

**VEGETATON AND FLORA OF LOT 9503 WEDGETAIL CIRCLE
PARKERVILLE**



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SUMMARY

Bennett Environmental Consulting Pty Ltd was commissioned by Coterra Environment to undertake a vegetation and flora survey of Lot 9503 Wedgetail Circle in Parkerville. The field work was undertaken between 6th and 8th November 2012 when 31 temporary quadrats were monitored.

Four different vegetation units were recorded. These were:

- Open Woodland of *Corymbia calophylla* over Low Woodland A of *Melaleuca preissiana* over Scrub of *Taxandria linearifolia* in the creek;
- Woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over Open Low Woodland A of *Eucalyptus marginata* subsp. *thalassica* over Open Low Scrub B of *Xanthorrhoea preissii* over Dense Low Heath C of *Hibbertia hypericoides* which occurred on the lower slopes above the creek. This unit was restricted in distribution at the site;
- Forest to Woodland of *Corymbia calophylla* over Low Heath C of *Hibbertia hypericoides* and *Phyllanthus calycinus* which occurred on the lower slopes surrounding the creek; and
- Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Banksia sessilis* var. *sessilis* over Low Scrub A of *Xanthorrhoea preissii* over Low Heath C dominated by *Hibbertia hypericoides*. This vegetation occurred on the middle to upper slopes to crest *Allocasuarina fraseriana* also occurred in this unit particularly in the northern section of the site.

None of the vegetation units are listed as Threatened or Priority Ecological Communities.

The vegetation condition of the remnant vegetation varied between excellent and degraded but all the degraded areas had previously been heavily logged and had not as yet recovered. Where the remnant vegetation had not been logged it was in good or better condition.

A total of 57 vascular plant families, 160 genera and 253 taxa (species, subspecies, varieties etc) were recorded from the site during the survey. The dominant plant families were Fabaceae, Poaceae, Asteraceae, Proteaceae, Asparagaceae and Cyperaceae.

One priority 4 flora, *Templetonia drummondii* was recorded from 36 locations during the survey. It would appear that this species is widespread across the site, particularly in the middle to upper slope areas.

A total of 48 weeds were recorded from the remnant bushland. Three weeds, **Asparagus asparagoides*, **Gomphocarpus fruticosus* and **Moraea flaccida* are Declared Plants under the Agriculture and Related Resources Protection Act of 1976 (Department of Agriculture and Food (2012)). Twenty one of the weeds were listed as having a high impact on the environment (Department of Environment and Conservation, 2012c).

Other observations:

- There were several areas where the trees had been heavily logged and where the vegetation had not regenerated;
- One area had a large number of tree deaths but all the plants were resprouting. This was not dieback as the trees and shrubs were resprouting;
- There was a small area on the western side where *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica*. Up to 25m tall were observed; and
- An outcropping of granite rocks was observed close to the creek but it was small in area and the vegetation was the same as the surrounding area.

It is recommended that when the area is subdivided:

- the retention of native vegetation be encouraged taking into account that fire safety is paramount; and
- that a buffer be left on the western side where the site abuts the John Forest National Park. This will help to ensure that vegetation and its condition in the National Park is maintained.

1. INTRODUCTION

1.1 Background

Coterra Environment commissioned Bennett Environmental Consulting Pty Ltd to undertake a vegetation and flora survey of Lot 9503 Wedgetail Circle, Parkerville. The site adjoins John Forrest National Park on its western edge and privately owned blocks to the north, east and south. Some areas of the site are totally cleared and there is a creek running from east to west which also continues into the John Forrest National Park.

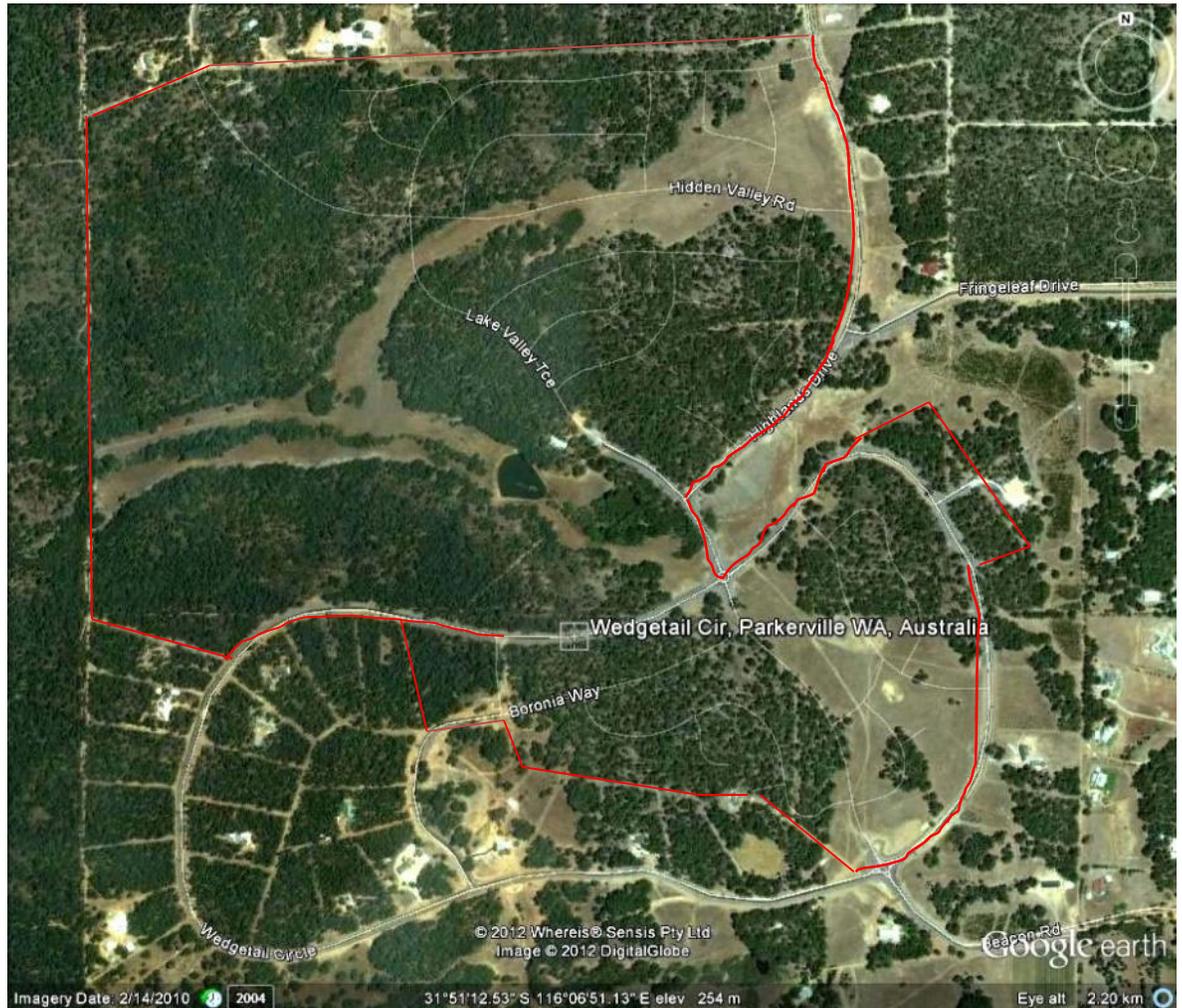


Diagram 1. Survey area outlined in red.

1.2 Scope of Works

The requirements for this project were to:

- i. Undertake a Level 2 vegetation survey (Environmental Protection Authority, 2004); and to
- ii. Search for and record all significant species at the site.

2. BACKGROUND INFORMATION

2.1 Geology and Landform

The site is included in the Darling Plateau which has lateritic uplands dominated by duricrust, gravels and sands. These form a gently undulating surface. The Darling Plateau has a trend from north to south in elevation, relief, incidence of duricrust and the nature and extent of gravels. Mount Helena is included in the Dwellingup unit which has fine gravels (Churchward and McArthur, 1980).

2.2 Vegetation

The Interim Biogeographical Regionalisation for Australia (IBRA) (Thackway and Cresswell, 1995) recognizes 85 bioregions. The IBRA is used as the common unit to compare biological and biophysical attributes. Bioregions represent a landscape-based approach to classifying the land surface and each region is defined by a set of major environmental influences, which shape the occurrence of flora and fauna and their interaction with the physical environment. This was an Australia-wide mapping exercise that resulted in the production of the Interim Biogeographic Regionalisation of Australia (IBRA), a system that divides Australia into bioregions on the basis of their dominant landscape-scale attributes. IBRA was developed as a framework primarily to identify deficiencies in the Australian network of protected areas and to set priorities for further enhancing the reserve system. The site occurs within the Jarrah Forest Bioregion of Thackway and Cresswell (1995).

In 2002 the Department of Environment and Conservation undertook a biodiversity Audit for Western Australia. The Jarrah Forest of Thackway and Cresswell (1995) was divided into Jarrah Forest North and Jarrah Forest South. Parkerville occurs in the Jarrah Forest North (abbreviated JF1) (Hearn *et al.*, 2002). None of the ecosystems listed as at risk in this Region occur in the Parkerville area.

The survey lots are mapped by Beard, 1981) as Jarrah (*Eucalyptus marginata* subsp. *thalassica* – Marri (*Corymbia calophylla*) Forest (abbreviated) e2,3Mi. Shepherd *et al.* (2002) have determined the pre-European and current extent of the vegetation associations described by Beard. In addition they have assessed the percentage of each vegetation association remaining, the amount in IUCN reserves and the percentage in other reserves. The pre-European area of e2,3Mi is estimated to be 114,848ha, the current extent 5,415ha which represents 4.7% remaining vegetated of which 46% is included in conservation.

Hedde *et al.* (1980) described the vegetation complexes of the Darling System at a scale of 1: 250,000. There was found to be a distinct pattern of plant distribution linked to landforms, soils and climate. The most obvious trend was associated with increasing aridity from west to east on the Darling Plateau. The vegetation changes observed were a decrease in height and percentage cover of the tallest stratum and a distinct change in floristics. Parkerville occurs across two vegetation complexes the Dwellingup Complex in Low to Medium rainfall and the Murray and Bindoon Complex in low to medium rainfall.

The Regional Forest Agreement (RFA) (Mattiske and Havel, 1998) mapped the vegetation complexes of the forest areas of Western Australia. This included the Jarrah Forest which covers the site. There are two RFA vegetation complexes recorded for the site. These are:

- **Dwellingup 4** – Open Forest to Woodland of *Eucalyptus marginata* subsp. *thalassica* – *Corymbia calophylla* on lateritic uplands in arid and semiarid zones; and
- **Murray 2** – Open Forest of *Eucalyptus marginata* subsp. *thalassica* – *Corymbia calophylla* – *Eucalyptus patens* and Woodland of *Eucalyptus wandoo* with some *Eucalyptus accedens* on valley slopes to Woodland of *Eucalyptus rudis* – *Melaleuca raphiophylla* on the valley floors in the semi-arid and arid zones

2.3 Threatened Ecological Communities

An ecological community is a naturally occurring biological assemblage that occurs in a particular type of habitat. A Threatened Ecological Community is one which falls into one of the following categories, presumed totally destroyed, critically endangered, endangered or vulnerable (Department of Environment and Conservation, 2012b).

A possibly significant ecological community which does not meet the above is added to the Priority Ecological Community List. Priorities 1, 2, and 3 are adequately known but are not currently believed to be threatened. Those that have recently been removed from the threatened list are listed as Priority 4. Conservation dependent ecological communities are placed in Priority 5.

No Threatened Ecological Communities are listed for the site (Department of Environment and Conservation, 2012b) or as a poorly represented vegetation complex (Havel, 2002).

2.4 Significant Flora

Prior to undertaking the field work a search was undertaken of the Department of Conservation and Environment Rare Flora Database. The resulting data is provided in Table 3.

Table 1. Code and description of Rare and Priority Flora (Department Environment and Conservation, 2012a)

Code	Declared Rare and Priority Flora Categories
T	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.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
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 1 presents the definitions of Declared Rare and the four Priority Flora ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2012a). Table 2 presents the definitions of the threatened species under the Environmental Protection and Biodiversity Conservation Act, 1999 (Department of Sustainability, Environment, Water, Populations and Communities, 2012).

Table 2. Categories of Threatened Flora Species (Department of Sustainability, Environment, Water, Populations and Communities, 2012)

Code	Declared Rare and Priority Flora Categories
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of this species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at any particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa, which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa which at a particular time if, at that time, 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 3. Results Obtained from a search of the Threatened Flora database. Description extracted from Florabase (Western Australian Herbarium, 2012a)

Taxon	Code	Description
<i>Acacia aphylla</i>	T	Divaricately branched, spinescent, glaucous shrub, 0.9-2.5 m high. Fl. yellow, Aug to Oct. Sand, loam, clay loam. Granite outcrops, hills.
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	T	Prostrate, mat-forming, non-lignotuberous shrub, to 0.3 m high. Fl. white-cream-pink-green/green, Jul or Sep to Dec or Jan. Grey sand, lateritic gravel.
<i>Anthocercis gracilis</i>	T	Erect, spindly shrub, to 0.6(-1) m high. Fl. yellow-green, Sep to Oct. Sandy or loamy soils. Granite outcrops.
<i>Darwinia pimelioides</i>	T	Erect shrub, 0.25-0.5(-1) m high. Fl. red/pink & green, Sep to Oct. Loam, sandy loam. Granite outcrops.
<i>Diplolaena andrewsii</i>	T	Erect shrub, 0.5-1 m high, inner involucre bracts glabrous, leaves broadly cordate. Fl. red, Jul to Oct. Loam, clay. Granite outcrops & hillsides.
<i>Grevillea flexuosa</i>	T	Irregular, few-branched, non-lignotuberous shrub, to 2 m high. Fl. creamy-yellow, Jul to Oct. Red-brown sand with laterite & gravel, sand over granite. Ridgetop plateau & associated breakaways.
<i>Grevillea manglesii</i> subsp. <i>ornithopoda</i>	2	Spreading, virgate shrub, 1-3(-5) m high, up to 3 m wide. Fl. Sep to Nov.
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	3	Shrub, 0.9-2.5 m high, 'minni-ritchi' bark, phyllodes mostly 8-13 cm long, 1-2 mm wide. Fl. yellow, Aug to Oct. Granitic soils.
<i>Halgania corymbosa</i>	3	Erect shrub, 0.35-1 m high. Fl. blue-purple, Aug to Nov. Gravelly soils, soils over granite.
<i>Lepyrodia heleocharoides</i>	3	Rhizomatous, slender, tufted perennial, herb (sedge-like), 0.15-0.25 m high. Fl. Dec. Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps.
<i>Meionectes tenuifolia</i>	3	No description provided.
<i>Pithocarpa corymbulosa</i>	3	Erect to scrambling perennial, herb, 0.5-1 m high. Fl. white, Jan to Apr. Gravelly or sandy loam. Amongst granite outcrops.
<i>Tetratea pilifera</i>	3	Spreading shrub, 0.1-0.3 m high. Fl. purple, Aug to Oct. Gravelly soils.
<i>Thysanotus anceps</i>	3	Rhizomatous, leafless perennial, herb, to 0.4 m high. Fl. purple, Oct to Dec. White or grey sand, lateritic gravel, laterite.
<i>Boronia tenuis</i>	4	Procumbent or erect & slender shrub, 0.1-0.5 m high. Fl. blue/pink-white, Aug to Nov. Laterite, stony soils, granite.
<i>Grevillea pimeleoides</i>	4	Non-lignotuberous shrub, 0.4-2.4 m high. Fl. yellow-orange, May to Nov. Gravelly soils over granite. Rocky hillsides.
<i>Lasiopetalum bracteatum</i>	4	Erect, open shrub, 0.4-1.5 m high. Fl. pink-purple, Aug to Nov. Sandy clay, clay, lateritic gravel. Along drainage lines, creeks, gullies, granite outcrops.
<i>Persoonia sulcata</i>	4	Erect, spreading to decumbent shrub, 0.2-1 m high. Fl. yellow, Sep to Nov. Lateritic or granitic soils.
<i>Pimelea rara</i>	4	Shrub, 0.2-0.35 m high. Fl. white, Dec or Jan. Lateritic soils.
<i>Senecio leucoglossus</i>	4	Erect annual, herb, to 1.3 m high. Fl. white, Aug to Dec. Gravelly lateritic or granitic soils. Granite outcrops, slopes.
<i>Templetonia drummondii</i>	4	Prostrate or ascending shrub, 0.1-0.4(-0.6) m high. Fl. yellow & brown/purple, Aug to Sep. Lateritic soils.

3. METHODS

Firebreaks and accessible tracks were driven and transects were walked through the remnant bushland listing the vegetation units in the area and the dominant taxa. As this was being undertaken the bushland was searched for Threatened and Priority Flora. As a Level 2 vegetation survey was required temporary 10m x 10m quadrats were recorded. The vegetation at the site is described using the vegetation classification of Muir (1977) as described in Table 4.

Table 4 Vegetation Classification (from Muir, 1977)

LIFE FORM / HEIGHT CLASS	Canopy Cover			
	DENSE 70% - 100%	MID DENSE 30% - 70%	SPARSE 10% - 30%	VERY SPARSE 2% - 10%
Trees > 30 m	Dense Tall Forest	Tall Forest	Tall Woodland	Open Tall Woodland
Trees 15 – 30 m	Dense Forest	Forest	Woodland	Open Woodland
Trees 5 – 15 m	Dense Low Forest A	Low Forest A	Low Woodland A	Open Low Woodland A
Trees < 5 m	Dense Low Forest B	Low Forest B	Low Woodland B	Open Low Woodland B
Mallee (tree form)	Dense Tree Mallee	Tree Mallee	Open Tree Mallee	Very Open Tree Mallee
Mallee (shrub form)	Dense Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2 m	Dense Thicket	Thicket	Scrub	Open Scrub
Shrubs 1.5 – 2 m	Dense Heath A	Heath A	Low Scrub A	Open Low Scrub A
Shrubs 1 - 1.5 m	Dense Heath B	Heath B	Low Scrub B	Open Low Scrub B
Shrubs 0.5 – 1 m	Dense Low Heath C	Low Heath C	Dwarf Scrub C	Open Dwarf Scrub C
Shrubs 0 - 0.5 m	Dense Low Heath D	Low Heath D	Dwarf Scrub D	Open Dwarf Scrub D
Mat plants	Dense Mat Plants	Mat Plants	Open Mat Plants	Very Open Mat Plants
Hummock grass	Dense Hummock Grass	Mid-Dense Hummock Grass	Hummock Grass	Open Hummock Grass
Bunch grass > 0.5 m	Dense Tall Grass	Tall Grass	Open Tall Grass	Very Open Tall Grass
Bunch grass < 0.5 m	Dense Low Grass	Low Grass	Open Low Grass	Very Open Low Grass
Herbaceous spp.	Dense Herbs	Herbs	Open Herbs	Very Open Herbs
Sedges > 0.5 m	Dense Tall Sedges	Tall Sedges	Open Tall Sedges	Very Open Tall Sedges
Sedges < 0.5 m	Dense Low Sedges	Low Sedges	Open Low Sedges	Very Open Low Sedges
Ferns	Dense Ferns	Ferns	Open Ferns	Very Open Ferns
Mosses, liverworts	Dense Mosses	Mosses	Open Mosses	Very Open Mosses

4. RESULTS

Field work was undertaken from 6th to 8th November 2012. Within the remnant vegetation there were large open areas, mainly in the northern section of the site where the trees had been cut. There was very little variation in the vegetation of the middle to upper slopes basically being a Woodland to Forest of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* with occasional *Allocasuarina fraseriana* over a Thicket to Dense Thicket of *Banksia sessilis* var. *sessilis* over low Scrub A to Heath A of *Xanthorrhoea preissii* over Dwarf Scrub C to Low Heath C of *Hibbertia hypericoides*. The creek vegetation was distinct but the vegetation around the perimeter of the creek although typically lacking *Eucalyptus marginata* subsp. *thalassica* was not noticeably different.

This is confirmed by the PATN© (Belbin, 2006) analysis undertaken where both the percentage cover and presence/absence of taxa were used. The creek vegetation was the only distinct unit, the other vegetation variations noted in the field did not separate as distinct units. PATN© is a multivariate analysis tool that generates estimates of association (resemblance, affinity, distance) between sets of objects described by a suite of variables (attributes), and classifies the objects into groups and condenses the information and displays the patterns in the data graphically.

The presence/absence data recorded from the 31 floristic quadrats was used, with all species included in the analysis. The association measure used was the Kulczynski coefficient as it was originally formulated for presence/absence data and it doesn't place the assumption on the data that differences between high data values are considered more significant than the same difference between low data values.

The results were displayed using a dendrogram (figure A3). When interpreting the dendrogram, the earlier (further to the right) that a quadrat separates (splits) from the others, the more distinctive it is, and the later (further to the left), the greater the number of elements (in this case, species) in common. For the current data the first split was the creek vegetation.

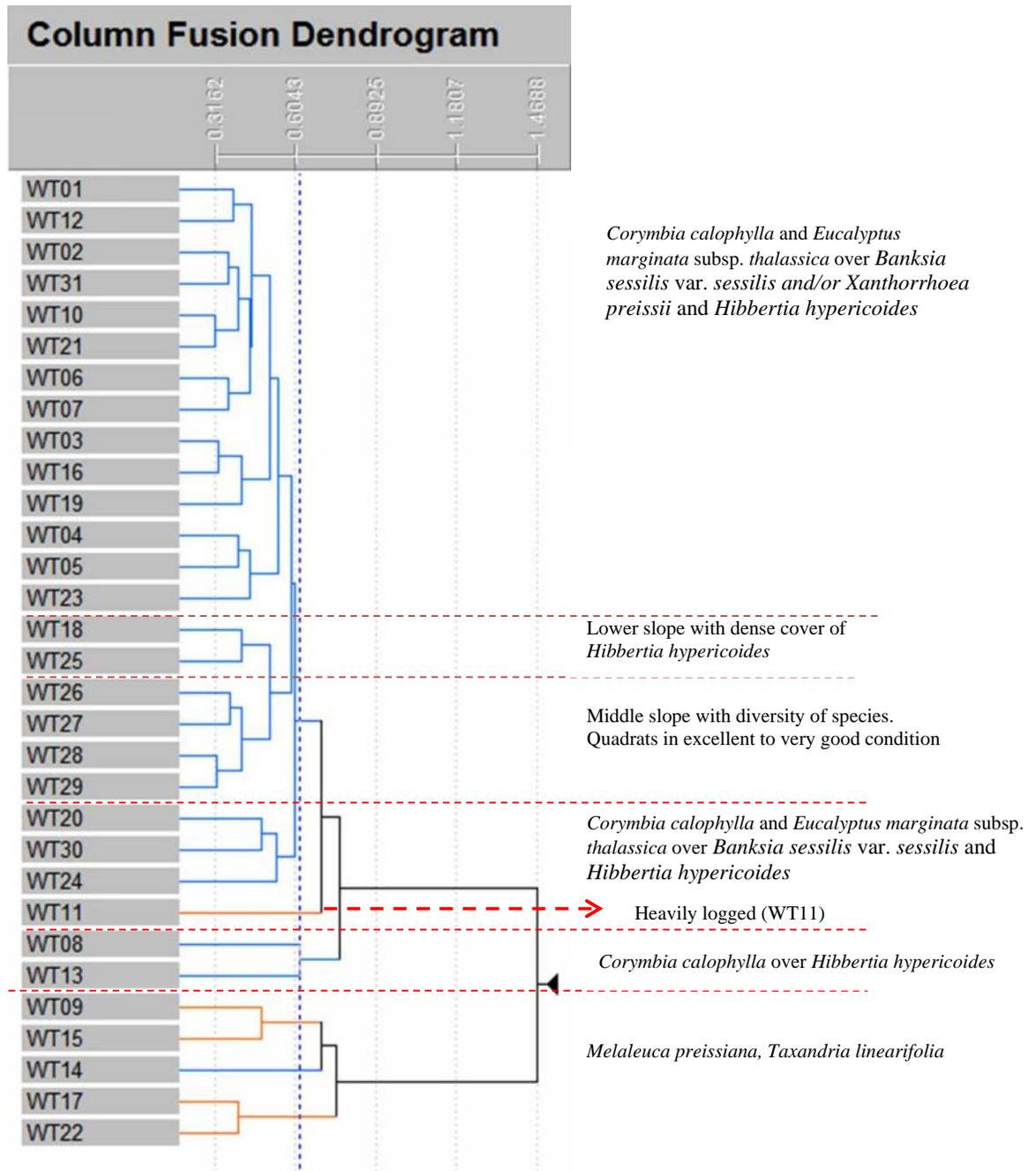


Diagram 2. PATN analysis

4.1 Vegetation

In the field there were four vegetation units which could be separated. These are:

- **Open Woodland of *Corymbia calophylla* over Low Woodland A of *Melaleuca preissiana* over Scrub of *Taxandria linearifolia* in the creek.** This was represented by quadrats WT09, WT14, WT15, WT17 and WT22. Quadrats WT22 and WT17 are possibly more representative of the variation shown in the original vegetation as the other sites have had the understory mainly replaced by weeds. A small area where soil had been dug for the dam wall, had a stand of **Typha orientalis*. This was the only area where this species was recorded.
- **Woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over Open Low Woodland A of *Eucalyptus marginata* subsp. *thalassica* over Open Low Scrub B of**

Xanthorrhoea preissii over Dense Low Heath C of *Hibbertia hypericoides*. This vegetation occurred on the lower slope above the creek and was restricted in area. It occurred on the southern side of the main creek close to the western boundary. It was represented by quadrat WT18.

- **Forest to Woodland of *Corymbia calophylla* over Low Heath C of *Hibbertia hypericoides* and *Phyllanthus calycinus*.** This unit occurred on the lower slopes surrounding the creek. Variation included scattered trees of *Eucalyptus marginata* subsp. *thalassica* but never as dense as *Corymbia calophylla* and often shrubs of *Banksia sessilis* var. *sessilis*. It was represented by quadrats WT08, WT13 and WT25.
- **Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Banksia sessilis* var. *sessilis* over Low Scrub A of *Xanthorrhoea preissii* over Low Heath C dominated by *Hibbertia hypericoides*.** *Hibbertia hypericoides* was always present as the dominant lower storey species but *Banksia sessilis* var. *sessilis* occurred in patches often dense but also sometimes not present. Similarly the density of *Xanthorrhoea preissii* varied considerably. It was represented by WT01, WT02, WT03, WT04, WT05, WT06, WT07, WT10, WT11, WT12, WT16, WT19, WT20, WT21, WT23, WT24, WT26, WT27, WT28, WT29, WT30 and WT31. *Allocasuarina fraseriana* occurred in this unit in the northern section of the site. Several quadrats were placed in this unit to illustrate the variation across the site and also to ensure all variations were observed, in this large area of disjunct remnant vegetation. The major understory variations included:
 - Dense *Banksia sessilis* var. *sessilis* (50% or higher) – WT01, WT06, WT07, WT20, WT24, WT26 and WT31;
 - Dense *Xanthorrhoea preissii* – WT16 and WT21;
 - Dense *Hibbertia hypericoides* (>20%) – WT19, WT21, WT24, WT27, WT28;
 - *Allocasuarina fraseriana* – WT05, WT07, WT11, WT12;
 - Understorey that included *Hakea stenocarpa* – WT29; and
 - Disturbance areas, particularly those heavily logged – WT03, WT04, WT11.

A small area with outcropping granite boulders was observed but the vegetation did not vary from the surrounding vegetation so no quadrat was placed here.

4.2 Vegetation Condition

Bushland has been historically subject to ongoing degradation and is especially susceptible to disturbances arising as a result of indirect impacts from surrounding developments and human activity. Degradation is caused by a wide range of factors, including isolation, edge effects, weed invasion, plant diseases, changes in fire frequency, landscape fragmentation, increased predation on native fauna by feral animals, decrease in species richness and general modification of ecological function.

Vegetation condition was rated according to the vegetation condition scale used in Keighery (1994). All quadrats were placed in the best condition of the vegetation units, so the vegetation condition of the quadrat often is not true of the surrounding vegetation.

The vegetation condition of the quadrats at the site is provided in Table 6.

Table 5. Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.
6	Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

Table 6 Vegetation Condition of the quadrats

Vegetation Condition	Quadrat Number
2-3	WT16, WT17, WT18, WT19, WT20, WT21, WT22, WT27, WT28, WT29, WT31
3	WT06, WT07, WT10, WT12, WT25, WT26, WT30
3-4	WT01, WT02, WT08, WT24
4	WT03, WT13
4-5	WT14, WT23
5	WT04, WT05, WT09, WT15
5-6	WT11
6	Pasture and cleared areas

Many shrubs of *Taxandria linearifolia* in WT09 were dead but several seedlings had germinated. This could be due to the dry winters and summers that have been experienced for the last few years.

At 416097E; 6475851N there was an area of dieback. The site should be checked by dieback specialists to map the extent of this fungus at the site.

4.3 Species Recorded

A total of 57 vascular plant families, 160 genera and 253 taxa (species, subspecies, varieties etc) were recorded from the site during the survey. The dominant vascular plant families were:

- Fabaceae with 13 genera and 25 taxa of which 4 were weeds;
- Poaceae with 16 genera and 21 taxa of which 13 were weeds;
- Asteraceae with 16 genera and 20 taxa of which 5 were weeds;
- Proteaceae with 8 genera and 20 taxa none of which were weeds;
- Asparagaceae with 6 genera and 14 taxa of which 1 was a weed; and
- Cyperaceae with 8 genera and 14 taxa of which 2 were weeds.

These 6 families represent 10.5% of the total number of families, 41.7% of the total number of genera and 44.7% of the total number of taxa.

4.4 Significant Taxa

One priority 4 taxon, *Templetonia drummondii* was recorded several times. This is a plant which can be readily overlooked as it grows close to the ground and often under litter or other plants. However once it is observed additional plants generally are not difficult to locate. It would appear there are many plants of this taxon scattered through the middle to upper slopes of the site in the lateritic soils. No specific search was undertaken for *Templetonia drummondii*, those recorded below were observed in quadrats or when walking transect through the bushland. It was recorded from 36 distinct locations and it is assumed that *Templetonia drummondii* is relatively common in the bushland and if a detailed search was undertaken many more plants would be recorded. All plants observed were healthy and several were in fruit.

Western Australian Herbarium (2012a) records occurring in the following local government areas Armadale, Beverley, Boddington, Brookton, Canning, Chittering, Kalamunda, Kojonup, Mundaring, Swan, Toodyay, Wandering, Williams (Western Australian Herbarium, 2012a).

Table 7. Locations of *Templetonia drummondii*

GPS	No. plants	GPS	No. plants
416175E; 6475059N	2	416113E; 6475883N	3
416159E; 6475030N	1	416072E; 6475958N	4
416170E; 6475058N	1	416008E; 6475691N	1
416759E; 6475297N	1	416030E; 6475760N	2
416744E; 6475319N	1	415295E; 6475434N	7
416832E; 6475565N	1	415312E; 6475428N	6
415583E; 6475273N	15	415580E; 6475428N	6
415573E; 6475254N	5	415595E; 6475366N	8

GPS	No. plants	GPS	No. plants
415542E; 6475255N	3	415606E; 6475396N	1
415874E; 6475333N	25	415610E; 6475391N	2
416260E; 6475360N	3	416338E; 6475582N	6
416113E; 6475883N	12	416308E; 6475509N	2
416285E; 6475325N	2	416125E; 6476084N	2
416277E; 6475322N	4	415760E; 6475883N	15
416350E; 6475748N	4	415284E; 6475939N	4
416443E; 6475831N	1	415458E; 6476244N	1
416322E; 6475717N	3	415402E; 6475256N	1
415378E; 6475970N	2	415295E; 6475274N	4



Photograph 1. *Templetonia drummondii* plant with fruit above.

4.5 Weeds

A total of 48 weeds were recorded during the current survey. All have been determined as weeds by the Western Australian Herbarium (2012a) and Department of Environment and Conservation (2012c). There are several ratings allocated to each weed in the Invasive Plant Prioritisation but only three have been selected to include in this report. These are ecological impacts, impact attributes and invasiveness which are shown in Table 8 for each of the non-endemic species recorded. Twenty two of the weeds are listed as having a high ecological impact on the environment and 35 are listed having a rapid rate of dispersal.

Table 8. Ecological Impacts and Invasiveness of recorded weeds

Species	Common Name	Ecological Impacts		Invasiveness
		Ecological impact L – low impact species M – medium impact species H – high impact species U – unknown impact	Impact attributes 1, 2,3,4, 5, 6, 7, 8, 9, 10 See explanation below table	Rate of dispersal R=rapid, M=moderate, S=slow, U = unknown
* <i>Acacia iteaphylla</i>	Flinders Range Wattle	H		R
* <i>Aira caryophyllea</i>	Silvery Hairgrass	U		U
* <i>Arctotheca calendula</i>	Cape Weed	H	8,9	R
* <i>Asparagus asparagoides</i>	Bridal Creeper	H	6,7,8,9	R
* <i>Avena barbata</i>	Bearded Oats	H		R
* <i>Brachychiton populneus</i>	Kurrajong	H		M
* <i>Briza maxima</i>	Blowfly Grass	U		R
* <i>Briza minor</i>	Shivery Grass	U		R
* <i>Bromus diandrus</i>	Great Brome	H		R

Species	Common Name	Ecological Impacts		Invasiveness Rate of dispersal R=rapid, M=moderate, S=slow, U = unknown
		Ecological impact L – low impact species M – medium impact species H – high impact species U – unknown impact	Impact attributes 1, 2,3,4, 5, 6, 7, 8, 9, 10 See explanation below table	
* <i>Bromus hordeaceus</i>	Soft Brome	H		R
* <i>Bromus rubens</i>	Red Brome	U		R
* <i>Callitriche stagnalis</i>	Common Starwort	H		R
* <i>Cyperus tenellus</i>	Tiny Flat Sedge	L		U
* <i>Disa bracteata</i>	South African Orchid	U		R
* <i>Ehrharta longiflora</i>	Annual Veldt Grass	H	1,2,6,8,9	R
* <i>Ficus carica</i>	Edible Fig	H		M
* <i>Galium divaricatum</i>	Slender Goosegrass	L		R
* <i>Gladiolus ? angustus</i>	Long Tubed Painted Lady	H		U
* <i>Gomphocarpus fruticosus</i>	Swan Plant	H	9	R
* <i>Hesperantha falcata</i>	Hesperantha	H		R
* <i>Holcus lanatus</i>	Yorkshire Fog	H		U
* <i>Hordeum leporinum</i>	Barley Grass	H		U
* <i>Hypochaeris glabra</i>	Flat Weed	H		R
* <i>Isolepis prolifera</i>	Budding Club Rush	U		R
* <i>Juncus capitatus</i>	Capitate Rush	U		R
* <i>Juncus usitatus</i>	Weedy Rush	U		U
* <i>Lolium multiflorum</i>	Italian Ryegrass	Not listed		
* <i>Lotus subbiflorus</i>	Hairy Birdsfoot Trefoil	U		R
* <i>Lysimachia arvensis</i>	Pimpernel	U		R
* <i>Lythrum hyssopifolia</i>	Lesser Loosestrife	M		R
* <i>Mentha pulegium</i>	Perry Royal	H		R
* <i>Monopsis debilis</i>	Monopsis	M		R
* <i>Moraea flaccida</i>	One-leaf Cape Tulip	H	8,9	R
* <i>Olea europaea</i>	Olive	H		R
* <i>Pentstemonis airoides</i>	False Hairgrass	U		R
* <i>Persicaria maculosa</i>	Redshank	L		U
* <i>Phytolacca octandra</i>	Red Ink Plant	U		M
* <i>Romulea rosea</i>	Onion Grass	U		R
* <i>Sherardia arvensis</i>	Field Madder	M		R
* <i>Solanum nigrum</i>	Blackberry Night Shade	M		R
* <i>Sonchus asper</i>	Rough Sowthistle	U		R
* <i>Sonchus oleraceus</i>	Common Sowthistle	U	increasing	R
* <i>Trifolium campestre</i>	Hop Clover	U		U
* <i>Trifolium subterraneum</i>	Subterranean Clover	U		U
* <i>Typha orientalis</i>	Bulrush	H	2, 3,5,6,7,9	R
* <i>Ursinia anthemoides</i>	Ursinia	U	increasing	R
* <i>Vulpia bromoides</i>	Squirrel Tail Fescue	H		R
* <i>Watsonia meriana</i>	Watsonia	H		R

Impact Attributes: 1 - changed fire regime; 2 - changed nutrient conditions; 3 - changed hydrological patterns; 4 - changed soil erosion patterns; 5 - changed geomorphological processes; 6 - changed biomass distribution; 7 - changed light distribution; 8 - loss of biodiversity; 9 - substantially reduces regeneration opportunities of native plants; 10 - allelopathic effects. Increasing means that the weed is increasing its distribution from original known areas.

Three of the weeds **Asparagus asparagoides*, **Gomphocarpus fruticosus* and **Moraea flaccida* are Declared Plants under the Agriculture and Related Resources Protection Act (1976) Department of Agriculture and Food Western Australia (2012). Removal of these species should occur to ensure there is no further spread. The weeds listed in Table 8 as having a high environmental impact should also be prioritised for removal.

5. DISCUSSION

Lot 9503 Wedgetail Circle in Parkerville contained a large area of remnant vegetation including a creek, vegetation immediately above the creek and higher ground. There were some areas of pasture/weeds with no remnant vegetation often with scattered trees.

Four different vegetation units were recorded. These were:

- Open Woodland of *Corymbia calophylla* over Low Woodland A of *Melaleuca preissiana* over Scrub of *Taxandria linearifolia* in the creek;
- Woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over Open Low Woodland A of *Eucalyptus marginata* subsp. *thalassica* over Open Low Scrub B of *Xanthorrhoea preissii* over Dense Low Heath C of *Hibbertia hypericoides* which occurred on the lower slopes above the creek. This unit was restricted in distribution at the site;
- Forest to Woodland of *Corymbia calophylla* over Low Heath C of *Hibbertia hypericoides* and *Phyllanthus calycinus* which occurred on the lower slopes surrounding the creek; and
- Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Banksia sessilis* var. *sessilis* over Low Scrub A of *Xanthorrhoea preissii* over Low Heath C dominated by *Hibbertia hypericoides*. This vegetation occurred on the middle to upper slopes to crest *Allocasuarina fraseriana* also occurred in this unit particularly in the northern section of the site.

None of the vegetation units are listed as Threatened or Priority Ecological Communities.

The vegetation condition of the remnant vegetation varied between excellent and degraded. The degraded areas had previously been heavily logged and had not as yet recovered. Where the remnant vegetation had not been logged it was in good or better condition.

A total of 57 vascular plant families, 160 genera and 253 taxa (species, subspecies, varieties etc) were recorded from the site during the survey. The dominant plant families were Fabaceae, Poaceae, Asteraceae, Proteaceae, Asparagaceae and Cyperaceae.

One priority 4 flora, *Templetonia drummondii* was recorded from 36 locations during the survey. It would appear that this species is widespread through the middle to upper slope areas at the site, but it is not readily observed as it typically is flat on the ground and tends to grow amongst litter.

A total of 48 weeds were recorded from the remnant bushland. Three weeds, **Asparagus asparagoides*, **Gomphocarpus fruticosus* and **Moraea flaccida* are Declared Plants under the Agriculture and Related Resources Protection Act of 1976 Department of Agriculture and Food (2012). Twenty one of the weeds were listed as having a high impact on the environment (Department of Environment and Conservation, 2012c). These are the weeds that should be targeted for removal. A small patch of **Typha orientalis* was observed in one of the damp areas which had been dug out to form part of the dam wall.

The vegetation units and the vegetation condition are mapped. There were several areas where the trees had been heavily logged and where the vegetation had not regenerated. One area had a large number of tree deaths but all the plants were resprouting. From a general overview it appeared to be dieback but the trees and shrubs were resprouting which eliminated dieback being the cause.

There was a small area on the western side where there were some very tall *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica*. These were up to 25m high with a reasonable sized girth. Some of the *Eucalyptus marginata* subsp. *thalassica* had deaths in the upper branches.

An outcropping of granite rocks was observed close to the creek but it was small in area and the vegetation was the same as the surrounding area.

It is recommended that when the area is subdivided the retention of native vegetation be encouraged taking into account that fire safety is paramount. Many of the blocks that have already been subdivided in the area, and adjacent to the site have attempted to retain some of the vegetation. It is recommended that a buffer be left on the western side where the site abuts the John Forest National Park. This will help to ensure that vegetation and its condition in the National Park is maintained.

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APPENDIX A

SPECIES ARRANGED ALPHABETICALLY UNDER VASCULAR PLANT FAMILY

LEGEND

ABBREVIATION	MEANING
sp.	Species, used where the plant is vegetative or too immature for positive identification
subsp.	subspecies
var.	variety
affin.	Not the species given but is close to it
?	Unsure if this is the correct species as the plant was vegetative only
*	Weed

VASCULAR PLANT FAMILY**TAXON****Amaranthaceae**

Ptilotus drummondii var. *drummondii*
Ptilotus esquamatus
Ptilotus gaudichaudii
Ptilotus manglesii

Apiaceae

Daucus glochidiatus
Pentapeltis peltigera
Platysace compressa
Platysace tenuissima
Xanthosia candida
Xanthosia huegelii

Apocynaceae

**Gomphocarpus fruticosus*

Araliaceae

Trachymene pilosa

Asparagaceae

**Asparagus asparagoides*
Chamaescilla corymbosa
Dichopogon preissii
Laxmannia squarrosa
Lomandra brittanii
Lomandra caespitosa
Lomandra hermaphrodita
Lomandra micrantha
Lomandra preissii
Lomandra purpurea
Lomandra sericea
Thysanotus multiflorus
Thysanotus patersonii
Thysanotus rectantherus

Asteraceae

**Arctotheca calendula*
Blennospora drummondii
Craspedia variabilis
Gnephosis tenuissima
Helichrysum luteoalbum
Hyalosperma cotula
**Hypochaeris glabra*
Lagenophora huegelii
Millotia tenuifolia
Podotheca angustifolia
Podotheca gnaphalioides
Pterochaeta paniculata
Rhodanthe citrina
Senecio diaschides
Senecio hispidulus
Senecio quadridentatus
**Sonchus asper*

VASCULAR PLANT FAMILY	TAXON
Asteraceae (cont.)	<i>*Sonchus oleraceus</i> <i>Trichocline spathulata</i> <i>*Ursinia anthemoides</i>
Campanulaceae	<i>Isotoma hypocrateriformis</i> <i>Lobelia anceps</i> <i>Lobelia rhytidosperma</i> <i>*Monopsis debilis</i> <i>Wahlenbergia preissii</i>
Casuarinaceae	<i>Allocasuarina fraseriana</i>
Celastraceae	<i>Tripterococcus brunonis</i>
Centrolepidaceae	<i>Centrolepis aristata</i>
Colchicaceae	<i>Burchardia congesta</i>
Crassulaceae	<i>Crassula glomerata</i>
Cyperaceae	<i>Baumea juncea</i> <i>Chorizandra enodis</i> <i>*Cyperus tenellus</i> <i>*Isolepis prolifera</i> <i>Lepidosperma drummondii</i> <i>Lepidosperma leptostachyum</i> <i>Lepidosperma pubisquameum</i> <i>Lepidosperma squamatum</i> <i>Lepidosperma tetraquetrum</i> <i>Lepidosperma ? tenue</i> <i>Mesomelaena tetragona</i> <i>Schoenus clandestinus</i> <i>Tetraria octandra</i> <i>Tetraria sp. Darling Range</i>
Dennstaedtiaceae	<i>Pteridium esculentum</i>
Dilleniaceae	<i>Hibbertia commutata</i> <i>Hibbertia huegelii</i> <i>Hibbertia hypericoides</i> <i>Hibbertia subvaginata</i>
Droseraceae	<i>Drosera callistos</i> <i>Drosera erythrorhiza</i> <i>Drosera leucoblata</i> <i>Drosera pallida</i> <i>Drosera porrecta</i>
Elaeocarpaceae	<i>Tetratheca hirsuta</i>

VASCULAR PLANT FAMILY**TAXON****Ericaceae**

Astroloma ciliatum
Leucopogon capitellatus
Leucopogon nutans
Leucopogon propinquus
Leucopogon pulchellus
Styphelia tenuiflora

Euphorbiaceae

Monotaxis grandiflora

Fabaceae

Acacia barbinervis
Acacia incurva
**Acacia iteaphylla*
Acacia nervosa
Acacia pulchella var. *pulchella*
Bossiaea eriocarpa
Cristonia biloba
Daviesia decurrens
Daviesia preissii
Gastrolobium ebracteolatum
Gastrolobium spinosum
Gompholobium knightianum
Gompholobium marginatum
Gompholobium polymorphum
Gompholobium preissii
Hovea chorizemifolia
Hovea trisperma
Kennedia coccinea
Kennedia prostrata
Labichea punctata
**Lotus subbiflorus*
Sphaerolobium medium
Templetonia drummondii
**Trifolium campestre*
**Trifolium subterraneum*

Goodeniaceae

Dampiera alata
Dampiera linearis
Goodenia coerulea
Goodenia micrantha
Lechenaultia biloba
Scaevola calliptera
Scaevola platyphylla
Velleia trinervis

Haemodoraceae

Anigozanthos manglesii
Conostylis setigera
Conostylis setosa
Haemodorum paniculatum

VASCULAR PLANT FAMILY	TAXON
Haemodoraceae (cont.)	<i>Haemodorum spicatum</i>
Haloragaceae	<i>Gonocarpus cordiger</i>
Hemerocallidaceae	<i>Agrostocrinum scabrum</i> <i>Caesia micrantha</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Tricoryne elatior</i>
Iridaceae	* <i>Gladiolus ? angustus</i> * <i>Hesperantha falcata</i> * <i>Moraea flaccida</i> <i>Orthrosanthus laxis</i> <i>Patersonia babianooides</i> <i>Patersonia juncea</i> <i>Patersonia rudis</i> * <i>Romulea rosea</i> * <i>Watsonia meriana</i>
Juncaceae	* <i>Juncus capitatus</i> <i>Juncus pallidus</i> * <i>Juncus usitatus</i>
Lamiaceae	<i>Hemiantra pungens</i> * <i>Mentha pulegium</i>
Lauraceae	<i>Cassytha glabella</i> <i>Cassytha racemosa</i>
Loganiaceae	<i>Phyllangium paradoxum</i>
Loranthaceae	<i>Amyema miquelii</i> <i>Nuytsia floribunda</i>
Lythraceae	* <i>Lythrum hyssopifolia</i>
Malvaceae	* <i>Brachychiton populneus</i>
Moraceae	* <i>Ficus carica</i>
Myrtaceae	<i>Babingtonia camphorosmae</i> <i>Calytrix variabilis</i> <i>Corymbia calophylla</i> <i>Eucalyptus marginata</i> subsp. <i>thalassica</i> <i>Eucalyptus wandoo</i> <i>Hypocalymma angustifolium</i> <i>Hypocalymma robustum</i> <i>Kunzea micrantha</i> subsp. <i>micrantha</i> <i>Melaleuca parviceps</i>

VASCULAR PLANT FAMILY	TAXON
Myrtaceae (cont.)	<i>Melaleuca preissiana</i> <i>Taxandria linearifolia</i> <i>Verticordia huegelii</i> var. <i>huegelii</i>
Oleaceae	<i>*Olea europaea</i>
Orchidaceae	<i>Caladenia flava</i> <i>*Disa bracteata</i> <i>Pterostylis recurva</i> <i>Pyrorchis nigricans</i> <i>Thelymitra crinita</i> <i>Thelymitra macrophylla</i>
Phyllanthaceae	<i>Phyllanthus calycinus</i> <i>Poranthera microphylla</i>
Phytolaccaceae	<i>*Phytolacca octandra</i>
Pittosporaceae	<i>Billardiera fraseri</i> <i>Billardiera heterophylla</i> <i>Billardiera variifolia</i>
Plantaginaceae	<i>*Callitriche stagnalis</i>
Poaceae	<i>*Aira caryophyllea</i> <i>Amphipogon amhipogonoides</i> <i>Austrostipa mollis</i> <i>Austrostipa variabilis</i> <i>*Avena barbata</i> <i>*Briza maxima</i> <i>*Briza minor</i> <i>*Bromus diandrus</i> <i>*Bromus hordeaceus</i> <i>*Bromus rubens</i> <i>*Ehrharta longiflora</i> <i>*Holcus lanatus</i> <i>*Hordeum leporinum</i> <i>*Lolium multiflorum</i> <i>Microlaena stipoides</i> <i>Neurachne alopecuroidea</i> <i>*Pentaschistis airoides</i> <i>Rhynchospora caespitosum</i> <i>Rhynchospora occidentale</i> <i>Tetrarrhena laevis</i> <i>*Vulpia bromoides</i>
Polygalaceae	<i>Comesperma calymega</i> <i>Comesperma virgatum</i>

VASCULAR PLANT FAMILY	TAXON
Polygonaceae	<i>Persicaria decipiens</i> * <i>Persicaria maculosa</i>
Potamogetonaceae	<i>Potamogeton ochreatus</i>
Primulaceae	* <i>Lysimachia arvensis</i>
Proteaceae	<i>Adenanthos barbiger</i> <i>Banksia bipinnatifida</i> subsp. <i>bipinnatifida</i> <i>Banksia dallanneyi</i> var. <i>dallanneyi</i> <i>Banksia grandis</i> <i>Banksia sessilis</i> var. <i>sessilis</i> <i>Banksia squarrosa</i> subsp. <i>squarrosa</i> <i>Grevillea synapheae</i> <i>Grevillea wilsonii</i> <i>Hakea amplexicaulis</i> <i>Hakea lissocarpa</i> <i>Hakea ruscifolia</i> <i>Hakea stenocarpa</i> <i>Hakea undulata</i> <i>Isopogon sphaerocephalus</i> <i>Persoonia elliptica</i> <i>Persoonia quinquenervis</i> <i>Petrophile serruriae</i> <i>Petrophile striata</i> <i>Synaphea gracillima</i> <i>Synaphea petiolaris</i>
Ranunculaceae	<i>Clematis pubescens</i>
Restionaceae	<i>Desmocladius fasciculatus</i>
Rubiaceae	* <i>Galium divaricatum</i> <i>Opercularia apiciflora</i> <i>Opercularia echinocephala</i> <i>Opercularia hispidula</i> <i>Opercularia vaginata</i> * <i>Sherardia arvensis</i>
Rutaceae	<i>Boronia ovata</i> <i>Boronia ramosa</i> subsp. <i>ramosa</i> <i>Philotheca spicata</i>
Solanaceae	* <i>Solanum nigrum</i>
Stylidiaceae	<i>Levenhookia pusilla</i> <i>Levenhookia stipitata</i> <i>Stylidium amoenum</i>

VASCULAR PLANT FAMILY

TAXON

Stylidiaceae (cont.)

Stylidium brunonianum

Stylidium calcaratum

Stylidium ciliatum

Stylidium pilosum

Thymelaeaceae

Pimelea ciliata subsp. *ciliata*

Pimelea floribunda

Pimelea suaveolens

Typhaceae

**Typha orientalis*

Violaceae

Hybanthus floribundus subsp. *floribundus*

Xanthorrhoeaceae

Xanthorrhoea gracilis

Xanthorrhoea preissii

Zamiaceae

Macrozamia riedlei

APPENDIX B
QUADRAT DATA

For quadrat locations see Appendix C, Map 1

LEGEND

ABBREVIATION	MEANING
sp.	Species, used where the plant is vegetative or too immature for positive identification
subsp.	subspecies
var.	variety
affin.	Not the species given but is close to it
?	Unsure if this is the correct species as the plant was vegetative only
*	Weed

QUADRAT WT01

GPS (WGS84): 415981E; 6475175N

LOCATION: Between Wedgetail Circle and Boronia Way

TOPOGRAPHY: Middle to upper slope

SOIL: Dark brown loam with sparse laterite pebbles

LITTER: Logs 10%; Leaves 100%

VEGETATION DESCRIPTION: Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Thicket of *Banksia sessilis* var. *sessilis* over Open Low Scrub B of *Xanthorrhoea gracilis* over Open Dwarf Scrub D of *Hibbertia hypericoides*

VEGETATION CONDITION: Good

NOTES: Area logged many years previously



SPECIES	HEIGHT (CM)	% COVER
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	15	1
<i>Banksia sessilis</i> var. <i>sessilis</i>	600	50
<i>Caesia micrantha</i>	70	<1
<i>Corymbia calophylla</i>	2000	15
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1400	10
<i>Gompholobium knightianum</i>	25	<1
<i>Gompholobium preissii</i>	25	<1
<i>Grevillea wilsonii</i>	70	<1
<i>Haemodorum paniculatum</i>	80	<1
<i>Hibbertia commutata</i>	50	<1
<i>Hibbertia huegelii</i>	35	<1
<i>Hibbertia hypericoides</i>	30	5
<i>Labichea punctata</i>	15	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Leucopogon nutans</i>	70	<1
<i>Lomandra hermaphrodita</i>	25	<1
<i>Opercularia apiciflora</i>	50	<1
<i>Pentapeltis peltigera</i>	10	1
<i>Pimelea suaveolens</i>	30	<1
<i>Ptilotus manglesii</i>	10	1
<i>Thelymitra macrophylla</i>	70	<1
<i>Thysanotus rectantherus</i>	60	<1
<i>Trichocline spathulata</i>	15	<1
<i>Xanthorrhoea gracilis</i>	150	5
<i>Banksia grandis</i>	Opportunistic	
<i>Boronia ovata</i>	Opportunistic	
<i>Bossiaea eriocarpa</i>	Opportunistic	
<i>Burchardia congesta</i>	Opportunistic	
<i>Crassula glomerata</i>	Opportunistic	
<i>Gompholobium marginatum</i>	Opportunistic	
<i>Hovea chorizemifolia</i>	Opportunistic	
<i>Kennedia coccinea</i>	Opportunistic	
<i>Kennedia prostrata</i>	Opportunistic	
<i>Lechenaultia biloba</i>	Opportunistic	
<i>Opercularia echinocephala</i>	Opportunistic	
<i>Phyllanthus calycinus</i>	Opportunistic	
<i>Podotheca gnaphalioides</i>	Opportunistic	
<i>Stylidium ciliatum</i>	Opportunistic	
<i>Stylidium pilosum</i>	Opportunistic	
<i>Tetragia</i> sp. Darling Range	Opportunistic	
<i>Trachymene pilosa</i>	Opportunistic	
<i>Tricoryne elatior</i>	Opportunistic	

QUADRAT WT02

GPS (WGS84): 416175E; 6475059N

LOCATION: Near Boronia Way

TOPOGRAPHY: Middle slope facing west

SOIL: Sandy loam gravel with numerous laterite pebbles and few outcropping rocks

LITTER: Bark 2%; Branches 10%; Leaves 100%

VEGETATION DESCRIPTION: Forest of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Banksia sessilis* var. *sessilis* over Open Low Scrub B of *Xanthorrhoea preissii* over Open Herbs dominated by *Orthrosanthus laxus*

VEGETATION CONDITION: Very good to good

NOTES: Jarrah logged from area. Marris are the taller trees. *Banksia grandis* up to 6m and with a cover of 10% in the surrounding area. *Templetonia drummondii* – **Priority 4** - 2 plants recorded in quadrat; 1 plant at 416170E; 6475058N



SPECIES	HEIGHT (CM)	% COVER
<i>Amphipogon amphipogonoides</i>	30	<1
<i>Astroloma ciliatum</i>	30	1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	30	1
<i>Banksia grandis</i>	300	<1
<i>Banksia sessilis</i> var. <i>sessilis</i>	700	15
<i>Boronia ovata</i>	50	<1
<i>Bossiaea eriocarpa</i>	60	1
<i>Burchardia congesta</i>	70	<1
<i>Chamaescilla corymbosa</i>	15	<1
<i>Comesperma calymega</i>	70	<1
<i>Conostylis setigera</i>	30	<1
<i>Conostylis setosa</i>	35	<1
<i>Corymbia calophylla</i>	2200	25

SPECIES	HEIGHT (CM)	% COVER
<i>Dianella revoluta</i> var. <i>divaricata</i>	70	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1400	10
<i>Gompholobium preissii</i>	20	<1
<i>Haemodorum paniculatum</i>	80	<1
<i>Hakea amplexicaulis</i>	30	<1
<i>Hakea lissocarpa</i>	60	1
<i>Hibbertia commutata</i>	50	<1
<i>Hovea chorizemifolia</i>	35	<1
<i>Kennedia coccinea</i>	10	<1
<i>Lagenophora huegelii</i>	20	<1
<i>Leucopogon nutans</i>	60	1
<i>Opercularia apiciflora</i>	35	<1
<i>Opercularia hispidula</i>	30	<1
<i>Orthrosanthus laxus</i>	60	25
<i>Patersonia babianoides</i>	50	<1
<i>Pentapeltis peltigera</i>	30	5
<i>Phyllanthus calycinus</i>	35	<1
<i>Pterochaeta paniculata</i>	20	<1
<i>Ptilotus manglesii</i>	15	1
<i>Rhytidosperma caespitosum</i>	60	<1
<i>Stylidium calcaratum</i>	15	<1
<i>Stylidium ciliatum</i>	20	<1
<i>Stylidium pilosum</i>	30	<1
<i>Templetonia drummondii</i>	15	<1
<i>Tetralia</i> sp. Darling Range	60	5
<i>Tetralia laevis</i>	45	1
<i>Thelymitra crinita</i>	50	<1
<i>Thelymitra macrophylla</i>	70	<1
<i>Trachymene pilosa</i>	25	<1
<i>Trichocline spathulata</i>	15	<1
<i>Xanthorrhoea gracilis</i>	220	15
<i>Xanthorrhoea preissii</i>	150	10
<i>Xanthosia candida</i>	5	2
* <i>Aira caryophyllea</i>	Opportunistic	
<i>Allocasuarina fraseriana</i>	Opportunistic	
<i>Austrostipa mollis</i>	Opportunistic	
<i>Gompholobium knightianum</i>	Opportunistic	
<i>Hibbertia huegelii</i>	Opportunistic	
* <i>Juncus capitatus</i>	Opportunistic	
<i>Levenhookia pusilla</i>	Opportunistic	
<i>Lobelia rhytidosperma</i>	Opportunistic	
<i>Lomandra sericea</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Opercularia echinocephala</i>	Opportunistic	
<i>Persoonia elliptica</i>	Opportunistic	
<i>Platysace compressa</i>	Opportunistic	
<i>Senecio quadridentatus</i>	Opportunistic	
<i>Stylidium amoenum</i>	Opportunistic	
<i>Thysanotus multiflorus</i>	Opportunistic	
<i>Tripterococcus brunonis</i>	Opportunistic	

QUADRAT WT03

GPS (WGS84): 416408E; 6474984N

WT03B: 416652E; 6474987N

LOCATION: Beside cleared area off Wedgetail Circle

TOPOGRAPHY: Upper slope

SOIL: Sandy loam gravel with laterite rocks outcropping

LITTER: Logs 5%; Branches 10%; Leaves 95%

VEGETATION DESCRIPTION: Forest of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Low Scrub A of *Xanthorrhoea preissii* over Dwarf Scrub D dominated by *Banksia dallanneyi* var. *dallanneyi* over Very Open Herbs of *Orthrosanthus laxis*

VEGETATION CONDITION: Good

NOTES: Area logged. Lot of felled logs left on ground especially close to the firebreak. Whole of this area is very open. WT03B on east side of fence recorded occasional *Allocasuarina fraseriana*.



SPECIES	HEIGHT (CM)	% COVER
<i>Austrostipa mollis</i>	60	<1
<i>Austrostipa variabilis</i>	70	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	30	10
<i>Boronia ovata</i>	30	<1
<i>Bossiaea eriocarpa</i>	50	2
* <i>Briza maxima</i>	15	<1
<i>Corymbia calophylla</i>	2200	5
<i>Cristonia biloba</i>	30	<1
<i>Dichopogon preissii</i>	40	5
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1600	30
<i>Hakea undulata</i>	250	1

SPECIES	HEIGHT (CM)	% COVER
<i>Hibbertia commutata</i>	30	<1
<i>Hibbertia huegelii</i>	25	2
<i>Hibbertia hypericoides</i>	50	5
<i>Hovea chorizemifolia</i>	35	<1
<i>Hyalosperma cotula</i>	30	<1
<i>Kennedia coccinea</i>	twiner	<1
<i>Lagenophora huegelii</i>	20	1
<i>Leucopogon nutans</i>	50	1
<i>Lomandra sericea</i>	60	<1
<i>Macrozamia riedlei</i>	90	2
<i>Opercularia hispidula</i>	30	<1
<i>Orthrosanthus laxus</i>	60	5
<i>Pentapeltis peltigera</i>	10	1
<i>Phyllanthus calycinus</i>	25	2
<i>Pimelea floribunda</i>	70	<1
<i>Pimelea suaveolens</i>	70	<1
<i>Rhytidosperma caespitosum</i>	50	<1
<i>Scaevola calliptera</i>	10	<1
<i>Senecio quadridentatus</i>	50	<1
<i>Stylidium amoenum</i>	60	<1
<i>Stylidium calcaratum</i>	20	<1
<i>Stylidium ciliatum</i>	20	<1
<i>Tetralia</i> sp. Darling Range	50	5
<i>Tetrarrhena laevis</i>	40	<1
<i>Thysanotus multiflorus</i>	70	<1
<i>Trachymene pilosa</i>	15	1
<i>Trichocline spathulata</i>	15	<1
<i>Xanthorrhoea gracilis</i>	90	3
<i>Xanthorrhoea preissii</i>	150	20
<i>Xanthosia candida</i>	5	1
<i>Allocasuarina fraseriana</i>	Opportunistic	
<i>Anigozanthos manglesii</i>	Opportunistic	
<i>Banksia grandis</i>	Opportunistic	
<i>Chamaescilla corymbosa</i>	Opportunistic	
* <i>Disa bracteata</i>	Opportunistic	
* <i>Gladiolus ? angustus</i>	Opportunistic	
<i>Grevillea wilsonii</i>	Opportunistic	
<i>Haemodorum paniculatum</i>	Opportunistic	
<i>Isotoma hypocrateriformis</i>	Opportunistic	
<i>Opercularia echinocephala</i>	Opportunistic	
<i>Platysace compressa</i>	Opportunistic	
<i>Pterochaeta paniculata</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Ptilotus manglesii</i>	Opportunistic	
<i>Thelymitra crinita</i>	Opportunistic	
<i>Thysanotus rectantherus</i>	Opportunistic	
<i>Tripterococcus brunonis</i>	Opportunistic	

QUADRAT WT04

GPS (WGS84): 416766E; 6475411N

LOCATION: Beside Wedgetail Circle

TOPOGRAPHY: Middle slope facing west

SOIL: Sandy loam gravel with numerous gravel rocks up to 50cm

LITTER: Bark 2%; Logs 25%; Branches 25%; Leaves 45%

VEGETATION DESCRIPTION: Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Open Low Woodland A of *Persoonia elliptica* over Open Scrub of *Banksia sessilis* var. *sessilis* over Very Open Low Grass dominated by *Aira caryophyllea* and *Vulpia bromoides* over Very Open Herbs dominated by *Hyalosperma cotula*

VEGETATION CONDITION: Degraded

NOTES: Large amount of litter on the ground, especially tree trunks. *Templetonia drummondii* – P4 – 1 plant with fruit at 416759E; 6475297N; 1 plants at 416744E; 6475319N



SPECIES	HEIGHT (CM)	% COVER
<i>*Aira caryophyllea</i>	30	5
<i>Amphipogon amphipogonoides</i>	40	<1
<i>Astroloma ciliatum</i>	10	<1
<i>Austrostipa mollis</i>	40	<1
<i>Banksia grandis</i>	Dead	<1% dead
<i>Banksia sessilis</i> var. <i>sessilis</i>	400	1
<i>Corymbia calophylla</i>	1800	5
<i>Drosera callistos</i>	5	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	2000	20
<i>Haemodorum paniculatum</i>	70	<1
<i>Hibbertia huegelii</i>	30	1
<i>Hyalosperma cotula</i>	35	5
<i>*Hypochaeris glabra</i>	25	1

SPECIES	HEIGHT (CM)	% COVER
<i>Isotoma hypocrateriformis</i>	60	<1
<i>Lagenophora huegelii</i>	10	5
<i>Leucopogon nutans</i>	40	<1
<i>Lomandra hermaphrodita</i>	25	<1
<i>Lomandra sericea</i>	50	<1
<i>Millotia tenuiflora</i>	10	<1
<i>Opercularia echinocephala</i>	25	<1
<i>Persoonia elliptica</i>	500	5
<i>Phyllanthus calycinus</i>	25	<1
<i>Rhytidosperma caespitosum</i>	50	<1
<i>Senecio quadridentatus</i>	70	<1
<i>Stylidium calcaratum</i>	20	1
<i>Stylidium pilosum</i>	30	1
<i>Tetragia</i> sp. Darling Range	60	<1
<i>Thelymitra macrophylla</i>	60	<1
<i>Thysanotus rectantherus</i>	50	<1
<i>Trachymene pilosa</i>	25	<1
<i>Trichocline spathulata</i>	20	
* <i>Ursinia anthemoides</i>	70	<1
* <i>Vulpia bromoides</i>	40	5
<i>Xanthosia candida</i>	5	<1
<i>Burchardia congesta</i>	Opportunistic	
<i>Drosera erythrorhiza</i>	Opportunistic	
<i>Gompholobium knightianum</i>	Opportunistic	
<i>Gompholobium marginatum</i>	Opportunistic	
<i>Gompholobium preissii</i>	Opportunistic	
<i>Hibbertia commutata</i>	Opportunistic	
<i>Kennedia coccinea</i>	Opportunistic	
<i>Leucopogon propinquus</i>	Opportunistic	
<i>Neurachne alopecuroidea</i>	Opportunistic	
<i>Pentapeltis peltigera</i>	Opportunistic	
* <i>Romulea rosea</i>	Opportunistic	
<i>Templetonia drummondii</i>	Opportunistic	
<i>Xanthorrhoea gracilis</i>	Opportunistic	

QUADRAT WT05

GPS (WGS84): 416832E; 6475565N

LOCATION: Off Wedgetail Circle

TOPOGRAPHY: Upper slope facing north west

SOIL: Sandy loam gravel with few outcropping laterite rocks

LITTER: Logs 10%; Branches 10%; Leaves 95%

VEGETATION DESCRIPTION: Woodland of *Allocasuarina fraseriana*, *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Open Scrub of *Banksia sessilis* var. *sessilis* over Very Open Tall Sedges of *Tetraria* sp. Darling Range

VEGETATION CONDITION: Good to degraded

NOTES: *Allocasuarina fraseriana* on upper slope to crest. *Templetonia drummondii* – P4 – 1 plant in fruit in quadrat



SPECIES	HEIGHT (CM)	% COVER
<i>Allocasuarina fraseriana</i>	1600	10
<i>Amphipogon amphipogonoides</i>	50	<1
<i>Austrostipa variabilis</i>	60	<1
<i>Banksia sessilis</i> var. <i>sessilis</i>	500	5
* <i>Bromus hordeaceus</i>	45	<1
* <i>Bromus rubens</i>	40	<1
<i>Burchardia congesta</i>	70	<1
<i>Caesia micrantha</i>	70	<1
<i>Corymbia calophylla</i>	2000	10
* <i>Ehrharta longiflora</i>	50	1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	2000	10
<i>Gompholobium knightianum</i>	20	<1
<i>Gompholobium preissii</i>	15	<1
<i>Haemodorum paniculatum</i>	70	<1
<i>Hibbertia huegelii</i>	50	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Hibbertia hypericoides</i>	40	<1
<i>Lagenophora huegelii</i>	30	1
<i>Lepidosperma drummondii</i>	70	<1
<i>Lomandra hermaphrodita</i>	50	<1
<i>Lomandra sericea</i>	60	<1
<i>Patersonia babianooides</i>	35	<1
<i>Pentapeltis peltigera</i>	15	<1
<i>Phyllanthus calycinus</i>	25	<1
* <i>Sherardia arvensis</i>	5	<1
<i>Templetonia drummondii</i>	20	<1
<i>Tetraria octandra</i>	60	<1
<i>Tetraria</i> sp. Darling Range	60	10
<i>Tetrarrhena laevis</i>	50	<1
<i>Thelymitra macrophylla</i>	60	<1
<i>Thysanotus rectantherus</i>	70	<1
<i>Trachymene pilosa</i>	15	<1
<i>Xanthorrhoea gracilis</i>	90	2
<i>Xanthosia candida</i>	5	<1
<i>Xanthosia huegelii</i>	5	<1
<i>Agrostocrinum scabrum</i>	Opportunistic	
<i>Austrostipa mollis</i>	Opportunistic	
<i>Banksia grandis</i>	Opportunistic	
<i>Bossiaea eriocarpa</i>	Opportunistic	
<i>Clematis pubescens</i>	Opportunistic	
<i>Conostylis setosa</i>	Opportunistic	
<i>Cristonia biloba</i>	Opportunistic	
<i>Dampiera linearis</i>	Opportunistic	
<i>Daviesia decurrens</i>	Opportunistic	
<i>Dianella revoluta</i> var. <i>divaricata</i>	Opportunistic	
* <i>Galium divaricatum</i>	Opportunistic	
<i>Hibbertia commutata</i>	Opportunistic	
<i>Hibbertia subvaginata</i>	Opportunistic	
<i>Hyalosperma cotula</i>	Opportunistic	
* <i>Hypochaeris glabra</i>	Opportunistic	
<i>Isotoma hypocrateriformis</i>	Opportunistic	
<i>Lepidosperma leptostachyum</i>	Opportunistic	
<i>Leucopogon nutans</i>	Opportunistic	
<i>Levenhookia pusilla</i>	Opportunistic	
<i>Lomandra micrantha</i>	Opportunistic	
<i>Macrozamia riedlei</i>	Opportunistic	
<i>Neurachne alopecuroidea</i>	Opportunistic	
SPECIES	HEIGHT (CM)	% COVER

<i>Opercularia echinocephala</i>	Opportunistic	
<i>Persoonia elliptica</i>	Opportunistic	
<i>Platysace compressa</i>	Opportunistic	
<i>Podotheca angustifolia</i>	Opportunistic	
<i>Poranthera microphylla</i>	Opportunistic	
<i>Scaevola calliptera</i>	Opportunistic	
<i>Scaevola platyphylla</i>	Opportunistic	
<i>Stylidium calcaratum</i>	Opportunistic	
<i>Stylidium pilosum</i>	Opportunistic	
<i>Tetratheca hirsuta</i>	Opportunistic	
<i>Trichocline spathulata</i>	Opportunistic	

QUADRAT WT06

GPS (WGS84): 415583E; 6475273N

LOCATION: Wedgetail Circle

TOPOGRAPHY: Middle slope

SOIL: Sandy loam laterite with outcropping laterite rocks

LITTER: Logs 5%; Branches 40%; Leaves 60%

VEGETATION DESCRIPTION: Open Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Dense Thicket of *Banksia sessilis* var. *sessilis* over Open Low Scrub A of *Xanthorrhoea gracilis* over Open Dwarf Scrub C of *Hibbertia hypericoides* and *Bossiaea eriocarpa* over Open Tall Sedges of *Tetraria* sp. Darling Range

VEGETATION CONDITION: Very good

NOTES: Several *Banksia sessilis* var. *sessilis* dead and fallen over throughout the bush. *Templetonia drummondii*

– P4 – 15 plants in the quadrat; 5 plants at 415573E; 6475254N; 3 plants at 415542E; 6475255N



SPECIES	HEIGHT (CM)	% COVER
<i>Adenanthos barbiger</i>	50	2
<i>Austrostipa mollis</i>	90	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	50	<1
<i>Banksia grandis</i>	150	<1
<i>Banksia sessilis</i> var. <i>sessilis</i>	600	75
<i>Boronia ovata</i>	50	<1
<i>Bossiaea eriocarpa</i>	70	5
<i>Burchardia congesta</i>	70	<1
<i>Caesia micrantha</i>	70	<1
<i>Comesperma calymega</i>	80	<1
<i>Corymbia calophylla</i>	2200	2
<i>Dampiera linearis</i>	25	1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1600	5
<i>Gompholobium knightianum</i>	70	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Haemodorum paniculatum</i>	70	<1
<i>Hibbertia huegelii</i>	50	2
<i>Hibbertia hypericoides</i>	50	5
<i>Hovea chorizemifolia</i>	60	<1
<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>	60	2
<i>Isopogon sphaerocephalus</i>	60	<1
<i>Lagenophora huegelii</i>	15	<1
<i>Leucopogon capitellatus</i>	60	<1
<i>Leucopogon nutans</i>	60	<1
<i>Lomandra caespitosa</i>	40	<1
<i>Lomandra hermaphrodita</i>	50	<1
<i>Lomandra sericea</i>	65	<1
<i>Pentapeltis peltigera</i>	15	<1
<i>Ptilotus drummondii</i> var. <i>drummondii</i>	15	<1
<i>Scaevola calliptera</i>	15	<1
<i>Stylidium amoenum</i>	60	<1
<i>Stylidium ciliatum</i>	60	<1
<i>Templetonia drummondii</i>	20	<1
<i>Tetragonia</i> sp. Darling Range	70	15
<i>Thysanotus rectantherus</i>	60	<1
<i>Trichocline spathulata</i>	25	<1
* <i>Watsonia meriana</i>	80	<1
<i>Xanthorrhoea gracilis</i>	120	10
<i>Xanthorrhoea preissii</i>	120	3
<i>Agrostocrinum scabrum</i>	Opportunistic	
<i>Amphipogon amphipogonoides</i>	Opportunistic	
<i>Conostylis setosa</i>	Opportunistic	
<i>Daviesia decurrens</i>	Opportunistic	
<i>Grevillea wilsonii</i>	Opportunistic	
<i>Haemodorum spicatum</i>	Opportunistic	
<i>Hibbertia commutata</i>	Opportunistic	
* <i>Juncus capitatus</i>	Opportunistic	
<i>Lechenaultia biloba</i>	Opportunistic	
<i>Levenhookia pusilla</i>	Opportunistic	
<i>Levenhookia stipitata</i>	Opportunistic	
<i>Lobelia rhytidosperma</i>	Opportunistic	
<i>Neurachne alopecuroidea</i>	Opportunistic	
<i>Opercularia echinocephala</i>	Opportunistic	
<i>Patersonia babianoidea</i>	Opportunistic	
<i>Petrophile serruriae</i>	Opportunistic	
<i>Pterochaeta paniculata</i>	Opportunistic	
<i>Pyrorchis nigricans</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Rhytidosperma caespitosum</i>	Opportunistic	
<i>Scaevola platyphylla</i>	Opportunistic	
<i>Thelymitra macrophylla</i>	Opportunistic	
<i>Trachymene pilosa</i>	Opportunistic	

QUADRAT WT07

GPS (WGS84): 415874E; 6475333N

LOCATION: Off Wedgetail Circle

TOPOGRAPHY: Middle slope facing north west

SOIL: Sandy loam gravel with few laterite boulders

LITTER: Logs 10%; Branches 10%; Leaves 100%

VEGETATION DESCRIPTION: Woodland of *Allocasuarina fraseriana* and *Eucalyptus marginata* subsp. *thalassica* over Thicket of *Banksia sessilis* var. *sessilis* and *Banksia grandis* over Dwarf Scrub C of *Leucopogon nutans* and *Hibbertia hypericoides*

VEGETATION CONDITION: Very good.

NOTES: *Templetonia drummondii* – P4 – 25 plants in quadrat



SPECIES	HEIGHT (CM)	% COVER
<i>Allocasuarina fraseriana</i>	1600	10
<i>Amphipogon amphipogonoides</i>	50	<1
<i>Babingtonia camphorosmae</i>	50	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	50	<1
<i>Banksia grandis</i>	500	2
<i>Banksia sessilis</i> var. <i>sessilis</i>	600	50
<i>Billardiera heterophylla</i>	60	<1
<i>Boronia ovata</i>	50	<1
<i>Bossiaea eriocarpa</i>	50	<1
<i>Burchardia congesta</i>	70	<1
<i>Caesia micrantha</i>	70	<1
<i>Dampiera linearis</i>	25	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1800	20
<i>Gompholobium knightianum</i>	40	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Gompholobium preissii</i>	40	<1
<i>Grevillea wilsonii</i>	70	1
<i>Haemodorum paniculatum</i>	80	<1
<i>Hakea amplexicaulis</i>	50	2
<i>Hibbertia commutata</i>	40	<1
<i>Hibbertia hypericoides</i>	50	2
<i>Hybanthus floribundus</i> subsp. <i>floribundus</i>	70	<1
<i>Labichea punctata</i>	20	<1
<i>Lechenaultia biloba</i>	60	<1
<i>Lepidosperma drummondii</i>	70	2
<i>Leucopogon nutans</i>	70	10
<i>Leucopogon propinquus</i>	70	<1
<i>Lomandra hermaphrodita</i>	30	<1
<i>Opercularia apiciflora</i>	50	<1
<i>Pentapeltis peltigera</i>	5	1
<i>Scaevola platyphylla</i>	70	<1
<i>Stylidium pilosum</i>	30	<1
<i>Styphelia tenuiflora</i>	50	<1
<i>Templetonia drummondii</i>	10	<1
<i>Tetaria</i> sp. Darling Range	70	5
<i>Tetarrhena laevis</i>	50	<1
<i>Thelymitra macrophylla</i>	70	<1
<i>Trichocline spathulata</i>	20	<1
<i>Xanthorrhoea gracilis</i>	80	1
<i>Xanthosia candida</i>	5	<1
<i>Adenanthos barbiger</i>	Opportunistic	
<i>Cassytha glabella</i>	Opportunistic	
<i>Chamaescilla corymbosa</i>	Opportunistic	
<i>Daviesia decurrens</i>	Opportunistic	
<i>Hovea chorizemifolia</i>	Opportunistic	
<i>Levenhookia pusilla</i>	Opportunistic	
<i>Levenhookia stipitata</i>	Opportunistic	
<i>Lobelia rhytidosperra</i>	Opportunistic	
<i>Poranthera microphylla</i>	Opportunistic	
<i>Pterochaeta paniculata</i>	Opportunistic	
<i>Ptilotus manglesii</i>	Opportunistic	
<i>Rhytidosperra occidentale</i>	Opportunistic	
<i>Stylidium amoenum</i>	Opportunistic	
<i>Trachymene pilosa</i>	Opportunistic	
<i>Xanthorrhoea preissii</i>	Opportunistic	

QUADRAT WT08

GPS (WGS84): 416260E; 6475360N
 WT08B: 416032E; 6475461N

LOCATION: Near dam

TOPOGRAPHY: Lower slope above creek

SOIL: Brown loam with few outcropping laterite rocks

LITTER: Logs 10%; Branches 20%; Leaves 95%

VEGETATION DESCRIPTION: Forest to Dense Forest of *Corymbia calophylla* over Thicket of *Banksia sessilis* var. *sessilis* over Low Heath of *Hibbertia hypericoides*

VEGETATION CONDITION: Very good to good

NOTES: *Templetonia drummondii* – P4 -3 plants in the quadrat; additional 2 plants at 416285E; 6475325N and 4 plants at 416277E; 6475322N



SPECIES	HEIGHT (CM)	% COVER
<i>Acacia barbinervis</i>	30	<1
<i>Acacia nervosa</i>	25	<1
<i>Agrostocrinum scabrum</i>	70	<1
* <i>Aira caryophylla</i>	10	3
<i>Austrostipa mollis</i>	70	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	30	3
<i>Banksia sessilis</i> var. <i>sessilis</i>	500	50
* <i>Briza maxima</i>	50	1
* <i>Bromus hordeaceus</i>	25	<1
<i>Burchardia congesta</i>	80	<1
<i>Caesia micrantha</i>	70	<1
<i>Caladenia flava</i>	30	<1
<i>Corymbia calophylla</i>	1800	35% in quadrat up to 80% outside

SPECIES	HEIGHT (CM)	% COVER
<i>Drosera pallida</i>	twiner	<1
* <i>Ehrharta longiflora</i>	50	<1
<i>Gompholobium marginatum</i>	30	3
<i>Haemodorum paniculatum</i>	80	<1
<i>Hibbertia hypericoides</i>	30	50% in quadrat up to 70% outside
<i>Lagenophora huegelii</i>	2	<1
<i>Lepidosperma ? tenue</i>	50	2
<i>Leucopogon nutans</i>	70	<1
<i>Lomandra sericea</i>	70	1
<i>Neurachne alopecuroidea</i>	35	1
<i>Opercularia hispidula</i>	70	<1
<i>Platysace tenuissima</i>	30	<1
<i>Rhytidosperma caespitosum</i>	60	<1
<i>Stylidium ciliatum</i>	50	<1
<i>Templetonia drummondii</i>	25	<1
<i>Tetragonia</i> sp. Darling Range	80	5
<i>Thelymitra crinita</i>	75	<1
<i>Trachymene pilosa</i>	25	<1
<i>Velleia trinervis</i>	2	<1
<i>Xanthorrhoea gracilis</i>	90	5
* <i>Asparagus asparagoides</i>	Opportunistic	
<i>Desmocladius fasciculatus</i>	Opportunistic	
* <i>Disa bracteata</i>	Opportunistic	
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	Opportunistic	
<i>Grevillea synapheae</i>	Opportunistic	
<i>Hovea trisperma</i>	Opportunistic	
<i>Hypocalymma angustifolium</i>	Opportunistic	
* <i>Lysimachia arvensis</i>	Opportunistic	
<i>Nuytsia floribunda</i>	Opportunistic	
<i>Senecio quadridentatus</i>	Opportunistic	
<i>Tricoryne elatior</i>	Opportunistic	

QUADRAT WT09

GPS (WGS84): 416257E; 6475415N
 WT09B: 416088E; 6475459N
 WT09C: 416343E; 6475431N
 WT09D: 416295E; 6475409N

LOCATION: Along creek

TOPOGRAPHY: Creek margin

SOIL: Loam

LITTER: Branches 20%

VEGETATION DESCRIPTION: Low Forest A of *Melaleuca preissiana* over Heath A of *Taxandria linearifolia* over Dense Low Grass of *Microlaena stipoides* over Open Herbs dominated by **Mentha pulegium* and *Hesperantha falcata*

VEGETATION CONDITION: Degraded

NOTES: Several mature *Taxandria* dead, but many seedlings growing



SPECIES	HEIGHT (CM)	% COVER
* <i>Aira caryophyllea</i>	15	2
* <i>Bromus hordeaceus</i>	30	<1
* <i>Ehrharta longiflora</i>	50	5
<i>Helichrysum luteoalbum</i>	30	<1
* <i>Hesperantha falcata</i>	50	15
* <i>Holcus lanatus</i>	90	10
* <i>Isolepis prolifera</i>	50	1
* <i>Juncus usitatus</i>	70	<1
<i>Lobelia anceps</i>	60	<1
* <i>Lolium multiflorum</i>	35	<1
* <i>Lotus subbiflorus</i>	30	3

SPECIES	HEIGHT (CM)	% COVER
* <i>Lysimachia arvensis</i>	5	<1
<i>Melaleuca preissiana</i>	1200	40
* <i>Mentha pulegium</i>	70	15
<i>Microlaena stipoides</i>	40	85
* <i>Persicaria maculosa</i>	30	2
* <i>Phytolacca octandra</i>	60	<1
<i>Senecio diaschides</i>	70	<1
* <i>Sherardia arvensis</i>	10	<1
* <i>Solanum nigrum</i>	70	<1
* <i>Sonchus oleraceus</i>	70	1
<i>Taxandria linearifolia</i>	200	5% alive, 30% dead
* <i>Vulpia bromoides</i>	20	<1
* <i>Acacia iteaphylla</i>	Opportunistic	
<i>Chorizandra enodis</i>	Opportunistic	
<i>Corymbia calophylla</i>	Opportunistic	
* <i>Disa bracteata</i>	Opportunistic	
* <i>Hordeum leporinum</i>	Opportunistic	
<i>Juncus pallidus</i>	Opportunistic	
<i>Kennedia prostrata</i>	Opportunistic	
* <i>Lythrum hyssopifolia</i>	Opportunistic	
<i>Mesomelaena tetragona</i>	Opportunistic	
* <i>Moraea flaccida</i>	Opportunistic	
<i>Potamogeton ochreatus</i>	Opportunistic	
* <i>Vulpia bromoides</i>	Opportunistic	

QUADRAT WT10

GPS (WGS84): 416322E; 6475717N

WT10B: 416577E; 6475882N

LOCATION: To the north of the dam

TOPOGRAPHY: Crest

SOIL: Sandy loam gravel with laterite rocks outcropping

LITTER: Branches 10%; Leaves 20%

VEGETATION DESCRIPTION: Woodland of *Allocasuarina fraseriana*, *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub A of *Banksia sessilis* var. *sessilis* over Scrub B of *Xanthorrhoea preissii* over Open Dwarf Scrub C of *Xanthorrhoea gracilis*

VEGETATION CONDITION: Very good

NOTES: Few *Banksia grandis* dead. Several *Banksia sessilis* var. *sessilis* fallen over. *Banksia grandis* has been cut out from WT10B only stumps remain. *Templetonia drummondii* – P4 – 4 plants at 416350E; 6475748N; 1 plant at 416443E; 6475831N



SPECIES	HEIGHT (CM)	% COVER
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	40	1
<i>Banksia grandis</i>	500	1
<i>Banksia sessilis</i> var. <i>sessilis</i>	500	30
<i>Boronia ovata</i>	30	2
<i>Bossiaea eriocarpa</i>	50	1
<i>Burchardia congesta</i>	70	<1
<i>Caesia micrantha</i>	70	<1
<i>Conostylis setosa</i>	60	<1
<i>Corymbia calophylla</i>	1600	5
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1800	10
<i>Gompholobium preissii</i>	30	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Grevillea wilsonii</i>	60	<1
<i>Haemodorum paniculatum</i>	80	<1
<i>Hakea amplexicaulis</i>	60	<1
<i>Hibbertia commutata</i>	50	<1
<i>Hibbertia huegelii</i>	50	1
<i>Hibbertia hypericoides</i>	50	1
<i>Hovea chorizemifolia</i>	35	<1
<i>Hyalosperma cotula</i>	15	<1
<i>Labichea punctata</i>	35	<1
<i>Lagenophora huegelii</i>	15	2
<i>Lepidosperma leptostachyum</i>	60	1
<i>Leucopogon nutans</i>	60	<1
<i>Lomandra caespitosa</i>	40	2
<i>Lomandra sericea</i>	60	<1
<i>Opercularia echinocephala</i>	35	<1
<i>Pentapeltis peltigera</i>	15	1
<i>Persoonia elliptica</i>	600	3
<i>Petrophile striata</i>	70	1
<i>Phyllanthus calycinus</i>	50	<1
<i>Ptilotus manglesii</i>	15	<1
<i>Rhytidosperra occidentale</i>	70	<1
<i>Stylidium amoenum</i>	70	<1
<i>Stylidium ciliatum</i>	35	<1
<i>Stylidium pilosum</i>	35	<1
<i>Styphelia tenuiflora</i>	50	<1
<i>Templetonia drummondii</i>	10	<1
<i>Tetralia</i> sp. Darling Range	70	3
<i>Tetrarrhena laevis</i>	70	1
<i>Tetralia hirsuta</i>	70	<1
<i>Thelymitra macrophylla</i>	60	<1
<i>Thysanotus rectantherus</i>	25	<1
<i>Trachymene pilosa</i>	15	<1
<i>Trichocline spathulata</i>	70	<1
<i>Xanthorrhoea gracilis</i>	90	10
<i>Xanthorrhoea preissii</i>	200	15
<i>Xanthosia candida</i>	5	1
<i>Allocasuarina fraseriana</i>	Opportunistic	
<i>Comesperma calymega</i>	Opportunistic	
<i>Drosera stolonifera</i>	Opportunistic	
<i>Gnaphosia tenuissima</i>	Opportunistic	
<i>Hakea ruscifolia</i>	Opportunistic	
<i>Isotoma hypocrateriformis</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Lechenaultia biloba</i>	Opportunistic	
<i>Neurachne alopecuroidea</i>	Opportunistic	
<i>Patersonia babianoides</i>	Opportunistic	
<i>Pyrorchis nigricans</i>	Opportunistic	
<i>Scaevola platyphylla</i>	Opportunistic	
<i>Tripterococcus brunonis</i>	Opportunistic	

QUADRAT WT11

GPS (WGS84): 416427E; 6475882N

LOCATION: To west of Highlands Drive

TOPOGRAPHY: Crest

SOIL: Sandy loam gravel with many laterite rocks up to 50cm

LITTER: Logs 20%; Branches 20%; Leaves 100%

VEGETATION DESCRIPTION: Open Low Woodland A of *Allocasuarina fraseriana*, *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over litter

VEGETATION CONDITION: Degraded to completely degraded

NOTES: Jarrah has been cut out for firewood. Open area. Those Jarrahs still standing are dead – dieback?



SPECIES	HEIGHT (CM)	% COVER
<i>*Aira caryophyllea</i>	25	1
<i>Allocasuarina fraseriana</i>	800	5
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	Dead	15
<i>Chamaescilla corymbosa</i>	15	<1
<i>Conostylis setigera</i>	30	<1
<i>Corymbia calophylla</i>	1200	10
<i>Drosera porrecta</i>	25	<1
<i>*Galium divaricatum</i>	20	<1
<i>Hyalosperma cotula</i>	25	<1
<i>Lagenophora huegelii</i>	10	1
<i>Leucopogon nutans</i>	20	<1
<i>Levenhookia stipitata</i>	10	<1
<i>Lomandra hermaphrodita</i>	20	<1
<i>Lomandra sericea</i>	40	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Opercularia echinocephala</i>	30	<1
<i>Phyllanthus calycinus</i>	50	<1
<i>Podotheca angustifolia</i>	10	<1
<i>Rhodanthe citrina</i>	25	<1
<i>Rhytidosperma caespitosum</i>	30	<1
<i>Stylidium pilosum</i>	20	1
<i>Trachymene pilosa</i>	30	<1
<i>Trichocline spathulata</i>	35	<1
* <i>Ursinia anthemoides</i>	70	<1
* <i>Vulpia bromoides</i>	35	2
<i>Xanthosia candida</i>	5	<1
<i>Acacia incurva</i>	Opportunistic	
<i>Allocasuarina fraseriana</i>	Opportunistic	
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	Opportunistic	
<i>Grevillea wilsonii</i>	Opportunistic	
<i>Haemodorum paniculatum</i>	Opportunistic	
<i>Hovea chorizemifolia</i>	Opportunistic	
<i>Pentapeltis peltigera</i>	Opportunistic	
<i>Xanthorrhoea gracilis</i>	Opportunistic	

QUADRAT WT12

GPS (WGS84): 416113E; 6475883N

LOCATION: To south of cleared area off Hidden Valley Road

TOPOGRAPHY: Middle slope facing north west

SOIL: Sandy loam gravel with laterite boulders

LITTER: Logs 10%; Branches 5%; Leaves 100%

VEGETATION DESCRIPTION: Low Woodland A of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Thicket of *Banksia sessilis* var. *sessilis* over Dwarf Scrub C of *Phyllanthus calycinus* and *Hibbertia hypericoides* over Very Open Herbs dominated by *Lagenophora huegelii*

VEGETATION CONDITION: Very good

NOTES: Jarrah logged previously all regrowth. When there is a large number of *Banksia sessilis* deaths, *Hibbertia hypericoides* becomes dominant. Dieback area at 416097E; 6475851N



SPECIES	HEIGHT (CM)	% COVER
<i>Amphipogon amphipogonoides</i>	50	1
<i>Austrostipa mollis</i>	80	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	20	<1
<i>Banksia sessilis</i> var. <i>sessilis</i>	500	5
<i>Boronia ramosa</i> subsp. <i>ramosa</i>	30	<1
<i>Bossiaea eriocarpa</i>	40	<1
<i>Burchardia congesta</i>	70	<1
<i>Caesia micrantha</i>	70	<1
<i>Caladenia flava</i>	15	<1
<i>Conostylis setigera</i>	15	<1
<i>Corymbia calophylla</i>	2000	40
<i>Drosera callistos</i>	5	<1
<i>Drosera porrecta</i>	20	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1400	5

SPECIES	HEIGHT (CM)	% COVER
<i>Gompholobium knightianum</i>	25	<1
<i>Gompholobium preissii</i>	5	<1
<i>Haemodorum paniculatum</i>	70	<1
<i>Hakea ruscifolia</i>	50	<1
<i>Hibbertia huegelii</i>	30	<1
<i>Hibbertia hypericoides</i>	50	10
<i>Hovea chorizemifolia</i>	50	<1
<i>Hyalosperma cotula</i>	15	<1
<i>Isotoma hypocrateriformis</i>	60	<1
<i>Lagenophora huegelii</i>	20	5
<i>Lepidosperma pubisquameum</i>	70	<1
<i>Levenhookia pusilla</i>	5	<1
<i>Lomandra hermaphrodita</i>	45	<1
<i>Monotaxis grandiflora</i>	5	<1
<i>Opercularia echinocephala</i>	40	1
<i>Opercularia vaginata</i>	50	3
<i>Pentapeltis peltigera</i>	30	<1
<i>Phyllanthus calycinus</i>	60	<1
<i>Pimelea suaveolens</i>	50	<1
<i>Ptilotus drummondii</i> var. <i>drummondii</i>	30	<1
<i>Rhytidosperma caespitosum</i>	50	2
<i>Stylidium calcaratum</i>	15	<1
<i>Stylidium ciliatum</i>	25	<1
<i>Stylidium pilosum</i>	30	1
<i>Styphelia tenuiflora</i>	40	<1
<i>Templetonia drummondii</i>	10	<1
<i>Tetralix</i> sp. Darling Range	70	3
<i>Thysanotus rectantherus</i>	40	<1
<i>Trachymene pilosa</i>	15	<1
<i>Tripterococcus brunonis</i>	70	<1
<i>Xanthorrhoea gracilis</i>	60	3
<i>Hibbertia commutata</i>	Opportunistic	
<i>Ptilotus manglesii</i>	Opportunistic	
<i>Stylidium amoenum</i>	Opportunistic	
<i>Stylidium brunonianum</i>	Opportunistic	
<i>Tetrarrhena laevis</i>	Opportunistic	
<i>Trichocline spathulata</i>	Opportunistic	

QUADRAT WT13

GPS (WGS84): 416072E; 6475958N

WT 13B: 415688E; 6475662N

WT13C: 416021E; 6475603N

LOCATION: To south of drainage area

TOPOGRAPHY: Lower slope facing north west

SOIL: Sandy loam gravel with few outcropping laterite

LITTER: Branches 10%; Leaves 100%

VEGETATION DESCRIPTION: Dense Forest of *Corymbia calophylla* over Open Scrub of *Xanthorrhoea gracilis* over Dwarf Scrub C to Low Heath of *Hibbertia hypericoides* and *Banksia dallanneyi* var. *dallanneyi* over Open Low Sedges of *Lepidosperma leptostachyum*

VEGETATION CONDITION: Good

NOTES: Area logged. WT13B had a cover of *Hibbertia hypericoides* 70% and *Hypocalymma angustifolium* 5%.

**Moraea flaccida* common around edge. *Templetonia drummondii* – P4 – 4 plants in the quadrat



SPECIES	HEIGHT (CM)	% COVER
* <i>Avena barbata</i>	60	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	50	15
<i>Bossiaea eriocarpa</i>	50	<1
* <i>Brachychiton populneus</i>	30	<1
* <i>Bromus diandrus</i>	70	<1
* <i>Bromus hordeaceus</i>	70	<1
<i>Burchardia congesta</i>	80	<1
<i>Caesia micrantha</i>	60	<1
<i>Corymbia calophylla</i>	1800	80
<i>Drosera stolonifera</i>	25	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1200	2
<i>Haemodorum paniculatum</i>	70	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Hibbertia huegelii</i>	50	<1
<i>Hibbertia hypericoides</i>	50	10
<i>Hovea chorizemifolia</i>	45	<1
<i>Lepidosperma drummondii</i>	70	5
<i>Lepidosperma leptostachyum</i>	70	20
* <i>Olea europaea</i>	10	<1
<i>Senecio diaschides</i>	35	10
<i>Stylidium amoenum</i>	2	<1
<i>Templetonia drummondii</i>	20	<1
<i>Tetraria octandra</i>	50	<1
<i>Xanthorrhoea gracilis</i>	200	10
<i>Xanthosia candida</i>	15	<1
<i>Austrostipa mollis</i>	Opportunistic	
<i>Babingtonia camphorosmae</i>	Opportunistic	
<i>Banksia sessilis</i> var. <i>sessilis</i>	Opportunistic	
<i>Billardiera fraseri</i>	Opportunistic	
<i>Caladenia flava</i>	Opportunistic	
<i>Grevillea synapheae</i>	Opportunistic	
<i>Grevillea wilsonii</i>	Opportunistic	
<i>Hakea amplexicaulis</i>	Opportunistic	
<i>Hovea trisperma</i>	Opportunistic	
<i>Hypocalymma angustifolium</i>	Opportunistic	
<i>Kunzea micrantha</i> var. <i>micrantha</i>	Opportunistic	
* <i>Moraea flaccida</i>	Opportunistic	
<i>Orthrosanthus laxus</i>	Opportunistic	
<i>Scaevola calliptera</i>	Opportunistic	
<i>Thelymitra macrophylla</i>	Opportunistic	
<i>Trichocline spathulata</i>	Opportunistic	
<i>Xanthorrhoea preissii</i>	Opportunistic	

QUADRAT WT14

GPS (WGS84): 416133E; 6476002N

WT14B: 415753E; 6475666N

LOCATION: Northern drainage area

TOPOGRAPHY: Damp area, drainage

SOIL: Black sandy clay

LITTER: Branches 5%; Leaves 10%

VEGETATION DESCRIPTION: Dense Thicket of *Taxandria linearifolia* over Low Grass of **Vulpia bromoides* over Open Herbs of **Lotus subbiflorus* and **Hesperantha falcata*

VEGETATION CONDITION: Good to degraded

NOTES: Large number of *Taxandria linearifolia* are dead



SPECIES	HEIGHT (CM)	% COVER
<i>Centrolepis aristata</i>	10	<1
<i>*Disa bracteata</i>	60	<1
<i>Goodenia micrantha</i>	5	<1
<i>*Hesperantha falcata</i>	30	10
<i>*Hypochaeris glabra</i>	30	5
<i>*Lotus subbiflorus</i>	20	20
<i>*Lysimachia arvensis</i>	30	<1
<i>*Monopsis debilis</i>	10	2
<i>*Sonchus oleraceus</i>	70	<1
<i>Taxandria linearifolia</i>	600	15 alive, 80% dead
<i>*Trifolium campestre</i>	15	<1
<i>*Vulpia bromoides</i>	50	50
<i>*Arctotheca calendula</i>	Opportunistic	
<i>Corymbia calophylla</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Hibbertia hypericoides</i>	Opportunistic	
<i>Microlaena stipoides</i>	Opportunistic	
* <i>Pentaschistis airoides</i>	Opportunistic	
* <i>Sherardia arvensis</i>	Opportunistic	

QUADRAT WT15

GPS (WGS84): 415656E; 6475607N

LOCATION: Northern creek

TOPOGRAPHY: Creek

SOIL: Brown loam

LITTER: Logs 2%; Branches 10%

VEGETATION DESCRIPTION: Open Woodland of *Corymbia calophylla* over Low Woodland A of *Melaleuca preissiana* over Scrub of *Taxandria linearifolia* over Open Low Grass of *Microlaena stipoides* over Herbs of **Mentha pulegium*

VEGETATION CONDITION: Degraded

NOTES: Quadrat 20m x 5m . **Typha orientalis* in one of the water holes dug out for the dam at 415922E; 6475620N



SPECIES	HEIGHT (CM)	% COVER
<i>*Briza minor</i>	60	3
<i>*Callitriche stagnalis</i>	20	2
<i>Corymbia calophylla</i>	2000	10
<i>*Cyperus tenellus</i>	10	<1
<i>*Ehrharta longiflora</i>	70	<1
<i>*Gomphocarpus fruticosus</i>	200	3
<i>*Hesperantha falcata</i>	50	1
<i>*Juncus usitatus</i>	70	<1
<i>*Lolium multiflorum</i>	25	<1
<i>*Lysimachia arvensis</i>	40	<1
<i>Melaleuca preissiana</i>	1400	20
<i>*Mentha pulegium</i>	50	70
<i>Microlaena stipoides</i>	30	25
<i>*Moraea flaccida</i>	70	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Persicaria decipiens</i>	70	<1
* <i>Persicaria maculosa</i>	80	<1
* <i>Sherardia arvensis</i>	50	5
* <i>Sonchus asper</i>	70	<1
<i>Taxandria linearifolia</i>	300	15
* <i>Trifolium subterraneum</i>	30	2
* <i>Typha orientalis</i>	Opportunistic	

QUADRAT 16

GPS (WGS84): 416036E; 6475762N

LOCATION: Off Wedgetail Circle

TOPOGRAPHY: Upper slope/crest

SOIL: Sandy loam gravel

LITTER: Branches 5%; Leaves 60%

VEGETATION DESCRIPTION: Forest of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Xanthorrhoea preissii*

VEGETATION CONDITION: Excellent to very good

NOTES: *Banksia sessilis* var. *sessilis* very patchy through the area, occurring in scattered often dense groups of plants. *Templetonia drummondii* – P4 – 1 plant at 416008E; 6475691N and 2 plants at 416030E; 6475760N



SPECIES	HEIGHT (CM)	% COVER
<i>Acacia pulchella</i> var. <i>pulchella</i>	20	<1
<i>Astroloma ciliatum</i>	15	<1
<i>Austrostipa mollis</i>	70	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	30	5
<i>Bossiaea eriocarpa</i>	60	2
* <i>Briza maxima</i>	50	2
<i>Clematis pubescens</i>	twiner	<1
<i>Corymbia calophylla</i>	2000	20
<i>Dichopogon preissii</i>	30	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	2000	20
<i>Gompholobium preissii</i>	5	<1
<i>Grevillea synapheae</i>	35	<1
<i>Hakea amplexicaulis</i>	50	<1
<i>Hakea lissocarpha</i>	70	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Hibbertia commutata</i>	60	2
<i>Hibbertia hypericoides</i>	60	15
* <i>Hypochaeris glabra</i>	30	1
<i>Kennedia coccinea</i>	twiner	<1
<i>Lagenophora huegelii</i>	15	1
<i>Lechenaultia biloba</i>	50	<1
<i>Leucopogon nutans</i>	60	<1
<i>Levenhookia pusilla</i>	5	<1
<i>Lomandra hermaphrodita</i>	20	<1
<i>Lomandra sericea</i>	60	<1
<i>Opercularia hispidula</i>	25	<1
<i>Orthrosanthus laxus</i>	60	3
<i>Pentapeltis peltigera</i>	20	<1
<i>Phyllanthus calycinus</i>	60	10
<i>Ptilotus manglesii</i>	30	<1
<i>Rhytidosperra caespitosum</i>	50	<1
<i>Scaevola calliptera</i>	30	<1
<i>Stylidium calcaratum</i>	20	<1
<i>Stylidium ciliatum</i>	30	<1
<i>Styphelia tenuiflora</i>	50	1
<i>Tetrarrhena laevis</i>	60	5
<i>Thysanotus rectantherus</i>	35	<1
<i>Trachymene pilosa</i>	25	<1
<i>Tripterococcus brunonis</i>	70	<1
<i>Xanthorrhoea gracilis</i>	90	10
<i>Xanthorrhoea preissii</i>	250	20
<i>Austrostipa variabilis</i>	Opportunistic	
<i>Banksia grandis</i>	Opportunistic	
<i>Banksia sessilis</i> var. <i>sessilis</i>	Opportunistic	
<i>Banksia squarrosa</i> subsp. <i>squarrosa</i>	Opportunistic	
<i>Caesia micrantha</i>	Opportunistic	
<i>Cassytha racemosa</i>	Opportunistic	
<i>Daucus glochidiatus</i>	Opportunistic	
<i>Daviesia decurrens</i>	Opportunistic	
<i>Dianella revoluta</i> var. <i>divaricata</i>	Opportunistic	
<i>Gompholobium knightianum</i>	Opportunistic	
<i>Goodenia coerulea</i>	Opportunistic	
<i>Haemodorum paniculatum</i>	Opportunistic	
<i>Hibbertia huegelii</i>	Opportunistic	
<i>Hovea chorizemifolia</i>	Opportunistic	
<i>Macrozamia riedlei</i>	Opportunistic	
<i>Opercularia echinocephala</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Platysace compressa</i>	Opportunistic	
<i>Senecio hispidulus</i>	Opportunistic	
<i>Stylidium amoenum</i>	Opportunistic	
<i>Templetonia drummondii</i>	Opportunistic	
<i>Tetraria</i> sp. Darling Range	Opportunistic	
<i>Thelymitra crinita</i>	Opportunistic	
<i>Xanthosia candida</i>	Opportunistic	

QUADRAT WT17

GPS (WGS84): 415487E; 6475608N

WT17B: 415392E; 6475578N

LOCATION: Along creek

TOPOGRAPHY: Creek

SOIL: Black loam

LITTER: Branches 10%; Leaves 50%

VEGETATION DESCRIPTION: Tall Forest of *Corymbia calophylla* over Low Forest A of *Melaleuca preissiana* over Dense Tall Sedges of *Lepidosperma tetraquetrum* over Very Open Ferns of *Pteridium esculentum*

VEGETATION CONDITION: Excellent to very good

NOTES: *Pteridium esculentum* becomes denser further away from the creek where the *Lepidosperma tetraquetrum* ends. At the western boundary of the creek *Baumea juncea* as well as *Lepidosperma tetraquetrum* form the understory



SPECIES	HEIGHT (CM)	% COVER
<i>Corymbia calophylla</i>	1800	60
<i>Lepidosperma tetraquetrum</i>	150	95
<i>Melaleuca preissiana</i>	800	5
<i>Microlaena stipoides</i>	95	5
<i>Pteridium esculentum</i>	120	10
<i>Taxandria linearifolia</i>	200	1
<i>Baumea juncea</i>	Opportunistic	
<i>Clematis pubescens</i>	Opportunistic	
* <i>Ficus carica</i>	Opportunistic	
<i>Juncus pallidus</i>	Opportunistic	

QUADRAT WT18

GPS (WGS84): 415295E; 6475434N

WT18B: 415613E; 6475531N

WT18C: 415754E; 6475539N

LOCATION: Above creek

TOPOGRAPHY: Lower slope

SOIL: Sandy loam gravel

LITTER: Branches 10%; Leaves 85%

VEGETATION DESCRIPTION: Woodland of *Eucalyptus wandoo* and *Corymbia calophylla* over Open Low Woodland A of *Eucalyptus marginata* subsp. *thalassica* over Open Low Scrub B of *Xanthorrhoea preissii* over Dense Low Heath C of *Hibbertia hypericoides*

VEGETATION CONDITION: Excellent to very good

NOTES: About 150 metres up slope becomes Woodland of *Eucalyptus marginata* subsp. *thalassica* and *Corymbia calophylla* over Thicket of *Banksia sessilis* var. *sessilis*. *Templetonia drummondii* – P4 – 7 plants in the quadrat; 6 plants at 415312E; 6475428N



SPECIES	HEIGHT (CM)	% COVER
<i>Austrostipa variabilis</i>	35	1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	40	2
<i>Billardiera fraseri</i>	twiner	<1
<i>Boronia ovata</i>	40	<1
<i>Bossiaea eriocarpa</i>	50	<1
<i>Caesia micrantha</i>	70	<1
<i>Caladenia flava</i>	15	<1
<i>Calytrix variabilis</i>	40	<1
<i>Cassytha racemosa</i>	twiner	2
<i>Conostylis setosa</i>	60	<1
<i>Corymbia calophylla</i>	1800	20
<i>Dampiera alata</i>	30	<1

SPECIES	HEIGHT (CM)	% COVER
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1000	5
<i>Eucalyptus wandoo</i>	1800	10
<i>Goodenia coerulea</i>	30	<1
<i>Hakea lissocarpa</i>	50	1
<i>Hibbertia commutata</i>	50	<1
<i>Hibbertia huegelii</i>	30	<1
<i>Hibbertia hypericoides</i>	60	90
<i>Labichea punctata</i>	25	<1
<i>Lagenophora huegelii</i>	25	1
<i>Lepidosperma leptostachyum</i>	70	1
<i>Leucopogon nutans</i>	70	<1
<i>Lomandra hermaphrodita</i>	50	<1
<i>Lomandra sericea</i>	50	<1
<i>Macrozamia riedlei</i>	30	<1
<i>Melaleuca parviceps</i>	50	<1
<i>Orthrosanthus laxus</i>	70	2
<i>Petrophile striata</i>	60	1
<i>Phyllanthus calycinus</i>	60	3
<i>Pimelea suaveolens</i>	50	<1
<i>Pterostylis recurva</i>	40	<1
<i>Rhytidosperma occidentale</i>	70	<1
<i>Stylidium amoenum</i>	40	<1
<i>Stylidium calcaratum</i>	15	<1
<i>Templetonia drummondii</i>	30	<1
<i>Tetrarrhena laevis</i>	50	1
<i>Thelymitra crinita</i>	40	<1
<i>Thelymitra macrophylla</i>	50	<1
<i>Trichocline spathulata</i>	20	<1
<i>Xanthorrhoea gracilis</i>	90	2
<i>Xanthorrhoea preissii</i>	150	5
<i>Banksia grandis</i>	Opportunistic	
<i>Banksia sessilis</i> var. <i>sessilis</i>	Opportunistic	
<i>Daucus glochidiatus</i>	Opportunistic	
<i>Desmocladius fasciculatus</i>	Opportunistic	
* <i>Disa bracteata</i>	Opportunistic	
<i>Hakea amplexicaulis</i>	Opportunistic	
<i>Hovea trisperma</i>	Opportunistic	
<i>Hypocalymma angustifolium</i>	Opportunistic	
<i>Kennedia prostrata</i>	Opportunistic	
<i>Leucopogon propinquus</i>	Opportunistic	
<i>Neurachne alopecuroidea</i>	Opportunistic	
<i>Ptilotus esquamatus</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Scaevola calliptera</i>	Opportunistic	
<i>Thysanotus patersonii</i>	Opportunistic	

QUADRAT WT19

GPS (WGS84): 415596E; 6475473N

LOCATION: South side of creek

TOPOGRAPHY: Middle slope facing north

SOIL: Sandy loam gravel

LITTER: Branches 5%; Leaves 50%

VEGETATION DESCRIPTION: Woodland of *Corymbia calophylla* and *Eucalyptus marginata* subsp. *thalassica* over Scrub of *Banksia sessilis* var. *sessilis* over Low Scrub A of *Xanthorrhoea preissii* over Low Heath C dominated by *Hibbertia hypericoides*

VEGETATION CONDITION: Excellent to very good

NOTES: Overlap in the vegetation between the crest and lower slope. *Templetonia drummondii* – P4 – 6 plants at 415580E; 6475428N



SPECIES	HEIGHT (CM)	% COVER
<i>Acacia pulchella</i> var. <i>pulchella</i>	70	<1
<i>Austrostipa mollis</i>	70	<1
<i>Austrostipa variabilis</i>	70	<1
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	25	5
<i>Banksia sessilis</i> var. <i>sessilis</i>	500	15
<i>Bossiaea eriocarpa</i>	50	<1
* <i>Briza maxima</i>	50	<1
<i>Caesia micrantha</i>	70	<1
<i>Cassytha racemosa</i>	twiner	1
<i>Conostylis setosa</i>	40	<1
<i>Corymbia calophylla</i>	2000	15
<i>Craspedia variabilis</i>	80	<1
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>	1600	10

SPECIES	HEIGHT (CM)	% COVER
<i>Gompholobium preissii</i>	5	<1
<i>Goodenia coerulea</i>	30	<1
<i>Grevillea synapheae</i>	50	<1
<i>Hakea amplexicaulis</i>	70	1
<i>Hakea lissocarpha</i>	50	1
<i>Hibbertia hypericoides</i>	50	30
<i>Lagenophora huegelii</i>	5	1
<i>Lepidosperma pubisquamum</i>	80	<1
<i>Leucopogon capitellatus</i>	50	2
<i>Lobelia rhytidisperma</i>	10	<1
<i>Lomandra brittanii</i>	25	<1
<i>Macrozamia riedlei</i>	20	<1
<i>Neurachne alopecuroidea</i>	5	<1
<i>Opercularia echinocephala</i>	30	<1
<i>Opercularia vaginata</i>	40	<1
<i>Orthrosanthus laxis</i>	50	5
<i>Pentapeltis peltigera</i>	5	<1
<i>Phyllanthus calycinus</i>	50	1
<i>Pimelea suaveolens</i>	50	<1
<i>Pterostylis recurva</i>	35	<1
<i>Scaevola calliptera</i>	15	<1
<i>Stylidium amoenum</i>	50	<1
<i>Stylidium calcaratum</i>	15	<1
<i>Stylidium ciliatum</i>	50	<1
<i>Tetralia</i> sp. Darling Range	70	2
<i>Tetrarrhena laevis</i>	60	<1
<i>Thelymitra crinita</i>	60	<1
<i>Thysanotus rectantherus</i>	60	<1
<i>Trachymene pilosa</i>	15	<1
<i>Xanthorrhoea preissii</i>	175	15
<i>Xanthosia candida</i>	20	<1
<i>Amyema miquelii</i>	Opportunistic	
<i>Banksia bipinnatifida</i> subsp. <i>bipinnatifida</i>	Opportunistic	
<i>Boronia ovata</i>	Opportunistic	
<i>Gompholobium knightianum</i>	Opportunistic	
<i>Gompholobium marginatum</i>	Opportunistic	
<i>Gompholobium polymorphum</i>	Opportunistic	
<i>Hibbertia huegelii</i>	Opportunistic	
<i>Hyalosperma cotula</i>	Opportunistic	
<i>Leucopogon nutans</i>	Opportunistic	
<i>Levenhookia pusilla</i>	Opportunistic	
<i>Patersonia juncea</i>	Opportunistic	

SPECIES	HEIGHT (CM)	% COVER
<i>Pterochaeta paniculata</i>	Opportunistic	
<i>Rhytidosperma caespitosum</i>	Opportunistic	
<i>Synaphea petiolaris</i>	Opportunistic	
<i>Templetonia drummondii</i>	Opportunistic	