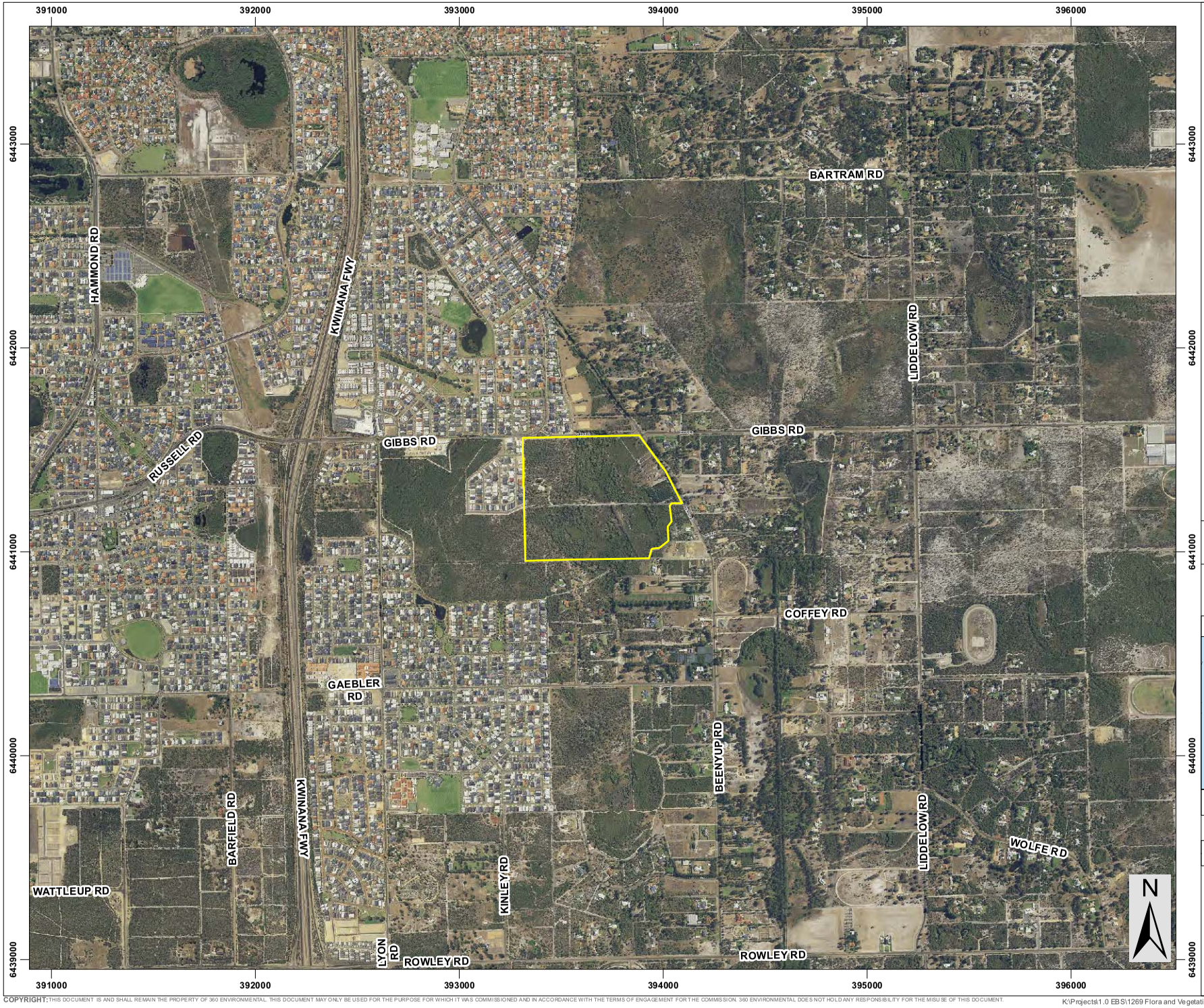

Legend

- Survey Area
- Roads

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 200 400 600 800 1,000

Meters

1:25,000 @ A4

LOCALITY MAP

PROJECT ID	DATE
1269	11/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	NW	TS	0

Aigle Royal Developments
Beenyup Road, Banjup

Level 2 Flora and Vegetation Survey

Figure 1 -
Vegetation Condition

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\L2 Flora and Veg Report\1269 L2 F1 Site Location.mxd

1.2 Background to the Protection of Flora and Vegetation

WA flora is protected formally and informally by various legislative and non-legislative measures, which are as follows:

Legislative measures:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Wildlife Conservation Act 1950* (WC Act);
- *Environmental Protection Act 1986* (EP Act); and
- *Biosecurity and Agriculture Management Act 2007* (BAM Act).

Non-legislative measures:

- WA Department of Parks and Wildlife (DPaW) Priority lists for flora and ecological communities;
- Weeds of National Significance (WONS); and
- Recognition of locally significant populations by the DPaW.

A short description of each is given below. Other definitions, including species conservation categories, are provided in Appendix A. Conservation categories for ecological communities are provided in Appendix B.

1.2.1 EPBC Act

The EPBC Act aims to protect matters of national environmental significance (MNES). Under the EPBC Act, the Commonwealth Department of the Environment (DoE) lists threatened species and communities in categories determined by criteria set out in the Act (Appendix A and B).

Projects likely to cause a significant impact on MNES should be referred to the DoE for assessment under the EPBC Act.

1.2.2 WC Act

The WA DPaW lists flora under the provisions of the WC Act as protected according to their need for protection (Appendix A).

Flora is given Declared Rare status when populations are geographically restricted or are threatened by local processes. In addition, under the WC Act, by Notice in the WA Government Gazette of 9 October 1987, all native flora are protected throughout the State.

1.2.3 EP Act

T/DRF and TECs are given special consideration in environmental impact assessments, and have special status as ESAs under the EP Act and the *Environmental Protection*

(Clearing of Native Vegetation) Regulations 2004. Exemptions for a clearing permit do not apply in an ESA.

1.2.4 BAM Act

Plants may be 'Declared' by the Agriculture Protection Board (APB) under the BAM Act 2007 (WA). Declared Plants are gazetted under three categories (C1-C3), which define the action required. Details of the definitions of these categories are provided in Appendix C. A declaration may apply to the whole State, to districts, individual properties or even to single paddocks. If a plant is 'Declared', landholders are obliged to control that plant on their properties (Department of Agriculture and Food WA [DAFWA] 2014).

1.2.5 DPaW Weed Prioritisation Process

The DPaW Weed Prioritisation Process (WPP) was developed to progress the Environmental Weed Strategy of WA. The Weed Prioritisation Process for DPaW (DPaW 2013) prioritises weeds in each of the DPaW Regions, with the aim being to establish both a species-led and an asset-protection-based approach to weed management.

The species-led process assesses weed species for their invasiveness, ecological impacts, potential and current distribution and feasibility of control. The resulting priorities focus on infestations of species which are considered to be high impact, rapidly invasive and still at a population size which is feasible to eradicate or contain to a manageable size. Weed species which are already widespread do not rank as a high priority through this part of the process.

The next stage of the process investigates the use of an asset-protection-based approach to guide the management of widespread weeds. This approach focuses on identifying high value biodiversity assets, the weeds that pose a threat to these assets and the sites where control will have the greatest biodiversity benefit and cost effectiveness. Social, cultural and economic assets as well as good neighbour issues are considered at a later stage of the process.

1.2.6 Weeds of National Significance

The Australian Government along with the State and Territory governments has endorsed 32 WONS. Four major criteria were used in determining WONS:

- The invasiveness of a weed species;
- A weed's impacts;
- The potential for spread of a weed; and
- Socio-economic and environmental values.

Each WONS has a national strategy and a national coordinator, responsible for implementing the strategy. WONS are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, economic and environmental impacts (Thorp & Lynch 2000).

1.2.7 DPAW Priority Lists

The DPaW lists 'Priority' flora that have not been assigned statutory protection as Declared Rare or 'Scheduled' under the WC Act, but which are under consideration for declaration as DRF. Flora assessed as Priority 1-3 are considered to be in urgent need of further survey. Priority 4 flora requires monitoring every 5-10 years and Priority 5 flora is subject to a specific conservation programme (Appendix A).

The DPaW maintains a list of PECs which identifies ecologically valuable communities that need further investigation before possible nomination for TEC status. Once listed, a community is a PEC, and when endorsed by the WA Minister of Environment becomes a TEC, and protected as an ESA under *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Appendix B).

1.2.8 Informal Recognition of Flora

Certain populations or communities of flora may be of local significance or interest because of their patterns of distribution and abundance. For example, specific locations of flora may be locally significant because they are range extensions to the previously known distribution, or are newly discovered taxa (and have the potential to be of more than local significance). In addition, many species are in decline as a result of threatening processes (land clearing, grazing, changed fire regimes), and relict populations of such species assume local importance for the DPaW. It is not uncommon for the DPaW to make comment on these species of interest.

2 Biophysical Environment

2.1 Climate

The closest long term official Bureau of Meteorology (BoM) weather station currently operating near the Survey Area, is Jandakot Airport (Station number 009172), approximately 7 km north of the Survey Area. The climate for the area is described as warm Mediterranean (Mitchell *et al*. 2002), with mean minima of 11.5 °C, a maxima of 24.5 °C and an average of 820.1 mm of rainfall per annum (BoM 2015).

Jandakot Airport recorded 530.8 mm of rain prior to the survey (January 2015 – August 2015). This is 121.4 mm below the long term average rainfall of 652.2 mm for the same period (BoM 2015). For the three months prior to the survey (June 2015 – August 2015), Jandakot Airport recorded 351.6 mm of rainfall, 23% below the 456.4 mm long term average rainfall for the same period (BoM 2015).

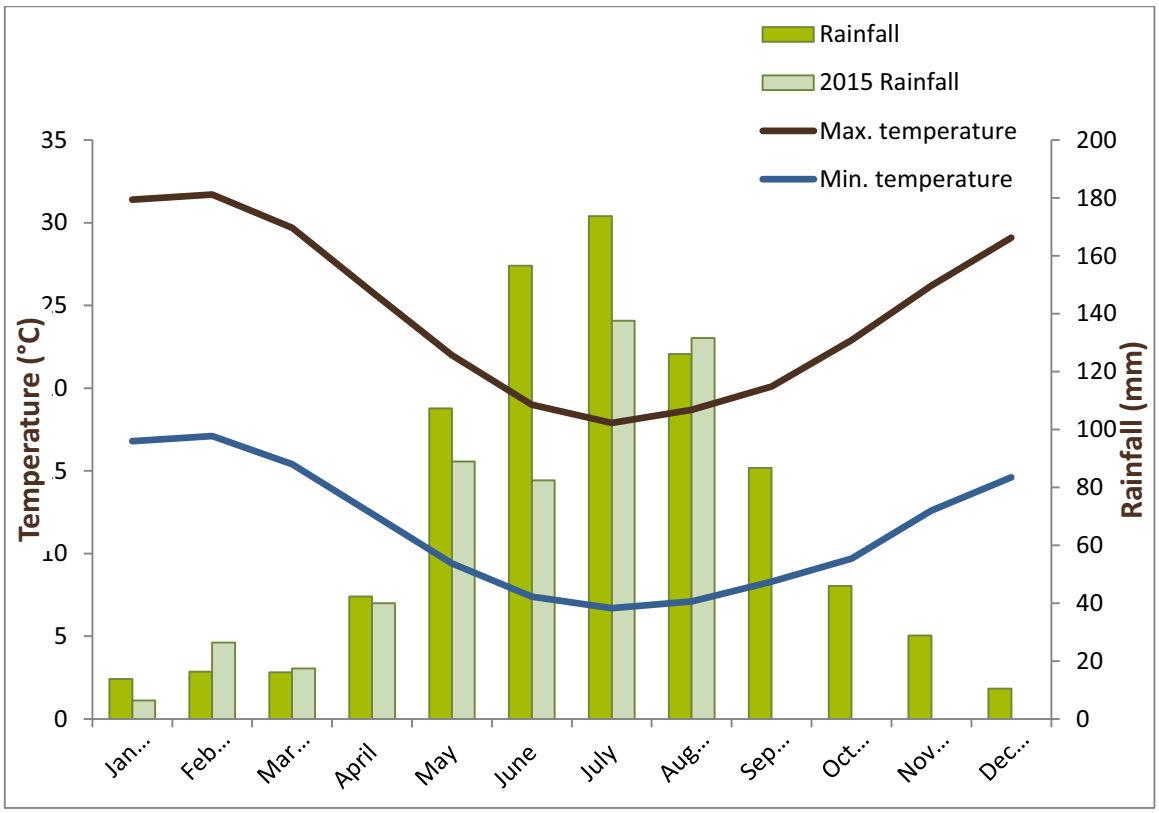

Figure 2: Mean Rainfall (from 1944 to 2015) and Temperature Data (from 1944 to 2015) for Jandakot Airport Weather Station (009172) (BoM 2015).

2.2 Geology and Soils

Soil-landscape mapping of South West WA has been captured at scales ranging from 1:20 000 to 1:250 000 (DAFWA 2012). Soil-landscape mapping describes broad soil and landscape characteristics from regional to local scales.

The Survey Area contains the following geological units and soil types:

- 212Bs – Swan Coastal Plain from Busselton to Jurian. Sand Dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths.

2.3 Hydrology

The Geomorphic Wetlands dataset is identified and utilised by the Environmental Protection Authority (EPA), Department of Environment Regulation (DER) and the Department of Planning as a basis for planning and decision making. The wetland management categories as set out by Hill *et al.* (1996) along with the management objectives utilised by the EPA and the DPaW for wetlands are displayed in Table 1.

The DPaW Geomorphic Wetlands Dataset identifies two wetlands as occurring in the Survey Area (DPAW 2015a) (Figure 3).

The DPaW Geomorphic Wetlands Dataset identifies one Conservation Category Wetland (CCW) and one Resource Enhancement Wetland (REW) as occurring in the Survey Area. The unique identification numbers (UFI) and management category of these wetlands are provided in Table 1.

Table 1: Geomorphic Wetlands in the Survey Area

MANAGEMENT CATEGORY	WETLAND UFI
Resource Enhancement Wetland	15180
Conservation Wetland	12984

2.4 Bush Forever

Bush Forever is a State Government Policy and programme that identifies 51,200 ha of regionally significant vegetation for protection, covering 26 vegetation complexes. This amounts to approximately 18% of the original vegetation on the SCP biogeographic region of the Perth metropolitan area.

Regionally significant vegetation has been identified based on criteria relating to its conservation value. Important criteria in the identification process include the achievement, where possible, of a comprehensive representation of all the ecological communities originally occurring in the region, principally through protecting a target of at least 10% of each vegetation complex in the Bush Forever project boundary (Government of WA 2000).

No Bush Forever Sites are in the Survey Area; however, there is one Bush Forever site adjacent to the site on the south west corner (Figure 3):

- BF 492 – Lyon Road Bushland, Banjup.

There is also another Bush Forever Site, 263 – Banjup Bushland, Banjup which, is approximately 250 m to the east.

2.5 Ecological Linkages

The Survey Area forms part of the Perth Biodiversity Project's (PBP) Draft Regional Ecological Linkage Network presented in Figure 3. The purpose of the Regional Ecological Linkages identified by the PBP was to link protected natural areas with other areas of mapped native vegetation. Priority was given to identifying linkages through those areas having the greatest assumed protection and to those areas that maximised opportunities to form continuous corridors of native vegetation. The Survey Area is intersected by ecological linkage 52 which includes approximately 50% of the Survey Area and joins ecological linkage 46 that runs in a northern direction.

2.6 Environmentally Sensitive Areas

The entire Survey Area is mapped as an ESA (Figure 4).

2.7 Biogeographic Regionalisation for Australia

The Biogeographic Regionalisation of Australia (IBRA7) divides Australia into 89 bioregions based on major biological and geographical/geological attributes. These bioregions are subdivided into 419 subregions, as part of a refinement of the IBRA framework (DoE 2014a). The Survey Area lies within the Swan Coastal Plain Bioregion and Perth subregion (SWA2) of WA.

2.8 Broad Vegetation Types

Mapping of the vegetation of the Perth region of WA was completed on a broad scale (1:250,000) by Beard (1981). These vegetation units were re-assessed by Shepherd *et al*. (2001) to account for clearing in the intensive land use zone, dividing some larger vegetation units into smaller units.

There is one Beard / Shepherd vegetation unit in the Survey Area. The Shepherd *et al.* (2001) vegetation types (along with the corresponding Beard [1981] type in brackets), is described below, and its representation within the Survey Area, subregion, region and state is shown in Table 2.

- **1001** (e2Mb cbLi) – **Bassendean;** Medium very sparse woodland; *E. marginata* with low woodland, *Banksia* sp. and *Casuarina* sp.

Table 2: Broad Vegetation Types within the Survey Area and its State and Regional Representation (Government of WA 2013).

	Pre-European area (ha)	Current extent (ha) 1	Remaining (%)	Current extent % in IUCN Class I-IV Reserves1
Vegetation Types (Beard 1981/ Shepherd *et al*. 2001) in the state				
1001	57,410.23	13,240.22	23.06	1.14
Vegetation Types (Beard 1981/ Shepherd *et al*. 2001) in the Swan Coastal Bioregion				
1001	57,410.23	13,240.22	23.06	1.14
Vegetation Types (Beard 1981/ Shepherd *et al*. 2001) in the Perth Subregion				
1001	57,410.23	13,240.22	23.06	1.14

Mapping by Heddle *et al*. (1980) is based on the relationship to the landform-soil units determined by Churchward & McArthur (1980). This mapping identified one vegetation complex occurring in the Survey Area and this is summarised in Table 3. The delineation of vegetation complexes is based on the concept of series of plant communities forming regularly repeating complexes associated with a particular soil unit. The Heddle *et al.* (1980) vegetation complex that occurs across the Survey Area is described below:

- **Bassendean Complex – Central and South** Woodland to low woodland and sedgelands;

Table 3: Vegetation Complex within the Survey Area and their State and Regional Representation.

	Pre-European area (ha)	Current extent (ha)	Remaining (%)	Current extent Secure Tenure Reserves (%)
Vegetation Complex (Heddle *et al.* 1980) in the System 6/part System 1 area (EPA 2006)				
Bassendean Complex–Central and South	87,477	23,624	27.0	0.7
Vegetation (Heddle *et al.* 1980) in the Swan Coastal Bioregion (PBP 2013)				
Bassendean Complex–Central and South	87,392.73	24,206.24	27.70	2.57

3 Methods

3.1 Background

The flora survey was consistent with a single season Level 2 survey as per the EPA requirements for environmental surveying and reporting for flora and vegetation in WA where practical and relevant, as set out in the following documents:

- EPA Guidance for the Assessment of Environmental Factors: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA No. 51 (EPA 2004); and
- EPA Guidance for the Level of Assessment for Proposals affecting Natural Areas within the System 6 Region and Swan Coastal Plain Portion of the System 1 region. Guidance Statement No. 10 (EPA 2006).

3.2 Flora and Vegetation Survey Methods

3.2.1 Flora and Vegetation Database Review

The desktop study provided background information on the flora and vegetation of the Survey Area. This involved a search of the following sources:

- DPaW Threatened and Priority Flora database (DPaW 2015b);
- DPaW Threatened and Priority Ecological Communities database (DPaW 2015c); and
- DoE Protected Matters Search Tool (DoE 2015b).

A request for a database search was submitted to the DPaW on the 8th September 2015 (5 km buffer search around the Survey Area) to obtain a list of Declared Rare Flora/Threatened or Priority flora, and TECs and PECs in and near the Survey Area. These sources were used to compile a list of expected DRF or Priority species and TECs and PECs that may occur based on the landforms in the Survey Area.

3.2.2 Flora and Vegetation Field Survey

The field survey was conducted by two botanists, on the 15th and 16th September 2015.

The survey included the assessment of 15 quadrats and seven relevés and vegetation mapping notes. Quadrats are vegetation survey plots which are accurately measured out as 10 x 10 m (or an area equivalent to 100 m2) and marked at the NW corner using a handheld Garmin GPS unit. Relevés are unbounded vegetation survey plots with information recorded including landscape features, surface soil colour and texture, bare ground, litter cover, disturbance, fire age, aspect and vegetation condition. Each species

of dominant plant at each relevé was recorded, including information on height and percentage cover.

3.2.3 Taxonomy and Nomenclature

Where field identification of plant taxa was not possible, specimens were collected systematically for later identification utilising resources of the Western Australian Herbarium (WAH).

The species list was checked against FloraBase (WAH 2014) to determine the species conservation status. Threatened and Priority Flora were verified against the EPBC Act listing of threatened species to determine Commonwealth listing.

Introduced species were checked against the DPaW Weed Prioritisation Process (WPP) (DPaW 2013), to determine their ranking in terms of environmental impact. The BAM Act Declared Plants list was consulted to determine if any are Declared Plants, and the WONS list to determine the presence of any WONS (Thorp & Lynch 2000).

3.2.4 Vegetation Mapping

The vegetation mapping units were described based on their structure and species composition, as defined by quadrat data and field observations. Vegetation was mapped in the field using handheld GPS (Garmin) units and high-resolution aerial photographs (1:2,000 scale), which in the office were digitised using GIS software.

Vegetation condition was mapped in the field using handheld GPS (Garmin) units and high-resolution aerial photographs (1:2,000 scale), which in the office were digitised using GIS software. Vegetation condition was assessed based on Bush Forever (Government of WA 2000) (Appendix D).

4 Results

4.1 Flora and Vegetation Survey Limitations and Constraints

Survey constraints are often difficult to predict, as is the extent to which they influence survey effort. Survey limitations and constraints of the flora and vegetation survey are detailed in Table 4.

Table 4: Limitations and Constraints Associated with the Survey.

VARIABLE	IMPACT ON SURVEY OUTCOMES
Access	The whole Survey Area was accessed and traversed. Particular focus was given to areas expected to be impacted and or that may have species of conservation significance.
Experience	The personnel who executed these surveys were practitioners suitably qualified in their respective fields: ● Coordinating Principal Botanist: Narelle Whittington; ● Field Staff: Narelle Whittington and Hayden Ajduk; ● Data Interpretation and Reporting: Narelle Whittington and Hayden Adjuk ● Report Review: Dr Ron Firth.
Timing, weather, season	The survey was conducted during spring after three months of below average rainfall (refer to section 2.1). The climate for the area is described as warm Mediterranean (Mitchell *et al.* 2002), with mean minima of 11.5 °C, a maxima of 24.5 °C and an average of 820.1 mm of rainfall per annum (BoM 2015). Flora composition changes with time, particularly seasonally as a result of seasonal conditions. Therefore, botanical surveys completed at different times will have varying results.
Scope: Life forms sampled	The scope of this project included the detailed surveying of flora and vegetation and searching for conservation significant species or communities.
Sources of information	Relevant DPaW searches were undertaken for the Survey Area and are listed in section 3.2. The desktop analysis used several sources to produce a list

	of flora species previously recorded in the vicinity of the Survey Area. This includes records from the EPBC Protected Matters Search Tool (DoE 2015b), NatureMap (DoE 2015c), DPaW Threatened & Priority Flora Search (DPaW 2015b) and DPaW Threatened & Priority Ecological Communities Search (DPaW 2015c), as well as field guides and other scientific literature.
Completeness	The entire Survey Area was accessible; the time spent conducting the survey was considered adequate for the size and complexity of the site. All vegetation associations were sufficiently surveyed; with 15 quadrats and seven relevés and additional vegetation mapping notes recorded.
Disturbances	The disturbance of the Survey Area varies. Portions of the Survey Area have been completely cleared for housing and the nursery. Some areas have been allowed to regenerate naturally and others have had endemic and non-endemic species planted. A large proportion of the site has not been cleared and remains intact.

4.2 Flora Results

4.2.1 Database Results

The database searches identified 24 conservation significant flora species as potentially occurring in the vicinity of the Survey Area. Of these, nine are classed as Threatened, one as Priority 1, eight as Priority 3 and six as Priority 4.

The likelihood of these 24 conservation significant flora occurring in the Survey Area is shown in Table 5 (refer also to Figure 5).

No TECs listed by the State or under the EPBC Act were present in the databases within a 5 km radius of the Survey Area. However, three State PECs were identified as occurring within 5 km of the Survey Area:

- SCP21c – Low lying *Banksia attenuata* woodlands or shrublands (Priority 3 (DPaW);
- SCP22 – *Banksia ilicifolia* woodlands (Priority 3 (DPaW)); and
- SCP24 – Northern *Spearwood shrublands and woodlands* (Priority 3 (DPaW));

Table 5: Assessment of the Likelihood of Occurrence of Significant Flora in the Survey Area.

[1]Closest record to Survey Area based on DPaW 2014.
Likely = Suitable habitat present and records less than 2 km from the Survey Area, Possible = Suitable habitat present and records between 2 km and 5 km from the Survey Area, Unlikely = No suitable habitat present and/or records greater than 5 km from the Survey Area, EN = Endangered, CR = Critically Endangered, VU = Vulnerable and T=Threatened.

Conservation Status		Species	Habitat Information (WAH 2014)	Suitable Habitat	Closest Record[1]	Likelihood
EPBC	DPaW					
EN	T	*Andersonia gracilis*	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	Yes	16.0 km	Unlikely
CR	T	*Caladenia huegelii*	Grey or brown sand, clay loam.	Yes	1 km	Likely
CR	T	*Darwinia foetida*	Information unavailable	Unknown	56.1 km	Unlikely
VU	T	*Diuris micrantha*	Brown loamy clay. Winter-wet swamps, in shallow water.	Yes	6.3 km	Unlikely
EN	T	*Diuris purdiei*	Grey-black moist sand. Winter-wet swamps.	Yes	4.2 km	Possible
EN	T	*Drakaea elastica*	White or grey sand. Low-lying situations adjoining winter-wet swamps.	Yes	3.1 km	Possible
EN	T	*Drakaea micrantha*	White-grey sand.	Yes	3.6 km	Possible
EN	T	*Lepidosperma rostratum*	Peaty sand, clay.	Yes	7.3 km	Unlikely
EN	T	*Thelymitra dedmaniarum*	Granite	No	41.1 km	Unlikely
-	P1	*Acacia lasiocarpa* var. *bracteolata* long peduncle variant	Grey or Black sand over clay. Swampy areas, winter wet lowlands	Yes	Not available	Possible

Conservation Status		Species	Habitat Information (WAH 2014)	Suitable Habitat	Closest Record[1]	Likelihood
EPBC	DPaW					
-	P3	*Byblis gigantea*	Sandy-peat swamps. Seasonally wet areas.	Yes	6.3 km	Unlikely
-	P3	*Cyathochaeta teretifolia*	Grey sand, sandy clay. Swamps, creek edges.	Yes	2.7 km	Possible
-	P3	*Eryngium pinnatifidum* subsp. *palustre*	No information available	Unknown	Not available	Unknown
-	P3	*Jacksonia gracillima*	No information available	Yes	500 m	Likely
-	P3	*Pimelea calcicola*	Coastal limestone ridges	No	3.4 km	Unlikely
-	P3	*Stylidium longitubum*	Sandy clay, clay. Seasonal wetlands.	Yes	5.8 km	Possible
-	P3	*Stylidium paludicola*	Peaty sand over clay. Winter-wet areas. Marri and *Melaleuca* woodland, *Melaleuca* shrubland.	Yes	3.2 km	Possible
-	P4	*Dodonaea hackettiana*	Sand. Outcropping limestone.	No	3.6 km	Unlikely
-	P4	*Microtis quadrata*	No information available	Unknown	6.0 km	Unknown
-	P4	*Ornduffia submersa*	No information available	Unknown	6.9 km	Unknown
-	P4	*Thysanotus glaucus*	White, grey or yellow sand, sandy gravel	Yes	9.3 km	Unlikely
-	P4	*Tripterococcus* sp. *Brachylobus*	No information available	Unknown	1.2 km	Unknown

Conservation Status		Species	Habitat Information (WAH 2014)	Suitable Habitat	Closest Record[1]	Likelihood
EPBC	DPaW					
-	P4	*Verticordia lindleyi* subsp. *lindleyi*	Sand, sandy clay. Winter-wet depressions.	Yes	1.5 km	Likely

4.2.2 Overview of Flora

A total of 145 taxa (including species, subspecies, varieties and forms) from 101 genera and 45 families were recorded in the Survey Area. The commonly occurring families were; Myrtaceae (18 taxa), Fabaceae (15 taxa) and Orchidaceae (13 taxa.)

Of the 146 taxa, 27 are introduced species. Portions of the Survey Area have been completely cleared for residential and nursery purposes, some areas have been allowed to regenerate naturally and others have had endemic and non-endemic species planted (Figure 6). There is also a large proportion of the site that is original native vegetation.

The flora inventory is provided in Appendix E and the Survey Area data sheets in Appendix F.

4.2.3 Flora of Conservation Significance

A targeted search for conservation significant flora species resulted in:

- No Priority species as listed by DPaW were recorded during the survey; and
- No Threatened species listed under the EPBC Act or gazetted as Declared Rare Flora (Threatened) pursuant to the WC Act were recorded during the survey.

4.2.4 Introduced Flora

A total of 27 introduced species were recorded during the survey (Table 6). Two species, **Asparagus asparagoides* and **Zantedeschia aethiopica*, are listed as Declared under the BAM Act. One species **Asparagus asparagoides* is listed as a WONS.

Table 6: Introduced Flora Recorded in the Survey Area and Their Ranking under the DPaW Weed Prioritisation Process (DPaW 2013).

Taxon	Common Name	DPaW WPP ranking	Declared BAM Act	WONS
**Acacia iteaphylla*	Flinders Range Wattle	High	No	No
**Acacia longifolia*	Sydney Golden Wattle	High	No	No
**Arctotheca calendula*	Cape Weed	Low	No	No
**Avena barbata*	Bearded Oat	Low	No	No
**Asparagus asparagoides*	Bridal Creeper	Low	Yes	Yes
**Briza maxima*	Blowfly Grass	Low	No	No
**Carpobrotus edulis*	Pigface	Under review	No	No
**Cotula coronopifolia*	Waterbuttons	Under review	No	No
**Crassula natans* var. *minus*	-	Under review	No	No

**Cyperus tenellus*	Tiny Flat-Sedge	Under review	No	No
**Ehrharta calycina*	Perennial Veld Grass	Low	No	No
**Ehrharta longiflora*	Annual Veld Grass	Low	No	No
**Eragrostis curvula*	African Lovegrass	Low	No	No
**Euphorbia terracina*	Geraldton Carnation Weed	Moderate	No	No
**Fumaria capreolata*	Whiteflower Fumitory	Low	No	No
**Galium murale*	Small Bedstraw	Under review	No	No
**Gladiolus caryophyllaceus*	Wild Gladiolus	Moderate	No	No
**Hypochaeris glabra*	Smooth Catsear	Low	No	No
**Juncus capitatus*	-	Under review	No	No
**Lysimachia arvensis*	Pimpernel	Under review	No	No
**Pelargonium capitatum*	Rose Pelargonium	Low	No	No
**Romulea rosea* var. *australis*	Guildford Grass	Negligible	No	No
**Sonchus oleraceus*	Common Sowthistle	Negligible	No	No
**Trifolium* sp.	Hop Clover	information unavailable	No	No
**Ursinia anthemoides*	Ursinia	Negligible	No	No
**Vulpia bromoides*	Squirrels Tail Fescue	Under review	No	No
**Zantedeschia aethiopica*	Arum Lily	Moderate	Yes	No

4.2.5 Vegetation Associations

Thirteen natural vegetation associations were recorded in the Survey Area, there are also five other mapping units. Descriptions of these are provided in Table 7 and 8 and Figure 6.

Table 7: Vegetation Association Descriptions and their Extent in the Survey Area.

Vegetation Association Code	Description	Area (ha)
BaBm(a)	Low Woodland of *Banksia attenuata, Banksia menziesii, Allocasuarina fraseriana, Eucalyptus marginata* over *Kunzea glabrescens, Acacia pulchella, Hibbertia hypericoides, Xanthorrhoea preissii, Bossiaea eriocarpa and Conostylis aculeata.*	2.64
BaBm(b)	Low Woodland of *Banksia attenuata, Banksia menziesii, Allocasuarina fraseriana* over *Kunzea glabrescens, Dasypogon bromeliifolius, Hibbertia subvaginata, Calytrix fraseri* and *Bossiaea eriocarpa*.	4.67
AfEmBi	Open Woodland of *Allocasuarina fraseriana*, *Eucalyptus marginata* and *Banksia ilicifolia* over *Xanthorrhoea preissii*, *Dasypogon bromeliifolius, Bossiaea eriocarpa, Gompholobium tomentosum* and *Phlebocarya ciliata.*	1.53
BiKg	Woodland of *Banksia ilicifolia* and *Banksia attenuata* over *Kunzea glabrescens*, *Xanthorrhoea preissii*, *Dasypogon bromeliifolius* and *Desmocladus flexuosus*.	1.12
ErMp	Woodland of *Eucalyptus rudis* and *Melaleuca preissiana* over *Kunzea glabrescens, Xanthorrhoea preissii, Adenanthos cygnorum* and *Hypocalymma angustifolium.*	1.14
KgHa	Low Open Woodland of *Melaleuca preissiana* and *Melaleuca rhaphiophylla* over *Kunzea glabrescens, Hypocalymma angustifolium, Astartea scoparia, Melaleuca teretifolia, Meeboldina scariosa* and *Lepidosperma longitudinale.*	3.38
MpKg	Low Open Woodland of *Melaleuca preissiana* over *Kunzea glabrescens, Hakea varia, Acacia pulchella* var. *glaberrima, Calothamnus lateralis* var. *lateralis* and *Meeboldina coangustata*.	2.89
MrBa	Low Closed Forest of *Melaleuca rhaphiophylla* over *Baumea articulata*.	2.83

MtMr	*Closed Tall Scrub of Melaleuca teretifolia, Melaleuca rhaphiophylla, Meeboldina coangustata and Juncus capitatus.*	1.24
MrMl	*Low Woodland of Melaleuca rhaphiophylla over Melaleuca lateritia, Astartea scoparia, Meeboldina coangustata, Lepidosperma longitudinale and Juncus pallidus.*	3.65
Ec	Ecotone of *Banksia ilicifolia* and *Banksia menziesii* over *Kunzea glabrescens, Dasypogon bromeliifolius* and *Phlebocarya ciliata.*	0.8
Ha	Closed Heath of *Hypocalymma angustifolium, Kunzea glabrescens, Dielsia stenostachya, Dasypogon bromeliifolius* and *Boronia crenulata* var. *crenulata.*	7.87
Mr	Monoculture of young *Melaleuca rhaphiophylla* over water.	0.47

Table 8: Other Mapping Unit Descriptions and their Extent in the Survey Area

VEGETATION ASSOCIATION CODE	DESCRIPTION	AREA (HA)
NE	Non-endemic Eucalypt species.	0.49
G/O	Garden and Orchard.	3.96
Cleared	Cleared.	1.95
P	Planted non-endemic and endemic species.	0.73
OW	Open Water	0.04

4.2.6 Vegetation Condition

Vegetation condition ranged from Completely Degraded to Excellent (Figure 7). Historical vegetation clearing, weeds, housing, a nursery and the presence of tracks in the survey area were the most frequently observed impacts on native vegetation.

As evident from historical photographs clearing of the eastern side of the Survey Area was undertaken around 1983 for residential and agriculture use (Figure 8). This has had a direct effect on vegetation association 'Ha' and 'P' which have regrown and now has very low diversity. Vegetation 'P' has had supplementary planting undertaken and is now interspersed with non-endemic species along with naturally occurring vegetation. Additional tracks and clearing have been undertaken since then, including another residence on the western side.

The CCW in the middle of the Survey Area has remained relatively intact and the majority is considered to be in Very Good to Excellent condition with a couple of areas of vegetation in Good condition along with the tracks and a couple of small pockets considered to be in Degraded to Completely Degraded condition. The extent of each vegetation condition is presented in Tables 9.

Table 9: Vegetation Condition and Extent in the Survey Area.

CONDITION	EXTENT (HA)
Excellent	1.29
Excellent – Very Good	11.71
Very Good	9.52
Very Good - Good	1.25
Good	9.70
Good - Degraded	1.29
Degraded	0.28
Completely Degraded	3.36

4.2.7 Floristic Community Types

Statistical analysis (multivariate analysis) and data interpretation, as shown in Table 10 was undertaken to help determine the FCTs represented by the vegetation in the project area. This involves reviewing site data for other factors that are diagnostic for FCTs, including the presence of indicator species, soil types and landform position. The quadrat data was tested for similarity against each of the 509 Gibson *et al.* quadrats that were established as part of a regional study to describe the vegetation types present on the Swan Coastal Plain in 1994. Results from the statistical analysis and the site information, identified six FCTs as occurring in the Survey Area

Table 10: Floristic Community Type Analysis

VEGETATION ASSOCIATION	GIBSON *ET AL.* QUADRAT & FCT	SIMILARITY BASED ON STATISTICAL ANALYSIS	COMMENTS	INFERRED FLORISTIC COMMUNITY TYPE
BJQ1 (BaBm[a])	CRES01 (FCT SCP 23a)	55.0	The top three results in the analysis were SCP23a. This result seems appropriate given the species present and the location of the	FCT SCP23a – Central *Banksia attenuata* – *B. menziesii* woodlands
	BANK-3 (FCT SCP 23a)	54.7		
	YULE-2 (FCT	53.7		

Vegetation Association	Gibson *et al.* Quadrat & FCT	Similarity Based on Statistical analysis	Comments	Inferred Floristic Community Type
	SCP 23a)		community on the higher dunes of the Survey Area.	
BJQ2 (MrBa)	Chid06 (FCT SCP s17)	50	This quadrat was characterised by large mature *Melaleuca preissiana* over either sedges or exposed soil which had evidence of inundation.	FCT SCP13 – Deeper wetlands on heavy soils
	White04 (FCT SCP s17)	35.2		
	WN020 (FCT SCP s19)	30.7		
BJQ3 (MrBa)	HYMUS05 (FCT SCP 11)	28.5	The association had both *Melaleuca preissiana* and *M. rhaphiophylla* with an open understorey which showed signs of being inundated.	FCT SCP13 – Deeper wetlands on heavy soils
	HYMUS01 (FCT SCP 11)	25.8		
	CAVS06 (FCT SCP s07)	25.8		
BJQ4 (Mr)	MTB-5 (FCT SCP 17)	25	This quadrat was established in the core of the wetland and was still inundated with water to approximately 30 cm, consisting of only *Melaleuca preissiana*.	FCT SCP13 – Deeper wetlands on heavy soils
	CHID06 (FCT SCP 17)	22.2		
	WATER-2 (FCT SCP 13)	20		
BJQ5 (KgHa)	CHID06 (FCT SCP 17)	36.3	This association was characterised by high density wetland shrubs with scattered *Melaleuca preissiana* and *M. rhaphiophylla*. It is more analogous to SCP5 rather than	FCT SCP5 – Mixed shrub damplands
	PINJ02 (FCT SCP s03)	32.2		
	GOSN05 (FCT SCP s03)	29.6		

Vegetation Association	Gibson *et al.* Quadrat & FCT	Similarity Based on Statistical analysis	Comments	Inferred Floristic Community Type
			SCP4. This is based on the low diversity of the dense shrub layer.	
BJQ6 (MtMr)	McLART-1 (FCT SCP 13)	35.7	This quadrat consisted of dense wetland shrubs and sedges with scattered *Melaleuca rhaphiophylla*.	FCT SCP5 – Mixed shrub damplands
	ELLIS-1(FCT SCP 17)	29.6		
	CAPEL-9 (FCT SCP 12)	28.5		
BJQ7 (AfEmBi)	ELE33 (FCT SCP 4)	48.1	Regardless of the analysis results that indicate a higher similarity with SCP4, because of the presence of more dry land species and the dominance of *Allocasuarina fraseriana* and *Eucalyptus marginata* it is thought to be more similar with SCP21a.	FCT SCP21a – Central *Banksia attenuata* – *E. marginata* woodlands
	MODO-2 (FCT SCP 21c)	44.8		
	ELE04 (FCT SCP 21a)	42.1		
BJQ8 (Ha)	TWIN-1 (FCT SCP 6)	34.4	This association had been historically cleared and is now natural regrowth with very low diversity. Due to the lack of upper- storey species, it is most analogous to SCP5.	FCT SCP5 – Mixed shrub damplands
	PINJ13 (FCT SCP s17)	33.3		
	AUSTB-4 (FCT SCP 5)	30		
BJQ9	McLART-1 (FCT	31.25	Due to the	FCT SCP4 -

Vegetation Association	Gibson *et al.* Quadrat & FCT	Similarity Based on Statistical analysis	Comments	Inferred Floristic Community Type
(MrMl)	SCP 13)		dominance of *Melaleuca preissiana* and *M. rhaphiophylla* along with the typical understorey species it is thought that this association is more similar to SCP4. The area also did not appear to be subject to deep inundation in the winter months due to the species and ground litter present.	Melaleuca preissiana damplands
	LESCH-6 (FCT SCP 17)	27.7		
	BEEL03 (FCT SCP 11)	27.5		
BJQ10 (BiKg)	LOW07 (FCT SCP 21c)	52.1	The analysis indicated that BJQ10 is most similar to SCP21c, given the species present, and the location of the association in the landscape SCP21c.	FCT SCP21c – Low Lying *Banksia attenuata* woodlands or shrublands
	MODO-2 (FCT SCP 21c)	48.3		
	GOSN13 (FCT SCP 23a)	46.6		
BJQ11 (MrMl)	WHITE08 (FCT SCP 21a)	33.3	Due to the dominance of *Melaleuca preissiana* and *M. rhaphiophylla* along with the typical understorey species it is thought that the association is more analogous to SCP4. The area also did not appear to be subject to deep inundation in the winter months.	FCT SCP4 - Melaleuca preissiana damplands
	GOSN05 (FCT SCP s03)	28.5		
	McLART-1(FCT SCP 13)	28.5		

Vegetation Association	Gibson *et al.* Quadrat & FCT	Similarity Based on Statistical analysis	Comments	Inferred Floristic Community Type
BJQ12 (BaBm[b])	FL-5 (FCT SCP 21c)	55	The analysis showed that BJQ10 is most similar to SCP21c. This is due to the species present and the location of the association in the landscape. .	FCT SCP21c – Low Lying *Banksia attenuata* woodlands or shrublands
	ELE02 (FCT SCP 21c)	49.3		
	HURST03 (FCT SCP 23a)	49.0		
BJQ13 (MpKg)	McLART-1 (FCT SCP 13)	36.3	Due to the dominance of *Melaleuca preissiana* along with the typical understorey species it is thought that the association is more similar to SCP4. The association is not part of the core wetland and did not appear to be subject to deep inundation in the winter months due to the species and ground litter present.	FCT SCP4 - *Melaleuca preissiana* damplands
	WHITE08 (FCT SCP s17)	34.0		
	GOS05 (FCT SCP s03)	30.3		
BJQ14 (Ha)	PERTH10 (FCT SCP 4)	44.0	The location of this association had been historically disturbed and consequently has low diversity. Due to the lack of upper- storey species and in its present state it is most analogous with SCP5.	FCT SCP5 – Mixed shrub damplands
	GUTHR-4 (FCT SCP 5)	36.6		
	GOSN01 (FCT SCP 4)	34.9		

Vegetation Association	Gibson *et al.* Quadrat & FCT	Similarity Based on Statistical Analysis	Comments	Inferred Floristic Community Type
BJQ15 (BaBm[a])	HURST03 (FCT SCP 23a)	50.9	The top two results in the analysis were for SCP23a, this result seems appropriate given the species present and the location of the community on the higher dunes of the Survey Area.	FCT SCP23a – Central Banksia attenuata – B. menziesii woodlands
	CRESW01 (FCT SCP 23a)	49.4		
	CAVS11 (FCT SCP 21a)	49.4		

Table 11: Referred Floristic Community Types

Vegetation Association	Comments	Inferred Floristic Community Type
ErMp (BJR4)	This community had an over storey of species found in wetland areas (*Eucalyptus rudis* and *Melaleuca preissiana*), however, it also had upland species present such as *Xanthorrhoea preissii* and *Adenanthos cygnorum*. This characteristic as well as nearby occurrences makes it simular to SCP5,	FCT SCP5 - Mixed shrub damplands
Ec	This community is an ecotone between the drier BaBm association and the wetland. Due to the mix of both dry land and wetland species a FCT couldn't be determined.	-

4.2.8 Threatened and Priority Ecological Communities

A search of the DPaW TEC and PEC database identified no TECs listed by the State or under the EPBC Act within a 5 km radius of the Survey Area. Three PECs were identified as occurring within 5 km of the Survey Area:

Two Priority 3 vegetation communities, SCP21c - Low lying *Banksia attenuata* woodlands or shrublands and SCP22 – *Banksia ilicifolia* woodlands, are known to occur in close proximity to the Survey Area with their buffers encroaching into the north east corner of the Survey Areas boundary.

One listed Priority 3 vegetation community was identified as occurring in the Survey Area. Vegetation associations BaBm (b) and BiKg are thought to represent FCT SCP 21c – Low lying *Banksia attenuata* woodlands or shrublands.

Although the database search did not identify "Banksia dominated woodlands of the Swan Coastal Plain IBRA region", all vegetation that has an over storey dominated by *Banksia* are all listed as Priority 3 ecological communities and have been nominated to become a federally listed TEC under the EPBC Act. The nomination is currently being assessed by the DoE and the corresponding threatened species scientific committee. The key feature of these *Banksia* woodlands is the presence of *Banksia attenuata* and/or *B. menziesii* occurring on deep sands. The vegetation association BaBm (a), which has been identified as FCT SCP23a - Central *Banksia attenuata – B. menziesii* woodlands, may also be considered the Priority 3 ecological community. With this taken into consideration vegetation association BaBm (a) is considered Priority 3.

4.2.9 Regional Representation

Vegetation mapping units described in the Survey Area were correlated with the Beard (1981) and Shepherd *et al*. (2001) broad vegetation types as much as possible by examining similarities in vegetation descriptions (Table 11). Differences exist with the terminology used in the descriptions as they are based on different methods of categorising and characterising vegetation types, and the different spatial scale of the analysis (i.e. region vs. local scale). Due to the altered state of some of the vegetation and the majority of the vegetation being wetland dependant many of the vegetation associations could not be correlated.

Table 12: Representation of broad vegetation types and corresponding vegetation associations.

Vegetation Type and Description (Shepherd *et al.* 2001 / Beard 1981)	Corresponding Vegetation Association (Current Survey)	Vegetation Association Extent in Survey Area (ha)
1001 (e2Mb cbLi)	BaBm, AfEmBt, Ec	9.64

5 Discussion

5.1 Flora Context

A total of 145 taxa (including species, subspecies, varieties and forms) from 101 genera and 45 families were recorded in the Survey Area.

Of the 145 taxa, 27 are introduced species. Portions of the Survey Area have been completely cleared for residential and a nursery, some areas have been allowed to regenerate naturally and others have had endemic and non-endemic species planted. There is also a large proportion of the site that is original native vegetation.

5.2 Flora of Conservation Significance

No Threatened species listed under the EPBC Act or gazetted as Declared Rare Flora (Threatened) pursuant to the WC Act were recorded during the survey. No Priority Flora were recorded during the survey.

The review of the database searches identified nine T/DRF flora species potentially occurring in the vicinity of the Survey Area. Of these species, five are unlikely, three are possible and one is likely. Two of these possible species are perennial, so would have been detectable at the time of the survey if they occurred in the Survey Area. Five species, *Caladenia huegelii*, *Diuris micrantha, Diuris purdiei, Drakaea elastica* and *Drakaea micrantha,* are perennial (tuberous) short-lived herbs (orchids) that need various conditions to flower and exhibit different flowering patterns. Regardless of these attributes, the survey was undertaken during the optimum time for the flowering of these species and targeted searches were undertaken in their preferred habitats and none were found.

A further 14 priority flora taxa were identified as potentially occurring in the Survey Area based on database searches. Of these species, four do not have information available to determine whether it could occur in the Survey Area, two are considered likely to occur, four are considered possible and four are considered unlikely. Five of the potential species are perennial so would have been able to be located at the time of the survey. The remaining two species are annual; *Stylidium longitudinale* would have been able to be detected during the survey based on the species flowering period.

5.3 Vegetation of Conservation Significance

A search of the DPaW TEC and PEC database identified three PEC occurring within 5 km of the Survey Area (DPaW 2013c). Two PECs are considered likely to occur in the Survey Area.

Results from the statistical analysis (multivariate analysis) and data interpretation indicate that there are two Priority 3 ecological communities in the Survey Area. Vegetation associations BaBm (b) and BiKg are thought to represent FCT SCP 21c – Low lying *Banksia attenuata* woodlands or shrublands. These two associations equate to 5.79 ha of the survey area. The majority of this FCT is considered to be in good condition. On the northern boundary there is a small area that is very weed infested and has some *Banksia* death, therefore this area has been given a condition rating of Good to Degraded. There are a few localised patches of weeds in the north west corner, however, these haven't effected the overall condition of the vegetation, therefore, its considered to be in Excellent condition.

The vegetation association BaBm(a), has been identified as FCT SCP23a - Central *Banksia attenuata – B. menziesii* woodlands. Although the database search did not identify SCP23a, it is included in the PEC "*Banksia* dominated woodlands of the Swan Coastal Plain IBRA region", which is now listed as a Priority 3 and is being currently assessed to become a federally listed TEC. With this taken into consideration vegetation association BaBm(a) is considered Priority 3 and equates to 2.64 ha of the Survey Area. This FCT is considered to be in a Good to Excellent condition.

Two Priority 3 vegetation communities, SCP21c - Low lying *Banksia attenuata* woodlands or shrublands and SCP22 – *Banksia ilicifolia* woodlands, are known to occur in close proximity to the Survey Area with their buffers encroaching into the north east corner of the Survey Areas boundary.

PECs are known as ecologically valuable communities that need further investigation before possible nomination for TEC status. Priority communities listed by DPaW have no formal protection. There is no written policy on how to respond to the presence of PECs within proposed development sites and the presence of these communities is dealt with by DPaW on a case by case basis.

5.4 ESAs

There are no TECs or DRF present in the Survey Area, however, the entire Survey Area is identified as an ESA. Although there is no publicly available information detailing the reasoning behind the ESA mapping, the boundaries are found to correlate with the Gibbs Road Swamp System according to the Directory of Important Wetlands (2008).

Under the EP Act, any clearing of native vegetation requires a permit unless done for an exempt purpose. ESAs are declared to prevent degradation of important environmental values such as T/DRF, TECs or significant wetlands. Exemptions contained in the Environmental Protection (Clearing of Native vegetation) Regulations 2004 for low impact land clearing do not apply in ESAs and a native vegetation clearing permit is required. A specific permit must therefore be obtained prior to any clearing in an ESA.

5.5 Vegetation Condition and Introduced Flora

Vegetation condition ranged from Completely Degraded to Excellent (Figure 7). Historical vegetation clearing, weeds, housing, a nursery and the presence of tracks in the survey area were the most frequently observed impacts on native vegetation.

Historical and present land use has altered areas of the vegetation, which is reflected in the low diversity and non-endemic species that have been planted to supplement the regrowth of the natural vegetation. This has mainly affected the eastern side of the CCW.

The CCW in the middle of the Survey Area has remained relatively intact and is considered to be in Very Good to Excellent condition with a couple of areas of vegetation in Good condition along with the tracks that are cleared.

The upland vegetation on the Western side of the Survey Area varies greatly in condition from Excellent to Good to Degraded. There are areas considered high in diversity, however, there are pockets where the understory is low in both diversity and density and is weed infested.

A total of 27 introduced species were recorded during the survey. Two species, **Asparagus asparagoides* and **Zantedeschia aethiopica*, are listed as Declared under the BAM Act. One species **Asparagus asparagoides* is listed as a WONS.

5.6 Regional Representation

The PBP has mapped native vegetation extent by vegetation complex on the Swan Coastal Plain. It is estimated that Bassendean Complex – Central and South has 27.7% native vegetation remaining based on the pre-European extent.

The EPA recognises vegetation complexes that are not well represented as being significant. Vegetation complexes which have 10%-30% remaining may be considered regionally significant. Proposals that would affect a vegetation complex with 10% or less remaining are likely to be formally assessed by the EPA (EPA 2006).

5.7 Geomorphic Wetlands

The DPaW Geomorphic Wetlands Dataset identifies two wetlands as occurring within the Survey Area including one CCW and one REW. CCWs and their associated buffers are considered ESAs and as such exemptions offered for clearing under Regulation 5 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* do not apply.

5.8 Ecological Linkages

The Survey Area forms part of the PBPs Draft Regional Ecological linkage network. The Survey Area is intersected by ecological linkage 52 which includes approximately 50% of the Survey Area and joins ecological linkage 46 that runs in a northern direction (Figure 3). The linkage portion of the Survey Area is fully vegetated and could be considered to be important in providing vegetated habitat in a non-continuous linkage across the landscape.

Recognised by the EPA, DPaW and local government, the retention of native vegetation and fauna habitat within the Regional Ecological Linkages aims to reduce the loss of biodiversity and key ecological functions across the South West. The EPA expects that in preparing plans and proposals for development, consideration will be given to both the site-specific biodiversity conservation values of patches of native vegetation, as well as the landscape function and core linkage significance of a patch in supporting the maintenance of an ecological linkage.

6 Conclusions

The targeted flora survey was undertaken within the recommended season and flowering period for the south west botanical province. The Survey Area was sufficiently surveyed and as such the following conclusions can be drawn:

- The condition varies greatly across the site, this being influenced by historical clearing and land use;
- Results from the statistical analysis (multivariate analysis) and data interpretation indicate that there are two Priority 3 ecological communities in the Survey Area;
- Vegetation associations BaBm (b) and BiKg are thought to represent FCT SCP 21c – Low lying *Banksia attenuata* woodlands or shrublands;
- The vegetation association BaBm (a), has been identified as FCT SCP23a - Central *Banksia attenuata – B. menziesii* woodlands. Although the database search did not identify SCP23a, it is included in the PEC "*Banksia* dominated woodlands of the Swan Coastal Plain IBRA region", which is now listed as a Priority 3;
- No Threatened species listed under the EPBC Act and/or gazetted as Declared Rare Flora (Threatened) pursuant to the WC Act were recorded during the survey;
- No Priority flora were recorded during the survey;
- No Bush Forever sites occur in the Survey Area, however, there is one adjacent to the boundary in the south west corner;
- The DPaW Geomorphic Wetlands Dataset identifies one CCW and one REW as occurring in the Survey Area; and
- The Survey Area is identified as part of a larger ESA, and part of the PBP's Draft Regional Ecological linkage network.

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8 Limitations

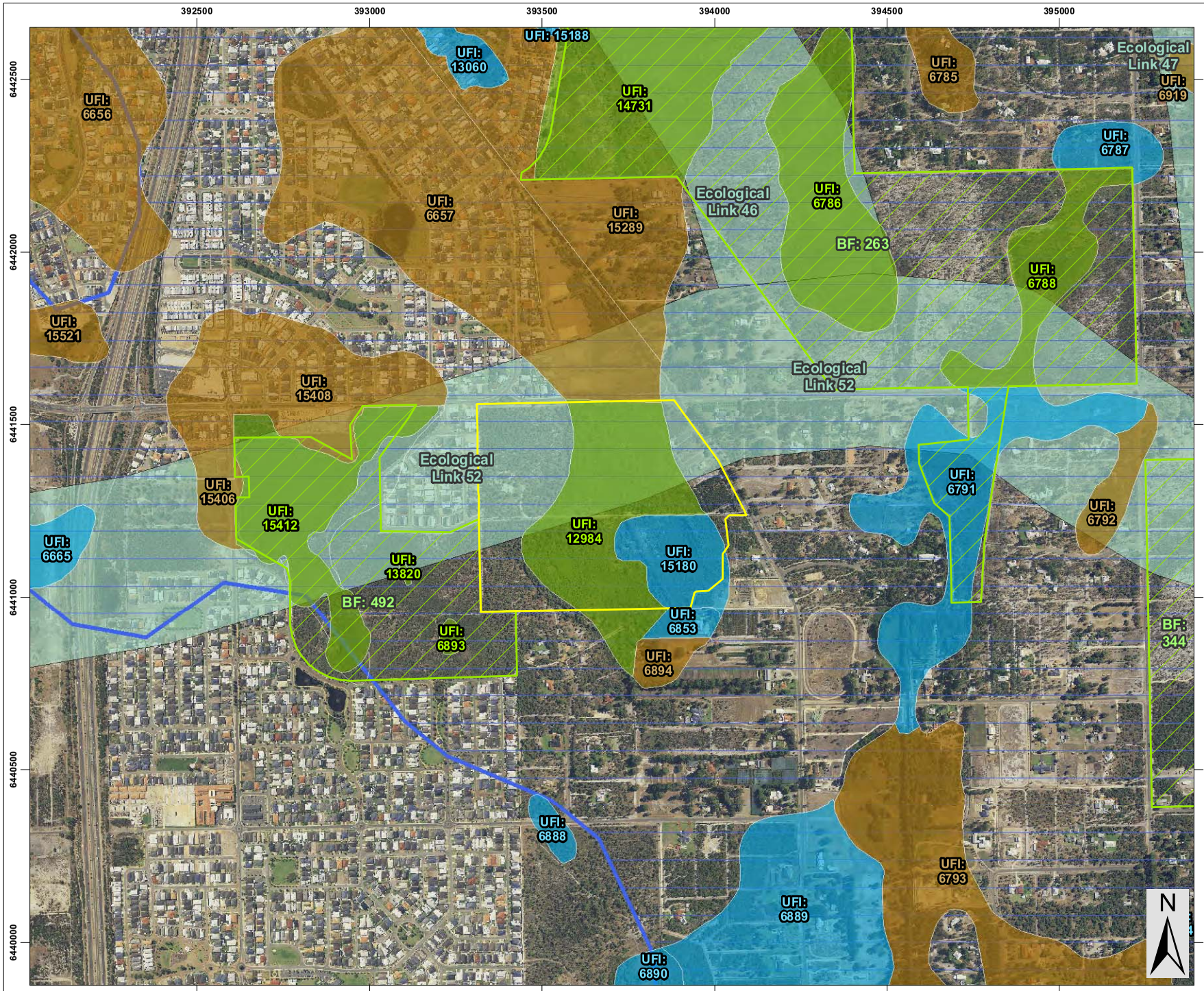
This report is produced strictly in accordance with the scope of services set out in the contract or otherwise agreed in accordance with the contract. 360 Environmental makes no representations or warranties in relation to the nature and quality of soil and water other than the visual observation and analytical data in this report.

In the preparation of this report, 360 Environmental has relied upon documents, information, data and analyses ("client's information") provided by the client and other individuals and entities. In most cases where client's information has been relied upon, such reliance has been indicated in this report. Unless expressly set out in this report, 360 Environmental has not verified that the client's information is accurate, exhaustive or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness and currency of the client's information. 360 Environmental shall not be liable to the client or any other person in connection with any invalid or inaccurate aspect of this report where that invalidity or inaccuracy arose because the client's information was not accurate, exhaustive and current or arose because of any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to 360 Environmental.

Aspects of this report, including the opinions, conclusions and recommendations it contains, are based on the results of the investigation, sampling and testing set out in the contract and otherwise in accordance with normal practices and standards. The investigation, sampling and testing are designed to produce results that represent a reasonable interpretation of the general conditions of the site that is the subject of this report. However, due to the characteristics of the site, including natural variations in site conditions, the results of the investigation, sampling and testing may not accurately represent the actual state of the whole site at all points.

It is important to recognise that site conditions, including the extent and concentration of contaminants, can change with time. This is particularly relevant if this report, including the data, opinions, conclusions and recommendations it contains, are to be used a considerable time after it was prepared. In these circumstances, further investigation of the site may be necessary.

FIGURES



Legend

- Survey Area
- Bush Forever Sites
- DPaW Managed Lands
- Perth Regional Ecological Linkages
- Directory of Important Wetlands DIWA Australia

Geomorphic Wetlands

- Conservation
- Resource Enhancement
- Multiple Use
- Not Assessed

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- WETLANDS SOURCED DPAW 2015
- ECOLOGICAL LINKAGES SOURCED WALGA 2014
- BUSH FOREVER SOURCED DOP 2014
- DIWA SOURCED DoE 2008
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2015
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0 100 200 300 400 500
Meters
1:15,000 @ A4

LOCALITY MAP

PROJECT ID	DATE
1269	14/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

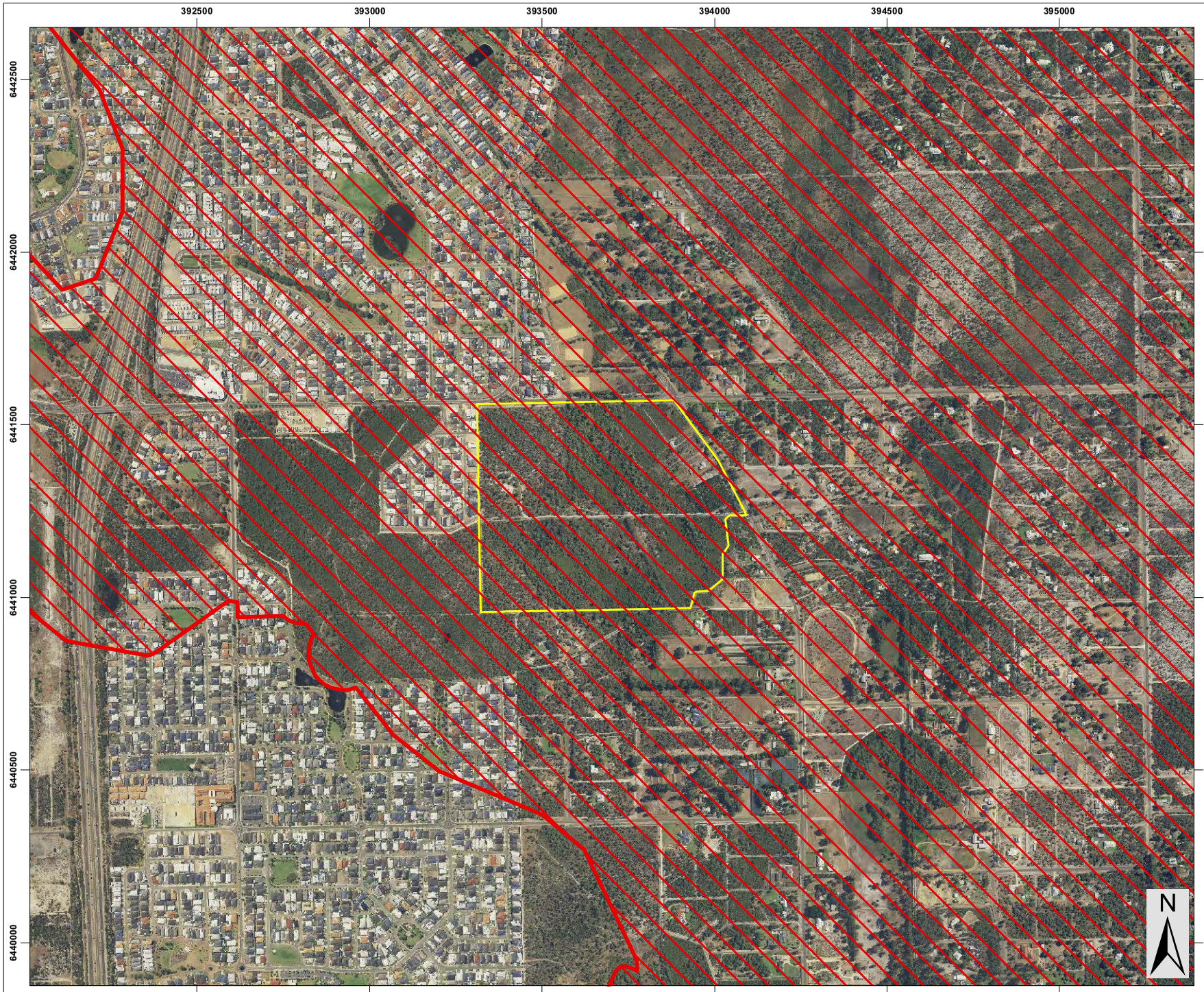
CREATED	CHECKED	APPROVED	REVISION
CS	NW	RF	0

Aigle Royal Developments
Beenyup Road, Banjup

Level 2 Flora and Vegetation Survey

Figure 3 -
Conservation Areas

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\L2 Flora and Veg Report\1269 L2 FX Environmental.mxd



Legend

- Survey Area
- Environmentally Sensitive Areas

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- ESA SOURCED DER 2014
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2015 (© Western Australian Land Information Authority 2015)

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LOCALITY MAP

PROJECT ID	DATE
1269	14/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	NW	RF	0

Aigle Royal Developments
Beenyup Road, Banjup

Level 2 Flora and Vegetation Survey

Figure 4 -
Environmentally Sensitive Areas

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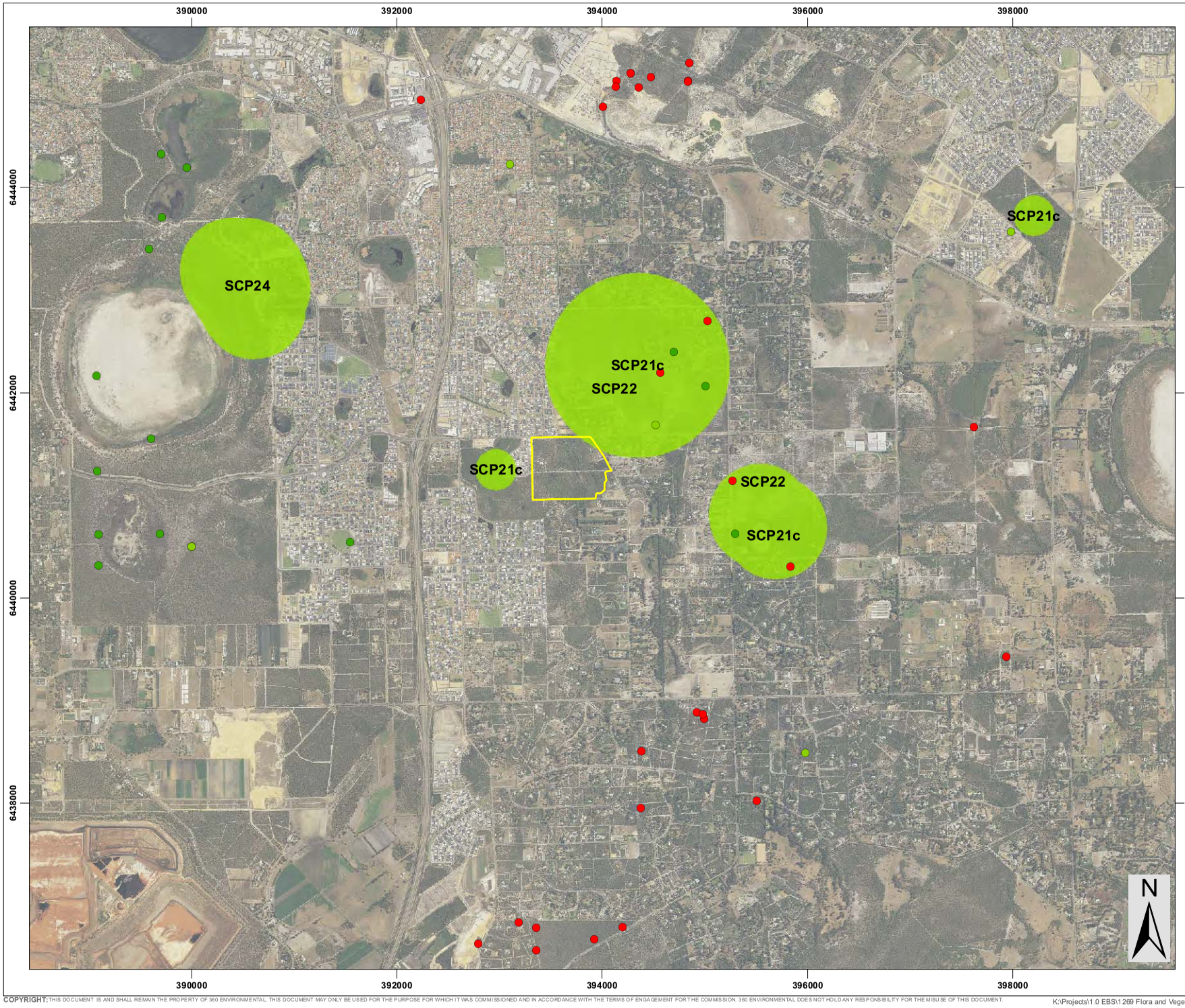

Legend

Survey Area

Rare and Priority Flora

- Priority 4
- Priority 3
- Priority 2
- Priority 1
- Declared Rare

TECs/PECs

- Priority 4
- Priority 3
- Priority 2
- Priority 1
- Vulnerable
- Endangered
- Critically Endangered

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2006
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2014 (© Western Australian Land Information Authority 2015)

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LOCALITY MAP

PROJECT ID	DATE
1269	11/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	NW	RF	0

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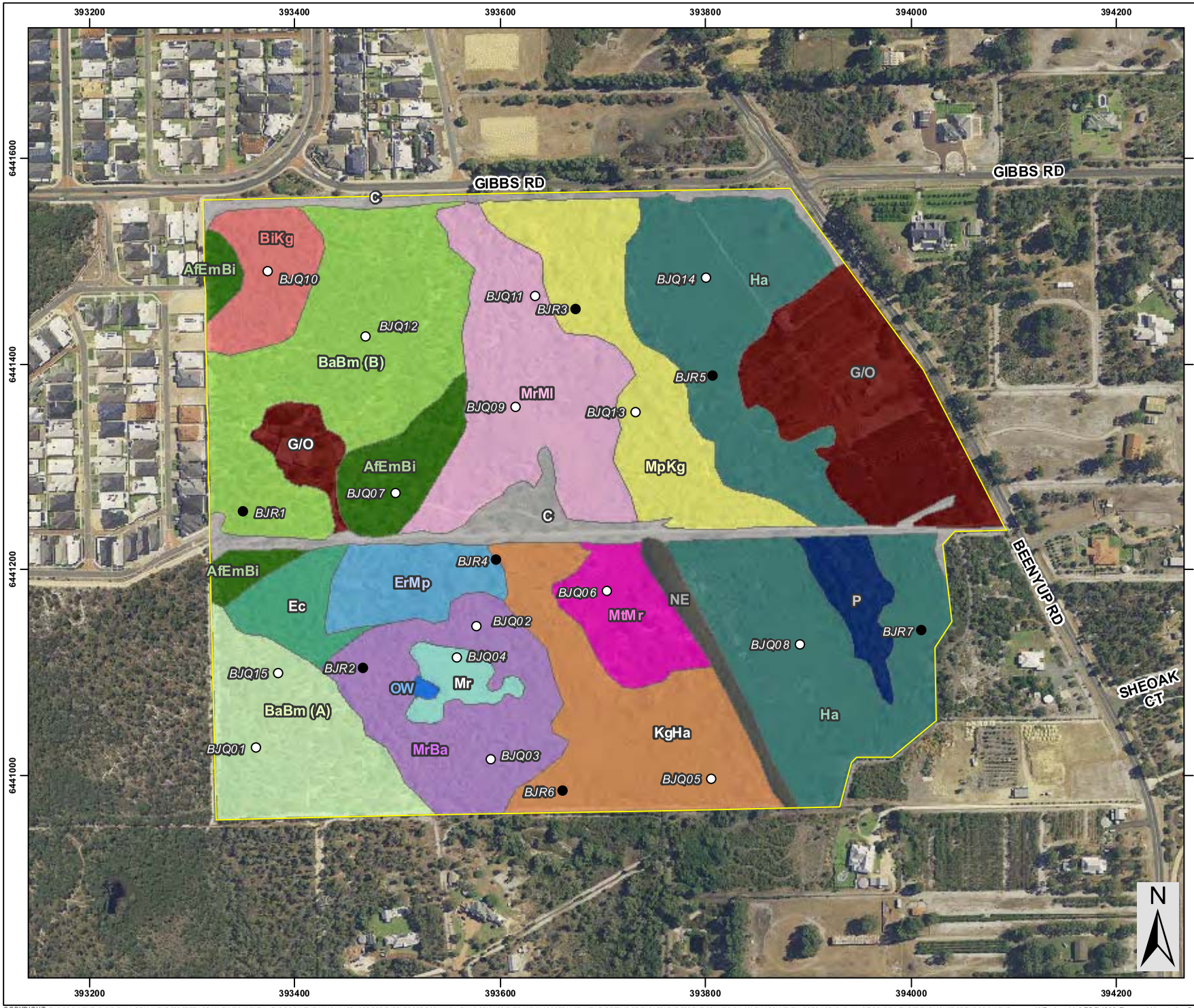
Figure 5 -
DPAW Results

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\L2 Flora and Veg Report\1269 L2 FX TEC PEC Flora.mxd



Legend

- Survey Area (41.4 ha)

Vegetation Association

- BaBm (A)
- BaBm (B)
- AfEmBi
- BiKg
- Ec
- ErMp
- Ha
- KgHa
- MpKg
- Mr
- MrBa
- MrMl
- MtMr
- Non Endemic Eucalypt species
- Open Water
- Planted non endemic and endemic species
- Cleared
- Garden/Orchard

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LOCALITY MAP

PROJECT ID	DATE
1269	15/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	NW	TS	0

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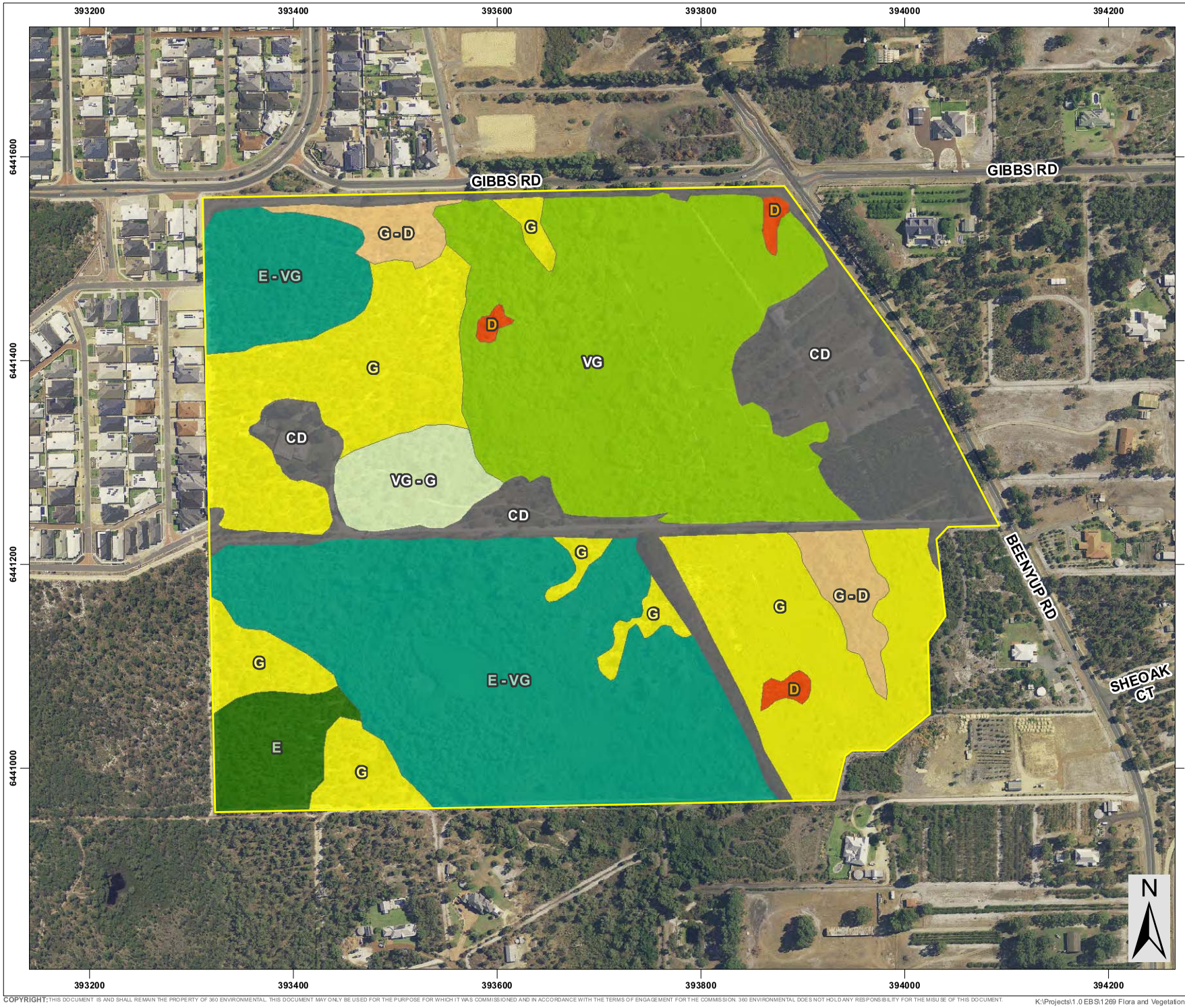
Level 2 Flora and Vegetation Survey

Figure 6 -
Vegetation Associations

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\L2 Flora and Veg Report\1269 L2 FX Vegetation Associations.mxd



Legend

- Survey Area

Vegetation Condition

- Excellent (1.29 ha)
- Excellent - Very Good (11.71 ha)
- Very Good (9.52 ha)
- Very Good - Good (1.25 ha)
- Good (9.70 ha)
- Good - Degraded (1.29 ha)
- Degraded (0.28 ha)
- Completely Degraded (6.36 ha)

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LOCALITY MAP

PROJECT ID	DATE
1269	14/12/2015

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	NW	TS	0

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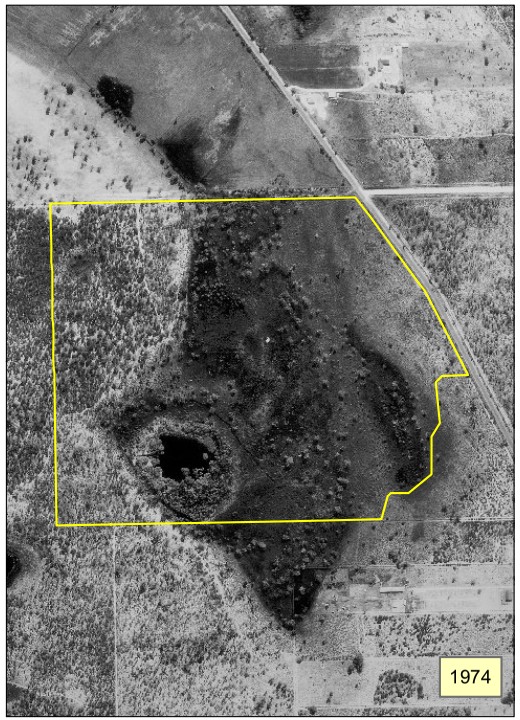
Level 2 Flora and Vegetation Survey

Figure 7 -
Vegetation Condition Mapping

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\L2 Flora and Veg Report\1269 L2 FX Vegetation Condition.mxd



Legend

Site Location

- CADASTRAL BOUNDARY SOURCED LANDGATE 2009
- LOCALITY MAP SOURCED LANDGATE 2006
- CADASTRE SOURCED SLIP SERVICES 15 JAN 2015
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2014
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Meters
@A3

LOCALITY MAP

PROJECT ID	DATE
950	17-Dec-15

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CS	RHa	LR	0

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Figure 8 -
Historical Aerial Imagery

K:\Projects\1.0 EBS\1269 Flora and Vegetation Banjup\Figures\1269 Historicals mxd.mxd

APPENDIX A

Definition of Declared Rare / Priority / Threatened Flora and Fauna Species

Categories of Declared Rare Flora (WC act) and Priority listings (DPaW)

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

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

Source: Department of Parks and Wildlife (2013). Online: http://florabase.dpaw.wa.gov.au.

Western Australian Threatened Fauna Categories Wildlife Conservation Act 1950 (WA)

CATEGORY	CODE	DESCRIPTION
Schedule 1	S1	Rare or likely to become extinct.
Schedule 2	S2	Presumed extinct.
Schedule 3	S3	Birds subject to an agreement between the governments of Australia and Japan, the People's Republic of China & the Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
Schedule 4	S4	Other specially protected fauna.

Department of Environment and Conservation Fauna Priority Codes

CATEGORY	CODE	DESCRIPTION
Priority 1	P1	Taxa with few, poorly known populations on threatened lands.
Priority 2	P2	Taxa with few, poorly known populations on conservation lands.
Priority 3	P3	Taxa with several, poorly known populations, some on conservation lands.
Priority 4	P4	Taxa in need of monitoring: not currently threatened or in need of special protection, but could become so. Usually represented on conservation lands.
Priority 5	P5	Taxa in need of monitoring: not considered threatened, but the subject of a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of Threatened Flora and Fauna Species under the EPBC Act

CONSERVATION CODE	DESCRIPTION
Ex	**Extinct** Taxa which at a particular time if, at the time, there is no reasonable doubt that the last member of the 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 a particular 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 medium-term 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.

Source: *Environment Protection and Biodiversity Conservation Act 1999*

APPENDIX B

Definition of Threatened and Priority Ecological Communities

Definitions of Threatened Ecological Communities as Endorsed by the Western Australian Minister for the Environment

Presumed Totally Destroyed (PD)

An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B);

A) Records within the last 50 years have not been confirmed despite thorough searches or known or likely habitats or

B) All occurrences recorded within the last 50 years have since been destroyed.

Critically Endangered (CR)

An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):

A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii)

i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 5 years)

ii) modification throughout its range is continuing such that in the immediate future (within approximately 5 years) the community is unlikely to be capable of being substantially rehabilitated.

B) Current distribution is limited, and one or more of the following apply (i, ii or iii):

i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 5 years)

ii) there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes

iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes

C) The ecological community exists only as highly modified occurrences which may be capable of being rehabilitated if such work begins in the immediate future (within approximately 5 years)

Endangered (EN)

An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):

A) The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 70% and either or both of the following apply (i or ii)

i) geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term (within approximately 10 years)

ii) modification throughout its range is continuing such that in the short term future (within approximately 10 years) the community is unlikely to be capable of being substantially restored or rehabilitated.

B) Current distribution is limited, and one or more of the following apply (i, ii or iii):

i) geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 10 years)

ii) there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes

iii) there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes

C) The ecological community exists only as highly modified occurrences which may be capable of being rehabilitated if such work begins in the short term future (within approximately 10 years).

Vulnerable (VU)

An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction in the medium to long term future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C):

A) The ecological community exists largely as modified occurrences which are likely to be capable of being substantially restored or rehabilitated.

B) The ecological community can be modified or destroyed and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations.

C) The ecological community may still be widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes.

Source: Department of Environment and Conservation (2010). Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. Department of Environment and Conservation, Perth, WA. Online: www.naturebase.net/

Definitions of Priority Ecological Communities as listed DPaW

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

Priority One: Poorly known ecological communities

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

Priority Two: Poorly known ecological communities

Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.

Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:

(ii) Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;

(iii) Communities made up of large, and/or widespread occurrences that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

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

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened or that have been recently removed from the threatened list.

These communities require regular monitoring.

(a) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.

(b) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.

(c) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities.

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

Source: Department of Parks and Wildlife (2013). Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. Department of Environment and Conservation, Perth, WA. Online: www.naturebase.net/

APPENDIX C

Environmental Weeds and Declared Plant Categories

Criteria used for Ranking Environmental Weeds

The Weed Prioritisation Process for DPaW contains criteria for the assessment and ranking of weeds in terms of their environmental impact on biodiversity. These criteria are as follows:

- **Potential Distribution** – Area of potential habitat in the Region that could be occupied or the area at risk of invasion by the weed.
- **Current Distribution -** Area of habitat in the Region currently occupied by the weed, in relation to the habitat that it could invade.
- **Ecological Impact -** Impact of species within the Region, from low impact (causes minimal disruption to ecological processes or loss of biodiversity) to high (causes acute disruption of ecological processes, dominates and/or significantly alters vegetation structure, composition and function of ecosystems).
- **Invasiveness** – rate of spread of a weed in native vegetative, encompassing factors of establishment, reproduction and long distance dispersal (>100m).
- **Feasibility of Control** - The longer a coordinated control program takes to achieve its desired goal, the more expensive and less feasible it becomes. Is it feasible to eradicate or at least contain the infestation?

Source: DPaW (2013). Weed Prioritisation Process for DPaW (formerly DEC) – "An integrated approach to Weed Management on DPaW-managed lands in WA"

Standard Meanings of Declared Plant Categories

Under the Biosecurity and Agriculture Management Act 2007 (the BAM Act), all declared pests are placed in one of three categories, namely C1 (exclusion), C2 (eradication) or C3 (management).

C1 category (Exclusion) - Pests will be assigned to this category if they are not established in WA and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.

C2 category (Eradication) – Pests will be assigned to this category if they are present in WA in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.

C3 category (Management) – Pests will be assigned to this category if they are established in WA but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

Source: Department of Agriculture and Food, WA. Online: http://www.biosecurity.wa.gov.au/western-australian-organism-list-waol

APPENDIX D

Vegetation Condition Scale

CONDITION SCALE CODE	CONDITION SCALE
P	**Pristine (1)** Pristine or nearly so, no obvious signs of disturbance
E	**Excellent (2)** Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
VG	**Very Good (3)** Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
G	**Good (4)** Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
D	**Degraded (5)** Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
CD	**Completely Degraded (6)** The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Source: Bush Forever Vegetation Condition Scale as developed by Keighery (1994) and summarized in Bush Forever (Government of WA (2000b)

APPENDIX E

Flora Inventory

Family	Name
Aizoaceae	**Carpobrotus edulis*
Anarthriaceae	*Lyginia barbata*
	Lyginia imberbis
Apiaceae	*Actinotus glomeratus*
Araceae	**Zantedeschia aethiopica*
Araliaceae	*Trachymene pilosa*
Asparagaceae	**Asparagus asparagoides*
	Chamaescilla corymbosa
	Laxmannia squarrosa
	Lomandra caespitosa
	Lomandra hermaphrodita
	Lomandra micrantha subsp. *micrantha*
	Lomandra suaveolens
	Thysanotus manglesianus
	Thysanotus patersonii
Asteraceae	**Arctotheca calendula*
	**Cotula coronopifolia*
	**Hypochaeris glabra*
	Lagenifera huegelii
	Quinetia urvillei
	Siloxerus humifusus
	**Sonchus oleraceus*
	**Ursinia anthemoides*
	Waitzia suaveolens var. *suaveolens*
	Asteraceae sp.
Campanulaceae	*Lobelia alata*
	Lobelia anceps
	Wahlenbergia sp.
Casuarinaceae	*Allocasuarina fraseriana*
Colchicaceae	*Burchardia congesta*
Crassulaceae	*Crassula closiana*
	Crassula colorata var. *colorata*
	**Crassula natans* var. *minus*
Cupressaceae	*Callitris preissii*
Cyperaceae	*Baumea articulata*
	Cyathochaeta avenacea
	**Cyperus tenellus*
	Lepidosperma ? longitudinale
	Lepidosperma longitudinale
	Lepidosperma sp.
	Lepidosperma squamatum

Family	Name
	Lepidosperma squamatum
	Schoenus efoliatus
Dasypogonaceae	*Dasypogon bromeliifolius*
Dilleniaceae	*Hibbertia hypericoides*
	Hibbertia racemosa
	Hibbertia subvaginata
Droseraceae	*Drosera erythrorhiza*
	Drosera macrantha subsp. *macrantha*
	Drosera pulchella
	Drosera glanduligera
Ericaceae	*Leucopogon* aff. *conostephioides*
	Leucopogon conostephioides
Euphorbiaceae	**Euphorbia terracina*
Fabaceae	**Acacia iteaphylla*
	**Acacia longifolia*
	Acacia pulchella var. *glaberrima*
	Acacia stenoptera
	Aotus sp.
	Bossiaea eriocarpa
	Daviesia triflora
	Eutaxia virgata
	Gompholobium tomentosum
	Hovea pungens
	Jacksonia furcellata
	Kennedia prostrata
	Pultenaea ochreata
	Pultenaea reticulata
	**Trifolium* sp.
Geraniaceae	**Pelargonium capitatum*
Goodeniaceae	*Dampiera linearis*
Haemodoraceae	*Anigozanthos humilis*
	Anigozanthos manglesii
	Conostylis aculeata subsp. *aculeata*
	Conostylis juncea
	Phlebocarya ciliata
Haloragaceae	*Glischrocaryon angustifolium*
Iridaceae	**Gladiolus caryophyllaceus*
	Patersonia occidentalis var. *occidentalis*
	**Romulea rosea* var. *australis*
Juncaceae	**Juncus capitatus*
	Juncus pallidus

Family	Name
	Juncus planifolius
Lamiaceae	*Hemiandra pungens*
Lauraceae	*Cassytha racemosa*
	Cassytha sp.
Loganiaceae	*Phyllangium divergens*
Loranthaceae	*Nuytsia floribunda*
Menyanthaceae	*Liparophyllum* sp.
Molluginaceae	*Macarthuria australis*
Myrtaceae	*Astartea scoparia*
	Calothamnus lateralis var. *lateralis*
	Calytrix fraseri
	Chamelaucium uncinatum
	Eucalyptus camaldulensis
	Eucalyptus marginata
	Eucalyptus rudis
	Eucalyptus todtiana
	Hypocalymma angustifolium
	Hypocalymma robustum
	Kunzea glabrescens
	Melaleuca lateritia
	Melaleuca preissiana
	Melaleuca rhaphiophylla
	Melaleuca teretifolia
	Melaleuca thymoides
	Pericalymma ellipticum var. *ellipticum*
	Scholtzia involucrata
Orchidaceae	*Caladenia discoidea*
	Caladenia flava subsp. *flava*
	Caladenia latifolia
	Diuris corymbosa
	Diuris laxiflora
	Diuris sp.
	Pterostylis recurva
	Pterostylis sanguinea
	Pterostylis sp. crinkled leaf (G.J. Keighery 13426)
	Pterostylis sp. short sepals (W. Jackson BJ259)
	Pterostylis vittata
	Thelymitra sp.
	Orchidaceae sp.
Papaveraceae	**Fumaria capreolata*
Phyllanthaceae	*Poranthera microphylla*

Family	Name
Poaceae	*Amphipogon turbinatus*
	**Avena barbata*
	**Briza maxima*
	**Ehrharta calycina*
	**Ehrharta longiflora*
	**Eragrostis curvula*
	Neurachne alopecuroidea
	**Vulpia bromoides*
	Poaceae sp.
Primulaceae	**Lysimachia arvensis*
Proteaceae	*Adenanthos cygnorum* subsp. *cygnorum*
	Banksia attenuata
	Banksia ilicifolia
	Banksia menziesii
	Banksia prionotes
	Hakea varia
	Persoonia saccata
	Petrophile linearis
	Stirlingia latifolia
	Xylomelum occidentale
Restionaceae	*Desmocladus flexuosus*
	Dielsia stenostachya
	Hypolaena exsulca
	Meeboldina coangustata
	Meeboldina scariosa
Rubiaceae	**Galium murale*
	Opercularia vaginata
Rutaceae	*Boronia crenulata*
	Philotheca spicata
Santalaceae	*Leptomeria pauciflora*
Stylidiaceae	*Stylidium brunonianum*
	Stylidium piliferum
	Stylidium repens
Violaceae	*Hybanthus calycinus*
Xanthorrhoeaceae	*Xanthorrhoea preissii*
Zamiaceae	*Macrozamia riedlei*

APPENDIX F

Flora Survey Area Data Sheets

Site BJQ01

Described by HA
Date 16/09/2015
Type Quadrat 10 X 10m
MGA Zone 50 393363 **mE** 6441026 **mN**
Habitat Top dune
Soil Grey sands
Vegetation Low woodland of Banksia attenuata, Banksia menziesii, Allocasuarina fraseriana and Eucalyptus marginata over mixed low shrubs over Conostylis aculeata subsp. aculeata and Dasypogon bromeliifolius with Desmocladus flexuosus with Stylidium repens.
Veg Condition Excellent - Very Good
Fire Age Old (8-12)
Notes Aspect: North
Disturbance: Weeds, Clearing
Ground Cover: 2% Bareground, 1% Logs, 1% Twigs, 45% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia pulchella var. glaberrima	1.5	50	BJ01-02
Acacia stenoptera	+	30	BJ01-23
Allocasuarina fraseriana	4	400	nc
Amphipogon turbinatus	+	15	BJ01-11
Anigozanthos manglesii	+	50	nc
Banksia attenuata	17	600	nc
Banksia menziesii	4	500	nc
Bossiaea eriocarpa	1	40	BJ01-06
Briza maxima	+	10	nc
Burchardia congesta	+	50	nc
Caladenia discoidea	+	20	BJHA02
Caladenia flava subsp. flava	+	20	nc
Chamaescilla corymbosa	+	20	BJ01-X1
Conostylis aculeata subsp. aculeata	3	30	BJ01-10
Conostylis juncea	1	50	BJ01-04
Dampiera linearis	+	20	BJ01-09
Dasypogon bromeliifolius	2	40	nc
Desmocladus flexuosus	8	20	BJ01-07
Drosera erythrorhiza	+	1	nc
Drosera macrantha subsp. macrantha	+	<1	BJ01-28
Ehrharta calycina	+	40	nc
Eucalyptus marginata	3	350	nc
Gladiolus caryophyllaceus	+	50	nc
Gompholobium tomentosum	+	40	BJ01-08
Hibbertia hypericoides	2	50	nc
Hibbertia racemosa	1.5	30	BJ01-19
Hypocalymma robustum	3	50	BJ01-03
Hypochaeris glabra	+	1	nc
Kennedia prostrata	+		nc
Kunzea glabrescens	2	50-200	BJ01-01
Lagenifera huegelii	+	40	BJ01-14
Laxmannia squarrosa	+	20	BJ01-24
Lepidosperma squamatum	+	50	BJ01-13
Leucopogon conostephioides	1	20	BJ01-16
Lomandra hermaphrodita	+	20	BJ01-22
Lomandra micrantha subsp. micrantha	+	30	BJ01-27
Lomandra suaveolens	+	10	BJ01-25
Lyginia barbata	1	50	BJ01-17
Macrozamia riedlei	+	50	nc
Opercularia vaginata	+	20	BJ01-12
Patersonia occidentalis var. occidentalis	1	30	nc
Petrophile linearis	+	30	nc
Philotheca spicata	1	60	BJ01-05
Pterostylis sanguinea	+	20	BJ01-26
Stirlingia latifolia	+	70	nc
Stylidium brunonianum	+	20	BJ01-21
Stylidium piliferum	+	30	BJ01-15
Stylidium repens	3	10	nc
Thysanotus patersonii	+	<1	BJ01-18
Trachymene pilosa	+	10	BJ01-20
Ursinia anthemoides	+	10	nc

Site BJQ02

Described by NW
Date 15/09/2015
Type Q 10 x 10m
MGA Zone 50 393578 **mE** 6441144 **mN**
Habitat Wetland
Soil Brown loam peat
Vegetation Closed woodland of *Melaleuca rhaphiophylla* over *Baumea articulata*
Veg Condition Excellent
Fire Age Very Old (>12)
Notes Aspect: N/A
Disturbance: -
Ground Cover: 41% Bareground, 4% Logs, 8% Twigs, 85% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	1.5	200	nc
Baumea articulata	70	150	nc
Lepidosperma longitudinale	2	45	nc
Melaleuca rhaphiophylla	85	800	nc
Pterostylis sp. short sepals (W. Jackson BJ259)	+	10	BJQ2-1

Site BJQ03

Described by HA
Date 15/09/2015
Type Q 10 x 10m
MGA Zone 50 393591 **mE** 6441015 **mN**
Habitat Wetland
Soil dark brown peaty soils
Vegetation *Melaleuca rhaphiophylla* low forest with very open tussock grassland of **Ehrharta longiflora* with very open herbland of **Cotula coronopifolia*
Veg Condition Very Good - Good
Fire Age Old (8-12)
Notes Aspect: North
Disturbance: Weeds, Clearing
Ground Cover: 5% Bareground, 2% Logs, 3% Twigs, 85% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	+	40	nc
Carpobrotus edulis	1	Pr	nc
Cotula coronopifolia	4	10	BJ03-01
Crassula natans var. *minus*	+	1	BJ03-05
Ehrharta longiflora	3	30	nc
Fumaria capreolata	+		nc
Hypochaeris glabra	+	1	nc
Juncus planifolius	+	100	BJ03-03
Melaleuca rhaphiophylla	65	350-700	nc
Sonchus oleraceus	+	10	nc
Trifolium sp.	+	5	BJ03-04
Vulpia bromoides	+	10	BJ03-02
Zantedeschia aethiopica	+	30	nc

Site BJQ04

Described by NW
Date 15/09/2015
Type Q 10x10m
MGA Zone 50 393559 **mE** 6441114 **mN**
Habitat Wetland
Soil peat
Vegetation Surface water, dense saplings of *Melaleuca rhaphiophylla*
Veg Condition Excellent
Fire Age Old (8-12)
Notes Aspect: N/A
Disturbance:
Ground Cover: -% Bareground, -% Logs, -% Twigs, -% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Melaleuca rhaphiophylla	95	400	nc

Site BJQ05

Described by HA
Date 15/09/2015
Type Q 10 x 10m
MGA Zone 50 393806 **mE** 6440996 **mN**
Habitat Wetland/Dampland
Soil dark brown peat and grey sands
Vegetation Low scattered trees of *Melaleuca preissiana* and Melaleuca rhaphiophylla over tall open scrub of *Kunzea glabrescens* and *Astartea scoparia* over *Hypocalymma angustifolium* and *Acacia pulchella* var. *glaberrima* shrubland with scattered sedges of *Lepidosperma longitudinale*
Veg Condition Excellent - Very Good
Fire Age Old (>12)
Notes Aspect: North
Disturbance: Weeds, Clearing
Ground Cover: 90% Bareground, <1% Logs, 1% Twigs, 7% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	+	150	nc
Acacia pulchella var. *glaberrima*	5	180-200	BJ05-08
Aotus sp.	+	100	BJ05-03
Astartea scoparia	25	200-250	BJ05-04
Cassytha racemosa	+	<1	BJ05-05
Hypocalymma angustifolium	15	180	BJ05-01
Hypochaeris glabra	+	1	nc
Kunzea glabrescens	25	300	nc
Lepidosperma longitudinale	1	100	BJ05-10
Meeboldina scariosa	+	180	BJ05-02
Melaleuca lateritia	+	100	BJ05-07
Melaleuca preissiana	0.5	600	nc
Melaleuca rhaphiophylla	0.5	600	nc
Melaleuca teretifolia	+	150	BJ05-06
Orchidaceae sp.	+	2	BJ05-11
Pterostylis recurva	+	40	BJ05-09
Pterostylis sp. crinkled leaf (G.J. Keighery 13426)	+	20	BJHA-08

Site BJQ06

Described by NW
Date 15/09/2015
Type Q 10x10m
MGA Zone 50 393704 **mE** 6441178 **mN**
Habitat Flat
Soil grey/black loamy sand
Vegetation Dense shrubland of *Melaleuca teretifolia* and *Melaleuca rhaphiophylla* over sedges
Veg Condition Excellent
Fire Age Old (8-12)
Notes Aspect: North
Disturbance: Weeds, Clearing
Ground Cover: 4% Bareground, 0% Logs, 2% Twigs, 3% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	2	240	nc
Acacia pulchella var. *glaberrima*	1	130	nc
Briza maxima	2	35	nc
Cassytha racemosa	35	+	BJQ6-4
Crassula closiana	+	1	BJQ6-7
Galium murale	+	3	BJQ6-6
Galium murale	+	3	BJQ6-5
Hypochaeris glabra	5	1	nc
Juncus capitatus	+	2	BJQ6-8
Juncus pallidus	+	120	nc
Lepidosperma longitudinale	25	60	nc
Lysimachia arvensis	+	5	nc
Meeboldina coangustata	4	10	BJQ6-3
Melaleuca rhaphiophylla	55	170	BJQ6-2
Melaleuca teretifolia	8	90	BJQ6-1
Zantedeschia aethiopica	+	15	nc

Site BJQ07

Described by HA
Date 15/09/2015
Type Q 10 x 10m
MGA Zone 50 393499 **mE** 6441274 **mN**
Habitat Lower slope above wetland
Soil Grey sands
Vegetation *Allocasuarina fraseriana* and *Eucalyptus marginata* and *Banksia ilicifolia* over *Xanthorrhoea preissii* open heath over *Dasypogon bromeliifolius*, *Phlebocarya ciliata* and *Gompholobium tomentosum* over very open herbland of *Stylidium repens* and *Ursinia anthemoides*
Veg Condition Very Good
Fire Age Very Old (>12)
Notes Aspect: NA
Disturbance: Some tracks, weeds, historic clearing
Ground Cover: 1% Bareground, <1% Logs, <1% Twigs, 60% Leaves

SPECIES LIST:

Name	Cover	C Class	Height	Specimen Notes
Allocasuarina fraseriana	8		1000	nc
Banksia ilicifolia	2		600	nc
Bossiaea eriocarpa	+		30	BJ01-06
Briza maxima	+		20	nc
Chamaescilla corymbosa	+		10	BJ01-X1
Conostylis juncea	+		20	BJ07-04
Crassula colorata var. *colorata*	+		1	BJ07-07
Dasypogon bromeliifolius	15		30	nc
Drosera erythrorhiza	+		1	nc
Ehrharta longiflora	+		30	nc
Eucalyptus marginata	4		1000	nc
Gladiolus caryophyllaceus	+		20	nc
Gompholobium tomentosum	1		30	BJ01-08
Hypochaeris glabra	+		1	nc
Hypolaena exsulca	+		30	BJ07-06
Jacksonia furcellata	+		120	nc
Laxmannia squarrosa	+		20	BJ01-24
Lepidosperma sp.	+		30	BJ07-05
Phlebocarya ciliata	3		30	BJ07-03
Phyllangium divergens	+		10	BJ07-01
Pterostylis sanguinea	+		20	BJ01-26
Stylidium piliferum	+		10	BJ01-15
Stylidium repens	1		5	nc
Trachymene pilosa	+		10	BJ01-20
Ursinia anthemoides	1		10	nc
Wahlenbergia sp.	+		10	BJ07-02
Xanthorrhoea preissii	38		120	nc

Site BJQ08

Described by NW
Date 15/09/2015
Type Q 10x10m
MGA Zone 50 393892 **mE** 6441127 **mN**
Habitat flat wetland plain
Soil blank sand with a little silt
Vegetation Heath of *Hypocalymma angustifolium*
Veg Condition Excellent
Fire Age Old (8-12)
Notes Aspect: NA
Disturbance: ? historic clearing
Ground Cover: 7% Bareground, 0% Logs, 1% Twigs, 1% Leaves

SPECIES LIST:

Name	Cover	C Class	Height	Specimen Notes
Acacia pulchella var. *glaberrima*	1		120	nc
Caladenia flava subsp. *flava*	+		15	nc
Cassytha racemosa	4		+	BJQ6.04
Dielsia stenostachya	7		20	BJR04.02
Gladiolus caryophyllaceus	+		60	nc
Hypocalymma angustifolium	90		110	nc
Hypochaeris glabra	+		1	nc
Kunzea glabrescens	1		170	nc
Siloxerus humifusus	+		2	nc
Trachymene pilosa	+		3	nc
Ursinia anthemoides	+		10	nc

Site BJQ09

Described by HA
Date 15/09/2015
Type Q 10x10m
MGA Zone 50 393615 **mE** 6441358 **mN**
Habitat Wetland
Soil dark grey sands and peat
Vegetation *Melaleuca rhaphiophylla* tall open shrubland over *Acacia longifolia* over scattered shrubs of *Melaleuca lateritia* over *Lepidosperma longitudinale*, *Meeboldina coangustata* and *Juncus pallidus* sedgeland over open herbland of *Zantedeschia aethiopica* over scattered grasses of *Ehrharta longiflora*
Veg Condition Very Good
Fire Age Very Old (>12)
Notes Aspect: NA
Disturbance: Some tracks, weeds, historic clearing
Ground Cover: 20% Bareground, 1% Logs, 5% Twigs, 45% Leaves

SPECIES LIST:

Name	Cover	C Class	Height	Specimen Notes
Acacia longifolia	10		400	nc
Asparagus asparagoides	+		C1	nc
Astartea scoparia	+		180	BJ05.04
Briza maxima	+		20	nc
Cassytha sp.	+		C1	nc
Chamaescilla corymbosa	+		10	BJ01.X1
Ehrharta longiflora	1		30	nc
Galium murale	+		2	BJ09.05
Gladiolus caryophyllaceus	+		60	nc
Hypochaeris glabra	+		1	nc
Juncus pallidus	1		100	BJ03.03
Lepidosperma longitudinale	25		100	BJ09.03
Liparophyllum sp.	+		10	BJ09.07
Lobelia alata	+		10	BJ09.06
Meeboldina coangustata	8		100	BJ09.02
Melaleuca lateritia	1		120	BJ05.07
Melaleuca rhaphiophylla	1		500	nc
Melaleuca rhaphiophylla	20		300	BJ09.01
Pelargonium capitatum	+		30	BJ09.04
Sonchus oleraceus	+		10	nc
Trachymene pilosa	+		10	BJ01.20
Trifolium sp.	+		10	BJ03.04
Zantedeschia aethiopica	3		50	nc

Site BJQ10

Described by NW
Date 15/09/2015
Type Q 10x10m
MGA Zone 50 393374 **mE** 6441490 **mN**
Habitat Plain
Soil grey sand - some loam
Vegetation Woodland of *Banksia ilicifolia*, *Banksia attenuata* over *Kunzea glabrescens*, *Xanthorrhoea preissii*, *Dasypogon bromeliifolius*
Veg Condition Very Good to Excellent
Fire Age Old (8-12)
Notes Aspect: NA
Disturbance: Some weeds
Ground Cover: 2% Bareground, 0% Logs, 4% Twigs, 15% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	+	120	nc
Allocasuarina fraseriana	+	35	nc
Banksia attenuata	5	700	nc
Banksia ilicifolia	12	1100	nc
Bossiaea eriocarpa	+	40	nc
Briza maxima	4	15	nc
Burchardia congesta	+	50	nc
Caladenia flava subsp. *flava*	+	15	nc
Chamaescilla corymbosa	+	1	nc
Conostylis juncea	+	15	nc
Dasypogon bromeliifolius	15	40	nc
Desmocladus flexuosus	50	25	BJQ10.01
Drosera erythrorhiza	1	1	nc
Gompholobium tomentosum	1.5	40	nc
Hemiandra pungens	+	15	BJQ10.05
Hibbertia subvaginata	+	20	nc
Hypolaena exsulca	+	30	BJQ10.03
Kunzea glabrescens	55	600	nc
Leucopogon aff. *conostephioides*	+	35	BJQ10.04
Philotheca spicata	+	15	nc
Phlebocarya ciliata	1	30	nc
Pterostylis recurva	+	70	BJQ10.02
Stylidium brunonianum	+	45	nc
Stylidium piliferum	+	15	nc
Stylidium repens	+	3	nc
Thelymitra sp.	+	25	nc
Thysanotus manglesianus	+	C	nc
Xanthorrhoea preissii	4	110	nc
Zantedeschia aethiopica	1	45	nc

Site BJQ11

Described by HA
Date 16/09/2015
Type Q 10x10m
MGA Zone 50 393635 **mE** 6441466 **mN**
Habitat wetland
Soil dark grey sands and peat
Vegetation Low open forest of *Melaleuca rhaphiophylla* and *Acacia longifolia* over scattered shrubs of *Astartea scoparia* over *Lepidosperma ? longitudinale* and *Meeboldina coangustata* sedgeland over open herbland of *Zantedeschia aethiopica*
Veg Condition Very Good
Fire Age Very Old (>12)
Notes Aspect: NA
Disturbance: Some tracks, weeds, historic clearing
Ground Cover: 1% Bareground, <1% Logs, <1% Twigs, 30% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	5	300	nc
Acacia pulchella var. *glaberrima*	+	70	BJ05.08
Asparagus asparagoides	ASS		nc
Astartea scoparia	2	180	BJ05.04
Briza maxima	+	10	nc
Cassytha racemosa	+	C1	BJ11.03
Eutaxia virgata	+	50	BJ11.05
Galium murale	+	10	BJ11.07
Hypocalymma angustifolium	+	80	BJ05.01
Hypochaeris glabra	+	1	nc
Lepidosperma ? longitudinale	40	120	BJ11.02
Lobelia anceps	+	10	BJ11.04
Lysimachia arvensis	+	30	BJ11.06
Meeboldina coangustata	20	120	BJ11.01
Melaleuca lateritia	+	60	BJ05.07
Melaleuca preissiana	ASS		nc
Melaleuca rhaphiophylla	20	300	nc
Melaleuca rhaphiophylla	25	250	BJ09.01
Zantedeschia aethiopica	3	50	nc

Site BJQ12

Described by NW
Date 15/09/2015
Type Q 10x10
MGA Zone 50 393470 **mE** 6441426 **mN**
Habitat Mid slope
Soil grey sand
Vegetation Woodland of *Banksia menziesii*, *Banksia attenuata*, *Nuytsia floribunda* over *Stirlingia latifolia*, *Calytrix fraseri*, *Jacksonia furcellata*, *Adenanthos cygnorum* subsp. *cygnorum* & grass weeds
Veg Condition Good
Fire Age Moderate (4-8)
Notes Aspect: NA
Disturbance: Weeds, Banksia death
Ground Cover: 6% Bareground, 1.5% Logs, 4% Twigs, 3% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Adenanthos cygnorum subsp. *cygnorum*	6	400	nc
Allocasuarina fraseriana	1.5	400	nc
Anigozanthos manglesii	1	80	nc
Banksia attenuata	5	700	nc
Banksia menziesii	6	500	nc
Bossiaea eriocarpa	40	+	nc
Briza maxima	3	20	nc
Burchardia congesta	+	40	nc
Caladenia flava subsp. *flava*	+	15	nc
Calytrix fraseri	8	150	nc
Conostylis aculeata subsp. aculeata	+	30	nc
Crassula colorata var. colorata	+	2	BJQ12.03
Dasypogon bromeliifolius	2	45	nc
Desmocladus flexuosus	3	15	BJQ10.01
Diuris corymbosa	+	30	OPPNW01
Drosera erythrorhiza	+	1	nc
Ehrharta calycina	20	80	nc
Gladiolus caryophyllaceus	+	60	nc
Gompholobium tomentosum	1	45	nc
Hibbertia subvaginata	1	30	nc
Hypochaeris glabra	4	1	nc
Hypolaena exsulca	+	35	nc
Jacksonia furcellata	1	130	nc
Kunzea glabrescens	2	300	nc
Lomandra caespitosa	+	25	BJQ12.04
Lyginia imberbis	1	40	nc
Neurachne alopecuroidea	+	25	nc
Nuytsia floribunda	6	600	nc
Pterostylis vittata	+	35	BJQ12.05
Quinetia urvillei	+	4	BJQ12.01
Scholtzia involucrata	1	30	nc
Sonchus oleraceus	+	25	nc
Stirlingia latifolia	4	120	nc
Stylidium brunonianum	+	30	nc
Thysanotus manglesianus	+	C	nc
Trachymene pilosa	+	3	nc
Ursinia anthemoides	+	10	nc
Vulpia bromoides	+	3	BJQ12.02
Zantedeschia aethiopica	1.5	80	nc

Site BJQ13

Described by HA
Date 16/09/2015
Type Q 10x10m
MGA Zone 50 393733 **mE** 6441353 **mN**
Habitat dampland/wetland
Soil dark grey sands with peat
Vegetation Low woodland of *Melaleuca preissiana* over *Kunzea glabrescens*, *Acacia longifolia* and *Hakea varia* tall scrub over mixed shrubs over *Meeboldina coangustata* sedgeland
Veg Condition Very Good to Excellent
Fire Age Very Old (>12)
Notes Aspect: NA
Disturbance: Weeds
Ground Cover: 3% Bareground, <1% Logs, 5% Twigs, 40% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	12	350	nc
Acacia pulchella var. *glaberrima*	1	120	BJ05.08
Astartea scoparia	2	150	BJ05.04
Briza maxima	+	20	nc
Caladenia flava subsp. *flava*	+	10	nc
Calothamnus lateralis var. *lateralis*	2	210	BJ13.01
Cassytha racemosa	+	C1	BJ11.03
Ehrharta calycina	+	100	nc
Hakea varia	3	310	BJ13.02
Hypochaeris glabra	+	1	nc
Kunzea glabrescens	12	350	nc
Lepidosperma longitudinale	2	90	BJ11.02
Liparophyllum sp.	+	10	BJ09.07
Meeboldina coangustata	40	130	BJ11.01
Melaleuca lateritia	+	120	BJ05.07
Melaleuca preissiana	10	800-600	nc
Melaleuca rhaphiophylla	+	190	BJ09.01
Melaleuca teretifolia	+	180	BJ13.05
Pericalymma ellipticum var. *ellipticum*	2	120	BJ13.03
Poaceae sp.	+	10	BJ13.04
Trachymene pilosa	+	1	BJ01.20
Zantedeschia aethiopica	+	10	nc

Site BJQ14

Described by HA
Date 16/09/2015
Type Q 10x10m
MGA Zone 50 393801 **mE** 6441483 **mN**
Habitat dampland
Soil grey sands and some peat
Vegetation Low scattered trees of *Melaleuca preissiana* over scattered *Kunzea glabrescens* over low open health of *Hypocalymma angustifolium* and *Boronia crenulata* over *Dielsia stenostachya, Schoenus efoliatus* and *Dasypogon bromeliifolius* sedgeland or scattered *Hypochaeris glabra* & *Ursinia anthemoides* herbs

Veg Condition Excellent (Very Good in surrounding area)
Fire Age Old (8-12)
Notes Aspect: NA
Disturbance: Minor weeds, historic clearing
Ground Cover: 3% Bareground,<1% Logs, +% Twigs, 2% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia pulchella var. *glaberrima*	+	60	nc
Actinotus glomeratus	0.5	15	BJ15.02
Asteraceae sp.	+	1	BJ15.06
Boronia crenulata	7	70	BJ15.01
Briza maxima	+	20	nc
Carpobrotus edulis	+	10	nc
Cassytha racemosa	+	Cl	BJ15.10
Crassula colorata var. *colorata*	+	1	BJ15.05
Cyperus tenellus	+	10	BJ15.07
Dasypogon bromeliifolius	2	40	nc
Dielsia stenostachya	28	30	BJR5.01
Drosera pulchella	+	1	BJ15.03
Ehrharta calycina	+	30	nc
Gladiolus caryophyllaceus	+	60	nc
Hypocalymma angustifolium	45	70	BJ05.01
Hypochaeris glabra	0.5	1	nc
Kunzea glabrescens	2	180	nc
Melaleuca preissiana	1.5	300	nc
Phyllangium divergens	+	8	BJ15.09
Poranthera microphylla	+	10	BJ15.11
Pultenaea reticulata	+	60	BJ15.08
Schoenus efoliatus	3	3	BJR3.01
Stylidium brunonianum	+	20	BJ15.04
Stylidium repens	+	10	nc
Ursinia anthemoides	0.5	20	nc
Xanthorrhoea preissii	1	100	nc

Site BJQ15

Described by HA
Date 16/09/2015
Type Q 10x10m
MGA Zone 50 393384 **mE** 6441099 **mN**
Habitat lower slope above wetland
Soil grey sands
Vegetation Low woodland of *Banksia ilicifolia* and *Eucalyptus marginata* over tall shrubland of *Kunzea glabrescens* over scattered *Leucopogon conostephioides* and *Scholtzia involucrata* over *Desmocladus flexuosus*, *Conostylis aculeata* subsp. *aculeata*, *Dasypogon bromeliifolius* and *Phlebocarya ciliata* over very open herb land of *Carpobrotus edulis* and *Stylidium repens* over *Briza maxima* and *Ehrharta calycina* grasses

Veg Condition Good
Fire Age Old (8-12)
Notes Aspect: East
Disturbance: Some tracks, weeds, historic clearing
Ground Cover: 5% Bareground, <1% Logs, 1% Twigs, 70% Leaves

SPECIES LIST:

Name	Cover	C Class	Height	Specimen Notes
Allocasuarina fraseriana	+		120	nc
Anigozanthos humilis	+		100	nc
Banksia ilicifolia	8		700	nc
Banksia menziesii	+		100	nc
Bossiaea eriocarpa	+		30	BJ01.06
Briza maxima	3		20	nc
Burchardia congesta	+		50	nc
Caladenia flava subsp. *flava*	+		20	nc
Carpobrotus edulis	2		Pr	nc
Conostylis aculeata subsp. *aculeata*	2		30	BJ01.10
Conostylis juncea	+		20	BJR01.03
Crassula colorata var. *colorata*	+		1	BJ17.06
Dampiera linearis	+		10	BJ01.09
Dasypogon bromeliifolius	1		30	nc
Desmocladus flexuosus	20		10	BJ01.07
Drosera erythrorhiza	+		1	nc
Ehrharta calycina	1		100	nc
Eucalyptus marginata	2		500	nc
Gladiolus caryophyllaceus	+		50	nc
Gompholobium tomentosum	+		100	BJ01.08
Hovea pungens	ASS			BJ17.X1
Hypochaeris glabra	+		1	nc
Jacksonia furcellata	1		180	nc
Kennedia prostrata	+		Pr	nc
Kunzea glabrescens	28		300	BJ01.01
Lepidosperma sp.	+		10	BJ17.04
Lepidosperma squamatum	+		30	BJ17.02
Lepidosperma squamatum	+		30	BJ17.03
Leucopogon conostephioides	1		30	BJ17.05
Lyginia imberbis	+		30	nc
Melaleuca thymoides	+		180	BJ07.X1
Nuytsia floribunda	ASS			nc
Philotheca spicata	+		40	BJ01.01
Phlebocarya ciliata	3		30	BJ17.01
Scholtzia involucrata	1		30	nc
Stylidium repens	2		20	nc
Thysanotus patersonii	+		Cl	BJ01.01
Trachymene pilosa	+		10	BJ01.20
Ursinia anthemoides	+		30	nc
Xanthorrhoea preissii	ASS			nc

Site BJR1

Described by HA
Date 15/09/2015
Type R
MGA Zone 50 393350 **mE** 6441256 **mN**
Habitat Hill top / sand dune-
Soil Grey sands
Vegetation Low woodland of *Banksia menziesii*, *B. attenuata* & *Allocasuarina fraseriana* over tall open shrubland of *Adenanthos cygnorum* subsp. *cygnorum* over low open shrubland of *Leucopogon conostephioides* and *Stirlingia latifolia* over *Briza maxima*
Veg Condition Good
Fire Age 8-12
Notes Disturbance: Weeds
Ground Cover: 4% Bareground, 1% Logs, 2% Twigs, 70% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Adenanthos cygnorum subsp. *cygnorum*	3	210	nc
Allocasuarina fraseriana	4	800	nc
Anigozanthos manglesii	+	100	nc
Banksia attenuata	5	600	nc
Banksia menziesii	18	800	nc
Bossiaea eriocarpa	+	30	Q1-6
Briza maxima	9	20	nc
Burchardia congesta	+	50	nc
Caladenia flava subsp. *flava*	+	10	nc
Conostylis aculeata subsp. *aculeata*	1.0	30	21-10
Conostylis juncea	+	20	R1-3
Dasypogon bromeliifolius	2	30	nc
Drosera erythrorhiza	1	1	nc
Ehrharta longiflora	+	30	nc
Gompholobium tomentosum	+	50	21-8
Hibbertia hypericoides	+	50	nc
Hypochaeris glabra	+	1	nc
Kunzea glabrescens	+	Cl	R1-1
Kunzea glabrescens	1	180	nc
Leucopogon conostephioides	2	30	R1-2
Petrophile linearis	+	30	nc
Stirlingia latifolia	2	50	nc
Stylidium brunonianum	+	30	Q1-21
Stylidium repens	+	20	nc
Thysanotus patersonii	+	Cl	BJR01.07
Ursinia anthemoides	2	30	nc
Zantedeschia aethiopica	+	30	nc

Site BJR2

Described by NW
Date 15/09/2015
Type R
MGA Zone 50 393467 **mE** 6441104 **mN**
Habitat Wetland - with water
Soil Brown Loam
Vegetation Low closed forest of *Melaleuca rhaphiophylla* over water
Veg Condition Excellent
Fire Age Very Old (>12)
Notes Disturbance:
Ground Cover: 3% Bareground, 4% Logs, 6% Twigs, 85% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	1.5	450	
Baumea articulata	3	200	
Hypochaeris glabra	+	1	
Lepidosperma longitudinale	3	60	
Melaleuca rhaphiophylla	90	600	

Site BJR3

Described by HA
Date 16/09/2015
Type R
MGA Zone 50 393674 **mE** 6441453 **mN**
Habitat Dampland
Soil
Vegetation Low open woodland of *Melaleuca preissiana* over tall open shrubland of *Kunzea glabrescens* over low open heath of *Hypocalymma angustifolium* and *Acacia pulchella* var. *glaberrima* over *Hypolaena exsulca* and *Schoenus efoliatus*
Veg Condition Good
Fire Age >12
Notes Disturbance: Weeds, Clearing
Ground Cover: 30%Bareground, 1% Logs, 2% Twigs, 20% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	+	200-300	nc
Acacia pulchella var. *glaberrima*	2	50	BJQ05-8
Briza maxima	+	10	nc
Caladenia flava subsp. *flava*	+	10	nc
Dampiera linearis	+	10	BJR03.03
Ehrharta calycina	1	30	nc
Hypocalymma angustifolium	35	60	BJQ5-1
Hypochaeris glabra	1	1	nc
Hypolaena exsulca	10	20	BJR3-2
Kunzea glabrescens	4	200	BJQ1-1
Melaleuca preissiana	5	300-1000	nc
Schoenus efoliatus	1	30	BJR3-1
Ursinia anthemoides	3	20	nc
Xanthorrhoea preissii	+	100	nc

Site BJR4

Described by NW
Date 15/09/2015
Type R
MGA Zone 50 393596 **mE** 6441209 **mN**
Habitat Lower slope however higher edge of wetland
Soil Grey sands
Vegetation Open woodland of *Melaleuca preissiana* and *Eucalyptus rudis* over dense understorey of *Hypocalymma angustifolium*, *Xanthorrhoea preissii* and sedges
Veg Condition Excellent
Fire Age Old (8-12)
Notes Disturbance: Some weeds
Ground Cover: 0% Bareground, 0% Logs, 6% Twigs, 30% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia pulchella var. glaberrima	1	120	nc
Avena barbata	6	40	nc
Caladenia latifolia	+	30	nc
Carpobrotus edulis	1.5	15	nc
Chamaescilla corymbosa	3	5	nc
Cyathochaeta avenacea	3	100	BJR4-1
Dielsia stenostachya	5	25	BJR4-2
Eucalyptus rudis	5	1200	nc
Hypocalymma angustifolium	20	140	nc
Kunzea glabrescens	2	140	nc
Lepidosperma longitudinale	2	50	nc
Lepidosperma sp.	8	80	BJR4-3
Melaleuca preissiana	10	1100	nc
Xanthorrhoea preissii	8	130	nc

Site BJR5

Described by HA
Date 16/09/2015
Type R
MGA Zone 50 393808 **mE** 6441388 **mN**
Habitat Dampland
Soil Grey sands and peat
Vegetation Low open woodland of *Melaleuca preissiana* over tall shrubland of *Kunzea glabrescens* and *Acacia longifolia* over *Hypocalymma angustifolium* heath over *Dielsia stenostachya* sedgeland
Veg Condition Very Good
Fire Age Old (8-12)
Notes Disturbance: Some weeds
Ground Cover: 1% Bareground, <1% Logs, <1% Twigs, 5% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	0.5	300	nc
Acacia pulchella var. *glaberrima*	+	60	BJQ05.08
Astartea scoparia	+	180	BJQ05.04
Briza maxima	+	20	nc
Cassytha racemosa	+	Cl	BJQ11.03
Dielsia stenostachya	30	30	BJR05.01
Drosera pulchella	+	1	BJQ15.03
Glischrocaryon angustifolium	+	50	BJR05.03
Hypocalymma angustifolium	60	50	BJQ05.01
Kunzea glabrescens	12	150-250	nc
Melaleuca preissiana	5	300-800	nc
Ursinia anthemoides	+	20	nc
Xanthorrhoea preissii	1	100	nc

Site BJR6

Described by HA
Date 16/09/2015
Type R
MGA Zone 50 393661 **mE** 6440984 **mN**
Habitat Dampland / Wetland
Soil Grey sands and peat
Vegetation Scattered *Melaleuca preissiana* trees over *Kunzea glabrescens* and *Melaleuca rhaphiophylla* and *Acacia longifolia* tall shrubland over *Lepidosperma longitudinale* and *Meeboldina coangustata* sedgeland
Veg Condition Very Good
Fire Age Very Old (>12)
Notes Disturbance: Some weeds
Ground Cover: 5% Bareground, <1% Logs, <1% Twigs, 12% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	3	300	nc
Astartea scoparia	+	150	BJQ05.04
Carpobrotus edulis	+	Cr	nc
Cassytha racemosa	+	Cl	BJQ11.03
Hypocalymma angustifolium	5	90	BJQ05.01
Hypochaeris glabra	+	1	nc
Kunzea glabrescens	10	300	BJQ01.01
Lepidosperma longitudinale	38	100	BJQ11.02
Meeboldina coangustata	15	100	BJQ11.01
Melaleuca lateritia	+	100	BJQ05.07
Melaleuca preissiana	1	600	nc
Melaleuca rhaphiophylla	15	250	BJQ09.01
Pericalymma ellipticum var. *ellipticum*	+	120	BJQ13.03
Ursinia anthemoides	+	30	nc
Zantedeschia aethiopica	+	30	nc

Site BJR7

Described by HA
Date 16/09/2015
Type R
MGA Zone 50 394011 **mE** 6441140 **mN**
Habitat Dampland
Soil Grey sand and peat
Vegetation Scattered low trees of *Melaleuca preissiana* over scattered tall shrubs of *Acacia longifolia* and *Kunzea glabrescens* over *Hypocalymma angustifolium* low heath over *Dielsia stenostachya* and *Schoenus efoliatus* open sedgeland.
Veg Condition Very Good
Fire Age Old (8-12)
Notes Disturbance: Some weeds
Ground Cover: 5% Bareground, <1% Logs, <1% Twigs, 12% Leaves

SPECIES LIST:

Name	Cover	Height	Specimen Notes
Acacia longifolia	1	300	nc
Astartea scoparia	1	150	BJQ05.04
Briza maxima	+	20	nc
Dampiera linearis	+	10	BJR03.03
Dielsia stenostachya	10	30	BJR05.01
Glischrocaryon angustifolium	+	50	BJR05.03
Hypocalymma angustifolium	80	60	BJQ05.01
Hypochaeris glabra	+	1	nc
Kunzea glabrescens	1	250	BJQ01.01
Melaleuca preissiana	+	300	nc
Schoenus efoliatus	1	30	BJR03.01
Stylidium brunonianum	+		BJQ15.04

Banjup Beenyup Rd | Site BJOPPCOLL

Described by | Date | Type O

Season | Uniformity

Location

MGA Zone | mE | mN | E | S

Habitat

Soil

Rock Type

Vegetation

Veg Condition

Fire Age

Notes

SPECIES LIST:

Name	Cover	C Class	Height	Specimen	Notes
Acacia iteaphylla	-			nc	Acacia Iteaphylla
Adenanthos cygnorum subsp. cygnorum	-			nc	adenanthos cyg
Arctotheca calendula	-			nc	Arcotheca cal
Banksia prionotes	-			nc	Banksia prionotes
Caladenia discoidea	-			BJHA02	orchid
Caladenia flava subsp. flava	-			nc	Caladenia flava
Caladenia flava subsp. flava	-			nc	Caladenia flava
Caladenia latifolia	-			nc	Calandenia lati
Caladenia latifolia	-			nc	Caladenia lat
Callitris preissii	-			BJHA15	? Callitris
Chamelaucium uncinatum	-			BJHA16	Geraldton wax
Daviesia triflora	-			BJHA07	Daviesa physoides
Diuris corymbosa	-			OPPNW01	pale donkey orchid
Diuris corymbosa	-			BJHA21	Diuris large
Diuris corymbosa	-			OPPNW01	Pale donkey orchid
Diuris laxiflora	-			BJHA19	Diuris
Diuris sp.	-			BJHA01	diuris
Drosera glanduligera	-			BJHA11a	
Eragrostis curvula	-			nc	Eragrostis
Eucalyptus camaldulensis	-			BJHA14	Euc camlad
Eucalyptus todtiana	-			nc	Euc tod
Euphorbia terracina	-			BJHA12	Euphorbia terra
Hemiandra pungens	-			BJHA06	Hemiandra creeper
Hovea pungens	-			BJHA05	Hovea
Hybanthus calycinus	-			BJHA09	Hybanthus blue
Lepidosperma longitudinale	-			BJHA13	Lepidosperma longi
Leptomeria pauciflora	-			OPPNW03	Strange white flw stick
Macarthuria australis	-			BJHA03	Macarthuria aust
Persoonia saccata	-			BJHA04	Dunno
Pterostylis sp. crinkled leaf (G.J. Keighery 13426)	-			BJHA08	Snail orhicd
Pultenaea ochreata	-			BJHA11a	Pea wetland
Pultenaea reticulata	-			BJHA18	Pea
Romulea rosea var. australis	-			BJHA17	Romulea rosea
Trachymene pilosa	-			BJHA10	Trachymene oprnata
Waitzia suaveolens var. suaveolens	-			BJHA20	Waitzia
Xylomelum occidentale	-			nc	Xylomelum occi
Zantedeschia aethiopica	-			nc	Arum lily
Zantedeschia aethiopica	-			nc	Arum lily
Zantedeschia aethiopica	-			nc	Arum lily

APPENDIX G

Desktop Searches

Australian Government
Department of the Environment

EPBC Act Protected Matters Report

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

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

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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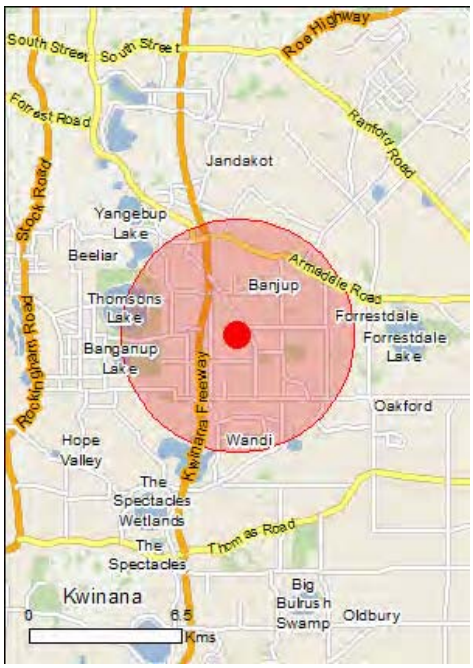

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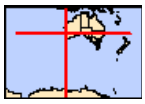

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	19
Listed Migratory Species:	18

Other Matters Protected by the EPBC Act

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

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

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

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

State and Territory Reserves:	6
Regional Forest Agreements:	None
Invasive Species:	44
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Forrestdale and thomsons lakes	Within Ramsar site
Peel-yalgorup system	30 - 40km upstream

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus baudinii Baudin's Black-Cockatoo, Long-billed Black-Cockatoo [769]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Insects		
Neopasiphae simplicior A native bee [66821]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir [25911]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Darwinia foetida Muchea Bell [83190]	Critically Endangered	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area
Drakaea elastica Glossy-leafed Hammer-orchid, Praying Virgin [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Gibbs Road	WA
Harry Waring Marsupial Reserve	WA
Thomsons Lake	WA
Unnamed WA48291	WA
Unnamed WA49561	WA
Wandi	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		

Name	Status	Type of Presence
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Gibbs Road Swamp System	WA
Thomsons Lake	WA

Caveat

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-32.15964 115.87145

Acknowledgements

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

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

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

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

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NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 13/12/2015

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	115°52' 19" E,32°09' 35" S
Buffer	5km
Group By	Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	625	8384
Other specially protected fauna	1	6
Priority 1	1	3
Priority 3	7	139
Priority 4	7	35
Priority 5	3	83
Protected under international agreement	11	228
Rare or likely to become extinct	12	121
TOTAL	**667**	**8999**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Rare or likely to become extinct					
1.	1596	*Caladenia huegelii (Grand Spider Orchid)*		T	
2.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
3.	24731	*Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black-Cockatoo)*		T	
4.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)*		T	
5.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
6.	1637	*Diuris purdiei (Purdie's Donkey Orchid)*		T	
7.	1639	*Drakaea elastica (Glossy-leaved Hammer Orchid)*		T	
8.	13635	*Drakaea micrantha*		T	
9.	24146	*Myrmecobius fasciatus (Numbat, Walpurti)*		T	
Protected under international agreement					
10.	41324	*Ardea modesta (Eastern Great Egret)*		IA	
11.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
12.	24786	*Calidris melanotos (Pectoral Sandpiper)*		IA	
13.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
14.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
15.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*		IA	
16.	25741	*Limosa limosa (Black-tailed Godwit)*		IA	
17.	24598	*Merops ornatus (Rainbow Bee-eater)*		IA	
18.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
19.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
20.	24808	*Tringa nebularia (Common Greenshank)*		IA	
Other specially protected fauna					
21.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
Priority 1					
22.	33994	*Throscodectes xiphos (cricket)*		P1	
Priority 3					
23.	16245	*Cyathochaeta teretifolia*		P3	
24.	20462	*Jacksonia gracillima*		P3	
25.	25147	*Lerista lineata (Perth Slider, Lined Skink)*		P3	
26.	25249	*Neelaps calonotos (Black-striped Snake)*		P3	
27.	5237	*Pimelea calcicola*		P3	
28.	8163	*Pithocarpa corymbulosa (Corymbose Pithocarpa)*		P3	
29.	25800	*Stylidium paludicola*		P3	
Priority 4					
30.	4763	*Dodonaea hackettiana (Hackett's Hopbush)*		P4	
31.	24189	*Falsistrellus mackenziei (Western False Pipistrelle)*		P4	

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
32.	24328	*Oxyura australis (Blue-billed Duck)*		P4	
33.	24663	*Phaethon rubricauda (Red-tailed Tropicbird)*		P4	
34.	33992	*Synemon gratiosa (Graceful Sunmoth)*		P4	
35.	44444	*Tripterococcus sp. Brachylobus (A.S. George 14234)*		P4	
36.	14714	*Verticordia lindleyi subsp. lindleyi*		P4	
Priority 5					
37.	25478	*Isoodon obesulus (Southern Brown Bandicoot)*		P5	
38.	24153	*Isoodon obesulus subsp. fusciventer (Quenda, Southern Brown Bandicoot)*		P5	
39.	24131	*Macropus eugenii subsp. derbianus (Tammar Wallaby (WA subsp))*		P5	
Non-conservation taxon					
40.	11731	*Acacia browniana var. browniana*			
41.	3262	*Acacia cochlearis (Rigid Wattle)*			
42.	3282	*Acacia cyclops (Coastal Wattle)*			
43.	3374	*Acacia huegelii*			
44.	3502	*Acacia pulchella (Prickly Moses)*			
45.	15481	*Acacia pulchella var. glaberrima*			
46.	30032	*Acacia saligna subsp. saligna*			
47.	3557	*Acacia stenoptera (Narrow Winged Wattle)*			
48.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
49.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
50.	24262	*Acanthiza inornata (Western Thornbill)*			
51.		*Acantholophus hypoleucus*			
52.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
53.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
54.	25536	*Accipiter fasciatus (Brown Goshawk)*			
55.	42368	*Acritoscincus trilineatus (Western Three-lined Skink)*			
56.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
57.	1775	*Adenanthos cygnorum (Common Woollybush)*			
58.	11837	*Adenanthos cygnorum subsp. cygnorum (Common Woollybush)*			
59.	1791	*Adenanthos obovatus (Basket Flower)*			
60.	17202	*Agonis flexuosa var. flexuosa*			
61.	184	*Aira caryophyllea (Silvery Hairgrass)*	Y		
62.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
63.	1728	*Allocasuarina fraseriana (Sheoak, Kondil)*			
64.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
65.	198	*Amphipogon laguroides*			
66.	200	*Amphipogon turbinatus*			
67.	13267	*Amyema linophylla subsp. linophylla*			
68.	24310	*Anas castanea (Chestnut Teal)*			
69.	24312	*Anas gracilis (Grey Teal)*			
70.	24313	*Anas platyrhynchos (Mallard)*			
71.	24315	*Anas rhynchotis (Australasian Shoveler)*			
72.	24316	*Anas superciliosa (Pacific Black Duck)*			
73.	7833	*Angianthus preissianus*			
74.	25553	*Anhinga melanogaster (Darter)*			
75.		*Anhinga novaehollandiae*			
76.	11434	*Anigozanthos humilis subsp. humilis*			
77.	1411	*Anigozanthos manglesii (Mangles Kangaroo Paw, Kurulbrang)*			
78.	11566	*Anigozanthos viridis subsp. viridis*			
79.	44629	*Anilios australis*			
80.		*Anser sp.*			
81.	24561	*Anthochaera carunculata (Red Wattlebird)*			
82.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
83.	3688	*Aotus gracillima*			
84.	3692	*Aotus procumbens*			
85.	24991	*Aprasia repens (Sand-plain Worm-lizard)*			
86.	24285	*Aquila audax (Wedge-tailed Eagle)*			
87.		*Archiargiolestes parvulus*			
88.		*Archiargiolestes pusillus*			
89.		*Arcuatula glaberrima*			
90.	38968	*Arcyria insignis*			
91.	24340	*Ardea novaehollandiae (White-faced Heron)*			
92.	24341	*Ardea pacifica (White-necked Heron)*			
93.	1264	*Arnocrinum preissii*			
94.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
95.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
96.	8779	*Asparagus asparagoides (Bridal Creeper)*	Y		
97.	20283	*Astartea scoparia*			
98.	7851	*Asteridea pulverulenta (Common Bristle Daisy)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
99.	6334	*Astroloma pallidum (Kick Bush)*			
100.	2471	*Atriplex prostrata (Hastate Orache)*	Y		
101.	17234	*Austrostipa compressa*			
102.	17240	*Austrostipa flavescens*			
103.	17245	*Austrostipa mollis*			
104.	17257	*Austrostipa variabilis*			
105.		*Aythya (Nyroca) australis*			
106.	24318	*Aythya australis (Hardhead)*			
107.	17737	*Azolla pinnata*			
108.	36441	*Babingtonia camphorosmae (Camphor Myrtle)*			
109.	1800	*Banksia attenuata (Slender Banksia, Piara)*			
110.	32580	*Banksia dallanneyi var. dallanneyi*			
111.	1822	*Banksia ilicifolia (Holly-leaved Banksia)*			
112.	1830	*Banksia littoralis (Swamp Banksia, Pungura)*			
113.	1834	*Banksia menziesii (Firewood Banksia)*			
114.	32077	*Banksia sessilis var. cygnorum*			
115.	1852	*Banksia telmatiaea (Swamp Fox Banksia)*			
116.		*Barnardius zonarius*			
117.	741	*Baumea articulata (Jointed Rush)*			
118.	743	*Baumea juncea (Bare Twigrush)*			
119.	744	*Baumea laxa*			
120.	5382	*Beaufortia elegans*			
121.	24319	*Biziura lobata (Musk Duck)*			
122.	1417	*Blancoa canescens (Winter Bell)*			
123.	749	*Bolboschoenus caldwellii (Marsh Club-rush)*			
124.	4413	*Boronia crenulata (Aniseed Boronia)*			
125.	16636	*Boronia crenulata subsp. viminea*			
126.	11503	*Boronia crenulata var. crenulata*			
127.	4417	*Boronia dichotoma*			
128.	11381	*Boronia ramosa subsp. anethifolia*			
129.	3710	*Bossiaea eriocarpa (Common Brown Pea)*			
130.	6341	*Brachyloma preissii (Globe Heath)*			
131.	30142	*Brachyloma preissii subsp. obtusifolium*			
132.	30136	*Brachyloma preissii subsp. preissii*			
133.	8661	*Brachypodium distachyon (False Brome)*	Y		
134.	42381	*Brachyurophis semifasciatus (Southern Shovel-nosed Snake)*			
135.	244	*Briza maxima (Blowfly Grass)*	Y		
136.	245	*Briza minor (Shivery Grass)*	Y		
137.	249	*Bromus diandrus (Great Brome)*	Y		
138.	12770	*Burchardia congesta*			
139.	25714	*Cacatua pastinator (Western Long-billed Corella)*			
140.	25716	*Cacatua sanguinea (Little Corella)*			
141.		*Cacatua sp.*			
142.	24729	*Cacatua tenuirostris (Eastern Long-billed Corella)*	Y		
143.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
144.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
145.	1277	*Caesia occidentalis*			
146.	1586	*Caladenia discoidea (Dancing Orchid)*			
147.	1592	*Caladenia flava (Cowslip Orchid)*			
148.	15352	*Caladenia georgei*			
149.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
150.	15361	*Caladenia longicauda subsp. calcigena*			
151.	1605	*Caladenia marginata (White Fairy Orchid)*			
152.	2848	*Calandrinia corrigioloides (Strap Purslane)*			
153.	2856	*Calandrinia liniflora (Parakeelya)*			
154.	19309	*Calectasia narragara*			
155.	34942	*Callitriche brutia subsp. brutia*	Y		
156.	36600	*Callitris pyramidalis (Swamp Cypress)*			
157.	5411	*Calothamnus hirsutus*			
158.	5415	*Calothamnus lateralis*			
159.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
160.		*Calyptorhynchus sp.*			
161.	5439	*Calytrix angulata (Yellow Starflower)*			
162.	5458	*Calytrix flavescens (Summer Starflower)*			
163.	5460	*Calytrix fraseri (Pink Summer Calytrix)*			
164.		*Calytrix sp.*			
165.	2794	*Carpobrotus aequilaterus (Angular Pigface)*	Y		
166.	2795	*Carpobrotus edulis (Hottentot Fig)*	Y		
167.	1162	*Cartonema philydroides*			
168.	2951	*Cassytha flava (Dodder Laurel)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
169.	2957	*Cassytha racemosa (Dodder Laurel)*			
170.		*Castiarina anchoralis*			
171.	1742	*Casuarina obesa (Swamp Sheoak, Kuli)*			
172.	41568	*Cenchrus setaceus (Fountain Grass)*	Y		
173.	6542	*Centaurium tenuiflorum*	Y		
174.	6214	*Centella asiatica*			
175.	1125	*Centrolepis drummondiana*			
176.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
177.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
178.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
179.	18156	*Chamaecytisus palmensis (Tagasaste)*	Y		
180.	1280	*Chamaescilla corymbosa (Blue Squill)*			
181.	24373	*Charadrius melanops (Black-fronted Dotterel)*			
182.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
183.	43380	*Chelodina colliei (Oblong Turtle)*			
184.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
185.	2490	*Chenopodium glaucum (Glaucous Goosefoot)*	Y		
186.	24980	*Christinus marmoratus (Marbled Gecko)*			
187.		*Chroicocephalus novaehollandiae*			
188.	24288	*Circus approximans (Swamp Harrier)*			
189.	7937	*Cirsium vulgare (Spear Thistle)*	Y		
190.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
191.	38983	*Clastoderma debaryanum*			
192.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
193.	24399	*Columba livia (Domestic Pigeon)*	Y		
194.	38990	*Comatricha nigra*			
195.	4550	*Comesperma calymega (Blue-spike Milkwort)*			
196.	1858	*Conospermum amoenum (Blue Smokebush)*			
197.	15611	*Conospermum stoechadis subsp. stoechadis (Common Smokebush)*			
198.	6348	*Conostephium pendulum (Pearl Flower)*			
199.	6349	*Conostephium preissii*			
200.	1418	*Conostylis aculeata (Prickly Conostylis)*			
201.	11826	*Conostylis aculeata subsp. aculeata*			
202.	1436	*Conostylis juncea*			
203.	1454	*Conostylis setigera (Bristly Cottonhead)*			
204.	11597	*Conostylis setigera subsp. setigera*			
205.	20074	*Conyza sumatrensis*	Y		
206.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
207.	277	*Cortaderia selloana (Pampas Grass)*	Y		
208.	25592	*Corvus coronoides (Australian Raven)*			
209.	1285	*Corynotheca micrantha (Sand Lily)*			
210.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
211.	24671	*Coturnix pectoralis (Stubble Quail)*			
212.	25701	*Coturnix ypsilophora (Brown Quail)*			
213.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
214.	25595	*Cracticus tibicen (Australian Magpie)*			
215.	25596	*Cracticus torquatus (Grey Butcherbird)*			
216.	3137	*Crassula colorata (Dense Stonecrop)*			
217.	3139	*Crassula exserta*			
218.	3140	*Crassula glomerata*	Y		
219.	25399	*Crinia glauerti (Clicking Frog)*			
220.	25400	*Crinia insignifera (Squelching Froglet)*			
221.	30893	*Cryptoblepharus buchananii*			
222.	30899	*Ctenophorus adelaidensis (Southern Heath Dragon, Western Heath Dragon)*			
223.	25027	*Ctenotus australis*			
224.	25040	*Ctenotus gemmula (Jewelled South-west Ctenotus (Swan Coastal Plain pop P3), skink)*			
225.		*Cubicorhynchus crenicollis*			
226.	40660	*Cycnogeton huegelii*			
227.	24322	*Cygnus atratus (Black Swan)*			
228.	19625	*Cymbalaria muralis subsp. muralis*	Y		
229.	816	*Cyperus tenuiflorus (Scaly Sedge)*	Y		
230.	30901	*Dacelo novaeguineae (Laughing Kookaburra)*	Y		
231.	7454	*Dampiera linearis (Common Dampiera)*			
232.	7462	*Dampiera pedunculata*			
233.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
234.	5508	*Darwinia citriodora (Lemon-scented Darwinia)*			
235.	35618	*Darwinia sp. Karonie (K. Newbey 8503)*			
236.	1218	*Dasypogon bromeliifolius (Pineapple Bush)*			
237.	3832	*Daviesia physodes*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
238.	3845	*Daviesia triflora*			
239.	25766	*Delma fraseri (Fraser's Legless Lizard)*			
240.	24999	*Delma grayii*			
241.	25296	*Demansia psammophis subsp. reticulata (Yellow-faced Whipsnake)*			
242.		*Descolea maculata*			
243.	16595	*Desmocladus flexuosus*			
244.	299	*Deyeuxia quadriseta (Reed Bentgrass)*			
245.	1259	*Dianella revoluta (Blueberry Lily)*			
246.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
247.	1287	*Dichopogon capillipes*			
248.	17838	*Dielsia stenostachya*			
249.	1634	*Diuris laxiflora (Bee Orchid)*			
250.	1636	*Diuris pauciflora*			
251.	1640	*Drakaea glyptodon (King-in-his-carriage)*			
252.	3095	*Drosera erythrorhiza (Red Ink Sundew)*			
253.	3098	*Drosera glanduligera (Pimpernel Sundew)*			
254.	3106	*Drosera macrantha (Bridal Rainbow)*			
255.	14298	*Drosera macrantha subsp. macrantha*			
256.	3109	*Drosera menziesii (Pink Rainbow)*			
257.	13216	*Drosera menziesii subsp. penicillaris*			
258.	3117	*Drosera paleacea (Dwarf Sundew)*			
259.	13188	*Drosera paleacea subsp. paleacea*			
260.	3135	*Drosera zonaria (Painted Sundew)*			
261.	11105	*Echinochloa crus-galli*	Y		
262.		*Ecnomus pansus*			
263.	25100	*Egernia napoleonis*			
264.		*Egretta garzetta*			
265.		*Egretta novaehollandiae*			
266.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
267.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
268.		*Elanus axillaris*			
269.	25250	*Elapognathus coronatus (Crowned Snake)*			
270.		*Elseyornis melanops*			
271.		*Eolophus roseicapillus*			
272.	1645	*Epiblema grandiflorum (Babe-in-a-cradle)*			
273.	6133	*Epilobium hirtigerum (Hairy Willow Herb)*			
274.	24567	*Epthianura albifrons (White-fronted Chat)*			
275.	13950	*Eremaea asterocarpa subsp. asterocarpa*			
276.	5541	*Eremaea pauciflora*			
277.	14104	*Eremaea pauciflora var. pauciflora*			
278.		*Eremaea sp.*			
279.	1647	*Eriochilus scaber (Pink Bunny Orchid)*			
280.	15446	*Eryngium pinnatifidum subsp. pinnatifidum*			
281.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
282.	5615	*Eucalyptus decipiens (Limestone Marlock, Moit)*			
283.	5708	*Eucalyptus marginata (Jarrah, Djara)*			
284.	13547	*Eucalyptus marginata subsp. marginata (Jarrah)*			
285.	5763	*Eucalyptus rudis (Flooded Gum, Kulurda)*			
286.	13511	*Eucalyptus rudis subsp. rudis*			
287.	5790	*Eucalyptus todtiana (Coastal Blackbutt)*			
288.	3872	*Euchilopsis linearis (Swamp Pea)*			
289.	20014	*Euphorbia hyssopifolia*	Y		
290.	4648	*Euphorbia terracina (Geraldton Carnation Weed)*	Y		
291.	3880	*Eutaxia virgata*			
292.	25621	*Falco berigora (Brown Falcon)*			
293.	25622	*Falco cenchroides (Australian Kestrel)*			
294.	25623	*Falco longipennis (Australian Hobby)*			
295.	24041	*Felis catus (Cat)*	Y		
296.	1747	*Ficus carica (Common Fig)*	Y		
297.	25727	*Fulica atra (Eurasian Coot)*			
298.	24761	*Fulica atra subsp. australis (Eurasian Coot)*			
299.	2969	*Fumaria capreolata (Whiteflower Fumitory)*	Y		
300.	25729	*Gallinula tenebrosa (Dusky Moorhen)*			
301.	24763	*Gallinula tenebrosa subsp. tenebrosa (Dusky Moorhen)*			
302.	24764	*Gallinula ventralis (Black-tailed Native-hen)*			
303.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
304.	20475	*Gastrolobium capitatum*			
305.	20483	*Gastrolobium linearifolium*			
306.	3921	*Gastrolobium reticulatum*			
307.	24959	*Gehyra variegata*			

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308.		*Gelochelidon nilotica*			
309.	25530	*Gerygone fusca (Western Gerygone)*			
310.	1520	*Gladiolus caryophyllaceus (Wild Gladiolus)*	Y		
311.	24735	*Glossopsitta porphyrocephala (Purple-crowned Lorikeet)*			
312.	12624	*Gnephosis angianthoides*			
313.	6587	*Gomphocarpus fruticosus (Narrowleaf Cottonbush)*	Y		
314.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
315.	6161	*Gonocarpus pithyoides*			
316.	24443	*Grallina cyanoleuca (Magpie-lark)*			
317.	14282	*Gratiola pubescens*			
318.	2032	*Grevillea leucopteris (White Plume Grevillea)*			
319.	1475	*Haemodorum spicatum (Mardja)*			
320.	2197	*Hakea prostrata (Harsh Hakea)*			
321.	2216	*Hakea varia (Variable-leaved Hakea)*			
322.	24295	*Haliastur sphenurus (Whistling Kite)*			
323.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
324.	25410	*Heleioporus eyrei (Moaning Frog)*			
325.		*Heleioporus sp.*			
326.	29594	*Helichrysum luteoalbum (Jersey Cudweed)*			
327.	6710	*Heliotropium europaeum (Common Heliotrope)*	Y		
328.	6839	*Hemiandra pungens (Snakebush)*			
329.		*Hemiandra sp.*			
330.	38320	*Hemiandra sp. Jurien (B.J. Conn & M.E. Tozer BJC 3885)*			
331.		*Hemiandra sp. Jurien (B.J.Conn 3885 & M.E.Tozer)*			
332.	25119	*Hemiergis quadrilineata*			
333.	1293	*Hensmania turbinata*			
334.	27778	*Heterodermia speciosa*			
335.		*Heurodes turritus*			
336.	5134	*Hibbertia huegelii*			
337.	5135	*Hibbertia hypericoides (Yellow Buttercups)*			
338.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
339.	43280	*Hibbertia sericosepala*			
340.	5173	*Hibbertia subvaginata*			
341.	5176	*Hibbertia vaginata*			
342.	25734	*Himantopus himantopus (Black-winged Stilt)*			
343.	24491	*Hirundo neoxena (Welcome Swallow)*			
344.	444	*Holcus lanatus (Yorkshire Fog)*	Y		
345.	6222	*Homalosciadium homalocarpum*			
346.	12859	*Hovea trisperma var. trisperma*			
347.	12741	*Hyalosperma cotula*			
348.	5216	*Hybanthus calycinus (Wild Violet)*			
349.	5817	*Hypocalymma angustifolium (White Myrtle, Kudjid)*			
350.	35070	*Hypocalymma angustifolium subsp. Swan Coastal Plain (G.J. Keighery 16777)*			
351.	5825	*Hypocalymma robustum (Swan River Myrtle)*			
352.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
353.	9352	*Hypochaeris radicata (Flat Weed)*	Y		
354.	1070	*Hypolaena exsulca*			
355.	17841	*Hypolaena pubescens*			
356.		*Idiommata blackwalli*			
357.		*Iridomyrmex conifer*			
358.	20200	*Isolepis cernua var. setiformis*			
359.	917	*Isolepis marginata (Coarse Club-rush)*			
360.	921	*Isolepis producta*			
361.		*Ixobrychus dubius*			
362.	4012	*Jacksonia furcellata (Grey Stinkwood)*			
363.	4029	*Jacksonia sternbergiana (Stinkwood, Kapur)*			
364.	1178	*Juncus bufonius (Toad Rush)*	Y		
365.	1186	*Juncus microcephalus*	Y		
366.	1188	*Juncus pallidus (Pale Rush)*			
367.	1190	*Juncus planifolius (Broadleaf Rush)*			
368.	4044	*Kennedia prostrata (Scarlet Runner)*			
369.	5832	*Kunzea ericifolia (Spearwood, Pondil)*			
370.	15498	*Kunzea glabrescens (Spearwood)*			
371.	20019	*Lachnagrostis filiformis*			
372.	6777	*Lachnostachys albicans*			
373.	18585	*Lagenophora huegelii*			
374.		*Latrodectus hasseltii*			
375.	1307	*Laxmannia ramosa (Branching Lily)*			
376.	11911	*Laxmannia ramosa subsp. ramosa*			
377.	11464	*Laxmannia sessiliflora subsp. australis*			

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378.	1309	*Laxmannia squarrosa*			
379.	7572	*Lechenaultia expansa*			
380.	7574	*Lechenaultia floribunda (Free-flowering Leschenaultia)*			
381.		*Lechenaultia sp.*			
382.	8099	*Leontodon saxatilis (Hairy Hawkbit)*	Y		
383.	925	*Lepidosperma angustatum*			
384.	937	*Lepidosperma longitudinale (Pithy Sword-sedge)*			
385.	940	*Lepidosperma pubisquameum*			
386.	41649	*Lepidosperma rigidulum*			
387.		*Lepidosperma sp.*			
388.	945	*Lepidosperma squamatum*			
389.	19833	*Leptocarpus laxus*			
390.	2342	*Leptomeria cunninghamii*			
391.	2344	*Leptomeria empetriformis*			
392.	2350	*Leptomeria pauciflora (Sparse-flowered Currant Bush)*			
393.	5850	*Leptospermum laevigatum (Coast Teatree)*	Y		
394.	25131	*Lerista distinguenda*			
395.	25133	*Lerista elegans*			
396.	6360	*Leucopogon australis (Spiked Beard-heath)*			
397.	6374	*Leucopogon conostephioides*			
398.	6425	*Leucopogon oxycedrus*			
399.	6434	*Leucopogon polymorphus*			
400.	6436	*Leucopogon propinquus*			
401.	7676	*Levenhookia pusilla (Midget Stylewort)*			
402.	7677	*Levenhookia stipitata (Common Stylewort)*			
403.	25005	*Lialis burtonis*			
404.	31280	*Lichenomphalia chromacea*			
405.	25661	*Lichmera indistincta (Brown Honeyeater)*			
406.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
407.	25378	*Litoria adelaidensis (Slender Tree Frog)*			
408.	25388	*Litoria moorei (Motorbike Frog)*			
409.	9289	*Lobelia anceps (Angled Lobelia)*			
410.	7408	*Lobelia tenuior (Slender Lobelia)*			
411.	6515	*Logania vaginalis (White Spray)*			
412.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
413.	1223	*Lomandra caespitosa (Tufted Mat Rush)*			
414.	1228	*Lomandra hermaphrodita*			
415.	1234	*Lomandra nigricans*			
416.	1239	*Lomandra preissii*			
417.	1243	*Lomandra sericea (Silky Mat Rush)*			
418.	1246	*Lomandra suaveolens*			
419.	25683	*Lonchura castaneothorax (Chestnut-breasted Mannikin)*			
420.		*Lophoictinia isura*			
421.	8564	*Lotus subbiflorus*	Y		
422.	4065	*Lupinus angustifolius (Narrowleaf Lupin)*	Y		
423.	1097	*Lyginia barbata*			
424.	18049	*Lyginia imberbis*			
425.	6456	*Lysinema ciliatum (Curry Flower)*			
426.	6458	*Lysinema elegans*			
427.	34736	*Lysinema pentapetalum*			
428.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
429.	2839	*Macarthuria australis*			
430.	85	*Macrozamia riedlei (Zamia, Djiridji)*			
431.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
432.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
433.	25654	*Malurus splendens (Splendid Fairy-wren)*			
434.	4079	*Medicago polymorpha (Burr Medic)*	Y		
435.	17683	*Meeboldina cana*			
436.		*Meeboldina roycei MS*			
437.	25758	*Megalurus gramineus (Little Grassbird)*			
438.	34676	*Meionectes brownii (Swamp Raspwort)*			
439.	5900	*Melaleuca cuticularis (Saltwater Paperbark)*			
440.	5917	*Melaleuca hamulosa*			
441.	13271	*Melaleuca huegelii subsp. huegelii*			
442.	13273	*Melaleuca incana subsp. incana*			
443.	5926	*Melaleuca lateritia (Robin Redbreast Bush)*			
444.	5946	*Melaleuca pauciflora*			
445.	5952	*Melaleuca preissiana (Moonah)*			
446.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
447.	18598	*Melaleuca systena*			

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448.	5978	*Melaleuca teretifolia (Banbar)*			
449.	5980	*Melaleuca thymoides*			
450.	5987	*Melaleuca viminea (Mohan)*			
451.	4085	*Melilotus indicus*	Y		
452.	25663	*Melithreptus brevirostris (Brown-headed Honeyeater)*			
453.	25184	*Menetia greyii*			
454.	955	*Mesomelaena pseudostygia*			
455.	957	*Mesomelaena tetragona (Semaphore Sedge)*			
456.		*Metaballus litus*			
457.		*Microcarbo melanoleucos*			
458.	485	*Microlaena stipoides (Weeping Grass)*			
459.	15419	*Microtis media subsp. media*			
460.		*Microtis sp.*			
461.	25191	*Morethia lineoocellata*			
462.	25192	*Morethia obscura*			
463.	24223	*Mus musculus (House Mouse)*	Y		
464.	25420	*Myobatrachus gouldii (Turtle Frog)*			
465.	6189	*Myriophyllum crispatum*			
466.	6199	*Myriophyllum tillaeoides*			
467.		*Nassarius sp.*			
468.	25248	*Neelaps bimaculatus (Black-naped Snake)*			
469.	24738	*Neophema elegans (Elegant Parrot)*			
470.	6974	*Nicotiana glauca (Tree Tobacco)*	Y		
471.		*Nidula emodensis*			
472.	25748	*Ninox novaeseelandiae (Boobook Owl)*			
473.	25252	*Notechis scutatus (Tiger Snake)*			
474.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
475.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
476.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
477.		*Oecetis pechana*			
478.	14293	*Oenothera indecora subsp. bonariensis*	Y		
479.	16347	*Oenothera laciniata*	Y		
480.	6140	*Oenothera mollissima*	Y		
481.	36177	*Ornduffia albiflora*			
482.	4113	*Ornithopus compressus (Yellow Serradella)*	Y		
483.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
484.	25679	*Pachycephala pectoralis (Golden Whistler)*			
485.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
486.		*Paramphisopus sp.*			
487.	25253	*Parasuta gouldii*			
488.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
489.	25682	*Pardalotus striatus (Striated Pardalote)*			
490.	7090	*Parentucellia viscosa (Sticky Bartsia)*	Y		
491.	527	*Paspalum dilatatum*	Y		
492.	1550	*Patersonia occidentalis (Purple Flag, Koma)*			
493.	30471	*Patersonia occidentalis var. angustifolia*			
494.	30472	*Patersonia occidentalis var. occidentalis*			
495.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
496.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
497.	6006	*Pericalymma ellipticum (Swamp Teatree)*			
498.	16477	*Pericalymma ellipticum var. ellipticum*			
499.	2273	*Persoonia saccata (Snottygobble)*			
500.	24659	*Petroica goodenovii (Red-capped Robin)*			
501.	2299	*Petrophile linearis (Pixie Mops)*			
502.	2301	*Petrophile macrostachya*			
503.	2312	*Petrophile striata*			
504.	19825	*Petrorhagia dubia*	Y		
505.	25697	*Phalacrocorax carbo (Great Cormorant)*			
506.	25698	*Phalacrocorax melanoleucos (Little Pied Cormorant)*			
507.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
508.	25699	*Phalacrocorax varius (Pied Cormorant)*			
509.	24409	*Phaps chalcoptera (Common Bronzewing)*			
510.	20460	*Pheladenia deformis*			
511.	1478	*Phlebocarya ciliata*			
512.	1479	*Phlebocarya filifolia*			
513.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
514.	16177	*Phyllangium paradoxum*			
515.	4675	*Phyllanthus calycinus (False Boronia)*			
516.	4141	*Phyllota gracilis*			
517.	2793	*Phytolacca octandra (Red Ink Plant)*	Y		

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518.		*Phytophthora cinnamomi*			
519.	18117	*Pimelea rosea subsp. rosea*			
520.		*Piona murleyi*			
521.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
522.	25720	*Platycercus icterotis (Western Rosella)*			
523.	6249	*Platysace compressa (Tapeworm Plant)*			
524.	6253	*Platysace filiformis*			
525.	4524	*Platytheca galioides*			
526.	25509	*Pletholax gracilis (Keeled Legless Lizard)*			
527.	25007	*Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)*			
528.	25703	*Podargus strigoides (Tawny Frogmouth)*			
529.	25704	*Podiceps cristatus (Great Crested Grebe)*			
530.	8175	*Podolepis gracilis (Slender Podolepis)*			
531.	8182	*Podotheca angustifolia (Sticky Longheads)*			
532.	8183	*Podotheca chrysantha (Yellow Podotheca)*			
533.	8184	*Podotheca gnaphalioides (Golden Long-heads)*			
534.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
535.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
536.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
537.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
538.	25722	*Polytelis anthopeplus (Regent Parrot)*			
539.	4691	*Poranthera microphylla (Small Poranthera)*			
540.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
541.	24767	*Porphyrio porphyrio subsp. bellus (Purple Swamphen)*			
542.	24769	*Porzana fluminea (Australian Spotted Crake)*			
543.	25732	*Porzana pusilla (Baillon's Crake)*			
544.	24771	*Porzana tabuensis (Spotless Crake)*			
545.	1670	*Prasophyllum drummondii (Swamp Leek Orchid)*			
546.	1672	*Prasophyllum fimbria (Fringed Leek Orchid)*			
547.	1673	*Prasophyllum gibbosum (Humped Leek Orchid)*			
548.	1680	*Prasophyllum parvifolium (Autumn Leek Orchid)*			
549.	10853	*Prasophyllum plumiforme*			
550.	25511	*Pseudonaja affinis (Dugite)*			
551.	25259	*Pseudonaja affinis subsp. affinis (Dugite)*			
552.	25433	*Pseudophryne guentheri (Crawling Toadlet)*			
553.		*Pterostylis sp.*			
554.	4177	*Pultenaea ochreata*			
555.	4181	*Pultenaea reticulata*			
556.		*Purpureicephalus spurius*			
557.		*Pycnoporus coccineus*			
558.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
559.	8195	*Quinetia urvillei*			
560.	24243	*Rattus fuscipes (Western Bush Rat)*			
561.	24245	*Rattus rattus (Black Rat)*	Y		
562.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
563.	6012	*Regelia ciliata*			
564.	3083	*Reseda alba (White Mingnonette)*	Y		
565.	4822	*Rhamnus alaternus (Buckthorn)*	Y		
566.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
567.	13300	*Rhodanthe citrina*			
568.		*Rimelia sp.*			
569.	14485	*Romulea flava var. minor*	Y		
570.	1556	*Romulea rosea (Guildford Grass)*	Y		
571.	14924	*Romulea rosea var. communis*	Y		
572.	40426	*Rytidosperma occidentale*			
573.	11647	*Samolus repens var. repens*			
574.	978	*Schoenus brevisetis*			
575.	982	*Schoenus clandestinus*			
576.	984	*Schoenus curvifolius*			
577.	986	*Schoenus efoliatus*			
578.	992	*Schoenus grandiflorus (Large Flowered Bogrush)*			
579.	1011	*Schoenus rigens*			
580.	1017	*Schoenus subbulbosus*			
581.	6033	*Scholtzia involucrata (Spiked Scholtzia)*			
582.		*Sclerorrhinella crawshawi*			
583.	6	*Selaginella gracillima (Tiny Clubmoss)*			
584.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
585.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
586.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
587.	30948	*Smicrornis brevirostris (Weebill)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
588.	7020	*Solanum linnaeanum (Apple of Sodom)*	Y		
589.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
590.	1312	*Sowerbaea laxiflora (Purple Tassels)*			
591.	4211	*Sphaerolobium vimineum (Leafless Globe Pea)*			
592.		*Stackhousia sp.*			
593.	2918	*Stellaria media (Chickweed)*	Y		
594.	24329	*Stictonetta naevosa (Freckled Duck)*			
595.	2316	*Stirlingia latifolia (Blueboy)*			
596.	25597	*Strepera versicolor (Grey Currawong)*			
597.	25589	*Streptopelia chinensis (Spotted Turtle-Dove)*	Y		
598.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
599.	25831	*Stylidium araeophyllum (Stilt Walker)*			
600.	7693	*Stylidium brunonianum (Pink Fountain Triggerplant)*			
601.	7696	*Stylidium calcaratum (Book Triggerplant)*			
602.	7745	*Stylidium junceum (Reed Triggerplant)*			
603.	25829	*Stylidium neurophyllum (Coastal Plain Triggerplant)*			
604.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			
605.	7785	*Stylidium repens (Matted Triggerplant)*			
606.	25806	*Stylidium scariosum*			
607.	7798	*Stylidium schoenoides (Cow Kicks)*			
608.	23511	*Stylidium thesioides (Delicate Triggerplant)*			
609.	1260	*Stypandra glauca (Blind Grass)*			
610.	15532	*Synaphea spinulosa subsp. spinulosa*			
611.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
612.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
613.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
614.		*Talaurinus carbonarius*			
615.		*Talaurinus sp.*			
616.	24167	*Tarsipes rostratus (Honey Possum, Noolbenger)*			
617.		*Tellina sp.*			
618.		*Thalotia conica*			
619.	1716	*Thelymitra tigrina (Tiger Orchid)*			
620.		*Thinornis rubricollis*			
621.	24844	*Threskiornis molucca (Australian White Ibis)*			
622.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
623.	1318	*Thysanotus arbuscula*			
624.	1338	*Thysanotus manglesianus (Fringed Lily)*			
625.	1339	*Thysanotus multiflorus (Many-flowered Fringe Lily)*			
626.	1343	*Thysanotus patersonii*			
627.	1351	*Thysanotus sparteus*			
628.	1357	*Thysanotus thyrsoideus*			
629.	1358	*Thysanotus triandrus*			
630.	25519	*Tiliqua rugosa*			
631.	25204	*Tiliqua rugosa subsp. aspera*			
632.	25207	*Tiliqua rugosa subsp. rugosa*			
633.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
634.	6280	*Trachymene pilosa (Native Parsnip)*			
635.		*Tribonyx ventralis*			
636.	4383	*Tribulus terrestris (Caltrop)*	Y		
637.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
638.	25521	*Trichosurus vulpecula (Common Brushtail Possum)*			
639.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
640.	1363	*Tricoryne tenella*			
641.	1038	*Tricostularia neesii*			
642.	17145	*Trifolium angustifolium var. angustifolium*	Y		
643.	14738	*Trifolium resupinatum var. resupinatum*	Y		
644.	150	*Triglochin stowardii*			
645.	4360	*Tropaeolum majus (Garden Nasturtium)*	Y		
646.	98	*Typha domingensis (Bulrush, Djandjid)*			
647.		*Urodacus novaehollandiae*			
648.	8255	*Ursinia anthemoides (Ursinia)*	Y		
649.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		
650.	24386	*Vanellus tricolor (Banded Lapwing)*			
651.		*Venator immansueta*			
652.	15432	*Verticordia densiflora var. densiflora*			
653.	4320	*Vicia hirsuta (Hairy Vetch)*	Y		
654.	11474	*Vicia sativa subsp. nigra*	Y		
655.	4325	*Viminaria juncea (Swishbush, Koweda)*			
656.	722	*Vulpia bromoides (Squirrel Tail Fescue)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
657.	7384	*Wahlenbergia capensis (Cape Bluebell)*	Y		
658.	7389	*Wahlenbergia preissii*			
659.	8282	*Waitzia suaveolens (Fragrant Waitzia)*			
660.	1256	*Xanthorrhoea preissii (Grass tree, Palga)*			
661.	6289	*Xanthosia huegelii*			
662.	1049	*Zantedeschia aethiopica (Arum Lily)*	Y		
663.		*Zoila friendii*			
664.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

FID_	Sheet	NameID	Taxon	Cons_Code	Plant_Desc	Site_Descr	Vegetation	Frequency	Other_Note	Locality	Latitude	Longitude	Geocode_M	Accuracy	Date
	44 21213	1596	Caladenia huegelii	T	Up to 60 cm high.	Coastal plain. Grey sand.	Closed Banksia woodland. Banksia sp., Stirlingia latifolia, Hibbertia spp., Hypocalymma robustum, Conostephium pendulum		Abundance: 23 plants flowering. Plants found only in 'depression' ca 50 m x 75 m.	300 m E (right) on sand track, 300 m N up Fraser Road from Forrest Road, Banjup	-32.1254	115.8793	GPS	1	20/09/1996
	44 21205	1596	Caladenia huegelii	T	Up to 60 cm high.	Coastal plain. Grey sand.	Closed Banksia woodland. Banksia sp., Stirlingia latifolia, Hibbertia spp., Hypocalymma robustum, Conostephium pendulum		Abundance: 23 plants flowering. Plants found only in 'depression' ca 50 m x 75 m.	300 m E (right) on sand track, 300 m N up Fraser Road from Forrest Road, Banjup	-32.1254	115.8793	GPS	1	20/09/1996
	6752624	1596	Caladenia huegelii	T	Ca 30 cm tall. Linear hairy leaf 15 cm x 1 cm.	Grey sand.	Low open woodland of Melaleuca preissiana over Low Open Shrubland of Melaleuca thymoides over Dasypogon sp. and Desmocladus sp. herbland on lower slopes.	2 mature plants, one dead over 2 sq m.	Condition of population: healthy. Healthy population but at risk from disturbance given location and proximity to sand.	Bush Forever Site 390, Fraser Road Bushland, Banjup	-32.1262	115.8851	GPS	1	30/10/2003
	74 39938	1596	Caladenia huegelii	T		Private land. Flat. White / grey sand.		452 mature plants.		Lot 4, 131, 135 and 136, Fraser road. Fro, Armadale road head E onto Fraser road, Banjup	-32.1267	115.88	GPS	1	21/10/2004
	65 34163	16245	Cyathochaeta teretifolia		3					In or adjacent to Emma Treeby Reserve, S Armadale Road, Banjup	-32.1333	115.8667	MAN	3	10/12/1995
	42 60171	4763	Dodonaea hackettiana		4					Russell Road (S side of Reserve) between Thomsons Lake and Marsupial Reserves, Wattleup	-32.1664	115.8497	AUTO	2	28/11/1993
	1157655	4763	Dodonaea hackettiana		4				2159/62/2.	Thomson's Lake Reserve, Jandakot	-32.1333	115.8333	MAN	3	/09/1962
	2 31282	1639	Drakaea elastica	T		In deep grey sand on gradual slopes in undulating plain.	Low woodland of Banksia attenuata, B. menziesii, B. illicifolia, and Jarrah over scrub of Adenanthos cygnorum and Kunzea over herbs.	ca 60 plants.	Abundance: ca 60 plants.	Mandogalup, S of Perth, 0.8 km S of Hope Valley Road, along Treeby Road	-32.2	115.8667	MAN	3	28/10/1982
	84 15331	20462	Jacksonia gracillima		3 Decumbent perennial to 0.3 m high x 1.4 m diam.	Flat, well-drained but adjacent to winter-wet swamp; pale grey sand.	Banksia woodland.	infrequent.		Bushland near Shirley Balla Swamp, north of Gibbs Rd, Banjup	-32.1564	115.8814	GPS	1	14/11/2010
	68 36445	20462	Jacksonia gracillima		Low spreading shrub to 30 cm x 120 cm. Standard yellow-orange with red band close to base and yellow eye; wings 3 yellow-orange in distal half, red basally, keel red.	Coastal plain, low flat. Dry, but in area of high water table. Grey sand.	Open heath over dense herbs. Kunzea glabrescens, Melaleuca thymoides, Dasypogon bromeliifolius, Phlebocarya ciliata.	occasional.		Piara Nature Reserve, Forrestdale, off N-S track ca 300 m from powerline access track	-32.1397	115.9183	GPS	1	12/11/2003
	55 92224	5237	Pimelea calicicola		3 Erect, perennial, dwarf shrub.	Brown sand and protruding limestone.	Melaleuca/Acacia rostellifera patches. Associated vegetation: Dryandra sessilis, Phyllanthus calycinus, Hibbertia hypericoides, Ehrharta calycina.			ca 75 m N of Retta Street on E side of Cockburn Road, Mount Brown (Beeliar) Regional Park,	-32.1667	115.8333	MAN	0	10/11/1997
	28 57685	25800	Stylidium paludicola		3 0.5 m tall, flowers pink.	Near edge of swamp.	Amongst Juncus.			Jandakot Marsupial Breeding Station at Banganup Lake	-32.1667	115.8333	MAN	0	4/12/1974
	72 79906	25800	Stylidium paludicola		3 Herb to 0.4 m high. Flowers pink/red.	Gentle slope, south aspect, surface soil is dark grey loamy sand and sub surface soil is very dark grey brown sandy loam, drainage is poor and wet during winter and spring only.	Melaleuca preissiana, Kunzea glabrescens low open forest over Astartea scoparia, Hypocalymma angustifolium open shrubland over Lepidosperma longitudinale open sedgeland. Vegetation is in a pristine to excellent condition with some rabbit diggings and pot	scattered.		Robinson Road, Wandi	-32.1853	115.8965	GPS	1	22/11/2005
	25 21296	44444	Tripterococcus sp. Brachylobus (A.S. George 14234)		Slender erect multi-stemmed shrub to 40 cm. Flowers 4 orange-yellow, in full flower.	Winter wet flats, peaty sand over clay.	Hypocalymma angustifolium low heath.	scattered groups of 5-15 plants.		Gazetted Reserve 418 (Reserve No. 41438), Bartrum Road swamp, Jandakot	-32.15	115.8833	MAN	3	21/02/1992

Taxon	Status	Rank	IUCNCriteria	EPBC	DPaWRegion	DPaWDistrict	Distribution	FloweringPeriod	RecoveryPlan
Acacia lasiocarpa var. bracteolata long peduncle variant (G.J. Keighery 5026)		1			SWAN	PERTH HILLS,SWAN COASTAL	North Dandalup, Mundijong, Gosnells, Jandakot, Serpentine, Mundijong	My,Aug	
Amanita drummondii		3			SCST,SWAN,WARR	ALBANY,DONNELLY,FRANKLAND,SWAN COASTAL	Jandakot, Yunderup, Perup, Mount Roe N.P., Denmark, Albany		
Byblis gigantea		3			MWST,SWAN	MOORA,PERTH HILLS,SWAN COASTAL	Yule Brook, Cannington, Jandakot, Brookton Highway, Cervantes	Sep-Jan	
Dodonaea hackettiana		4			SWAN	SWAN COASTAL	Wattleup, Thompson Lake, Kings Park, Jandakot, Bibra Lake-The Spectacles, Gingin, Peron, Baldivis, Beeliar, Baldivis, Harry Waring Marsupial Reserve	Jul-Oct	
Eryngium pinnatifidum subsp. Palustre (G.J. Keighery 13459)		3			SWAN	SWAN COASTAL	Serpentine, Kenwick, Upper Swan, Gingin, Forrestdale, Bullsbrook, Mandurah, Arrowsmith, Capel	-	
Jacksonia gracilima		3			SWAN,SWST	BLACKWOOD,SWAN COASTAL	Mundijong, Forrestdale, Capel, Elgin, Modong N.R., Forrestfield, Ambergate	Oct-Nov	
Lepidosperma rostratum	T		EN B1ab(iii)+2ab(iii)	EN	SWAN	SWAN COASTAL	Cannington, Kenwick, Forrestdale Lake NR	Aug	
Microtis quadrata		4			SCST,SWAN,WARR,WHTB	ALBANY,FRANKLAND,SWAN COASTAL,GREAT SOUTHERN	Pinjarra, Jandakot, Albany, Lake Barker, Denamrk , Baufort Inlet	Dec-Jan	
Ornduffia submersa		4			SCST,SWAN,SWST,WARR	ALBANY,DONNELLY,FRANKLAND,PERTH HILLS,SWAN COASTAL,WELLINGTON	Gunapin, Boyanup, Lake Muir, Denmark, Forrestdale, Kenwick, Frankland River, Lane Poole	Sep-Oct	
Stylidium longitubum		3			SWAN,SWST,WHTB	BLACKWOOD,SWAN COASTAL,WELLINGTON,GREAT SOUTHERN	Upper Swan, Bullsbrook, Bunbury, Midland, Busselton, Arthur River, Jandakot, Mundijong, Karnup	Nov	
Stylidium paludicola		3			SWAN,SWST	BLACKWOOD,SWAN COASTAL,WELLINGTON	Bullsbrook, Ruabon, Mandogalup, Lake Clifton, Cookernup, Capel, Dardanup		
Thysanotus glaucus		4			MWST,SCST,SWAN,SWST,WHTB	BLACKWOOD,ALBANY,ESPERANCE,MOORA,PERTH HILLS,SWAN COASTAL,GREAT SOUTHERN	Regans Ford, Forrestdale, Busselton, Lake King, West Mt Barren, Lesueur NPk	Nov-Feb	
Verticordia lindleyi subsp. lindleyi		4			MWST,SWAN	MOORA,PERTH HILLS,SWAN COASTAL	Gillingarra-Forrestdale, Cannington, Guildford, Muchea, Gingin, Murray River, Moore River, Serpentine	Nov-Jan	

FID_	PopId	Nameid	Taxon	ConsStatus	WARank	PopNumbe	SubPopCoc	Gda94Lat	Gda94Long	PopStatus	Location	District	Vesting	Purpose1	Purpose2	CountDate	Method	MatureCou	JuvenileCo	SeedlingCo	LiveTotal	PlantTypeC	AreaOccup	inFlower	Population
	84932	1596	Caladenia h	T	CR	12		-32.1771	115.9174	X	*Extinct?*	SWAN COA	PRI			15/10/1997 0:00	ACT_IND	0			0			N	
	84944	1596	Caladenia h	T	CR	41		-32.1276	115.8575	X	EXTINCT - /	SWAN COA	MRD	VER		23/10/2006 0:00		0			0			N	
	97288	1596	Caladenia h	T	CR	42	A	-32.1258	115.8813		Lot 820 (pr	SWAN COA	SPC	GVT		23/09/2011 0:00	ACT_IND	447			0	PLANTS	112380	Y	HEALTHY
	97289	1596	Caladenia h	T	CR	42	B	-32.1261	115.8778		Lot 9004 (L	SWAN COA	PRI			14/10/2005 0:00	ACT_IND	0			0			Y	MODERATE
	97290	1596	Caladenia h	T	CR	42	C	-32.1246	115.8853		Lot 131 Fra	SWAN COA	PRI			9/10/2004 0:00		5			5			Y	
	97291	1596	Caladenia h	T	CR	42	D	-32.1266	115.8777		Fraser Roa	SWAN COA	LGA	VER		23/09/2011 0:00		0			0			N	
	106241	1596	Caladenia h	T	CR	42	E	-32.1284	115.8763		Lot 821 (pr	SWAN COA	PRI			14/10/2005 0:00	ACT_IND	0			0			Y	MODERATE
	106242	1596	Caladenia h	T	CR	42	F	-32.1262	115.8851		Private Pro	SWAN COA	PRI			14/10/2005 0:00	ACT_IND	0			0			Y	MODERATE
	97306	1596	Caladenia h	T	CR	59	A	-32.2004	115.8686		The north \	SWAN COA	CC	CFF		21/09/2004 0:00		1			1			N	
	97308	1596	Caladenia h	T	CR	59	C	-32.2024	115.8686		Western bc	SWAN COA	CC	CFF		4/10/2010 0:00	ACT_IND	0			0			N	
	97309	1596	Caladenia h	T	CR	59	D	-32.2016	115.8745		The southe	SWAN COA	CC	CFF		4/10/2010 0:00	ACT_IND	1		1	1			Y	
	97310	1596	Caladenia h	T	CR	59	E	-32.2005	115.8775		Approx 15(	SWAN COA	CC	CFF		4/10/2010 0:00	ACT_IND	26		14	26			Y	
	97312	1596	Caladenia h	T	CR	60	A	-32.1822	115.8861		Private Pro	SWAN COA	PRI			11/10/2005 0:00	ACT_IND	6			6			Y	
	97313	1596	Caladenia h	T	CR	60	B	-32.1817	115.8854		Private Pro	SWAN COA	PRI			11/10/2005 0:00	ACT_IND	11			0			Y	
	97314	1596	Caladenia h	T	CR	60	C	-32.185	115.8796		Private Pro	SWAN COA	PRI			16/10/2005 0:00	ACT_IND	3			3			Y	
	106221	1596	Caladenia h	T	CR	60	D	-32.1818	115.886		Private Pro	SWAN COA	PRI			10/10/2005 0:00	ACT_IND	5			0			Y	
	84954	1596	Caladenia h	T	CR	61		-32.1473	115.8869		Private Pro	SWAN COA	PRI			5/10/2005 0:00		1			1			Y	
	84955	1596	Caladenia h	T	CR	62		-32.1614	115.8893		Western ec	SWAN COA	LGA	REC		3/10/2005 0:00	ACT_IND	18			18			N	
	84960	1596	Caladenia h	T	CR	67		-32.1518	115.8819		Unvested F	SWAN COA	NON	GVT		8/10/2006 0:00	ACT_IND	4			4			Y	
	84964	1596	Caladenia h	T	CR	72		-32.1689	115.8953		Private Pro	SWAN COA	PRI			19/09/2007 0:00	ACT_IND	1			1			Y	
	84968	1596	Caladenia h	T	CR	76		-32.1895	115.8914		Private pro	SWAN COA	PRI			1/10/2009 0:00	ACT_IND	1		0	1			Y	
	106981	1596	Caladenia h	T	CR	78	A	-32.2018	115.8625		Private Pro	SWAN COA	PRI			25/09/2012 0:00	ACT_IND	1	1		0	PLANTS	1	Y	HEALTHY
	99183	4763	Dodonaea	4		4	A	-32.1321	115.8307		Along the I	SWAN COA	PRI			15/10/1980 0:00		0			0			N	
	99184	4763	Dodonaea	4		4	B	-32.1377	115.8307		N verge of	SWAN COA	LGA	VER		15/10/1980 0:00		0			0			N	
	99185	4763	Dodonaea	4		4	C	-32.1404	115.8293		N edge of T	SWAN COA	NON	OTH		15/10/1980 0:00		0			0			N	
	99189	4763	Dodonaea	4		5	A	-32.1599	115.8237		Russell Rd,	SWAN COA	LGA	VER		15/10/1980 0:00	ACT_IND	27			27			N	
	99190	4763	Dodonaea	4		5	B	-32.1516	115.8237		S side of Ru	SWAN COA	CC	CFF	OTH	15/10/1980 0:00	ACT_IND	13			13			N	
	99191	4763	Dodonaea	4		5	C	-32.1571	115.8293		S edge of T	SWAN COA	LGA	NRE	CFA	15/10/1980 0:00		0			0			N	
	99192	4763	Dodonaea	4		5	D	-32.1655	115.8237		Harry Wari	SWAN COA	CC	CFF	OTH	15/10/1980 0:00	ESTMT	700			1750			N	
	99193	4763	Dodonaea	4		5	E	-32.1655	115.8301		Harry Wari	SWAN COA	CC	CFF	OTH	15/10/1980 0:00	ESTMT	15			23			N	
	99194	4763	Dodonaea	4		5	F	-32.1682	115.8237		WSW edge	SWAN COA	PRI			15/10/1980 0:00		0			0			N	
	85074	1639	Drakaea el	T	CR	31		-32.19	115.8795		Private Pro	SWAN COA	PRI			17/08/2010 0:00		0			0			N	
	91320	13635	Drakaea mi	T	EN	15		-32.1568	115.9143		PP (Loc 33,	SWAN COA	PRI			14/11/2002 0:00		0			0			N	
	93725	16998	Tripterococ	4		6		-32.153	115.8866		Reserve 41	SWAN COA	NON	GVT		21/02/1992 0:00	ESTMT	10			10			N	
	92664	14714	Verticordia	4		22		-32.166	115.8895		Denis De Y(	SWAN COA	LGA	REC		15/06/1991 0:00		0			0			N	

APPENDIX D

Black Cockatoo and Banksia TEC Assessment (2017)

Our Ref: 2123AA

04/04/2017

Kris Kennedy
Manager - Planning
Aigle Royal Developments
225 St Georges Terrace
Perth, WA 6000
Via Email: kkennedy@aigleroyal.com.au

Dear Kris,

Black Cockatoo Habitat Assessment and Desktop Banksia Woodlands of the Swan Coastal Plain TEC Assessment - Lots 11 and 74 Beenyup Road, Banjup.

1. Introduction and Background

360 Environmental is pleased to provide Aigle Royal Developments with this letter report to provide information in relation to the Black Cockatoo habitat assessment and desktop Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (BW TEC) assessment for Lots 11 and 74 Beenyup Road, Banjup (Survey Area) (Figure 1).

In February 2015, 360 Environmental undertook a level 2 flora survey and identified a total of 145 taxa from 45 families in the Survey Area (360 Environmental 2015). Of these, a number of species are considered to be Black Cockatoo habitat and others are considered to be species included in the Banksia Woodland TEC. Subsequently a Black Cockatoo habitat assessment and BW TEC desktop assessment were commissioned.

1.1. Background to Black Cockatoos

All three Black Cockatoo species that occur in the south west (this includes the Perth metropolitan area) are listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act): Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) is listed as Endangered, the Forest Red-tailed Black Cockatoo (FRTBC [*Calyptorhynchus banksii naso*]) and Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) are classified as Vulnerable. All three Black Cockatoos have suffered a substantial decline in numbers and breeding distribution in the past 50 years (Johnstone & Storr 1998). Direct causes of population decline include the large numbers shot by orchardists (mainly associated with Baudin's Black Cockatoo), clearing and fragmentation of habitat (especially the loss of breeding hollows), the impact of hollow competitors including the Galah (*Cacatua roseicapilla*), corellas including Butler's Corella (*Cacatua pastinator butleri*), Australian Shelduck (*Tadorna tadornoides*), Australian Wood Duck (*Chenonetta jubata*), the feral European honey bee (*Apis mellifera*), and also vehicle strikes. Around 60% of the original vegetation on the Swan Coastal Plain has been cleared and up to 85% in other parts of the south-west region for agriculture (crops), meat production, dairying, farms, orchards, vineyards, pine plantations, mining, timber and wood chipping, cities and towns. At present, extensive tracts of uncleared land only remain in State forest and conservation reserves and what is left of remnant vegetation (in roadside verges etc.) is often disturbed to a varying degree (Johnstone & Kirkby 2011).

The south-west region is now a severely fragmented landscape and the further loss of foraging habitat, the lack of suitable breeding sites, climate change, and alterations in the landscape led to significant changes in forest structure. Almost every part of the Jarrah-Marri forest has been logged in the past, and most present day trees are too young to form hollows, and competition with exotic species, exacerbate the future conservation of Carnaby's Black Cockatoo, FRTBC's and Baudin's Black Cockatoo (Johnstone & Kirkby 2011).

The distribution of all three Black Cockatoo species can be seen in the 2014 Department of the Environment and Energy (DEE) distribution maps in Appendix A. The Survey Area is within the known distribution of Carnaby's Black Cockatoo and FRTBC; however, it is on the western extremity of Baudin's Cockatoo. Nevertheless, all three species of Black Cockatoo have been included for consideration in this document, particularly given that they are all highly mobile and the DEE distribution maps are indicative only. In addition there is some difficulty in distinguishing between Carnaby's Black Cockatoo and Baudin's Black Cockatoo, particularly when on the wing, therefore it advisable to include both species.

1.2. Background to BW TEC

BW TEC was listed (16 September 2016) as an Endangered community under the EPBC Act. A Level 2 flora and vegetation assessment of the Survey Area was undertaken prior to this listing (360 Environmental 2015), thus determination of whether the BW TEC is present in the Survey Area needed to be determined.

The BW TEC is restricted to the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) and immediate adjacent areas. These include the Dandaragan plateau from Jurien Bay in the North, to Dunsborough in the South, and north/east on the Whicher and Darling Escarpments. The BW TEC typically has a prominent tree layer of Banksia species with scattered Eucalypts and other tree species present within or emerging above the Banksia canopy with a species rich understorey.

Key diagnostic characteristics and condition thresholds are used to determine whether a remnant of BW TEC when being surveyed. These are: location and physical environment, structure, composition and condition. Other parameters also include minimum patch size, cover of native species and native plant species diversity.

2. Objectives

The objective of the Black Cockatoo habitat assessment was to:

- Identify and determine the type and extent of habitat (breeding and foraging) suitable for Black Cockatoos in the Survey Area with reference to the EPBC Act referral guidelines for three threatened Black Cockatoo species (DSEWPaC 2012).

The objective of the BW TEC assessment was to:

- Compare and analyse the existing Level 2 flora and vegetation survey data with the key diagnostic characteristics and condition thresholds of the BW TEC to determine if the banksia woodlands in the Survey Area would be considered favourable for National protection.

3. Methods

3.1. Black Cockatoo Habitat Assessment

This Black Cockatoo habitat assessment was undertaken on 9 February 2017. The assessment involved traversing the Survey Area on foot; any trees meeting each of the

following criteria for potential breeding were recorded and electronically logged using a hand held Global Positioning System (GPS) unit:

- Native trees (e.g. [Marri [*Corymbia calophylla*], Jarrah [*Eucalyptus marginata*], Tuart [*E. gomphocephala*] etc.);
- Diameter at breast height (DBH) > 500 mm (>300 mm for Wandoo [*E. wandoo*] and Salmon [*E. salmonophloia*] Gum) regardless of the presence or absence of hollows;
- Trees were placed in the following size class categories:
  - A = 500 – 1000 mm DBH
  - B = 1000 – 2000 mm DBH
  - C = >2000 mm DBH

The Black Cockatoo habitat assessment involved assessing the habitat for tree and shrub species known to be important dietary items e.g. Marri and *Banksia sp*. It also included looking for:

- Evidence of feeding (chewed cones, seed and nut material); and
- Opportunistic observations of Black Cockatoos in the Survey Area.

3.2. TEC Assessment

The results of the statistical (multivariate) analysis and data interpretation from the Level 2 flora and vegetation report (360 Environmental 2015) were used to determine which areas of the Survey Area are sub-communities of the BW TEC. The mapping of condition and vegetation association boundaries was overlaid to determine the amount of banksia woodland for each condition category.

4. Results

4.1. Black Cockatoos

During the Black Cockatoo habitat assessment, no Black Cockatoos were observed flying over or heard in the Survey Area.

4.1.1. Potential Breeding Trees

Two species of Eucalypts, Jarrah and Flooded Gum (*E. rudis*) recorded in the Survey Area are considered Black Cockatoo potential breeding habitat. The current Survey Area contains 19 potential breeding trees with a DBH of more than 500 mm (Jarrah [11] and

Flooded Gum [8]). The dimensions and the locations of these 19 potential breeding trees are displayed in Table 1 and Figure 2.

No hollows observed from the ground were considered to be large enough at the entrances (i.e. >100 mm) or deep enough to be considered as potential breeding hollows.

Table 1: Black Cockatoo Potential Breeding Trees

*Co-Ordinates are in UTMs (GDA 94)

No.	Species	DBH	Height (M)	*Easting	*Northing	Comments
1	Jarrah	B	12	0393358	6441096	Stag, lots of fallen branches
2	Jarrah	A	12	0393384	6441087	Stag
3	Jarrah	A	10	0393444	6441095	Stag
4	Jarrah	A	12	0393471	6441009	
5	Jarrah	A	12	0393480	6441025	Stag
6	Jarrah	A	12	0393480	6441025	Stag
7	Jarrah	A	12	0393500	6441001	Shallow hollow
8	Jarrah	A	14	0393367	6441084	Splits at 4m
9	Jarrah	A	15	0393537	6441295	
10	Flooded Gum	A	17	0393565	6441205	
11	Flooded Gum	A	17	0393565	6441205	
12	Flooded Gum	A	16	0393549	6441201	
13	Flooded Gum	A	16	0393528	6441200	
14	Flooded Gum	A	16	0393567	6441189	
15	Flooded Gum	A	16	0393567	6441197	
16	Flooded Gum	A	16	0393567	6441197	
17	Flooded Gum	A	17	0393575	6441198	5 branches
18	Jarrah	A	14	0393065	6441270	
19	Jarrah	A	8	0393055	6441288	