Eucalyptus pleurocarpa				2			2 1			2 1				2 1	1												1	1
Eucalyptus preissiana							2 1			2 1			4	2 1	1			1									1	1
Eucalyptus staeri	2 2	2 1 2 4	2 2	2		2 2	1		2		2	2	4	2 1	1	1 2 2 2	2	-			1	2	1 .	2 (1
	2 2	2 1 2 4	2 2	2		2 3	1		2	2	2	2	1	2 1	1	1 3 2 2	2	2 2			1	2		2 2	2 2		2	1
Eucalyptus uncinata										2								1				2					1	1
Eutaxia neurocalyx subsp. neurocalyx																												
Exocarpos sparteus																											1	
Franklandia fucifolia	1																											
Gahnia ancistrophylla																		2									1	
Gahnia aristata																												
Gahnia sp.																												1
Gamochaeta calviceps																												
Gastrolobium bracteolosum		1	1			1								1														
Gastrolobium reticulatum																												
Gastrolobium retusum		1												1										1	1		-	1
Gastrolobium spinosum		1																							•			
Glischrocaryon aureum																											-+-	+
Glischrocaryon aureum var. aureum																											-	
														1														_
Gnephosis tenuissima														1	-							1	+		-		+	+
Gompholobium baxteri			+						-													1	+		_			
Gompholobium burtonioides			+			+	+			1												1	+					1
Gompholobium capitatum																1												
Gompholobium confertum			1					1							1													
Gompholobium knightianum	1		1	1			1		1	1 1			1		1													\perp
Gompholobium marginatum																							$oxed{\Box}$					7
Gompholobium polymorphum						1																						
Gompholobium scabrum	1	1				1										1												
Gompholobium tomentosum						1 1	1															1						
Gompholobium venustum			1 1	1		- -	1		1		1							1				-		_			_	+
Goodenia affinis		1		1			1		1																		-	+
Goodenia concinna																									+		+	+
Goodenia filiformis	+ + -	 	1		1	+ + -	 					\vdash						1					+ +		_		+	+
	+ +		1 1	+	1							\vdash			1			-		1			+-+		+		-	+
Goodenia incana			1 1									\vdash			1			1		1				_			-	
Goodenia pterigosperma							+-+					\vdash											+	_	_			1
Goodenia pulchella					1																							
Grevillea concinna subsp. lemanniana																												\perp
Grevillea fasciculata																		1				2						1
Grevillea nudiflora																												$\perp \Box$
Grevillea pulchella subsp. pulchella																												
Haemodorum discolor																												\top
Haemodorum laxum				1										1	1												_	+ 1
Haemodorum sp.	1		1	1		1 1								1	-	1				1							-	+
	1 * 1				1 1	. 1				1 1		1				1	1			1						\bot		





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Species	S1 S	2 S3	S4 S	5 S6	S7 S8	S S9 S	10 S11	S12	S13 S14	S15	S16	S17 S	S18 S19	S20 S	S21 S22	S23 S2	4 S25	S S 26	S27 S28	S29	S30	S31 S	S32 S3	33 S34	S35	S36	S37 S38 S39	S40 S41	S42 S43 S44	S45 S46	S47 S48	S49 S50 S51
Haemodorum spicatum					1																		1	1			1		1 1			
Hakea baxteri	1	1 2			1		1		1													1	1		1		2		1	1 1		1
Hakea ceratophylla	1	L 2			-				-													-	1				2		1	1 1		1
Hakea coriacea																																
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Hakea corymbosa	2 1	l 1	-	1	1 1		1 1		1				1		1								1		1		1		1	1		1 2
Hakea cucullata	1		1			1							1		1 1				1 1													2 1
Hakea denticulata			1		1		1					1				2	1		1	1							1		1		1	
Hakea ferruginea	1	1					1															1					1					
Hakea laurina							_																			1						
Hakea marginata																										1						
Hakea nitida				-								1	-			-				-						-		-				
								1				1	1			1				1						1	1 1	1	1		1 1	
Hakea pandanicarpa subsp. crassifolia			1		4	2	1		2				2														1		1			2 3
Hakea prostrata							1																									1
Hakea ruscifolia															1												1			1		
Hakea sulcata																						1										
Hakea trifurcata						1	1						1		1							_	1							1		1
Hakea varia						1	1						1		1						1	1	1							1		1
											_										1	1										
Harperia confertospicata	1 1	1	1		1	1	1 1		1		2		1 1										1	l	1		1	1		1	1	1
Harperia lateriflora																																
Helichrysum luteoalbum																																
Hemiandra humilis																																
Hemiandra pungens																													1			
Hibbertia acerosa	+	+				+++				1				+ +	-		-	+ +			-					-+			1			
	+	-	\vdash	+		+	-					 		+	-		-	+ +											 			
Hibbertia amplexicaulis	+	_				+	_							\perp			_															
Hibbertia gracilipes																																2
Hibbertia hibbertioides var. meridionalis	1 1	1		1		\perp 1		L I	1	1	1		1		1	1		1 1		1	「	[1	「			1			1
Hibbertia lineata	1 1	1	1 1		1 1	1	1 1				1	1	1		1 1	1 1	1	1	1 1	1					1			1 1	1	1	1	1
Hibbertia recurvifolia															- T-																	2
Hibbertia rupicola																																
Hibbertia sp.				-																												
Hordeum leporinum																							1	l							1	
Hovea chorizemifolia																																
Hovea trisperma	1				1 2	1							1		1			1	1	1				1								1
Hyalosperma simplex																																
Hypocalymma angustifolium																													1			
Hypocalymma strictum subsp. elongatum	1	1 1					1		1	1												1	1	1 1					1			
Trypocarymma strictum subsp. etongarum	1	l I					1		1	1												1	1	1 1					1			
Hypocalymma strictum subsp. strictum																																
Hypochaeris glabra			1	1	1 1	1		1	1 1	1	1	1	1		1	1 2	1	1	2 1	1		2		1	1	1	1 1 1	1 1	1 1 1	1 1		1
Hypolaena exsulca			1																1			1	1	1				1				
Hypolaena fastigiata	1 1	1 1		1	1 1		1		1		1	1	1			1			1	1			1	1 1	1		1	1	1	1 1		1
Hypolaena sp.																									1							
Isolepis cernua																									-		1					
Isolepis stellata				-													-										1					
							_										1															
Isopogon attenuatus	1 1	1		1	1		1		1	1			1		1																	1
Isopogon baxteri																																
Isopogon buxifolius var. obovatus																																
Isopogon cuneatus																																
Isopogon formosus subsp. formosus																																
Isopogon heterophyllus																																
	+	_				++	-			1		-		+				+						-					+			
Isopogon longifolius				4-4		$\perp \perp$		\perp		1				1		\perp	_											1				
Isopogon sp.																																
Isopogon teretifolius	-			1 1]						1	1 1							Ī	Ī						
Isopogon teretifolius subsp. petrophiloides																																2
Isopogon teretifolius subsp. teretifolius																																
Isopogon trilobus	+	1	1	1	1	+	1 1	1	1 1	1	2	2	1 1	+ +			+	+ +					1			1	1	1	1			1 3
Jacksonia capitata	+	1	1	1	1	+	1	1	1 1	1			1 1	+	-		-	+					1			1	1	1				
	+	-				+		+		1						+	_												3			1 2
Jacksonia grevilleoides							1						1															1				
Jacksonia spinosa	<u> </u>					<u> </u>	[1 1									<u> </u>					
Johnsonia acaulis					1																				1				1			
Johnsonia lupulina	1	l I	1							1																		1				
Johnsonia teretifolia	1	-								-						+ + +	_	+ +										1				
Juncus bufonius	+	_				+	-			1		 		+	-		1	1	1							-+			+ + + -			
	+			+		+	-			1							1	1	1				_									
Juncus pallidus								1	1		1			1							3		1			1	1 1	1	1		1	
Kennedia coccinea	⊥ ¯			1		\perp 1		L I			L I							1 1			「	[2	「			2			
Kingia australis															1																	
Kunzea affinis																																1
Kunzea preissiana				1				1		1						+	1	+ +														1
	+			1		+	-		1	1	4		1	1			-	+													1 2	
Kunzea recurva	+	_				+	_		1		4		1	1			_														1 2	
Kunzea rostrata																																
Lachnagrostis filiformis																																
Lagurus ovatus																					1	1	1 1	l I								
Lambertia echinata subsp. citrina																					- 1	-										
		1						1						1 1		1													<u> </u>			1 1





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Species						S12 S13	3 S14 S	15 S16) S21	S22 S23	S24	S25	S26	S27 S28	S29 S30	S31 S32 S33	S34	S35 S36 S37	S38	S39 S40	S41	S42 S43	S44 S45			8 S49	S50	S51
Lambertia inermis var.inermis	2 1	2 3	1 2	2 1	1			1	4	2	1						1	1 2		2			1		1	2	1		3	2
Lasiopetalum microcardium																														
Lasiopetalum parvuliflorum																														
Latrobea recurva	1	1 1	1		1			1 1															1							_
Laxmannia brachyphylla	1	1 1	1		1			1 1										1					1						+	
Laxmannia grandiflora subsp. stirlingensis													-					1											\rightarrow	
Laxmannia ramosa																														
Laxmannia sessiliflora	1		1		1		1		1															1						
Laxmannia sp.																														
Laxmannia squarrosa																			1						1					
Lechenaultia formosa														1		1														1
Lepidosperma ?leptostachyum														-		1					1									÷
Lepidosperma brunonianum																					1									-
															_														\rightarrow	
Lepidosperma carphoides									1				2		2	1														
Lepidosperma leptostachyum																														
Lepidosperma pubisquameum																													.	
Lepidosperma sp.																														
Lepidosperma squamatum	1	1	1 1	1 1	1 1	1	1	1 1	1 1	1	1	1 1	1	1	1	1 1	1	1		1 1 1		1 1	1	1	1 1	1		2	. 1	2
Lepidosperma striatum	1	-	1 1	1 1	1 1	1		1 1		1	1	1 1	1	1	1	1 1	1	1		1 1 1		1	1	1	1 1	1				
Lepidosperma stratum Lepidosperma tenue						1											1			1		1		1						
Leptaosperma tenue																														
Lepidosperma ustulatum																														
Leporella fimbriata	1	1	1 1				1	1	1 1			1 1	1		1	1 1	1			1										
Leptomeria lehmannii																								1					. T	٦
Leptomeria pauciflora																													-	
Leptomeria squarrulosa		1 1 1																											-+	\neg
Leptospermum spinescens		+ + + -	+++							-	+				-											+ +				\dashv
Lepyrodia drummondiana																1										+				-
		+														1					-					+-+				
Lepyrodia hermaphrodita																														
Lepyrodia macra								1							1														.	
Leucopogon aff. elegans		1							1																				1	
Leucopogon conostephioides																											1			
Leucopogon corynocarpus	1			1	1				1																				1	
Leucopogon cucullatus	1 1	1	1		1 1			1	1			1																	1	
Leucopogon distans			1		1 1		1		1			1																		_
Leucopogon aistans	1 1	1 1	1				1	1 1	1																				1	_
Leucopogon elatior																														1
Leucopogon elegans																														
Leucopogon flavescens var. flavescens																														
Leucopogon gibbosus		1							1			1					1	1		1										
Leucopogon glabellus																														
Leucopogon reflexus																														
Leucopogon woodsii			1 1	1	1						1	1																	1	-
Leucopogon woodsti			1 1	1	1						1	1																	1	
Levenhookia dubia		1																											1	
Levenhookia pauciflora		1 1	1 1 1	1	1				1		1	1								1									1	
Logania campanulata																														
Logania micrantha																														
Logania serpyllifolia subsp. serpyllifolia																								1						
Logania stenophylla			1 1	1																		1		-						
Lolium perenne			1 1	1																		1			1	2				
																									1	2			\rightarrow	
Lomandra caespitosa																		1						1	1					
Lomandra hastilis		2 1	1					1		1						1		1 1	1	1 1		2			1 1				1	
Lomandra nigricans		1	1	1			\perp	1	<u> </u>				<u> </u>		[1		1	1	1	L				1	\perp Γ			1	
Lomandra pauciflora									1			1 1																		3
Lomandra preissii																														
Lomandra purpurea		+ + + -																			1					+ +			-+	-1
Lomandra rupestris	1	+ + +	 	1					 		+									1						+			+	\dashv
	1			1																1	-					1		-		——
Lomandra sericea																														
Lomandra sonderi																														
Lomandra sp.																													. T	1
Loxocarya striata					1							1 1	1	1	1	1 1	1	1		1					2	1			-	
Lyginia barbata			1 1				1	1										1				1		1					1	\neg
Lyginia imberbis	1	+ + +	1 1				1		2 2	1	3	1					1	1	1	1		1	2		1 1	1	1		2	\dashv
Lyperanthus serratus	1	+ + + -	1				1	1		1	3					1 1			1	1		1		1	1 1	1	1			-
		+ + + + + + + + + + + + + + + + + + + +	1									1				1 1	1				-					+-+				
Lysinema ciliatum	1	1	1				1	1 1	1		1						1	1					1		1				1	1
Lythrum hyssopifolia								1												1		1 1								
Meeboldina kraussii																													. 🗆	
Meeboldina sp.								1																					-+	
Melaleuca bracteosa								1																		+ +			-+	-
Melaleuca concinna		+ + +	 	1				1	 		+															+	1		+	-
		+]	1				1										+			 					+-+	1			
Melaleuca cuticularis						3 2				2							1				1	1		1			1			
Melaleuca pentagona var. latifolia																														J
Melaleuca pentagona var. pentagona																													. 🗆	一
Melaleuca sp.								2										1											-	\neg
· · · · · · · · <u>· · · · · · · · · · · </u>	1 1		1 1 1	1	1	1 1	1 1				1	1 1	1				1		1	1 1	1	1 1	1			1				





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Species	S1 S2	S3 S4 S	5 S6	S7 S8 S	S9 S10) S11	S12 S13	S14 S1	15 S16	S17 S	S18 S19	S20	S21	S22 S23	S24	S25	S26	S27 S28	S29 S3	0 S31	S32 S33	S S S S S S S S S S S S S S S S S S S	S35 S36	S37 S	38	S39 S40	S41	S42 S43	S44 S4	15 S4	6 S47	S48 S	849 S5	0 S51
Melaleuca spathulata																																		
Melaleuca striata	2 2	3 1 2	2 3		3 2	2		1 2			2 2		2			3		2 3	3	1	3 4	4	2	2		4	3	2	4 3	3 3	\perp		1	1 2
Melaleuca suberosa				1					1	-	1			1 1																	\perp			2
Melaleuca subtrigona				1 1	-	1		1	1		1		1		_						2 1						_			1				1 2
Melaleuca thymoides	1 1	1 1	1		1 1	1		2 2	2 1	1	1 2		1	1	1					1	2 1	1		1		1	2	1	1				1	
Melaleuca tuberculata																																		
Mesomelaena graciliceps	2													1							1													2
Mesomelaena pseudostygia																																	-	
Mesomelaena stygia	1 1	1	l l	1 1	1 1	1				1			1	1 1	_	1	1	1	1				1					1	2	2 2			1	
Mesomelaena tetragona								1	2						1	1		1 1		1						1		1					1	
Microcorys lenticularis																															\perp			
Microtis media subsp. media									1											1											\perp	1		
Millota tenuifolia var. tenufolia		1	1	1										1	1	1	1	1 1	1	1	1				1	1	1	1			\perp			
Monotaxis grandiflora var. grandiflora																										1					\perp			
Monotoca aristata																								1							\perp			
Monotoca tamariscina	1 1		1										1											1		1					\perp			
Muehlenbeckia adpressa																							1											
Neurachne alopecuroidea										1				1											1				\square				1	1
Nuytsia floribunda		1	1	1				1	1									2 1		1	1 1	1	1	1		1			\square		1			
Oligarrhena micrantha		1																											\square					
Onychosepalum laxiflorum																													\longrightarrow		\perp			
Opercularia hispidula															1	1	1	1	1										1		\perp			
Opercularia vaginata		1	1	1 1	1	1				1			1	1	1			1 1								1		1	1					
Ornithopus compressus			1																1	1			1		1	1	1	\Box	1	1 1	$\perp \perp \perp \perp$			
Orobanche minor																					1													
Oxalis perennans																										1		1						
Paracaleana nigrita	1		1					L I																$\perp \perp \perp \perp$										
Patersonia juncea										1																								
Patersonia lanata forma lanata																										1								
Patersonia occidentalis var. angustifolia							1																											
Patersonia occidentalis var. latifolia																																		
Patersonia occidentalis var. occidentalis		1	Į.		1 1																1						1							
Patersonia rudis						1																												
Patersonia sp.		1																									1							
Pelargonium littorale subsp. littorale																												1						
Pentaschistis airoides																																		
Pennisetum clandestinum																														-	1			-
Pericalymma ellipticum																														•				•
Pericalymma sp.																																		
Persoonia striata				1	1									1																				
Petrophile circinata																															+			
Petrophile crispata																																		
Petrophile divaricata	2				1 1	1		1 1	1	1			1				1																1	
Petrophile diversifolia																															+			
Petrophile ericifolia subsp. ericifolia		1							1	1	2.										1			1							+		1	1
Petrophile longifolia									1		_			1							-									_	+			
Petrophile media														-																_	_			1
Petrophile rigida																									\dashv			$\overline{}$		+	+			+
Petrophile seminuda	1	1 1		1		1			1				1	1 1	1	1		1	1		1	1		1	\dashv	1	1	1		1	+		1	1 2
Petrophile serruriae	1	1 1							1					- 1	1	•		1	-		1			1	\dashv	1		-		+	+		1	+-
Petrophile sp.																									\dashv			$\overline{}$	-+	+	+			+
Petrophile squamata						1																1			\dashv					+	+			_
Petrophile squamata subsp. squamata				1		1			1		1			1 1											\dashv			$\overline{}$		+	+	1	1	[
Petrophile teretifolia	1 1	1 1 1	1	-	1 1	1		1 1			1 1		1					1				1		1	\dashv	1			1	1	+	1		2
Philotheca nodiflora subsp. lasiocalyx	1 1	1 1 1	. 1	1	. 1	1		• •			1			. 1				1				1		1	\dashv	1		-+-		+	+	-	- -	+
Phyllangium paradoxum				1					+		-											1		+ +	\dashv	1		-+-	-+	+	+			+
Phyllota barbata	+ +	1						1	-		+		+								+	1		+ +	\dashv	1		\longrightarrow		+	+			+
Pimelea angustifolia	+ +	1						1	-		-										+	1		+ +	\dashv			\longrightarrow		+	+			+
Pimelea brevifolia subsp. brevifolia	+ + -					1			_	1	-			1					1				1	+ +	-			1	-+	+	+			+-
Pimelea hispida	+ +					1		+ +	-	1	+		+	1					1		+	1	1	+ +	\dashv			1		+	+			1
Pimelea lehmanniana subsp. lehmanniana	+ +							+ +	-		+		+								+	1		+ +	\dashv			\longrightarrow		+	+			+ 1
Pimelea longiflora subsp. longiflora	+ + -							 	_		-	1												+ +	-			-+-	-+	+	+			+-
Pimelea rosea								 	-		-				1						-	1		+ +	+			-+	-+	+	+			+-
Pimelea sp.	+ + -								_		-+	1			1									+ +	-+			-+-	\vdash	+	+			+-
Pimelea suaveolens	+							 	_		_				1							1	1	+	+			-+-	-+	+	+			+
									_		_								1			1	1	+ +	_					+	+			+
Pimelea suaveolens subsp. suaveolens				1					_		_	+ +							1					+ +	-+			-		+	+			+-
Pimelea sulphurea Pimelea tinctoria				1					-		_													+	_			-+-	\vdash	+	+			+-
																													\vdash	+	+			
Platysace filiformis													1													1		1	\vdash	+	+			
Platytheca aff. galioides	1	1						1																										\perp
D	1 1																			1	11				- 1						\rightarrow			
Poaceae sp. Poranthera ericoides																							1					\longrightarrow						_





From the month of the control of the	PRIN 00 007 132 400				- 1			T T T					Т							1 1		$\overline{}$			
Face contact whether we shall be a proper to the proper to	Species	S1 S2 S3	S4 S5 S6	S7	S8 S	S9 S10 S11	S12 S13	3 S14 S15 S16	S17 S18 S19	S20 S21 S22	S23 S24	S25 S26 S27	S28	8 S29 S30 S3	31 S32 S33	S34	S35 S	836 S37 S38 S39	S40 S41 S42	S43	S44 S45 S46 S47	S48	S49	S50 5	S51
Face contact whether we shall be a proper to the proper to	Poranthera microphylla		1			1					1 1		1					1				1			
Figure 1985 - 19															1							1			
Manuschier Bereit Berei			1		1	1	1					1	1	1		1		1 1			1	+	\vdash		-
Moreover protections of the control	Ptarostylis racurya		1			1	1			+ + + - +	1	1	1	 	L	1		1 1	1		1	+	\vdash		
Property Service 1					1	1		1											1			+	\vdash		
Accordance of the control of the con	Pierosiyus turjosa							1															+-+		
Accompanion of the property of					1				1		1		1									<u> </u>	$\perp \perp$		
Parent deplayer 1	Pultenaea empetrifolia																						\perp		
Specimen with a section of the secti	Pultenaea verruculosa	1		1		1	1		1	1							2							1	
Registration of the control of the c		1 1 1	1 1		1			1	1		1 1			1				1	1					1	
Registration of the control of the c	Quinetia urvillei										1	1 1													
Signer Archives - Channel Prophysiolate - Ch																									
Martine Mart											1											+	\vdash		-
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Schwerz (Appendent)							1										-					+	\longrightarrow		
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Scheener engingement																									1
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Sevent services Company Company	Schoenus caespititius	1	1					1						1	1	1			1 1 1		1			1	
Sevent services Company Company	Schoenus curvifolius		1	1				1											1						
Schooling of the second of the	Schoenus laevigatus												2		,							5			
Sevente supplies	Schoenus nanus									+ + + - +			_	 			1						\vdash		-
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Schoemes analysiscelaries Schoemes analysiscela	Schoenus subbulbosus					1				1															
Schwere subscreening	Schoenus subfascicularis						4							3				1 1			2				
Schoemers analyses where the second particular and the second particul	Schoenus sublateralis		1 1	1				1				1							1		1	1		. 1	1
Source populations:				1				1				1		1			1				1	+	+		
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Solition extragrame																		1		1		+	\vdash		
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Sphenochiom anomaliana		1								1															
Sphenochiom anomaliana	Sphaerolobium drummondii	1															1								
Spheroscholmen eschlame																	_					1			\neg
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Syrything microcephales		1																							
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Suchosia more micularis Suchosia scoparia Suchosi	Spyridium microcephalum																								
Suchosia more micularis Suchosia scoparia Suchosi	Stachystemon polyandrus	1 1						1 1																. 1	
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Succhonsia scoparia								1														+	\vdash		
Surlingia antificidia																						+	\vdash		
Sirlingia latifolia Sirlingia	Siacknousia scoparia		1 1	-															1				\vdash		_
Sirlingia simplex Sirlingia si	Stirtingia anethijoita	1	1 1	1				1											1			1	\longrightarrow	1	1
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Solidium carespinosum																						<u> </u>	$\perp \perp \perp$		
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Sylidium diversification	Stylidium calcaratum										1														
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Sylidium imbricatum 1			+	1 1			-+						1			1						+'	\vdash		-
Sylidium luteum			+	1										+	+							<u> </u>	↓		
Stylidium piliferum 1		1	1	$\perp \perp$		1																 '	$\perp \perp \perp$		
Stylidium preissi 1													1									<u> </u>			
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Stylidium scandens 1		 	1 1	1	1	-		+ + + -	1 1	1				+ + +	+ +				+ + + -			+	+	+	
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Synaphea favosa Synaphea petiolaris subsp. petiolaris Synaphea polymorpha 1 1 1 Taxandria parviceps				1								1 1	1		1		1					<u> </u>		1]
Synaphea favosa Synaphea petiolaris subsp. petiolaris Synaphea polymorpha 1 1 1 Taxandria parviceps	Stylidium spathulatum								1	1	1														
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Synaphea polymorpha 1 1 1 1	Synaphea petiolaris subsp. petiolaris		 							1				+ + +								T			-
Taxandria parviceps	Synanhea polymorpha	 	1	1	_	++++		+ + + -		1				+ + +	+ +				+ + + -			+	+	+	1
			1	1									-			1							+		1
1 2 1 3 2 2 3 3 1 2 1 1 1 1 1 1 1 1			+ - + - +	+_+												1							+		<u> </u>
	Laxandria spathulata	1 2 1	3 2 2	3		3 1 2	1	1	1 1	1	1 1	1 1	1		1		1	1	1 1		1 1 1	'	ш	1	4





Species	S1 S2	S3 S4	S5 S6	S7 S8 S	S9 S10	S11 S12	S13 S14	S15	S16 S17	S18	S19	S20	S21	S22 S23	S24	S25	S26	S27 S28	S29	S30	S31	S32	S33 S34	S35 S	36 S37	S38	S39 S40	S41	S42	S43 S44	1 S45 S4	46 S4'	7 S48	S49 S5	0 S51
Tetraria capillaris	2			1		1	4		1		3	4			2	4	2	1	1											1				3	
Tetraria octandra					1 1																														
Tetraria sp.																																			
Tetratheca pubescens	1		1		1 1				1 1				1			1								1					1	1	1				
Tetratheca setigera																																			
Thelymitra benthamiana																																			
Thelymitra canaliculata																																			1
Thelymitra crinita																																			
Thelymitra sp.																																			1
Thelymitra villosa															1																				
Thomasia rhynchocarpa																																			
Thomasia stelligera																																	1		
Thysanotus dichotomus																																			
Thysanotus glaucifolius																																			
Thysanotus sp.																																		•	
Thysanotus sparteus																																			
Thysanotus tenellus																																			
Trachymene pilosa																											1								
Tricoryne elatior						1										1																			
Tricoryne tenella																																			
Tricostularia compressa							1																												
Tricostularia neesii var. elatior	2 2	1		1 1	1 1	1	1		1	1													1	1	1					1	1			1	
Tricostularia neesii var. neesii																																			
Tricostularia sp. south coast (R.T. Wills 1423)																																			
Trifolium campestre var. campestre																										2									
Trifolium sp.						1														1	1						1			1		3			
Trifolium subterranean			1													1		1	1		3		1				1 1		1		1 1	1			
Ursinia anthemoides																1	1	1	1																
Velleia trinervis																											1								
Vellereophyton dealbatum																																			
Verticordia densiflora var. cespitosa								1	1																										
Verticordia habrantha				1		1								1 1																				1	. 1
Verticordia plumosa var. grandiflora																																			\top
Verticordia plumosa var. plumosa								1																											
Verticordia sieberi var. lomata	1	1																																	\top
Verticordia sp.																											1								
Verticordia subulata																																			\top
Villarsia parnassifolia						1	1																												
Vittadinia gracilis																																			
Vulpia myuros var. megalura						1										1		1			3	1		1		1	1								
Xanthorrhoea gracilis																																			\top
Xanthorrhoea platyphylla	1	1	1	1	1 1	2	1	1	1	2			1	1 1	2	2	2	1 1	1		1	1	1	2	1				1		1 2	2 1		1	. 1
Xanthosia huegelii																																			
Xanthosia singuliflora	1																																		\top
Xanthosia sp.					1																														
Xanthosia tasmanica					+					1																		1					+ +		
Xaninosia iasmanica										1	ļ																								$oldsymbol{ol}}}}}}}}}}}}}}}}}}$





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Species S	52 S53	S54 S5	55 S56	6 S57	S58	S59 S60	S61	S62	S63 S64 S	65 S66	S67	S68 S	69 S70	0 S71 S	72 S73	S74	S75 S76	S77 S78	S79 S80	S81	S82 S	883 S84	S85 S	S86 S87	S88 S89	S90 S	S91 S92	S93	S94	S95 S	96 S	97 S98	S125
Acacia aemula subsp. aemula			+			227			200 200 20								2.0	2	211	1					200								
Acacia applanata			+	+																1											-		
				4																											-		
Acacia bifaria																																	
Acacia biflora					L I				1										1										1		1		_ 1
Acacia browniana var. browniana																											1						
Acacia crispula				+																				1							-		-
Acacia cupularis	1		+-	+																				1							-		
	1			+																1													
Acacia cyclops																				1													
Acacia delphina	1		1			1		3	1	l	1	1	1												1		1	1				1	
Acacia leioderma				l l																													
Acacia luteola		1					1		1 1	2			1	1	1			1 1	1		1	1	1			1	1 1		1	1			
Acacia moirii subsp. moirii				+												1															-		
Acacia pulchella var. glaberrima				+												•																	
Acacia pulchella var. goadbyi			-	+																				-							$-\!\!\!+\!\!\!\!-$		
Acacia pycnocephala	1	1					1									1																	
Acacia saligna				l l																													
Acacia sp.																																	-
Acacia subcaerulea		1 2) 1	+		1		1					1 1	1	1		1	2	1			1	1		1		4	2	1				
		1 2		+		1		1					1 1	1	1		1		1			1	1		1		4		1				
Acacia sulcata var. planoconvexa				+																											$-\!\!\!\!+\!\!\!\!\!-$		
Acacia tetragonocarpa																																	
Acetosella vulgaris					L I																												
Acrotriche cordata							1		1																								-
Actinodium calocephalum		-		1	2																				3					1	-		
Actinodium cunninghamii		_	+-	1	-					+									1					2	3	+ +				1	-	-	
			+-	+						-						_	1 .					2 .	2		2 2	+	-		,	2	+	2	
Adenanthos apiculatus				\perp	1	1				\perp					1	2	1 1	1	1 1			2 1	2		3 2		2		1	3	<u> </u>	2	1
Adenanthos cacomorphus																								1									
Adenanthos cuneatus		2	2 1	1		1		3	1	l	2	T	2		2		1 2	2	1	1	4	3 3		1	2	4	2	4		\top	-	3	
Agonis theiformis				$\overline{}$										1					3				1		2		4	2	1		\neg		2
Agrostis avenacea		-+	+-	+						_				1 -				- -	-			++	-		-		-	-	-		+		
	-	-+	+	+	1					-																+-+		-			+	+	
Aira caryophyllea				\perp						_																					\bot		
Aira cupaniana				\perp																											\perp		
Allocasuarina ?thuyoides				[T	l T			1 1		1	1						ı I J						[
Allocasuarina huegeliana				1																													
Allocasuarina humilis	1	1	+-	+											1 2	3	2 2	3	1 2			1 1		3				2	1	2	3	5 1	1
Allocasuarina microstachya	1	1	+	+	 			1		-					. 2	ی	<u> </u>	3	1 4			1 1		٥		+			1	۷ .	<u>-</u>	J 1	
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Allocasuarina thuyoides	1	1		\perp		1			1	1						1			1			1								1		1	
Amphipogon amphipogonoides					L T		l l	l I			L I	-				L T	<u> </u>				-		-						[-	¯		
Amphipogon avenaceus																																	1
Amphipogon sericeus			+	+																											-		
Amphipogon setaceus		-+	+-	+					- - 	-																		1			+		
			+	+	\vdash			\vdash		-				+										-+		+		1		-	$-\!\!+\!\!\!-$	-	
Amphipogon sp.		2	—	\perp																													
Amphipogon turbinatus			Ш_	\perp										1																	$\perp \perp$		
Anarthria gracilis	1	1		1	2										1	1	1					1 1		2	1						1	1	1
Anarthria laevis				$\overline{}$		4														1				1	5	1	4		1		1		
Anarthria prolifera	2	4 2	2 3	+		1		2	1 2	2 2	2	2	4	1	2	3	1 1	1 1	1		2	1 2	1		2		2 1	2	1			2 2	1
Anarthria scabra						1		_											_					1						1			
	1	$\frac{4}{}$	4 3	+		1		3		3	1	2 .) 4	2	1 2	1	2 2	3 2	3 2		1	1 1	3	1	1		1	4	1			2 2	
Andersonia caerulea subsp. caerulea												1																					
Andersonia simplex		1	1 1		<u>L</u>		1	1	1	1	1	1	1		2		1 1	1	1 2		2	1	2		2	1	1 1	1				2 1	
Andersonia sprengelioides									1																								
Anigozanthos humilis				$\overline{}$																											\neg		
Anigozanthos rufus		-+	+-	+						_																					+		
Arctotheca calendula		-+	+-	+	\vdash			+		-																		+		-	$-\!\!\!+\!\!\!\!-$	\rightarrow	
				+						_																					+	+	
Astartea aspera	1					1														1										1			
Asterolasia drummondii																																	
Astroloma baxteri															1		1									1							-
Astroloma drummondii		1	1							1		1				1	1							1			1				\neg		
Astroloma sp.		-	+-	+	1				+ +	-		-				1	1						-	-		+	-			-	+		
			+	+	1					-										 						+		 			$-\!\!\!+\!\!\!\!-$	+	
Astroloma pallidum			\bot	+						_																					+		
Astroloma tectum		1		!						l					1	1						1		1									
Austrodanthonia caespitosa		1			2	1		1	2 2	2	1	2		1		1			1	1	1		T	1			1	1				1	
Austrostipa flavescens				\top																											\neg		
Austrostipa hemipogon		-+	+-	+	\vdash					_																		+ +		-	+	++	
Avellinia michelii	-	-+	+	+	1					-																+		-			+	+	
			\bot	+						_																					+		
Avena barbata				\perp																											\perp		
Baeckea camphorosmae										1		T																		T			
Baeckea crispiflora		-	\top	+																											\top		
Baeckea preissiana		-	+	+	\vdash				1	2		1	1															+ +		-	+		
			+	+	1				1			1	, I							 	2					+					$-\!\!\!+\!\!\!\!-$	2	
Banksia attenuata				\perp									l								3							3			— ∔	2	
Banksia baueri	1	2				1		2	1 2	2	2		2	1	2 2	2	1 2	2	3 2														
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Banksia baxteri			2	1				1		L	2	2	1 1		1		1		2		3	2			1	3	2	3				1	
Banksia baxteri			2	+				1		L .		2 .			1		1		2			2			1	3	2	3			+	1	
		#	2	+-				1		L	3	2 .	1 1		1	1	1		2		2	2			1	3	2	3				1	





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Species	S52 S53	S54 S5	55 S56	S57	S58	S59 S60	S61	S62	S63 S	664 S65	S66	S67	S68 S	69 S70	S71 S72	S73	S74	S75 S76	S77 S	S78 S79 S80	S81	S82	S83 S84	S85	S86 S87 S	888 S89	S90 S91 S9	2 S93	S94	S95	S96	S97	S98 S125
Banksia gardneri var. gardneri		1								1	1							3 1		1 1			1			1			3			1	1 1
Banksia grandis	1	1								1								3 1	1				1		1	1		1	3		1	1	1 1
Banksia littoralis																			1						2			1					
Banksia nutans																									2								
										_	-	_	_																		_	_	
Banksia nutans var. cernuella		2 1	. 1							2	2	2	2		2	I		1 2				2	1	1		2	2	2		2	2	2	2
Banksia nutans var. nutans																																	
Banksia repens var. repens						1			1	1 1	1		1			1	1	3 1	1	1			2		1		2	1	1				
Banksia seminuda																																	
Banksia sphaerocarpa var. sphaerocarpa																																	
Baumea articulata	1																																
Beaufortia anisandra	1	1		1							2		1						1	2									1		1		
Beaufortia empetrifolia		1	. 2		1	1		2	1	2 1		2	3	2			3	3		2 2 1		4	2	1		3 2	1 1	4		1		2	3
Beaufortia micrantha var. micrantha																																	
Beaufortia schaueri											3				2			1		3 3		2			1			1		2		1	
Billardiera fraseri																																	
Billardiera variifolia																																	
Billardiera venusta							1			1	1																						
Boronia albiflora			1			1	1	1		1				1					1	1		2					1 3						
Boronia crassifolia	1	1	1			1	1	1	1	1 1				1	1		1	1 1	1				1		2		1 3						
Boronia crenulata	1	1					1		1	1 1					1		1	1 1	1	1 1 1			1		2								
Boronia crenulata subsp. crenulata	+		-				-				1				+ + -					1	1			1	 					 			
Boronia crenuiata subsp. crenuiata Boronia ramosa subsp. anethifolia	+-+-+	1	-				1				1									1	1			1			1		1	+	-+		
· · · · · ·	+	1	-																-											1			
Boronia sp.																													1	\perp			
Boronia spathulata	1	1	1	1	1				1		1				1		1	1 1	1	1 1			1 1				1	1	1	\perp	1		
Boronia subsessilis																																	
Bossiaea eriocarpa																																	
Bossiaea ornata																																	
Bossiaea praetermissa		1				1									1						1		1	1			1 2						
Bossiaea rufa																					1												
Brachyloma geissoloma																																	
Bromus diandrus																																	
Burchardia umbellata						1				1				1 1	1							1	1 1		1		1		1		1		1 1
Caladenia cairnsiana																																	
Caladenia flaccida																																	
Caladenia flava																									1								
Caladenia fuscolutescens																																	
Caladenia graminifolia																					1												
Caladenia heberleana																					-				1								
Caladenia latifolia																									-								
Caladenia longicauda subsp. australora																					1												
Caladenia nana subsp. nana																					1												
Caladenia pectinata																																	
Caladenia reptans subsp reptans																																	
Caladenia sp.																																	
Calectasia gracilis																																	
Callitris roei																																1	
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Calothamnus gracilis	2	1 1	. 1			1	1		1	1	2	2	1		1						1	1	1 1	1	1	2	+	1	1	\vdash	1	1	
Calothamnus sanguineus																													1	\vdash			
Calothamnus schaueri	\longrightarrow																																
Calytrix depressa	\longrightarrow																																
Calytrix flavescens							1						1		1					1													1
Calytrix leschenaultii							1			1								1		1 1		1	1	1			1						
Calytrix similis			1									1								1		3											
Calytrix sp.										1																		1					
Cassytha flava						1										Ī																	
Cassytha glabella					\Box		\perp	oxdot					T																1				
Cassytha micrantha	1	1 1				1																							1				
Cassytha pomiformis																																	
Cassytha racemosa																																	
Cassytha racemosa forma pilosa							1		1		1			1	1		1		1	1			1	1			1						
Cassytha sp.																																	
Caustis dioica				1		1	1	1		1		1	2	1 1		1		1 2		1 1	1	1	1				1	2	1	1		2	2
Centrolepis aristata	+ + +			_		-				-		-	-	1		-				- -	1	1	1				-	-		-		-+	-
Centrolepis aristata Centrolepis polygyna	+ + +				\vdash							-												1						 			
Cerastium glomeratum	+ + +											-												1						 			
Chaetanthus aristatus	+			1								-+			+ + -														1	1			
Chaetanthus tenellus	+			1	2							-+			+ + -														1	1			
Chamescilla corymbosa var. corymbosa	+				2		1				\vdash				+						-	1			+ + +		 	-	1	 			
Chamescilla spiralis							1				\vdash			-										-									
Chordifex capillaceus		1		1	2		1				\vdash			-			1							-						1		1	
	+	1		1	2	2	1	_				2	2	1		1	1	2 2		1 1 2		2			1	2			1	1		1	2
Chordifex crispatus	+-+-+	1	-		1	3	1	2				2	2	1		1		2 2		1 1 2	-	3			1	2	+			\vdash		1	5
Chordifex laxus							1															1											





ASN 80 009 132 405																												
Species	S52 S53	S54	S55	S56 S57 S	S58 S59	S60 S61	S62 S63	S64 S65	S66	S67	S68 S69 S70	S71 S72	S73 S74	S75 S76	S77 S7	8 S79	9 S80 S81	S82	S83 S84	S85	S86 S87	S88	S89 S90	S91	S92 S93 S9	4 S95	S96 S97	S98 S125
Chordifex leucoblepharus																												
Chordifex ornatus																				+	1							
Chordifex sphacelatus	1	2					2	1	2			1	2	1					1		•	1	1		1 1	1	1	1
	1	2					2	1	2			1	2	1					1		2	1	1		1 1	1	1	1
Chorizandra enodis	1	1																										
Chorizema cytisoides							1													1								1
Chorizema diversifolium																												
Chorizema glycinifolium	1						1	1 1	1			1							1	1					1 1	1		
Chorizema nanum																												
Cirsium vulgare																												
Comesperma calymega																												
Comesperma confertum																			1 1	1	1				1	1	1	
Comesperma flavum														1														
Comesperma virgatum																												
Commersonia sp. Mt Groper																	3											
Conospermum caeruleum																												
Conospermum caeruleum subsp. caeruleum								1		1			1	1	1	1				+		1		1			1	
Conospermum cueruteum subsp. cueruteum Conospermum flexuosum subsp. flexuosum								1		1			-	1		_				+		1		1			1	
													1		1													
Conospermum floribundum				_																					1		1	
Conospermum teretifolium				2																					1		1	
Conostylis aurea																												
Conostylis hiemalis																												1
Conostylis pusilla					1																							
Conostylis serrulata		<u>l</u> T	1		1				Щ Т	T	1											L T		1		1		
Conostylis setigera subsp. setigera	1	1				1	1	1 1	1		1	1	1	1	1	1			1 1		1	1			1 1	1	1 1	
Conostylis vaginata			1	1 1	1		1	1		1	1 1		1	1 1				2	1	1			1		1		1	1
Conothamnus aureus	2		1		1 1	2		1			1	2							1				-			1	2	
Conyza parva																												
Conyza sumatrensis																												
Corybas sp.							1																					
Cotula australis							1																					
Crassula colligata																												
Crassula colorata	-																											
Crassula decumbens var. decumbens																												
Crassula ecumbens var. aecumbens Crassula exserta																												
Crassula glomerata																												
Cyathochaeta avenacea					2																					1		
Cyathochaeta equitans											1					1												2
Cyperochloa hirsuta																	1						1					
Cyperus tenellus																												
Dampiera juncea	1	1	1	1	1	1	1 1	1 1	1	1	1 1	1 1	1 1	1 1	1 1	1	1		1 1		1	1		1	1 1 1	1		1 1
Dampiera linearis			1	1						1				1 1					1	1	1	1	1	1	1			1
Dampiera pedunculata																												
Dampiera sacculata																												
Dampiera sp.																												
Darwinia diosmoides																		1			1	1			1 1 1			1
Darwinia vestita		1	1		1	1	1 1	1	2				1 1	1 1	1 1			-	1 1	1	-	-						1
Dasypogon bromeliifolius		-	-		•	1	1 1	1	_	2	1		1 1	1 1						-					4		1 2	
Daviesia alternifolia											1		1 2	1 1							1				1 1	2		1
Daviesia emarginata													1 2	1 1							1	1			1 1		3	1
Daviesia gracilis	+														+ +		+ + -					1			+		ی	
Daviesia gracius Daviesia incrassata subsp. incrassata	 			1			1			1	1		1		1 2	. 1	1	2	2 2	1	2	1	4	2	++2+	1	2	1
	+			1			1			1	1		1		1 2	. 1	1	2	2 2	1	2	2	4	2	2	1	3	1
Daviesia inflata																						-			+			
Daviesia lancifolia																												
Daviesia oppositifolia		1																										
Daviesia trigonophylla																												
Desmocladus austrinus																												
Desmocladus fasciculatus	1	1					1	1	2			1 1	1	1	1 1	1	1		2 1	2	2	1			1 1		1	1 1
Deyeuxia quadriseta																												
Dianella brevicaulis	1																											
Dianella revoluta var. divaricata						1																						
Disa bracteata																												
Diuris longifolia																												
Drosera erythrorhiza																												
Drosera glandulifera											 											1			+++			+ +
Drosera huegelii									1																+			+ + -
Drosera leucoblasta	+	1 1							1											+-					+-+-			
Drosera teucootasta Drosera menziesii subsp. menziesii	1	+ +	1	1	1		1	1		1	1	1 1	1	1	1 1	1			1 1	1	1	\vdash			1 1			1
	1	1	1	1	1		1	1		1	1	1 1	1	1	1 1	1			1 1	1	1				1 1			1
Drosera micrantha subsp. micrantha																												
Drosera paleacea subsp. paleacea																												
Drosera paleacea subsp. trichocaulis				1			1						1					1					1					
Drosera pallida																												1
Drosera platypoda																\perp						┖						





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Species	S52 S53	S54	S55 S	56 S	57 S58	S 59 S	60 S61	1 S62	S63 S6	4 S65 S	666 S	67 S68	S69 S	70 S71	S72 S73	S74	S75 S76	S77 S78	S79 S80	S81	S82 S	883 S84	S85	S86 S87 S	S88 S89	S90 S9	1 S92	S93	S94 S	895 S9	6 S97	7 S98 S125
Drosera pulchella																								1	1							
Drosera scorpioides																								1	1							
Dryandra arctotidis																1									1			1				
Dryandra armata	1																						1	2					1			
Dryandra blechnifolia	1	1																							2			1			1	
Dryandra brownii																																
Dryandra calophylla		1													1	2	1 1					1 2	1	1						1		
Dryandra cuneata	1	1													-		1 1					1 2			2					1		1
Dryandra falcata	1								2						2										4							1
		1							2		1				2	1	1					1			1		1					1
Dryandra mucronulata subsp. mucronulata															1			3 2	3 4			1	3				1					2
Dryandra nervosa							2		3																							
Dryandra nivea subsp. nivea	1	1	1		1 2	1		1				1					1 2		1					1				1		1 1	1	1
Dryandra plumosa subsp. plumosa	3	2	1	1	2			2.	2 3	1	3			3	3 1	2.	3 3						1		2					2 3		
Dryandra pteridifolia subsp. pteridifolia			-	_					1 -						1 1								-		_							-
Dryandra tenuifolia var. tenuifolia		1			2				1		2					2			1											1		1
		1			2				1		2					2			1											1		1
Ehrharta calycina																																
Ehrharta longiflora																																
Elymus scabrus var. scabrus																																
Elythranthera brunonis																						1		1								1
Eremaea pauciflora var. pauciflora																						1		1								-
Erodium cygnorum	1					+		-	+						+ + + -					+							-	+				+ + -
	1					+		-							+					-							-	1		-		+ + -
Eucalyptus ?yilgarnesis						\perp									1												_	1			_	
Eucalyptus angulosa		2				<u> </u>	3								<u> </u>					<u> </u>												
Eucalyptus buprestium																																
Eucalyptus decens	1 1														1 1																	
Eucalyptus decipiens subsp. adesmophloia	3						1 3								+ + -							3		1	1	2	1			3	1	
Eucalyptus decurva	3					+ +	1 3	-	1		2			-	+ + -	1			1	+ -		3		1	1	+ + 2		+ +		2	1	+ + -
	+			_		+		+	2		2				+	1			1	+ -		\rightarrow					2	1 1	_	-+		
Eucalyptus falcata	+					\perp		_	3						+					+		-					1	1 1	2			
Eucalyptus marginata																										4		3		1	3	
Eucalyptus occidentalis	4						2													2				2	2							
Eucalyptus pachyloma																																
Eucalyptus pleurocarpa	3	2							3 2	1	1																					
Eucalyptus preissiana									3 2	1																						
Eucalyptus staeri	1		4	2		2		-		1		2 1	2	2 2	2 1	2	2 2	2 2	2 2		1	2 2	2		2	1 4	1	2	2		2	2
	1		4	3		3		2		1			3	3 3	2 1	2	2 2	3 3	3 3		1	2 3	3		3	1 4	1	3	2		3	2
Eucalyptus uncinata		3									2	2																				
Eutaxia neurocalyx subsp. neurocalyx				1				2										1 1	1		1	1										
Exocarpos sparteus																														1		
Franklandia fucifolia			1	1				1		1		1 1					1	2										1				
Gahnia ancistrophylla	1																															
Gahnia aristata	-						1																									
							1																									
Gahnia sp.																																
Gamochaeta calviceps																				1												
Gastrolobium bracteolosum																			1 2					1	1		3		1	3		
Gastrolobium reticulatum																																
Gastrolobium retusum		1									2				1	2	1												1	1 1		
Gastrolobium spinosum		-									_				1		-												-			
Glischrocaryon aureum																																
Glischrocaryon aureum var. aureum	+					+		-							+					+		\rightarrow					-	+			-	
	+					\perp		_							+					+		\rightarrow					_	1 1			_	1
Gnephosis tenuissima																																
Gompholobium baxteri	<u></u> T			¯		\perp \Box					-		-	l	<u></u>					1								<u>l</u> T		¯		<u></u>
Gompholobium burtonioides																															2	
Gompholobium capitatum																																
Gompholobium confertum	+ +					+ +	1		1 1						1 1	1			1													1 1
Gompholobium knightianum	1	1		-		+ +	1	+	1 1		1		-	1	2	2	1	1	1	+	2	1		1	1		+	1		1	2	1
				-		+ +		-			1			1			1	1	1	+ -	4	1		1	1			1		1		1
Gompholobium marginatum	1	1				\perp									1 1					+		\rightarrow						1 1				
Gompholobium polymorphum																																
Gompholobium scabrum				1				1		1		1 1	T		1						1					1 3			T			
Gompholobium tomentosum																				1												
Gompholobium venustum	1 1		1			1			1	1		1		1	1		1		1	+ -		1	1			1	1		1	1		1 1
Goodenia affinis	+ + +			-		1	-	+	1	1		1	-	1	1 1		-		-	+		-				*	1	+ +	4	1		+ + -
Goodenia concinna	+					+	-	-	 						+ + + -					+							-	+				+ + -
						\perp	1		1						1 1					\perp		-						1 1				
Goodenia filiformis																																
Goodenia incana	1 1 7		1												1 1 -			1		1 7		1						1				
Goodenia pterigosperma																																
Goodenia pulchella	1 1														† †								+									1 1
Grevillea concinna subsp. lemanniana	+ + +					+ +								-	+ + -					+ -								1 1				+ +
	+			-		+ +		-						-	+ + -	4				+ -			1	1	2	1 -	-	+		1	_	+ + -
Grevillea fasciculata	+					\perp		_	+						1	1		1		+		1	1	1	2	1 2	1	1 1	1	1	2	1
Grevillea nudiflora				\perp			1																								\perp	
Grevillea pulchella subsp. pulchella																					T		T						T			
Haemodorum discolor																																
				_		+ +													 			-				+		1			_	
Haemodorum laxum															1						Į.											1 1
Haemodorum laxum Haemodorum sp.		1																														





g .	G50 G50	054 05		0.55	050	G 5 0 GC	0 001	0.0	000 004	0.5 O.	C C C =	0.00	(O CE	0 051 050 0	53 G 5	4 055 056	0== 0	150 C50 C00	001	COA	G02 G04	CO.	G0.4 G0.5	goo goo	000 (701 00	2 002	004	005	006 0	05 G00 G	105
Species	S52 S53 S	S54 S5	55 S56	S57	S58	S59 S60	0 S61	S62	S63 S64	865 S6	5 S67	S68 S	69 S7	0 S71 S72 S	73 S7	4 S75 S76	S77 S	578 S79 S80	S81	S82	S83 S84	S85	S86 S87	S88 S89	S90 S	891 S9	2 S93	S94	S95 S	S96 S	97 S98 S	125
Haemodorum spicatum																													$\perp \perp$			
Hakea baxteri											1			2				1														
Hakea ceratophylla																															1	
Hakea coriacea																																
Hakea corymbosa	1									1				1			3	1			2	2	2			2 1		1	2			2
Hakea cucullata	1	2													1	1					2	2	1							1	1 1	1
Hakea denticulata		2													1	2						2		1		1					1	
Hakea ferruginea				3	3	1										2 2		2 1 1				2		2 1		2			1			
Hakea laurina						-																										
Hakea marginata	1																															
Hakea nitida		1																														
		1										-																				
Hakea pandanicarpa subsp. crassifolia		2		1	2	1 1		1	2 1	2 1		2	1	2 3				1													2	
Hakea prostrata	1	1																														
Hakea ruscifolia																																1
Hakea sulcata																																
Hakea trifurcata	1				1									2										3								
Hakea varia						1																										
Harperia confertospicata	1					-						1		1 1	1	1 1		1 1			1	1		1	1	1	1	1	1		1 1	
Harperia lateriflora	1									1		1			1	1 1		1 1			1 1	1		1	1	1	_	1	1		1 1	
						1		-		1				1	1				-		1 1					1						
Helichrysum luteoalbum						1			+								1		1										\vdash			
Hemiandra humilis											\perp																		\vdash			
Hemiandra pungens																													\longrightarrow			
Hibbertia acerosa															\perp														<u> </u>			
Hibbertia amplexicaulis																																-
Hibbertia gracilipes	1	2				1	1	1	1	2			1	2	2	1	1	1 1			1 2	1	2	2		1		1	2		1 2	
Hibbertia hibbertioides var. meridionalis	-													 - 	1-						_								-			
Hibbertia lineata																																
Hibbertia recurvifolia	+ + +	1 2) 1		+	1		1	1 1	1 1	1	1	1 1	1	1 1	1 1	1	1 1	+ +	1	1 2	2	1	1	1	1 1	1	1	1	-	2 1	
Hibbertia rupicola		1 2								1 1	1	1	1 1	1	1 1					1			1				1	1			2 1	
		1	1			1		1	1 1	1	+				_	1 1	+	1	1		1	1		2	+	2	-		1			
Hibbertia sp.											\perp				\perp														\vdash			1
Hordeum leporinum																																
Hovea chorizemifolia																													$\perp \perp$			
Hovea trisperma		1	L		$\perp \sqcap$	1	1			1 1	\perp \top			1			1	1		T	1 1					1		LΠ	1	[1
Hyalosperma simplex																																
Hypocalymma angustifolium																																
Hypocalymma strictum subsp. elongatum						1					1		1																			
Hypocalymma strictum subsp. strictum						1					1		1																			
Hypochaeris glabra													1						1													
																			1													
Hypolaena exsulca				1								_								1		_	_			_						
Hypolaena fastigiata		1	1			1		1		1	1	2	1	1		1 1	1	1 1			1	1	2	1		1	1	1			1 2	
Hypolaena sp.																																
Isolepis cernua																																
Isolepis stellata																																
Isopogon attenuatus																																
Isopogon baxteri																																
Isopogon buxifolius var. obovatus									1																				-			
Isopogon cuneatus									1																							
Isopogon cuneatus Isopogon formosus subsp. formosus	+ + +				\vdash				+ + +		+					+ + + -	+ +												+			1
		_							+ + +		+				_				1						+		-					1
Isopogon heterophyllus	2		1							1	\perp	1		1		1 1	1	2					1	1					1		1	
Isopogon longifolius		1	1 2					1	1		1		1 1				1	2 2				1		1	1		2		\longrightarrow		2 1	1
Isopogon sp.																							1					1	$\perp \perp \perp$			
Isopogon teretifolius						<u> </u>											<u>1 </u>											<u>∟</u> ∣	ш ∣			
Isopogon teretifolius subsp. petrophiloides																						1										-
Isopogon teretifolius subsp. teretifolius															2 1	1							1								1	1
Isopogon trilobus	+ + +		1			3	1	2	2 2	1 2	1	2	1 2		2	2 1		1 2		1	1			1		1		1	3		-	2
Jacksonia capitata	1		1		1	1	-	1		- -	1	- -	- -			1 1	+ +	1 1		-	1	1	1 1			1	_	-	1		1	_
Jacksonia grevilleoides	1	1	1		1			2	+ + +		+	1		+ + +	<u>.</u>	1 1	+ +	1	+ -		1	1	1 1	1		1			1		1	
	+ + +	1	1			1			+ + +		+	1			-	+ + +	+ +		+								-		-+			
Jacksonia spinosa											\perp				\perp														\vdash			
Johnsonia acaulis																				1	1								\longrightarrow			
Johnsonia lupulina											1		1																			
Johnsonia teretifolia	1 T				1 1				\perp		1		3 1	\perp					1	Ţ								7				-
Juncus bufonius																																
Juncus pallidus	1 1																												-			
Kennedia coccinea	+ + +					 			+ + +	+	+			+ +	+	+ + + -	+ +		+ +	-						1	+		-+			
Kingia australis	+ +		-						 		+-				+		+-+		+ +	-					+	1	-		\vdash			1
									+		\perp						1		1										+			1
Kunzea affinis											+						\perp												\vdash			
Kunzea preissiana												1																				
Kunzea recurva						2													1				2	3					1			-
Kunzeu recurva			_	1											- 1			1 1	1 1										-			-
Kunzea rostrata					l l				1 1 1						J					- 1		II.				l l		l l				
Kunzea rostrata																													-			
Kunzea rostrata Lachnagrostis filiformis																																_
Kunzea rostrata																1																





				T			1	1 1			1					1	-		1			1	1												1
Species	S52 S53	S54 S5	55 S56	S57	S58	S59 S60	S61	S62	S63 S	64 S65	S66	S67 S	668 S6	9 S70	0 S71 S72						579 S80	S81	S82			S86 S87	7 S88 S8	89 S90 S					96 S	97 S98	S125
Lambertia inermis var.inermis	3	2 1				1	2	1	3 2	2 2	3	3	3		3	1	1	2	1	1	4			2	1		1		1	2	2	2	2 2	2	
Lasiopetalum microcardium																_														_	1				
Lasiopetalum parvuliflorum																						1													
Latrobea recurva			1			1						1	2 1	2		1		2		2	1 0		1												
			1			1						1	2 1			1		2			1 2		1										. 2		
Laxmannia brachyphylla		1	1			1		1								1		1	1	1	1		1	1								1	1 1	l	
Laxmannia grandiflora subsp. stirlingensis																																			
Laxmannia ramosa					1																														
Laxmannia sessiliflora								1												1				1	1		1								
Laxmannia sp.																1		1																	
Laxmannia squarrosa																1		1																	
Lechenaultia formosa																																			
										l.																									
Lepidosperma ?leptostachyum																																			
Lepidosperma brunonianum							1																								1				
Lepidosperma carphoides							2			2																			1						
Lepidosperma leptostachyum																																			
Lepidosperma pubisquameum																																			
		1																																	
Lepidosperma sp.		1																																	
Lepidosperma squamatum		1 1							1		1		1	1	1		1	1 1		1				2			2	2				1			
Lepidosperma striatum						5																2		1			5	i	2 1		1	1			
Lepidosperma tenue	1																																		
Lepidosperma ustulatum																			3					1	1	2.							1		
Leporella fimbriata			_	1						-	_				+ + +				3					-	-	-	+ +						-		
Leptomeria lehmannii			-	-						-	-				+ + +				-	 					1									-	
			_	1						_									1						\perp										
Leptomeria pauciflora																																			
Leptomeria squarrulosa			1					1							1 1 7	Ī	Ī								1 7										
Leptospermum spinescens																																			
Lepyrodia drummondiana																																			
Lepyrodia hermaphrodita			_	1						-					+ + +										+		+ +				1				1
Lepyrodia macra																															1				
Leucopogon aff. elegans																																			
Leucopogon conostephioides																																			
Leucopogon corynocarpus		1	1			1		1	1	1		1	1			1	2	1 2						1 1	2	1	5	1	1		1				
Leucopogon cucullatus															1		1	1	1	1	1			1	1								2		
Leucopogon distans		1	1			1		2		1		1	1		-		-	1	-	3	2		1		1		2		3	4		2		2 2	
Leucopogon elatior		1	. 1			1				1		1	1					1		3			1	1	1				3	7		-			
												_				_							_												
Leucopogon elegans								1				1				1		1 1					2					2	2				2	2	
Leucopogon flavescens var. flavescens																																			
Leucopogon gibbosus	1	1									2						2		1		1			1		1			1		1	1			
Leucopogon glabellus																																			
Leucopogon reflexus																																			
Leucopogon woodsii																	2			1	1												1	1	
Levenhookia dubia																				1	1													L	
Levenhookia pauciflora																																			
Logania campanulata																																			
Logania micrantha																																			
Logania serpyllifolia subsp. serpyllifolia																								1								1			
Logania stenophylla																																			
Lolium perenne			-				-				 				+ + +										+ -				-					-	
Lomandra caespitosa			_		 					-	-				+				-	 					+		+							_	1
			\perp							_											_				+		\perp								1
Lomandra hastilis	3							1				1			1 1						1		1	1											
Lomandra nigricans	1	1	. 1				1							1	1				1																
Lomandra pauciflora																																			
Lomandra preissii		1																																	
Lomandra purpurea															+ + +				1																
Lomandra rupestris		3	-				-		,	2	 				+ + +										+ -				-					-	
^		3	-	1			-		-	-					+				1	 					+ -									-	
Lomandra sericea			\perp																						\perp										1
Lomandra sonderi																																			
Lomandra sp.																								1		1									
Loxocarya striata																																			
Lyginia barbata			1	1									1 1															1							
Lyginia imberbis			1	1	2			1		-	_	2	- 1	2	+ + +								1		+		1	-		1			-	1 1	1
Lyperanthus serratus			-	1				1		-	-	۷			+ + +				-	 			1		1		1			1				1	-
				1						_							_		1						1										
Lysinema ciliatum	1	1 1	l l			1		1	1	1		1	1			1	2	3 1		1	1 1		2	1 1	1	1	1	1	1	2	3	1	2 2	2 2	1
Lythrum hyssopifolia					L T		⊥ ¯	<u>L</u> I				[7	[[L						<u>l</u> 1							¯	¯		
Meeboldina kraussii	1																																		
Meeboldina sp.																																			
Melaleuca bracteosa	1		+	-	 		-			-	 				+ + +				-	 		-			+ -		+ +	+ +						_	
	1		-	1						-															+ -			+						-	1
Melaleuca concinna			\perp																						\perp										
Melaleuca cuticularis	1		\perp																			2			1		2	!							
Melaleuca pentagona var. latifolia					1 7							T																							
Melaleuca pentagona var. pentagona																																			
Melaleuca sp.			_		1 1					-		-															+ +								
income were up.			- 1	1	1		1	1	1	1	1	- 1	1	1	1 1			1	1	1 1	1	1			1		1 1	1 1	1	1	1		1	1	1





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	S52 S53	S54 S	55 S5	6 S57	S58	S59 S60	S61	S62	S63 S64 S	865 S6	66 S6	7 S68	S69	S70	S71 S72 S73	S74	4 S75 S76	S77	S78 S79 S8	80 S81	S82	S83 S84	S85	S86 S87 S	888 S89	S90 S91 S9	2 S93	3 S94	1 S95	S96	S97 S	S98 S125
Melaleuca spathulata	2																									1						
Melaleuca striata	4	2	3 4			3		4	1	3 1	1 3	3	2	2	3 3 3	3	3 3	3	3 1 3	3	3	4 3	3	3	3		3	2	2	1		2 2
Melaleuca suberosa	1	2							1 1	2																1			2			
Melaleuca subtrigona	1					1			2	2	2	1												3					2			
Melaleuca thymoides			1 3	1		1		2	1	3	2	3	3	2	1		1		2 1 1		1	1	1		1	1 2	4				1	1 1
Melaleuca tuberculata																																
Mesomelaena graciliceps												1			2																	
Mesomelaena pseudostygia															1			3														
Mesomelaena stygia	2	4		1	2				2	1 3	3	1			1 1	2	1 2	1	1 1			1 1	3	2	1		1		1	1	1	2 1
Mesomelaena tetragona					1																	2			5						1	
Microcorys lenticularis																																
Microtis media subsp. media																				1												
Millota tenuifolia var. tenufolia																																
Monotaxis grandiflora var. grandiflora																																
Monotoca aristata											3	1	2	2												1					2	
Monotoca tamariscina																																
Muehlenbeckia adpressa																																
Neurachne alopecuroidea									1																							
Nuytsia floribunda									1					1				1														
Oligarrhena micrantha														-				-														
Onychosepalum laxiflorum					1		1																									
Opercularia hispidula																																
Opercularia vaginata																						1				1						
Ornithopus compressus																						1				1						
Orobanche minor																										+ + +						
Oxalis perennans																																
Paracaleana nigrita					1		1																									
Patersonia juncea					1		1		1	1																						
Patersonia lanata forma lanata	1	1	1				1		1	1						1	1 1												1			1
Patersonia occidentalis var. angustifolia	1	1	1							,	L					1	1 1			1									1			1
Patersonia occidentalis var. latifolia									1											1												
Patersonia occidentalis var. occidentalis		1	1						-	1 1	ı				1		1							1		1		1				
Patersonia rudis		1	1							1 1	L				1		1							1		1		1				
Patersonia sp.																																
Pelargonium littorale subsp. littorale																																
Pentaschistis airoides																																
Pennisetum clandestinum																																
Pericalymma ellipticum				4	4																											
Pericalymma sp.				4	4																											
Persoonia striata																2							1		2				1			
Petrophile circinata																							1		2				1			
Petrophile crispata									1																							
Petrophile divaricata			1						1						1	1	1 1															
Petrophile diversifolia			1												1	1	1 1								1							
Petrophile ericifolia subsp. ericifolia						2		1		1		2			1	2	1 2		1		2				1	1						2
Petrophile longifolia						2		1		1					1		1 2		-					1	2	1						2
Petrophile media									1							1						1	1	1								
Petrophile rigida	1		1		1	1	1	1	1	-	1		1	1		1	1				2	1	1	1 1		1	2				1	1
Petrophile seminuda	1	1	1	1	1	1	1	1		-	1		1	1	 	-	1			-				2		1	1 2				1	1
Petrophile serruriae		1			1		1			-							+							4								
Petrophile sp.				1	1		1			-		1			 	-	+ + -	1	+ +	-				2		+ + +				1		
Petrophile squamata							1					1					+ + -	+	+ +	-				<u> </u>		+ + +		-		1		
Petrophile squamata subsp. squamata				1	2		1		1	-					 	1	3 2	1	1	-						+ + +						
Petrophile teretifolia			1 1		+ 4	1	1	1		1 1	1	1	1	1	1 1 1			+	1 1 1	-	1	1 1		1	2	1 1 1	1	1	1		2	1 1
Philotheca nodiflora subsp. lasiocalyx			1 1	1	1	1	1	1	1	1 1	1	1	1	1	1 1 1	1	<u> </u>	1	1 1 1		1	1 1		1		1 1 1	1	1	1			1 1
Phyllangium paradoxum				1	1	1	1			-					 	-	+ + -	1	+ +	-						+ + +						
Phyllota barbata			1 1		1		1	1		-	1	1					2		1 1		1	1									1	
Pimelea angustifolia			1 1	_	1		1	1		-	1	1							1 1	-	1	1	1		1	1 1	1				1	
Pimelea angustijotta Pimelea brevifolia subsp. brevifolia			1				1													+-			1		1	1 1	1	+			1	
Pimelea hispida							1													+-								+				
Pimetea nispiaa Pimelea lehmanniana subsp. lehmanniana							1													+-								+				
Pimetea tenmanniana suosp. tenmanniana Pimetea longiflora subsp. longiflora				-	1		1								 	-	+ + -	\vdash		-						+ + + -		-				
Pimetea tongiftora subsp. tongiftora Pimetea rosea				-	1		1								 	-	+ + -	\vdash		-						+ + + -		-				
Pimetea rosea Pimetea sp.					1												+ +															
					1												+ +															
Pimelea suaveolens							1			_										-								-				
Pimelea suaveolens subsp. suaveolens							1			_										-								-				
Pimelea sulphurea																																
Pimelea tinctoria															2	1	1 1		1				1		1		1	1		1	1	1
Platysace filiformis																						1			1	1		1	1			
Platytheca aff. galioides																							1			1						
Poaceae sp.																							1									
Poranthera ericoides																																





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Species	S52 S53 S5	54 S5	5 S56	S57	S58	S59 S60	S61	S62	S63 S64 S6	S66	S67	S68 S	69 S7	0 S71	S72 S73	S74	S75 S76	S77	7 S78 S79	S80 S8	1 S82	S83 S84	S85	S86 S87	S88 S8	89 S9	0 S91 S92	S93	S94	S95 S	896 S	597 S	98 S125
Poranthera microphylla	372 370 3						~	~	200 200 200						2.2							200		000	200		7 27 - 27 -						
Porumera microphytia																														1			
Praecoxanthus aphyllus																																	
Pseudognaphalium luteoalbum																																	
Pterostylis recurva							1						1																				
Pterostylis turfosa							1						-																				
Pterostylis vittata																																	
Pultenaea empetrifolia																																	
Pultenaea verruculosa	1 1	1			1			2	1 1	1						3	1	1	2	2		1	1	2	2 1			1	1	1	1		1
Pyrorchis nigricans					-			1		1			1		1		-	1	-	_		-	-	-					-	-	-		-
Quinetia urvillei								1		1			1		1																		
Regelia inops							3		3																								
Rinzia schollerifolia																								1									
Rulingia rotundifolia																																	
Rumex crispus																																	
Schoenus ?sesquispiculus																																	
Schoenus aff. curvifolius																																	
Schoenus brevisetis																										1							
Schoenus caespititius		1	1		1			1			1		2								1				1	L	1	2	1			1	
Schoenus curvifolius			1					1	1												1		1				1		1				
Schoenus laevigatus																								1	1	1							
Schoenus nanus																								-									
				1						1							1 .	1	+ + +		-					_		1					
Schoenus obtusifolius									1								1					1		1									
Schoenus pleiostemoneus									1	1	1											1 1											1
Schoenus sp.1																								1									
Schoenus sp.1 Schoenus sp.2	 	_	-		+				- 	1			-				+ + + -	1	+ + +		-	 		1		+	+ +			-		_	
C.L		-+								-	1					-	+ + -		+		-	 			\vdash	-						-+	
Schoenus subbarbatus																1		1									1		1				
Schoenus subbulbosus										1	1																						
Schoenus subfascicularis	1																																
Schoenus sublateralis		1			1																	1		1							1		
	J	ı			1																			1							1		
Schoenus sublaxus																				1		1 1			1								
Senecio quadridentatus																																	
Siloxerus filifolius																																	
Solanum nigrum																																	
Sonchus oleraceus																																	
Sphaerolobium alatum															1																		
Sphaerolobium drummondii																	1																1
Sphaerolobium macranthum																	-															1	
Sphaerolobium medium																																_ '	L
	1								1													1										1	
Sphaerolobium scabriusculum										1																			1				
Sphenotoma capitatum																																	
Sphenotoma dracophylloides																																	
Spyridium majoranifolium							2											+															
Spyriaium majoranijoiium							3																										
Spyridium microcephalum							1																										
Stachystemon polyandrus	1	1						1	1	1							1 1		1	1	1	1			1					1		1	
Stachystemon vermicularis																																	
Stackhousia monogyna																		+															
Stackhousia scoparia																					1				1	L							
Stirlingia anethifolia		1	1	1	1	1		1	1			1							1 1	1		1						1		1		2 1	
Stirlingia latifolia																																	
Stirlingia simplex			1					1		1	1				1		1	1	+ + +		-	+ + +				+						-	
		-	1	1 -			-	1		1	1				1		1		+					 		-		1 -					
Stirlingia tenuifolia			-	1					1				\perp				1 1		+			1			\vdash	1		1				_	
Stylidium caespitosum		L																															
Stylidium calcaratum																		1															
Stylidium diuroides		1																			1							1				1	
Stylidium diversifolium		1					-		1	- 1	1					1	+ + -	-	+ + +		-			 		-	+ + -	1					
	1			1			-		1	1						1	+		+							\perp	+	1					
Stylidium glandulosissimum	1 1	1							1							1													1	1			
Stylidium hirsutum																					1												
Stylidium imbricatum	1	_																	+ + +							1							
Stylidium luteum	1						-		- .	- 1	1						+ + -	-	+ + +		-			 		-	+ + -					-+	
				1						1							+		+							_	\bot	1					
Stylidium piliferum		L					1		1																1								
Stylidium preissii							1											1					1										
Stylidium repens										1			1		1		1 1		1		1												
Stylidium rupestre			-							1			- 1		1		+ + -	1	1		1			 		-	+ + -						
Signatum rupestre																	1 1		\bot		1						\bot						
Stylidium scandens			1					1													1					\perp		1					
Stylidium schoenoides	1	1	1				1		1			1	T				1	1	1			1	1	1	1				1	1		1	[
Stylidium sp.	-	- -	1							1			-				1 1 -	1	+ + + + +							+				-			
Stylidium spathulatum	 			1 -						-			-				+ + + -	1	+ + +		1			 		_	+ +	1 -					
Synaphea favosa				1 7	T			1 1											\top			1		1			1	1 7	1 1				
Synaphea petiolaris subsp. petiolaris			1	1		1			1		1					1																	
Synaphea polymorpha			1	1		-			1	1	1				1	1	1 1	1	+ + +	1	-		2	1	1	1			1	1		1	
				1											1		1 1		+	1				1	1	1		1	1	1		1	
Taxandria parviceps		l					L			1			1		<u> </u>		<u> </u>	1	<u> </u>		\perp	<u> </u>		<u></u>									
Taxandria spathulata	4 3	3 3	2		1	4	1	3	4 2 1	4	3	4	2 1	1	3 3	3	3 2	1	2 3	2	2	4 2	2	4	2	1	2	3		2	3	3	3 3
		, ,																															





Species	S52	S53 S5	4 S55	S56	S57	S58	S59 S60	0 S61	S62	S63	S64	S65 S66	S67	S68	S69 S	570 S71	1 S72	S73	S74 S	S75 S	S76	S77 S78 S79	S80 S	S81 S82	S83	S84 S85 S8	6 S8	87 S88 S89	S90	S91 S92	S93	S94	S95	S96 S	97 S98	S125
Tetraria capillaris																																				
Tetraria octandra																	1		1									1								
Tetraria sp.																																				
Tetratheca pubescens																																				1
Tetratheca setigera																																				
Thelymitra benthamiana																																				
Thelymitra canaliculata																																				
Thelymitra crinita																									1											
Thelymitra sp.																						1														
Thelymitra villosa																																				
Thomasia rhynchocarpa																								1												
Thomasia stelligera																																				
Thysanotus dichotomus																																				
Thysanotus glaucifolius			1	1			1		1		1					1																				
Thysanotus sp.																						1														
Thysanotus sparteus		1																						1												
Thysanotus tenellus																																				
Trachymene pilosa																																				
Tricoryne elatior												1																		1						
Tricoryne tenella																																				
Tricostularia compressa											2								1		1			2			1	. 2								
Tricostularia neesii var. elatior				1		2			2				2			4	1	1		1	2	1 1	2	3		2 1		2	1	1	2		2		1 2	
Tricostularia neesii var. neesii												3		2	1																					1
Tricostularia sp. south coast (R.T. Wills 1423)				1																																
Trifolium campestre var. campestre																																				
Trifolium sp.																																				
Trifolium subterranean																																				
Ursinia anthemoides																																				
Velleia trinervis																																				
Vellereophyton dealbatum																								1												
Verticordia densiflora var. cespitosa																																				
Verticordia habrantha		1 1										1													1									1	1 1	
Verticordia plumosa var. grandiflora					1																															
Verticordia plumosa var. plumosa																																				
Verticordia sieberi var. lomata				1					1				1																							
Verticordia sp.																																				
Verticordia subulata																																				
Villarsia parnassifolia																								1												
Vittadinia gracilis																																				
Vulpia myuros var. megalura																																				
Xanthorrhoea gracilis																																				
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Species	S126 S127 S	S128 S12	29 S13	30 S13	31 S	5131a S132	S133	S134 S13	5 S135a	S1P1	S1P2 S1P	P3 S1	1P4 S1P5 S1P6	S1P7	' S140 S141 S142 S	143 S	S144 S1	145 S146	S147	S148 S149	S150	S151	S152	S153	S154 S155 S156 S157
Acacia aemula subsp. aemula																									1
Acacia applanata																			1						
Acacia bifaria																			1					1	2
Acacia biflora											1 1		1 1		1 1 2			1	1		1		1	1	
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Acacia browniana var. browniana																									1
Acacia crispula											1														
Acacia cupularis																									
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Acacia pulchella var. glaberrima																									
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Acacia pulchella var. goadbyi																									
Acacia pycnocephala																									
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Acacia sp.																									
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Actinodium calocephalum								1	2	1															
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Baumea articulata																																		
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Caladenia cairnsiana	1		1		1		1	1	1	1	1							1		1	1										1	1		
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Chamescilla corymbosa var. corymbosa							1																											
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Drosera scorpioides								1																				
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Eucalyptus decipiens subsp. adesmophloia				2	2	3								3			T		2	3				2				
Eucalyptus decurva																	t							1	1			
Eucalyptus falcata													-					2						1	1			
Eucalyptus marginata																												
Eucalyptus occidentalis													3			3												
Eucalyptus occidentalis Eucalyptus pachyloma													3			3											2	
											2	2	2	2	4 2	2			2	2 1	1		2				3	-
Eucalyptus pleurocarpa						3					3	3	3		4 3			3	3	3 1	3 4		3				1	3
Eucalyptus preissiana														2	4 1													
	3 3	3 3	2	. 2	2	4	3	3	2	4								3 3		3 2 3				3	1	2	1 2	
Eucalyptus uncinata																				2	3	3	3					
Eutaxia neurocalyx subsp. neurocalyx											1																	
Exocarpos sparteus																												
Franklandia fucifolia				1	1													1										
Gahnia ancistrophylla																												
Gahnia aristata																												
Gahnia sp.																												
Gamochaeta calviceps																											_	
Gastrolobium bracteolosum																							1	1	1	1		1
Gastrolobium reticulatum																							1	1	1	1		1
Gastrolobium retusum Gastrolobium retusum																												
											1		_		1			1										
Gastrolobium spinosum													2															
Glischrocaryon aureum						1																						
Glischrocaryon aureum var. aureum		1 1																										
Gnephosis tenuissima																												
Gompholobium baxteri																												
Gompholobium burtonioides																		1										
Gompholobium capitatum																	T											
Gompholobium confertum																				1	1			1			\neg	
a	1	1														1				1				+ -				
Gompholobium marginatum	-	1														1	+				+ + + + - + - + + + + + + + + + + + + +			+			-	
Gompholobium polymorphum			-				+										+							+			-+-	+
			2	4	1		+					+					+							+	1			-
Gompholobium scabrum			3	1	1						-						\perp					1		+	-		-	
	1																-				1 1			1			\perp	
Gompholobium venustum	1	1	1	1	l			1	1	1	1	1		1	1 1			1		1 1 1				1	1			
Goodenia affinis																												
Goodenia concinna																	⊥								<u> </u>			
Goodenia filiformis																						1		\perp				
Goodenia incana									1								İ											
Goodenia pterigosperma																1	T							1				
Goodenia pulchella													-			-								1				
Grevillea concinna subsp. lemanniana	+ +							1				3		1	1		+				+ + + + - + - + + + + + + + + + + + + +			+			-	
Grevillea fasciculata	+ +	1	-					1	1		1	٦		1	1	-	+		+ +		+ + + -	1		1			1	1
Grevillea nudiflora		1							1								+				+ +		-	1			1	1
Crevillea mulahalla suksus sukskill			_														\perp											
Grevillea pulchella subsp. pulchella		1															_							1				
Haemodorum discolor																												
Haemodorum laxum											<u> </u>						\perp							\perp				
Haemodorum sp.																	I											
			_							_							_											





c ·	126 612	27 S128	6120	C120	C121 C	1121-	6122	6122	0124	C125	6125-	C1D1	C1D2	C1D2	C1D4	C1D5	C1D(C1D7	C1 40	C1.41 C:	42 61	12 0	144 61	45 614	C C1.45	C140	C1 40	C150 (0151	0150	0152	0154 6	155 6	0156	C1 57
Species S Haemodorum spicatum	126 812	27 8128	5129	5130		131a	5132	5133	5134	5135	5135a	SIPI	SIPZ	SIPS	51P4	51P5	SIPo	SIP/	5140	5141 5	42 514	13 8	144 5	45 5140	5 5147	5148	5149	2120 5	3131	5152	5153	5154 8	155 8	5150	5157
Hakea baxteri	1	1			1			1								1												+		1	1				
Hakea ceratophylla	1	L						1								1												+		1	1				
Накеа ceratopnytta Накеа coriacea	1	1																										+							
	3	l .			1		1	2										3	2	1	1		2	1 1	2			1	2	1	1	2	2	1	1
Hakea cucullata		1 1			1		1		2	1					1		3	3			1		1	1 1				1		1	1			1	-1
Hakea denticulata	1	1					1			1		1	1		1		2			1	1		1					1		1	1	3	1	1	
Hakea ferruginea				1					3	1	1	2			2	2	2			1								+		1	1				
Hakea laurina				1					3	1	1		3															+							
Hakea marginata																												+							
Hakea nitida																		1										+	\rightarrow						
Hakea pandanicarpa subsp. crassifolia	1	1			1		1	1	1			1	1		1	3	1	1			1		3					+	\rightarrow	3	2		1	2	1
Hakea prostrata							1	1	1			-	1		1	3	-						3				3	2	1	3			1	-	-1
Hakea ruscifolia						3	1													1				1					-		1		1		
Hakea sulcata						3														-								+	\rightarrow		1		1		
Hakea trifurcata		1													1		1										2	+	-	2	1	2	1		
Hakea varia		1													1		-											+	\rightarrow		1	-	1		
Harperia confertospicata	1	1			1			2			1													1				2	-						
Harperia lateriflora	1	L			1	2	1	2			1			1				1			2			1	4	2	1		1	3	2	2			-
Helichrysum luteoalbum						-	1														_				-			+		3		-			
Hemiandra humilis																												+	\rightarrow					1	
Hemiandra pungens																						+						+	-+					-	
Hibbertia acerosa													 								+			+	+			+							
Hibbertia amplexicaulis													 									-						+	\rightarrow						
Hibbertia gracilipes		1	1				2	2					1		1	1		1	1			-			1	2		+	1	1		1			
Hibbertia hibbertioides var. meridionalis		1	1										1		1	1		1	1			-			1			+	1	1		1			
Hibbertia lineata	+				+								+ +									-			1	+ +		+	\rightarrow	+					-
	2 1	1	1	2	1	2		1	1	1	1	1	+			1			2	1	1		1	1		+ +		1	\rightarrow	+	2				-
Hibbertia rupicola	1		1	2	1	2		1	1	1	1	1		1		1				1	1		1	1				1	\rightarrow		2				
Hibbertia sp.	1	1 2											3	1														+							
Hordeum leporinum													3															+							-
Hovea chorizemifolia			1																1	1	2			1				+							
Hovea trisperma		1	1			1		1											1	1	2			1				+						1	-
Hyalosperma simplex		1	1			1		1						1														+	\rightarrow					1	
Hypocalymma angustifolium														1														+	\rightarrow						
Hypocalymma strictum subsp. elongatum				1																								+	\rightarrow						
Hypocalymma strictum subsp. strictum				1																	1			1				+							
Hypochaeris glabra		1	1		2																1			1				+	\rightarrow						
Hypolaena exsulca		1	1																	1								+							-
Hypolaena fastigiata					1			2		1	2								1	1				2			1	+	\rightarrow		1		1		
Hypolaena sp.																			1									+	\rightarrow		1		1		
Isolepis cernua																												+	\rightarrow						
Isolepis stellata																												+	-						
Isopogon attenuatus																												+	-				1		1
Isopogon baxteri	1	1																										+	-				-		-
Isopogon buxifolius var. obovatus														1														+	\rightarrow						
Isopogon cuneatus									1	1	1																		-						
	1 1	1		1	1			1	1	1		1			1	1	3											+	-						
Isopogon heterophyllus				-	-			-	-	-		-			-	-			1					2		1			-						
	2	1						1		1		1				1	1		-	1	2 1			2		1		+	\rightarrow						
Isopogon sp.		-						-		-		1 -				-	-				-							+	\rightarrow						\neg
Isopogon teretifolius																				1															
Isopogon teretifolius subsp. petrophiloides																																1			
Isopogon teretifolius subsp. teretifolius																					2		1												
Isopogon trilobus	1	1 1			1		1	1			1	2	3				1			1				3	1	2		2	3	1		1			
Jacksonia capitata												1		1	1																				-
Jacksonia grevilleoides															1		1							1 1											
Jacksonia spinosa			1	2																														1	-
Johnsonia acaulis					1																														
Johnsonia lupulina																																			
Johnsonia teretifolia																																			
Juncus bufonius																																			
Juncus pallidus																																			
Kennedia coccinea																												+	\rightarrow						-
Kingia australis																			1	1								+	\rightarrow		1				
Kunzea affinis																			1	-		+						+	-+		1				
Kunzea preissiana														1								+						+	-+						
Kunzea recurva	+				+		1						 					1			+	-		+	1			+	\rightarrow	-			+		
Kunzea rostrata	+				+		1						 	1							+	-		+	+			+	\rightarrow	-			+		
Lachnagrostis filiformis	+				+								 	1							+	-		+	+			1	\rightarrow	-			+		
Lagurus ovatus					-							+										-						1							
Lagurus ovaius Lambertia echinata subsp. citrina	+				+						1		 		 						-	+		+	+	+ +		+	\longrightarrow	-					
<u>катьении естичии subsp. синии</u>											1		1													1		1 1							ļ





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Species	126 S127 S128	8 S129	S130	S131	S131a S13	S133	S134 S135	S135a	S1P1	S1P2 S1P3	3 S1P	4 S1P5	S1P6 S	S1P7	S140 S141 S142 S143	S144 S145 S146	S147	S148 S149	S150	S151	S152	S153	S154 S15	5 S156 S157
Lambertia inermis var.inermis	3 3		_			-				3 2			2			2 2					4	2	2	
	3 3		1							3 2	3	3	2			2 2					4	2		4 3
Lasiopetalum microcardium																								
Lasiopetalum parvuliflorum																								
Latrobea recurva		1	2	1	3																			
Laxmannia brachyphylla	1	1	1	1	3			2		1	1	1	1											
Laxmanna brachyphylla	1		1							1	1	1	1											
Laxmannia grandiflora subsp. stirlingensis																								
Laxmannia ramosa																								
Laxmannia sessiliflora																								
Laxmannia sp.																								
Laxmannia squarrosa																								
Lechenaultia formosa					1									1										
Lepidosperma ?leptostachyum																								
Lepidosperma brunonianum																								
Lepidosperma carphoides																		1						
Lepidosperma leptostachyum																		1						
Lepidosperma pubisquameum																1	1							
Lepidosperma sp.																1	1							
																	_					_		
Lepidosperma squamatum	1 2	1		1	2 2		1			1		1		1	1 3	1	2		2		1	2	1	1 2
Lepidosperma striatum																								
Lepidosperma tenue	1			1																				
Lepidosperma ustulatum	1			1	+ + + + + + + + + + + + + + + + + + + +					 					+ + + + + + + + + + + + + + + + + + + +			 					-	+
															+ + + + + + + + + + + + + + + + + + + +									
Leporella fimbriata																								
Leptomeria lehmannii																								
Leptomeria pauciflora							1																	
	1				+ +		1				-				+ + + + + + +									
Leptomeria squarrulosa	1																							
Leptospermum spinescens					<u> </u>			1_		<u> </u>					<u> </u>	<u> </u>		<u> </u>		L				
Lepyrodia drummondiana																								
Lepyrodia hermaphrodita																								
I 1:																								
Lepyrodia macra																								
Leucopogon aff. elegans																								
Leucopogon conostephioides																								
	1		1	1	1	1	1 1	2	1	2	1		1	1	2 1	1				1		1	1 1	
Leucopogon corynocurpus			1	_					1	2			1	1		1				1				-
Leucopogon cucullatus	1	2		1	1	1	1		1		1	1			1 2		1	1				1	2	1
	1								2															
Leucopogon elatior																								
Leucopogon elegans																								
Leucopogon elegans																								
Leucopogon flavescens var. flavescens																								
Leucopogon gibbosus	1						1				1		1		2					1	1		2	
Leucopogon glabellus																					1			2
Leucopogon reflexus															1	1					-			
															1	1								
Leucopogon woodsii										2									1					3
Levenhookia dubia																								
Levenhookia pauciflora			1																					
Logania campanulata			1												+ + + + + + + + + + + + + + + + + + + +	1								
Logania campanutata																1								
Logania micrantha																								
Logania serpyllifolia subsp. serpyllifolia																								
Logania stenophylla																								
					+										+ + + + + + + + + + + + + + + + + + + +			 						
Lolium perenne																								
Lomandra caespitosa																								
Lomandra hastilis															1									
Lomandra nigricans															+ + + + + + + + + + + + + + + + + + + +									
					+										+ + + + + + + + + + + + + + + + + + + +			 						
Lomandra pauciflora																								
Lomandra preissii																								
Lomandra purpurea												1			1									
Lomandra rupestris				1	+ + + + + + + + + + + + + + + + + + + +							1			+ - + + + +									
											-				+ + + + + + + + + + + + + + + + + + + +									+
Lomandra sericea																								1
Lomandra sonderi																								
Lomandra sp.																								
Loxocarya striata					+ + + -					 					+ + + + + + + + + + + + + + + + + + + +			 					-	+ -
Loxocar ya siriata															+ + + + + + + + + + + + + + + + + + + +									
Lyginia barbata									2															
Lyginia imberbis															1							1		
Lyperanthus serratus				1											 							-	1	
	1 2	-			+ + -	_	1 .	^	1	1 .	-		-1		1 1 2	1					1			+ + -
Lysinema ciliatum	1 2	1	1		1	2	1 1	2	1	1 1	1	1	1		1 1 2	1		 			1			
Lythrum hyssopifolia								1_		<u> </u>					<u> </u>	<u> </u>		<u> </u>		<u></u>				
Meeboldina kraussii																								
Meeboldina sp.			+	1	+ + + + + + + + + + + + + + + + + + + +			1							+ + + + + + + + + + + + + + + + + + + +			+ + +						+ +
	1									 	-				+ + + + + + + + + + + + + + + + + + + +			 						
	1				3																			
Melaleuca concinna																								
Melaleuca cuticularis					1										+ + + + + + + + + + + + + + + + + + + +									
											-		1		+ + + + + +									
Melaleuca pentagona var. latifolia											1		1											
Melaleuca pentagona var. pentagona										1														
Melaleuca sp.																								
Melaleuca sp.																								





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	6 S127 S12	8 S129	S130	S131	S131a	S132	S133	S134 S13	35 S13	35a S	1P1	S1P2	S1P3	S1P4	S1P5	S1P6	S1P7	S140	0 S141	S142	S143	S144	S145	S146 S	147	S148 S	149	S150	S151	S152	S153	S154	S155	S156 S	3157
Melaleuca spathulata																																			
Melaleuca striata	1 1	2	3	2	3		5	3 2	2 4	Į.	2	3	1	3	4	3		3	3		3	3	3	3	3	3	2			1	2	4	2	3	4
Melaleuca suberosa						1					1			2		2	3											2	2	3					
Melaleuca subtrigona				1								1	2					2		2		1		1		1	2	2	1	1	2	2			
Melaleuca thymoides 2	1		1	2	2	1	1				2										2			2							2			1	-
Melaleuca tuberculata																																	•	1	2
Mesomelaena graciliceps	1																																		-
Mesomelaena pseudostygia																																	-	-	
Mesomelaena stygia	1 2			1	1		2	1 1		2			2	2	1	1	1	2	1	3		1	1		2	3	2	2	2	2		2	1		3
Mesomelaena tetragona	1 2			1	1		1	1 1		,					1	1	1		1	3		1	1	1		3						1	-1		
Microcorys lenticularis					1		1													3				1								1			
Microtis media subsp. media										Į.																									
Millota tenuifolia var. tenufolia																																			
Monotaxis grandiflora var. grandiflora																																			
Monotoca aristata																																			
Monotoca tamariscina 1																																			
Muehlenbeckia adpressa																																			
Neurachne alopecuroidea																	1											2							
Nuytsia floribunda		1																																	-
Oligarrhena micrantha																																		-	-
Onychosepalum laxiflorum																																			
Opercularia hispidula	+ + -																															-+	-+	-+	
Opercularia vaginata	+ + + -		+	1	3		+			-	1		1				1				+			-				+				\rightarrow	-+	-+	=
Ornithopus compressus	+ + -		+	1	2		+	+			1		1				1				+	-						+				\longrightarrow	-+	-+	
Orobanche minor	+		+															-			-														
			1	1																												\longrightarrow	-+		
Oxalis perennans			1															-																	
Paracaleana nigrita			1																													\longrightarrow	\rightarrow		
Patersonia juncea																														1				1	
Patersonia lanata forma lanata				1																		1													
Patersonia occidentalis var. angustifolia																																			
Patersonia occidentalis var. latifolia																																			
Patersonia occidentalis var. occidentalis 1	1	1						1 1							1			1	1				1										1		
Patersonia rudis	_																						_												
Patersonia sp.																																	-	-	
Pelargonium littorale subsp. littorale																																			
Pentaschistis airoides																						1													
Pennisetum clandestinum																						1													
Pericalymma ellipticum																				1															
Pericalymma sp.															1																				
Persoonia striata							1						1					1	1	2			1					1	1				1		
Petrophile circinata																																			
Petrophile crispata																																			
Petrophile divaricata	1 1	1																	1																
Petrophile diversifolia																																			
Petrophile ericifolia subsp. ericifolia								1																					1		1			-	-
Petrophile longifolia			1														1			1								1							
Petrophile media			-			1											-			-								-					-	-	
Petrophile rigida						3						1	1				1			3	1			1	1		1					2			
Petrophile seminuda						3						1	1				1			3	1			1	1		1	2	1						
Petrophile serruriae																													1				_	1	
																																	2	1	-
Petrophile sp.																											_								
Petrophile squamata																											1	2			1		2	1	1
Petrophile squamata subsp. squamata											1			1	1							1													
Petrophile teretifolia	1 1		1				3	1		l	1	1		3	1	1			1		2		1	1	1	1			1	1	2	1	1		
Philotheca nodiflora subsp. lasiocalyx																																			
Phyllangium paradoxum																																			
Phyllota barbata																					1														\neg
Pimelea angustifolia																																			\Box
Pimelea brevifolia subsp. brevifolia			1																													\rightarrow			
Pimelea hispida			+																		+											-+	-+	-+	\dashv
Pimelea lehmanniana subsp. lehmanniana	+ + + -		+	1			+									1					+			-				+				\rightarrow	-+	-+	\dashv
Pimelea longiflora subsp. longiflora	+ +		+							-	-+	1				1					+			-				+				\longrightarrow	-+	-+	-
			1				1			_		1									-							-				\longrightarrow	-+	-+	==
Pimelea rosea			1																														\longrightarrow	\longrightarrow	
Pimelea sp.			1																																1
Pimelea suaveolens																																			
Pimelea suaveolens subsp. suaveolens			\perp																																
Pimelea sulphurea													1																						
Pimelea tinctoria			1		1							1																				-			
Platysace filiformis			1																													-+	-+	-	-
Platytheca aff. galioides	+ +																															+	-+	-+	-
Poaceae sp.	+		+	1	1													-						-								+	-+	-+	
Poranthera ericoides		-	+	1	1					-											+	-		-								\rightarrow	-+		\dashv
1 oraninera ericoiaes																																			





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Species S12	26 S127 S128	8 S129	S130	S131	S131a S132	S133 S134	S135	S135a	S1P1	S1P2 S1P3	S1P4	S1P5 S1I	6 S1P7	S140 S141 S142 S14	13 S144 S145 S146 S147	S148 S149	S150	S151	S152	S153	S154 S155 S156 S157
Poranthera microphylla																					
Praecoxanthus aphyllus																					
Pseudognaphalium luteoalbum																					
Demonstration and the output																					
Pterostylis recurva	1																				
Pterostylis turfosa																					
Pterostylis vittata																					
Pultenaea empetrifolia													1								
Pultenaea verruculosa 1	1 1	1			1	2	1	3		1	1	1 3		2	1						
Pyrorchis nigricans		-			-	-	-			-	-			_	-						
Quinetia urvillei																					
Regelia inops																					2
Rinzia schollerifolia	1 1																				
Rulingia rotundifolia																					
Rumex crispus																					
Schoenus ?sesquispiculus																					
Schoenus aff. curvifolius																					
Schoenus brevisetis																					
Schoenus caespititius																					
Schoenus curvifolius														1							
Schoenus laevigatus																					
Schoenus nanus			1	1																	
Schoenus obtusifolius			1	1													1				
Schoenus pleiostemoneus		-	1	+	 	1				 		+		+ + + + + + + + + + + + + + + + + + + +	1 1		1	-	+ -		
	+	-	-	1		1									1 1		1				2
Schoenus sp.1			1	1																	
Schoenus sp.2				<u> </u>																	
Schoenus subbarbatus																					
Schoenus subbulbosus																					
Schoenus subfascicularis			1																		
Schoenus sublateralis	1																	1			
	1																	1			
Schoenus sublaxus																					
Senecio quadridentatus																					
Siloxerus filifolius																					
Solanum nigrum																					
Sonchus oleraceus																					
Sphaerolobium alatum																					
Sphaerolobium drummondii																					
Sphaerolobium macranthum																					
Sphaerolobium medium																					
Sphaerolobium scabriusculum																					
Sphenotoma capitatum 1						1									1						
Sphenotoma dracophylloides																					
Spyridium majoranifolium																					
Spyridium microcephalum																					
Stachystemon polyandrus																					
Stachystemon vermicularis																					
Stackhousia monogyna										1	1										
Stackhousia scoparia																					
Stirlingia anethifolia							1								1	1					
Stirlingia latifolia			+	+	1		1									+ + +					2
Stirlingia simplex			-	1	1					 						+ +					
			-	-																	
Stirlingia tenuifolia			1	1			1														
Stylidium caespitosum																					
Stylidium calcaratum																					
Stylidium diuroides																					
Stylidium diversifolium			1														1				
Stylidium glandulosissimum			1	1	 	1				 	1				+ + + + + + + + + + + + + + + + + + + +	1	1				1
Stylidium gianautosissimum Stylidium hirsutum		-	1	1		1					1						1				1
			1	1												1					
Stylidium imbricatum			1	1		1								1							1
Stylidium luteum				1																	
Stylidium piliferum 1												1									
Stylidium preissii			1	1				1													
Stylidium repens			+	1											1		1				
Stylidium rupestre			1	1											1		1				
Stytuatum rupestre			1	1												1 1					
Stylidium scandens																					
Stylidium schoenoides 1		1		1	1			· <u> </u>	1		1								1 7		
Stylidium sp.																					
Stylidium spathulatum													2								
Synaphea favosa			+	+																	
			-	1	 								-			+ +					
Synaphea petiolaris subsp. petiolaris			1	1						1			1	1		1 1					
Synaphea polymorpha 1	1	1	1	1		2 1	1		1	1						1					1
Taxandria parviceps				1				-													
	1 1	2	3	2	1 4	5 3	3	3	1	1	1	2 2	3	2 4 2	2 4 4	3 3	3	3	2		3 2 3 4
1 2	1					- 3	J	J		- 1		- -		L						1	J 2 J 7





Species S12	6 S127 S	128 S	S129	S130	S131	S131a	S132	S133	S134 S1	35 S1	35a S	S1P1	S1P2 S1P3	S1P	P4 S1P5 S1P6	S1P7	7 S	140 S141 S142	S143	S144	S145	S146	S147	S148 S149	S150	S151	S152	S153	S154	S155	S156 S157
Tetraria capillaris																															
Tetraria octandra	1		1			2																			1					1	
Tetraria sp.																			1												
Tetratheca pubescens 2					1	3		1								1		1					1								
Tetratheca setigera																															
Thelymitra benthamiana																1															
Thelymitra canaliculata																															
Thelymitra crinita																															
Thelymitra sp.																															
Thelymitra villosa																															
Thomasia rhynchocarpa																															
Thomasia stelligera																															
Thysanotus dichotomus																															
Thysanotus glaucifolius																															
Thysanotus sp.																															
Thysanotus sparteus																		1 1		1	1			1		1	1	1	1		
Thysanotus tenellus																		1													
Trachymene pilosa																															
Tricoryne elatior																															
Tricoryne tenella																		1 1													
Tricostularia compressa																															
Tricostularia neesii var. elatior																												2			
Tricostularia neesii var. neesii									1		2			2				2 1	1	1	3	1	2		1						1
Tricostularia sp. south coast (R.T. Wills 1423)																															
Trifolium campestre var. campestre																															
Trifolium sp.																															
Trifolium subterranean			1			2																									
Ursinia anthemoides																															
Velleia trinervis																															
Vellereophyton dealbatum																															
Verticordia densiflora var. cespitosa																															
Verticordia habrantha					1		1	1	1 1			1	1			1		1							1	1					
Verticordia plumosa var. grandiflora																													\perp		
Verticordia plumosa var. plumosa																															
Verticordia sieberi var. lomata																			3			1	1	1 1					\perp		
Verticordia sp.																													\perp		
Verticordia subulata													1																		
Villarsia parnassifolia																													\perp		
Vittadinia gracilis			1													-													1		
Vulpia myuros var. megalura Xanthorrhoea gracilis											. +					-													1		
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Xanthosia huegelii																-								1	1						
Xanthosia singuliflora																-	-											1	1		
Xanthosia sp.														1		-													4		
Xanthosia tasmanica				ļ																											





Species	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Acacia aemula subsp. aemula				1										
Acacia applanata														
Acacia bifaria														
Acacia biflora		2		1										
Acacia browniana var. browniana														
Acacia crispula														
Acacia cupularis														
Acacia cyclops														
Acacia delphina														1
Acacia leioderma														
Acacia luteola			1	2					1	1	1	1		
Acacia moirii subsp. moirii														
Acacia pulchella var. glaberrima														
Acacia pulchella var. goadbyi														
Acacia pycnocephala														
Acacia saligna														
Acacia sp.														
Acacia subcaerulea						2			1		1	1		
Acacia sulcata var. planoconvexa														
Acacia tetragonocarpa														
Acetosella vulgaris														
Acrotriche cordata Actinodium calocephalum														
Actinodium cunninghamii														
Actinodium cunningnamii Adenanthos apiculatus			2					1	2	1				
Adenanthos cacomorphus			2					1	2	1				
Adenanthos cacomorphus Adenanthos cuneatus		1		2	2	2	1	2			3	2		2
Agonis theiformis		1		2		2	4	1	2	3	2	3		3
Agrostis avenacea				4			4	1		3		3		
Aira caryophyllea														
Aira cupaniana														
Allocasuarina ?thuyoides														
Allocasuarina huegeliana														
Allocasuarina humilis	2							1	1	1		2		1
Allocasuarina microstachya								1	-					
Allocasuarina thuyoides		1	1				1	1					1	
Amphipogon amphipogonoides		-	-				-						•	
Amphipogon avenaceus														
Amphipogon sericeus								1						
Amphipogon setaceus										2		1		2
Amphipogon sp.														
Amphipogon turbinatus		1		1	1	1								
Anarthria gracilis			1					1						
Anarthria laevis														1
Anarthria prolifera	1	2		3	4	2	2	1	1	2		1		2
Anarthria scabra									1	2	2	3		3
Andersonia caerulea subsp. caerulea														
Andersonia simplex				1	1						2	1		1
Andersonia sprengelioides			2											
Anigozanthos humilis														
Anigozanthos rufus														
Arctotheca calendula														
Astartea aspera														
Asterolasia drummondii		1												
Astroloma baxteri														
Astroloma drummondii														
Astroloma sp.														
Astroloma pallidum														
Astroloma tectum					_									
Austrodanthonia caespitosa		1			1									
Austrostipa flavescens														
Austrostipa hemipogon														
Avena harbata														
Avena barbata														
Baeckea camphorosmae						_								
Baeckea crispiflora						2								
Baeckea preissiana Banksia attenuata											1			
Banksia attenuata Banksia baueri											1			1
Banksia baxteri											1			1
Banksia coccinea					1						1			
Banksia dryandroides					1									
	1	I			1		I		1		1	l	l	1





Banksia gardneri var, gardneri 2 2 2 1 1 2 2 1 1 1	C	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Booksia granulis Booksia intantaria Booksia intanta	Species				2101		5103					5108			51/1
I		2	2	2		1			2	2	1		1	1	
Banksia naturase war. ermunita								2							
Babkisa matass sur. cermedia Babkisa matass sur. cermedia Babkisa matass sur. repens var. polaerecarpa var. splaerecarpa var. splaer							_					_			
Banksia minana war matanas					I		2				1	2	I		1
Banksia expensa var. repeess 2									1						
Rinksia uninaeda controllata Romani articultus R			_											_	
Bunkins aphaerocarpa var. sphaerocarpa 2 2 1 2 2 2 3 3 3 3 3 3 3			2											2	2
Billimen articulata						_									
Beauforia unisuadra Beauforia unisuadra Beauforia unisuadra Beauforia unisuadra universalua Beauforia universalua universalua Billardiera varifolia Boronia aphallata Boronia aphallata Boronia aphallata Boronia varifolia Boro		2	2	1		2				2					
Beauforite amperifolia Beauforite amperifolia Beauforite schaereri Billardiere varifolia Baronia spalinala Baronia sp											_				
Beauforian aricrantha war internatha Beauforian aricrantha war internatha Beauforian aricrantha war internatha Billardinen yarvifolia Bil	v .										1				
Beauform's schouerer Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Billardiere y avrijolia Boronia sedubliora Boronia serventuta subsp. crenulata Boronia serventuta subsp. crenulata Boronia serventuta subsp. crenulata Boronia sy avrijolia Boro			1		2	1	2	1	3			3	3	1	3
Billardiera verusta Billardiera verusta Billardiera verusta Billardiera verusta Billardiera verusta Billardiera verusta Boronia crenalitata Boronia crenalitata subsp. crenulata Boronia crenalitata subsp. crenulata Boronia crenalitata subsp. crenulata Boronia spendata Caladenia faceda 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1															\vdash
Billardiera variifolia Billardiera variifolia Billardiera versusia Boronia difflora Boronia difflora 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		3		3											
Billardiera venusta															
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Boronia cressifolia Boronia cressifolia Boronia cressifolia Boronia cressifolia Boronia subsp. cresulata Boronia subsp. cresulata Boronia subsp. anestholia Boronia subsp. ane			1												
Boronia cremidata subsp. cremidata and subsp. cremidata s						1	1			1					
Beronia remulatus subsp. cremulatus 1		1		2										1	
Boronia remosa subsp. anethifolia Boronia spachulata Boronia spachulata Boronia spachulata Boronia spachulata Boronia spachulata Bossiaca oriocarpa Bossiacarpa Bossiaca oriocarpa Bossiacarpa Bo															
Boronia spahulata 1			1							1					
Boronia styladata	1 0				1										
Boronia subsessilis Bossiaca erocarpa Bossiaca cornata Bossiaca pratermissa Bossiaca pratermi	Boronia sp.														
Bossiace ariocarpa Bossiace a praetermissa Bossiace a		1			1		2		1	1	1		2	1	
Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetermissa Bossiaca praetitia Caladenia a praeta and basia an	Boronia subsessilis														
Bossiace a praetermissa Bossiace a prage	Bossiaea eriocarpa														
Bossiaca nafa Bromus geissoloma Bromus diandrus Bromus diandrus Bromus diandrus Bromus diandrus Bromus diandrus Burchardia umbelluta 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Bossiaea ornata														
Brachyloma geissoloma						2	1								
Broms diandrus	Bossiaea rufa									1					
Burchardia umbellata	Brachyloma geissoloma							1	1						
Caladenia cairnsiana Caladenia flaccida Caladenia flaccida Caladenia flacco Caladenia flava Caladenia flava Caladenia flava Caladenia flava Caladenia flava Caladenia flava Caladenia flava Caladenia capinifolia Caladenia capinifolia Caladenia capinifolia Caladenia latifolia Caladenia latifolia Caladenia latifolia Caladenia nongicauda subsp. australora Caladenia nongicauda subsp. nana Caladenia reptans subsp reptans Caladenia reptans subsp. Caladenia reptans subsp. 1	Bromus diandrus														
Caladenia flaccida Caladenia flava Caladenia latifolia Caladenia nana subsp. nana Caladenia nana subsp. nana Caladenia nana subsp. nana Caladenia pecinata Caladenia perinas subsp reptans Caladenia sp. Caladenia subsp. Caladenia caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia sp. Caladenia sp. Caladenia subsp. Caladenia subsp. Caladenia subsp. Caladenia sp. Caladenia subsp. Caladenia sp. Caladenia subsp. Caladenia sp. Caladenia sp. Caladenia sp. Caladenia sp. Caladenia subsp. Caladenia sp. Caladen	Burchardia umbellata		1		1	1			1	1		1			
Caladenia fluva Caladenia fuscolutescens Caladenia fuscolutescens Caladenia fuscolutescens Caladenia fuscolutescens Caladenia fuscolutescens Caladenia complicate to the function of the funct	Caladenia cairnsiana														
Caladenia fuscolutescens Caladenia graminifolia Caladenia prominifolia Caladenia latifolia Caladenia nana subsp. australora Caladenia nana subsp. australora Caladenia nana subsp. australora Caladenia prominifolia Caladenia nana subsp. australora Caladenia prominifolia Caladenia nana subsp. australora Caladenia prominifolia Caladenia reptans subsp reptans Caladenia speratus subsp reptans Caladenia speratus subsp reptans Caladenia specifis Calitris roei Calcatasi graccilis Calitris roei Calothamnus sarquilis Calothamnus sanquineus Calothamnus sanquineus Calothamnus sanquineus Calothamnus sanquineus Calothamnus sanquineus Calothamnus schaueri Calytrix flavescens Calytrix flavescens Calytrix flavescens Calytrix flavescens Calytrix flavescens Calytrix sp. Cassytha flava Cassytha flava Cassytha flava Cassytha micrantha 1 1 1 1 1 1 1 1 1 1 Calytrix sp. Cassytha micrantha 1 1 1 1 1 1 1 1 1 1 Cassytha racemosa Cassytha racemosa Cassytha racemosa on the complete of the	Caladenia flaccida				2	2							1		
Caladenia graminifolia Caladenia heberleama Caladenia historia Caladenia historia Caladenia programa subsp. australora Caladenia na subsp. ama Caladenia pectinata Caladenia pectinata Caladenia pectinata Caladenia pertinas subsp reptans Caladenia pertinas subsp. pertinas Caladenia pectinata Caladenia pecti	Caladenia flava														
Caladenia graminifolia Caladenia heberleama Caladenia historia Caladenia historia Caladenia programa subsp. australora Caladenia na subsp. ama Caladenia pectinata Caladenia pectinata Caladenia pectinata Caladenia pertinas subsp reptans Caladenia pertinas subsp. pertinas Caladenia pectinata Caladenia pecti	Caladenia fuscolutescens														
Caladenia hebreleana Caladenia latifolia Caladenia longicauda subsp. australora Caladenia nana subsp. nana Caladenia pertanas subsp reptans Caladenia reptans subsp reptans Caladenia spracilis Calitris roei Calothamnus gracilis Calitris roei Calothamnus sanguineus Calothamnus sanguineus Calothamnus sanguineus Calothamnus schaueri Calytrix plavescens Calytrix plavescens Calytrix plavescens Calytrix generalis Calytrix sp. Casytha flava Cassytha pontiornis Casytha pracemosa Casytha pracemosa Casytha racemosa Casytha racemosa Casytha racemosa Casytha racemosa Casytha pracemosa Casytha p															
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Calytrix depressa Calytrix flavescens 1	Calothamnus schaueri														
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Calytrix leschenaultii Calytrix smilis 2 1 1 1			1				1								
Calytrix similis Calytrix sp. Cassytha flava Cassytha flava Cassytha micrantha 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							1								
Calytrix sp. Cassytha flava Cassytha glabella Cassytha micrantha 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				2		1	1								1
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Cassytha micrantha 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1															
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Cassytha racemosa forma pilosa Cassytha sp. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1						1						
Cassytha sp. 1 1 1 1 1 1 1 Caustis dioica 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1						1						
Caustis dioica 1 1 1 2 2 1 Centrolepis aristata Centrolepis polygyna Cerastium glomeratum Chaetanthus aristatus Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus					1			1		1			1		
Centrolepis aristata Centrolepis polygyna Cerastium glomeratum Chaetanthus aristatus Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus						1		1		1		2			
Centrolepis polygyna Cerastium glomeratum Chaetanthus aristatus Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus					1	1							1		\vdash
Cerastium glomeratum Chaetanthus aristatus Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus		-													$\vdash \vdash \vdash$
Chaetanthus aristatus Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus	Connectium alamanatum														\vdash
Chaetanthus tenellus Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus															
Chamescilla corymbosa var. corymbosa Chamescilla spiralis Chordifex capillaceus Chordifex crispatus															
Chamescilla spiralis Chordifex capillaceus Chordifex crispatus															$oxed{oxed}$
Chordifex capillaceus Chordifex crispatus															igwdot
Chordifex crispatus															igwdot
	Chordifex capillaceus														igsquare
Chordifex laxus															
·	Chordifex laxus														





Smaries	S158	S159	S160	S161	S162	S163	S164	S165	C166	S167	S168	S169	S170	S171
Species Chardifordered blockers	2129	3139	2100	2101	5102	5103	5104	2102	S166	5107	5108	5109	5170	51/1
Chordifex leucoblepharus														
Chardifest and a selection				2	1		1	1	1				2	
Chordifex sphacelatus Chorizandra enodis				2	1		1	1	1				3	
Chorizema cytisoides														
Chorizema diversifolium														
Chorizema glycinifolium										1				
Chorizema nanum										1				
Cirsium vulgare														
Comesperma calymega														
Comesperma confertum														
Comesperma flavum														
Comesperma virgatum							1							
Commersonia sp. Mt Groper														
Conospermum caeruleum														
Conospermum caeruleum subsp. caeruleum														
Conospermum flexuosum subsp. flexuosum														
Conospermum floribundum														
Conospermum teretifolium														
Conostylis aurea														
Conostylis hiemalis														
Conostylis pusilla						1								
Conostylis serrulata							_							
Conostylis setigera subsp. setigera							1							
Conostylis vaginata											1			
Conothamnus aureus		1		1										
Conyza parva Conyza sumatrensis														
Conyza sumairensis Corybas sp.														
Cotybus sp. Cotula australis														
Crassula colligata														
Crassula colorata														
Crassula decumbens var. decumbens														
Crassula exserta														
Crassula glomerata														
Cyathochaeta avenacea			1											
Cyathochaeta equitans				2			1					1		
Cyperochloa hirsuta							-					•		
Cyperus tenellus														
Dampiera juncea				1										
Dampiera linearis											1			
Dampiera pedunculata														
Dampiera sacculata														
Dampiera sp.														
Darwinia diosmoides														
Darwinia vestita		1	1		1		1	1		1			1	
Dasypogon bromeliifolius											1			
Daviesia alternifolia														
Daviesia emarginata										2			2	
Daviesia gracilis											_			
Daviesia incrassata subsp. incrassata	1			1			2	1	3	2	2		1	
Daviesia inflata Daviesia lancifolia														
Daviesia iancijotia Daviesia oppositifolia								1						
Daviesia trigonophylla								1						
Desmocladus austrinus		2		1							1			1
Desmocladus fasciculatus	2	3	1	1		1	3	2	1	2	1		2	1
Deyeuxia quadriseta		3	1			1	3		1					
Dianella brevicaulis														
Dianella revoluta var. divaricata														
Disa bracteata														
Diuris longifolia														
Drosera erythrorhiza														
Drosera glandulifera														
Drosera huegelii														
Drosera leucoblasta														
Drosera menziesii subsp. menziesii	1													
Drosera micrantha subsp. micrantha	1													
Drosera paleacea subsp. paleacea														
Drosera paleacea subsp. trichocaulis														
Drosera pallida														
Drosera platypoda														





Species	C150	Q1 <i>E</i> 0	Q1/A	Q1/1	C1/2	C1/2	Q1/A	Q1/F	Q1//	C1/7	C1/0	Q1/A	C170	C171
Species Drosera pulchella	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Drosera pulchella							-					1		
Drosera scorpioides	1	_					1	-1					1	
Dryandra arctotidis Dryandra armata	1	2	1				1	1		1			1	
Dryandra armata Dryandra blechnifolia	2	2	1					1		1				
Dryandra biechnijotta Dryandra brownii														
Dryandra calophylla			1											
Dryandra cuneata			1											
Dryandra falcata														
Dryandra mucronulata subsp. mucronulata						4			4	4				
Dryandra nervosa	2					-			-	-				
Dryandra nivea subsp. nivea		1									1			
Dryandra plumosa subsp. plumosa		2	2								2	2	3	
Dryandra pteridifolia subsp. pteridifolia														
Dryandra tenuifolia var. tenuifolia													1	
Ehrharta calycina														
Ehrharta longiflora														
Elymus scabrus var. scabrus														
Elythranthera brunonis														
Eremaea pauciflora var. pauciflora														
Erodium cygnorum														
Eucalyptus ?yilgarnesis														
Eucalyptus angulosa			1											
Eucalyptus buprestium													3	
Eucalyptus decens														
Eucalyptus decipiens subsp. adesmophloia		2												
Eucalyptus decurva														
Eucalyptus falcata			2											
Eucalyptus marginata														
Eucalyptus occidentalis														
Eucalyptus pachyloma			2											
Eucalyptus pleurocarpa		3	3										3	
Eucalyptus preissiana														
Eucalyptus staeri	3			3	3	3	3	3	4	3	3	3		3
Eucalyptus uncinata														
Eutaxia neurocalyx subsp. neurocalyx														
Exocarpos sparteus														
Franklandia fucifolia							1							1
Gahnia ancistrophylla														
Gahnia aristata														
Gahnia sp.														
Gamochaeta calviceps Gastrolobium bracteolosum											1			
Gastrolobium pracieolosum Gastrolobium reticulatum	1		1								1			
Gastrolobium retusum Gastrolobium retusum	1		1											
Gastrolobium reiusum Gastrolobium spinosum														
Glischrocaryon aureum														
Glischrocaryon aureum var. aureum														
Gnephosis tenuissima														
Gompholobium baxteri														
Gompholobium burtonioides											2			
Gompholobium capitatum														
Gompholobium confertum	1	1	1			1			1					
Gompholobium knightianum	1								•					
Gompholobium marginatum	1													
Gompholobium polymorphum														
Gompholobium scabrum														
Gompholobium tomentosum				1		1								
Gompholobium venustum				1	1	_	1			1	1		1	
Goodenia affinis					-						-		-	
Goodenia concinna														
Goodenia filiformis														
Goodenia incana					1	1								
Goodenia pterigosperma	1	1												
Goodenia pulchella														
Grevillea concinna subsp. lemanniana														
Grevillea fasciculata	1							1	2	1			1	
Grevillea nudiflora														
Grevillea pulchella subsp. pulchella														
Haemodorum discolor		1												
Haemodorum laxum														
Haemodorum sp.														





Haemodorum spicatum Hakea baxteri Hakea ceratophylla Hakea coriacea Hakea corymbosa 1 2 Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata 3 Hakea pnostrata 1 Hakea prostrata 1 Hakea ruscifolia 1 Hakea trifurcata 1 Hakea varia Hakea varia	2 3 3 11 33 22	1 1 2 2	1	1 2	2	2	2 2 2	3 2	1 2 2	1	3 3	1 2	\$171
Hakea baxteri Hakea ceratophylla Hakea coriacea Hakea corymbosa Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea ruscifolia Hakea varia Hakea varia Harperia confertospicata Harperia lateriflora Hemiandra humilis Hemiandra pungens Hibbertia arepesa Hibbertia amplexicaulis Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Horea coriacea Hakea coriacea I 1 Hakea varia Harperia laterifora Helichrysum luteoalbum Hemiandra humilis Hibbertia recurvifolia Hibbertia recurvifolia Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	3 1 3	1	1	1			2		2	1	3	2	
Hakea ceratophylla Hakea coriacea Hakea corymbosa 1 2 Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea sulcata Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fibertioides var. meridionalis Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hokea crosaries Hokea ruscifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	3 1 3	1	1	1			2		2	1	3	2	
Hakea coriacea Hakea corymbosa 1 2 Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea varia Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra pungens Hibbertia acerosa Hibbertia areurifolia Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hokea trisperma 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 1 3	1	1				2		2	1	3	2	
Hakea corymbosa Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea sulcata Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia recurvifolia Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hokea denticulata 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 1 3	1	1				2		2	1	3	2	
Hakea cucullata Hakea denticulata Hakea ferruginea Hakea laurina Hakea marginata Hakea nitida Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea trifurcata Hakea trifurcata Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia gracilipes Hibbertia lineata Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hokea trisperma	3 1 3	1	1				2		2	1	3	2	
Hakea ferruginea Hakea laurina Hakea marginata Alakea nitida Hakea pandanicarpa subsp. crassifolia Alakea prostrata Alakea ruscifolia Alakea ruscifolia Alakea trifurcata Alakea varia Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia argracilipes Hibbertia hibbertioides var. meridionalis Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	1 3	1	1	2	1	1	2	2	2	1			
Hakea laurina Hakea marginata Alakea nitida Hakea pandanicarpa subsp. crassifolia Alakea prostrata Alakea ruscifolia Alakea ruscifolia Alakea sulcata Hakea trifurcata Alarperia confertospicata Harperia lateriflora Alelichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fibertioides var. meridionalis Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	1 3		1	2	1	1	2	2	2	1			
Hakea marginata Hakea nitida Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea trifurcata Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia lineata Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Horea subsp. 3 3 3 4 3 4 4 5 5 6 7 7 8 8 8 8 8 8 8 8 8 8 8	1 3	2	1	2	1	1	2			1	1		
Hakea nitida Hakea pandanicarpa subsp. crassifolia 2 33 Hakea prostrata 1 1 Hakea ruscifolia 1 1 Hakea sulcata Hakea trifurcata 1 1 1 Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Horea trisperma	1 3	2	1	2	1	1	2			1	1		
Hakea pandanicarpa subsp. crassifolia Hakea prostrata Hakea ruscifolia Hakea sulcata Hakea trifurcata Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia arplexicaulis Hibbertia lineata Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia	1 3	2	1	2	1	1	2			1	1		
Hakea prostrata 1 Hakea ruscifolia 1 Hakea sulcata Hakea trifurcata 1 1 Hakea varia Harperia confertospicata 3 Harperia lateriflora 2 Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fipes Hibbertia lineata Hibbertia recurvifolia 1 Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	1 3	2	1	2	1	1	2			1	1		
Hakea ruscifolia 1 Hakea sulcata Hakea trifurcata 1 1 1 Hakea varia Harperia confertospicata 2 Harperia lateriflora 2 Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fireatilipes Hibbertia lineata Hibbertia recurvifolia 1 Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	3	2	1		1	1	2			1	1		
Hakea sulcata Hakea trifurcata 1 1 1 Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fireatilipes Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	3	2	1		1	1	2			1	1		
Hakea trifurcata Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia fireatilipes Hibbertia lineata Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia	3	2	1		1						1		
Hakea varia Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia gracilipes Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Horea trisperma	3	2	1		1								
Harperia confertospicata Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia ineata Hibbertia recurvifolia Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Horea trisperma		2	1		1						1	1	
Harperia lateriflora Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia gracilipes Hibbertia lihebertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma		2	1		1								
Helichrysum luteoalbum Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia 1 Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma	2	2								1			
Hemiandra humilis Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia 1 Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma													1
Hemiandra pungens Hibbertia acerosa Hibbertia amplexicaulis Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma									1		1		
Hibbertia acerosa Hibbertia amplexicaulis Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma									1		1		
Hibbertia amplexicaulis Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma					1								-
Hibbertia gracilipes Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma					1				1				-
Hibbertia hibbertioides var. meridionalis Hibbertia lineata Hibbertia recurvifolia Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma					1			1	1	1	1		-
Hibbertia lineata Hibbertia recurvifolia 1 Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma		Į.			1			1		1	1		-
Hibbertia recurvifolia 1 Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma													-
Hibbertia rupicola Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma		1	1	2		1	2				1		-
Hibbertia sp. Hordeum leporinum Hovea chorizemifolia Hovea trisperma		1	1	2		1					1		
Hordeum leporinum Hovea chorizemifolia Hovea trisperma													
Hovea chorizemifolia Hovea trisperma													
Hyalosperma simplex					1								
· · · · · · · · · · · · · · · · · · ·													
Hypocalymma angustifolium													
Hypocalymma strictum subsp. elongatum													
Hypocalymma strictum subsp. strictum			2	2		1							
Hypochaeris glabra													
Hypolaena exsulca			1			1	2						
	1		1	1				1		1	1		2
Hypolaena sp.													
Isolepis cernua													
Isolepis stellata													
Isopogon attenuatus		1		1				2		2	1		
Isopogon baxteri													
Isopogon buxifolius var. obovatus													
Isopogon cuneatus													
Isopogon formosus subsp. formosus													
Isopogon heterophyllus						2			1				
Isopogon longifolius 1 Isopogon sp.						2			1			1	
Isopogon sp. Isopogon teretifolius													
Isopogon teretifolius subsp. petrophiloides		1											
Isopogon teretifolius subsp. teretifolius		1				2		2					
	2			1		2	1	7					1
Jacksonia capitata	_			1			1						1
Jacksonia grevilleoides													-
Jacksonia spinosa													
Johnsonia acaulis													
Johnsonia lupulina													
Johnsonia teretifolia													
Juncus bufonius													1
Juncus pallidus													
Kennedia coccinea													
Kingia australis													
Kunzea affinis													
Kunzea preissiana													
Kunzea recurva													
Kunzea rostrata													
Lachnagrostis filiformis													
Lagurus ovatus													
Lambertia echinata subsp. citrina					-							. —	





Г	04.50	G4 =0	04.60	04.64	04.60	04.60	04.64	G4 6	04.55	04.5	04.60	04.60	G1 = 0	04=4
Species	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Lambertia inermis var.inermis	3	3	3			3			2	3	1	1	1	
Lasiopetalum microcardium														
Lasiopetalum parvuliflorum														
Latrobea recurva				1							1			1
Laxmannia brachyphylla					1									
Laxmannia grandiflora subsp. stirlingensis										1				
Laxmannia ramosa														
Laxmannia sessiliflora														
Laxmannia sp.														
Laxmannia squarrosa														
Lechenaultia formosa														
Lepidosperma ?leptostachyum														
Lepidosperma brunonianum														
Lepidosperma carphoides		1								1				
Lepidosperma leptostachyum		-								•				
Lepidosperma pubisquameum														
Lepidosperma sp.										1				
Lepidosperma squamatum	2		2	2	1	1	2	1	2	1				
Lepidosperma striatum			1		1	1		1						
Lepidosperma tenue			1											
Lepidosperma ienue Lepidosperma ustulatum								2						
Leporella fimbriata								2						
1 0														
Leptomeria lehmannii														
Leptomeria pauciflora														
Leptomeria squarrulosa														
Leptospermum spinescens			1						1					
Lepyrodia drummondiana														
Lepyrodia hermaphrodita														
Lepyrodia macra														
Leucopogon aff. elegans														
Leucopogon conostephioides														
Leucopogon corynocarpus	2				2			1	1		1			1
Leucopogon cucullatus		2		1			1	2	1			1		
Leucopogon distans														
Leucopogon elatior														
Leucopogon elegans														
Leucopogon flavescens var. flavescens				2										
Leucopogon gibbosus	2									2			1	
Leucopogon glabellus						1							1	
Leucopogon reflexus						1	1							1
Leucopogon woodsii							1	1					1	1
Levenhookia dubia							1	1					1	
Levenhookia pauciflora														
Logania campanulata														
Logania micrantha			1											
Logania serpyllifolia subsp. serpyllifolia														
Logania stenophylla														
Lolium perenne														
Lomandra caespitosa														
Lomandra hastilis					2	2								
Lomandra nigricans	1													
Lomandra pauciflora														
Lomandra preissii														
Lomandra purpurea														
Lomandra rupestris			2											
Lomandra sericea														
Lomandra sonderi											1			
Lomandra sp.									1				1	
Loxocarya striata									-				-	
Lyginia barbata				1		1	1					2		
Lyginia imberbis		1				•	1				1	1		
Lyperanthus serratus		1									1	1		
Lysinema ciliatum			1	2	1		2	1						
Lythrum hyssopifolia			1		1			1						
Lyinrum nyssopijoila Meeboldina kraussii														
Meeboldina sp.														
Melaleuca bracteosa														
Melaleuca concinna														
Melaleuca cuticularis														
Melaleuca pentagona var. latifolia														
Melaleuca pentagona var. pentagona														
Melaleuca sp.														





Species	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Melaleuca spathulata														
Melaleuca striata	2	4	2	4	4	4	3	2	2	3	3	4	1	2
Melaleuca suberosa			2										2	
Melaleuca subtrigona	1	3											2	
Melaleuca thymoides			1	2	2	1					2	2		2
Melaleuca tuberculata Mesomelaena graciliceps		2	1		1		1							
Mesomelaena pseudostygia		2	1		1		1							
Mesomelaena stygia	3	3	4				2	2	2	3			4	
Mesomelaena tetragona	3	2	4					1		3	1		4	
Microcorys lenticularis					1			1			1			
Microtis media subsp. media					-									
Millota tenuifolia var. tenufolia														
Monotaxis grandiflora var. grandiflora														
Monotoca aristata														
Monotoca tamariscina														
Muehlenbeckia adpressa														
Neurachne alopecuroidea			1											
Nuytsia floribunda											1	1		1
Oligarrhena micrantha				2										
Onychosepalum laxiflorum Opercularia hispidula		1												
Opercularia mspiaula Opercularia vaginata														
Ornithopus compressus														
Orninopus compressus Orobanche minor														
Oxalis perennans														
Paracaleana nigrita														
Patersonia juncea														
Patersonia lanata forma lanata						1				1				
Patersonia occidentalis var. angustifolia														
Patersonia occidentalis var. latifolia														
Patersonia occidentalis var. occidentalis	1		1						1					
Patersonia rudis														
Patersonia sp.														
Pelargonium littorale subsp. littorale														
Pentaschistis airoides														
Pennisetum clandestinum														
Pericalymma ellipticum														
Pericalymma sp. Persoonia striata		1	1							1			1	
Petrophile circinata		1	1							1	1		1	
Petrophile crispata											1			1
Petrophile divaricata		1						1						1
Petrophile diversifolia		1						-						
Petrophile ericifolia subsp. ericifolia							1							
Petrophile longifolia							1							
Petrophile media														
Petrophile rigida	1		1				1	1					1	
Petrophile seminuda										1				
Petrophile serruriae														
Petrophile sp.														
Petrophile squamata														
Petrophile squamata subsp. squamata Petrophile teretifolia		1	1	1	1	2							1	
Petrophile teretifolia Philotheca nodiflora subsp. lasiocalyx		1	1	1	1	2							1	2
Phyllangium paradoxum														
Phyllota barbata							1				2	1		
Pimelea angustifolia							1					1		
Pimelea brevifolia subsp. brevifolia														
Pimelea hispida														
Pimelea lehmanniana subsp. lehmanniana														
Pimelea longiflora subsp. longiflora														
Pimelea rosea														
Pimelea sp.									1					
Pimelea suaveolens														_
Pimelea suaveolens subsp. suaveolens														
Pimelea sulphurea														
Pimelea tinctoria														
Platysace filiformis				1										
Platytheca aff. galioides														
Poaceae sp. Poranthera ericoides														
1 oranicou concoues														





Species	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Poranthera microphylla	- 220	~	~ 200	~	~	~230	~	~ - 30	~200	~	~ 230	~-97	~ - 10	~
Praecoxanthus aphyllus														
Pseudognaphalium luteoalbum														
Pterostylis recurva														
Pterostylis turfosa														
Pterostylis vittata														
Pultenaea empetrifolia														
Pultenaea verruculosa		1							2	3	1		2	
Pyrorchis nigricans														
Quinetia urvillei														
Regelia inops														
Rinzia schollerifolia														
Rulingia rotundifolia														
Rumex crispus														
Schoenus ?sesquispiculus														
Schoenus aff. curvifolius														
Schoenus brevisetis														
Schoenus caespititius					1									1
Schoenus curvifolius		2												1
Schoenus laevigatus														
Schoenus nanus														
Schoenus obtusifolius														
Schoenus pleiostemoneus	2		1				1							
Schoenus sp.1														
Schoenus sp.2														
Schoenus subbarbatus														
Schoenus subbulbosus														
Schoenus subfascicularis Schoenus sublateralis									-					
Schoenus sublaxus									1					
Senecio quadridentatus														
Siloxerus filifolius														
Solanum nigrum														
Sonchus oleraceus														
Sphaerolobium alatum														
Sphaerolobium drummondii														
Sphaerolobium macranthum	1													
Sphaerolobium medium														
Sphaerolobium scabriusculum			1											
Sphenotoma capitatum														
Sphenotoma dracophylloides														
Spyridium majoranifolium														
Spyridium microcephalum														
Stachystemon polyandrus														
Stachystemon vermicularis														
Stackhousia monogyna														
Stackhousia scoparia														
Stirlingia anethifolia							1	1			1	1		
Stirlingia latifolia				2	2	1						1		
Stirlingia simplex														
Stirlingia tenuifolia														1
Stylidium caespitosum														
Stylidium calcaratum														
Stylidium diuroides														
Stylidium diversifolium														
Stylidium glandulosissimum														
Stylidium hirsutum														
Stylidium imbricatum														1
Stylidium luteum														
Stylidium piliferum														
Stylidium preissii				-										
Stylidium repens		1		1										
Stylidium rupestre Stylidium scandens				2	-1	-1								
Stylidium schoenoides				2	1	1								
Stylidium schoenoides Stylidium sp.														
Stylidium spathulatum														
Synaphea favosa														
Synaphea petiolaris subsp. petiolaris								1						
Synaphea polymorpha							2	1			1			
Taxandria parviceps								1			1			
Taxandria spathulata		4	1		4	2	4	3				2	2	3
								5		1	l .			ی





Species	S158	S159	S160	S161	S162	S163	S164	S165	S166	S167	S168	S169	S170	S171
Tetraria capillaris														
Tetraria octandra	1					1	1	1	1	2				
Tetraria sp.														
Tetratheca pubescens					1	1								
Tetratheca setigera						1								
Thelymitra benthamiana														
Thelymitra canaliculata														
Thelymitra crinita														
Thelymitra sp.														
Thelymitra villosa														
Thomasia rhynchocarpa														
Thomasia stelligera														
Thysanotus dichotomus											1			
Thysanotus glaucifolius														
Thysanotus sp.														
Thysanotus sparteus								1	1	1	1	1		
Thysanotus tenellus														
Trachymene pilosa														
Tricoryne elatior														
Tricoryne tenella		1												
Tricostularia compressa														
Tricostularia neesii var. elatior							1							
Tricostularia neesii var. neesii				1	1	2					3			3
Tricostularia sp. south coast (R.T. Wills 1423)														
Trifolium campestre var. campestre														
Trifolium sp.														
Trifolium subterranean														
Ursinia anthemoides														
Velleia trinervis														
Vellereophyton dealbatum														
Verticordia densiflora var. cespitosa				1										
Verticordia habrantha														
Verticordia plumosa var. grandiflora														
Verticordia plumosa var. plumosa														
Verticordia sieberi var. lomata		2												2
Verticordia sp.														
Verticordia subulata														
Villarsia parnassifolia														
Vittadinia gracilis														
Vulpia myuros var. megalura														
Xanthorrhoea gracilis														
Xanthorrhoea platyphylla	2	2	2		1	1	1		1	1			1	
Xanthosia huegelii														
Xanthosia singuliflora														
Xanthosia sp.														
Xanthosia tasmanica														





Appendix G: Regional Survey Site Sheets





EXPLANATION OF CODES

* = Introduced species

 \dagger = Priority species

subsp. = subspecies

var. = variety

VEGETATION CONDITION

Pristine: Vegetation pristine; no disturbance evident at all.

Excellent: Strata essentially intact: some signs of human non native disturbance; e.g. feral scats,

litter, minor tracks.

Good: One or more strata significantly impacted; e.g. grazing, some weeds, some vegetation

removal.

Poor: One or more strata severely impacted; e.g. dense weed invasion, substantial logging or

tracks.

Degraded: native vegetation largely or totally removed.

DENSITY (Vegetation, leaf litter, woodlitter)

Scattered 0-2% total cover

 Sparse
 2-10%

 Open
 10-30%

 Moderately dense
 30-70%

 Dense
 70-100%

FIRE HISTORY

Recent: 0-2 years (completely devoid of vegetation or vegetation re-seeding/re-shooting. Eucalypts and shrubs may have juvenile foliage from rootstock and/or branches. Shrubs, spinifex, herbs and grasses may evident as seedlings)

Moderate: 2-5 years (burn scars on shrubs and trees still obvious, shrubs and spinifex may not be fully mature but species composition resembles original vegetation)

Old: 5 years + (Vegetation mature but burn scars evident on trees, no evidence of fire damage on shrubs, grasses, herbs and spinifex)

None evident: No burn scars evident. Vegetation mature.

All GPS locations are given as WGS 84.





Site 1 Minesite Open Low Mallee over dense Heath.

Date: 13/04/05

Location: 50 H 640945 UTM 6176815

Topography: Hill crest Slope: gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Sparse Vegetation condition: Excellent Fire History: Old

Regeneration notes:

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decurva; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Hakea cucullata; Lambertia inermis; Hakea ferruginea
Shrubs 1.0- 2.0m	30-70%	Acacia subcaerulea; Agonis theiformis; Allocasuarina humilis; Banksia nutans var. nutans; Beaufortia anisandra; Calothamnus gracilis; Dryandra armata var. armata; Dryandra quercifolia; Hakea corymbosa; Melaleuca striata; Petrophile divaricata; Petrophile teretifolia
Shrubs 0.5- 1.0m		Hibbertia lineata; Isopogon attenuatus; Kunzea recurva; Leucopogon corynocarpus; Melaleuca thymoides
Shrubs 0.0- 0.5m	30-70%	Acacia delphina; Acacia lateriticola; Astroloma drummondii; Boronia crassifolia; Bossiaea rufa; Darwinia vestita; Dryandra tenuifolia; Gompholobium knightianum; Hibbertia hibbertioides var. meridionalis; Hovea trisperma; Leucopogon cucullatus; Leucopogon distans ssp. distans; Monotoca tamariscina; Pultenaea verruculosa; Sphenotoma dracophylloides; Tetratheca pubescens
Climbers		Cassytha racemosa forma pilosa; Stylidium scandens
Herbs	30-70%	Anarthria prolifera; Anarthria scabra; Desmocladus fasciculatus; Haemodorum ?simplex; Harperia confertospicata; Hypolaena fastigiata; Lomandra ?rupestris; Stylidium imbricatum
Sedges		Lepidosperma squamatum; Mesomelaena graciliceps; Mesomelaena stygia; Tetraria capillaris; Tricostularia neesii var. elatior
Tree-like Monocot		Xanthorrhoea brunonis var. brunonis



Site 2 Minesite Open Eucalyptus staeri over mid-dense Heath on deeper white/grey sandy slopes

Date: 13/04/05

Location: 50 H 641038 UTM 6176904

Topography: Hill slope Slope: Moderate Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Sparse Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Banksia baxteri; Hakea baxteri; Lambertia inermis
Shrubs 1.0- 2.0m	30-70%	Adenanthos cuneatus; Agonis theiformis; Banksia nutans var. nutans; Beaufortia empetrifolia; Dryandra plumosa ssp. plumosa; Hakea corymbosa; Isopogon attenuatus; Melaleuca striata; Melaleuca thymoides; Petrophile seminuda
Shrubs 0.5- 1.0m		Acacia subcaerulea; Allocasuarina humilis; Calothamnus gracilis; Daviesia preissii; Kunzea recurva; Petrophile teretifolia
Shrubs 0.0- 0.5m	30-70%	Acacia delphina; Andersonia simplex; Astroloma drummondii; Banksia gardneri vax. gardneri; Beaufortia empetrifolia; Boronia albiflora; Bossiaea rufa; Calytrix ?flavescens; Calytrix similis; Dryandra tenuifolia; Franklandia fucifolia; Gompholobium scabrum; Hibbertia hibbertioides vax. meridionalis; Hibbertia lineata; Hypocalymma scariosum; Latrobea ?diosmifolia; Leucopogon cucullatus; Leucopogon distans ssp. distans; Lysinema ciliatum; Monotoca tamariscina; Platytheca galioides; Stachystemon polyandrus; Stirlingia anethifolia; Verticordia plumosa vax. plumosa
Climbers		Drosera ?menziesii
Herbs		Anarthria prolifera; Anarthria scabra; Harperia confertospicata; Hypolaena fastigiata; Johnsonia lupulina; Laxmannia sessiliflora
Soft grasses		Austrodanthonia caespitosa; POACEAE sp.
Sedge		Caustis dioica; Lyginia imberbis; Mesomelaena stygia; Schoenus caespititius; Tricostularia neesii var. elatior





Site 3 Minesite Open Eucalyptus staeri over mid-dense Heath on deep white/grey sandy slope

Date: 13/04/05

Location: 50 H 641305 UTM 6177086

Topography: Hill slope Slope: Gentle Soil texture: Sand

Soil colour: White/ Grey
Surface layer: Loose soil
Rock type: Nil
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Plentiful
Vegetation condition: Pristine

Disturbance details:

Fire History: None evident

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Lambertia inermis; Hakea baxteri
Shrubs 1.0- 2.0m	30-70%	Acacia subcaerulea; Beaufortia empetrifolia; Hakea ferruginea; Isopogon trilobus; Kunzea recurva; Melaleuca thymoides; Adenanthos cuneatus; Agonis theiformis; Banksia nutans var. nutans; Dryandra plumosa ssp. plumosa; Hakea corymbosa; Melaleuca striata
Shrubs 0.5- 1.0m	10-30%	Calytrix ?flavescens; Daviesia preissii; Hypocalymma scariosum; Isopogon attenuatus; Banksia baueri
Shrubs 0.0- 0.5m	30-70%	Acacia delphina; Andersonia simplex; Boronia albiflora; Bossiaea rufa; Calothamnus gracilis; Darwinia vestita; Hibbertia hibbertioides var. meridionalis; Latrobea ?diosmifolia; Leucopogon distans ssp. distans; Lysinema ciliatum; Petrophile teretifolia; Pultenaea verruculosa; Stachystemon polyandrus; Astroloma drummondii; Dryandra lindleyana
Climbers		Stylidium scandens
Herbs	<2%	Anarthria gracilis; Anarthria laevis; Anarthria prolifera; Anarthria scabra; Chordifex crispatus; Harperia confertospicata; Hypolaena fastigiata
Soft grasses		Austrodanthonia caespitosa
Sedge		Caustis dioica; Cyathochaeta avenacea
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 4 Minesite Banksia attenuata/Banksia baxteri open scrub over Kunzea/Adenanthos/Melaleuca mid-dense Heath.

Date: 13/040/05

Location: 50 H 641468 UTM 6177250

Topography: Plain
Slope: Negligible
Soil texture: Sand
Soil colour: White/ Grey
Surface layer: Loose Soil
People trippe: Formula

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

Vegetation Cover STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	<2%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Nuytsia floribunda; Banksia baxteri; Banksia attenuata
Shrubs 1.0-2.0m	30-70%	Beaufortia empetrifolia; Eremaea pauciflora? var. pauciflora; Acacia subcaerulea; Melaleuca striata; Kunzea recurva; Adenanthis cuneatus; Melaleuca thymoides
Shrubs 0.5-1.0m	30-70%	Calytrix similis; Leucopogon distans ssp. distans; Petrophile seminuda; Acacia delphina; Banksia nutans var. nutans; Bossiaea rufa; Daviesia preissii
Shrubs 0.0-0.5m	10-30%	Andersonia simplex; Calytrix ?flavescens; Hibbertia lineata; Latrobea ?diosmifolia; Leucopogon affin. elegans; Oligarrhena micrantha; Platytheca galioides; Synaphea polymorpha; Petrophile teretifolia
Climbers		Drosera ?menziesii; Chorizema cytisoides
Herbs		Anarthria prolifera; Anarthria scabra; Drosera paleacea ssp. paleacea; Hypolaena exsulca; Johnsonia lupulina; Lomandra hastilis; Lomandra nigricans
Sedge		Caustis dioica; Schoenus caespititius; Schoenus curvifolius; Schoenus sublateralis; Tricostularia neesii var. elatior





Site 5 Minesite Very open *Eucalyptus staeri* with mixed *Lambertia inermis* open scrub over very dense Heath on shallow white/ grey sand (with laterite close to the surface).

Date: 13/04/05

Location: 50 H 641091 UTM 6177428

Topography: Hill Slope Slope: Moderate Soil texture: Sand

Soil colour: White/ Grey

Surface layer: Coarse gravel/ Pebbles

Rock type: Ferrous/ Laterite

Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees <5 m	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Hakea pandanicarpa ssp. crassifolia; Hakea cucullata; Lambertia inermis
Shrubs 1.0- 2.0m	10-30%	Beaufortia anisandra; Hakea corymbosa; Hakea pandanicarpa ssp. crassifolia; Isopogon trilobus; Melaleuca tuberculata vax. tuberculata; Petrophile ericifolia ssp. ericifolia; Hakea denticulata; Calothamnus gracilis; Kunzea recurva; Agonis theiformis; Acacia subcaerulea; Dryandra plumosa
Shrubs 0.5- 1.0m	2-10%	Banksia baueri; Beaufortia empetrifolia; Dryandra armata vat. armata; Gompholobium scabrum; Petrophile seminuda; Allocasuarina humilis; Melaleuca striata
Shrubs 0.0- 0.5m		Acacia biflora; Acacia delphina; Adenanthos apiculatus; Gastrolobium retusum; Hibbertia lineata; Labichea punctata; Leucopogon cucullatus; Leucopogon gibbosus; Stirlingia anethifolia; Tetratheca pubescens; Petrophile teretifolia; Banksia gardneri var. gardneri
Climbers		Billardiera sericea
Herbs		Anarthria prolifera; Anarthria scabra; Chordifex sinuosus; Conostylis pusilla; Desmocladus fasciculatus; Harperia confertospicata; Lomandra hastilis; Patersonia sp. Swamp Form; Stylidium repens
Soft grasses		Austrodanthonia caespitosa
Sedge		Lepidosperma squamatum; Mesomelaena stygia; Schoenus subbarbatus; Schoenus sublaxus
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 6 Minesite Eucalyptus staeri over Agonis theiformis / Banksia baxteri open scrub over Melaleuca striata/ Beaufortia empetrifolia Heath on deep white/ grey sandy slopes.

Date: 14/04/05

Location: 50 H 640792 UTM 6177251

Topography: Hill Slope Slope: Gentle Soil texture: Sand

Soil colour: White/ Grey
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Banksia baxteri; Agonis theiformis; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Kunzea recurva; Adenanthos cuneatus; Melaleuca striata; Melaleuca thymoides; Isopogon attenuatus; Hakea corymbosa; Allocasuarina humilis; Agonis theiformis; Acacia subcaerulea; Isopogon trilobus; Nuytsia floribunda
Shrubs 0.5-1.0m	10-30%	Boronia albiflora; Banksia nutans var. nutans; Calothamnus gracilis; Beaufortia empetrifolia; Petrophile teretifolia
Shrubs 0.0-0.5m		Bossiaea rufa; Lysinema ciliatum; Dryandra lindleyana; Daviesia preissii; Andersonia simplex; Stirlingia anethifolia; Monotoca tamariscina
Herbs		Anarthria prolifera; Anarthria scabra; Goodenia affinis; Hypolaena fastigiata; Lomandra hastilis; Lyginia barbata
Sedge		Schoenus sublateralis





Site 7 Minesite Eucalyptus staeri open mallee over Agonis theiformis open scrub over Melaleuca/Kunzea/Anarthria Heath

Date: 14/04/05

Location: 50 H 640439 UTM 6177008

Topography: Hill crest Slope: Gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Moderate Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Agonis theiformis; Hakea baxteri; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Petrophile seminuda; Agonis theiformis; Hakea corymbosa; Melaleuca striata; Kunzea recurva; Isopogon attenuatus; Acacia subcaerulea
Shrubs 0.5-1.0m	10-30%	Chorizema cytisoides; Leucopogon cucullatus; Allocasuarina humilis; Dryandra plumosa ssp. plumosa; Calothamnus gracilis; Beaufortia empetrifolia; Petrophile teretifolia
Shrubs 0.0-0.5m	2-10%	Acacia biflora; Andersonia simplex; Banksia gardneri var. gardneri; Banksia repens; Beaufortia empetrifolia; Calytrix ?flavescens; Conospermum caeruleum ssp. caeruleum; Daviesia preissii; Dryandra arctotidis; Gompholobium confertum; Gompholobium venustum; Hibbertia lineata; Hovea trisperma; Latrobea ?diosmifolia; Leucopogon distans ssp. distans; Leucopogon woodsii; Logania stenophylla; Melaleuca tuberculata var. tuberculata; Persoonia striata; Pimelea sulphurea; Pultenaea verruculosa; Synaphea polymorpha; Dryandra lindleyana; Lambertia inermis; Stirlingia anethifolia; Acacia delphina
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Anarthria prolifera; Anarthria scabra; Anigozanthos flavidus; Conostylis pusilla; Drosera paleacea ssp. paleacea; Goodenia incana; Haemodorum spicatum; Harperia confertospicata; Hypolaena fastigiata; Johnsonia acaulis; Laxmannia sessiliflora; Lyginia barbata; Stylidium repens; Stylidium sp.
Soft grasses		Austrodanthonia caespitosa
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Mesomelaena stygia; Schoenus curvifolius; Schoenus subbarbatus; Schoenus sublateralis; Schoenus sublaxus; Tricostularia neesii var. elatior





Site 8 Minesite Eucalyptus decipiens ssp. adesmophloia over Agonis theiformis/Hakea pandanicarpa ssp. crassifolia/Melaleuca striata/Lambertia inermis over sedges.

Date: 14/04/05

Location: 50 H 640240 UTM 6176860

Topography: Hill Slope Slope: Gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Plentiful Excellent Vegetation condition:

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus decipiens ssp. adesmophloia
Shrubs > 2.0 m	2-10%	Agonis theiformis; Acacia cyclops
Shrubs 1.0-2.0m	10-30%	Acacia gilbertii; Allocasuarina thuyoides; Beaufortia empetrifolia; Hakea denticulata; Isopogon trilobus; Melaleuca similis; Melaleuca suberosa; Petrophile squamata ssp. squamata; Hakea pandanicarpa ssp. crassifolia; Hakea corymbosa; Dryandra plumosa ssp. plumosa; Lambertia inermis; Melaleuca striata
Shrubs 0.5-1.0m		Acacia biflora; Daviesia preissii; Melaleuca tuberculata var. tuberculata; Verticordia habrantha; Melaleuca thymoides; Calothamnus gracilis; Petrophile teretifolia
Shrubs 0.0-0.5m		Adenanthos apiculatus; Banksia repens; Dryandra arctotidis; Dryandra tenuifolia var. tenuifolia; Hibbertia lineata; Hovea trisperma; Leucopogon woodsii; Logania stenophylla; Lambertia inermis var. inermis; Dryandra lindleyana; Acacia delphina; Acacia subcaerulea
Herbs		Anarthria gracilis; Anarthria prolifera; Anarthria scabra; Burchardia umbellata; Chordifex sinuosus; Chordifex sinuosus; Desmocladus fasciculatus; Hypolaena fastigiata; Lomandra ?rupestris; Stylidium repens
Sedge	30-70%	Cyathochaeta avenacea; Lepidosperma squamatum; Mesomelaena stygia; Schoenus pleiostemoneus; Tetraria capillaris; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 9 Minesite Eucalyptus staeri open mallee over Hakea pandanicarpa open scrub over Melaleuca/ Kunzea heath (with open sedge ground cover)

Date: 14/04/05

Location: 50 H 640059 UTM 6176511

Topography: Lower Hill Slope

Slope: Gentle Soil texture: Sand

Soil colour: White/ Grey
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Plentiful
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri; Eucalyptus decurva
Shrubs > 2.0 m	2-10%	Lambertia inermis; Hakea pandanicarpa ssp. crassifolia; Agonis theiformis
Shrubs 1.0-2.0m	30-70%	Beaufortia anisandra; Dryandra armata; Beaufortia empetrifolia; Dryandra quercifolia; Hakea trifurcata; Melaleuca thymoides; Petrophile divaricata; Hakea cucullata; Kunzea recurva; Banksia grandis; Hakea corymbosa; Melaleuca striata; Melaleuca tuberculata var. tuberculata; Agonis theiformis; Allocasuarina thuyoides
Shrubs 0.5-1.0m		Banksia baueri; Banksia nutans var. nutans; Calothamnus gracilis; Acacia subcaerulea
Shrubs 0.0-0.5m	2-10%	Acacia delphina; Adenanthos apiculatus; Andersonia simplex; Astroloma drummondii; Banksia gardneri var. gardneri; Calytrix ?flavescens; Gompholobium knightianum; Gompholobium venustum; Hibbertia lineata; Hovea trisperma; Leucopogon corynocarpus; Tetratheca pubescens; Petrophile teretifolia
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Anarthria gracilis; Anarthria prolifera; Anarthria scabra; Burchardia umbellata; Chordifex sinuosus; Desmocladus fasciculatus; Goodenia incana; Haemodorum ?simplex; Harperia confertospicata; Patersonia occidentalis; Stylidium repens; Xanthosia candida
Sedge		Lepidosperma squamatum; Mesomelaena stygia; Tetraria octandra; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 10 Minesite Eucalyptus staeri open mallee over Agonis theiformis open scrub over Heath (Dryandra plumosa ssp. plumosa / Melaleuca striata/ Banksia nutans) over Anarthria Open Sedge

Date: 14/04/05

Location: 50 H 640718 UTM 6176709

Hill Slope Topography: Slope: Gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Moderate Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Hakea corymbosa; Hakea baxteri; Agonis theiformis; Banksia baxteri
Shrubs 1.0-2.0m	30-70%	Beaufortia anisandra; Hakea ferruginea; Melaleuca thymoides; Lambertia inermis; Kunzea recurva; Hakea corymbosa; Melaleuca thymoides; Melaleuca striata; Banksia nutans var. nutans; Dryandra plumosa ssp. plumosa
Shrubs 0.5-1.0m		Dryandra quercifolia; Hypocalymma scariosum; Latrobea ?diosmifolia; Leucopogon cucullatus; Pultenaea verruculosa; Hakea trifurcata; Isopogon attenuatus; Banksia nutans var. nutans; Calothamnus gracilis; Isopogon trilobus; Acacia subcaerulea; Acacia delphina
Shrubs 0.0-0.5m	2-10%	Andersonia simplex; Astroloma drummondii; Boronia spathulata; Bossiaea rufa; Calytrix ?flavescens; Gompholobium knightianum; Gompholobium venustum; Hibbertia lineata; Jacksonia grevilleoides; Leucopogon cucullatus; Persoonia striata; Pultenaea verruculosa; Astroloma drummondii; Petrophile divaricata; Petrophile teretifolia
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii; Stylidium scandens
Herbs		Anarthria prolifera; Anarthria scabra; Desmocladus fasciculatus; Harperia confertospicata; Hypolaena fastigiata; Laxmannia sessiliflora; Patersonia occidentalis; Stylidium imbricatum
Soft grasses		Austrodanthonia caespitosa
Sedge		?Cyathochaeta avenaceae; Lepidosperma squamatum; Mesomelaena stygia; Tetraria octandra; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 11 Minesite *Eucalyptus pleurocarpa* open mallee over *Melaleuca/ Kunzea* Heath over Sedges (lower lying wetter sands at base of ridge)

Date: 14/04/05

Location: 50 H 640464 UTM 6176545

Topography: Swale (base of ridge)

Slope: Gentle
Soil texture: Sand
Soil colour: White/ Grey
Surface layer: Loose soil

Surface layer:
Rock type:
Ferrous
Leaf litter:
Plentiful
Distribution:
Wood litter:
Vegetation condition:
Excellent

Disturbance details:

Fire History: Old

STRATUM STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus communalis; Eucalyptus decurva, Eucalyptus pleurocarpa
Shrubs > 2.0 m		Hakea pandanicarpa ssp. crassifolia
Shrubs 1.0-2.0m	30-70%	Allocasuarina thuyoides; Beaufortia empetrifolia; Hakea denticulata; Hakea prostrata; Petrophile squamata ssp. squamata; Kunzea recurva; Banksia nutans var. nutans; Hakea corymbosa; Hakea pandanicarpa ssp. crassifolia; Isopogon trilobus; Melaleuca striata; Melaleuca thymoides
Shrubs 0.5-1.0m	2-10%	Beaufortia empetrifolia; Dryandra armata; Leucopogon cucullatus, Melaleuca tuberculata var. tuberculata; Petrophile teretifolia; Calothamnus gracilis
Shrubs 0.0-0.5m		Acacia biflora; Adenanthos apiculatus; Banksia gardneri var. gardneri; Banksia repens; Boronia crenulata; Darwinia vestita; Dryandra arctotidis; Hibbertia lineata; Leucopogon corynocarpus; Leucopogon cucullatus; Leucopogon woodsii; Pimelea longiflora; Verticordia habrantha; Acacia delphina; Petrophile divaricata; Petrophile teretifolia
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		?Loxocarya cinerea; ?Tricoryne elatior; Praecoxanthus aphyllus; Chordifex crispatus; Chordifex sinuosus; Conostylis pusilla; Desmocladus fasciculatus; Haemodorum laxum; Harperia confertospicata; Patersonia occidentalis
Sedge	10-30%	Cyathochaeta avenacea; Lepidosperma squamatum; Mesomelaena stygia; Schoenus subbulbosus; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 12 Minesite Mid-dense *Eucalyptus occidentalis* low woodland A over open *Melaleuca* scrub over sparse shrubs (*Acacia pulchella*) on mid-dense Sedge on grey sandy loam

Date: 15/04/05

Location: 50 H 641657 UTM 6177036 Topography: Low-lying drainage line- swamp

Slope: Negligible Soil texture: Sand- Loam

Soil colour: Grey

Surface layer: Surface crust, Humus, loose soil

Rock type: Nil
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Good

Disturbance details:

Fire History: None evident

Vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	10-30%	Eucalyptus occidentalis; Melaleuca cuticularis
Trees <5 m	10-30%	Melaleuca cuticularis
Mallee trees		Eucalyptus decipiens ssp. adesmophloia; Eucalyptus falcata
Shrubs > 2.0 m		Isopogon trilobus
Shrubs 1.0-2.0m		Hakea nitida; Isopogon trilobus
Shrubs 0.5-1.0m		Acacia pulchella var. glaberrima
Shrubs 0.0-0.5m	30-70%	Astartea aspera; Bossiaea rufa
Herbs	<10%	*Conyza parva; *Hypochaeris glabra; Anarthria laevis; Juncus pallidus; Stylidium piliferum subsp. minor; Trifolium sp.; Villarsia parnassifolia
Soft grasses		*Vulpia myuros var. megalura; Amphipogon amphipogonoides
Sedge		Lepidosperma squamatum; Schoenus ?brevisetis; Schoenus subfascicularis; Tetraria capillaris





Site 13 Minesite *Eucalyptus occidentalis* open woodland over *Melaleuca cuticularis* open scrub over dense sedge (low lying drainage line)

Date: 15/04/05

Location: 50 H 641894 UTM 6177025 Topography: Creek Base (Low lying swamp)

Slope: Gentle
Soil texture: Sandy Loam
Soil colour: Grey/ Brown
Surface layer: Humus
Rock type: Ferrous
Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	2-10%	Eucalyptus occidentalis; Banksia littoralis; Melaleuca cuticularis
Shrubs > 2.0 m	2-10%	Melaleuca cuticularis
Shrubs 1.0-2.0m		Isopogon trilobus; Kunzea recurva; Acacia subcaerulea; Adenanthos cuneatus
Shrubs 0.5-1.0m	2-10%	Acacia pulchella var. glaberrima
Shrubs 0.0-0.5m	30-70%	Astartea aspera; Daviesia preissii; Pultenaea verruculosa
Herbs	<10%	*Conyza parva; *Hypochaeris glabra; *Pseudognaphalium luteoalbum; Anarthria laevis; Juncus pallidus; Patersonia sp. Swamp Form; Stylidium piliferum subsp. minor; Villarsia parnassifolia; Comesperma flavum
Soft grasses		Deyeuxia quadriseta
Sedge		?Evandra pauciflora; Lepidosperma striatum; Schoenus sp.; Tetraria capillaris





Site 14 Minesite Eucalyptus staeri open mallee over Hakea pandanicarpa/ Agonis theiformis open scrub over dense Heath (Beaufortia empetrifolia/ Melaleuca thymoides) over open sedge

Date: 15/04/05

Location: 50 H 641405 UTM 6176919

Hill Slope Topography: Slope: Gentle Soil texture: Sand Soil colour: Grey Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Moderate Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Banksia grandis; Agonis theiformis; Banksia baxteri; Hakea baxteri; Hakea pandanicarpa ssp. crassifolia
Shrubs 1.0-2.0m	30-70%	Melaleuca tuberculata var. tuberculata; Adenanthos cuneatus; Allocasuarina humilis; Hakea corymbosa; Isopogon attenuatus; Isopogon trilobus; Melaleuca striata; Melaleuca thymoides; Acacia delphina; Beaufortia empetrifolia
Shrubs 0.5-1.0m	2-10%	Calytrix ?flavescens; Leucopogon distans ssp. distans; Banksia nutans var. nutans; Calothamnus gracilis
Shrubs 0.0-0.5m	10-30%	?Aotus intermedia; Calytrix ?flavescens; Gompholobium tomentosum; Hibbertia hibbertioides vax. meridionalis; Hypocalymma scariosum; Lysinema ciliatum; Platytheca galioides; Stachystemon polyandrus; Acacia subcaerulea; Petrophile divaricata; Petrophile teretifolia
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii; Gompholobium polymorphum
Herbs		Anarthria prolifera; Anarthria scabra; Burchardia umbellata; Chordifex crispatus; Desmocladus fasciculatus; Drosera erythrorhiza; Haemodorum ?simplex; Harperia confertospicata; Hypolaena fastigiata; Laxmannia sessiliflora; Lyginia barbata
Soft grasses		Austrodanthonia caespitosa
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena tetragona; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 15 Minsite Eucalyptus staeri mallee over Banksia baxteri open scrub over Melaleuca heath with Anarthria open sedge ground cover

Date: 15/04/05

Location: 50 H 641194 UTM 6176693

Topography: Hill Slope Slope: Moderate Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Moderate Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees <5 m		Banksia baxteri
Mallee trees	10-30%	Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Nuytsia floribunda, Banksia baxteri; Agonis theiformis
Shrubs 1.0-2.0m	30-70%	Banksia attenuata; Acacia subcaerulea; Banksia nutans var. nutans; Kunzea recurva; Melaleuca striata; Melaleuca thymoides
Shrubs 0.5-1.0m	10-30%	Adenanthos cuneatus; Calytrix similis; Hypocalymma scariosum; Isopogon attenuatus; Latrobea ?diosmifolia; Leucopogon distans ssp. distans; Beaufortia empetrifolia
Shrubs 0.0-0.5m	10-30%	Verticordia plumosa var. plumosa; Verticordia densiflora var. ?cespitosa; Acacia biflora; Andersonia simplex;Bossiaea rufa; Darwinia vestita; Hibbertia hibbertioides var. meridionalis; Lysinema ciliatum; Petrophile teretifolia; Petrophile divaricata; Gompholobium scabrum
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Anarthria prolifera; Anarthria scabra; Johnsonia lupulina; Lomandra hastilis; Lomandra nigricans; Lyginia barbata
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Schoenus caespititius; Schoenus sublateralis
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 16 Minesite Kunzea recurva/ Beaufortia empetrifolia heath over Mesomelaena tetragona open sedge.

Date: 15/04/05

Location: 50 H 640986 UTM 6176523 Topography: Swale, Low-lying Dampland

Slope: Gentle
Soil texture: Sand
Soil colour: Grey

Surface layer: Humus, Loose soil

Rock type: Ferrous Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Spares
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees		Eucalyptus decipiens ssp. adesmophloia
Shrubs > 2.0 m		Banksia littoralis; Lambertia inermis
Shrubs 1.0-2.0m	30-70%	Beaufortia empetrifolia; Banksia nutans var. nutans; Isopogon trilobus; Kunzea recurva; Melaleuca similis; Melaleuca sp.; Melaleuca suberosa; Petrophile longifolia; Petrophile seminuda; Acacia cyclops; Lambertia inermis
Shrubs 0.5-1.0m		Dryandra tenuifolia var. tenuifolia; Banksia nutans var. nutans; Melaleuca tuberculata var. tuberculata; Petrophile ericifolia ssp. ericifolia; Petrophile squamata ssp. squamata; Verticordia densiflora var. ?cespitosa
Shrubs 0.0-0.5m	2-10%	Acacia biflora; Adenanthos apiculatus; Beaufortia empetrifolia; Calytrix ?flavescens; Darwinia diosmoides; Daviesia preissii; Gompholobium tomentosum; Hibbertia hibbertioides vax. meridionalis; Hibbertia lineata; Banksia repens; Labichea punctata; Latrobea ?diosmifolia; Leucopogon cucullatus; Leucopogon distans ssp. distans; Lysinema ciliatum; Melaleuca thymoides; Stachystemon polyandrus; Stachystemon vermicularis; Stirlingia anethifolia; Tetratheca pubescens
Climbers		Cassytha racemosa forma pilosa
Herbs	<10%	*Hypochaeris glabra; ?Microtis media; Chordifex crispatus; Chordifex sinuosus; Drosera paleacea ssp. paleacea; Haemodorum ?simplex; Harperia confertospicata; Hypolaena fastigiata; Juncus pallidus; Lepyrodia macra; Meeboldina denmarkica
Soft grasses		Austrodanthonia caespitosa
Sedge		Caustis dioica; Cyathochaeta avenacea; CYPERACEAE sp.; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena tetragona; Schoenus curvifolius; Schoenus sp.; Tetraria capillaris; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 17 Minesite Eucalyptus buprestium / Eucalyptus pleurocarpa mallee over Melaleuca/ Dryandra/ Isopogon mid-dense heath (1-1.5 m) over Lyginia imberbis open sedge

Date: 15/04/05

Location: 50 H 640805 UTM 6176375

Topography: Hill Slope (lower)

Slope: Gentle
Soil texture: Sandy Loam

Soil colour: Grey

Surface layer: Humus, Loose soil

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus buprestium; Eucalyptus pleurocarpa
Shrubs > 2.0 m		Hakea nitida; Isopogon trilobus
Shrubs 1.0-2.0m	10-30%	Acacia gilbertii; Acacia subcaerulea; Beaufortia empetrifolia; Dryandra armata var. armata; Dryandra plumosa ssp. plumosa; Hakea corymbosa; Hakea denticulata; Isopogon trilobus; Kunzea recurva; Melaleuca suberosa; Pultenaea verruculosa
Shrubs 0.5-1.0m		Calothamnus gracilis; Melaleuca striata; Melaleuca thymoides; Melaleuca tuberculata var. tuberculata; Pimelea longiflora; Spyridium majoranifolium; Petrophile divaricata; Petrophile ericifolia ssp. ericifolia
Shrubs 0.0-0.5m	10-20%	Allocasuarina thuyoides; Astroloma drummondii; Acacia delphina; Banksia gardneri var. gardneri; Banksia repens; Darwinia diosmoides; Gompholobium confertum; Gompholobium knightianum; Hibbertia lineata; Leucopogon gibbosus; Tetratheca pubescens
Climbers		Billardiera sericea
Herbs		Anarthria gracilis; Anarthria prolifera; Conostylis pusilla; Desmocladus fasciculatus; Hypolaena fastigiata; Leporella fimbriata; Lomandra pauciflora; Stylidium piliferum subsp. minor; Stylidium repens
Sedge		Lepidosperma carphoides; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Schoenus ?sesquispiculus





Site 18 Minesite Eucalyptus staeri very open mallee over Lambertia inermis/ Hakea pandanicarpa/ Agonis theiformis scrub over Melaleuca/ Petrophile/ Xanthorrhoea dense heath over open sedge

Date: 15/04/05

Location: 50 H 640314 UTM 6176122

Topography: Hill Slope (lower)

Slope: Gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Plentiful Vegetation condition: Excellent Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	<2%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus pleurocarpa; Eucalyptus staeri
Shrubs > 2.0 m	30-70%	Hakea cucullata; Lambertia inermis; Agonis theiformis; Banksia baxteri; Hakea corymbosa; Hakea pandanicarpa ssp. crassifolia; Hakea trifurcata
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Banksia baueri; Dryandra plumosa ssp. plumosa; Isopogon trilobus; Kunzea recurva; Melaleuca striata; Melaleuca tuberculata var. tuberculata; Petrophile ericifolia ssp. ericifolia
Shrubs 0.5-1.0m		Adenanthos cuneatus; Allocasuarina humilis; Banksia nutans var. nutans; Beaufortia empetrifolia; Calothamnus gracilis; Isopogon attenuatus; Melaleuca thymoides; Petrophile squamata ssp. squamata; Petrophile teretifolia; Adenanthos apiculatus; Astroloma drummondii
Shrubs 0.0-0.5m	2-10%	Acacia biflora; Acacia delphina; Adenanthos apiculatus; Bossiaea rufa; Calytrix similis; Conospermum caeruleum ssp. caeruleum; Dryandra tenuifolia; Gompholobium tomentosum; Dryandra tenuifolia var. tenuifolia; Gompholobium venustum; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Hovea trisperma; Jacksonia grevilleoides; Leucopogon affin. elegans; Leucopogon corynocarpus; Leucopogon distans ssp. distans; Lysinema ciliatum; Melaleuca suberosa
Climbers		Drosera ?menziesii
Herbs		Anarthria gracilis; Anarthria prolifera; Anigozanthos flavidus; Chordifex leucoblepharus; Chordifex sinuosus; Harperia confertospicata; Hypolaena fastigiata; Laxmannia sessiliflora; Stylidium repens
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Schoenus subbarbatus; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 19 Minesite Eucalyptus occidentalis/ Eucalyptus decipiens ssp. adesmophloia mallee over Lambertia inermis open scrub over Melaleuca spp. Low Scrub B over Sedgeland

Date: 16/04/05

Location: 50 H 639744 UTM 6176099

Topography: Plain (lower lying)

Slope: Negligible
Soil texture: Loamy Sand
Soil colour: White/ Grey
Surface layer: Humus, Loose Soil

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m		Eucalyptus occidentalis
Trees <5 m		Lambertia inermis
Mallee trees	10-30%	Eucalyptus decipiens ssp. adesmophloia
Shrubs > 2.0 m	2-10%	Lambertia inermis; Hakea nitida
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Banksia baueri; Beaufortia empetrifolia; Dryandra armata var. armata; Dryandra plumosa ssp. plumosa; Isopogon trilobus; Kunzea recurva; Melaleuca striata; Melaleuca thymoides
Shrubs 0.5-1.0m		Acacia pulchella var. glaberrima
Shrubs 0.0-0.5m	30-70%	Dryandra tenuifolia var. tenuifolia; Gompholobium confertum; Petrophile teretifolia
Herbs		?Bossiaea eriocarpa; Anarthria laevis; Harperia confertospicata; Lomandra hastilis
Sedge		Lepidosperma squamatum; Lyginia imberbis; Tetraria capillaris





Site 20 Minesite scrub over sedgeland

Eucalytpus occidentalis Low Woodland A over Melaleuca cuticularis open

Date: 16/04/05

Location: 50 H 639657 UTM 6175632

Topography: Swamp Land
Slope: Negligible
Soil texture: Loamy Sand
Soil colour: White/ Grey
Surface layer: Humus, Loose soil

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Sparse
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	2-10%	Eucalyptus occidentalis
Trees <5 m		Melaleuca cuticularis
Shrubs > 2.0 m	2-10%	Melaleuca cuticularis
Shrubs 1.0-2.0m		Kunzea recurva
Shrubs 0.5-1.0m		Acacia pulchella var. glaberrima
Herbs		*Rumex crispus; Anarthria laevis; Juncus pallidus
Sedge	>70%	Tetraria capillaris





Site 21 Minesite Eucalyptus staeri open mallee over Agonis theiformis/ Dryandra plumosa ssp. plumosa open scrub over Melaleuca striata/ Banksia nutans Low Scrub B over open sedges on ironstone upper slopes/ crests

Date: 16/04/05

Location: 50 H 640246 UTM 6176651 Topography: Hill crest (upper slope)

Slope: Moderate

Soil texture: Sand (+/- floaters)
Soil colour: White/ Grey

Surface layer: Fine gravel, Stones/ boulders (Ironstone close to the surface)

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Hakea cucullata; Agonis theiformis; Dryandra armata; Dryandra plumosa ssp. plumosa
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Allocasuarina humilis; Banksia nutans var. nutans; Beaufortia anisandra; Calothamnus gracilis; Dryandra quercifolia; Hakea corymbosa; Hakea ruscifolia; Melaleuca striata; Petrophile divaricata; Petrophile seminuda
Shrubs 0.5-1.0m	10-30%	Calothamnus gracilis; Daviesia preissii; Isopogon attenuatus; Melaleuca striata; Melaleuca thymoides; Petrophile teretifolia
Shrubs 0.0-0.5m	10-30%	Lambertia inermis; Acacia biflora; Acacia delphina; Allocasuarina thuyoides; Andersonia simplex; Astroloma drummondii; Astroloma pallidum; Banksia gardneri var. gardneri; Boronia crassifolia; Calytrix ?flavescens; Dryandra arctotidis; Gompholobium knightianum; Gompholobium venustum; Hibbertia lineata; Hovea trisperma; Leucopogon woodsii; Lysinema ciliatum; Melaleuca tuberculata var. tuberculata; Monotoca tamariscina; Pultenaea verruculosa; Tetratheca pubescens
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs	<10%	?Bossiaea eriocarpa; Anarthria prolifera; Chordifex sinuosus; Desmocladus fasciculatus; Stylidium repens
Sedge		?Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Schoenus subbulbosus
Tree like monocot		Kingia australis; Xanthorrhoea brunonis var. brunonis





Site 22 Minesite Eucalyptus pleurocarpa/ Eucalyptus falcata mallee over Beaufortia empetrifolia Low Scrub B over Dryandra/ Banksia Open Dwarf Scrub C over Sedgeland

Date: 16/04/05

Location: 50 H 640454 UTM 6176314 Topography: Lowland (at base of Plain)

Excellent

Slope: Gentle Loamy Sand Soil texture: Soil colour: Grey Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Plentiful

Vegetation condition: Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus falcata; Eucalyptus pleurocarpa; Eucalyptus uncinata
Shrubs > 2.0 m		Hakea cucullata
Shrubs 1.0-2.0m	10-30%	Banksia dryandroides; Beaufortia empetrifolia; Dryandra plumosa ssp. plumosa; Dryandra tenuifolia var. tenuifolia; Kunzea recurva
Shrubs 0.5-1.0m	2-10%	Allocasuarina thuyoides; Daviesia preissii; Hakea trifurcata; Leucopogon cucullatus; Melaleuca tuberculata var. tuberculata; Petrophile longifolia; Petrophile seminuda; Petrophile squamata ssp. squamata; Petrophile teretifolia
Shrubs 0.0-0.5m	30-70%	?Synaphea petiolaris; Andersonia sprengelioides; Banksia gardneri var. gardneri; Banksia repens; Dryandra tenuifolia var. tenuifolia; Gompholobium knightianum; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Melaleuca ?societatis; Melaleuca suberosa; Synaphea petiolaris ssp. petiolaris; Verticordia habrantha
Climbers		Billardiera sericea
Herbs		?Lomandra nutans; Anarthria gracilis; Chordifex sinuosus; Conostylis pusilla; Drosera paleacea ssp. paleacea; Hypolaena pubescens; Lomandra pauciflora; Stylidium piliferum subsp. minor; Stylidium rupestre
Soft grasses		Neurachne alopecuroidea
Sedge		Lepidosperma squamatum; Lyginia imberbis; Mesomelaena graciliceps; Mesomelaena stygia
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 23 Minesite Eucalytpus falcata/ Eucalyptus pleurocarpa open mallee over Beaufortia empetrifolia/ Hakea denticulata open heath over Sedgeland

Date: 16/04/05

Location: 50 H 640564 UTM 6176177

Topography: Plain (lower lying plain at base of main ridge)

Slope: Gentle Soil texture: Loamy Sand

Soil colour: Grey

Surface layer: Loose soil, Coarse gravel/ Pebbles, Stones/boulders

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Plentiful
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus pleurocarpa; Eucalyptus falcata
Shrubs > 2.0 m		Hakea cucullata
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Dryandra plumosa ssp. plumosa; Hakea denticulata; Melaleuca thymoides; Kunzea recurva; Beaufortia empetrifolia
Shrubs 0.5-1.0m		Calothamnus gracilis; Daviesia preissii; Melaleuca suberosa; Melaleuca tuberculata var. tuberculata; Petrophile seminuda; Petrophile squamata ssp. squamata
Shrubs 0.0-0.5m	30-70%	Allocasuarina thuyoides; Andersonia sprengelioides; Astroloma drummondii; Banksia gardneri var. gardneri; Banksia repens; Dryandra arctotidis; Dryandra tenuifolia var. tenuifolia; Gompholobium ?burtonoides; Gompholobium knightianum; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Leucopogon gibbosus; Leucopogon woodsii; Persoonia striata; Petrophile teretifolia; Verticordia habrantha
Climbers		Drosera ?menziesii
Herbs		Anarthria gracilis; Praecoxanthus aphyllus; Chordifex sinuosus; Conostylis pusilla; Hypolaena pubescens; Leporella fimbriata; Lomandra pauciflora; Stylidium rupestre
Soft grasses		*Ehrharta longiflora; Amphipogon amphipogonoides
Sedge		Lepidosperma squamatum; Mesomelaena stygia; Schoenus subbarbatus
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 24 Minesite Eucalyptus staeri open Low Mallee over Melaleuca striata Low Scrub B over Dryandra armata/ Xanthorrhoea brunonis var. brunonis Dwarf Scrub C over Sedges

Date: 16/04/05

Location: 50 H 638294 UTM 6175208

Topography: Undulating Plain

Slope: Gentle Soil texture: Loamy Sand

Soil colour: Grey

Surface layer: Stones/ boulders

Rock type: Ferrous Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Dryandra plumosa ssp. plumosa; Hakea nitida; Kunzea recurva; Melaleuca striata
Shrubs 0.5-1.0m	10-30%	Allocasuarina humilis; Beaufortia anisandra; Calothamnus gracilis; Dryandra armata; Melaleuca thymoides; Petrophile seminuda; Melaleuca suberosa
Shrubs 0.0-0.5m		Allocasuarina thuyoides; Banksia gardneri var. gardneri; Banksia repens; Dryandra arctotidis; Dryandra tenuifolia var. tenuifolia; Hibbertia lineata; Pimelea sp.
Climbers		Drosera ?menziesii
Herbs		?Lomandra nutans; Anarthria gracilis; Chordifex sinuosus; Conostylis pusilla; Drosera paleacea ssp. paleacea; Hypolaena fastigiata; Hypolaena pubescens; Leporella fimbriata; Opercularia hispidula; Stylidium repens; Dampiera sacculata
Soft grasses		Amphipogon amphipogonoides
Sedge	10-30%	Lepidosperma carphoides; Lepidosperma squamatum; Mesomelaena stygia; Mesomelaena tetragona; Tetraria capillaris
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 25 Minesite Eucalyptus staeri/ Eucalyptus falcata Open Mallee over Agonis theiformis open scrub over Melaleuca striata/ Dryandra armata/ Xanthorrhoea brunonis var. brunonis / Low Scrub B over Sedges

Date: 16/04/05

Location: 50 H 637897 UTM 6175247

Topography: Undulating Plain (Lower lying area of plain to west)

Slope: Gentle
Soil texture: Loamy Sand

Soil colour: Grey

Surface layer: Surface level plates or boulders Rock type: Ferrous, Laterite Floaters at surface

Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus falcata; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Agonis theiformis; Hakea denticulata
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Agonis theiformis; Dryandra armata; Melaleuca striata
Shrubs 0.5-1.0m		Acacia gilbertii; Kunzea recurva
Shrubs 0.0-0.5m		Acacia biflora; Banksia gardneri var. gardneri; Daviesia preissii; Dryandra arctotidis; Hibbertia lineata; Lechenaultia formosa; Petrophile seminuda; Tetratheca pubescens
Climbers		Billardiera sericea; Chorizema diversifolium
Herbs		Chordifex crispatus; Chordifex sinuosus; Conostylis pusilla; Drosera erythrorhiza; Hypolaena pubescens; Opercularia hispidula; Stylidium repens; Stylidium sp.; Tricoryne elatior
Soft grasses		Austrostipa flavescens
Sedge	30-70%	Lepidosperma squamatum; Mesomelaena stygia; Mesomelaena tetragona; Schoenus subbarbatus; Tetraria capillaris
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 26 Minesite *Eucalyptus preissiana* dense low mallee over *Xanthorrhoea brunonis* var. *brunonis*/ Open Low Scrub B over Open Sedge

Date: 17/04/05

Location: 50 H 637695 UTM 6175289

Topography: Plain (lower lying)

Slope: Negligible
Soil texture: Loamy Sand
Soil colour: Grey

Soil colour: Grey
Surface layer: Loose Soil
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly Under Shrubs

Wood litter: Sparse Vegetation condition: Poor

Disturbance details: Heavily Sheep grazed understorey, unfenced

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	30-70%	Eucalyptus angulosa; Eucalyptus communalis; Eucalyptus decipiens ssp. adesmophloia; Eucalyptus preissiana; Eucalyptus staeri
Shrubs 1.0-2.0m	2-10%	Dryandra armata
Shrubs 0.5-1.0m	2-10%	Acacia subcaerulea; Agonis theiformis; Petrophile divaricata
Shrubs 0.0-0.5m	2-10%	Banksia gardneri var. gardneri; Boronia spathulata; Gompholobium knightianum; Hibbertia lineata; Hovea trisperma
Climbers		Billardiera sericea
Herbs		Chordifex sinuosus; Conostylis pusilla; Hypolaena pubescens; Lepyrodia macra; Opercularia hispidula
Soft grasses		Amphipogon amphipogonoides; Austrodanthonia caespitosa
Sedge		Lepidosperma carphoides; Lepidosperma squamatum; Mesomelaena stygia; Tetraria capillaris
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 27 Minesite *Eucalyptus staeri/ Eucalyptus pleurocarpa* open mallee over Low Scrub A over Open Sedge

Date: 17/04/05

Location: 50 H 638371 UTM 6175653

Topography: Undulating Plain (gentle sloping plain on lower slopes south below ridge. Grey

sandy soil on laterite)

Slope: Gentle
Soil texture: Loamy Sand

Soil colour: Grey

Surface layer: Humus, Loose Soil

Rock type: Ferrous Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details: Grazing impact particulary at edges

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus falcata; Eucalyptus pleurocarpa; Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Agonis theiformis; Hakea cucullata; Nuytsia floribunda
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Dryandra armata var. armata; Dryandra plumosa ssp. plumosa; Melaleuca striata
Shrubs 0.5-1.0m	2-10%	Beaufortia anisandra; Kunzea recurva
Shrubs 0.0-0.5m	2-10%	Allocasuarina thuyoides; Banksia gardneri var. gardneri; Hibbertia lineata; Hovea trisperma; Lechenaultia formosa
Climbers		Billardiera sericea; Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Chordifex sinuosus; Conostylis pusilla; Desmocladus fasciculatus; Drosera erythrorhiza; Hypolaena exsulca; Hypolaena fastigiata; Hypolaena pubescens; Leporella fimbriata; Lepyrodia drummondiana; Stylidium rupestre; Stylidium sp.
Soft grasses		Amphipogon amphipogonoides
Sedge		Cyathochaeta avenacea; Lepidosperma squamatum; Mesomelaena tetragona; Schoenus sublateralis; Schoenus sublaxus; Tetraria capillaris
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 28 Minesite Mixed species Mallee over *Melaleuca striata/ Dryandra plumosa* ssp. *plumosa* Low Scrub B over Open Sedge

Date: 17/04/05

Location: 50 H 638657 UTM 6175824

Topography: Undulating Plain (lowest north-east corner of remnant, laterite brought to

surface on cleared perimeter)

Slope: Gentle
Soil texture: Sand
Soil colour: White/ Grey

Surface layer: Loose Soil, Surface level plates or boulders, laterite floaters

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus angulosa; Eucalyptus buprestium; Eucalyptus decipiens ssp. adesmophloia; Eucalyptus decurva; Eucalyptus falcata; Eucalyptus pleurocarpa; Eucalyptus staeri
Shrubs > 2.0 m		Astroloma drummondii; Hakea denticulata; Banksia grandis; Allocasuarina huegeliana; Nuytsia floribunda
Shrubs 1.0-2.0m	10-30%	Acacia gilbertii; Acacia subcaerulea; Agonis theiformis; Dryandra armata; Dryandra plumosa ssp. plumosa; Kunzea recurva; Melaleuca striata; Hakea cucullata
Shrubs 0.5-1.0m		Beaufortia anisandra; Gastrolobium retusum; Petrophile seminuda
Shrubs 0.0-0.5m		Acacia delphina; Adenanthos apiculatus; Banksia gardneri var. gardneri; Darwinia diosmoides; Daviesia preissii; Dryandra tenuifolia var. tenuifolia; Hibbertia lineata; Labichea punctata; Petrophile teretifolia
Herbs		Chordifex sinuosus; Conostylis pusilla; Desmocladus fasciculatus; Haemodorum laxum; Hypolaena pubescens; Lomandra hastilis; Opercularia hispidula; Pterostylis vittata
Soft grasses		Amphipogon amphipogonoides
Sedge	2-10%	Lepidosperma carphoides; Lepidosperma squamatum; Mesomelaena stygia; Mesomelaena tetragona; Schoenus laevigatus
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 29 Minesite Eucalyptus staeri open mallee over Agonis theiformis dense scrub over Melaleuca striata/ Acacia subcaerulea Low Scrub

Date: 17/04/05

Location: 50 H 638716 UTM 6175460 (south-east corner of remnant)

Topography: Undulating Plain Slope: Gentle/ Negligible

Soil texture: Sand Soil colour: Grey

Surface layer: Loose soil, surface level plates or boulders, skeletal sands over laterite

Rock type: Ferrous

Leaf litter: Distribution: Wood litter:

Vegetation condition: Disturbance details:

Fire History: Old

Vegetation Cover STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	<2%	Eucalyptus communalis; Eucalyptus decurva; Eucalyptus pleurocarpa; Eucalyptus staeri
Shrubs > 2.0 m	30-70%	Agonis theiformis; Dryandra plumosa ssp. plumosa; Hakea nitida; Banksia grandis; Lambertia inermis
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Agonis theiformis; Comesperma virgatum; Dryandra armata; Dryandra plumosa ssp. plumosa; Dryandra quercifolia; Hakea denticulata; Melaleuca striata; Petrophile seminuda
Shrubs 0.5-1.0m		Acacia lateriticola; Beaufortia anisandra
Shrubs 0.0-0.5m		Astroloma pallidum; Boronia crenulata; Boronia subsessilis; Chorizema nanum; Gompholobium confertum; Gompholobium knightianum; Hibbertia hibbertioides vax. meridionalis; Hibbertia lineata; Hovea trisperma; Leucopogon gibbosus; Lysinema ciliatum; Pimelea longiflora; Pimelea suaveolens ssp. suaveolens; Astroloma drummondii
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Anarthria prolifera; Chordifex sinuosus; Drosera erythrorhiza; Haemodorum laxum; Hypolaena fastigiata; Hypolaena pubescens; Leporella fimbriata; Opercularia hispidula; Stylidium piliferum subsp. minor; Dampiera sacculata
Soft grasses		Amphipogon amphipogonoides; Austrodanthonia caespitosa
Sedge		?Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Schoenus ?sesquispiculus; Schoenus subbarbatus; Schoenus sublaxus; Tetraria capillaris
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 30 Minesite Eucalyptus occidentalis Low Woodland A over Banksia littoralis/ Melaleuca/ Hakea Open Scrub over dense Sedges

Date: 17/04/05

Location: 50 H 639480 UTM 6174577 Topography: Localised Swamp Foci

Slope: Negligible
Soil texture: Loamy Sand

Soil colour: Grey
Surface layer: Humus
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	10-30%	Eucalyptus occidentalis; Banksia littoralis
Mallee trees		Eucalyptus angulosa; Eucalyptus decipiens ssp. adesmophloia; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Hakea varia; Melaleuca cuticularis
Herbs	10-30%	*Cirsium vulgare; *Conyza sumatrensis; Juncus pallidus; Trifolium sp.
Soft grasses		*Lagurus ovatus
Sedge	10-30%	Lepidosperma striatum; Schoenus subfascicularis





Site 31 Minesite Eucalyptus staeri mallee over Cyathochaeta/ Xanthorrhoea brunonis var. brunonis open Dwarf Scrub over Open Sedges

Date: 17/04/05

Location: 50 H 639708 UTM 6174182

Topography: Low land (intermittent drainage line across paddock)

Slope: Gentle- Negligible

Soil texture: Loamy Sand

Soil colour: Grey
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly under Shrubs

Wood litter: Moderate Vegetation condition: Poor

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus staeri
Shrubs > 2.0 m		Banksia baxteri; Hakea baxteri; Hakea ferruginea; Banksia attenuata; Lambertia inermis; Nuytsia floribunda
Shrubs 1.0-2.0m		Acacia subcaerulea; Adenanthos cuneatus; Agonis theiformis; Calothamnus gracilis; Hypocalymma strictum ssp. elongatum; Kunzea recurva; Melaleuca striata; Acacia saligna; Banksia attenuata; Banksia grandis
Shrubs 0.0-0.5m	2-10%	Acacia delphina; Melaleuca thymoides
Climbers		Drosera ?menziesii
Herbs		*Cirsium vulgare; *Hypochaeris glabra; Anarthria scabra; Dasypogon bromeliifolius; Hypolaena exsulca; Lomandra caespitosa; Trifolium sp.; *Solanum nigrum; *Conyza sumatrensis
Soft grasses		*Lagurus ovatus; ?Austrodanthonia pilosa
Sedge	10-30%	?Schoenus laevigatus; Cyathochaeta avenacea; Mesomelaena tetragona; Schoenus caespititius
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 32 Minesite Eucalyptus staeri open mallee over Lambertia inermis/ Agonis theiformis scrub over Melaleuca heath

Date: 17/04/05

Location: 50 H 638431 UTM 6176934 Topography: Hill Slope (Upland slope)

Slope: Gentle
Soil texture: Sand
Soil colour: Grey

Surface layer: Loose soil (Shallow grey sand 1200mm over laterite)

Rock type: Ferrous Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Moderate
Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Agonis theiformis; Hakea baxteri; Hakea trifurcata; Lambertia inermis; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Agonis theiformis, Allocasuarina humilis; Beaufortia empetrifolia; Hakea corymbosa; Banksia baxteri; Isopogon trilobus; Kunzea recurva; Melaleuca thymoides; Petrophile ericifolia ssp. ericifolia; Banksia attenuata
Shrubs 0.0-0.5m		Adenanthos cuneatus; Darwinia diosmoides; Gompholobium capitatum; Leucopogon gibbosus; Melaleuca striata
Climbers		Cassytha racemosa forma pilosa
Herbs		*Acetosella vulgaris; *Aira caryphyllea; *Cirsium vulgare; *Conyza sumatrensis; ASTERACEAE sp.; Haemodorum spicatum; Hypolaena pubescens; Juncus pallidus; Lomandra hastilis; Patersonia occidentalis; Stylidium sp.; *Solanum nigrum
Soft grasses	<10%	*Ehrharta longiflora; *Lagurus ovatus; *Vulpia myuros var. megalura
Sedge		Mesomelaena graciliceps
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 33 Minesite Eucalyptus staeri open mallee over Melaleuca striata heath (1-2m) on low sandy rise

Date: 18/04/05

Location: 50 H 639352 UTM 6178681

Topography: Low Rise
Slope: Gentle
Soil texture: Sand
Soil colour: White
Surface layer: Loose Soil
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse
Vegetation condition: Excellent

Disturbance details: Numerous rabbit burrows

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus staeri
Shrubs > 2.0 m		Banksia attenuata; Banksia coccinea; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Bossiaea rufa; Hypocalymma strictum ssp. elongatum; Melaleuca striata; Melaleuca sp.
Shrubs 0.5-1.0m		Lysinema ciliatum; Melaleuca thymoides; Petrophile seminuda
Shrubs 0.0-0.5m		Acacia delphina; Gompholobium scabrum
Climbers		Drosera ?menziesii
Herbs		*Avena barbata; Anarthria prolifera; Burchardia umbellata; Praecoxanthus aphyllus; Chordifex crispatus; Chordifex sinuosus; Drosera erythrorhiza; Haemodorum ?simplex; Harperia confertospicata; Hypolaena exsulca; Hypolaena fastigiata; Lomandra hastilis; Lyginia barbata
Soft grasses		*Ehrharta longiflora; *Hordeum leporinum; *Lagurus ovatus; Amphipogon amphipogonoides; Austrostipa flavescens
Sedge		Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Schoenus caespititius; Schoenus subbarbatus; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 34 Minesite Eucalyptus staeri open mallee over Melaleuca striata heath

Date: 18/04/05

Location: 50 H 639642 UTM 6178293

Topography: Undulating Plain

Slope: Gentle
Soil texture: Sand
Soil colour: White
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old (approximately 8 years post fire- charcoal on trunks of some trees)

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m		Banksia baxteri; Banksia attenuata; Banksia coccinea; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Melaleuca striata
Shrubs 0.5-1.0m		Adenanthos cuneatus; Beaufortia empetrifolia; Hovea trisperma; Melaleuca thymoides
Shrubs 0.0-0.5m		Acacia delphina; Hypocalymma strictum ssp. elongatum
Climbers		Drosera ?menziesii
Herbs		*Aira caryophyllea; *Conyza sumatrensis; Anarthria prolifera; Burchardia umbellata; Drosera paleacea ssp. paleacea; Haemodorum spicatum; Hypolaena fastigiata; Laxmannia squarrosa; Lomandra hastilis; Lomandra nigricans
Soft grasses		Amphipogon amphipogonoides; Austrodanthonia caespitosa
Sedge		Cyathochaeta avenacea; Lyginia imberbis; Schoenus caespititius





Site 35 Minesite Eucalyptus staeri open mallee over Melaleuca striata/ Agonis theiformis/ Xanthorrhoea brunonis var. brunonis Dwarf Scrub C over Dwarf Scrub D

Date: 15/04/05

Location: 50 H 639618 UTM 6177631

Topography: Hill Slope (some laterite floaters present)

Slope: Moderate
Soil texture: Sand
Soil colour: Grey

Surface layer: Loose soil, surface level plates or boulders

Rock type: Ferrous Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Moderate (fire two years previous)

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs > 2.0 m		Hakea baxteri; Banksia grandis; Nuytsia floribunda
Shrubs 0.5-1.0m	10-30%	Allocasuarina humilis; Banksia baueri; Beaufortia anisandra; Chorizema glycinifolium; Dryandra quercifolia; Hakea corymbosa; Kunzea recurva
Shrubs 0.0-0.5m	10-30%	Acacia lateriticola; Acacia subcaerulea; Beaufortia anisandra; Bossiaea rufa; Dryandra plumosa ssp. plumosa; Gompholobium venustum; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Leucopogon gibbosus; Melaleuca striata; Pultenaea verruculosa; Tetratheca pubescens
Climbers		Kennedia coccinea
Herbs		*Cirsium vulgare; *Hypochaeris glabra; *Rumex crispus; Anarthria prolifera; Anarthria scabra; Desmocladus fasciculatus; Drosera erythrorhiza; Harperia confertospicata; Hypolaena fastigiata; Hypolaena pubescens; Lomandra hastilis; Stylidium sp.
Soft grasses		Amphipogon amphipogonoides
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma longitudinale; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Schoenus nanus; Schoenus subbarbatus; Schoenus sublaxus; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 36 Minesite Eucalyptus angulosa / Eucalyptus falcata dense mallee over Hakea nitida/ Isopogon trilobus/ Hakea laurina over Open Sedge Gahnia ancistrophylla

Date: 18/04/05

Location: 50 H 638037 UTM 6177398

Topography: Undulating Plain (lower lying plain below sandy rise to north)

Slope: Gentle

Soil texture: Loamy- Sand/ Clay Soil colour: Grey/ Brown Surface layer: Humus, Loose soil

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	30-70%	Eucalyptus angulosa; Eucalyptus falcata; Eucalyptus preissiana; Eucalyptus uncinata
Shrubs > 2.0 m	<2%	Hakea nitida; Isopogon trilobus; Hakea laurina
Shrubs 0.5-1.0m		Acacia lateriticola
Herbs		*Cirsium vulgare; *Hypochaeris glabra; Juncus pallidus
Soft grasses		Amphipogon amphipogonoides; Austrostipa hemipogon
Sedge	2-10%	Gahnia ancistrophylla; Lepidosperma squamatum





Site 37 Minesite Eucalyptus staeri open mallee over Hakea baxteri/ Banksia attenuata/ Lambertia inermis scrub over Banksia baueri/ Melaleuca striata/ Dryandra plumosa ssp. plumosa Heath

Date: 18/04/05

Location: 50 H 637823 UTM 6177760

Topography: Undulating Plain (low sandy rise-dune)

Slope: Gentle Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Moderate Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus falcata; Eucalyptus staeri
Shrubs > 2.0 m	10-30%	Banksia baxteri; Hakea baxteri; Hakea pandanicarpa ssp. crassifolia; Banksia attenuata; Lambertia inermis; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Acrotriche sp. Bremer Bay; Acacia subcaerulea; Banksia baueri; Dryandra plumosa ssp. plumosa; Dryandra quercifolia; Hakea corymbosa; Hakea denticulata; Hakea ferruginea; Hakea ruscifolia; Isopogon trilobus; Kunzea recurva; Melaleuca striata; Petrophile ericifolia ssp. ericifolia; Petrophile seminuda
Shrubs 0.5-1.0m		?Kunzea ericifolia; Adenanthos cuneatus; Beaufortia anisandra; Calothamnus gracilis; Dryandra armata; Melaleuca thymoides; Petrophile teretifolia
Shrubs 0.0-0.5m		Acacia biflora; Astroloma drummondii; Dryandra brownii; Dryandra calophylla
Herbs		*Aira caryophyllea; *Hypochaeris glabra; Anarthria prolifera; Anarthria scabra; Chordifex crispatus; Drosera erythrorhiza; Goodenia incana; Haemodorum spicatum; Harperia confertospicata; Hypolaena fastigiata; Hypolaena pubescens; Lomandra hastilis; Lomandra nigricans; Lomandra rupestris; Villarsia parnassifolia
Soft grasses		*Ehrharta calycina; *Ehrharta longiflora; Austrodanthonia caespitosa
Sedge		Cyathochaeta avenacea; Lepidosperma squamatum; Lepidosperma striatum; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 38 Minesite Eucalyptus occidentalis Low Forest A

Date: 18/04/05

Location: 50 H 640195 UTM 6179058

Topography: Drainage Foci- low lying swampland

Slope: Negligible Sandy Loam Soil texture: Brown Soil colour: Surface layer: Humus Rock type: Ferrous Leaf litter: Sparse Distribution: Widespread Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	2-10%	Eucalyptus occidentalis
Mallee trees	30-70%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus occidentalis
Shrubs > 2.0 m	<2%	Hakea nitida; Melaleuca cuticularis
Herbs		ASTERACEAE sp.; Juncus pallidus
Soft grasses		Amphipogon amphipogonoides
Sedge	<2%	Lepidosperma ?leptostachyum; Schoenus subfascicularis





Site 39 Minesite Eucalyptus occidentalis Low Forest A (Dense Mallee)

Date: 18/04/05

Location: 50 H 640379 UTM 6178925 Topography: Drainage Foci (Swampland)

Slope: Negligible Soil texture: Sandy Loam Soil colour: Brown Surface layer: Humus Rock type: Ferrous Leaf litter: Moderate Distribution: Widespread Wood litter: Moderate Vegetation condition: Good

Disturbance details:

Fire History: Old

vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	2-10%	Eucalyptus occidentalis
Mallee trees	30-70%	Eucalyptus occidentalis
Shrubs > 2.0 m	<2%	Hakea nitida; Melaleuca cuticularis
Herbs		*Hypochaeris glabra; *Pseudognaphalum luteoalbum; Juncus pallidus; Trifolium sp.
Soft grasses		Amphipogon amphipogonoides; Austrostipa hemipogon
Sedge	2-10%	Lepidosperma squamatum; Lepidosperma striatum; Schoenus subfascicularis





Site 40 Minesite Eucalyptus decipiens ssp. adesmophloia open mallee over Melaleuca striata/ Lomandra hastilis heath over open Sedges

Date: 18/04/05

Location: 50 H 640504 UTM 6178894 Topography: Undulating Plain (low sandy rise)

Slope: Moderate Soil texture: Sand Soil colour: White Surface layer: Loose soil Rock type: Ferrous Leaf litter: Plentiful Distribution: Widespread Wood litter: Sparse Vegetation condition: Excellent

Disturbance details: Degraded at northern end

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia
Shrubs > 2.0 m		Banksia baxteri; Hakea nitida; Banksia attenuata; Nuytsia floribunda
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Allocasuarina thuyoides; Banksia baueri; Beaufortia empetrifolia; Isopogon trilobus; Kunzea recurva; Melaleuca striata; Melaleuca thymoides
Shrubs 0.5-1.0m		Adenanthos cuneatus; Calytrix similis; Darwinia vestita; Petrophile seminuda; Petrophile teretifolia
Shrubs 0.0-0.5m		Acacia biflora; Acacia delphina; Andersonia simplex; Banksia gardneri var. gardneri; Banksia repens; Boronia crassifolia; Hibbertia lineata; Jacksonia grevilleoides; Logania stenophylla; Monotaxis grandiflora var. grandiflora; Monotoca tamariscina; Verticordia ?chrysantha
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii; Chorizema cytisoides
Herbs		*Aira caryophyllea; Anarthria prolifera; Chordifex crispatus; Drosera erythrorhiza; Haemodorum ?simplex; Harperia confertospicata; Lomandra hastilis; Lyginia barbata
Soft grasses		Austrodanthonia caespitosa
Sedge	2-10%	Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena tetragona; Schoenus caespititius; Schoenus subbarbatus





Site 41 Minesite Eucalyptus staeri open mallee over Banksia attenuata Open Scrub over Melaleuca striata/ Melaleuca thymoides Heath over Lyginia imberbis Open Sedge

Date: 18/04/05

Location: 50 H 639894 UTM 6179045

Topography: Hill Crest (upper crest of low sandy ridge)

Slope: Gentle
Soil texture: Sand
Soil colour: White
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	<2%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Banksia attenuata; Lambertia inermis
Shrubs 1.0-2.0m	30-70%	Acacia subcaerulea; Beaufortia empetrifolia; Kunzea recurva; Melaleuca striata; Melaleuca thymoides; Banksia attenuata
Shrubs 0.5-1.0m	2-10%	Adenanthos cuneatus; Banksia baueri; Calytrix similis; Melaleuca thymoides; Petrophile seminuda
Shrubs 0.0-0.5m		Acacia delphina; Andersonia simplex; Bossiaea rufa; Calytrix ?flavescens; Hibbertia lineata; Latrobea ?diosmifolia; Lysinema ciliatum
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		*Aira caryophyllea; Anarthria laevis; Anarthria prolifera; Caladenia sp.; Chordifex crispatus; Drosera erythrorhiza; Hypolaena exsulca; Hypolaena fastigiata; Johnsonia lupulina; Juncus pallidus; Patersonia occidentalis; Patersonia sp.
Soft grasses		*Ehrharta longiflora; Austrodanthonia caespitosa
Sedge		Caustis dioica; Lepidosperma squamatum; Lyginia imberbis; Schoenus caespititius; Schoenus curvifolius; Schoenus sublateralis





Site 42 Minesite Eucalyptus staeri Open Mallee over Kennedia coccinea / Melaleuca striata / Acacia lateriticola Open Dwarf Scrub C over mixed Dwarf Scrub D

Date: 18/04/05

Location: 50 H 639861 UTM 6177691

Topography: Hill Slope
Slope: Moderate
Soil texture: Sand
Soil colour: White
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Moderate (2-3 years post fire)

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri
Shrubs 0.5-1.0m	2-10%	Acacia subcaerulea; Agonis theiformis; Melaleuca striata
Shrubs 0.0-0.5m	10-30%	Acacia biflora; Acacia lateriticola; Acacia tetragonocarpa; Adenanthos cuneatus; Banksia baueri; Banksia baxteri; Banksia gardneri var. gardneri; Boronia ramosa ssp. anethifolia; Bossiaea rufa; Calothamnus gracilis; Daviesia preissii; Gompholobium burtonioides; Hakea baxteri; Hemiandra pungens; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Hypocalymma angustifolium; Jacksonia intricata; Leptomeria lehmannii; Melaleuca thymoides; Petrophile seminuda; Pimelea longiflora; Stirlingia anethifolia; Tetratheca pubescens; Banksia attenuata
Climbers		Kennedia coccinea
Herbs		*Aira caryophyllea; *Cirsium vulgare; *Conyza sumatrensis; *Hypochaeris glabra; Anarthria prolifera; Anigozanthos flavidus; Burchardia umbellata; Chordifex sinuosus; Haemodorum spicatum; Hypolaena fastigiata; Laxmannia sessiliflora; Lomandra caespitosa; Lyginia barbata; Darwinia ?diosmoides
Soft grasses		*Ehrharta calycina; Austrostipa ?hemipogon
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Mesomelaena tetragona; Schoenus caespititius; Schoenus sublaxus
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 43 Minesite Eucalyptus occidentalis Low Forest A over Melaleuca cuticularis/ Hakea nitida Open Scrub over Acacia pulchella/ Juncus pallidus Open Dwarf Scrub C

Date: 19/04/05

Location: 50 H 637446 UTM 6177366 Topography: Hill Slope (lower slopes-base)

Slope: Gentle Soil texture: Sand

Soil colour: Grey/ Brown
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Good

Disturbance details:

Fire History: Old

Vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m	30-70%	Eucalyptus occidentalis
Mallee trees	30-70%	Eucalyptus uncinata
Shrubs > 2.0 m	2-10%	Melaleuca cuticularis; Hakea nitida
Shrubs 0.5-1.0m	<2%	Acacia pulchella var. glaberrima
Herbs	10-30%	*Aira caryphyllea; *Cirsium vulgare; *Conyza sumatrensis; *Hypochaeris glabra; ASTERACEAE sp.; Juncus pallidus; Senecio quadridentatus; Trifolium sp.; *Solanum nigrum
Soft grasses		Austrostipa hemipogon
Sedge		Lepidosperma striatum; Tetraria capillaris





Site 44 Minesite Eucalyptus falcata/ Eucalyptus staeri Open Mallee over Melaleuca striata/ Beaufortia empetrifolia Heath

Date: 19/04/05

Location: 50 H 637734 UTM 6177585 Topography: Undulating Plain (Low Sand Dune)

Slope: Gentle
Soil texture: Sand
Soil colour: White
Surface layer: Loose Soil
Rock type: Ferrous
Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus staeri; Eucalyptus falcata
Shrubs > 2.0 m		Banksia baxteri; Hakea pandanicarpa ssp. crassifolia
Shrubs 1.0-2.0m	30-70%	Hakea corymbosa; Hakea denticulata; Kunzea recurva; Melaleuca striata; Melaleuca thymoides; Lambertia inermis
Shrubs 0.5-1.0m	2-10%	Banksia baueri; Beaufortia empetrifolia; Isopogon trilobus
Shrubs 0.0-0.5m		Acacia biflora; Acacia delphina; Andersonia simplex; Lysinema ciliatum; Melaleuca thymoides; Tetratheca pubescens
Climbers		Drosera ?menziesii
Herbs		*Aira caryophyllea; *Conyza sumatrensis; *Hypochaeris glabra; Chordifex crispatus; Drosera erythrorhiza; Haemodorum spicatum; Hypolaena fastigiata; Johnsonia acaulis; Laxmannia squarrosa; Lomandra caespitosa; Lomandra hastilis; Opercularia hispidula; *Solanum nigrum
Soft grasses		*Ehrharta longiflora; Amphipogon amphipogonoides; Amphipogon avenaceus; POACEAE sp.
Sedge		Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Schoenus caespititius; Schoenus sublateralis; Tricostularia neesii var. elatior





Site 45 Minesite Eucalyptus staeri open mallee over Open Scrub (Agonis theiformis/ Dryandra quercifolia / Banksia grandis) over Melaleuca striata Low Scrub B over Cyathochaeta / Banksia baueri Dwarf Scrub C over Open Sedge

Date: 19/04/05

Location: 50 H 640119 UTM 6177346

Topography: Hill Slope (middle slope of main ridge, with northerly aspect)

Slope: Moderate
Soil texture: Sand
Soil colour: Grey
Surface layer: Loose soil
Rock type: Ferrous
Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Moderate
Vegetation condition: Poor

Disturbance details: Heavily grazed by domestic stock, not fenced

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Agonis theiformis; Allocasuarina humilis; Dryandra quercifolia; Hakea baxteri; Hakea corymbosa; Hakea trifurcata; Acacia cyclops; Banksia grandis
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Daviesia preissii; Dryandra plumosa ssp. plumosa; Kunzea recurva; Melaleuca striata
Shrubs 0.5-1.0m	2-10%	Banksia baueri; Beaufortia empetrifolia; Calothamnus gracilis; Melaleuca tuberculata var. tuberculata; Petrophile seminuda; Petrophile teretifolia
Shrubs 0.0-0.5m		Banksia gardneri var. gardneri; Boronia crassifolia; Tetratheca pubescens
Climbers		Cassytha racemosa forma pilosa; Drosera ?menziesii
Herbs		Anarthria gracilis; Chordifex sinuosus; Anarthria prolifera; Harperia confertospicata; Hypolaena fastigiata; Hypolaena pubescens; Lomandra hastilis; Lomandra nigricans
Soft grasses		*Ehrharta calycina; Austrodanthonia caespitosa
Sedge	10-30%	Caustis dioica; Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Tricostularia neesii var. elatior
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 46 Minesite Eucalyptus staeri Open Mallee over Agonis theiformis/ Lambertia inermis/ Open Scrub over Melaleuca striata Low Scrub B over Banksia baueri/ Xanthorrhoea brunonis var. brunonis Dwarf Scrub C over Open Sedge

Date: 19/04/05

Location: 50 H 640279 UTM 6177465 Topography: Hill Slope (upper hill slope)

Slope: Gentle Soil texture: Sand Soil colour: Grey

Surface layer: Loose soil, stones/ boulders, occasional ironstone nodules at surface

Rock type: Ferrous Leaf litter: Moderate

Distribution: Mainly under shrubs

Wood litter: Moderate
Vegetation condition: Poor

Disturbance details: Heavily grazed/ trampled by domestic stock

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus falcata; Eucalyptus staeri
Shrubs > 2.0 m	2-10%	Agonis theiformis; Dryandra quercifolia; Gastrolobium retusum; Hakea baxteri; Lambertia inermis
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Dryandra plumosa ssp. plumosa; Gastrolobium retusum; Hakea ruscifolia; Kunzea recurva; Melaleuca striata; Banksia grandis
Shrubs 0.5-1.0m	10-30%	Allocasuarina thuyoides; Banksia baueri
Shrubs 0.0-0.5m		Acacia biflora; Acacia lateriticola; Banksia gardneri var. gardneri; Hibbertia lineata
Climbers		Drosera ?menziesii
Herbs		Chordifex sinuosus; Conostylis pusilla; Drosera erythrorhiza; Hypolaena fastigiata; Hypolaena pubescens
Soft grasses		*Ehrharta calycina
Sedge	2-10%	?Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Mesomelaena stygia; Schoenus subbarbatus
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 47 Minesite Eucalyptyus occidentalis/ Eucalyptus staeri/ Eucalyptus falcata Low Forest A (Dense Mallee) over Open Segdes

Date: 19/04/05

Location: 50 H 640114 UTM 6174672

Topography: Undulating Plain, Swampland (lowland isolated in middle of paddock)

Slope: Negligible Soil texture: Loamy Sand

Soil colour: Grey

Surface layer: Loose Soil, Stones/ boulders

Rock type: Ferrous, Laterite nodules stockpiled around the perimeter of wetland (harvested

from adjacent paddocks)

Leaf litter: Spares

Distribution:

Wood litter: Sparse Vegetation condition: Degraded

Disturbance details:

Fire History: Old

vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Trees 5-15m		Eucalyptus occidentalis
Mallee trees	30-70%	Eucalyptus communalis; Eucalyptus staeri; Eucalyptus occidentalis
Shrubs > 2.0 m		Agonis theiformis; Hakea denticulata; Hakea nitida; Spyridium majoranifolium; Lambertia inermis; Nuytsia floribunda
Shrubs 1.0-2.0m		Kunzea recurva
Herbs	2-10%	*Rumex crispus; Anarthria laevis; Juncus pallidus; Trifolium sp.
Soft grasses		*Hordeum leporinum; *Pennisetum clandestinum
Sedge		Schoenus subfascicularis
Tree like monocot		Xanthorrhoea brunonis var. brunonis





Site 48 Minesite Eucalyptus occidentalis open mallee over Melaleuca cuticularis very Open Scrub over Schoenus laevigatus Dense Sedge at edge of swamp

Date: 20/04/05

Location: 50 H 639826 UTM 6175599

Topography: Sumpland (southern perimeter of wetland)

Slope: Negligible Soil texture: Loamy Sand

Soil colour: White

Surface layer: Humus, Loose soil

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

vegetation Cover		
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus occidentalis
Shrubs > 2.0 m	<2%	Hakea nitida; Melaleuca cuticularis
Shrubs 1.0-2.0m		Banksia dryandroides; Kunzea recurva; Melaleuca societatis; Petrophile teretifolia
Shrubs 0.5-1.0m		Banksia dryandroides; Kunzea recurva; Petrophile squamata ssp. squamata; Stirlingia anethifolia
Shrubs 0.0-0.5m	>70%	Astartea aspera; Hibbertia lineata; Leucopogon conostephioides; Thomasia stelligera
Herbs		?Bossiaea eriocarpa; Anarthria laevis
Soft grasses		Amphipogon amphipogonoides
Sedge		Lyginia imberbis; Schoenus laevigatus





Site 49 Minesite Mixed Mallee over Open Scrub Hakea nitida over Sedge (outer perimeter of Sumpland)

Date: 20/04/05

Location: 50 H 641316 UTM 6176084

Topography: Sumpland, drainage foci in centre of paddock, holding water in centre, site

located on upper slopes

Slope: Gentle Soil texture: Loamy Sand

Soil colour: Surface layer:

Rock type: Ferrous Leaf litter: Sparse

Distribution: Mainly under shrubs

Wood litter: Sparse Vegetation condition: Good

Disturbance details:

Fire History: Old

STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM
Mallee trees	10-30%	Eucalyptus angulosa; Eucalyptus decipiens ssp. adesmophloia; Eucalyptus falcata; Eucalyptus pleurocarpa; Eucalyptus uncinata; Eucalyptus occidentalis
Shrubs > 2.0 m	<2%	Exocarpos sparteus; Hakea nitida; Isopogon trilobus
Shrubs 1.0-2.0m		Melaleuca thymoides
Shrubs 0.5-1.0m		Acacia pulchella var. glaberrima; Dryandra armata
Herbs		*Aira caryophyllea
Soft grasses		Amphipogon amphipogonoides; Amphipogon avenaceus; Neurachne alopecuroidea
Sedge		Gahnia ancistrophylla; Lepidosperma squamatum; Mesomelaena stygia; Mesomelaena tetragona; Tetraria capillaris





Site 50 Minesite Eucalyptus staeri Open Mallee over Hakea/ Lambertia/ Agonis scrub over Dryandra/ Beaufortia Low Scrub B over Isopogon/ Lyginia Dwarf Scrub C over Calytrix/ Dryandra Dwarf Scrub D

Date: 20/04/05

Location: 50 H 641126 UTM 6177238

Topography: Hill Slope
Slope: Moderate
Soil texture: Sand
Soil colour: White/ Grey

Surface layer: Loose soil, occasional stones/ boulders

Rock type: Ferrous
Leaf litter: Plentiful
Distribution: Widespread
Wood litter: Moderate
Vegetation condition: Excellent

Disturbance details:

Fire History: Old

Vegetation Cover			
STRATUM	COVER	DOMINANT SPECIES WITHIN EACH STRATUM	
Mallee trees	2-10%	Eucalyptus decipiens ssp. adesmophloia; Eucalyptus staeri	
Shrubs > 2.0 m	10-30%	Agonis theiformis; Allocasuarina humilis; Hakea baxteri; Hakea pandanicarpa ssp. crassifolia; Banksia grandis; Hakea cucullata; Lambertia inermis	
Shrubs 1.0-2.0m	10-30%	Acacia subcaerulea; Adenanthos cuneatus; Allocasuarina humilis; Beaufortia anisandra; Dryandra armata var. armata; Dryandra quercifolia; Hakea corymbosa; Isopogon attenuatus; Melaleuca tuberculata var. tuberculata; Petrophile ericifolia ssp. ericifolia	
Shrubs 0.5-1.0m	10-30%	Banksia baueri; Beaufortia empetrifolia; Calothamnus gracilis; Dryandra plumosa ssp. plumosa; Kunzea recurva; Melaleuca striata; Melaleuca thymoides; Petrophile divaricata; Petrophile squamata ssp. squamata; Petrophile teretifolia	
Shrubs 0.0-0.5m	30-70%	Acacia biflora; Acacia delphina; Adenanthos apiculatus; Andersonia simplex; Bossiaea rufa; Calytrix ?flavescens; Calytrix leschenaultii; Daviesia preissii; Dryandra brownii; Dryandra calophylla; Hibbertia hibbertioides var. meridionalis; Hibbertia lineata; Jacksonia capitata; Leucopogon affin. elegans; Leucopogon corynocarpus; Leucopogon cucullatus; Leucopogon distans ssp. distans; Leucopogon woodsii; Lysinema ciliatum; Melaleuca tuberculata var. tuberculata; Pultenaea verruculosa; Stachystemon polyandrus; Stirlingia anethifolia; Verticordia habrantha	
Climbers		Drosera ?menziesii; Hovea trisperma	
Herbs		?Lomandra nutans; Anarthria prolifera; Chordifex capillaceus; Chordifex sinuosus; Conostylis pusilla; Drosera erythrorhiza; Harperia confertospicata; Hypolaena fastigiata; Lomandra hastilis; Lomandra nigricans; Lyginia barbata; Stylidium sp.; Dampiera sp.	
Soft grasses		Austrodanthonia caespitosa	
Sedge		Cyathochaeta avenacea; Lepidosperma squamatum; Lyginia imberbis; Schoenus caespititius; Schoenus sublateralis; Tricostularia neesii var. elatior	
Tree like		Xanthorrhoea brunonis var. brunonis	
monocot			





Site: 52 Off Cape Riche Road, Low closed Eucalyptus occidentalis forest.

Described CT **Date** 11/10/2006 **Type:** Quadrat 10 x 10 m

Location Off Cape Riche Road

MGA Zone 50 655921 mE 6173674 mN

Habitat Wetland - seasonally inundated basin

Soil type Clay basin

Rock Type Nil

Vegetation Low closed Eucalyptus occidentalis forest, over sparse Melaleuca cuticularis low shrubs,

over Schoenus subfascicularis / Chorizandra enodis sedges.

Veg Condition Excellent - no weeds & bush around wetland is completely intact.

Fire > 10 years

Notes Moderate leaf litter widespread, sparse wood litter

Vegetation Cover

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees > 5 m	30-70%	Eucalyptus occidentalis
Shrubs 1.0 - 2.0 m	2-10%	Melaleuca bracteosa, <u>Melaleuca cuticularis</u> , Hakea marginata
Shrubs 0.5 - 1.0 m	2-10%	Astartea aspera, Acacia cupularis, Melaleuca cuticularis, Melaleuca spathulata
Sedges	< 2%	Baumea articulata, <u>Chorizandra enodis</u> , Gahnia ancistrophylla, <u>Lepidosperma tenue</u> , Meeboldina kraussii, Schoenus subfascicularis
Herbs	< 2%	Dianella brevicaulis, Erodium cygnorum, <u>Lomandra</u> <u>nigricans</u>

(dominant species underlined)





Site: 53 Cnr Old Boundary Rd and South Coast Highway, Open Mallee woodland.

Described AC **Date** 12/10/2006 **Type:** Quadrat 10 x 10 m

Location Corner of Old Boundary Rd and the Hwy, Wellstead

MGA Zone 50 649172 mE 6185602 mN

Habitat Undulating plain

Soil Type Humus over loose white/grey sandy loam

Rock Type nil

Vegetation Open Mallee Woodland, over open moderately dense mixed low shrubs, over open mixed

herbs and sedges. Open Eucalyptus decipiens subsp. adesmophloia / Eucalyptus pleurocarpa mallee, over open Lambertia inermis tall shrubs, over open Dryandra plumosa / Taxandria spathulata moderately tall shrubs, over moderately dense Melaleuca striata low shrubs, over Stylidium glandulosissimum / Boronia spathulata herbs, over Anarthria prolifera /

Mesomelaena stygia / Anarthria gracilis sedges.

Veg Condition Good - Moderate disturbance

Fire None evident

Notes Moderate leaf litter widespread, moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Hakea trifurcata, <u>Lambertia inermis</u>
Shrubs 1 - 2 m	30-70%	Allocasuarina thuyoides, Banksia baueri, Calothamnus gracilis, Conothamnus aureus, <u>Dryandra plumosa</u> , Hakea cucullata, Hakea florida, Hakea prostrata, Isopogon heterophyllus, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	30-70%	Beaufortia anisandra, Dryandra cuneata, Gompholobium knightianum, Lambertia inermis, Leucopogon gibbosus, Lysinema ciliatum, <u>Melaleuca striata</u> , Sphaerolobium medium, <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	2-10%	Acacia delphina, Acacia pycnocephala, Allocasuarina humilis, Banksia gardneri var. gardneri, Boronia crassifolia, Dryandra armata, Dryandra blechnifolia, Dryandra nivea subsp. nivea, Hakea corymbosa, Hibbertia gracilipes, Melaleuca suberosa, Melaleuca subtrigona, Petrophile rigida, Pultenaea verruculosa, Verticordia habrantha
Herbs	< 2%	Boronia spathulata, Chorizema glycinifolium, Conostylis setigera subsp. setigera, <u>Dampiera juncea</u> , Jacksonia capitata, <u>Patersonia lanata forma lanata</u> , Stylidium glandulosissimum, Stylidium imbricatum, Stylidium schoenoides, Xanthosia singuliflora
Sedges	10-30%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Chordifex sphacelatus, Desmocladus fasciculatus, Harperia confertospicata, <u>Lomandra hastilis</u> , Mesomelaena stygia
Climbers		Cassytha micrantha, Drosera menziesii, Gompholobium marginatum





Site: 54 Cnr of Old Boundary Rd and South Coast Highway, Open Mallee woodland

Described CT **Date** 12/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr of Old Boundary Rd & Hwy, Wellstead

MGA Zone 50 649065 mE 6185580 mN

Habitat Undulating plain

Soil Type Loose brown sandy loam

Rock Type Laterite

Vegetation Open Eucalyptus pleurocarpa / Eucalyptus uncinata / Eucalyptus angulosa mallee

woodland, over sparse Hakea pandanicarpa subsp. pandanicarpa / Lambertia inermis tall shrubs, over sparse Dryandra plumosa subsp. plumosa / Taxandria spathulata moderately tall shrubs, over open Taxandria spathulata / Melaleuca suberosa low shrubs, over Dryandra nivea subsp. nivea /Banksia gardneri var. gardneri dwarf shrubs, over scattered Stylidium glandulosissimum herbs, over sparse Amphipogon sp. soft grasses, over moderately dense

Anarthria prolifera / Lomandra nigricans / Mesomelaena stygia sedges.

Veg Condition Excellent - no disturbance

Fire >> 5 years

Notes Moderate leaf litter widespread, moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus angulosa, <u>Eucalyptus pleurocarpa</u> , <u>Eucalyptus uncinata</u>
Shrubs > 2 m	10-30%	<u>Hakea cucullata, Hakea pandanicarpa subsp. pandanicarpa, Lambertia inermis</u>
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, <u>Dryandra plumosa subsp. plumosa, Hakea</u> <u>denticulata,</u> Hakea prostrata, <u>Melaleuca striata, Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia pycnocephala, Banksia baueri, Banksia nutans, Calothamnus gracilis, Dryandra falcata, Dryandra tenuifolia, Gastrolobium retusum, Melaleuca suberosa, Pultenaea verruculosa, Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia luteola, Allocasuarina humilis, Allocasuarina thuyoides, Astroloma drummondii, Astroloma tectum, Banksia gardneri var. gardneri, Beaufortia anisandra, Boronia crassifolia, Boronia ramosa subsp. anethifolia, Boronia spathulata, Dampiera juncea, Darwinia vestita, Dryandra blechnifolia, Dryandra calophylla, Dryandra nivea subsp. nivea, Gompholobium knightianum, Gompholobium marginatum, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon heterophyllus, Leucopogon gibbosus, Lysinema ciliatum, Petrophile seminuda, Stachystemon polyandrus, Verticordia habrantha
Herbs	< 2%	Chorizandra enodis, Conostylis setigera subsp. setigera, Haemodorum sp., Patersonia lanata forma lanata, Stylidium diversifolium, Stylidium glandulosissimum, Thysanotus sparteus, Xanthosia singuliflora
Grasses	< 2%	Amphipogon sp., Austrodanthonia caespitosa
Sedges	30-70%	Anarthria gracilis, <u>Anarthria prolifera</u> , Chordifex capillaceus, <u>Chordifex sphacelatus</u> , Desmocladus fasciculatus, Lepidosperma sp. Lepidosperma squamatum, Lomandra rupestris, Mesomelaena stygia, Patersonia occidentalis, Schoenus sublateralis
Climbers		Cassytha micrantha





Site: 55 Cnr Old Boundary Rd and South Coast Highway, Low open Eucalyptus staeri mallee

woodland

Described AC **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr Old Boundary Rd, Wellstead

MGA Zone 50 650632 mE 6184973 mN

Habitat Gently undulating plain and hill crest

Soil Type White/grey sand

Rock Type Nil

Vegetation Low open *Eucalyptus staeri* mallee woodland, over moderately dense *Acacia subcaerulea* /

Taxandria spathulata / Melaleuca striata moderately shrubs, over sparse Adenanthos cuneatus low shrubs, over scattered Isopogon longifolius / Petrophile rigida / Hibbertia recurvifolia dwarf shrubs, over moderately dense Anarthria prolifera / Anarthria scabra

sedges.

Veg Condition Good - Moderate disturbance

Fire None evident

Notes Plentiful leaf litter widespread, moderate wood litter.

Species List:

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 6 m	4	<u>Eucalyptus staeri</u>
Shrubs 1 - 2 m	3	<u>Acacia subcaerulea</u> , Beaufortia empetrifolia, Calothamnus gracilis, Dryandra plumosa, Lambertia inermis, <u>Melaleuca</u> <u>striata</u> , Melaleuca thymoides, Taxandria spathulata
Shrubs 0.5 - 1 m	2	Acacia subcaerulea, <u>Adenanthos cuneatus</u> , Banksia nutans, Conothamnus aureus, Dryandra nivea subsp. nivea
Shrubs < 0.5 m	2	Andersonia simplex, Banksia nutans var. cernuella, Bossiaea praetermissa, Dampiera linearis, Darwinia vestita, Franklandia fucifolia, Gompholobium venustum, <u>Hibbertia recurvifolia</u> , Hibbertia rupicola, <u>Isopogon longifolius</u> , Jacksonia grevilleoides, Leucopogon corynocarpus, Leucopogon distans, Lysinema ciliatum, <u>Petrophile rigida</u> , Petrophile teretifolia, <u>Stirlingia anethifolia</u>
Herbs	1	Conostylis serrulata, Conostylis vaginata, Dampiera juncea, Goodenia incana, Laxmannia brachyphylla, Patersonia lanata forma lanata, Stylidium schoenoides
Sedges	4	Anarthria prolifera, Anarthria scabra, Chordifex crispatus, Hypolaena fastigiata, Lepidosperma squamatum, Lomandra nigricans, Lomandra preissii, Phyllota barbata, Schoenus caespititius
Climbers	1	Cassytha ?micrantha, Drosera menziesii, Hovea trisperma, Thysanotus glaucifolius





Site: 56 Cnr of Old Boundary Rd and South Coast Highway, Open Eucalyptus staeri mallee.

Described CT **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location

MGA Zone 50 650576 mE 6185039 mN

Habitat Gentle hill slope

Soi Loose deep white quartz sand

Rock Type nil

Vegetation Open Eucalyptus staeri (<6m) mallee, over moderately dense Melaleuca striata medium

shrubs, over open Melaleuca thymoides / Beaufortia empetrifolia low shrubs, over open

Anarthria scabra / Lyginia barbata sedges.

Veg Condition Excellent -no disturbance, no weeds

Fire >> 5 years

Notes Sparse leaf litter mainly under shrubs, sparse wood litter.

vegetation cover:	001/55	ODEOLEO MUTUUN EA OU OTDATUM
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 6 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	2-10%	<u>Banksia baxteri</u>
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Banksia nutans var. cernuella, Isopogon trilobus, <u>Melaleuca striata</u> , Phyllota barbata
Shrubs 0.5 - 1 m	10-30%	Beaufortia empetrifolia, Calothamnus gracilis, Conospermum teretifolium, Daviesia incrassata subsp. incrassata, Gompholobium scabrum, Isopogon heterophyllus, Isopogon trilobus, Jacksonia grevilleoides, Melaleuca thymoides, Taxandria spathulata
Shrubs < 0.5 m	10-30%	Acacia delphina, Adenanthos cuneatus, Andersonia simplex, Astroloma drummondii, Boronia albiflora, Calytrix similis, Dryandra plumosa subsp. plumosa, Eutaxia neurocalyx subsp. neurocalyx, Franklandia fucifolia, <u>Hibbertia recurvifolia</u> , Hibbertia rupicola, <u>Isopogon longifolius</u> , Latrobea recurva, Leucopogon corynocarpus, Leucopogon distans, Petrophile divaricata, Petrophile teretifolia, Pimelea angustifolia, Stirlingia anethifolia, Stirlingia simplex, Synaphea petiolaris, Verticordia sieberi var. lomata
Herbs	< 2%	Boronia spathulata, <u>Conostylis vaginata</u> , <u>Dampiera juncea</u> , <u>Dampiera linearis</u> , Drosera paleacea subsp. trichocaulis, <u>Laxmannia brachyphylla</u> , Patersonia occidentalis, Stylidium scandens, Stylidium schoenoides, Thysanotus glaucifolius
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Hypolaena fastigiata, Lomandra nigricans, Lyginia barbata, Schoenus caespititius, Schoenus curvifolius, Tricostularia neesii var. elatior, Tricostularia sp. south coast (R.T. Wills 1423)
Climbers		Drosera menziesii





Site: 57 Cnr of Old Boundary Road and South Coast Highway, open Hakea spp. woodland

Described CMC **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr of Old Boundary Rd & Hwy

MGA Zone 50 649865 mE 6184198 mN

Habitat Seasonal wetland

Soil Type Humus over brown loam

Rock Type nil

Vegetation Open Hakea ferruginea / Hakea pandanicarpa low trees, over moderately dense

Pericalymma ellipticum low shrubs, over sparse Mesomelaena tetragona / Anarthria gracilis

/ Mesomelaena stygia sedges.

Veg Condition Excellent - some dead shrubs from flooding (1 in 50 yrs rainfall event in 2005)

Fire none evident

Notes Moderate leaf litter mainly under shrubs, moderate wood litter.

regettation covers		
STRATUM Trees < 5 m	COVER 10-30%	SPECIES WITHIN EACH STRATUM Hakea ferruginea, Hakea pandanicarpa
Shrubs 0.5 - 1 m	30-70%	Melaleuca thymoides, <u>Pericalymma ellipticum</u> , Petrophile squamata subsp. squamata
Shrubs < 0.5 m	2-10%	Actinodium calocephalum, Adenanthos cuneatus, Beaufortia anisandra, <u>Dryandra nivea subsp. nivea</u> , Jacksonia capitata, Stirlingia anethifolia, Synaphea petiolaris, Xanthorrhoea platyphylla, Verticordia plumosa var. grandiflora
Herbs	< 2%	Boronia spathulata, Conostylis vaginata
Sedges	30-70%	Anarthria gracilis, Caustis dioica, Chaetanthus aristatus, Chordifex capillaceus, Hypolaena exsulca, Lyginia barbata, Lyginia imberbis, Mesomelaena stygia, Mesomelaena tetragona





Site: 58 Cnr Old Boundary Rd and South Coast Highway, Open Hakea spp. tall shrubland.

Described CT **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr of Old Boundary Rd & Hwy

MGA Zone 50 649817 mE 6184220 mN

Habitat Undulating plain- dampland, very shallow depression

Soil Type Loose white-grey sandy loam (over ?laterite at about 0.4m)

Rock Type nil

Vegetation Open Hakea pandanicarpa subsp. pandanicarpa / Hakea ferruginea tall shrubland, over

moderately dense Pericalymma ellipticum low shrubs, over sparse Dryandra plumosa subsp.

plumosa dwarf shrubs, over moderately dense Anarthria gracilis sedges.

Veg Condition Excellent - Many of PROTEACEAE (& less flood tolerent MYRT) spp. unhealthy due to

excessive flooding 2005 & 1 in 50 yr rainfall event

Fire None evident

Notes Moderate leaf litter mainly under shrubs, moderate wood litter.

vegetation cover:			
STRATUM	COVER	SPECIES WITHIN EACH STRATUM	
Shrubs > 2 m	10-30%	<u>Hakea ferruginea</u> , Hakea pandanicarpa subsp. pandanicarpa, Petrophile squamata subsp. squamata	
Shrubs 1 - 2 m	< 2%	Hakea corymbosa subsp. corymbosa, Hakea trifurcata, Xanthorrhoea platyphylla	
Shrubs 0.5 - 1 m	30-70%	Pericalymma ellipticum, Taxandria spathulata	
Shrubs < 0.5 m	2-10%	Actinodium calocephalum, Adenanthos apiculatus, Beaufortia empetrifolia, Conothamnus aureus, <u>Dryandra nivea subsp.</u> nivea, <u>Dryandra plumosa subsp. plumosa, Dryandra tenuifolia,</u> Jacksonia capitata, Pultenaea verruculosa, Stirlingia anethifolia	
Herbs	< 2%	Boronia spathulata, <u>Laxmannia ramosa</u>	
Grasses	2-10 %	Austrodanthonia caespitosa	
Sedges	30-70%	Anarthria gracilis, Chaetanthus tenellus, Chordifex capillaceus, Chordifex crispatus, Lyginia imberbis, Mesomelaena stygia, Mesomelaena tetragona, Schoenus caespititius, Schoenus sublateralis, Tricostularia neesii var. elatior, Cyathochaeta avenacea	





Site: 59 Cnr Old Boundary Rd and South Coast Highway, Open low Eucalyptus staeri mallee

woodland

Described AC **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr Old Boundary Rd & Hwy, Wellstead

MGA Zone 50 649361 mE 6184477 mN

Habitat Undulating plain

Soil Type Humus over loose white-grey sand

Rock Type nil

Vegetation Open low Eucalyptus staeri mallee woodland, over open Isopogon trilobus / Dryandra

plumosa tall shrubs, over moderately dense Taxandria spathulata / Petrophile ericifolia subsp. ericifolia medium shrubs, over open Melaleuca striata low shrubs, over scattered Hibbertia recurvifolia / Stirlingia anethifolia dwarf shrubs, over scattered Dampiera juncea

herbs, over open Chordifex crispatus / Anarthria scabra sedges.

Veg Condition Good **Fire** none evident

Notes Sparse leaf litter widespread, moderate wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee 5 - 10 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	<u>Dryandra plumosa</u> , Hakea pandanicarpa, <u>Isopogon trilobus</u> , Lambertia inermis
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Beaufortia empetrifolia, Melaleuca thymoides, Petrophile ericifolia subsp. ericifolia, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Banksia baueri, Calothamnus gracilis, Conothamnus aureus, Gompholobium venustum, Hibbertia gracilipes, Leucopogon corynocarpus, Leucopogon distans, <u>Melaleuca striata</u> , Philotheca nodiflora subsp. lasiocalyx, <u>Xanthorrhoea</u> <u>platyphylla</u>
Shrubs < 0.5 m	2-10%	Acacia delphina, Adenanthos apiculatus, <u>Adenanthos cuneatus</u> , Allocasuarina thuyoides, Banksia repens, Boronia albiflora, Bossiaea praetermissa, Darwinia vestita, Dryandra nivea subsp. nivea, <u>Hibbertia recurvifolia</u> , Hibbertia rupicola, Jacksonia grevilleoides, Latrobea recurva, Leucopogon distans, Lysinema ciliatum, Petrophile rigida, Petrophile teretifolia, <u>Stirlingia anethifolia</u> , Synaphea petiolaris
Herbs	< 2%	Burchardia congesta, Conostylis pusilla, Conostylis serrulata, Conostylis vaginata, <u>Dampiera juncea</u> , Jacksonia capitata, Laxmannia brachyphylla, Thysanotus glaucifolius
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, <u>Chordifex</u> <u>crispatus</u> , <u>Hypolaena fastigiata</u>
Climbers	< 2%	Cassytha micrantha, Drosera menziesii, Hovea trisperma





Site: 60 Cnr of Old Boundary Rd and South Coast Highway, Sparse Eucalyptus occidentalis

woodland.

Described CTDate 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr of Old Boundary Rd & Hwy, Wellstead

MGA Zone 649594 **mE** 6183959 mN

Habitat Seasonal wetland - shallow depression

Soil Type Loose brown clay

Rock Type nil

Vegetation Sparse Eucalyptus occidentalis (<8m) trees, over sparse Kunzea recurva / Hakea varia

moderately tall shrubs, over scattered Astartea aspera low shrubs, over *Helichrysum

luteoalbum herbs, over dense Anarthria laevis / Lepidosperma striatum sedges.

Veg Condition Good - only 1 weed *Helichrysum luteoalbum ?grazing in past

Fire >>5 years

Notes Sparse leaf litter widespread, moderate wood litter.

regetation covers		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Tree 5 - 15 m	2-10%	Eucalyptus occidentalis
Mallee 5 - 10 m	< 2%	Eucalyptus decipiens subsp. adesmophloia
Shrubs > 2 m	< 2%	Hakea varia
Shrubs 1 - 2 m	2-10%	Hakea pandanicarpa subsp. crassifolia, <u>Kunzea recurva</u>
Shrubs 0.5 - 1 m	< 2%	Astartea aspera, Melaleuca subtrigona
Shrubs < 0.5 m	< 2%	Hakea ferruginea, Hypocalymma strictum
Herbs	< 2%	*Helichrysum luteoalbum
Sedges	30-70%	Anarthria laevis, <u>Lepidosperma squamatum</u>
Climbers		Cassytha flava





Site: 61 Shire Reserve, SE cnr of Chillinup and Gnowellen Rd, Open Eucalyptus spp. mallee

woodland.

Described AC**Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Shire Reserve, cnr of Chillinup & Gnowellen Rds, Wellstead

MGA Zone 50 635958 mE 6187160 mΝ

Habitat Plain

Humus over brown loam Soil Type

Rock Type

Vegetation Open Eucalyptus decipiens subsp. adesmophloia / Eucalyptus angulosa woodland, over

sparse Lambertia inermis tall shrubs, over open Regelia inops / Taxandria spathulata medium shrubs, over open Isopogon trilobus / Lepidosperma brunonianum / Conothamnus aureus medium shrubs, over sparse Dryandra nervosa dwarf shrubs, over sparse Spyridium

majoranifolium / Lepidosperma carphoides sedges.

Veg Condition Good None evident Fire

Notes Plentiful leaf litter widespread, moderate wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees 5 - 10 m	10-30%	Eucalyptus angulosa, Eucalyptus decipiens subsp. adesmophloia
Shrubs > 2 m	2-10%	Hakea corymbosa subsp. corymbosa, Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	Regelia inops, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Calothamnus gracilis, Conothamnus aureus, Isopogon trilobus, Petrophile squamata subsp. squamata, Spyridium majoranifolium, Spyridium microcephalum
Shrubs < 0.5 m	2-10%	Acacia luteola, Acacia pycnocephala, Acrotriche cordata, Andersonia simplex, Boronia crassifolia, Calytrix leschenaultii, Darwinia vestita, Dryandra nervosa, Gompholobium confertum, Grevillea nudiflora, Hibbertia gracilipes
Herbs	< 2%	Conostylis setigera subsp. setigera, Dampiera juncea, Dianella revoluta var. divaricata, Goodenia concinna, Patersonia juncea, Pterostylis recurva, Stylidium piliferum subsp. minor
Sedges	2-10%	Chordifex crispatus, Lepidosperma brunonianum, Lepidosperma carphoides, Lomandra nigricans, Gahnia aristata
Climbers	< 2%	Billardiera venusta, Cassytha sp., Hovea trisperma





Site: 62, Cnr of Old Boundary Rd and South Coast Highway, Sparse Eucalyptus staeri mallees

Described CT **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Cnr of Old Boundary Rd & Hwy

MGA Zone 50 649412 mE 6184503 mN

Habitat Undulating plainSoil Type Loose white-grey sand

Rock Type nil

Vegetation Sparse *Eucalyptus staeri* (<4m) mallee, over scattered *Hakea pandanicarpa* subsp.

pandanicarpa tall shrubs, over moderately dense Melaleuca striata / Banksia baueri / Melaleuca thymoides medium shrubs, over open Adenanthos cuneatus / Acacia delphina low shrubs, over sparse Stachystemon polyandrus dwarf shrubs, over moderately dense Chordifex

crispatus / Anarthria scabra sedges.

Veg Condition Excellent - no weeds, no disturbance

Fire >>>5 years

Notes Sparse leaf litter mainly under shrubs, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees 3 - 6 m	2-10%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	< 2%	Hakea corymbosa subsp. corymbosa, Hakea pandanicarpa subsp. pandanicarpa
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Banksia baueri, Banksia baxteri, Dryandra plumosa subsp. plumosa, Isopogon trilobus, Lambertia inermis, Melaleuca striata, Melaleuca thymoides, Petrophile ericifolia
Shrubs 0.5 - 1 m	10-30%	Acacia delphina, Adenanthos cuneatus, Beaufortia empetrifolia, Franklandia fucifolia, Gompholobium scabrum, Jacksonia grevilleoides, Leucopogon corynocarpus, Lysinema ciliatum, Petrophile rigida, Petrophile teretifolia, Phyllota barbata, Pultenaea verruculosa, <u>Taxandria spathulata</u> , Verticordia sieberi var. lomata
Shrubs < 0.5 m	2-10%	Andersonia simplex, Boronia albiflora, Chorizema cytisoides, Dampiera juncea, Darwinia vestita, Daviesia incrassata subsp. incrassata, Dryandra nivea subsp. nivea, <u>Eutaxia neurocalyx subsp. neurocalyx</u> , Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Isopogon longifolius, <u>Leucopogon distans</u> , Stachystemon polyandrus, Stirlingia anethifolia, Stirlingia simplex
Herbs	< 2%	<u>Conostylis vaginata</u> , Drosera paleacea subsp. hirsuta, Laxmannia brachyphylla, <u>Laxmannia sessiliflora</u> , Pyrorchis nigricans, Stylidium scandens, Thysanotus glaucifolius
Grasses	< 2%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, Chordifex crispatus, Hypolaena fastigiata, Lomandra hastilis, Lyginia imberbis, Schoenus caespititius, Schoenus curvifolius, Tricostularia neesii var. elatior





Site: 63 Lot 6830, Moderately dense Eucalyptus pleurocarpa mallee woodland

Described AC **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's block, Wellstead

MGA Zone 50 634892 mE 6180288 mN

Habitat Plain

Soil Type Humus over loose white-grey sand

Rock Type laterite

Vegetation Moderately dense Eucalyptus pleurocarpa / Eucalyptus falcata mallees, over open Lambertia

inermis / Hakea pandanicarpa tall shrubs, over moderately dense Taxandria spathulata / Isopogon trilobus / Dryandra plumosa medium shrubs, over open Melaleuca striata low shrubs, over scattered Desmocladus fasciculatus herbs and sparse Austrodanthonia

caespitosa / Chordifex sphacelatus / Mesomelaena stygia sedges.

Veg Condition Excellent - mimimal disturbance

Fire none evident

Notes Moderate leaf litter widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees 5 - 10 m	10-30%	Eucalyptus falcata, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Hakea pandanicarpa, <u>Lambertia inermis</u>
Shrubs 1 - 2 m	30-70%	Beaufortia empetrifolia, Dryandra plumosa, Isopogon trilobus, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia delphina, Allocasuarina thuyoides, Banksia baueri, Beaufortia empetrifolia, Calothamnus gracilis, <u>Dryandra falcata</u> , <u>Melaleuca striata</u> , Petrophile teretifolia, Stachystemon polyandrus
Shrubs > 0.5 m	2-10%	Acacia luteola, Andersonia sprengelioides, Baeckea preissiana, Banksia repens, Boronia crassifolia, Boronia spathulata, Darwinia vestita, Dryandra tenuifolia var. tenuifolia, Gompholobium confertum, Gompholobium venustum, Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Isopogon longifolius, Leucopogon corynocarpus, Lysinema ciliatum, Melaleuca suberosa, Melaleuca thymoides, Pultenaea verruculosa, Synaphea petiolaris, Xanthorrhoea platyphylla
Herbs	< 2%	Conostylis setigera subsp. setigera, Corybas sp., Dampiera juncea, Patersonia occidentalis var. latifolia, Stylidium diversifolium
Grasses	2-10%	Austrodanthonia caespitosa
Sedges	< 2%	Anarthria prolifera, <u>Chordifex sphacelatus</u> , Desmocladus fasciculatus, Lepidosperma squamatum, <u>Mesomelaena stygia</u>
Climbers	< 2%	Cassytha sp., Chorizema glycinifolium, Drosera menziesii





Site: 64 Shire Reserve, SE cnr Chillinup and Gnowellen Roads, Sparse *Eucalyptus* spp. mallee woodland

Described CT **Date** 13/10/2006 **Type:** Quadrat 10 x 10 m

Location Shire Reserve cnr of Chillinup & Gnowellen Rd, Wellstead

MGA Zone 50 636022 mE 6187155 mN

Habitat Undulating plain

Soil Type Very shallow pale brown/red sandy loam mixed with gravel over hardpan

Rock Type laterite

Vegetation Sparse Eucalyptus decurva mallee, over sparse Eucalyptus pleurocarpa / Lambertia inermis

tall shrubs, over open Taxandria spathulata / Regelia inops moderately tall shrubs, over open

Dryandra nervosa / Dryandra plumosa subsp. plumosa low shrubs.

Veg Condition Excellent - no disturbance, no weeds

Fire >>5 years

Notes Moderate leaf litter widespread, moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees	2-10%	Eucalyptus decurva, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Lambertia inermis, <u>Regelia inops</u>
Shrubs 1 - 2 m	2-10%	Hakea pandanicarpa subsp. pandanicarpa, Petrophile squamata subsp. squamata, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Calothamnus gracilis, <u>Dryandra nervosa</u> , <u>Dryandra plumosa</u> <u>subsp. plumosa</u> , Hakea corymbosa subsp. corymbosa, Isopogon buxifolius var. obovatus, Isopogon trilobus
Shrubs < 0.5 m	2-10%	Acacia biflora, Acacia luteola, Acrotriche cordata, Andersonia simplex, Banksia gardneri var. gardneri, Banksia repens var. repens, <u>Beaufortia empetrifolia</u> , Boronia crassifolia, Calytrix leschenaultii, Chorizema glycinifolium, Conothamnus aureus, Dampiera juncea, Darwinia vestita, Dryandra plumosa, Gompholobium confertum, Hibbertia recurvifolia, Hibbertia rupicola, Lechenaultia formosa, Leucopogon gibbosus, Melaleuca suberosa, <u>Melaleuca subtrigona</u> , Petrophile crispata, Petrophile media, Pultenaea verruculosa
Herbs	< 2%	<u>Conostylis setigera subsp. setigera,</u> Goodenia concinna, <u>Patersonia juncea,</u> Stylidium glandulosissimum, Stylidium piliferum subsp. minor, Thysanotus glaucifolius
Grasses	2-10%	Austrodanthonia caespitosa, Neurachne alopecuroidea
Sedges	2-10%	Chordifex sphacelatus, Desmocladus fasciculatus, <u>Lepidosperma carphoides</u> , Lepidosperma squamatum, <u>Lomandra rupestris</u> , Schoenus curvifolius, Schoenus obtusifolius, Schoenus pleiostemoneus, <u>Tricostularia compressa</u>
Climbers	< 2%	? <u>Billardiera fraseri</u>





Site: 65 Lot 6830, Scattered Eucalyptus staeri mallees, over open shrubland.

Described AC **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's, Wellstead, Southdowns

MGA Zone 50 634957 mE 6179939 mN

Habitat Plain

Soil Type Humus over grey sand

Rock Type nil

Vegetation Scattered Eucalyptus staeri mallee, over open Lambertia inermis / Hakea pandanicarpa tall

shrubs, over moderately dense *Taxandria spathulata / Melaleuca striata / Melaleuca thymoides* medium shrubs, over sparse *Banksia baueri* low shrubs, over moderately dense

Anarthria scabra / Anarthria prolifera / Tricostularia neesii var. neesii sedges.

Veg Condition Good **Fire** none evident

Notes Plentiful leaf litter widespread, moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees	< 2%	Eucalyptus staeri, Eucalyptus pleurocarpa
Shrubs > 2 m	2-10%	<u>Hakea pandanicarpa</u> , <u>Lambertia inermis</u>
Shrubs 1 - 2 m	30-70%	Banksia nutans, Beaufortia empetrifolia, Dryandra plumosa, Isopogon trilobus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Taxandria spathulata
Shrubs 0.5 - 1 m	2-10%	Banksia baueri, Beaufortia empetrifolia, Hakea corymbosa, Leucopogon corynocarpus, Leucopogon distans, Petrophile ericifolia subsp. ericifolia
Shrubs < 0.5 m	2-10%	Acacia delphina, Adenanthos cuneatus, Astroloma tectum, Banksia baxteri, Banksia repens, Boronia crassifolia, Calytrix sp., Franklandia fucifolia, Gompholobium scabrum, Gompholobium venustum, Hibbertia recurvifolia, Hovea trisperma, Petrophile teretifolia, Sphaerolobium medium, Stirlingia anethifolia, Stirlingia tenuifolia, Taxandria spathulata
Herbs	< 2%	Burchardia congesta, Conospermum caeruleum subsp. caeruleum, Conostylis setigera subsp. setigera, Conostylis vaginata, Dampiera juncea, <u>Patersonia occidentalis var. occidentalis</u> , Stylidium luteum, Stylidium schoenoides
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, Mesomelaena stygia, Tricostularia neesii var. neesii
Climbers	< 2%	Chorizema glycinifolium, Drosera menziesii





Site: 66 Lot 6830, Open Eucalyptus spp. mallee woodland.

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's block, Wellstead

MGA Zone 50 634887 mE 6180317 mN

Habitat Undulating plain - shallow depression

Soil Type Shallow loamy sand with gravel over a hardpan

Rock Type laterite

Vegetation Open Eucalyptus decurva / Eucalyptus uncinata / Eucalyptus pleurocarpa mallees, over

moderately dense Lambertia inermis / Hakea pandanicarpa subsp. pandanicarpa tall shrubs, over moderately dense Taxandria spathulata medium shrubs, over Melaleuca spp. / Beaufortia anisandra / Baeckea preissiana low shrubs, over open Dryandra tenuifolia var. tenuifolia / Hibbertia spp. dwarf shrubs, over scattered Billardiera venusta climbers, over scattered Stylidium luteum / Drosera huegelii / Conostylis setigera subsp. setigera herbs, over open Austrodanthonia caespitosa soft grass and open Mesomelaena stygia sedges.

Veg Condition Pristine, no disturbance, no weeds, no grazing

Fire > 5 yrs probably >20 years

Notes Sparse leaf litter mainly under shrubs, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	2-10%	<u>Eucalyptus decurva</u> , Eucalyptus pleurocarpa, <u>Eucalyptus</u> <u>uncinata</u>
Shrubs > 2 m	10-30%	Hakea corymbosa subsp. corymbosa, Hakea pandanicarpa subsp. pandanicarpa, <u>Lambertia inermis</u>
Shrubs 1 - 2 m	30-70%	Dryandra plumosa var. plumosa, Isopogon trilobus, <u>Taxandria</u> spathulata
Shrubs 0.5 - 1 m	10-30%	Banksia nutans var. cernuella, Beaufortia anisandra, <u>Beaufortia schaueri</u> , Calothamnus gracilis, Dryandra falcata, Gastrolobium retusum, Melaleuca striata, Melaleuca suberosa, Pultenaea verruculosa, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia luteola, Allocasuarina thuyoides, Andersonia simplex, Astroloma drummondii, Baeckea preissiana, Banksia gardneri var. gardneri, Banksia repens var. repens, Boronia crenulata subsp. crenulata, Boronia spathulata, Darwinia vestita, Dryandra tenuifolia var. tenuifolia, Gompholobium knightianum, Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Isopogon heterophyllus, Lambertia inermis var. inermis, Leucopogon gibbosus, Melaleuca subtrigona, Petrophile teretifolia, Sphaerolobium scabriusculum, Stachystemon polyandrus, Verticordia habrantha
Herbs	< 2%	Boronia spathulata, <u>Conostylis setigera subsp. setigera</u> , Dampiera juncea, Drosera huegelii, Patersonia juncea, Patersonia lanata forma lanata, <u>Patersonia occidentalis</u> , Pyrorchis nigricans, Stylidium diversifolium, Stylidium luteum, Stylidium repens, Tricoryne elatior, Xanthosia singuliflora
Grasses	2-10%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria prolifera, Chordifex sphacelatus, Desmocladus fasciculatus, Harperia lateriflora, Hypolaena fastigiata, Lepidosperma squamatum, <u>Mesomelaena stygia</u>
Climbers	< 2%	Billardiera venusta, Cassytha sp., Hovea trisperma





Site: 67 Lot 6830 Moderately dense Banksia spp. / Lambertia inermis tall shrubland

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's block, Wellstead

MGA Zone 50 635266 mE 6179944 mN

Habitat Undulating plainSoil Type Loose white- grey sand

Rock Type nil

Vegetation Moderately dense Banksia coccinea / Banksia baxteri / Lambertia inermis very tall

shrubland, over moderately dense Melaleuca striata / Monotoca aristata / Beaufortia

empetrifolia moderately tall shrubs.

Veg Condition Excellent - no disturbance

Fire None evident

Notes Sparse leaf litter, widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees 3 - 6 m	2-10%	Eucalyptus staeri, Eucalyptus uncinata
Shrubs > 2 m	10-30%	Banksia baxteri, <u>Banksia coccinea</u> , Hakea baxteri, <u>Lambertia</u> inermis
Shrubs 1 - 2 m	10-30%	Adenanthos cuneatus, Banksia baueri, Isopogon trilobus, <u>Melaleuca striata</u>
Shrubs 0.5 - 1 m	10-30%	Banksia nutans var. cernuella, Beaufortia empetrifolia, Calothamnus gracilis, Gompholobium scabrum, Hypocalymma strictum subsp. elongatum, Isopogon longifolius, Latrobea recurva, Leucopogon corynocarpus, Leucopogon distans, Lysinema ciliatum, Petrophile rigida, Petrophile teretifolia, Taxandria spathulata
Shrubs < 0.5 m	10-30%	Acacia delphina, Andersonia simplex, Calytrix similis, Conospermum caeruleum subsp. caeruleum, Daviesia incrassata, Franklandia fucifolia, Hibbertia recurvifolia, Leucopogon elegans, Melaleuca thymoides, Monotoca aristata, Phyllota barbata, Stirlingia simplex, Synaphea petiolaris, Verticordia sieberi var. lomata
Herbs	< 2%	Conostylis vaginata, <u>Dampiera juncea</u> , Dampiera linearis, Dasypogon bromeliifolius, Johnsonia lupulina, Johnsonia teretifolia
Grasses	< 2%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Caustis dioica, <u>Chordifex</u> <u>crispatus</u> , Hypolaena fastigiata, Lomandra hastilis, <u>Lyginia</u> <u>imberbis</u> , Schoenus caespititius, <u>Tricostularia neesii</u>
Climbers	< 2%	<u>Drosera menziesii</u>





Site: 68 Lot 6830, Scattered Eucalyptus staeri mallee, over open tall shrubland.

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's Block, Wellstead

MGA Zone 50 634975 mE 6179932 mN

Habitat Undulating plain - ?low lying shallow depression

Soil Type loose white-grey sand

Rock Type nil (hardpan of laterite at depth)

Vegetation Scattered Eucalyptus staeri (<6m) mallee, over open Lambertia inermis / Hakea

pandanicarpa subsp. pandanicarpa tall shrubs, over moderately dense Taxandria spathulata medium shrubs, over moderately dense Melaleuca striata low shrubs, over open Melaleuca

thymoides dwarf shrubs, over open Anarthria scabra / Caustis dioica sedges.

Veg Condition Good - some Euc staeri dead due to highest water levels in 50yrs - not dieback as most

PROTEACEAE healthy

Fire >>>5 years

Notes Sparse leaf litter widespread, sparse wood litter.

Vegetation condition:

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee 5 - 10 m	< 2%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	Hakea pandanicarpa subsp. pandanicarpa, <u>Lambertia inermis</u>
Shrubs 1 - 2 m	30-70%	Banksia baxteri, Isopogon trilobus, Petrophile ericifolia, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia delphina, Banksia baueri, Banksia nutans var. cernuella, Beaufortia empetrifolia, Calothamnus gracilis, Franklandia fucifolia, Gompholobium scabrum, Hakea corymbosa subsp. corymbosa, Jacksonia grevilleoides, Kunzea preissiana, Leucopogon corynocarpus, Melaleuca striata, Monotoca aristata, Petrophile sp., Petrophile teretifolia
Shrubs < 0.5 m	10-30%	Andersonia caerulea subsp. caerulea, Andersonia simplex, Astroloma drummondii, Baeckea preissiana, Banksia repens var. repens, Beaufortia anisandra, Calytrix flavescens, Dampiera juncea, Dryandra nivea subsp. nivea, Gompholobium venustum, Hibbertia recurvifolia, Isopogon heterophyllus, Lambertia inermis var. inermis, Latrobea recurva, Leucopogon distans, Lysinema ciliatum, Melaleuca subtrigona, Melaleuca thymoides, Phyllota barbata, Stirlingia anethifolia
Herbs	< 2%	Conostylis setigera subsp. setigera, Conostylis vaginata, Dasypogon bromeliifolius, <u>Johnsonia lupulina</u> , Stylidium schoenoides
Grasses	2-10%	<u>Austrodanthonia caespitosa</u>
Sedges	2-10%	Anarthria prolifera, Anarthria scabra, Caustis dioica, Chordifex crispatus, Cyathochaeta equitans, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma squamatum, Lyginia barbata, Mesomelaena graciliceps, Mesomelaena stygia, Tricostularia neesii var. neesii





Site: 69 Lot 6830, Open Eucalyptus staeri mallee woodland

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 M

Location McLennan's, Wellstead

MGA Zone 50 636038 mE 6179285 mN

Habitat Undulating plain - gentle slope, Ridge crest

Soil Type Loose white-grey sand

Rock Type

Vegetation Open Eucalyptus staeri mallees, over sparse Taxandria spathulata tall shrubs, over sparse

Melaleuca striata / Monotoca aristata medium shrubs, over open Melaleuca thymoides low shrubs, over open Anarthria scabra / Johnsonia teretifolia sedges and scattered Dampiera

juncea herbs.

Veg Condition Excellent **Fire** none evident

Notes Sparse leaf litter widespread, moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	2-10%	<u>Taxandria spathulata</u>
Shrubs 1 - 2 m	2-10%	Acacia subcaerulea, Banksia attenuata, Banksia baxteri, Isopogon trilobus, <u>Melaleuca striata</u> , <u>Monotoca aristata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia luteola, Conothamnus aureus, Hibbertia recurvifolia, Latrobea recurva, <u>Melaleuca thymoides</u> , Petrophile rigida, Petrophile teretifolia
Shrubs < 0.5 m	2-10%	Andersonia simplex, Hypocalymma strictum subsp. strictum, Isopogon longifolius, <u>Monotoca aristata</u>
Herbs	10-30%	Burchardia congesta, Conostylis vaginata, Dampiera juncea, <u>Johnsonia teretifolia</u>
Sedges	10-30%	Anarthria scabra, Caustis dioica, Chordifex crispatus, Lyginia barbata, Tricostularia neesii var. neesii
Climbers	< 2%	Cassytha sp.





Site: 70 Lot 6830, Open Eucalyptus staeri mallee woodland

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's block, Wellstead

MGA Zone 50 636005 mE 6179296 mN

Habitat Hill crest - low sandhill, negligible slope

Soil Type Loose white-grey sand

Rock Type nil

Vegetation Open Eucalyptus staeri mallees, over scattered Banksia coccinea tall shrubs, over sparse

Melaleuca striata moderately tall shrubs, over open Melaleuca striata / Melaleuca thymoides low shrubs, over open Leucopogon spp. / Hibbertia spp. / Gompholobium sp., over scattered herbs and soft grasses, over moderately dense Anarthria scabra / Tricostularia neesii /

Schoenus caespititius / Anarthria prolifera sedges.

Veg Condition Excellent - no weeds

Fire 20 + /-5 years

Notes Moderate leaf litter widespread, negligible wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	< 2%	<u>Nuytsia floribunda</u>
Mallees < 5 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	< 2%	<u>Banksia baxteri</u> , <u>Banksia coccinea</u>
Shrubs 1 - 2 m	2-10%	Acacia subcaerulea, <u>Adenanthos cuneatus</u> , Hypocalymma strictum subsp. elongatum, <u>Isopogon trilobus</u> , <u>Latrobea recurva</u> , <u>Melaleuca striata</u> , Taxandria parviceps
Shrubs 0.5 - 1 m	10-30%	Banksia baueri, Beaufortia empetrifolia, Isopogon longifolius, Melaleuca striata, Melaleuca thymoides, Monotoca aristata
Shrubs < 0.5 m	< 2%	Acacia delphina, Baeckea preissiana, <u>Boronia albiflora</u> , Daviesia incrassata, <u>Gompholobium knightianum</u> , Hakea pandanicarpa subsp. pandanicarpa, <u>Hibbertia gracilipes</u> , <u>Hibbertia recurvifolia</u> , Petrophile rigida, <u>Petrophile teretifolia</u>
Herbs	< 2%	Burchardia congesta, <u>Conostylis serrulata</u> , Drosera menziesii, <u>Johnsonia lupulina</u> , <u>Johnsonia teretifolia</u> , Pterostylis recurva, Pyrorchis nigricans, Stylidium repens, Thysanotus glaucifolius
Sedges	30-70%	Anarthria prolifera, Anarthria scabra, Caustis dioica, Hypolaena fastigiata, Lepidosperma squamatum, Lomandra nigricans, Lyginia imberbis, Schoenus caespititius, <u>Tricostularia</u> neesii





Site: 71 Lot 6830, Open Eucalyptus staeri mallee woodland

Described AC **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's, Wellstead

MGA Zone 50 635025 mE 6178558 mN

Habitat Plain

Soil Type humus over grey sandy loam

Rock Type nil

Vegetation Open Eucalyptus staeri trees, over low Hakea pandanicarpa trees, over open Isopogon

trilobus tall shrubs, over moderately dense Conothamnus aureus / Melaleuca striata / Dryandra plumosa medium shrubs, over scattered Xanthorrhoea platyphylla low shrubs,

over sparse Anarthria prolifera / Anarthria scabra sedges.

Veg Condition Excellent **Fire** >20 years

Notes Plentiful leaf litter widespread, moderate wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	Hakea pandanicarpa, <u>Isopogon trilobus</u>
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Agonis theiformis, Banksia baueri, Conothamnus aureus, <u>Dryandra plumosa</u> , Hakea corymbosa, <u>Melaleuca striata</u> , Taxandria spathulata
Shrubs 0.5 - 1 m	< 2%	Melaleuca thymoides, <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 sh	< 2%	<u>Acacia luteola</u> , Bossiaea praetermissa, Calytrix flavescens, Gompholobium venustum, Leucopogon cucullatus, <u>Petrophile</u> <u>teretifolia</u>
Herbs	< 2%	Burchardia congesta, Dampiera juncea
Grasses	< 2%	Austrodanthonia caespitosa, Amphipogon turbinatus
Sedges	2-10%	Anarthria prolifera, Anarthria scabra, Desmocladus fasciculatus, Harperia confertospicata, Lomandra hastilis
Climbers	< 2%	<u>Cassytha sp., Drosera menziesii</u>





Site: 72 Lot 6830, Sparse Eucalyptus staeri mallees, over moderately dense tall shrubland.

Described CT **Date** 14/10/2006 **Type:** Quadrat 10 x 10 m

Location McLennan's south western edge, Wellstead

MGA Zone 50 635040 mE 6178577 mN

Habitat Undulating plain

Soil Type Brown sandy loam with surface coarse gravel/pebbles, very shallow soil over laterite hardpan

Rock Type Laterite

Vegetation Sparse Eucalyptus staeri mallees, over moderately dense Lambertia inermis / Hakea

pandanicarpa subsp. pandanicarpa / Hakea baxteri tall shrubs, over moderately dense Taxandria spathulata / Melaleuca striata medium shrubs, over open Petrophile spp. / Dryandra spp. low shrubs, over open Gompholobium sp. / Hibbertia sp. dwarf shrubs, over

sparse Anarthria prolifera / Anarthria scabra sedges.

Veg Condition Pristine, no disturbance, no weeds

Fire unknown

Notes Sparse leaf litter mainly under shrubs, negligible wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	2-10%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	Hakea baxteri, <u>Hakea pandanicarpa subsp. pandanicarpa</u> , <u>Lambertia inermis</u>
Shrubs 1 - 2m	10-30%	Acacia subcaerulea, Allocasuarina humilis, Banksia nutans var. cernuella, Beaufortia schaueri, Dryandra mucronulata subsp. mucronulata, <u>Dryandra plumosa subsp. plumosa</u> , Hakea trifurcata, Isopogon trilobus, <u>Melaleuca striata</u> , <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	2-10%	Acacia luteola, <u>Banksia baueri</u> , Calothamnus gracilis, <u>Dryandra falcata</u> , Gastrolobium retusum, Gompholobium knightianum, Hakea corymbosa subsp. corymbosa, Isopogon heterophyllus, Petrophile teretifolia, <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Banksia dryandroides, Banksia nutans, Boronia crassifolia, Boronia spathulata, Dryandra calophylla, Gompholobium scabrum, <u>Hibbertia gracilipes</u> , Hibbertia recurvifolia, Petrophile divaricata, Sphaerolobium alatum
Herbs	< 2%	<u>Chorizema glycinifolium, Conostylis setigera subsp. setigera,</u> <u>Dampiera juncea, Patersonia occidentalis, Pyrorchis nigricans,</u> <u>Stylidium repens</u>
Sedges	2-10%	Anarthria prolifera, Anarthria scabra, Chordifex sphacelatus, Desmocladus fasciculatus, Harperia confertospicata, Harperia lateriflora, Hypolaena fastigiata, Lepidosperma squamatum, Lomandra nigricans, Lomandra hastilis, Mesomelaena stygia, Tetraria octandra, Tricostularia neesii
Climbers	< 2%	Drosera menziesii, <u>Hovea trisperma</u>





Site: 73, Lot 4, Moderately dense low shrubland.

Described CMC **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbins, Wellstead

MGA Zone 50 647489 mE 6179748 mN

Habitat Undulating plainSoil Type Loose grey sandy loam

Rock Type nil

Vegetation Scattered Banksia baxteri moderately tall shrubs, over moderately dense Taxandria

spathulata / Isopogon trilobus / Adenanthos cuneatus low shrubs, over open Banksia baueri / Melaleuca striata dwarf shrubs, over Anarthria scabra / Mesomelaena graciliceps /

Mesomelaena pseudostygia sedges.

Veg Condition Good **Fire** none evident

Notes sparse leaf litter mainly under shrubs, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Shrubs 1 - 2 m	< 2%	<u>Banksia baxteri</u>
Shrubs 0.5 - 1 m	10-30%	Adenanthos cuneatus, Allocasuarina humilis, Banksia repens, Grevillea fasciculata, Isopogon teretifolius subsp. teretifolius, Isopogon trilobus, Lambertia inermis, Latrobea recurva, Leucopogon corynocarpus, Lysinema ciliatum, Petrophile ericifolia subsp. ericifolia, Petrophile teretifolia, Pimelea tinctoria, Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Andersonia simplex, Astroloma baxteri, Astroloma tectum, Banksia baueri, Banksia nutans, Conospermum flexuosum subsp. flexuosum, Darwinia vestita, Daviesia alternifolia, Dryandra plumosa, Hibbertia recurvifolia, Jacksonia capitata, Latrobea recurva, Leucopogon elegans, Melaleuca striata, Stirlingia simplex, Synaphea polymorpha
Herbs	< 2%	Conospermum caeruleum subsp. caeruleum, Conostylis vaginata, <u>Dampiera juncea</u> , Drosera paleacea subsp. trichocaulis, Gompholobium venustum, <u>Laxmannia</u> <u>brachyphylla</u> , Laxmannia sp.
Sedges	2-10%	Anarthria gracilis, <u>Anarthria scabra</u> , Caustis dioica, Chordifex crispatus, Harperia confertospicata, Harperia lateriflora, <u>Mesomelaena graciliceps</u> , Mesomelaena pseudostygia, Mesomelaena stygia, Tricostularia neesii var. elatior





Site: 74, Lot 4, Closed heath

Described CT **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbins block, Wellstead - mid east side

MGA Zone 50 647466 mE 6179645 mN

Habitat ?Plain

Soil Type Loose white-grey sand over laterite hard pan

Rock Type nil

Vegetation Closed heath (<1m in height) with emergent very open mallees (2-10%) from table: Sparse

Eucalyptus staeri mallee, over scattered Lambertia inermis var. inermis moderately tall shrubs, over moderately dense Dryandra plumosa subsp. plumosa / Taxandria spathulata / Dryandra falcata low shrubs, over moderately dense Allocasuarina humilis / Melaleuca

striata dwarf shrubs, over open Anarthria prolifera sedges.

Veg Condition Excellent - no disturbance evident

Fire > 5 years

Notes sparse leaf litter mainly under shrubs, negligible wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	2-10%	Eucalyptus decurva, <u>Eucalyptus staeri</u>
Shrubs > 2 m	< 2%	<u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	< 2%	Hakea denticulata, <u>Pimelea tinctoria</u>
Shrubs 0.5 - 1 m	10-30%	Dryandra falcata, Dryandra plumosa subsp. plumosa, <u>Taxandria spathulata</u>
Shrubs < 0.5 m	30-70%	Acacia moirii subsp. moirii, Acacia pycnocephala, Adenanthos apiculatus, <u>Allocasuarina humilis</u> , Allocasuarina thuyoides, Astroloma drummondii, Astroloma tectum, Banksia baueri, Banksia dryandroides, Banksia gardneri vat. gardneri, Banksia repens vat. repens, <u>Beaufortia empetrifolia</u> , Boronia crassifolia, Boronia spathulata, Dampiera juncea, Darwinia vestita, Daviesia alternifolia, Daviesia incrassata, Dryandra calophylla, Dryandra tenuifolia subsp. tenuifolia, Gastrolobium retusum, Gompholobium confertum, Gompholobium knightianum, Grevillea fasciculata, Hakea cucullata, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon teretifolius, Isopogon teretifolius subsp teretifolius, Jacksonia capitata, Leucopogon corynocarpus, Leucopogon cucullata, Leucopogon gibbosus, Leucopogon woodsii, Lysinema ciliatum, <u>Melaleuca striata</u> , Persoonia striata, Petrophile divaricata, Petrophile ericifolia, Petrophila squamata subsp. squamata, Petrophila teretifolia, <u>Pultenaea verruculosa</u> , Synaphea petiolaris, Xanthorrhoea platyphylla
Herbs	< 2%	<u>Conostylis setigera subsp. setigera,</u> Stylidium diversifolium, <u>Stylidium glandulosissimum,</u> Patersonia lanata forma lanata
Grasses	< 2%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Chordifex capillaceus, Chordifex sphacelatus, Desmocladus fasciculatus, Lepidosperma squamatum, Mesomelaena stygia, Schoenus subbarbatus, Tetraria octandra, Tricostularia compressa
Climbers	< 2%	<u>Cassytha sp., Drosera menziesii</u>





Site: 75, Lot 4, Emergent Eucalyptus staeri low trees over closed heath

Described AC **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbins, Wellstead

MGA Zone 50 647553 mE 6179701 mN

Habitat Plain

Soil Type Loose light brown sand with surface of humus and grey sand

Rock Type nil

Vegetation Scattered Eucalyptus staeri / Hakea cucullata low trees, over sparse Hakea ferruginea tall

shrubs, over moderately dense *Taxandria spathulata / Isopogon trilobus / Petrophile squamata* subsp. *squamata* medium shrubs, over moderately dense *Dryandra plumosa / Melaleuca striata / Lysinema ciliatum* low shrubs, over open *Banksia repens / Banksia*

gardneri dwarf shrubs, over sparse Anarthria scabra / Chordifex crispatus sedges.

Veg Condition Excellent **Fire** none evident

Notes moderate leaf litter mainly under shrubs, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Tree < 5 m	< 2%	<u>Hakea cucullata</u>
Mallees < 5 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	2-10%	<u>Hakea ferruginea</u>
Shrubs 1 - 2 m	10-30%	Allocasuarina humilis, Hakea corymbosa subsp. corymbosa, Isopogon trilobus, <u>Petrophile squamata subsp. squamata</u> , <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia subcaerulea, Adenanthos cuneatus, Banksia baueri, <u>Dryandra plumosa</u> , Isopogon heterophyllus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Petrophile ericifolia, Petrophile teretifolia, Pimelea tinctoria, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Adenanthos apiculatus, Andersonia simplex, Astroloma baxteri, Banksia gardneri vax. gardneri, Banksia nutans, Banksia repens, Beaufortia schaueri, Boronia crassifolia, Darwinia vestita, Daviesia alternifolia, Dryandra calophylla, Dryandra falcata, Dryandra nivea subsp. nivea, Gastrolobium retusum, Gompholobium venustum, Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Leucopogon corynocarpus, Leucopogon distans, Leucopogon elegans, Petrophile divaricata, Petrophile rigida, Pultenaea verruculosa, Sphaerolobium drummondii, Stachystemon polyandrus, Synaphea polymorpha
Herbs	< 2%	Boronia spathulata, Comesperma flavum, Conospermum caeruleum subsp. caeruleum, Conostylis setigera subsp. setigera, Conostylis vaginata, Dampiera juncea, Dampiera linearis, Drosera menziesii, Jacksonia capitata, Laxmannia sp., Patersonia lanata forma lanata, Patersonia occidentalis
Sedges	2-10%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, <u>Chordifex crispatus</u> , Chordifex sphacelatus, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Mesomelaena stygia, Tricostularia neesii var. elatior





Site: 76, Lot 4 Open low mallee, over closed heath.

Described CT **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheat bins, Wellstead

MGA Zone 50 647582 mE 6179691 mN

Habitat Undulating plain
Soil Type Loose white-grey sand
Rock Type Limestone/calcrete

Vegetation Very open low mallees (Eucalyptus staeri), over sparse Lambertia inermis tall shrubs, over

sparse *Hakea denticulata / Hakea ferruginea* moderately tall shrubs, over moderately dense *Melaleuca striata / Beaufortia empetrifolia*, over moderately dense mixed dwarf shrubs.

Veg Condition Pristine, all veg very healthy, no weeds, no disturbance at all, excellent regeneration

Fire >>>5 years

Notes moderate leaf litter widespread, negligible wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
	'	S. 20.20 2.10.10
Mallees < 5 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	2-10%	<u>Lambertia inermis</u>
Shrubs 1 - 2 m	2-10%	Hakea denticulata, <u>Hakea ferruginea</u>
Shrubs 0.5 - 1 sh	10-30%	Adenanthos cuneatus, Allocasuarina humilis, Banksia baueri, Banksia nutans var. cernuella, Beaufortia empetrifolia, Dryandra plumosa, Hakea corymbosa subsp. corymbosa, Isopogon heterophyllus, Isopogon teretifolius subsp. teretifolius, Isopogon trilobus, Lambertia echinata subsp. citrina, Leucopogon corynocarpus, Leucopogon cucullatus, Leucopogon elegans, Lysinema ciliatum, Melaleuca striata, Petrophile divaricata, Petrophile ericifolia, Petrophile squamata subsp. squamata, Pimelea tinctoria, Taxandria spathulata
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Andersonia simplex, Astroloma drummondii, Banksia gardneri var. gardneri, Banksia repens var. repens, Boronia crassifolia, Boronia spathulata, Calytrix leschenaultii, Darwinia vestita, Daviesia alternifolia, Dryandra calophylla, <u>Dryandra nivea subsp. nivea</u> , Franklandia fucifolia, Gompholobium knightianum, Hibbertia recurvifolia, Hibbertia rupicola, Jacksonia capitata, <u>Latrobea recurva</u> , Petrophile teretifolia, <u>Phyllota barbata</u> , Stachystemon polyandrus, Stirlingia simplex, Synaphea polymorpha
Herbs	< 2%	Conostylis vaginata, Dampiera juncea, Dampiera linearis, Laxmannia brachyphylla, Patersonia lanata forma lanata, Stylidium schoenoides
Sedges	2-10%	Anarthria gracilis, Anarthria prolifera, <u>Anarthria scabra</u> , <u>Caustis dioica</u> , <u>Chordifex crispatus</u> , Harperia confertospicata, Hypolaena fastigiata, Lepidosperma squamatum, <u>Mesomelaena stygia</u> , <u>Schoenus obtusifolius</u> , <u>Tricostularia compressa</u> , <u>Tricostularia neesii var. elatior</u>





Site: 77, Lot 4, Open Eucalyptus staeri mallees

Described AC **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbins, near Wellstead

MGA Zone 50 647819 mE 6178509 mN

Habitat Plain

Soil Type Loose light brown sandy loam with sparse surface pebbles

Rock Type

Vegetation Scattered Nuytsia floribunda low trees and open Eucalyptus staeri mallees, over open

Banksia grandis / Agonis theiformis tall shrubs, over open Hakea corymbosa / Dryandra mucronulata medium shrubs, over open Melaleuca striata low shrubs, over open Anarthria scabra / Lepidosperma ustulatum / Mesomelaena pseudostygia sedges and scattered herbs.

Veg Condition Excellent **Fire** none evident

Notes moderate leaf litter widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	< 2%	Nuytsia floribunda
Mallees < 5 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	Agonis theiformis, Banksia grandis, Lambertia inermis
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Banksia grandis, Beaufortia anisandra, <u>Dryandra mucronulata</u> subsp. mucronulata, <u>Hakea corymbosa</u>
Shrubs 0.5 - 1 m	10-30%	Darwinia vestita, Isopogon longifolius, Leucopogon cucullatus, <u>Melaleuca striata</u> , Pultenaea verruculosa
Shrubs < 0.5 m	< 2%	Acacia luteola, Banksia repens, Boronia albiflora, Boronia crassifolia, <u>Daviesia incrassata subsp. incrassata, Eutaxia neurocalyx subsp. neurocalyx, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon heterophyllus, Leucopogon gibbosus, Taxandria spathulata</u>
Herbs	< 2%	Boronia spathulata, Dampiera juncea, <u>Laxmannia brachyphylla</u>
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Desmocladus fasciculatus, Hypolaena fastigiata, <u>Lepidosperma ustulatum</u> , Lomandra nigricans, Mesomelaena stygia, <u>Mesomelaena pseudostygia</u> , ?Schoenus sp., Schoenus subbarbatus
Climbers	< 2%	Cassytha racemosa, Drosera menziesii, Hovea trisperma





Site: 78, Lot 4, Open Eucalyptus staeri mallee woodland

Described CT **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbins block - small area on southern side of block

MGA Zone 50 647869 mE 6178535 mN

Habitat Undulating plain

Soil Type Loose very shallow white-grey sand with coarse gravel/pebbles on surface

Rock Type laterite

Vegetation Open Eucalyptus staeri mallee, over scattered Lambertia inermis tall shrubs, over sparse

Dryandra mucronulata subsp. mucronulata / Hakea ferruginea moderately tall shrubs, over dense Dryandra mucronulata subsp. mucronulata low shrubs, over open Leucopogon distans

dwarf shrubs.

Veg Condition Pristine - no disturbance

Fire > 5 years

Notes moderate leaf litter widespread, negligible wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	< 2%	<u>Lambertia inermis</u>
Shrubs 1 - 2 m	10-30%	Agonis theiformis, <u>Allocasuarina humilis</u> , Dryandra mucronulata subsp. mucronulata, Hakea ferruginea, Isopogon longifolius, Petrophile squamata subsp. squamata
Shrubs 0.5 - 1 m	70-100%	Acacia subcaerulea, Adenanthos cuneatus, Banksia baueri, Beaufortia empetrifolia, Beaufortia schaueri, Conospermum caeruleum subsp caeruleum, Conospermum flexuosum subsp. flexuosum, Dryandra mucronulata subsp. mucronulata, Eutaxia neurocalyx subsp. neurocalyx, Franklandia fucifolia, Leucopogon cucullatus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Phyllota barbata, Pimelea tinctoria, Pultenaea verruculosa, Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia luteola, Adenanthos apiculatus, Andersonia simplex, Boronia crassifolia, Calytrix leschenaultii, Calytrix similis, Dampiera juncea, Darwinia vestita, <u>Daviesia incrassata</u> , Gompholobium knightianum, Goodenia incana, Grevillea fasciculata, Hibbertia recurvifolia, Hibbertia rupicola, Hovea trisperma, <u>Latrobea recurva</u> , <u>Leucopogon distans</u> , Leucopogon woodsii, Petrophile teretifolia, Stachystemon polyandrus, Stirlingia anethifolia
Herbs	< 2%	Conostylis setigera subsp. setigera, Drosera menziesii, Laxmannia brachyphylla, <u>Laxmannia sessiliflora</u> , <u>Stylidium</u> <u>repens</u>
Sedges	2-10%	Anarthria prolifera, <u>Anarthria scabra</u> , Chordifex crispatus, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma squamatum, Mesomelaena stygia, Tricostularia neesii var. elatior





Site: 79, Lot 4, Open Eucalyptus staeri mallee woodland

Described AC **Date** 15/10/2006 **Type:** Quadrat 10 x 10m

Location Sandalwood Road - Grainbin Block

MGA Zone 50 647833 mE 6178634 mN

Habitat Plain

Soil Type white-grey sand

Rock Type laterite

Vegetation Open Eucalyptus staeri mallee, over moderately dense Lambertia inermis tall shrubs, over

moderately dense Taxandria spathulata / Agonis theiformis / Dryandra mucronulata medium shrubs, over open Banksia baueri / Beaufortia anisandra low shrubs, over open Anarthria

scabra sedges.

Veg Condition

Fire none evident

Notes moderate leaf litter widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	30-70%	Hakea baxteri, Hakea ferruginea, Hakea pandanicarpa, <u>Lambertia inermis</u>
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Allocasuarina humilis, <u>Dryandra</u> mucronulata subsp. mucronulata, Hakea corymbosa, Isopogon trilobus, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia biflora, Adenanthos cuneatus, <u>Banksia baueri</u> , Beaufortia anisandra, Beaufortia empetrifolia, Daviesia incrassata, Dryandra tenuifolia var. tenuifolia, Gompholobium confertum, Gompholobium venustum, Hibbertia gracilipes, Latrobea recurva, Leucopogon cucullatus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Petrophile ericifolia subsp ericifolia, Petrophile teretifolia, Stirlingia anethifolia, Xanthorrhoea platyphylla
Shrubs < 0.5 m	< 2%	Actinodium cunninghamii, <u>Adenanthos apiculatus</u> , Andersonia simplex, Banksia gardneri var. gardneri, Banksia repens, Boronia albiflora, Boronia crassifolia, <u>Boronia spathulata</u> , Conospermum caeruleum subsp. caeruleum, Daviesia incrassata, Hibbertia gracilipes, <u>Stirlingia anethifolia</u>
Herbs	< 2%	Conostylis setigera subsp. setigera, Dampiera juncea, Stylidium schoenoides
Grasses	< 2%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria scabra, Anarthria prolifera, Caustis dioica, Chordifex crispatus, Cyathochaeta equitans, Desmocladus fasciculatus, Lomandra hastilis, Tricostularia neesii var. elatior
Climbers	< 2%	Cassytha sp., Drosera menziesii, Gastrolobium bracteolosum





Site: 80 Lot 4, Open mixed Eucalyptus spp. low mallee woodland.

Described CT **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Locatio Wheatbins southside

MGA Zone 50 647830 mE 6178606 mN

Habitat Undulating plain

Soil Type Very shallow (?10cm) white-grey sand

Rock Type laterite

Vegetation Open low Eucalyptus staeri / Eucalyptus decurva mallee, over scattered Hakea ferruginea

tall shrubs, over sparse *Taxandria spathulata / Banksia baxteri* moderately tall shrubs, over *Dryandra mucronulata* subsp. *mucronulata* low closed heath, over sparse mixed sedges.

Veg Condition Excellent, no disturbance

Fire > 5 years

Notes moderate leaf litter widespread, negligible wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decurva, <u>Eucalyptus staeri</u>
Shrubs 1 - 2 m	2 - 10%	Allocasuarina thuyoides, <u>Banksia baxteri</u> , Petrophile diversifolia, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	30-70%	Acacia subcaerulea, Allocasuarina humilis, Banksia baueri, Beaufortia empetrifolia, <u>Beaufortia schaueri</u> , Boronia crenulata subsp. crenulata, Calytrix flavescens, Daviesia incrassata, <u>Dryandra mucronulata subsp. mucronulata</u> , Eutaxia neurocalyx subsp. neurocalyx, Gastrolobium bracteolosum, Hibbertia recurvifolia, Isopogon heterophyllus, Isopogon longifolius, Isopogon trilobus, Latrobea recurva, Lysinema ciliatum, Melaleuca thymoides, Petrophile teretifolia, Phyllota barbata, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 sh	10-30%	Acacia luteola, Adenanthos apiculatus, <u>Andersonia simplex</u> , Banksia gardneri var. gardneri, Boronia crassifolia, Boronia spathulata, Calytrix leschenaultii, Dampiera juncea, Dryandra nivea subsp nivea, Gompholobium knightianum, Hibbertia gracilipes, Jacksonia capitata, <u>Leucopogon distans</u> , Leucopogon gibbosus, Leucopogon woodsii, <u>Melaleuca striata</u> , Petrophile longifolia, Pultenaea verruculosa, Stachystemon polyandrus, Stirlingia anethifolia, Synaphea polymorpha,
Herbs	< 2%	<u>Laxmannia brachyphylla</u>
Sedges	2-10%	Anarthria scabra, Caustis dioica, <u>Chordifex crispatus</u> , Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Mesomelaena stygia, <u>Tricostularia neesii</u>





Site: 81, Roadside, South Coast Highway, Eucalyptus occidentalis wetland

Described AC **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Wetland, road verge, South Coast Highway

MGA Zone 50 652109 mE 6186446 mN

Habitat Seasonal wetland - roadside culvert, gentle slope
Soil Type Surface humus over white-grey sandy loam

Rock Type Limestone/Calcrete

Vegetation Sparse Eucalyptus occidentalis low trees, over sparse Melaleuca cuticularis tall shrubs, over

sparse Commersonia sp. Mt Groper low shrubs, over moderately dense Cyperochloa hirsuta

soft grass and open Anarthria laevis sedges.

Veg Condition Excellent **Fire** 1 - 5 years

Notes moderate leaf litter widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	2-10%	<u>Eucalyptus occidentalis</u>
Shrubs > 2 m	2-10%	Melaleuca cuticularis
Shrubs 1 - 2 m	< 2%	Acacia cyclops, Adenanthos cuneatus, Kunzea recurva
Shrubs 0.5 - 1 m	< 2%	<u>Lasiopetalum parvuliflorum</u>
Shrubs < 0.5 m	10-30%	Acacia aemula subsp. aemula, Astartea aspera, Boronia crenulata subsp. crenulata, Bossiaea rufa, <u>Commersonia sp. Mt Groper</u> , Gompholobium tomentosum, Lasiopetalum parvuliflorum, Thomasia rhynchocarpa, Vellerophyton dealbatum
Herbs	< 2%	Bossiaea praetermissa, Caladenia graminifolia, Caladenia longicauda subsp. australora, ?Echium plantagineum, Hypochaeris glabra, Gamochaeta calviceps, Helichrysum luteoalbum, Microtis media subsp. media, <u>Patersonia occidentalis</u> , Thysanotus sparteus, Villarsia parnassifolia
Grasses	30-70%	Austrodanthonia caespitosa, <u>Cyperochloa hirsuta</u>
Sedges	2-10%	Anarthria laevis, Caustis dioica, <u>Lepidosperma striatum</u> , Schoenus sublaxus, <u>Tricostularia compressa</u>





Site: 82, near Wellstead. Scattered Eucalyptus staeri mallee, over mixed tall shrubs

Described CT **Date** 15/10/2006 **Type:** Quadrat 10 x 10 m

Location near Wellstead

MGA Zone 50 648007 mE 6178639 mN

Habitat low hill crest, negligible slope

Soil Type Loose white sand

Rock Type nil

Vegetation Scattered *Eucalyptus staeri* mallee, over mixed tall shrubs

Veg Condition Excellent **Fire** > 5 years

Notes sparse leaf litter mainly under shrubs, negligible wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 10 m	< 2%	<u>Eucalyptus staeri</u>
Shrubs > 2 m	10-30%	<u>Banksia baxteri</u> , Banksia coccinea
Shrubs 1 - 2 m	30-70%	<u>Adenanthos cuneatus</u> , Banksia attenuata, Isopogon trilobus, Melaleuca striata, Melaleuca thymoides, Taxandria spathulata
Shrubs 0.5 - 1 m	30-70%	Andersonia simplex, Banksia nutans var. cernuella, <u>Beaufortia empetrifolia</u> , Beaufortia schaueri, Boronia albiflora, <u>Calytrix similis</u> , Conostylis vaginata, Daviesia incrassata, Gompholobium knightianum, Gompholobium scabrum, Hibbertia recurvifolia, Latrobea recurva, Leucopogon elegans, Lysinema ciliatum, Petrophile ericifolia, Petrophile rigida, Petrophile teretifolia, Phyllota barbata
Shrubs < 0.5 m	2-10%	Acacia luteola, <u>Calytrix leschenaultii</u> , <u>Calytrix similis</u> , Darwinia diosmoides, <u>Daviesia incrassata</u> subsp. incrassata, Eutaxia neurocalyx subsp. neurocalyx, Leucopogon distans, <u>Leucopogon elegans</u> , <u>Petrophile rigida</u> , Phyllota barbata, Stachystemon polyandrus
Herbs	< 2%	Burchardia congesta, Drosera paleacea subsp. trichocaulis, Johnsonia acaulis, Laxmannia brachyphylla, Stackhousia scoparia, Stylidium repens, Stylidium scandens
Grasses	< 2%	<u>Austrodanthonia caespitosa</u>
Sedges	10-30%	Anarthria prolifera Anarthria scabra, Caustis dioica, <u>Chordifex</u> <u>crispatus</u> , <u>Hypolaena exsulca</u> , <u>Lomandra hastilis</u> , <u>Lyginia</u> <u>imberbis</u> , <u>Tricostularia neesii</u>





Site: 83, cnr Sandalwood and Mettler Lake Rds, Sparse *Eucalyptus staeri* mallee, over sparse *Hakea corymbosa* tall shrubs, over moderately dense (mixed shrubland)

Described AC **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Leighton's, Wellstead

MGA Zone 50 649587 mE 6178542 mN

Habitat Plain

Soil Type Loose grey sandy loam with humus & coarse grave/pebbles surface layer

Rock Type Laterite

Vegetation Sparse Eucalyptus staeri mallee, over sparse Hakea corymbosa tall shrubs, over moderately

dense (mixed shrubland) Taxandria spathulata / Adenanthos cuneatus moderately tall shrubs,

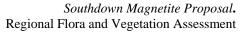
over open Xanthorrhoea platyphylla / Melaleuca striata medium shrubs

Veg Condition Excellent **Fire** none evident

Notes moderate leaf litter widespread, sparse wood litter.

vegetation cover.			
STRATUM	COVER	SPECIES WITHIN EACH STRATUM	
Mallees < 5 m	2-10%	Eucalyptus staeri	
Shrubs > 2 m	2-10%	Hakea corymbosa	
Shrubs 1 - 2 m	30-70%	Adenanthos cuneatus, <u>Taxandria spathulata</u>	
Shrubs 0.5 - 1 m	30-70%	Daviesia incrassata subsp. incrassata, Dryandra falcata, Leucopogon cucullatus, Lysinema ciliatum, <u>Melaleuca striata</u> , Stirlingia tenuifolia, <u>Xanthorrhoea platyphylla</u>	
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Agonis theiformis, Allocasuarina humilis, Andersonia simplex, Astroloma tectum, Banksia gardneri var. gardneri, Boronia spathulata, Calothamnus gracilis, Darwinia vestita, Dryandra calophylla, Dryandra mucronulata subsp. mucronulata, Grevillea fasciculata, Hibbertia gracilipes, Hibbertia recurvifolia, Jacksonia capitata, Leucopogon corynocarpus, Leucopogon gibbosus, Petrophile teretifolia, Synaphea favosa, Verticordia habrantha	
Herbs	< 2%	Burchardia congesta, Comesperma confertum, Conostylis setigera subsp. setigera, Conostylis vaginata, <u>Dampiera juncea</u> , Drosera menziesii, Elythranthera brunonis, Gompholobium venustum, Sphaerolobium medium, Stylidium schoenoides, Thelymitra crinita	
Sedges	2-10%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma striatum, Lepidosperma ustulatum, Lomandra sp., Mesomelaena stygia, Mesomelaena tetragona, Schoenus pleiostemoneus	
Climbers	< 2%	Cassytha sp., Hovea trisperma	







Site: 84, cnr Sandalwood and Mettler Lake Rds, Open Eucalytpus spp. mallee woodland.

Described CT **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Leighton's, Wellstead

MGA Zone 50 649591 mE 6178419 mN

Habitat Undulating plain

Soil Type Very shallow white-grey sand with surface layer of coarse gravel/pebbles

Rock Type laterite

Vegetation Open Eucalyptus staeri / Eucalyptus decipiens subsp. adesmophloia mallee, over sparse

Lambertia inermis / Hakea cucullata / Banksia baxteri tall shrubs, over open Hakea corymbosa subsp. corymbosa / Isopogon trilobus moderately tall shrubs, over moderately dense Melaleuca striata / Adenanthos cuneatus / Taxandria spathulata medium shrubs, over moderately dense Daviesia incrassata / Xanthorrhoea platyphylla dwarf shrubs, over scattered Burchardia congesta / Johnsonia acaulis herbs and open Tricostularia neesii /

Caustis dioica sedges.

Veg Condition Excellent - no weeds, some past grazing - structure more open in places than usual in this

area

Fire > 5 years

Notes moderate leaf litter widespread, negligible wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 7 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri
Shrubs > 2 m	2-10%	Banksia baxteri, Hakea cucullata, Lambertia inermis
Shrubs 1 - 2 m	2-10%	Acacia subcaerulea, <u>Agonis theiformis</u> , <u>Beaufortia empetrifolia</u> , <u>Hakea corymbosa subsp. corymbosa</u> , Isopogon trilobus, Leucopogon corynocarpus,
Shrubs 0.5 - 1 m	10-30%	Adenanthos cuneatus, Allocasuarina thuyoides, Banksia nutans var. cernuella, Calothamnus gracilis, Comesperma confertum, Daviesia incrassata subsp. incrassata, Eutaxia neurocalyx subsp. neurocalyx, Gompholobium knightianum, Leucopogon distans, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Pultenaea verruculosa, Taxandria spathulata
Shrub < 0.5 m	2-10%	Acacia luteola, Adenanthos apiculatus, Allocasuarina humilis, <u>Banksia repens</u> , Boronia crassifolia, Boronia spathulata, Bossiaea praetermissa, Calytrix leschenaultii, Chorizema glycinifolium, Comesperma confertum, Conothamnus aureus, Dampiera juncea, Dampiera linearis, Darwinia vestita, <u>Daviesia incrassata</u> , <u>Dryandra calophylla</u> , Goodenia incana, <u>Hibbertia gracilipes</u> , <u>Hibbertia recurvifolia</u> , Hibbertia rupicola, Hovea trisperma, Logania serpyllifolia subsp. serpyllifolia, Petrophile media, Petrophile teretifolia, Phyllota barbata, Platysace filiformis, Stachystemon polyandrus, Stirlingia anethifolia, <u>Xanthorrhoea platyphylla</u>
Herbs	< 2%	Burchardia congesta, Conostylis setigera subsp. setigera, Drosera menziesii, Johnsonia acaulis, Laxmannia brachyphylla, Laxmannia sessiliflora, Opercularia vaginata, Xanthosia huegelii
Sedges	2-10%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Caustis dioica, Chordifex sphacelatus, Desmocladus fasciculatus, Harperia confertospicata, Harperia lateriflora, Hypolaena fastigiata, Lepidosperma squamatum, Lomandra hastilis, Mesomelaena stygia, Schoenus obtusifolius, Schoenus pleiostemoneus, Tricostularia neesii





Site: 85, cnr Sandalwood and Mettler Lake Rds, Open Eucalyptus staeri mallee woodland

Described CMC **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Mettler's, Wellstead

MGA Zone 50 648206 **mE** 6175166 **mN**

Habitat Undulating plain
Soil Type Loose grey fine sand

Rock Type nil

Vegetation Open Eucalyptus staeri mallee, over sparse mixed Hakea spp. (Hakea cucullata / Hakea

ferruginea / Hakea denticulata) tall shrubs, over open Daviesia incrassata / Dryandra mucronulata / Melaleuca striata medium shrubs, over sparse Adenanthos apiculatus dwarf

shrubs, over open Anarthria scabra / Mesomelaena stygia sedges.

Veg Condition Excellent **Fire** none evident

Notes sparse leaf litter widespread, sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Hakea cucullata, Hakea denticulata
Shrubs 1 - 2 m	2-10%	Hakea corymbosa, Hakea denticulata, Hakea ferruginea, Lambertia inermis, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Beaufortia empetrifolia, Dryandra armata, Dryandra mucronulata subsp. mucronulata, <u>Grevillea fasciculata</u> , Isopogon longifolius, Leucopogon corynocarpus, Lysinema ciliatum, <u>Melaleuca striata</u> , Pimelea tinctoria, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia luteola, Acacia subcaerulea, <u>Adenanthos apiculatus</u> , Agonis theiformis, <u>Andersonia simplex</u> , Banksia gardneri vat. gardneri, Banksia nutans, Boronia crenulata subsp. crenulata, Bossiaea praetermissa, Calothamnus gracilis, Calytrix leschenaultii, Chorizema cytisoides, Comesperma confertum, Conostylis vaginata, Darwinia vestita, Daviesia incrassata, Dryandra calophylla, Dryandra plumosa, Hibbertia gracilipes, <u>Hibbertia recurvifolia</u> , Hibbertia rupicola, Isopogon teretifolius, Jacksonia capitata, Leucopogon cucullatus, Leucopogon distans, Melaleuca thymoides, Persoonia striata, Petrophile media, Pimelea angustifolia, Platytheca aff. galioides, Pultenaea verruculosa, Synaphea polymorpha
Herbs	< 2%	Cassytha sp., Chorizema glycinifolium, Dampiera linearis, Drosera menziesii, Gompholobium venustum, Laxmannia sessiliflora
Grasses	< 2%	POACEAE sp.
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma ustulatum, Mesomelaena stygia, Schoenus curvifolius





Site: 86, cnr Sandalwood and Mettler Lake Rds, Closed heath

Described CT **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Leighton's, Wellstead

MGA Zone 50 649640 mE 6178431 mN

Habitat Undulating plain, Dampland?Soil Type Fine gravel over sand/sandy loam

Rock Type Laterite

Vegetation Emergent Eucalyptus decipiens mallee, over moderately dense Taxandria spathulata /

Allocasuarina humilis / Melaleuca striata medium shrubs, over moderately dense mixed

sedges

Veg Condition Pristine/Excellent

Fire > 5 years

Notes sparse leaf litter widespread, negligible wood litter, excellent regeneration

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 3 m	< 2%	Eucalyptus decipiens subsp. adesmophloia
Shrubs 0.5 - 1 m	30-70%	Adenanthos cuneatus, Allocasuarina humilis, Beaufortia schaueri, Calothamnus gracilis, Daviesia incrassata, Dryandra armata, Hakea corymbosa, Isopogon heterophyllus, Isopogon longifolius, Isopogon teretifolius subsp. teretifolius, Melaleuca striata, Petrophile rigida, Petrophile seminuda, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia crispula, Adenanthos cacomorphus, Astroloma drummondii, Astroloma tectum, Banksia gardneri var. gardneri, Banksia repens var. repens, Boronia crassifolia, Comesperma confertum, Dampiera juncea, Dampiera linearis, Darwinia diosmoides, Daviesia alternifolia, Dryandra calophylla, Dryandra nivea subsp. nivea, Gastrolobium bracteolosum, Gompholobium knightianum, Grevillea fasciculata, Hakea cucullata, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon sp., Jacksonia capitata, Leucopogon corynocarpus, Leucopogon gibbosus, Lysinema ciliatum, Melaleuca subtrigona, Petrophile sp., Petrophile teretifolia, Pultenaea verruculosa, Rinzia schollerifolia, Synaphea favosa, Synaphea polymorpha
Herbs	< 2%	<u>Burchardia congesta</u> , Caladenia flava, Caladenia heberleana, <u>Conostylis setigera subsp. setigera</u> , Drosera menziesii, <u>Elythranthera brunonis, Stylidium schoenoides</u>
Sedges	2-10%	Anarthria gracilis, <u>Anarthria scabra</u> , Chordifex sphacelatus, Desmocladus fasciculatus, Hypolaena fastigiata, Lepidosperma ustulatum, Mesomelaena stygia, Patersonia occidentalis, Schoenus obtusifolius, Schoenus sublateralis, <u>Tricostularia</u> <u>neesii</u>





Site: 87, Mettler Lake Rd, Eucalyptus occidentalis wetland

Described CMC **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Mettler's Lake wetland

MGA Zone 50 648551 mE 6175345 mN

Habitat Seasonal wetlandSoil Type Loose grey sandy loam

Rock Type nil

Vegetation Sparse Eucalyptus occidentalis trees, over sparse Banksia littoralis tall shrubs, over sparse

Kunzea recurva / Actinodium cunninghamii low shrubs, over moderately dense Anarthria

laevis / Schoenus laevigatus sedges.

Veg Condition Excellent **Fire** > 5 years

Notes sparse leaf litter mainly under shrubs, sparse wood litter

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	2-10%	Eucalyptus occidentalis
Shrubs > 2 m	2-10%	Banksia littoralis
Shrubs 0.5 - 1 m	2-10%	Kunzea recurva, Petrophile rigida
Shrubs < 0.5 m	2-10%	Actinodium cunninghamii, Jacksonia capitata, Petrophile longifolia
Herbs	< 2%	Drosera pulchella
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	30-70%	Anarthria laevis, Chordifex crispatus, Chordifex ornatus, ?Lomandra sp., <u>Schoenus laevigatus</u> , Schoenus sp., Tricostularia compressa





Site: 88, Mettler Lake Rd, Open Eucalyptus staeri mallee woodland

Described CT **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Off Mettler Lake Road, near Wellstead

MGA Zone 50 648175 mE 6175146 mN

Habitat Gentle Hillslope

Soil Type Shallow loose white-grey sand with humus surface cover over laterite hard pan

Rock Type laterite

Vegetation Open Eucalyptus staeri mallee, over scattered Pimelea tinctoria / Dryandra falcata

moderately tall shrubs, over sparse Taxandria spathulata / Dryandra cuneata medium shrubs, over dense Leucopogon woodsii / Beaufortia empetrifolia / Melaleuca striata dwarf

shrubs, over open sedges, over scattered Conostylis setigera subsp. setigera herbs.

Veg Condition Excellent - no weeds

Fire 1 - 5 years

Notes sparse leaf litter mainly under shrubs, negligible wood litter

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus staeri
Shrubs 1 - 2 m	< 2%	Acacia subcaerulea, Banksia baxteri, Dryandra falcata, Lambertia inermis, Pimelea tinctoria
Shrubs 0.5 - 1 m	2-10%	Daviesia emarginata, Daviesia gracilis, <u>Daviesia incrassata</u> , <u>Dryandra cuneata</u> , <u>Hakea corymbosa subsp. corymbosa</u> , Hakea denticulata, <u>Hakea ferruginea</u> , Isopogon heterophyllus, Isopogon longifolius, Isopogon trilobus, Lambertia inermis var. inermis, <u>Petrophile teretifolia</u> , <u>Taxandria spathulata</u> , <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	10-30%	Acacia delphina, <u>Adenanthos apiculatus</u> , Adenanthos cuneatus, Agonis theiformis, Andersonia simplex, Banksia gardneri var. gardneri, Banksia nutans var. cernuella, <u>Beaufortia empetrifolia</u> , Calothamnus gracilis, Conospermum caeruleum subsp. caeruleum, Dampiera juncea, Dampiera linearis, Darwinia diosmoides, Dryandra arctotidis, Dryandra blechnifolia, Dryandra plumosa subsp. plumosa, Gompholobium knightianum, Grevillea fasciculata, Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Jacksonia capitata, Leucopogon corynocarpus, Leucopogon distans, Lysinema ciliatum, <u>Melaleuca striata</u> , Melaleuca thymoides, Persoonia striata, Pimelea angustifolia, Platysace filiformis, Pultenaea verruculosa, Stachystemon polyandrus, Synaphea polymorpha
Herbs	< 2%	Conostylis setigera subsp. setigera, Laxmannia sessiliflora, Stylidium schoenoides
Sedges	2-10%	Anarthria gracilis, <u>Anarthria prolifera</u> , Anarthria scabra, <u>Chordifex crispatus</u> , Chordifex sphacelatus, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, <u>Lepidosperma squamatum</u> , Lyginia imberbis, Mesomelaena stygia, Schoenus sublaxus, Tetraria octandra, <u>Tricostularia neesii</u>





Site: 89 Mettler Lake Road Reserve, Eucalyptus occidentalis wetland

Described CT **Date** 16/10/2006 **Type:** Quadrat 10 x 10 m

Location Wetland off Mettler Lake Road near Cape Riche homestead Road

MGA Zone 50 648519 mE 6175397 mN

Habitat Dampland - shallow depression with negligible slope

Soil Type Loose grey clay

Rock Type nil

Vegetation Sparse Eucalyptus occidentalis mallee, over open Hakea trifurcata moderately tall shrubs,

over open Kunzea recurva medium shrubs, over open Actinodium calocephalum dwarf shrubs, over dense Mesomelaena tetragona / Anarthria laevis / Lepidosperma striatum, over

scattered Cyperochloa hirsuta soft grass.

Veg Condition Excellent: no disturbance, no weeds

Fire 1 - 5 years

Notes sparse leaf litter mainly under shrubs, negligible wood litter

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 3 m	2-10%	Eucalyptus decipiens subsp. adesmophloia, <u>Eucalyptus</u> <u>occidentalis</u>
Shrubs 1 - 2 m	10-30%	Hakea trifurcata
Shrubs 0.5 - 1 m	10-30%	Hakea ferruginea, <u>Kunzea recurva</u> , Melaleuca cuticularis
Shrubs < 0.5 m	10-30%	Actinodium calocephalum, Adenanthos apiculatus, Banksia dryandroides, Beaufortia empetrifolia, Dampiera linearis, Gastrolobium bracteolosum, Petrophile diversifolia, Petrophile longifolia, Pultenaea verruculosa
Herbs	< 2%	Drosera pulchella, Stackhousia scoparia, <u>Stylidium piliferum</u> <u>subsp. minor</u>
Grasses	< 2%	Cyperochloa hirsuta
Sedges	70- 100%	Anarthria laevis, Chordifex sphacelatus, Lepidosperma striatum, Mesomelaena tetragona, Schoenus caespititius, Schoenus laevigatus, Tricostularia compressa





Site: 90, near Wellstead, Open mixed tall shrubland

Described AC **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location near Wellstead

MGA Zone 50 647879 mE 6176049 mN

Habitat Undulating plain Soil Type Loose grey sand

Rock Type nil

Vegetation Open Banksia baxteri tall shrubs, over moderately dense Adenanthos cuneatus moderately

tall shrubs, over moderately dense Daviesia incrassata subsp. incrassata shrubs, over sparse

Lepidosperma squamatum / Anarthria laevis sedges.

Veg Condition Excellent **Fire** > 5 years

Notes sparse leaf litter mainly under shrubs, moderate wood litter

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	< 2%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Banksia baxteri
Shrubs 1 - 2 m	30-70%	Adenanthos cuneatus, Taxandria spathulata
Shrubs 0.5 - 1 m	30-70%	Daviesia incrassata subsp. incrassata
Shrubs < 0.5 m	2-10%	Acacia luteola, Andersonia simplex, Astroloma baxteri, Beaufortia empetrifolia, Boronia albiflora, Bossiaea praetermissa, Gompholobium scabrum, Grevillea fasciculata, Hibbertia recurvifolia, Isopogon longifolius, Leucopogon corynocarpus, Leucopogon elegans, Lysinema ciliatum, Melaleuca spathulata, Melaleuca thymoides, Petrophile ericifolia, Petrophile teretifolia, Stirlingia tenuifolia, Synaphea polymorpha, Xanthorrhoea platyphylla
Herbs	< 2%	<u>Conostylis vaginata</u> , Drosera paleacea subsp. trichocaulis, <u>Gompholobium venustum</u>
Sedges	2-10%	<u>Anarthria laevis</u> , Anarthria prolifera, Caustis dioica, Harperia confertospicata, <u>Lepidosperma squamatum</u> , Lyginia barbata, Schoenus brevisetis, Tricostularia neesii var. elatior





Site: 91, off Mettler Lake Road, Moderately dense Eucalyptus marginata woodland

Described CT **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location off Mettler Lake Road, Wellstead

MGA Zone 50 647844 mE 6176048 mN

Habitat Gentle hill slope **Soil Type** white-grey sand

Rock Type nil

Vegetation Moderately dense *Eucalyptus marginata* trees / *Eucalyptus staeri* mallee, over moderately

dense Acacia subcaerulea / Agonis theiformis moderately tall shrubs, over open Gompholobium scabrum medium shrubs, over open Boronia albiflora / Leucopogon distans

dwarf shrubs, over moderately dense Anarthria laevis sedges.

Veg Condition Excellent **Fire** 1 - 5 years

Notes moderate leaf litter mainly under shrubs, sparse wood litter, good regeneration - no weeds

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	30-70%	Eucalyptus marginata
Mallees < 5 m	30-70%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Agonis theiformis, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Acacia delphina, Acacia luteola, Adenanthos cuneatus, Banksia nutans var. cernuella, Bossiaea praetermissa, Conospermum caeruleum, <u>Gompholobium scabrum</u> , Hakea corymbosa, Melaleuca thymoides, Petrophile rigida, Petrophile teretifolia, Pimelea angustifolia
Shrubs < 0.5 m	10-30%	Andersonia simplex, Astroloma drummondii, Banksia baxteri, Boronia albiflora, Dampiera juncea, Dampiera linearis, Daviesia incrassata, Grevillea fasciculata, Hibbertia recurvifolia, Hibbertia rupicola, Hovea trisperma, Leucopogon corynocarpus, Leucopogon distans, Leucopogon elegans, Monotoca aristata, Platysace filiformis, Platytheca aff. galioides
Herbs	< 2%	Conostylis serrulata
Sedges	30-70%	Anarthria laevis, Anarthria prolifera, Anarthria scabra, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma squamatum, Lepidosperma striatum, Schoenus caespititius
Climbers	< 2%	Kennedia coccinea





Site: 92, near Wellstead, Open Eucalytpus spp. mixed mallee woodland

Described CMC **Date** 19/10/2006 **Type:** Quadrat 10 x 10m

Location near Wellstead, ~90km from Albany

MGA Zone 50 646673 mE 6176970 mN

Habitat Plain

Soil Type Loose grey-brown fine sand

Rock Type nil

Vegetation Sparse to scattered Eucalyptus decurva / Eucalyptus staeri mallee, over scattered Dryandra

falcata tall shrubs, over sparse to scattered Hakea ferruginea / Hakea denticulata / Hakea corymbosa moderately tall shrubs, over sparse Taxandria spathulata / Daviesia incrassata subsp. incrassata medium shrubs, over open to sparse Gastrolobium bracteolosum /

Adenanthos apiculatus dwarf shrubs.

Veg Condition Excellent **Fire** > 5 years

Notes sparse leaf litter mainly under shrubs, sparse wood litter

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	2-10%	Eucalyptus decurva, Eucalyptus staeri
Shrubs > 2 m	< 2%	Dryandra falcata
Shrubs 1 - 2 m	2-10%	Hakea corymbosa, Hakea denticulata, <u>Hakea ferruginea</u> , Lambertia inermis
Shrubs 0.5 - 1 m	2-10%	Taxandria spathulata
Shrubs < 0.5 m	10-30%	Acacia browniana var. browniana, Acacia luteola, Adenanthos apiculatus, Andersonia simplex, Banksia repens, Beaufortia empetrifolia, Boronia crenulata subsp. crenulata, Calytrix leschenaultii, Darwinia diosmoides, Daviesia alternifolia, Dryandra mucronulata subsp. mucronulata, Gastrolobium bracteolosum, Grevillea fasciculata, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon trilobus, Leucopogon gibbosus, Lysinema ciliatum, Melaleuca suberosa, Synaphea favosa, Petrophile teretifolia, Pimelea angustifolia, Xanthorrhoea platyphylla
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Conostylis setigera subsp. setigera, Dampiera juncea, Drosera menziesii, Gompholobium venustum, Jacksonia capitata, Opercularia vaginata, Patersonia occidentalis, Tricoryne elatior
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	< 2%	Anarthria prolifera, Chordifex sphacelatus, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma carphoides, Lepidosperma striatum, Schoenus curvifolius, Schoenus subbarbatus, Tricostularia neesii var. elatior
Climbers	< 2%	Cassytha sp., Chorizema glycinifolium





Site: 93, near Wellstead, open Eucalyptus marginata low woodland

Described CT **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location near Wellstead, ~90 from Albany

MGA Zone 50 646526 mE 6176988 mN

Habitat Undulating plainSoil Type white grey sand

Rock Type nil

Vegetation Open Eucalyptus marginata trees, over open Eucalyptus staeri mallee, over open Banksia

baxteri / Banksia attenuata moderately tall shrubs, over moderately dense Beaufortia empetrifolia / Adenanthos cuneatus, over moderately dense Leucopogon distans / Melaleuca thymoides, over moderately dense Dasypogon bromeliifolius / Anarthria scabra sedges.

Veg Condition Excellent **Fire** 1 - 5 years

Notes sparse leaf litter mainly under shrubs, negligible wood litter, no weeds, good regeneration

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Tree < 6 m	10-30%	Eucalyptus marginata
Mallee < 5 m	10-30%	Eucalyptus staeri
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Adenanthos cuneatus, Agonis theiformis, <u>Banksia attenuata</u> , <u>Banksia baxteri</u> , Banksia grandis, Lambertia inermis, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	30-70%	Acacia delphina, Adenanthos cuneatus, Andersonia simplex, Beaufortia empetrifolia, Beaufortia schaueri, Conospermum teretifolium, Daviesia incrassata, Franklandia fucifolia, Gompholobium knightianum, Hakea corymbosa subsp. corymbosa, Melaleuca striata, Pimelea angustifolia, Pimelea tinctoria
Shrubs < 0.5 m	30-70%	Allocasuarina humilis, Andersonia simplex, Banksia nutans var. cernuella, Banksia repens, Boronia spathulata, Calothamnus gracilis, Calytrix sp., Conospermum floribundum, Dampiera juncea, Dampiera linearis, Darwinia diosmoides, Dryandra arctotidis, Dryandra blechnifolia, Dryandra nivea subsp. nivea, Hibbertia recurvifolia, Isopogon longifolius, Leucopogon distans, Lysinema ciliatum, Melaleuca thymoides, Petrophile rigida, Petrophile teretifolia, Pultenaea verruculosa, Stirlingia anethifolia
Herbs	30-70%	Conostylis vaginata, <u>Dasypogon bromeliifolius</u> , Stylidium diuroides, Stylidium scandens
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	30-70%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, Chordifex sphacelatus, Harperia confertospicata, Hypolaena fastigiata, Lyginia imberbis, Mesomelaena stygia, Schoenus caespititius, Tricostularia neesii





Site: 94, near Wellstead, sparse Eucalyptus spp. mixed low mallee woodland

Described CMC **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location near Wellstead, ~ 90km from Albany

MGA Zone 50 647176 **mE** 6181282 **mN**

Habitat Plain

Soil Type Loose grey brown sand

Rock Type Laterite

Vegetation Sparse Eucalyptus falcata / Eucalyptus staeri mallees, over sparse Lambertia inermis tall

shrubs, over sparse *Melaleuca striata* medium shrubs, over *Dryandra plumosa* var. *plumosa / Xanthorrhoea platyphylla* low shrubs, over open *Lysinema ciliatum / Banksia gardneri* dwarf

shrubs.

Veg Condition Excellent **Fire** none evident

Notes Sparse leaf litter mainly under shrubs, sparse wood litter

vegetation cover:	COVED	CDECIEC WITHIN EACH CED ATHA
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	2-10%	Eucalyptus falcata, <u>Eucalyptus staeri</u>
Shrubs > 2 m	2-10%	Lambertia inermis
Shrubs 1 -2 m	2-10%	Hakea corymbosa, <u>Melaleuca striata</u>
Shrubs 0.5 - 1 m	2-10%	Allocasuarina humilis, Dryandra plumosa subsp. plumosa, Pimelea tinctoria, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia biflora, Acacia luteola, Acacia subcaerulea, Adenanthos apiculatus, Agonis theiformis, <u>Banksia gardneri var. gardneri</u> , Banksia repens, Beaufortia anisandra, Calothamnus gracilis, Chorizema glycinifolium, Conostylis setigera subsp. setigera, Darwinia diosmoides, Daviesia alternifolia, Dryandra armata, Gastrolobium bracteolosum, Gastrolobium retusum, Grevillea fasciculata, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon sp., Isopogon trilobus, Lasiopetalum microcardium, Leucopogon corynocarpus, Leucopogon gibbosus, <u>Lysinema ciliatum</u> , Petrophile teretifolia, Platysace filiformis, Pultenaea verruculosa, Sphaerolobium scabriusculum, Synaphea polymorpha
Herbs	< 2%	Agrostocrinum scabrum subsp. scabrum, Burchardia congesta, Comesperma confertum, Dampiera juncea, Drosera menziesii, Gompholobium venustum, Patersonia occidentalis, Stylidium glandulosissimum, Stylidium schoenoides
Sedges	< 2%	Anarthria laevis, <u>Anarthria prolifera</u> , <u>Anarthria scabra</u> , Hypolaena fastigiata, <u>Lepidosperma brunonianum</u> , <u>Lepidosperma striatum</u> , Lepyrodia hermaphrodita, <u>Schoenus</u> <u>?caespititius</u> , <u>Schoenus curvifoliu</u> s, Schoenus subbarbatus
Climbers	< 2%	Cassytha micrantha





Site: 95, Lot 4

Described CT **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location Wheatbin Block

MGA Zone 50 647140 mE 6181355 mN

Habitat Gentle Hill slope

Soil Type white grey sand over ?laterite

Rock Type Laterite

Vegetation Open Eucalyptus decipiens subsp. adesmophloia, over sparse Lambertia inermis var. inermis

/ Isopogon trilobus/ Hakea corymbosa tall shrubs, over open Melaleuca suberosa /

Melaleuca striata dwarf shrubs.

Veg Condition Excellent **Fire** > 5 years

Notes Moderate leaf litter mainly under shrubs, Disturbance very old track nearby - no weeds

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus falcata
Shrubs > 2 m	10-30%	Exocarpos sparteus, Hakea corymbosa, Hakea ferruginea, <u>Isopogon trilobus</u> , Lambertia inermis var. inermis
Shrubs 1 - 2 m	2-10%	<u>Dryandra plumosa subsp. plumosa,</u> Kunzea recurva, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	2-10%	<u>Banksia nutans var. cernuella, Beaufortia empetrifolia, Daviesia</u> <u>alternifolia, Petrophile teretifolia, Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	10-30%	Acacia luteola, Actinodium calocephalum, Adenanthos apiculatus, Allocasuarina humilis, Allocasuarina thuyoides, Astartea aspera, Beaufortia schaueri, Chorizema glycinifolium, Comesperma confertum, Conothamnus aureus, Dampiera juncea, Daviesia incrassata, Dryandra calophylla, Dryandra nivea subsp. nivea, Dryandra tenuifolia var. tenuifolia, Gastrolobium bracteolosum, Gastrolobium retusum, Gompholobium knightianum, Grevillea fasciculata, Hibbertia gracilipes, Hibbertia recurvifolia, Hibbertia rupicola, Hovea trisperma, Isopogon heterophyllus, Jacksonia capitata, Leucopogon distans, Leucopogon gibbosus, Logania serpyllifolia subsp. serpyllifolia, Lysinema ciliatum, Melaleuca striata, Melaleuca suberosa, Melaleuca subtrigona, Persoonia striata, Platysace filiformis, Pultenaea verruculosa, Stachystemon polyandrus, Stirlingia anethifolia, Synaphea polymorpha
Herbs	< 2%	Conostylis serrulata, Conostylis setigera subsp. setigera, Laxmannia brachyphylla, Patersonia lanata, Poranthera microphylla, Stylidium glandulosissimum, Stylidium schoenoides
Sedges	2-10%	Anarthria prolifera, Caustis dioica, Chordifex capillaceus, Chordifex leucoblepharus, Chordifex sphacelatus, Cyathochaeta avenacea, Harperia confertospicata, Lepidosperma squamatum, Lepidosperma striatum, Mesomelaena stygia, <u>Tricostularia</u> <u>neesii</u>





Site: 96, near Wellstead

Described AC **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Locatio near Wellstead, ~ 90km from Albany

MGA Zone 50 646063 mE 6175976 mN

Habitat Gentle Hillslope

Soil Type loose grey-brown sand

Rock Type nil

Vegetation Scattered Hakea cucullata and sparse Lambertia inermis, over open Taxandria spathulata /

Allocasuarina humilis, over open Dryandra plumosa / Daviesia emarginata, over scattered

mixed sedges.

Veg Condition Excellent **Fire** 1-5 years

Notes sparse leaf litter mainly under shrubs, sparse wood litter

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Shrubs 1 - 2 m	2-10%	Hakea cucullata, <u>Lambertia inermis</u>
Shrubs 0.5 - 1 m	10-30%	Allocasuarina humilis, Conospermum floribundum, <u>Dryandra</u> <u>plumosa</u> , Pimelea tinctoria, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia biflora, Banksia gardneri var. gardneri, Beaufortia anisandra, Calothamnus gracilis, <u>Daviesia emarginata</u> , Dryandra nivea subsp. nivea, Gastrolobium retusum, Leucopogon cucullatus, Lysinema ciliatum, Melaleuca striata, Petrophile sp., Pultenaea verruculosa, Verticordia habrantha
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Comesperma confertum, Conostylis setigera subsp. setigera, Gompholobium venustum, Laxmannia brachyphylla
Sedges	< 2%	Anarthria gracilis, Anarthria laevis, Chordifex sphacelatus, Dasypogon bromeliifolius, Lepidosperma ustulatum, Mesomelaena stygia, Schoenus sublateralis





Site: 97, Lot 6859

Described CT **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location near Wellstead, east over fence from Nyman's recently burnt onto side of fence c.f. big lake

which is long unburnt

MGA Zone 50 646054 mE 6175887 mN

Habitat Hillcrest, gentle slope

Soil Type Deep white grey sand (loose soil)

Rock Type nil

Vegetation Open Eucalyptus staeri mallee / Eucalyptus marginata, over scattered / Banksia baxteri /

Lambertia inermis medium-tall shrubs, over sparse Lambertia inermis / Taxandria spathulata / Banksia attenuata medium shrubs, over dense Allocasuarina humilis / Dryandra

plumosa subsp. plumosa dwarf shrubs

Veg Condition excellent, regeneration

Fire 1 - 5 years

Notes neg leaf litter mainly under shrubs

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 10 m	10-30%	Eucalyptus marginata
Mallees < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri
Shrubs 1 - 2 m	2-10%	Banksia baxteri, Hakea cucullata, <u>Lambertia inermis</u>
Shrubs 0.5 - 1 m	10-30%	Banksia attenuata, Beaufortia schaueri, Daviesia alternifolia, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	70- 100%	Acacia delphina, Adenanthos apiculatus, Adenanthos cuneatus, Allocasuarina humilis, Allocasuarina thuyoides, Andersonia simplex, Banksia gardneri var. gardneri, Banksia nutans var. cernuella, Beaufortia empetrifolia, Calectasia gracilis, Conothamnus gracilis, Conospermum caeruleum, Conospermum teretifolium, Conothamnus aureus, Daviesia alternifolia, Daviesia incrassata, Dryandra blechnifolia, Dryandra nivea subsp. nivea, Dryandra plumosa, Gompholobium burtonioides, Gompholobium knightianum, Grevillea fasciculata, Hakea ceratophylla, Hakea corymbosa subsp. corymbosa, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon longifolius, Isopogon teretifolius subsp. teretifolius, Isopogon trilobus, Jacksonia capitata, Latrobea recurva, Leucopogon distans, Leucopogon elegans, Leucopogon woodsii, Lysinema ciliatum, Melaleuca thymoides, Monotoca aristata, Petrophile rigida, Petrophile teretifolia, Phyllota barbata, Pimelea angustifolia, Pimelea tinctoria, Sphaerolobium medium, Stachystemon polyandrus, Stirlingia anethifolia, Synaphea polymorpha, Verticordia habrantha
Herbs	2-10%	Conostylis setigera subsp. setigera, Conostylis vaginata, <u>Dasypogon bromeliifolius</u> , Laxmannia brachyphylla, Stylidium diuroides
Sedges	2-10%	Anarthria prolifera, Anarthria scabra, Caustis dioica, Chordifex capillaceus, Chordifex crispatus, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Lyginia imberbis, Mesomelaena stygia, Schoenus caespititius, Tricostularia neesii, Tricostularia neesii var. elatior





Site: 98, Lot 6857

Described CT **Date** 17/10/2006 **Type:** Quadrat 10 x 10 m

Location

MGA Zone 50 646103 **mE** 6175655 **mN**

Habitat undulating plain
Soil Type deep white/grey sand

Rock Type nil **Vegetatio** N/A

Veg Condition excellent

Fire long unburnt >20 years

Notes leaf litter sparse mainly under shrubs, moderate wood litter

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	2-10%	Hakea cucullata, <u>Hakea pandanicarpa</u>
Shrubs 1 - 2 m	10-30%	Hakea corymbosa subsp. corymbosa, Hakea denticulata, Petrophile ericifolia, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Adenanthos sp., Allocasuarina humilis, Banksia nutans var. cernuella, <u>Beaufortia empetrifolia</u> . Daviesia incrassata, Dryandra falcata, Dryandra plumosa subsp. plumosa, Isopogon heterophyllus, Isopogon longifolius, Leucopogon distans, Lysinema ciliatum, Melaleuca striata, Petrophile teretifolia, Pimelea tinctoria, Sphaerolobium macranthum, Xanthorrhoea platyphylla
Shrubs < 0.5 sh	2-10%	Andersonia simplex, Banksia gardneri var. gardneri, Calytrix flavescens, Chorizema cytisoides, Dampiera juncea, Dampiera linearis, Darwinia diosmoides, Daviesia alternifolia, Dryandra nivea subsp. nivea, Dryandra tenuifolia var. tenuifolia, Gompholobium knightianum, <u>Hibbertia gracilipes</u> , Hibbertia recurvifolia, Melaleuca thymoides, Petrophile rigida, Stirlingia anethifolia, Verticordia habrantha
Herbs	< 2%	Burchardia congesta, Conostylis hiemalis, Conostylis vaginata, Drosera menziesii, Stylidium schoenoides
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	10-30%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Caustis dioica, <u>Chordifex crispatus</u> , Cyathochaeta equitans, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Lyginia imberbis, Mesomelaena stygia, Tricostularia neesii





Site: 51, Roadside, South Coast Highway

Described CT **Date** 10/10/2006 **Type:** Quadrat 10 x 10 m

Location Drawdown cone at eastern end of minesite on road verge South Coast Hwy

MGA Zone 50 642253 mE 6176831 mN

Habitat Undulating Plain

Soil Type Loose brown sandy loam with surface layer of coarse gravel/Pebbles

Rock Type Nil

Vegetation Open mallee woodland, over moderately dense tall shrubs, over moderately dense sedges

Veg Condition Excellent **Fire** None evident

Notes Sparse leaf litter mainly under shrubs, sparse wood litter

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus angulosa, Eucalyptus decipiens subsp. adesmophloia, Eucalyptus decurva, Eucalyptus pleurocarpa, Eucalyptus staeri, Eucalyptus uncinata
Shrubs > 2 m	10-30%	Callitris roei, Hakea nitida, <u>Hakea pandanicarpa subsp.</u> <u>crassifolia</u> , Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Calothamnus gracilis, Dryandra falcata, <u>Dryandra plumosa subsp. plumosa</u> , Dryandra tenuifolia var. tenuifolia, Grevillea fasciculata, Hakea cucullata, Hakea corymbosa, Hakea trifurcata, <u>Isopogon trilobus</u> , Melaleuca striata, Petrophile seminuda, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	2-10%	Allocasuarina thuyoides, Beaufortia empetrifolia, Calothamnus schaueri, Chorizema glycinifolium, Comesperma confertum, Conospermum caeruleum subsp. caeruleum, Darwinia vestita, Daviesia emarginata, Dryandra armata, Gompholobium burtonioides, Hakea prostrata, Isopogon teretifolius subsp. petrophiloides, Lechenaultia formosa, Leucopogon elatior, Lysinema ciliatum, Petrophile media, Pimelea hispida, Stirlingia anethifolia, Synaphea polymorpha, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia crispula, Andersonia simplex, Astroloma drummondii, <u>Banksia nutans var. nutans, Banksia repens,</u> Calytrix sp., Gastrolobium retusum, <u>Hibbertia gracilipes, Hibbertia</u> <u>recurvifolia, Jacksonia capitata, Kunzea affinis, Melaleuca</u> <u>suberosa, Melaleuca subtrigona,</u> Petrophile ericifolia subsp. ericifolia, Spyridium majoranifolium, Verticordia habrantha
Herbs	< 2%	Burchardia congesta, Conostylis pusilla, Drosera paleacea subsp. paleacea, Goodenia pterigosperma, Stylidium schoenoides, Thelymitra canaliculata, Thelymitra sp.
Grasses	< 2%	Neurachne alopecuroidea
Sedges	10-30%	Anarthria gracilis, Chordifex capillaceus, <u>Chordifex</u> <u>sphacelatus</u> , Chorizandra enodis, Desmocladus fasciculatus, Gahnia sp., Lepidosperma squamatum, <u>Lomandra pauciflora</u> , Mesomelaena graciliceps, Schoenus aff. curvifolius, Schoenus sublateralis





Site: 125, Minesite

Described CJM **Date** 18/09/2007 **Type:** Quadrat 10 x 10 m

Location Minesite, in type 1a vegetation.

MGA Zone 50 640453 mE 6176833 mN

Habitat Gentle hill slope.

Soil Type Grey sandy loam, with a surface layer of fine lateritic gravel and humus.

Veg Condition Pristine. **Fire** None evident

Notes Plentiful, widespread leaf litter. Plentiful wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Shrubs > 2 m	2-10%	Dryandra cuneata
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Allocasuarina humilis, Dryandra mucronulata subsp. mucronulata, Hakea corymbosa, Hakea cucullata, Hakea ruscifolia, Isopogon formosus subsp formosus, Isopogon longifolius, Isopogon trilobus, Kingia australis, Melaleuca striata, Melaleuca thymoides, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	< 2%	Acacia subcaerulea, Grevillea fasciculata, Lysinema ciliatum, Petrophile teretifolia
Shrubs < 0.5 m	< 2%	Acacia biflora, Adenanthos apiculatus, Banksia gardneri var. gardneri, Darwinia vestita, Hibbertia sp., Hovea trisperma, Isopogon formosus subsp. formosus, Isopogon teretifolius subsp. teretifolius, Pultenaea verruculosa, Sphaerolobium drummondii, Tetratheca pubescens
Herbs	< 2%	Burchardia congesta, <u>Dampiera juncea</u> , Elythranthera brunonis, <u>Patersonia lanata</u>
Grasses	< 2%	Amphipogon avenaceus
Sedges	< 2%	Anarthria gracilis, Anarthria prolifera, Chordifex sphacelatus, Desmocladus fasciculatus, Mesomelaena stygia subsp stygia, Schoenus pleiostemoneus, Tricostularia neesii var. neesii
Climbers	< 2%	Drosera pallida





Site: 126, Minesite

Described AC **Date** 18/09/2007 **Type:** Quadrat 10 x 10 m

Location Minesite - within vegetation type 1a.

MGA Zone 50 640347 mE 6176789 mN

Habitat Ridge crest, negligible slope.

Soil Type White to grey sandy loam, with a surface layer of loose soil.

Rock Type Common ferrous pebbles.

Veg Condition Good **Fire** Old (>5 yrs)

Notes Moderate leaf litter, mainly under shrubs. Moderate wood litter.

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	< 2%	Dryandra cuneata
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Allocasuarina humilis, Beaufortia anisandra, Calothamnus gracilis, <u>Dryandra mucronulata subsp.</u> <u>mucronulata</u> , <u>Hakea corymbosa</u> , Isopogon longifolius, <u>Leucopogon distans, Taxandria spathulata</u>
Shrubs 0.5 - 1 m	2-10%	Acacia luteola, Acacia subcaerulea, <u>Banksia nutans var.</u> <u>cernuella</u> , <u>Beaufortia anisandra</u> , Bossiaea ornata, Isopogon formosus subsp. formosus, <u>Melaleuca thymoides</u> , Synaphea polymorpha, <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	2-10%	Acacia delphina, Andersonia simplex, Banksia gardneri var. gardneri, Boronia crassifolia, Darwinia vestita, Gompholobium tomentosum, <u>Hibbertia recurvifolia</u> , Isopogon formosus subsp. formosus, Leucopogon corynocarpus, Melaleuca ?bracteosa, Monotoca tamariscina, Pultenaea verruculosa, <u>Tetratheca pubescens</u>
Herbs	< 2%	Burchardia congesta, Dampiera juncea, Drosera erythrorhiza subsp. erythrorhiza, Patersonia occidentalis, Sphenotoma capitatum, Stylidium piliferum, Stylidium schoenoides
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Desmocladus fasciculatus
Climbers	< 2%	Chorizema glycinifolium, <u>Drosera menziesii</u> , Gompholobium knightianum





Site: 127

Described CJM **Date** 19/09/2007 **Type:** Quadrat 10 x 10 m

Location Map 8

MGA Zone 50 622421 mE 6172825 mN

Habitat Very gentle hill slope.Soil Type Grey sandy loam.

Rock Type Common lateritic coarse gravel/pebbles.

Vegetation Open Eucalyptus staeri, over open tall moderately dense Dryandra shrubs, over sparse mixed

low shrubs and sedges.

Veg Condition Excellent - there has been historical grazing.

Fire None evident

Notes Plentiful widespread leaf litter, moderate wood litter.

Species List:

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Hakea baxteri, Hakea cucullata, Hakea pandanicarpa subsp. crassifolia, <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Beaufortia anisandra, Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Isopogon trilobus, Lambertia inermis var. inermis, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Daviesia emarginata, <u>Dryandra mucronulata subsp.</u> <u>mucronulata</u> , Hakea coriacea, Isopogon formosus subsp. formosus, Leptomeria squarrulosa, Lysinema ciliatum, Petrophile divaricata, Petrophile teretifolia, <u>Xanthorrhoea</u> <u>platyphylla</u>
Shrubs < 0.5 m	< 2%	Andersonia simplex, Boronia crenulata subsp. crenulata, Calytrix depressa, Darwinia vestita, Dryandra armata, Dryandra calophylla, Dryandra nivea subsp. nivea, Gompholobium venustum, Hibbertia recurvifolia, Hibbertia rupicola, Isopogon baxteri, Leucopogon gibbosus, Melaleuca striata, Pultenaea verruculosa, Rinzia schollerifolia, Synaphea polymorpha
Herbs	< 2%	Dampiera juncea, Drosera erythrorhiza subsp. erythrorhiza, Patersonia occidentalis
Sedges	< 2%	Anarthria prolifera, Desmocladus fasciculatus, Harperia confertospicata, Lepidosperma squamatum, Lepidosperma tenue, Mesomelaena graciliceps, Mesomelaena stygia subsp. stygia, Schoenus sublateralis, Tetraria octandra
Climbers	< 2%	Chorizema glycinifolium, <u>Drosera pallida</u>





Site: 128

Described AC **Date** 19/09/2007 **Type:** Quadrat 10 x 10 m

Location Map 8, bottom left area

MGA Zone 50 622453 mE 6172865 mN

Habitat Undulating plain, negligible slope.

Soil Type White to grey sandy loam, with a surface layer of loose soil.

Rock Type Few non-banded ferrous pebbles.

Veg Condition Good **Fire** Old (>5 yrs)

Notes Plentiful widespread leaf litter. Moderate wood litter.

v egetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 10 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Hakea cucullata, Hakea trifurcata, <u>Lambertia inermis var.</u> <u>inermis</u>
Shrubs 1 - 2 m	10-30%	Allocasuarina humilis, Dryandra cuneata, <u>Dryandra</u> mucronulata subsp. mucronulata, Melaleuca striata, Melaleuca thymoides, <u>Xanthorrhoea platyphylla</u>
Shrubs 0.5 - 1 m	2-10%	Acacia luteola, <u>Beaufortia empetrifolia</u> , Darwinia vestita, Daviesia emarginata, Glischrocaryon aureum var. aureum, Isopogon longifolius, Isopogon trilobus, Leucopogon cucullatus, <u>Lysinema ciliatum</u> , Petrophile divaricata, Taxandria spathulata
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Andersonia caerulea subsp. caerulea, Andersonia simplex, Boronia crenulata subsp. crenulata, Calytrix leschenaultii, Conothamnus aureus, Dryandra nivea subsp. nivea, Gompholobium venustum, Hibbertia gracilipes, Hibbertia rupicola, Petrophile teretifolia, Pultenaea verruculosa, Rinzia schollerifolia
Herbs	< 2%	Boronia spathulata, Calectasia gracilis, Conostylis pusilla, <u>Dampiera juncea</u> , Disa bracteata, Drosera erythrorhiza subsp. erythrorhiza, Elythranthera brunonis, Hypochaeris glabra, Laxmannia brachyphylla, Pterostylis recurva
Sedges	2-10%	Anarthria prolifera, Desmocladus fasciculatus, <u>Lepidosperma</u> <u>squamatum</u> , <u>Mesomelaena stygia subsp. stygia</u>
Climbers	< 2%	Chorizema glycinifolium, <u>Drosera pallida</u> , Hovea trisperma





Site: 129, Gunnamata Tree Farm

Described CJM **Date** 20/09/2007 **Type:** Quadrat 10 x 10 m

Location Gunnamata Tree Farm

MGA Zone 50 604960 mE 6162538 mN

Habitat Undulating plain, gentle slope.

Soil Type Sandy loam, with some clay.

Rock Type Few coarse gravel pebbles, lateritic

Vegetation Moderately dense to open Eucalyptus staeri, over dense mixed low to medium height

shrubland, over sparse mixed sedges

Veg Condition Good, weeds at edge of site

Fire Moderate (>1 to <5 yrs)

Notes Moderate widespread leaf litter, negligible wood litter.

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	10-30%	Eucalyptus staeri, Nuytsia floribunda
Shrubs 1 - 2 m	10-30%	Agonis theiformis, <u>Daviesia incrassata subsp. incrassata</u> , Jacksonia spinosa, Petrophile divaricata, Taxandria spathulata
Shrubs 0.5 - 1 m	30-70%	Allocasuarina humilis, Banksia sphaerocarpa var. sphaerocarpa, Bossiaea rufa, <u>Dryandra mucronulata subsp.</u> mucronulata, Glischrocaryon aureum var. aureum, Grevillea fasciculata, Leucopogon cucullatus, Melaleuca striata, Petrophile divaricata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Andersonia caerulea subsp. caerulea, Banksia gardneri var. gardneri, Chorizema glycinifolium, Darwinia vestita, Dryandra nivea subsp. nivea, Gompholobium knightianum, Grevillea fasciculata, Grevillea pulchella subsp. pulchella, Hibbertia gracilipes, Hibbertia recurvifolia, Hovea chorizema, Hovea trisperma, Latrobea recurva, Lysinema ciliatum, Pultenaea verruculosa, Synaphea polymorpha
Herbs	< 2%	Caladenia cairnsiana, Caladenia longicauda subsp. australora, <u>Dampiera juncea</u> , Drosera erythrorhiza subsp. erythrorhiza, Elythranthera brunonis, Hypochaeris glabra, <u>Patersonia</u> <u>occidentalis</u> , Stylidium schoenoides, Trifolium subterraneum, Vittadinia gracilis
Sedges	< 2%	Anarthria prolifera, Anarthria scabra, Desmocladus fasciculatus, Lepidosperma squamatum, Tetraria octandra
Climbers	< 2%	Cassytha racemosa, <u>Drosera pallida</u>





Site: 130 Gunnamata Tree Farm

Described AC **Date** 20/09/2007 **Type:** Quadrat 10 x 10 m

Location Gunnamata Tree Farm, Map 3

MGA Zone 50 605428 **mE** 6162128 **mN**

Habitat Undulating plain, gentle slope.

Soil Type White to grey sand, with some clay loam.

Rock Type Nil

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate leaf litter, mainly under shrubs. Moderate wood litter.

etation cover:	COVER	SDECIES WITHIN EACH STRATIIM
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	2-10%	Banksia attenuata, Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	Banksia baxteri, Hakea ferruginea, <u>Jacksonia spinosa</u> , <u>Latrobea recurva</u> , Pimelea tinctoria, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Acacia luteola, Adenanthos cuneatus, Beaufortia empetrifolia, Darwinia vestita, Dasypogon bromeliifolius, <u>Daviesia incrassata</u> subsp. incrassata, Dryandra mucronulata subsp. mucronulata, <u>Gompholobium scabrum</u> , Hypocalymma strictum subsp. elongatum, Isopogon formosus subsp. formosus, Lysinema ciliatum, Melaleuca thymoides
Shrubs < 0.5 m	10-30%	Acacia delphina, Andersonia simplex, Banksia repens, Calytrix leschenaultii, Dryandra nervosa, Hibbertia recurvifolia, Leucopogon corynocarpus, Melaleuca striata, Petrophile longifolia, Petrophile teretifolia, Synaphea polymorpha
Herbs	< 2%	Boronia spathulata, Conostylis pusilla, <u>Dampiera juncea</u> , Drosera erythrorhiza subsp erythrorhiza, Elythranthera brunonis, Gompholobium venustum, Laxmannia brachyphylla, Levenhookia pauciflora
Sedges	2-10%	Caustis dioica, <u>Desmocladus fasciculatus</u> , Schoenus sp.
Climbers	< 2%	Cassytha micrantha, <u>Drosera pallida</u>





Site: 131, Minesite

Described CJM **Date** 20/09/2007 **Type:** Quadrat 10 x 10 m

Location Minesite

MGA Zone 50 640763 mE 6177106 mN

Habitat Hill slope

Soil Type Grey sandy loam, with a surface layer of coarse gravel/pebbles.

Rock Type Few lateritic pebbles.

Vegetation Open Eucalyptus sp. / Eucalyptus staeri mallees, over moderately dense to dense shrubs,

over open mixed sedges.

Veg Condition Pristine **Fire** None evident

Notes Plentiful, widespread leaf litter. Plentiful wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	2-10%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri
Shrubs > 2 m	< 2%	Hakea pandanicarpa subsp. crassifolia
Shrubs 1 - 2 m	2-10%	Acacia subcaerulea, <u>Agonis theiformis</u> , Banksia nutans var. cernuella, Banksia seminuda, <u>Beaufortia empetrifolia</u> , Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Franklandia fucifolia, Gompholobium scabrum, Hakea corymbosa, Isopogon formosus subsp. formosus, Isopogon trilobus, Leucopogon corynocarpus, <u>Melaleuca striata</u> , <u>Melaleuca thymoides</u> , <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	< 2%	Adenanthos cuneatus, <u>Calothamnus gracilis</u>
Shrubs < 0.5 m	< 2%	Acacia delphina, Andersonia simplex, Banksia repens, Boronia albiflora, Bossiaea praetermissa, Dampiera juncea, Dryandra nivea subsp. nivea, Gompholobium venustum, Hibbertia recurvifolia, Isopogon formosus subsp. formosus, Latrobea recurva, Leucopogon cucullatus, Melaleuca subtrigona, Tetratheca pubescens, Verticordia habrantha
Herbs	2-10%	Boronia spathulata, Burchardia congesta, Conospermum caeruleum subsp. caeruleum, Caladenia graminifolia, Conostylis pusilla, Drosera erythrorhiza subsp erythrorhiza, Haemodorum spicaticum, <u>Hypochaeris glabra</u> , Johnsonia acaulis, Patersonia lanata, Stylidium repens
Sedges	< 2%	Anarthria prolifera, Anarthria scabra, Caustis dioica, Harperia confertospicata, Hypolaena fastigiata, Lepidosperma squamatum, Lepidosperma tenue, Mesomelaena stygia subsp. stygia
Climbers	< 2%	Cassytha racemosa, Drosera pallida





Site: 131a Gunnamata Tree Farm

Described CMC **Date** 20/09/2007 **Type:** Quadrat 10 x 10 m

Location Gunnamata Tree Farm

MGA Zone 50 605394 mE 6162595 mN

Habitat Gentle hill slope

Soil Type Grey loam, with a surface layer of humus.

Rock Type Nil

Vegetation Moderately dense Eucalyptus staeri low trees, over moderately dense Taxandria sp. tall

shrubs, over dense Melaleuca sp, over dense Xanthorrhoea platyphylla / Dryandra

mucronulata shrubs, over dense Dryandra nivea, over sedges

Veg Condition Good, some weeds and piping for nearby forestry.

Fire Moderate to old (>1 yr to >5 yrs)

Notes Plentiful widespread leaf litter, sparse wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	30-70%	Eucalyptus staeri
Shrubs > 2 m	30-70%	Agonis theiformis
Shrubs 1 - 2 m	10-30%	Daviesia incrassata subsp. incrassata, <u>Hakea ruscifolia</u> , <u>Melaleuca striata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia luteola, Bossiaea praetermissa, Chorizema glycinifolium, <u>Dryandra mucronulata</u> subsp. mucronulata, Latrobea recurva, Melaleuca thymoides, Pimelea tinctoria, <u>Tetratheca pubescens</u> , <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	10-30%	Acacia delphina, Andersonia sprengelioides, <u>Banksia repens</u> , Dryandra arctotidis, Dryandra calophylla, Dryandra nervosa, Hibbertia recurvifolia, Hovea trisperma, Leucopogon cucullatus. Taxandria spathulata, Xanthorrhoea platyphylla
Herbs	10-30%	Boronia spathulata, Dampiera juncea, Glischrocaryon aureum, <u>Opercularia vaginata</u> , Ornithopus compressus, Trifolium subterraneum
Grasses	< 2%	POACEAE sp.
Sedges	10-30%	<u>Desmocladus fasciculatus</u> , Harperia lateriflora, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia, Mesomelaena tetragona, Tetraria octandra
Climbers	2-10%	Drosera pallida





Site: 132 Minesite

Described AC **Date** 21/09/2007 **Type:** Quadrat 10 x 10 m

Location Minesite

MGA Zone 50 640634 mE 6176568 mN

Habitat Flat/plain, gentle slope.

Soil Type White to grey sandy loam, with a surface layer of fine gravel and loose soil.

Rock Type Few ferrous pebbles.

Vegetation Open mallee woodland of Eucalyptus decipiens subsp. adesmophloia / Eucalyptus

pleurocarpa, over moderately dense Taxandria spathulata shrubs, over open Melaleuca

striata low shrubs, over open mixed sedges.

Veg Condition Good, tracks, few weeds at edge of site.

Fire None evident

Notes Moderate, widespread leaf litter. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 7 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus pleurocarpa
Shrubs > 2 m	< 2%	Hakea pandanicarpa subsp. crassifolia, Kunzea recurva
Shrubs 1 - 2 m	30-70%	Agonis theiformis, Allocasuarina humilis, Banksia nutans var. cernuella, <u>Beaufortia empetrifolia</u> , Dryandra falcata, Dryandra mucronulata subsp. mucronulata, Hakea corymbosa, Hakea cucullata, Hakea prostrata, Isopogon trilobus, Melaleuca thymoides, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Calothamnus gracilis, Daviesia incrassata subsp. incrassata, Leucopogon corynocarpus, <u>Melaleuca ?bracteosa</u> , Petrophile media, <u>Petrophile rigida</u> , Verticordia habrantha, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia delphina, Banksia gardneri subsp. gardneri, Boronia crenulata subsp. crenulata, Darwinia vestita, <u>Hibbertia gracilipes</u> , Lysinema ciliatum, Melaleuca suberosa, Pultenaea verruculosa, Stirlingia latifolia
Herbs	< 2%	Burchardia congesta, Caladenia longicauda subsp. australora, Chamaescilla corymbosa subsp. corymbosa, Conostylis pusilla, <u>Dampiera juncea</u> , Drosera menziesii, Elythranthera brunonis, Leschenaultia formosa, Stylidium schoenoides
Sedges	10-30%	Anarthria gracilis, Anarthria prolifera, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma squamatum





Site: 133 Minesite

Described CMC **Date** 21/09/2007 **Type:** Quadrat 10 x 10 m

Location Mine site

MGA Zone 50 640768 mE 6176850 mN

Habitat Genlte midslope.

Soil Type Grey sandy loam, with surface layer of loose soil and humus.

Rock Type Nil

Vegetation Open to moderately dense Eucalyptus staeri mallees, over moderately dense mixed tall

shrubs, over dense mixed shrubs, over dense mixed sedges.

Veg Condition Pristine to excellent.

Fire None evident.

Notes Plentiful leaf litter, mainly under shrubs. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	70-100%	Banksia grandis, Hakea baxteri, Leucopogon corynocarpus, <u>Taxandria spathulata</u>
Shrubs 1 - 2 m	70-100%	Dryandra cuneata, <u>Dryandra mucronulata subsp. mucronulata,</u> Hakea corymbosa, Isopogon longifolius, Isopogon trilobus, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	70-100%	Agonis theiformis, Banksia nutans var. cernuella, Calothamnus gracilis, Hakea corymbosa, Hovea trisperma, Isopogon formosus subsp. formosus, Leucopogon cucullatus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Pultenaea verruculosa, Verticordia habrantha, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia delphina, Acacia subcaerulea, Agonis theiformis, Andersonia simplex, Banksia gardneri var. gardneri, Beaufortia empetrifolia, Dryandra nivea subsp. nivea, Hakea pandanicarpa subsp. crassifolia, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon longifolius, Leucopogon corynocarpus, Petrophile teretifolia, Persoonia striata, Pultenaea verruculosa, Synaphea polymorpha, Tetratheca pubescens
Herbs	2-10%	Burchardia congesta, Conostylis pusilla, <u>Dampiera juncea</u> , Drosera erythrorhiza subsp. erythrorhiza, Drosera huegelii, Sphenotoma capitatum, Stylidium glandulosissimum
Sedges	30-70%	Anarthria gracilis, <u>Anarthria prolifera, Anarthria scabra,</u> Harperia confertospicata, Hypolaena fastigiata, Mesomelaena stygia subsp. stygia, Mesomelaena tetragona, Schoenus pleiostemoneus
Climbers	2-10%	Cassytha pomiformis, Cassytha racemosa, Chorizema glycinifolium, <u>Drosera pallida</u>





Site: 134, Sunnyside Tree Farm

Described AC **Date** 21/09/2007 **Type:** Quadrat 10 x 10 m

Location Map 2, southern edge of Sunnyside Tree Farm

MGA Zone 50 656805 mE 6174116 mN

Habitat Gentle hill slope.

Soil Type White to grey sand, with a surface layer of fine gravel and loose soil

Rock Type Common non-banded ferrous coarse gravel and pebbles.

Veg Condition Excellent **Fire** Old (>5 years)

Notes Moderate leaf litter, mainly under shrubs. Sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	2-10%	<u>Hakea cucullata</u> , Hakea pandanicarpa subsp. crassifolia
Shrubs 1 - 2 m	10-30%	Dryandra cuneata, <u>Dryandra mucronulata</u> subsp. mucronulata, <u>Hakea ferruginea</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Acacia subcaerulea, Adenanthos cuneatus, Allocasuarina humilis, Banksia nutans var. cernuella, Beaufortia anisandra, Grevillea concinna subsp. lemanniana, Isopogon cuneatus, Isopogon formosus subsp. formosus, Leucopogon corynocarpus, Melaleuca striata, Taxandria spathulata
Shrubs < 0.5 m	< 2%	Acacia luteola, Adenanthos apiculatus, Andersonia simplex, Banksia gardneri subsp. gardneri, Calytrix depressa, Darwinia vestita, <u>Daviesia incrassata</u> subsp. incrassata, <u>Hibbertia recurvifolia</u> , Leptomeria pauciflora, Leucopogon cucullatus, <u>Lysinema ciliatum</u> , Petrophile teretifolia, Stylidium imbricatum, <u>Synaphea polymorpha</u> , Verticordia habrantha
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Conostylis pusilla, <u>Dampiera juncea</u> , Drosera erythrorhiza subsp. erythrorhiza, <u>Drosera scorpioides</u> , Gompholobium venustum, Patersonia occidentalis var. occidentalis
Sedges	< 2%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, Chordifex sphacelatus, Desmocladus fasciculatus, Mesomelaena stygia
Climbers	< 2%	Drosera menziesii





Site: 135, Sunnyside Tree Farm

Described CJM **Date** 21/09/2007 **Type:** Quadrat 10 x 10 m

Location Southern side of Sunnyside Tree Farm

MGA Zone 50 656581 mE 6173524 mN

Habitat Gentle hill slope.

Soil Type Sandy loam, with a surface layer of fine gravel.

Rock Type Few lateritic pebbles.

Vegetatio Open to sparse Eucalyptus staeri, over open Dryandra sp / Taxandria spathulata tall shrubs,

over open mixed lower shrubs and sedges.

Veg Condition Good - some Dryandra death ?dieback

Fire None evident

Notes Moderate leaf litter, mainly under shrubs. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	< 2%	Hakea cucullata
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Allocasuarina humilis, Banksia nutans subsp. cernuella, Daviesia emarginata, Daviesia incrassata subsp. incrassata, Dryandra cuneata, Dryandra mucronulata subsp. mucronulata, Hakea denticulata, Hakea ferruginea, Isopogon cuneatus, Melaleuca striata, Petrophile ericifolia subsp. ericifolia, Taxandria spathulata
Shrubs 0.5 - 1 m	2-10%	Grevillea fasciculata, Isopogon formosus subsp. formosus, Leucopogon corynocarpus, Lysinema ciliatum, <u>Xanthorrhoea</u> <u>platyphylla</u>
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Astroloma sp., Banksia gardneri var. gardneri, Conospermum caeruleum, Darwinia vestita, Gompholobium venustum, Grevillea fasciculata, Hibbertia recurvifolia, Isopogon longifolius, Leucopogon gibbosus, Lysinema ciliatum, Pultenaea verruculosa, Stirlingia anethifolia, Synaphea polymorpha, Verticordia habrantha
Herbs	< 2%	Actinodium calocephalum, Boronia spathulata, Burchardia congesta, Conostylis pusilla, Conostylis vaginata, <u>Dampiera juncea</u> , Goodenia incana, Patersonia occidentalis var. occidentalis, Stirlingia tenuifolia
Sedges	< 2%	Anarthria gracilis, Anarthria prolifera, Anarthria scabra, Caustis dioica, Chordifex capillaceus, Desmocladus fasciculatus, Hypolaena fastigiata, <u>Lepidosperma squamatum</u> , Mesomelaena stygia, Tricostularia neesii var. neesii





Site: 135a, Sunnyside Tree Farm

Described CMC **Date** 21/09/2007 **Type:** Quadrat 10 x 10 m

Location Southern side of Sunnyside Tree Farm

MGA Zone 50 656594 mE 6173569 mN

Habitat Midslope, sand dune.

Soil Type White to tan fine sandy loam, with a surface layer of loose soil

Rock Type Nil

Vegetation Moderately dense Eucalyptus staeri mallees, over dense Dryandra sp. / Melaleuca striata

medium tall shrubs, over moderately dense Taxandria spathulata / Xanthorrhoea platyphylla

medium shrubs, over moderately dense mixed low shrubs, over dense mixed sedges.

Veg Condition Pristine to excellent

Fire None evident.

Notes Plentiful leaf litter, mainly under shrubs. Sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	30-70%	Eucalyptus staeri
Shrubs > 2 m	< 2%	Hakea ferruginea
Shrubs 1 - 2 m	30-70%	Adenanthos cuneatus, Banksia coccinea, <u>Dryandra mucronulata</u> subsp. mucronulata, Isopogon cuneatus, Isopogon Trilobus, Lambertia echinata subsp. citrina, <u>Melaleuca striata</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Actinodium calocephalum, Allocasuarina humilis, Beaufortia anisandra, Beaufortia empetrifolia, Leucopogon corynocarpus, Lysinema ciliatum, Melaleuca thymoides, Petrophile teretifolia, Taxandria spathulata
Shrubs < 0.5 m	10-30%	<u>Andersonia simplex.</u> Boronia spathulata, Daviesia incrassata subsp. incrassata, Dryandra cuneata, Hibbertia recurvifolia, Microcorys lenticularis, <u>Pultenaea verruculosa</u>
Herbs	2-10%	Burchardia congesta, <u>Conospermum caeruleum</u> , Conostylis vaginata, Dampiera juncea, Gompholobium venustum, <u>Laxmannia brachyphylla</u> , Stylidium preissii
Sedges	10-30%	Anarthria prolifera, Cyathochaeta equitans, Dasypogon bromeliifolius, Desmocladus fasciculatus, Harperia confertospicata, Hypolaena fastigiata, Mesomelaena stygia subsp. stygia, Tricostularia neesii var. neesii
Climbers	2-10%	Drosera pallida





Site: S1P1, Boat Harbour Reserve

Described AC **Date** 9/10/2007 **Type:** Quadrat 10 x 10 m

Location Boat Harbour Reserve

MGA Zone 50 664102 mE 6181082 mN

Habitat Gentle slope

Soil Type White grey to white sand, with a surface layer of loose soil and some crust

Rock Type Nil

Vegetation Open Eucalyptus pleurocarpa low mallees, over open mixed medium shrubs, over Melaleuca

striata / Daviesia sp sparse low shrubs, over sparse Anarthria prolifera sedges.

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate leaf and wood litter, mainly under shrubs.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus ?yilgarnensis, <u>Eucalyptus pleurocarpa</u>
Shrubs > 2 m	< 2%	Hakea denticulata
Shrubs 1 - 2 m	10-30%	Dryandra falcata, <u>Dryandra mucronulata subsp. mucronulata</u> , Hakea pandanicarpa subsp. crassifolia
Shrubs 0.5 - 1 m	2-10%	Beaufortia anisandra, Hakea ferruginea, Isopogon trilobus, Melaleuca thymoides, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia subcaerulea, Actinodium calocephalum, Allocasuarina humilis, Andersonia simplex, Banksia nutans var. cernuella, Banksia repens, Boronia albiflora, Calectasia gracilis, Calothamnus gracilis, Calytrix leschenaultii, Conostylis pusilla, Conothamnus aureus, Darwinia vestita, Daviesia incrassata subsp. incrassata, Dryandra nivea subsp. nivea, Dryandra tenuifolia subsp. tenuifolia, Eutaxia neurocalyx subsp. neurocalyx, Gastrolobium retusum, Gompholobium venustum, Hibbertia recurvifolia, Isopogon formosus subsp. formosus, Isopogon longifolius, Leucopogon corynocarpus, Leucopogon cucullatus, Leucopogon distans, Melaleuca striata, Melaleuca suberosa, Petrophile squamata subsp. squamata, Petrophile teretifolia, Synaphea polymorpha, Taxandria spathulata
Herbs	< 2%	Boronia spathulata, Caladenia flava, Dampiera juncea, Jacksonia capitata, Opercularia vaginata, Stylidium schoenoides
Sedges	2-10%	Anarthria gracilis, Chordifex sphacelatus, Desmocladus fasciculatus, <u>Lyginia barbata</u>





Site: S1P2, Boat Harbour Reserve

Described AC **Date** 9/10/2007 **Type:** Quadrat 10 x 10 m

Location Off Boat Harbour Rd, in reserve

MGA Zone 50 664182 **mE** 6181062 **mN**

Habitat Gentle hill slope.

Soil Type Grey to white sand, with a suface layer of loose soil.

Rock Type Nil

Vegetation Open Eucalyptus pleurocarpa mallees, over open Lambertia inermis / Hakea ferruginea tall

shrubs, over open Dryandra mucronata / Isopogon trilobus / Grevillea sp. low shrubs.

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate leaf litter, mainly under shrubs. Sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus ?yilgarnensis, <u>Eucalyptus pleurocarpa</u>
Shrubs > 2 m	10-30%	<u>Hakea ferruginea</u> , Lambertia inermis var. inermis
Shrubs 1 - 2 m	< 2%	<u>Hakea denticulata</u> , Hakea pandanicarpa subsp. crassifolia
Shrubs 0.5 - 1 m	< 2%	Acacia subcaerulea, Banksia baueri, Beaufortia empetrifolia, <u>Dryandra falcata</u> , Pimelea tinctoria, <u>Taxandria spathulata</u>
Shrubs < 0.5 m	10-30%	Acacia biflora, Acacia crispula, Allocasuarina humilis, Andersonia simplex, Banksia gardneri subsp. gardneri, Beaufortia anisandra, Boronia albiflora, Calectasia gracilis, Calothamnus gracilis, Calytrix depressa, Darwinia vestita, Daviesia incrassata subsp. incrassata, Dryandra mucronulata subsp. mucronulata, Dryandra tenuifolia subsp. tenuifolia, Gompholobium venustum, Hibbertia gracilipes, Hibbertia sp., Isopogon trilobus, Leucopogon corynocarpus, Lysinema ciliatum, Melaleuca striata, Melaleuca subtrigona, Petrophile rigida, Petrophile teretifolia, Pimelea longiflora subsp. longiflora, Pultenaea verruculosa, Synaphea polymorpha, Verticordia habrantha
Herbs	< 2%	Boronia spathulata, Conostylis pusilla, Dampiera juncea, Jacksonia capitata,
Sedges	< 2%	Anarthria gracilis, Caustis dioica, Desmocladus fasciculatus





Site: S1P3, Along South Coast Highway, road reserve, east of Pallinup River

Described AC **Date** 10/10/2007 **Type:** Quadrat 10 x 10 m

Location Eastern side of Pallinup River, roadside.

MGA Zone 50 660757 mE 6194417 mN

Habitat Hill crest, negligible slope.Soil Type Grey to white sand, loose soil.

Rock Type Nil

Vegetatio Tall open Eucalyptus pleurocarpa / Eucalyptus sp. mallees, over mixed low shrubs.

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate, widespread leaf litter. Sparse wood litter. Pallinup Nature Reserve is full of this veg

type.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus ?occidentalis, Eucalyptus pleurocarpa
Shrubs > 2 m	2-10%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	2-10%	Gastrolobium spinosum, Isopogon buxifolius var. spathulatus
Shrubs 0.5 - 1 m	2-10%	Acacia sulcata var. planoconvexa, Billardiera fraseri, Daviesia emarginata, Dryandra armata var. armata, <u>Leucopogon</u> <u>woodsii</u> , Persoonia striata
Shrubs < 0.5 m	2-10%	Acacia biflora, Allocasuarina humilis, Baeckea preissiana, Beaufortia micrantha var. micrantha, Calytrix leschenaultii, Hibbertia rupicola, Kunzea preissiana, Kunzea rostrata, Lysinema ciliatum, Melaleuca pentagona var. pentagona, Melaleuca striata, Melaleuca subtrigona, Petrophile rigida, Pimelea sulphurea, Synaphea petiolaris subsp. petiolaris, Verticordia subulata, Xanthorrhoea platyphylla
Herbs	< 2%	Conostylis pusilla, Disa bracteata, Hyalosperma simplex, Jacksonia capitata, Laxmannia brachyphylla, Opercularia vaginata, Stackhousia monogyna
Sedges	2-10%	Harperia lateriflora, Lepidosperma squamatum, <u>Mesomelaena</u> stygia subsp. stygia





Site: S1P4, Boat Harbour Reserve

Described AC **Date** 10/10/2007 **Type:** Quadrat 10 x 10 m

Location Boat Harbour Reserve

MGA Zone 50 664382 mE 6184749 mN

Habitat Flat/plain, negligible slope.Soil Type Grey to white sand, loose soil.

Rock Type Nil

Veg Condition Pristine **Fire** None evident

Notes Widespread, plentiful leaf litter. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus
Manee < 3 m	10-30%	pleurocarpa, Eucalyptus preissiana subsp. preissiana
Shrubs > 2 m	10-30%	<u>Hakea pandanicarpa subsp. crassifolia</u> , Lambertia inermis var.
Sili uos > 2 ili	10-3070	inermis
Shrubs 1 - 2 m	2-10%	Hakea cucullata, <u>Hakea ferruginea</u> , Hakea trifurcata
		Acacia biflora, Acacia subcaerulea, <u>Allocasuarina ?thuyoides</u> ,
		<u>Dryandra mucronulata subsp. mucronulata</u> , Grevillea concinna
Shrubs 0.5 - 1 m	10-30%	subsp lemanniana, Leucopogon cucullatus, Leucopogon
		gibbosus, Lysinema ciliatum, Petrophile squamata subsp.
		squamata, Taxandria spathulata, Xanthorrhoea platyphylla
		Andersonia simplex, Banksia gardneri var. gardneri, Beaufortia
		empetrifolia, Darwinia vestita, Dryandra tenuifolia subsp.
		tenuifolia, Hibbertia gracilipes, Isopogon formosus subsp.
Shrubs < 0.5 m	10-30%	formosus, Jacksonia grevilleoides, Leucopogon corynocarpus,
		Melaleuca pentagona var. latifolia, <u>Melaleuca striata</u> ,
		Melaleuca suberosa, <u>Petrophile teretifolia</u> , Pultenaea
		verruculosa
		Boronia spathulata, Conostylis pusilla, Gompholobium
Herbs	< 2%	venustum, Jacksonia capitata, Laxmannia brachyphylla,
		Stackhousia monogyna, Stylidium glandulosissimum
Sedges	2-10%	Anarthria prolifera, Desmocladus fasciculata, <u>Mesomelaena</u>
beages		<u>stygia subsp. stygia, Tricostularia neesii var. neesii</u>
Climbers	< 2%	Billardiera fraseri





Site: S1P5, Boat Harbour Reserve

Described AC **Date** 10/10/2007 **Type:** Quadrat 10 x 10 m

Location Boat Harbour Reserve

MGA Zone 50 664439 mE 6184709 mN

Habitat Flat/plain, negligible slope.Soil Type Grey to white sand, loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Widespread plentiful leaf litter. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	30-70%	Eucalyptus pleurocarpa, Eucalyptus preissiana subsp. preissiana
Shrubs > 2 m	10-30%	Hakea baxteri, <u>Hakea pandanicarpa subsp. crassifolia,</u> <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	2-10%	Banksia grandis, Dryandra cuneata, Dryandra mucronulata subsp. mucronulata, <u>Hakea ferruginea</u> , <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	30-70%	Acacia subcaerulea, Beaufortia anisandra, Darwinia vestita, Isopogon formosus subsp. formosus, Leucopogon cucullatus, Lysinema ciliatum, <u>Melaleuca striata</u> , Petrophile teretifolia, Xanthorrhoea platyphylla
Shrubs < 0.5 m	< 2%	Acacia luteola, Allocasuarina ?thuyoides, Dryandra nivea subsp. nivea, Hibbertia gracilipes, Hibbertia recurvifolia, Isopogon longifolius, Pericalymma sp., Petrophile squamata subsp. squamata, Pultenaea verruculosa
Herbs	< 2%	Boronia ramosa subsp. anethifolia, <u>Boronia spathulata</u> , Caladenia flaccida, Conostylis pusilla, Dampiera juncea, Gompholobium venustum, Laxmannia brachyphylla, Patersonia occidentalis, Stylidium piliferum
Sedges	< 2%	Anarthria prolifera, Caustis dioica, Desmocladus fasciculatus, Lepidosperma squamatum, Lomandra purpurea, <u>Mesomelaena</u> stygia
Climbers	< 2%	Chorizema glycinifolium





Site: S1P6, Boat Harbour Reserve

Described AC **Date** 10/10/2007 **Type:** Quadrat 10 x 10 m

Location Boat Harbour Nature Reserve

MGA Zone 50 664524 mE 6185182 mN

Habitat Flat/plain, negligible slope.Soil Type Grey to white sand, loose soil.

Rock Type Few ferrous pebbles

Veg Condition Excellent **Fire** None evident

Notes Plentiful widespread leaf litter. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
	10-30%	Eucalyptus pleurocarpa, Eucalyptus preissiana subsp.
Mallees < 5 m		preissiana, <u>Eucalyptus ?yilgarnensis</u>
Shrubs > 2 m	10-30%	Hakea cucullata, Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	Dryandra falcata, <u>Dryandra mucronulata</u> subsp. mucronulata, Hakea denticulata, Hakea pandanicarpa subsp. crassifolia, Hakea trifurcata
Shrubs 0.5 - 1 m	10-30%	Acacia biflora, Acacia subcaerulea, Allocasuarina ?thuyoides, Calothamnus gracilis, <u>Isopogon formosus</u> subsp. formosus, Isopogon longifolius, Jacksonia grevilleoides, Leucopogon corynocarpus, Lysinema ciliatum, Petrophile teretifolia, Taxandria spathulata, Xanthorrhoea gracilis
Shrubs < 0.5 m	10-30%	Banksia gardneri var. gardneri, Beaufortia empetrifolia, Boronia crassifolia, Darwinia vestita, Daviesia lancifolia, Dryandra nivea subsp. nivea, Gastrolobium retusum, Gompholobium venustum, Isopogon trilobus, Leucopogon gibbosus, Melaleuca pentagona var. latifolia, Melaleuca striata, Melaleuca suberosa, Pimelea lehmanniana subsp. lehmanniana, Pultenaea verruculosa
Herbs	< 2%	Boronia spathulata, Chorizema glycinifolium, Conostylis pusilla, Laxmannia brachyphylla
Sedges	< 2%	Chordifex sphacelatus, Desmocladus fasciculatus, <u>Mesomelaena</u> stygia subsp. stygia





Site: S1P7, Minesite

Described AC **Date** 10/10/2007 **Type:** Quadrat 10 x 10 m

Location Minesite

MGA Zone 50 640545 **mE** 6176510 **mN**

Habitat Flat/plain, negligible slope.

Soil Type Grey to white sand, wioth loose soil. **Rock Type** Common ferrous stones and pebbles.

Veg Condition Excellent **Fire** None evident

Notes Plentiful widespread leaf litter. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus occidentalis, Eucalyptus pleurocarpa
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Agonis theiformis, <u>Hakea corymbosa</u> , Hakea nitida, Kunzea recurva, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	<u>Calothamnus gracilis</u> , Conothamnus aureus, <u>Melaleuca</u> <u>suberosa</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia leioderma, Adenanthos apiculatus, Banksia gardneri var. gardneri, Bossiaea ornata, <u>Dryandra tenuifolia var. tenuifolia</u> , <u>Hibbertia gracilipes</u> , Leucopogon corynocarpus, Petrophile longifolia, Petrophile rigida, Pultenaea empetrifolia, Synaphea petiolaris subsp. petiolaris, Tetratheca pubescens, Verticordia habrantha
Herbs	2-10%	Burchardia congesta, Conostylis pusilla, Dampiera juncea, Goodenia pterigosperma, Lechenaultia formosa, Opercularia vaginata, <u>Stylidium sphacelatum</u> , Thelymitra benthamiana
Grasses	< 2%	Neurachne alopecuroidea
Sedges	2-10%	Anarthria gracilis, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia
Climbers	< 2%	Billardiera fraseri, Drosera menziesii, Gompholobium knightianum





Site: S140, Minesite

Described AC **Date** 15/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 1, Minesite (repeat of site from SDRM2)

MGA Zone 50 640349 mE 6176791 mN

Habitat Moderate hill slope.

Soil Type White to grey sandy loam, with a surface layer of humus and loose soil.

Rock Type Lateritic coarse gravel and pebbles.

Veg Condition Excellent **Fire** None evident

Notes Moderate leaf litter, mainly under shrubs. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Agonis theiformis, Dryandra mucronulata subsp. mucronulata
Shrubs 1 - 2 m	2-10%	Acacia subcaerulea, <u>Beaufortia anisandra</u> , <u>Hakea</u> <u>corymbosa</u> , Isopogon heterophyllus
Shrubs 0.5 - 1 m	10-30%	Banksia nutans var. cernuella, Calothamnus gracilis, Dryandra armata var. armata, Dryandra cuneata, Kingia australis, Leucopogon corynocarpus, Leucopogon reflexus, Lysinema ciliatum, <u>Melaleuca striata</u>
Shrubs < 0.5 m	2-10%	Acacia biflora, Allocasuarina humilis, Banksia gardneri var. gardneri, Boronia crassifolia, Calytrix flavescens, Daviesia oppositifolia, Hibbertia gracilipes, Hibbertia recurvifolia, Leucopogon cucullatus, Melaleuca subtrigona, Persoonia striata, Pultenaea verruculosa, Xanthorrhoea platyphylla
Herbs	< 2%	Patersonia occidentalis var. occidentalis, Tetratheca pubescens, Tricoryne tenella
Sedges	10-30%	Anarthria scabra, Chordifex sphacelatus, Desmocladus fasciculatus, Hypolaena fastigiata, Lomandra purpurea, Mesomelaena stygia subsp. stygia, Tricostularia neesii var. neesii
Climbers	< 2 %	Cassytha micrantha, <u>Hovea trisperma</u> , Thysanotus sparteus





Site: S141, Minesite

Described CJM **Date** 15/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 1, Minesite.

MGA Zone 50 640456 mE 6176822 mN

Habitat Upper hill slope. Gentle slope.

Soil Type Grey sandy loam, with a surface layer of humus.

Rock Type Lateritic stones and boulders.

Veg Condition Excellent **Fire** None evident

Notes Limited clearing adjacent. Plentiful widespread leaf litter, moderate wood litter.

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees > 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	< 2%	Agonis theiformis, Allocasuarina humilis, Banksia grandis, Hakea cucullata, Isopogon trilobus
Shrubs 1 - 2 m	10-30%	Allocasuarina thuyoides, Beaufortia anisandra, Beaufortia empetrifolia, Calothamnus gracilis, Dryandra cuneata, Dryandra mucronulata subsp. mucronulata, Hakea corymbosa, Hakea ruscifolia, Isopogon longifolius, Isopogon trilobus, Kingia australis, Melaleuca striata, Petrophile divaricata, Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	< 2%	Acacia delphina, Adenanthos apiculatus, Banksia nutans var. cernuella, Dryandra falcata, Persoonia striata
Shrubs < 0.5 m	< 2%	Acacia biflora, Banksia gardneri var. gardneri, Calytrix flavescens, Comesperma virgatum, Dryandra arctotidis, Dryandra nivea subsp. nivea, Gastrolobium retusum, Gompholobium venustum, Hakea corymbosa, Hakea denticulata, Hibbertia recurvifolia, Leucopogon corynocarpus, Lysinema ciliatum, Persoonia striata, Petrophile teretifolia
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Stylidium imbricatum, Patersonia occidentalis var. occidentalis, Thysanotus sparteus, Tricoryne tenella
Sedges	< 2%	Anarthria gracilis, Anarthria prolifera, Chordifex sphacelatus, Desmocladus fasciculatus, Hypolaena exsulca, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia, Schoenus curvifolius, Tricostularia neesii var. neesii
Climbers	< 2%	Cassytha racemosa, Hovea trisperma





Site: S142, Minesite

Described AC **Date** 15/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 1, Minesite

MGA Zone 50 640578 mE 6176556 mN

Habitat Plain, seasonal wetland, gentle slope.Soil Type White sand, with a surface crust.

Rock Type Nil

Veg Condition Excellent. **Fire** None evident

Notes Moderate leaf litter, mainly under shrubs. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus falcata, Eucalyptus pleurocarpa
Shrubs > 2 m	< 2%	Hakea cucullata, Hakea pandanicarpa subsp. crassifolia
Shrubs 1 - 2 m	30-70%	Agonis theiformis, Dryandra tenuifolia var. tenuifolia, Hakea corymbosa, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Banksia nutans var. cernuella, Bossiaea ornata, Calothamnus gracilis, Daviesia incrassata subsp. incrassata, Dryandra mucronulata subsp. mucronulata, Isopogon longifolius, Isopogon teretifolius, Leucopogon gibbosus, Petrophile rigida
Shrubs < 0.5 m	2-10%	Acacia biflora, Allocasuarina microstachya, Banksia repens, Baeufortia empetrifolia, Dryandra arctotidis, Gompholobium burtonioides, Hypocalymma strictum subsp. strictum, Melaleuca subtrigona, Pericalymma ellipticum, Persoonia striata, Petrophile longifolia, Synaphea petiolaris subsp. petiolaris, Verticordia habrantha, Xanthorrhoea platyphylla
Herbs	< 2%	Conostylis pusilla, Thysanotus tenellus
Sedges	10-30%	Anarthria prolifera, Chordifex ornatus, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia, Mesomelaena tetragona
Climbers	2-10%	Cassytha flava, Hovea trisperma





Site: S143, Minesite

Described CJM **Date** 15/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 1, Minesite

MGA Zone 50 640674 mE 6177188 mN

Habitat Hill crest, negligible slope.

Soil Type Grey sandy loam, with a surface layer of humus.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Widespread moderate leaf litter, moderate wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	2-10%	Banksia attenuata
Shrubs > 2 m	< 2%	Banksia baxteri
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Adenanthos cuneatus, Banksia baueri, Banksia nutans var. cernuella, Beaufortia empetrifolia, Calothamnus gracilis, Conospermum teretifolium, Melaleuca striata, Melaleuca thymoides, Taxandria spathulata
Shrubs 0.5 - 1 m	2-10%	Bossiaea rufa, Isopogon longifolius, <u>Lysinema ciliatum</u> , <u>Melaleuca thymoides</u> , Petrophile rigida, <u>Petrophile</u> <u>teretifolia</u>
Shrubs < 0.5 m	10-30%	Acacia delphina, Calytrix flavescens, Calytrix leschenaultii, Franklandia fucifolia, Hibbertia recurvifolia, Leucopogon cucullatus, Melaleuca striata, Phyllota barbata, Verticordia sieberi vax. lomata
Herbs	< 2%	Burchardia congesta, Drosera menziesii
Grasses	< 2%	Amphipogon avenaceus
Sedges	2-10%	Anarthria scabra, Lomandra hastilis, Lyginia imberbis, Tetraria sp., Tricostularia neesii var. neesii





Site: S144, Minesite

Described CG **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Minesite

MGA Zone 50 640607 mE 6176714 mN

Habitat Lower hill slope, gentle slope.

Soil Type Grey sandy loam, with a surface layer of humus.

Rock Type Limestone/calcrete

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate, widespread leaf litter. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Tree 5 - 15 m	10-30%	Eucalyptus decens, <u>Eucalyptus pleurocarpa</u>
Shrubs > 2 m	10-30%	Hakea cucullata, <u>Hakea pandanicarpa subsp. crassifolia,</u> Taxandria spathulata
Shrubs 1 - 2 m	10-30%	Beaufortia empetrifolia, Calothamnus gracilis, Hakea corymbosa, <u>Melaleuca striata</u> , Petrophile squamata subsp. squamata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	< 2%	Allocasuarina thuyoides, Calytrix flavescens, Darwinia vestita, Dryandra tenuifolia var. tenuifolia, Hakea corymbosa, Leucopogon reflexus
Shrubs < 0.5 m	< 2%	Acacia delphina, Adenanthos apiculatus, Banksia repens, Hibbertia recurvifolia, Isopogon teretifolius subsp. teretifolius, Melaleuca subtrigona
Herbs	< 2%	Conostylis pusilla, Logania campanulata
Grasses	< 2%	Pentaschistis airoides
Sedges	10-30%	Anarthria gracilis, Chordifex ornatus, Chordifex sphacelatus, Cyathochaeta equitans, Desmocladus austrinus, Desmocladus fasciculatus, Lepidosperma pubisquameum, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia, Patersonia lanata, Schoenus pleiostemoneus, Tricostularia neesii var. neesii
Climbers	< 2%	Cassytha flava, Chorizema glycinifolium, <u>Thysanotus</u> <u>sparteus</u>





Site: S145, Minesite

Described AC **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Minesite, Map 1

MGA Zone 50 640829 mE 6176909 mN

Habitat Hill crest, gentle slope.

Soil Type White to grey sandy loam, with a surface layer of humus and loose soil.

Rock Type Lateritic coarse gravel and pebbles.

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate, widespread leaf litter. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 7 m	10-30%	Eucalyptus staeri, Eucalyptus uncinata
Shrubs > 2 m	2-10%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Acacia subcaerulea, Banksia baxteri, Beaufortia anisandra, <u>Dryandra mucronulata subsp.</u> mucronulata, Hakea corymbosa, Isopogon heterophyllus, <u>Isopogon trilobus</u> , Leucopogon corynocarpus
Shrubs 0.5 - 1 m	10-30%	Agonis theiformis, Banksia nutans var. cernuella, Daviesia incrassata subsp. incrassata, Dryandra cuneata, Dryandra nivea subsp nivea, Hakea ruscifolia, Lysinema ciliatum, Melaleuca striata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia delphina, Adenanthos apiculatus, Allocasuarina humilis, Andersonia simplex, Banksia gardneri var. gardneri, Boronia crassifolia, Bossiaea rufa, Calothamnus gracilis, Calytrix flavescens, Darwinia vestita, Gompholobium venustum, Hibbertia recurvifolia, Isopogon longifolius, Jacksonia grevilleoides, Persoonia striata, Petrophile teretifolia, Pultenaea verruculosa
Herbs	< 2%	Patersonia occidentalis var. occidentalis, Sphenotoma capitatum, Thysanotus sparteus
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Chordifex sphacelatus, Desmocladus fasciculatus, Mesomelaena stygia subsp. stygia, Tricostularia neesii var. neesii
Climbers	< 2%	Billardiera venusta, Cassytha racemosa, Chorizema glycinifolium, Hovea trisperma





Site: S146, Lot 6238

Described CG **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Old Map 8, Lot 6238, Hood's

MGA Zone 50 624981 mE 6175673 mN

Habitat Hill slope, gentle slope.

Soil Type White to grey sand, with a surface layer of humus.

Rock Type Nil

Veg Condition Excellent Fire None evident

Notes Widespread moderate leaf litter. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 7 m	10-30%	Eucalyptus pleurocarpa, Eucalyptus staeri
Shrubs $> 2 \text{ m}$	2-10%	Acacia subcaerulea, Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Agonis theiformis, Allocasuarina humilis, <u>Banksia nutans</u> <u>var. cernuella</u> , Hakea corymbosa, Hypocalymma strictum subsp. strictum, Petrophile teretifolia, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Acacia biflora, Calothamnus gracilis, Calytrix flavescens, Calytrix similis, Dryandra nivea subsp. nivea, Gompholobium venustum, Jacksonia grevilleoides, Melaleuca striata, Melaleuca thymoides, Xanthorrhoea platyphylla
Shrubs < 0.5 m	< 2%	Banksia repens, Dryandra arctotidis, Melaleuca subalaris, Petrophile rigida, Verticordia sieberi var. lomata
Herbs	< 2%	Comesperma calymega, Stylidium repens
Grasses	< 2%	Amphipogon avenaceus
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Caustis dioica, Harperia confertospicata, Hypolaena fastigiata, Mesomelaena tetragona, <u>Tricostularia neesii var. neesii</u>





Site: S147, private land next to Sth Stirling NR, off Chillinup Rd

Described CG **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 4, private land next to South Stirling Nature Reserve

MGA Zone 50 609690 mE 6174653 mN

Habitat Low hill crest, with a gentle slope.

Soil Type Grey sand, with a surface layer of humus.

Rock Type Nil

Veg Condition Excellent **Fire** Old (>5 years)

Notes Moderate, widespread leaf litter. Moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees 5 - 15 m	10-30%	Eucalyptus staeri
Mallee < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, <u>Eucalyptus</u> <u>pleurocarpa</u>
Shrubs > 2 m	2-10%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Agonis theiformis, Banksia nutans var. cernuella, <u>Beaufortia</u> empetrifolia, Gompholobium confertum, Hakea corymbosa, Leucopogon cucullatus, <u>Melaleuca striata</u> , <u>Taxandria</u> spathulata
Shrubs 0.5 - 1 m	2-10%	Acacia applanata, <u>Calothamnus gracilis</u> , <u>Conothamnus</u> <u>aureus</u> , Daviesia incrassata subsp. incrassata, Daviesia trigonophylla, Isopogon trilobus, Petrophile teretifolia, Verticordia sieberi var. lomata, <u>Xanthorrhoea platyphylla</u>
Shrubs < 0.5 m	< 2%	Acacia biflora, Acacia luteola, Andersonia simplex, Banksia repens, Daviesia trigonophylla, Gompholobium venustum, Hibbertia gracilipes, Petrophile rigida, Stirlingia anethifolia
Herbs	< 2%	Conostylis pusilla, Dampiera linearis, Tetratheca pubescens
Grasses	< 2%	Austrodanthonia caespitosa
Sedges	30-70%	Anarthria prolifera, Desmocladus austrinus, <u>Harperia</u> <u>lateriflora</u> , Lepidosperma pubisquameum, Lepidosperma squamatum, Mesomelaena stygia subsp. stygia, Schoenus pleiostemoneus, Tricostularia neesii var. neesii
Climbers	< 2%	Billardiera venusta





Site: 148, private land next to Sth Stirling NR off Chillinup Rd

Described AC **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 4

MGA Zone 50 609303 mE 6174669 mN

Habitat Undulating plain, gentle slope.

Soil Type White to grey sand, with a surface layer of humus and loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Moderate leaf litter, mainly under shrubs. Sparse wood litter.

vegetation cover.		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 6 m	10-30%	Eucalyptus pleurocarpa, Eucalyptus uncinata
Shrubs 1 - 2 m	30-70%	<u>Beaufortia empetrifolia</u> , Dryandra plumosa subsp. plumosa, Isoetes tripus
Shrubs 0.5 - 1 m	10-30%	Isopogon heterophyllus, Leucopogon cucullatus, <u>Melaleuca</u> <u>striata</u> , Melaleuca subalaris, Petrophile teretifolia, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Adenanthos cuneatus, Allocasuarina thuyoides, Baeckea camphorosmae, <u>Banksia repens</u> , Beaufortia empetrifolia, <u>Calothamnus gracilis, Conothamnus aureus</u> , Dryandra arctotidis, Gompholobium confertum, <u>Hibbertia gracilipes</u> , Stirlingia anethifolia, Synaphea polymorpha, Verticordia sieberi var. lomata
Herbs	< 2%	Conostylis pusilla, Thysanotus sparteus
Sedges	10-30%	Desmocladus fasciculatus, Harperia lateriflora, Mesomelaena stygia subsp. stygia
Climbers	< 2%	Cassytha flava





Site 149, private land next to Sth Stirling NR off Chillinup Rd

Described CG **Date** 16/01/2008 **Type:** Quadrat 10 x 10 m

Location Map 4, private land next to South Stirling Nature Reserve

MGA Zone 50 609234 **mE** 6174661 **mN**

Habitat Low hill crest, gentle slope.

Soil Type Grey sand

Rock Type Nil

Veg Condition Good, grazed by kangaroos

Fire None evident

Notes Moderate leaf litter

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	30-70%	Eucalyptus pleurocarpa
Shrubs > 2 m	2-10%	Hakea trifurcata
Shrubs 1 - 2 m	10-30%	Beaufortia empetrifolia, Melaleuca striata, <u>Taxandria</u> <u>spathulata</u>
Shrubs 0.5 - 1 m	10-30%	Banksia nutans var. cernuella, Calothamnus sanguineus, Dryandra armata var. armata, <u>Hakea prostrata</u> , Melaleuca subtrigona, Petrophile rigida, Petrophile squamata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	<u>Banksia repens</u> , Dryandra arctotidis, Verticordia sieberi var. lomata
Herbs	< 2%	Boronia spathulata, Stylidium hirsutum, Xanthosia huegelii
Grasses	< 2%	Amphipogon avenaceus
Sedges	2-10%	Harperia lateriflora, Hypolaena fastigiata, <u>Lepidosperma</u> <u>carphoides</u> , Lepidosperma leptostachyum, <u>Mesomelaena</u> <u>stygia subsp. stygia</u>
Climbers	< 2%	Cassytha flava





Site: 150 Minesite

Described CG **Date** 22/02/20068 **Type:** Quadrat 10 x 10 m

Location Minesite, E. pleurocarpa

MGA Zone 50 640535 mE 6176529 mN

Habitat Seasonal wetland, gentle slope.

Soil Type White to grey sand, with a surface layer of loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Sparse wood litter. Widespread, plentiful leaf litter.

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus uncinata
Shrubs > 2 m	2-10%	Dryandra tenuifolia var. tenuifolia, Isopogon trilobus
Shrubs 1 - 2 m	10-30%	Acacia leioderma, Hakea prostrata, Petrophile squamata, Taxandria spathulata
Shrubs 0.5 - 1 m	2-10%	Acacia biflora, Allocasuarina thuyoides, Banksia dryandroides, Calothamnus gracilis, Hakea cucullata, Hibbertia recurvifolia, Melaleuca suberosa, Melaleuca subtrigona, Petrophile seminuda, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Allocasuarina thuyoides, Andersonia sprengelioides, Banksia gardneri var. gardneri, Dryandra arctotidis, Hakea corymbosa, Leucopogon woodsii, Melaleuca subtrigona, Persoonia striata, Petrophile longifolia, Verticordia habrantha
Herbs	2-10%	Conostylis pusilla, Stylidium repens, Xanthosia huegelii
Grasses	2-10%	Lachnagrostis filiformis, Neurachne alopecuroidea
Sedges	10-30%	Anarthria gracilis, <u>Desmocladus fasciculatus</u> , Harperia confertospicata, Harperia lateriflora, Lepidosperma squamatum, Mesomelaena stygia, Schoenus pleiostemoneus, Tetraria octandra, Tricostularia neesii var. neesii
Climbers	2-10%	Cassytha glabella



Site: 151 Minesite

Described AC **Date** 22/02/2008 **Type:** Quadrat 10 x 10 m

Location Minesite, E. pleurocarpa

MGA Zone 50 640456 mE 6176612 mN

Habitat Plain, negligible slope.

Soil Type Grey sandy loam, with a surface layer of humus and a surface crust.

Rock Type Nil

Veg Condition Excellent Fire None evident

Notes Plentiful leaf litter, widespread. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus pleurocarpa, Eucalyptus uncinata
Shrubs > 2 m	2-10%	Agonis theiformis, Banksia nutans var. cernuella
Shrubs 1 - 2 m	10-30%	Beaufortia empetrifolia, Hakea corymbosa, Hakea prostrata, Isopogon trilobus, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Beaufortia empetrifolia, Banksia dryandroides, Bossiaea eriocarpa, Calothamnus gracilis, <u>Daviesia incrassata subsp.</u> <u>incrassata</u> , Melaleuca suberosa, Petrophile ericifolia subsp. ericifolia, Petrophile seminuda, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia delphina, <u>Adenanthos apiculatus</u> , Allocasuarina thuyoides, Banksia gardneri var. gardneri, Darwinia vestita, <u>Dryandra tenuifolia var. tenuifolia</u> , Hibbertia gracilipes, Leucopogon corynocarpus, Leucopogon gibbosus, Melaleuca subtrigona, Persoonia striata, Petrophile teretifolia, Verticordia habrantha
Herbs	< 2%	Conostylis pusilla, Thysanotus sparteus
Grasses	< 2%	Agrostis avenacea
Sedges	2-10%	Anarthria gracilis, Chordifex capillaceus, <u>Desmocladus</u> fasciculatus, Harperia lateriflora, <u>Mesomelaena stygia</u> , Schoenus sublateralis
Climbers	2-10%	Billardiera venusta, <u>Cassytha glabella</u> , Gastrolobium bracteolosum





Site: 152 Minesite

Described AC **Date** 22/02/2008 **Type:** Quadrat 10 x 10 m

Location Minesite, E. staeri

MGA Zone 50 640409 mE 6177007 mN

Habitat Hill crest, negligible slope.

Soil Type White to grey sandy loam, with a surface crust and some humus.

Rock Type Few lateritic pebbles and stones.

Veg Condition Excellent. **Fire** None evident

Notes Widespread, moderate leaf litter, and moderate wood litter.

Vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus staeri
Shrubs > 2 m	30-70%	Hakea baxteri, <u>Hakea pandanicarpa subsp. crassifolia</u> , Hakea trifurcata, Isopogon trilobus, <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	2-10%	Acacia cyclops, Acacia subcaerulea, Agonis theiformis, Dryandra plumosa subsp. plumosa, Hakea corymbosa, Hakea denticulata, Taxandria spathulata
Shrubs 0.5 - 1 m	10-30%	Acacia subcaerulea, Allocasuarina thuyoides, Beaufortia empetrifolia, <u>Calothamnus gracilis</u> , Dryandra tenuifolia var. tenuifolia, Gompholobium confertum, Grevillea fasciculata, Leucopogon glabellus, Lysinema ciliatum, Melaleuca striata, <u>Melaleuca suberosa</u> , Petrophile teretifolia
Shrubs < 0.5 m	2-10%	Acacia biflora, Adenanthos apiculatus, Banksia repens, Boronia sp., Darwinia vestita, <u>Hibbertia gracilipes</u> , Leucopogon gibbosus, Melaleuca subtrigona, Xanthorrhoea platyphylla
Herbs	2-10%	Conostylis aurea, Patersonia juncea, Thysanotus sparteus
Sedges	30-70%	Anarthria gracilis, Anarthria prolifera, Cyathochaeta equitans, Desmocladus fasciculatus, <u>Harperia lateriflora</u> , Lepidosperma squamatum, Mesomelaena stygia
Climbers	< 2%	<u>Cassytha glabella</u> , Gastrolobium bracteolosum





Site: 153 Minesite

Described CG **Date** 22/02/2008 **Type:** Quadrat 10 x 10 m

Location Minesite, E. staeri

MGA Zone 50 640469 mE 6177046 mN

Habitat Hill crest, gentle slope.

Soil Type Grey sand, with a surface layer of humus and loose soil

Rock Type Nil

Veg Condition Pristine **Fire** None evident

Notes Plentiful widespread leaf litter. Moderate wood litter.

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STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	< 2%	Eucalyptus decurva, Eucalyptus staeri
Shrubs > 2 m	2-10%	Hakea baxteri, Hakea denticulata, <u>Hakea pandanicarpa subsp.</u> <u>crassifolia</u> , Hakea trifurcata, <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Agonis theiformis, Allocasuarina humilis, Banksia nutans var. cernuella, Beaufortia empetrifolia, <u>Dryandra plumosa</u> subsp. plumosa, Hakea ruscifolia, Melaleuca striata, Melaleuca thymoides, Petrophile ericifolia subsp. ericifolia, Petrophile squamata
Shrubs 0.5 - 1 m	2-10%	Acacia delphina, Conothamnus aureus, Daviesia incrassata subsp. incrassata, <u>Hibbertia recurvifolia</u> , Kingia australis, Leucopogon cucullatus, <u>Melaleuca subtrigona</u> , <u>Petrophile teretifolia</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia bifaria, Adenanthos apiculatus, <u>Banksia gardneri var. gardneri,</u> Bossiaea rufa, Hakea corymbosa, Leucopogon corynocarpus, Leucopogon cucullatus
Herbs	< 2%	Burchardia congesta, Thysanotus sparteus
Sedges	10-30%	Anarthria gracilis, Anarthria prolifera, Caustis dioica, Cyathochaeta equitans, <u>Desmocladus fasciculatus</u> , Harperia lateriflora, Hypolaena fastigiata, Lepidosperma squamatum, Lyginia imberbis, Tricostularia neesii var. elatior
Climbers	< 2%	Cassytha glabella, Gastrolobium bracteolosum





Site: 154, cnr Sandalwood and Mettler Lake Rds

Described AC **Date** 22/02/2008 **Type:** Quadrat 10 x 10 m

Location Leighton's, cnr Mettler Lake Rd & Sandalwood Rd

MGA Zone 50 649546 mE 6176196 mN

Habitat Hill slope, gentle slope

Soil Type White to grey sandy loam, with a surface crust and some humus.

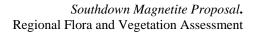
Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Plentiful, widespread leaf litter. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 7 m	2-10%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Hakea cucullata, Taxandria spathulata
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Agonis theiformis, Beaufortia empetrifolia, Hakea corymbosa, Hakea trifurcata, <u>Isopogon trilobus</u> , <u>Melaleuca</u> <u>striata</u> , <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	30-70%	Adenanthos cuneatus, Beaufortia empetrifolia, <u>Calothamnus gracilis</u> , Daviesia incrassata subsp. incrassata, Dryandra armata, Isopogon teretifolius subsp. petrophiloides, Isopogon trilobus, Leucopogon cucullatus, <u>Melaleuca striata</u> , Petrophile rigida, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Acacia bifaria, Adenanthos apiculatus, Allocasuarina thuyoides, Andersonia sprengelioides, Banksia gardneri var. gardneri, Darwinia vestita, Dryandra arctotidis, <u>Dryandra nervosa</u> , Hibbertia gracilipes, Leucopogon corynocarpus, Melaleuca subtrigona, Petrophile teretifolia
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Conostylis pusilla, Thysanotus sparteus, Xanthosia singuliflora
Grasses	< 2%	Elymus scabrus var. scabrus
Sedges	2-10%	Anarthria gracilis, Anarthria prolifera, <u>Chordifex sphacelatus</u> , Cyathochaeta equitans, <u>Desmocladus fasciculatus</u> , <u>Harperia</u> <u>lateriflora</u> , Lepidosperma squamatum, <u>Mesomelaena stygia</u> , Mesomelaena tetragona
Climbers	< 2%	Cassytha glabella, Gastrolobium bracteolosum







Site: 155, southern edge of Stirling Range National Park

Described CG **Date** 23/02/2008 **Type:** Quadrat 10 x 10 m

Location Road reserve, Stirling Range NP

MGA Zone 50 597719 mE 6184243 mN

Habitat Undulating plain, negligible slope

Soil Type Grey sandy loam, with a surface layer of loose soil.

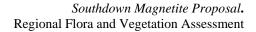
Rock Type Lateritic coarse gravel/pebbles.

Veg Condition Pristine **Fire** None evident

Notes Widespread, moderate leaf litter. Sparse wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	< 2%	Eucalyptus staeri
Mallees < 5 m	10-30%	Eucalyptus pachyloma, Eucalyptus pleurocarpa
Shrubs > 2 m	2-10%	Hakea cucullata, Hakea pandanicarpa subsp. crassifolia, Hakea ruscifolia, <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	10-30%	Beaufortia anisandra, Dryandra mucronulata subsp. mucronulata, Hakea corymbosa, Hakea trifurcata, Isopogon attenuatus, Petrophile squamata, Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Beaufortia schaueri, <u>Calothamnus gracilis</u> , Daviesia emarginata, Leucopogon corynocarpus, Leucopogon gibbosus, Melaleuca striata, Petrophile serruriae, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia browniana var. browniana, Astroloma sp., Banksia gardneri var. gardneri, Banksia sphaerocarpa subsp. sphaerocarpa, Boronia crassifolia, <u>Dryandra calophylla</u> , Grevillea fasciculata, Persoonia striata, Petrophile teretifolia, Stylidium imbricatum
Herbs	< 2%	Boronia spathulata, Patersonia occidentalis
Grasses	2-10%	Amphipogon setaceus
Sedges	2-10%	Anarthria prolifera, <u>Chordifex sphacelatus</u> , <u>Desmocladus fasciculatus</u> , Hypolaena fastigiata, Mesomelaena stygia, Tetraria octandra







Site: 156 southern edge of Stirling Range National Park

Described AC **Date** 23/02/2008 **Type:** Quadrat 10 x 10 m

Location Stirling Range NP, just off Chester Pass Rd

MGA Zone 50 597676 mE 6184350 mN

Habitat Plain, negligible slope.

Soil Type White sand, with a surface crust and some humus.

Rock Type Lateritic coarse gravel and pebbles.

Veg Condition Excellent. **Fire** Old (>5 yrs)

Notes Widespread moderate leaf litter, sparse wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	30-70%	Hakea pandanicarpa, <u>Lambertia inermis var. inermis</u>
Shrubs 1 - 2 m	10-30%	Agonis theiformis, Allocasuarina humilis, Dryandra cuneata, Dryandra mucronulata subsp. mucronulata, Hakea cucullata, <u>Taxandria</u> spathulata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	10-30%	Banksia sphaerocarpa var. sphaerocarpa, <u>Beaufortia anisandra</u> , Calothamnus gracilis, Hakea corymbosa, Jacksonia spinosa, <u>Melaleuca</u> <u>striata</u> . Melaleuca thymoides, Petrophile squamata, Stirlingia latifolia, Xanthorrhoea platyphylla
Shrubs < 0.5 sh	10-30%	Baeckea crispiflora, Banksia gardneri var. gardneri, Boronia crassifolia, <u>Calothamnus sanguineus</u> , Calytrix flavescens, Dryandra arctotidis, Dryandra calophylla, Hemigenia humilis, Leucopogon cucullatus, Melaleuca tuberculata var. tuberculata, Petrophile serruriae, Synaphea polymorpha
Herbs	< 2%	Acacia aemula subsp. aemula, <u>Boronia spathulata</u> , Lomandra sericea, Patersonia juncea, Stylidium glandulosissimum
Sedges	< 2%	Anarthria prolifera, Caustis dioica, Chordifex sphacelatus, Desmocladus fasciculatus, Lepidosperma squamatum, Tricostularia neesii var. neesii
Climbers	< 2%	Cassytha micrantha, Hovea trisperma





Site: 157 southern edge of Stirling Range National Park

Described CG **Date** 23/02/2008 **Type:** Quadrat 10 x 10 m

Location Stirling Range NP, along the southern border, just off Branson Rd

MGA Zone 50 605684 mE 6184198 mN

Habitat Plain, negligible slope.

Soil Type White sand, with a surface crust and some loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** Moderate (1-5 yrs)

Notes Widespread moderate leaf litter, moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decens, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Agonis theiformis, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	30-70%	Banksia nutans, Calothamnus sanguineus, Hakea corymbosa, Hakea pandanicarpa subsp. crassifolia, Isopogon attenuatus, Leucopogon glabellus, <u>Melaleuca striata</u> , Petrophile squamata, Regelia inops
Shrubs < 0.5 m	10-30%	Acacia biflora, Allocasuarina humilis, Banksia repens, Caladenia graminifolia, Calytrix flavescens, Dryandra arctotidis, Dryandra pteridifolia subsp. pteridifolia, Grevillea fasciculata, <u>Leucopogon woodsii</u> , Melaleuca tuberculata, Pimelea sp., <u>Xanthorrhoea platyphylla</u>
Herbs	< 2 %	Andersonia caerulea, Boronia spathulata
Grasses	< 2%	Amphipogon turbinatus
Sedges	10-30%	Anarthria gracilis, Chordifex laxus, Chordifex sphacelatus, Desmocladus fasciculatus, Lepidosperma squamatum, <u>Mesomelaena stygia</u> , Schoenus pleiostemoneus





Site: 158 southern edge of Stirling Range National Park

Described AC **Date** 23/02/2008 **Type:** Quadrat 10 x 10 m

Location Stirling Range NP, south border along Branson Rd

MGA Zone 50 605103 mE 6184171 mN

Habitat Hill crest, gentle slope.

Soil Type Grey sandy loam, with a surface crust and humus.

Rock Type Lateritic coarse gravel and pebbles.

Veg Condition Excellent

Fire Moderate (1-5 yrs)

Notes Widespread, moderate leaf litter. Moderate wood litter.

vegetation cover:	001/50	
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallee < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Hakea cucullata, Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	<u>Hakea marginata</u> , Hakea pandanicarpa subsp. crassifolia, Hakea prostrata
Shrubs 0.5 - 1 m	2-10%	Banksia sphaerocarpa var. sphaerocarpa, Hakea corymbosa, Hakea ruscifolia, Hakea trifurcata, Isopogon longifolius, Melaleuca striata, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Allocasuarina humilis, Banksia gardneri var. gardneri, <u>Beaufortia schaueri</u> , Boronia crassifolia, Daviesia incrassata subsp. incrassata, Dryandra arctotidis, Dryandra armata, Dryandra nervosa, Gastrolobium reticulatum, Gompholobium confertum, Grevillea fasciculata, Hibbertia recurvifolia, Leucopogon corynocarpus, Leucopogon gibbosus, Melaleuca subtrigona, Petrophile rigida, Sphaerolobium macranthum
Herbs	< 2%	Boronia spathulata, Goodenia pterigosperma, Patersonia occidentalis var. occidentalis
Sedges	10-30%	Anarthria prolifera, Desmocladus fasciculatus, Lepidosperma squamatum, Lomandra nigricans, <u>Mesomelaena stygia</u> , Schoenus pleiostemoneus, Tetraria octandra
Climbers	< 2%	Gompholobium knightianum





Site: 159, Chillinup Nature Reserve

Described AC **Date** 23/02/2008 **Type:** Quadrat 10 x 10 m

Location Chillinup Nr, just off Home Rd

MGA Zone 50 597272 **mE** 6176774 **mN**

Habitat Plain, negligible slope.

Soil Type White to grey sand, with a surface crust and some humus.

Rock Type Nil

Veg Condition Excellent. **Fire** None evident

Notes Sparse wood litter. Sparse leaf litter, mainly under shrubs.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus decipiens subsp. adesmophloia, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Hakea pandanicarpa subsp. crassifolia, Hakea trifurcata, Lambertia inermis var. inermis
Shrubs 1 - 2 m	2-10%	Dryandra plumosa subsp. plumosa, Isopogon trilobus
Shrubs 0.5 - 1 m	30-70%	Adenanthos cuneatus, Banksia sphaerocarpa var. sphaerocarpa, Beaufortia empetrifolia, Dryandra armata, Hakea corymbosa, <u>Melaleuca striata</u> , Melaleuca subtrigona, Petrophile divaricata, <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Acacia biflora, Allocasuarina thuyoides, Astroloma drummondii, Banksia gardneri var. gardneri, Banksia repens, Boronia crenulata subsp. crenulata, Calothamnus gracilis, Calytrix flavescens, Conothamnus aureus, Darwinia vestita, Dryandra arctotidis, Dryandra nivea subsp. nivea, Gompholobium confertum, Leucopogon cucullatus, Melaleuca subtrigona, Persoonia striata, Petrophile teretifolia, Pultenaea verruculosa, Verticordia sieberi var. lomata
Herbs	< 2%	Burchardia congesta, Goodenia pterigosperma, Haemodorum discolor, Stylidium repens
Grasses	< 2%	Amphipogon turbinatus, Austrodanthonia caespitosa
Sedges	10-30%	Anarthria prolifera, <u>Desmocladus austrinus</u> , Desmocladus fasciculatus, Harperia confertospicata, <u>Harperia lateriflora</u> , Hypolaena fastigiata, Lepidosperma carphoides, Lyginia imberbis, Mesomelaena graciliceps, <u>Mesomelaena stygia</u> , Mesomelaena tetragona, Onychosepalum laxiflorum, Schoenus curvifolius
Climbers	< 2%	Billardiera venusta, Cassytha micrantha, Cassytha racemosa





Site: 160, South Stirling Nature Reserve

Described CG **Date** 24/02/2008 **Type:** Quadrat 10 x 10 m

Location South Stiling NR, east of Pfeiffer Rd

MGA Zone 50 610911 mE 6169332 mN

Habitat Plain, gentle slope.

Soil Type White to grey sand, with a surface layer of humus and loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate, widespread leaf litter, and moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus angulosa, Eucalyptus falcata, Eucalyptus pachyloma, Eucalyptus pleurocarpa
Shrubs > 2 m	10-30%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	< 2%	Hakea ferruginea, Taxandria spathulata
Shrubs 0.5 - 1 m	2-10%	Dryandra plumosa subsp. plumosa, Hakea denticulata, Melaleuca striata, Melaleuca suberosa
Shrubs < 0.5 m	10-30%	Acacia luteola, Adenanthos apiculatus, Allocasuarina thuyoides, Andersonia sprengelioides, Banksia gardneri var. gardneri, Banksia sphaerocarpa var. sphaerocarpa, Beaufortia schaueri, Boronia crassifolia, Calothamnus gracilis, Calytrix similis, Comesperma sp., Darwinia vestita, Dryandra armata var. armata, Dryandra calophylla, Gastrolobium reticulatum, Hakea denticulata, Hibbertia recurvifolia, Isopogon attenuatus, Isopogon teretifolius subsp. petrophiloides, Leptospermum spinescens, Logania micrantha, Lysinema ciliatum, Melaleuca thymoides, Persoonia striata, Petrophile rigida, Petrophile teretifolia, Sphaerolobium scabriusculum, Xanthorrhoea platyphylla
Herbs	< 2%	Gompholobium confertum, Patersonia occidentalis var. occidentalis
Grasses	< 2%	Neurachne alopecuroidea
Sedges	30-70%	Anarthria gracilis, Cyathochaeta avenacea, Desmocladus fasciculatus, Harperia lateriflora, Lepidosperma squamatum, Lepidosperma striatum, Lomandra rupestris, Mesomelaena graciliceps, Mesomelaena stygia, Schoenus pleiostemoneus
Climbers	< 2%	Cassytha micrantha





Site: 161, South Stirling Nature Reserve

Described AC **Date** 24/02/2008 **Type:** Quadrat 10 x 10 m

Location South Stirling NR, off Chillinup Rd

MGA Zone 50 610165 mE 6176305 mN

Habitat Hill slope, gentle slope.Soil Type White to grey sand.

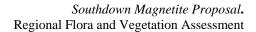
Rock Type Lateritic coarse gravel/pebbles.

Veg Condition Excellent **Fire** None evident

Notes Moderate widespread leaf litter, moderate wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	30-70%	Agonis theiformis, Melaleuca striata
Shrubs 1 - 2 m	30-70%	Beaufortia empetrifolia, Calothamnus gracilis, Leucopogon flavescens var. flavescens, <u>Melaleuca striata</u> , Melaleuca thymoides
Shrubs 0.5 - 1 m	30-70%	Acacia luteola, Adenanthos cuneatus, Banksia nutans, Calothamnus gracilis, Daviesia incrassata subsp. incrassata, Hypocalymma strictum subsp. strictum, Leucopogon cucullatus, Lysinema ciliatum, Melaleuca striata, Melaleuca thymoides, Oligarrhena micrantha, Stirlingia latifolia
Shrubs < 0.5 m	2-10%	Acacia aemula subsp. aemula, Acacia biflora, Andersonia simplex, Boronia ramosa subsp. anethifolia, Conothamnus aureus, Gompholobium tomentosum, Hibbertia recurvifolia, <u>Latrobea</u> recurva, Petrophile teretifolia, Verticordia densiflora var. cespitosa
Herbs	2-10%	Boronia spathulata, Burchardia congesta, <u>Caladenia flaccida</u> , Dampiera juncea, Stylidium repens, <u>Stylidium scandens</u>
Grasses	< 2%	Amphipogon turbinatus
Sedges	10-30%	Anarthria prolifera, Caustis dioica, Chordifex sphacelatus, Cyathochaeta equitans, Desmocladus austrinus, Harperia confertospicata, Hypolaena exsulca, Hypolaena fastigiata, Lepidosperma squamatum, Lyginia barbata, Tricostularia neesii var. neesii
Climbers	< 2%	Cassytha sp., Gompholobium venustum







Site: 162, South Stirling Nature Reserve

Described CG **Date** 24/02/2008 **Type:** Quadrat 10 x 10 m

Location South Stirling NR

MGA Zone 50 610164 mE 6176222 mN

Habitat Hill crest, gentle slope.

Soil Type White sand, with a surface layer of humus and loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Plentiful leaf litter, mainly under shrubs. Moderate wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	2-10%	Banksia coccinea, Hakea baxteri, <u>Hakea pandanicarpa subsp.</u> <u>crassifolia</u>
Shrubs 1 - 2 m	30-70%	Adenanthos cuneatus, Banksia sphaerocarpa var. sphaerocarpa, Beaufortia empetrifolia, Bossiaea praetermissa, Calothamnus gracilis, Isopogon trilobus, Leucopogon corynocarpus, <u>Melaleuca striata</u> , <u>Taxandria spathulata</u> , Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	2-10%	Adenanthos cuneatus, Darwinia vestita, Hakea corymbosa, <u>Hibbertia</u> recurvifolia, Isopogon attenuatus, Lysinema ciliatum, <u>Melaleuca</u> thymoides, Petrophile teretifolia, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Andersonia simplex, Banksia gardneri var. gardneri, Boronia albiflora, Calytrix similis, <u>Hypocalymma strictum</u> subsp. strictum, Microcorys lenticularis, Stirlingia latifolia
Herbs	2-10%	Burchardia congesta, <u>Caladenia flaccida</u> , Goodenia incana, Laxmannia brachyphylla, <u>Stylidium scandens</u> , <u>Tetratheca pubescens</u>
Grasses	< 2%	Amphipogon turbinatus, Austrodanthonia caespitosa
Sedges	30-70%	Anarthria prolifera, Caustis dioica, Chordifex sphacelatus, Hypolaena fastigiata, Lepidosperma squamatum, Lomandra hastilis, Mesomelaena graciliceps, Schoenus caespititius, Tricostularia neesii var. neesii
Climbers	< 2%	Gompholobium venustum





Site: 163, South Stirling Nature Reserve

Described CG **Date** 24/02/2008 **Type:** Quadrat 10 x 10 m

Location SW cnr of South Stirling Nature Reserve

MGA Zone 50 610190 mE 6172942 mN

Habitat Plain

Soil Type Grey sand, with a surface layer of humus and loose soil.

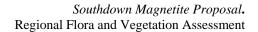
Rock Type Nil

Veg Condition Pristine **Fire** None evident

Notes Moderate widespread leaf litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Acacia subcaerulea, Adenanthos cuneatus, Agonis theiformis, Banksia nutans, Beaufortia empetrifolia, Boronia albiflora, <u>Dryandra mucronulata subsp. mucronulata</u> , Hakea corymbosa, <u>Melaleuca striata</u> , Taxandria spathulata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	2-10%	Leucopogon glabellus, Melaleuca thymoides, Petrophile teretifolia
Shrubs < 0.5 m	2-10%	Baeckea crispiflora, Bossiaea praetermissa, Calytrix flavescens, Calytrix similis, Gompholobium confertum, Hibbertia acerosa, Hibbertia gracilipes, Lambertia inermis var. inermis, Stirlingia latifolia
Herbs	2-10%	<u>Boronia spathulata</u> , Conostylis pusilla, Goodenia incana, Patersonia lanata forma lanata, Stylidium scandens, Tetratheca pubescens, Tetratheca setigera
Grasses	< 2%	Amphipogon turbinatus
Sedges	10-30%	Anarthria prolifera, Desmocladus fasciculatus, Harperia confertospicata, Lepidosperma squamatum, Lomandra hastilis, Lyginia barbata, Tetraria octandra, <u>Tricostularia neesii var. neesii</u>
Climbers	< 2%	Cassytha micrantha, Gompholobium tomentosum, Hovea trisperma







Site: 164, Basil Rd Nature Reserve

Described AC **Date** 25/02/2008 **Type:** Quadrat 10 x 10 m

Location Basil Road NR

MGA Zone 50 651015 mE 6165906 mN

Habitat Gentle hill slope

Soil Type White to grey sand, with a surface layer of loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Sparse wood litter. Moderate, widespread leaf litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs 1 - 2 m	30-70%	Agonis theiformis, Banksia grandis, Hakea cucullata, Hakea ruscifolia, Isopogon teretifolius subsp. teretifolius, Phyllota barbata, Xanthorrhoea platyphylla
Shrubs 0.5 - 1 m	30-70%	Adenanthos cuneatus, <u>Agonis theiformis</u> , Beaufortia anisandra, Comesperma virgatum, Darwinia vestita, Daviesia incrassata, Isopogon longifolius, Leucopogon cucullatus, Leucopogon reflexus, Lysinema ciliatum, <u>Melaleuca striata</u> , Petrophile ericifolia subsp. ericifolia, Synaphea polymorpha, <u>Taxandria spathulata</u>
Shrubs < 0.5 m	< 2%	Allocasuarina thuyoides, Banksia gardneri var. gardneri, Beaufortia empetrifolia, Brachyloma geissoloma, Dryandra arctotidis, Franklandia fucifolia, Hibbertia recurvifolia, Hypocalymma strictum subsp. strictum, Leucopogon woodsii, Melaleuca striata, Petrophile longifolia, Petrophile rigida, Stirlingia anethifolia
Herbs	< 2%	Conostylis setigera subsp. setigera
Sedges	10-30%	Anarthria prolifera. Chordifex sphacelatus, Cyathochaeta equitans, Desmocladus fasciculatus, Hypolaena exsulca, Lepidosperma squamatum, Lyginia barbata, Mesomelaena graciliceps, Mesomelaena stygia, Schoenus pleiostemoneus, Tetraria octandra, Tricostularia neesii var. elatior
Climbers	< 2%	Cassytha sp., Gompholobium venustum





Site: 165 Basil Rd Nature Reserve

Described AC **Date** 25/02/2008 **Type:** Quadrat 10 x 10 m

Location Basil Rd NR

MGA Zone 50 651264 mE 6166510 mN

Habitat Hill slope, gentle slope.

Soil Type White sand, with a surface layer of loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Moderate wood litter. Moderate widespread leaf litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	2-10%	Hakea cucullata
Shrubs 1 - 2 m	10-30%	Adenanthos cuneatus, Agonis theiformis, Allocasuarina humilis, Banksia nutans var. cernuella, <u>Beaufortia empetrifolia</u> , Hakea corymbosa, Melaleuca striata, <u>Taxandria spathulata</u>
Shrubs 0.5 - 1 m	2-10%	Allocasuarina thuyoides, Darwinia vestita, Daviesia incrassata subsp. incrassata, Grevillea fasciculata, <u>Hakea ruscifolia, Isopogon trilobus</u> , Leucopogon corynocarpus, <u>Leucopogon cucullatus</u> , Lysinema ciliatum, Petrophile divaricata, Petrophile rigida, Stirlingia anethifolia, Synaphea polymorpha
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, <u>Banksia gardneri var. gardneri</u> , Brachyloma geissoloma, Daviesia oppositifolia, Dryandra arctotidis, Dryandra armata, <u>Hibbertia recurvifolia</u> , Leucopogon woodsii, Synaphea petiolaris subsp. petiolaris
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Thysanotus sparteus
Sedges	2-10%	Anarthria gracilis, Anarthria prolifera, Chordifex sphacelatus, Desmocladus fasciculatus, Hypolaena exsulca, Lepidosperma ustulatum, Mesomelaena stygia, Mesomelaena tetragona, Tetraria octandra
Climbers	< 2%	Cassytha racemosa





Site: 166, Mettler's Lake Nature Reserve

Described CG **Date** 25/02/2008 **Type:** Quadrat 10 x 10 m

Location Mettler's Lake NR

MGA Zone 50 648374 mE 6175090 mN

Habitat Undulating plain, gentle slope.

Soil Type Grey sand, with a surface layer of loose soil.

Rock Type Lateritic coarse gravel/pebbles.

Veg Condition Excellent

Fire Moderate (1-5 years previously)

Notes Moderate, widespread leaf litter. Sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	30-70%	Eucalyptus staeri
Shrubs $> 2 \text{ m}$	10-30%	<u>Hakea cucullata</u> , Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Acacia luteola, Agonis theiformis, Allocasuarina humilis, <u>Dryandra mucronulata</u> subsp. mucronulata, Hakea ferruginea, Leucopogon cucullatus, Pimelea sp.
Shrubs 0.5 - 1 m	10-30%	Acacia subcaerulea, <u>Daviesia incrassata</u> , Grevillea fasciculata, Isopogon attenuatus, Isopogon teretifolius subsp. teretifolius, Leptospermum spinescens, Melaleuca striata, Pultenaea verruculosa, Xanthorrhoea platyphylla
Shrubs < 0.5 m	2-10%	Adenanthos apiculatus, Banksia gardneri var. gardneri, Banksia sphaerocarpa var. sphaerocarpa, Boronia albiflora, Boronia crenulata, Bossiaea rufa, Gompholobium confertum, Hibbertia gracilipes, Leucopogon corynocarpus
Herbs	< 2%	Boronia spathulata, Burchardia congesta, Patersonia occidentalis var. occidentalis
Sedges	2-10%	Anarthria prolifera, Anarthria scabra, Chordifex sphacelatus, Desmocladus fasciculatus, Hypolaena fastigiata, <u>Lepidosperma squamatum</u> , Lomandra sp., <u>Mesomelaena stygia</u> , Schoenus sublateralis, Tetraria octandra
Climbers	< 2%	Cassytha sp.





Site: 167, Mettler's Lake Nature Reserve

Described AC **Date** 25/02/2008 **Type:** Quadrat 10 x 10 m

Location Mettler Lake NR

MGA Zone 50 647284 mE 6174239 mN

Habitat Hill crest, gentle slope

Soil Type White to grey sandy loam, with a surface layer of humus and loose soil

Rock Type Lateritic coarse gravel and pebbles

Veg Condition Excellent **Fire** Old (>5 yrs)

Notes Moderate leaf litter, mainly under shrubs. Sparse wood litter.

vegetation cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 6 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	10-30%	Lambertia inermis var. inermis
Shrubs 1 - 2 m	30-70%	Acacia luteola, <u>Dryandra mucronulata subsp. mucronulata</u> , Hakea corymbosa, Hakea cucullata, Hakea ferruginea
Shrubs 0.5 - 1 m	10-30%	Agonis theiformis, Allocasuarina humilis, Beaufortia anisandra, Daviesia emarginata, Daviesia incrassata, Dryandra armata, Grevillea fasciculata, Melaleuca striata, Petrophile seminuda, Xanthorrhoea platyphylla
Shrubs < 0.5 m	10-30%	Adenanthos apiculatus, Banksia gardneri var. gardneri, Banksia nutans, Darwinia vestita, Hemigenia humilis, Hibbertia amplexicaulis, Isopogon longifolius, Leucopogon gibbosus, Persoonia striata, <u>Pultenaea verruculosa</u> , Sphaerolobium sp.
Herbs	< 2%	Boronia spathulata, <u>Laxmannia grandiflora subsp. stirlingensis</u> , Patersonia lanata forma lanata, Thysanotus sparteus
Sedges	10-30%	Anarthria prolifera, Anarthria scabra, Desmocladus fasciculatus, Lepidosperma carphoides, Lepidosperma sp., <u>Mesomelaena stygia</u> , Tetraria octandra
Climbers	< 2%	Cassytha micrantha, Chorizema glycinifolium





Site: 168, Hassell National Park

Described: CG **Date Type:** Quadrat 10 x 10 m

Location Hassell NP, cnr South Coast Hwy and Mettler Lake Rd

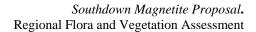
MGA Zone mE mN

Habitat Soil Type Rock Type Veg Condition

Fire Notes

Vegetation Cover:		
STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Trees < 5 m	10-30%	Banksia attenuata, <u>Eucalyptus staeri</u>
Shrubs > 2 m	< 2%	Banksia baxteri, Hakea ruscifolia, Lambertia inermis var. inermis
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, <u>Adenanthos cuneatus</u> , Agonis theiformis, Banksia nutans, <u>Beaufortia empetrifolia</u> , Dryandra plumosa subsp. plumosa, <u>Melaleuca striata</u> , Melaleuca thymoides
Shrubs 0.5 - 1 m	10-30%	Acacia luteola, <u>Beaufortia empetrifolia</u> , Gompholobium burtonioides, Isopogon attenuatus, Leucopogon corynocarpus, Petrophile circinata, Phyllota barbata
Shrubs < 0.5 m	2-10%	Andersonia simplex, Dasypogon bromeliifolius, <u>Daviesia incrassata</u> subsp. incrassata, Dryandra nivea subsp. nivea, Gastrolobium bracteolosum, Hibbertia gracilipes, Latrobea recurva, Leucopogon corynocarpus, Nuytsia floribunda, Pultenaea verruculosa, Stirlingia anethifolia, Synaphea polymorpha
Herbs	< 2%	Burchardia congesta, Conostylis vaginata, Dampiera linearis, Thysanotus sparteus, Thysanotus dichotomus
Sedges	10-30%	Anarthria scabra, Caustis dioica, Desmocladus austrinus, Harperia confertospicata, Hypolaena fastigiata Lomandra sonderi, Lyginia imberbis, Mesomelaena tetragona, Tricostularia neesii var. neesii
Climbers	< 2%	Gompholobium venustum







Site: 169, Hassell National Park

Described AC **Date** 25/02/2008 **Type:** Quadrat 10 x 10 m

Location Hassell NP, cnr South Coast Hwy and Mettler Lake Rd

MGA Zone 50 639550 mE 6171866 mN

Habitat Plain

Soil Type White sand, with a surface layer of loose soil.

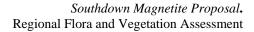
Rock Type Lateritic coarse gravel and pebbles.

Veg Condition Excellent **Fire** None evident.

Notes Plentiful widespread leaf litter. Moderate wood litter.

vegetation cover:			
STRATUM	COVER	SPECIES WITHIN EACH STRATUM	
Mallees < 5 m	10-30%	Eucalyptus staeri	
Shrubs > 2 m	< 2 %	Hakea trifurcata, Lambertia inermis var. inermis	
Shrubs 1 - 2 m	10-30%	Acacia subcaerulea, Adenanthos cuneatus, <u>Agonis theiformis</u> , Allocasuarina humilis, Banksia nutans, Dryandra plumosa subsp. plumosa, <u>Hakea corymbosa</u> , <u>Hakea ferruginea</u> , Taxandria spathulata	
Shrubs 0.5 - 1 m	30-70%	Acacia luteola, <u>Beaufortia empetrifolia</u> , Isopogon attenuatus, Leucopogon cucullatus, <u>Melaleuca striata</u> , Melaleuca thymoides, Phyllota barbata	
Shrubs < 0.5 m	< 2%	Andersonia simplex, Banksia gardneri var. gardneri, Caladenia flaccida, Hemigenia humilis, Hibbertia gracilipes, Hibbertia recurvifolia, Nuytsia floribunda, Stirlingia anethifolia, Stirlingia latifolia	
Herbs	2-10%	Boronia spathulata, Drosera pulchella, Thysanotus sparteus	
Grasses	< 2%	Amphipogon setaceus	
Sedges	10-30%	Anarthria prolifera, <u>Anarthria scabra</u> , Caustis dioica, Cyathochaeta equitans, Hypolaena fastigiata, Lyginia barbata, Lyginia imberbis	
Climbers	< 2%	Cassytha sp.	







Site: 170, cnr South Coast Highway and Old Boundary Rd

Described AC **Date** 26/02/2008 **Type:** Quadrat 10 x 10 m

Location O'Meara's block, cnr South Coast Hwy and Old Boundary Rd

MGA Zone 50 650564 mE 6184829 mN

Habitat Plain, gentle slope.

Soil Type White to grey sand, with a surface layer of loose soil.

Rock Type Nil

Veg Condition Excellent **Fire** None evident

Notes Moderate wood litter. Moderate leaf litter, mostly under shrubs.

vegetation cover.			
STRATUM	COVER	SPECIES WITHIN EACH STRATUM	
Mallees < 5 m	10-30%	Eucalyptus buprestium, <u>Eucalyptus pleurocarpa</u>	
Shrubs > 2 m	2-10%	<u>Hakea cucullata</u> , Hakea trifurcata, Lambertia inermis var. inermis	
Shrubs 1 - 2 m	10-30%	Calothamnus gracilis, Daviesia emarginata, <u>Dryandra plumosa subsp.</u> <u>plumosa</u> , Isopogon longifolius, Melaleuca striata	
Shrubs 0.5 - 1 m	2-10%	Allocasuarina thuyoides, Darwinia vestita, Daviesia incrassata subsp. incrassata, Leucopogon gibbosus, Petrophile rigida, <u>Taxandria</u> spathulata	
Shrubs < 0.5 m	2-10%	Banksia gardneri var. gardneri, <u>Banksia repens</u> , Boronia crassifolia, Dryandra arctotidis, Dryandra tenuifolia var. tenuifolia, Gompholobium venustum, Grevillea fasciculata, Hakea corymbosa, Leucopogon woodsii, <u>Melaleuca suberosa</u> , <u>Melaleuca subtrigona</u> , Persoonia striata, Petrophile teretifolia, <u>Pultenaea verruculosa</u> , Xanthorrhoea platyphylla	
Herbs	< 2%	Boronia spathulata	
Sedges	30-70%	Chordifex sphacelatus, Desmocladus fasciculatus, Lomandra sp., <u>Mesomelaena stygia</u>	
Climbers	< 2%	Cassytha micrantha	





Site: 171, cnr South Coast Highway and Old Boundary Rd

Described CG **Date** 26/02/2008 **Type:** Quadrat 10 x 10 m

Location O'Meara's block, cnr South Coast Hwy and Old Boundary Rd

MGA Zone 50 650185 mE 6184522 mN

Habitat Hill crest, gentle slope.

Soil Type White sand, with a surface layer of loose soil.

Rock Type Nil

Veg Condition Pristine **Fire** Old (>5 yrs)

Notes Moderate leaf litter, mainly under shrubs. Sparse wood litter.

STRATUM	COVER	SPECIES WITHIN EACH STRATUM
Mallees < 5 m	10-30%	Eucalyptus staeri
Shrubs > 2 m	< 2%	Nuytsia floribunda
Shrubs 1 - 2 m	10-30%	Adenanthos cuneatus, Banksia baueri, Banksia nutans, <u>Beaufortia</u> <u>empetrifolia</u> , Isoetes tripus, Latrobea sp., Melaleuca striata, Melaleuca thymoides, <u>Taxandria spathulata</u> , Verticordia sieberi var. lomata
Shrubs 0.5 - 1 m	2-10%	Allocasuarina humilis, <u>Calothamnus gracilis</u> , <u>Leucopogon reflexus</u> , <u>Melaleuca thymoides</u> , <u>Petrophile crispata</u> , <u>Petrophile teretifolia</u>
Shrubs < 0.5 m	2-10%	Acacia delphina, Andersonia simplex, <u>Banksia repens</u> , Calytrix similis, Franklandia fucifolia, Latrobea recurva, Leucopogon corynocarpus, Stirlingia tenuifolia
Herbs	< 2%	Stylidium imbricatum
Grasses	2-10%	Amphipogon setaceus
Sedges	10-30%	Anarthria laevis, Anarthria prolifera, <u>Anarthria scabra</u> , Desmocladus austrinus, Harperia lateriflora, Hypolaena fastigiata, Schoenus caespititius, Schoenus curvifolius, <u>Tricostularia neesii var.</u> neesii

