Main Roads Western Australia

Mitchell Freeway extension: Burns Beach Rd to Romeo Rd
Level 2 Flora & Level 1 Fauna Assessment

February 2014

Executive summary

The Mitchell Freeway provides the primary road access route from the Perth north-west corridor towards the City of Perth. The freeway currently terminates at Burns Beach Road. The freeway has been constructed in several stages since the 1960s, with further extensions and widening works planned. The Mitchell Freeway Extension has been the subject of a planning process undertaken by Main Roads Western Australia.

GHD was commissioned by Main Roads Western Australia to conduct a Level 2 flora and vegetation assessment and Level 1 fauna assessment for the proposed Mitchell Freeway Extension and associated works between Burns Beach Road and Romeo Road, located north of Perth, Western Australia (the Study Area). The business case prepared for the project divides the project into three stages to be completed over a period of time. These stages are:

- Stage 1 – Freeway extension from Burns Beach Road to Hester Avenue and the connecting roads (Neerabup Road and Hester Avenue) 2015–2017
- Stage 2 – Freeway extension from Hester Avenue to Romeo Road and connecting road (Romeo Road) 2017–2021
- Stage 3 – Wanneroo Road duplication from Joondalup Drive to Hall Road 2027–2029

The information from this assessment will be used to support an Environmental Impact Assessment and subsequent Federal and State approvals documentation, as required.

The Study Area includes the corridor and other associated works required between Burns Beach Road and Romeo Road as part of the Mitchell Freeway Extension Project, located approximately 30 km north of Perth (within the Cities of Joondalup and Wanneroo). The Study Area is approximately 438 hectares (ha) in total and is larger than will be required for the proposed works. A smaller disturbance area will be defined during detailed design works.

Desktop assessment

A desktop review was conducted prior to the commencement of the field surveys which identified the following:

- A large proportion of the Study Area is classified as Environmentally Sensitive Areas (ESAs) (Government of Western Australia, 2012). The ESAs are associated with Bush Forever sites and Threatened Ecological Communities (TECs).
- Two conservation reserves managed by the Department of Parks and Wildlife (DPaW) (Neerabup National Park and Neerabup Nature Reserve) are present within the boundaries of the Study Area.
- The following three Bush Forever sites occur within the boundaries of the Study Area:
  - Site 299 (Yellagonga Regional Park)
  - Site 383 (Neerabup National Park, Lake Nowergup Reserve and adjacent bushland)
  - Site 384 (Neerabup Lake and adjacent bushland)
- Broadscale vegetation mapping undertaken by Beard (1979) has identified the presence of the following four vegetation associations within the Study Area:
  - Medium woodland; tuart [*Eucalyptus gomphocephala*] & jarrah [*E. marginata*] (association 6)
  - Shrublands; teatree [*Agonis flexuosa*] thicket (association 37)
  - Low woodland; banksia [*Banksia* spp.] (association 949)

  - Medium woodland; tuart [*E. gomphocephala*] (association 998).
- Mapping undertaken by Heddle et al. (1980) identified the following four vegetation complexes within the Study Area:
  - Cottesloe complex (Quindalup Dunes)
  - Cottesloe complex – central and south (Spearwood Dunes)
  - Karrakatta complex – central and south (Spearwood Dunes)
  - Herdsman complex (Spearwood Dunes)

Field assessment

During May–July and September–October, 2013, GHD conducted Level 2 flora and vegetation assessments of the Study Area in accordance with the Environmental Protection Authority (EPA) Guidance Statement 51 and Position Statement No. 3 and a Level 1 fauna assessment (reconnaissance survey) in accordance with Guidance Statement No. 56. The results of these assessments are summarised below.

Flora & vegetation

The Study Area is located adjacent to existing roads and railways (a total of 231 ha is generally in *Completely Degraded* condition), as well as a new alignment through the Neerabup National Park and in other intact patches of native vegetation (ranging in condition from *Excellent* to *Degraded*). The following six vegetation types (and an additional mosaic vegetation types) were mapped within the Study Area:

- 1: *Banksia* woodland (93.4 ha)
- 2: Jarrah–*Banksia* woodland (10.8 ha)
- 3: Tuart woodland (59.2 ha)
- 4: Mixed low heath on limestone (22.3 ha)
- 5: *Melaleuca huegelii–M. systena* shrubland on limestone (0.6 ha and additional minor occurrences)
- 6: *Banksia sessilis* closed tall scrub (7.7 ha)
- Mosaic of vegetation types 1 (*Banksia* woodland) and 4 (Mixed low heath on limestone) (14.3 ha)

Vegetation types 3, 4 and 6 (a total of 89.2 ha in *Excellent* to *Degraded–Completely Degraded* condition) appear to correspond with the Priority 3 Priority Ecological Community (PEC) "Northern Spearwood Shrublands and Woodlands". Vegetation type 5 (0.6 ha and additional minor occurrences) appears to correspond with the state listed Endangered TEC "*Melaleuca huegelii–M. acerosa* [now *M. systena*] shrublands on limestone ridges".

Of the 392 flora species identified during the survey, none were listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Wildlife Conservation Act 1950* (WC Act). However, the following five are listed as DPaW Priority species:

- *Acacia ?benthamii* (Priority 2): two individuals were observed within a fenced off portion alongside the railway approximately 1.5 km north of Hester Avenue within vegetation type 1 (Stage 2).
- *Eucalytpus caesia* (Priority 4): identified in roadside plantings. This species is widely grown as an ornamental plant. As a result, the individuals observed within the Study Area are not considered to be wild, naturally occurring specimens.

- *Jacksonia sericea* (Priority 4): approximately 6020 individuals were observed, scattered predominantly throughout vegetation type 1 and alongside disturbed areas (Stages 1, 2 and 3).
- *Pimelea calcicola* (Priority 3): approximately 516 individuals were observed within vegetation types 4 and 5 (Stages 2 and 3).
- *Stylidium maritimum* (Priority 3): approximately 1455 individuals were observed within vegetation type 4 (Stages 2 and 3).

In addition to the five species of conservation significance identified during previous surveys (*Acacia benthamii* and the Priority 2 species, *Fabronia hampeana*) and the GHD survey (*Acacia benthamii*, *Eucalytpus caesia*, *Jacksonia sericea*, *Pimelea calcicola* and *Stylidium maritimum*), the likelihood of occurrence assessment determined that two species listed under both the EPBC Act and WC Act and eight DPaW Priority-listed species may occur within the Study Area:

- *Caladenia huegelii* (Grand Spider Orchid) (State Threatened, Federal Endangered)
- *Drakaea micrantha* (Dwarf hammer-orchid) (State Threatened, Federal Vulnerable)
- *Austrostipa mundula* (Priority 2)
- *Conostylis bracteata* (Priority 3)
- *Conostylis pauciflora* subsp. *euryrhipis* (Priority 4)
- *Conostylis pauciflora* subsp. *pauciflora* (Priority 4)
- *Lecania turicensis* var. *turicensis* (a lichen) (Priority 2)
- *Sarcozona bicarinata* (Priority 3)
- *Schoenus griffinianus* (Priority 3)
- *Thelymitra variegata* (Priority 3)

In addition to the flora species of conservation significance, seven other significant flora were observed within the Study Area. However, two are not considered to be naturally occurring as they were present as roadside plantings.

The following three introduced flora species identified within the Study Area are considered to be Weeds of National Significance (WoNS) and/or listed as Declared Pests under State legislation:

- **Asparagus asparagoides* (bridal creeper) (Declared Pest C3 Management for the Whole of the State, WoNS)
- **Solanum linnaeanum* (apple of Sodom) (Declared Pest C3 Management for the South West Land Division)
- **Zantedeschia aethiopica* (arum lily) (Declared Pest C3 Management for the Whole of the State).

Fauna

The following six broad fauna habitat types were identified in the Study Area, based on the predominant landforms, soil and vegetation structure in the area:

- Low heathland on limestone outcrops
- *Banksia* woodland on grey/brown sand
- Tuart (*Eucalyptus gomphocephala*) woodland in deep dark brown sand
- *Banksia sessilis* tall shrubland on grey sand and limestone outcropping

- Jarrah (*E. marginata*)–*Banksia* woodland on grey/brown sand
- Planted roadside vegetation/highly degraded/cleared

The native vegetation within the Study Area consists predominantly of a combination of mixed eucalypt woodlands and *Banksia* woodlands. These habitat types consist of a dominant overstorey of *E. gomphocephala* (tuart), *E. marginata* (jarrah), *Corymbia calophylla* (marri), *Banksia attenuata* and *B. menziesii* and were generally associated with grey sandy soils on plains or low undulating dune systems. The eucalypt and *Banksia* woodlands ranged from degraded to excellent condition and provided particularly high habitat value for fauna species due to the variety of microhabitats and various resource niches available (i.e. fallen logs, hollows, leaf litter, sandy soil).

The areas of remnant vegetation in and immediately surrounding the Study Area are part of a regionally significant contiguous bushland/wetland linkage, with a large proportion of this vegetation currently protected as national park and a series of Bush Forever sites. The vegetation within Neerabup National Park (Bush Forever site 383) is linked to vegetation to the north, south (Bush Forever site 299, across the road), east and west (Site 323, through bushland to Site 397); and is part of Greenways 35, 2, 5. Neerabup National Park provides a narrow corridor to allow movement of animals along the coastal plain and associated wetlands.

A total of 61 fauna species, consisting of 47 birds, seven reptiles and seven mammals were recorded within the Study Area during the field surveys. Of these, nine are introduced (feral) species. The following two conservation significant fauna species were recorded during the survey:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) listed as Endangered under the EPBC Act and Threatened under the WC Act
- Carpet Python (*Morelia spilota imbricata*) listed as Schedule 4 under the WC Act.

The field assessment also identified from potential diggings the likely presence of DPaW Priority 5 species, Quenda/Southern Brown Bandicoot (*Isoodon obesulus fusciventer*).

In addition to the fauna species recorded during the field survey, a number of conservation significant fauna species were identified as potentially occurring within the Study Area based on the species biology, availability of suitable habitat and known records in the area. The assessment identified eight species as likely to occur and four species as possibly occurring within the Study Area.

Ten bird species recorded during the survey are considered to be significant birds of the Swan Coastal Plain portion of the Perth Metropolitan Region. They include the Brown Goshawk, Carnaby's Black Cockatoo, Emu, Splendid Fairy-wren, New Holland Honeyeater, White-cheeked Honeyeater, Grey Shrike-thrush, Golden Whistler and Scarlet Robin. These species are either habitat specialists with a reduced distribution on the Swan Coastal Plain or are wide-ranging species with reduced populations on the Swan Coastal Plain. Additionally the Carpet Python and Echidna would also be considered to be locally significant fauna as even though they have large distributions they have declined on the Swan Coastal Plain. The Study Area is also considered to contain suitable habitat for a number of other fauna species identified as locally significant, including the Honey Possum, White-striped Bat, Speckled Granite Gecko (Swan Coastal Plain population) and Little Eagle.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.5 and the assumptions and qualifications contained throughout the Report.

Table of contents

Table index

Figure index

Appendices

1. Introduction

1.1 Project background

The Mitchell Freeway provides the primary road access route from the Perth north-west corridor towards the City of Perth. The freeway currently terminates at Burns Beach Road. The freeway has been constructed in several stages since the 1960s, with further extensions and widening works planned. The Mitchell Freeway Extension has been the subject of a planning process undertaken by Main Roads Western Australia (Main Roads).

The business case prepared for the project divides the project into three stages to be completed over a period of time. These stages are:

- Stage 1 – Freeway extension from Burns Beach Road to Hester Avenue and the connecting roads (Neerabup Road and Hester Avenue) 2015–2017
- Stage 2 – Freeway extension from Hester Avenue to Romeo Road and connecting road (Romeo Road) 2017–2021
- Stage 3 – Wanneroo Road duplication from Joondalup Drive to Hall Road 2027–2029

Main Roads commissioned GHD Pty Ltd (GHD) to conduct a flora and fauna assessment for the proposed Mitchell Freeway Extension and associated works between Burns Beach Road and Romeo Road.

1.2 Purpose of this report

Information from this flora and fauna assessment will be used to support an Environmental Impact Assessment (EIA) and subsequent Federal and State approvals documentation, as required.

1.3 Study Area

The Study Area includes the corridor and other associated works required between Burns Beach Road and Romeo Road as part of the Mitchell Freeway Extension Project, and is located approximately 30 km north of Perth, Western Australia (within the Cities of Joondalup and Wanneroo). The Study Area is approximately 438 hectares (ha) in total and is larger than will be required for the proposed works. A smaller disturbance area will be defined during detailed design works.

The Study Area includes the Mitchell Freeway Metropolitan Region Scheme (MRS) reservation area between Burns Beach Road and Romeo Road as well as associated side roads and intersection areas, including:

- Neerabup Road east of the Freeway to Wanneroo Road
- Hester Avenue to Wanneroo Road
- Intersections at Neerabup Road, Hester Avenue and Burns Beach Road
- PSP Bridge at Burns Beach Road
- Demolition of the bridge at Hester Avenue
- Romeo Road East to Wanneroo Road
- Wanneroo Road
- Neerabup Road West

- Connolly Drive (between Neerabup Road and Hester Avenue)

The Study Area boundary is shown on Figure 1, Appendix A.

1.4 Scope of works

The scope of works as per the project brief and GHD proposal was to:

- Undertake a desktop assessment of environmental aspects and constraints (Appendix B)
- Undertake a Level 2 vegetation and flora survey to provide:
  - A description and mapping of vegetation units and vegetation condition
  - An assessment of presence of Threatened and Priority Ecological Communities (TEC and PEC) within the Study Area (including a statistical analysis)
  - An inventory of vascular flora
  - Locations and counts of conservation significant flora (Threatened and Priority Flora)
  - An assessment of the likelihood of occurrence of flora species of conservation significance within the Study Area
  - Locations and counts of Declared Pest flora and Weeds of National Significance (WoNS)
  - Identification of other significant flora
- Undertake a Level 1 fauna survey to provide:
  - Description and mapping of fauna habitat
  - Inventory of fauna recorded within the Study Area
  - An indication of the presence or likelihood of occurrence of conservation significant fauna within the Study Area
- Prepare a flora and fauna assessment including the results of the desktop assessment and Level 1 surveys.

1.5 Limitations

This report has been prepared by GHD for Main Roads Western Australia and may only be used and relied on by Main Roads Western Australia for the purpose agreed between GHD and the Main Roads Western Australia as set out in section 1.4 of this report.

GHD otherwise disclaims responsibility to any person other than Main Roads Western Australia arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services conducted by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Main Roads Western Australia and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD

does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing conducted at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations conducted in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

1.6 Assumptions

This report has assessed the flora and fauna within the Study Area (Figure 1, Appendix A).Should the Study Area change or be refined, further assessment may be required.

2. Relevant legislation, conservation codes & background information

Table 1 provides a summary of legislation, conservation codes and background information relevant to the Project. Further details on the conservation codes and other background information are provided in Appendix C.

Table 1 Key relevant environmental legislation

Legislation		Responsible Government agency	Aspect
State Legislation			
Agricultural and Related Resources Protection Act 1976	ARRP Act	Department of Agriculture and Food (WA)	Weeds and feral animals
Environmental Protection Act 1986 (Part III) (the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 (SCPL)*)*	EP Act	Department of Environmental Regulation (DER) (formerly Department of Environment and Conservation – DEC)	Swan Coastal Plain Lakes
Environmental Protection Act 1986 (Part IV)	EP Act	Office of the Environmental Protection Authority (OPEA)	Environmental impact assessment and management
Environmental Protection Act 1986 (Part V)	EP Act	OEPA	Works Approvals and Licenses for Prescribed Premises
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	-	DER	Clearing of native vegetation
Wildlife Conservation Act 1950	WC Act	Department of Parks and Wildlife (DPaW) (formerly DEC)	Protection of native wildlife
Agricultural and Related Resources Protection Act 1976	ARRP Act	Department of Agriculture and Food (WA)	Weeds and feral animals
Federal Legislation			
Environment Protection and Biodiversity Conservation Act 1999	EPBC Act	Department of the Environment (DotE) (formerly the Department of Sustainability, Environment, Water, Population and Communities – DSEWPaC)	Matters of National Environmental Significance including listed threatened species, populations and ecological communities and migratory species

3. Methodology

3.1 Desktop assessment

A desktop review was conducted prior to the commencement of field surveys.

3.1.1 Flora

- A review of the Department of Parks and Wildlife (DPaW) NatureMap database (2007–), and the DPaW Threatened Flora Database (DPaW, 2012) for flora species previously recorded within a 10 km buffer of the Study Area
- A review of the DPaW TEC and PEC databases to determine the potential for TEC or PEC to be present within the Study Area (DPaW, 2013a and DPaW, 2013b)
- A review of the Department of the Environment (DotE) Protected Matters database – to identify species and communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) potentially occurring within the Study Area (DotE, 2013b)
- Reviews of Environmental Protection Authority (EPA) (2000a, 2000b) documents.

3.1.2 Fauna

- A review of the DPaW NatureMap database (DPaW, 2007–), for fauna species previously recorded within a 10 km buffer of the Study Area
- A review of DotE Protected Matters database to identify species listed under the EPBC Act potentially occurring within the Study Area (DotE, 2013b)
- Reviews of EPA (2000a, 2000b) documents.

3.2 Field survey

3.2.1 Flora and vegetation

GHD conducted a Level 2 flora and vegetation assessment (in accordance with the EPA Guidance Statement 51 (EPA, 2004a) and Position Statement No. 3 (EPA, 2002)) of the Study Area in two seasons of 2013. The initial phase of the flora and vegetation assessment was conducted between May 16 and July 4 2013, while the second phase was conducted in spring, between September 24 and October 29 2013 (Table 2). The survey was conducted to provide descriptions of the dominant vegetation types present, vegetation condition and flora species visible at the time of the survey. In order to record plant species and vegetation types at the time of the surveys, field assessment methodology involved:

- Quadrats: 28 quadrats were visited over the course of both assessments, with a selection of quadrats established during the initial phase revisited during the spring surveys (Figure 3, Appendix A)
- Photograph points: 20 photograph points located in representative vegetation types in both phases (Figure 3, Appendix A)
- Meandering walking transects

Vegetation units were identified and boundaries delineated using a combination of aerial photography interpretation, topographical features, previous mapping (Beard, 1979 and Heddle et al. 1980) and field observations and were compared against Floristic Community Types (FCT) identified by Gibson et al. (1994) as present on the Swan Coastal Plain. Quadrat sampling sites were 10 m × 10 m in size and the position of each site was recorded using a handheld Global Positioning System (GPS) unit. The information presented in Table 3 was recorded for each quadrat. Vegetation units were described based on structure, dominant taxa and cover characteristics as defined by quadrat data. Vegetation unit descriptions follow the National Vegetation Information System (NVIS) (ESCAVI, 2003).

Species that were well-known to the survey botanists were identified in the field, while species that were unknown were collected and assigned a unique collection number to facilitate tracking. Plant species were identified by the use of local and regional flora keys and by comparison with the named species held at the Western Australian Herbarium (WA Herbarium). When necessary, plant taxonomists considered to be authorities on particular plant groups were consulted.

In addition to the spring survey, an assessment targeting flora species and vegetation types of conservation significance was conducted. The targeted flora assessment involved up to three people traversing the Study Area on foot in a relatively straight line fashion, with 10–30 m between each person. Areas of intact vegetation were traversed, focussing specifically on areas of known habitat for flora species of conservation significance. The vegetation surrounding any previously recorded or observed location of flora species of conservation significance was focussed on in greater detail, with less than 10 m between each person.

The conservation status of all recorded flora was compared against the current lists available on FloraBase (WA Herbarium, 1998–) and the EPBC Act Threatened species database provided by DotE (2013b).

Nomenclature used in the report follows that used by the Western Australian Herbarium as reported on FloraBase (WA Herbarium, 1998–).

Table 2 Dates of the flora & fauna surveys

	15/05/2013	16/05/2013	17/05/2013	24/05/2013	05/06/2013	18/06/2013	19/06/2013	20/06/2013	03/07/2013	04/07/2013
Initial flora & vegetation survey		×	×	×	×	×	×	×	×	×
Level 1 fauna	×	×	×		×	×	×	×	×	×

	24/09/2013	25/09/2013	26/09/2013	27/09/2013	03/10/2013	04/10/2013	07/10/2013	09/10/2013	10/10/2013	29/10/2013
Spring flora & vegetation survey & targeted flora searches	×	×	×	×	×	×	×	×	×	×

Table 3 Data collected during the field survey

Aspect	Measurement
Physical features	Aspect, soil attributes. Percentage surface cover by: rocks, logs and branches, leaf litter, bare ground.
Location of important features	Coordinates recorded in GDA94 datum using a hand-held Global Positioning System (GPS) tool to accuracy approximately ± 5 m.
Vegetation condition	Vegetation condition was assessed using the condition rating scale devised by Keighery (1994).
Disturbance	Level and nature of disturbances (e.g. weed presence, fire — and time since last fire, impacts from grazing, exploration activities).
Flora	List of dominant flora from each structural layer.

Vegetation condition

The vegetation condition of the Study Area was assessed using the vegetation condition rating scale developed by Keighery (1994) that recognises the intactness of vegetation, which is defined by the following:

- Completeness of structural levels.
- Extent of weed invasion.
- Historical disturbance from tracks and other clearing or dumping.
- The potential for natural or assisted regeneration.

The scale consists of six rating levels as outlined in Table 4.

Table 4 Vegetation condition rating scale

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

(Keighery, 1994)

PATN Analysis

PATN analysis (furthest neighbour analysis on Bray–Curtis dissimilarity index) was used to generate an estimate of association between vegetation types by comparing species present within representative quadrats. The PATN classifies the quadrats into groups, condenses the information into three dimensions and displays the patterns graphically.

Data from GHD quadrats visited in spring (Q01, Q11, Q12, Q13, Q16, Q17, Q18, Q19, Q20, Q25, Q26, Q27, Q28) was analysed using PATN to assist in the determination of vegetation types, with those quadrats grouped together in PATN being typically assigned to the same vegetation type. The results of the PATN analysis were verified against field observations to derive the final vegetation types. As PATN compares the species present in each quadrat (and

GHD has not included dominance) occasionally quadrats are grouped together due to similarities in the species complex which may appear distinctly different in the field (either based on dominance of key species, soils, landform or presence of disturbance factors). As a result, a degree of discretion is required when interpreting PATN outputs. In these instances, GHD has assigned the vegetation type based on field assessment not PATN results.

PATN analysis was used to compare the GHD quadrats to existing data (where available) for TEC/PEC of the Swan Coastal Plain. PATN is limited in use for this purpose as analysis is based on all species recorded in quadrats, includes introduced species and does not take into account dominance of species. Further interpretation of PATN results, coupled with field and desktop information is needed to determine whether the vegetation types are representative of a TEC or PEC.

Information from the Swan Coastal Plain dataset (Gibson et al., 1994) was extracted for each of the TEC/PEC identified during desktop searches. These TEC/PEC align with FCT described and surveyed by Gibson et al. (1994). A representative sample of the FCT potentially found in the area was selected. The quadrats shown in Table 5 were used for each of the relevant FCT.

Table 5 List of Gibson et al. (1994) quadrats used in PATN analysis

Floristic Community Type	Quadrats
SCP19a	PB-1, PB-6, rich01
SCP19b	cool 09, cool14, cool15, xyan10
SCP24	bold07, bold09, BOLD-1, bold12, bold13, bold14, BOLD-2, bold23, BOLD-3, BOLD-4, buck01, CHIDPT-1, cool 02, cool 03, cool 08, Hepb03, KERO-1, KERO-2, MI23, MTB-1, MTB-2, MTB-3, MTB-4, NAVB-3, NAVB-4, NEER-1, NERR-10, NEER-11, NEER-7, NEER-9, PTWALT-1, star01, star02, THOM-2, TRIG-5, TRIG-6, xbeer01
SCP26a	CLIFT02, CLIFT02, CLIFT03, SHE-4, SHE-5, SVH-1, WABL-1, YAN-12, YAN-13, YAN-15, YAN-2, YAN-24, zYAN4, zYAN5
SCP28	4M03, beel01, BULL-1, BULL-10, BULL-11, BULL-4, BULL-9, DEPOT-1, Guild08, HARRY-1, HARRY-2, Hepb01, KING-1, KING-2, leda02, MILT-4, moore01, moore02, moore03, much01, much03, NEER-2, NEER-20, NEER-21, NEER-22, NEER-23, NEER-3, NEER-4, NEER-5, NEER-6, NEER-8, Pinn01, Pinn03, quinn02, sams01, sand01, SEAB-6, SHE-2, SHENT-1, star03, tokyu03, TRIG-3, TRIG-4, WABL-4, WARI-1, WARI-2, WATERRD1, wilb06, wilb07

3.2.2 Fauna

The fauna assessment was consistent with a Level 1 assessment (reconnaissance survey) in accordance with Guidance Statement No. 56 (EPA, 2004b). Nomenclature follows that used by the Western Australian Museum and the DPaW NatureMap database, as it is deemed to contain the most up-to-date species information for Western Australia, with the exception of birds, which uses Christidis and Boles (2008).

GHD ecologists conducted a reconnaissance survey of the Study Area on foot over a series of nine days between May and July 2013 to identify habitat types. A fauna habitat assessment check sheet was used to document the type, condition and extent of habitats within the Study Area, this included:

- Habitat structure (e.g. vegetation type, presence/absence of overstorey, midstorey, understorey, ground cover)
- Presence/absence of refuge including: fallen timber (coarse woody debris), hollow-bearing trees and stags and rocks/boulder piles, and the type and extent of each refuge
- Presence/absence of waterways including type, extent and habitat quality within waterways
- Land use or disturbance history
- Location of habitat within the surrounding landscape and habitat connectivity
- Identification of wildlife corridors within and immediately adjacent Study Area
- Evaluation of the likelihood of occurrence of listed fauna occurring within the habitat (based on presence of suitable habitat)

Opportunistic fauna searches were also conducted across the Study Area. Opportunistic searches involved:

- Searching through microhabitats including turning over logs or rocks, turning over leaf litter and examining tree hollows and hollow logs
- Visual and aural surveys. This accounted for many bird species potentially utilising the Study Area
- Searching the Study Area for tracks, scats, bones, diggings and feeding areas for both native and feral fauna

A general habitat assessment of the potential for black cockatoo habitat within the Study Area was also conducted. The survey documented the presence/absence of suitable habitat trees (e.g. eucalypt trees with diameter at breast height (DBH) greater than 50 centimetres (cm) or greater than 30 cm for wandoo and salmon gum). General notes were also taken regarding the presence and extent of foraging habitat and the presence/absence of black cockatoo species within the Study Area. The results of this assessment are provided in more detail within the Black Cockatoo Assessment report (GHD, 2013).

3.3 Limitations

3.3.1 Desktop investigation limitations

Queries of the DotE Protected Matters database (the Protected Matters Search Tool – PMST) is used to identify species listed under the EPBC Act and draws on various sources to report on the potential of the species occurrence within an area. The database is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. Additionally, it is broad-scale in its reporting and often the specific habitat requirements of the species do not occur, or are unlikely to occur, within a Study Area. For this reason not all species reported by the search tool need to be considered in management decisions. The DPaW NatureMap database reports on actual records of the species within the designated area and can provide more accurate information of the likelihood of species presence. However, some records of collections, sightings or trappings can be dated and often misrepresent the current range of threatened species. Neither data base can be considered exhaustive. Species of conservation significance may be found during surveys that are not listed in the databases.

3.3.2 Field survey limitations

The limitations surrounding the flora and fauna survey are provided in Table 6.

Table 6 Field survey limitations

Limitation	Constraint	Impact on survey outcomes
Sources of information and availability of contextual information	Nil	Adequate information is available for the Study Area, this includes: • Previous mapping by HGM (2001) • Broad scale (1:250,000) mapping by Beard (1979) and Shepherd et al. (2002) • Broad scale (1:250,000) mapping by Heddle et al. (1980) • FloraBase records (WA Herbarium, 1998–) • Threatened and Priority Ecological Community records (DPaW, 2013a and 2013b) • Threatened flora records (DPaW, 2012) • NatureMap records (DPaW, 2007–) (also includes fauna records) • Vegetation extents (Government of Western Australia, 2013 and EPA, 2006a) Suitable habitat mapping and database records for most fauna species (and some flora species) is often lacking and not verified by the appropriate authority.
Scope (i.e. what life forms were sampled etc.)	Nil	Vascular flora and vertebrate fauna taxa were sampled during the survey. Non-vascular flora taxa were not assessed as part of the survey.
Proportion of flora collected and identified (based on sampling, timing and intensity).	Moderate	The flora recorded from the field survey is detailed in Section 4.8 and a full flora species list provided in Appendix D. A total of 392 taxa representing 79 families and 234 genera were recorded during the survey. Due to the absence of adequate flowering parts and/or fruiting bodies required for identification, eight taxa could be identified to family only and 35 taxa could be identified to genus only. In addition, two species were only tentatively identified to species and some herbs and grasses were too immature to be unidentifiable. The first phase of the survey was conducted in May–July, 2013, which is outside of the optimal spring survey season. Many taxa (e.g. shrubs, herbs, sedges and grasses) were not flowering and many annual species (e.g. orchids) would not yet have emerged (most appear after winter rains). However, the second phase of the survey was conducted in September and October, 2013, which is within the optimal spring survey season. A total of 28 quadrats were described by GHD ecologists. The distribution of quadrats is consistent with EPA (2004) Guidance Statement No. 51 which stipulates a minimum of two sites per vegetation unit. In addition to quadrats, GHD recorded 20 photograph points.
Flora determination	Nil	Flora determination was undertaken by GHD ecologists in the field and in consultation with staff at the WA Herbarium. The taxonomy and conservation status of the Western Australian flora is dynamic. This report was prepared with reliance on taxonomy and conservation current at the time issuing, but it should be noted this may change.

Limitation	Constraint	Impact on survey outcomes
Intensity of survey – fauna	Nil	The fauna assessment conducted was a reconnaissance (Level 1) survey only and thus only sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings etc. Many cryptic and nocturnal species would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. The fauna assessment was aimed at identifying habitat types and terrestrial vertebrate fauna utilising the Study Area. No sampling for invertebrates or aquatic species occurred. The information available on the identification, distribution and conservation status of invertebrates is generally less extensive than that of vertebrate species.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed?)	Moderate	The majority of the Study Area was accessible during the field survey. Some fenced portions were not accessed by the field team during the initial phase of the survey. However, these areas were successfully accessed during the second phase of the survey. Areas of land owned by the Public Transport Authority were accessed during both phases of the survey. It is considered that the majority of the taxa identifiable at the time of the surveys would have been observed. The Gibson et al. (1994) "*analysis of plant communities on the Swan Coastal Plain … is the most recent regional floristic work on public lands*, … [and considers] *the patterning of plant distribution on the Plain and relates to the total flora of the Plain*" (Government of Western Australia, 2000). Floristic Community Types (FCT) are based on the results of multivariant analysis conducted on 1122 quadrats. Comparison of vegetation identified at the Project area against FCT identified by Gibson et al. (1994) can assist in determining the presence of TEC or PEC. The vegetation types identified within the Study Area have been aligned with various FCT. Although, clarification with the Department of Parks and Wildlife (DPaW) is often recommended for certainty. In addition, FCT cannot be definitively determined when the remaining vegetation has been too disturbed to sample adequately or not enough information about the vegetation can be obtained (Government of Western Australia, 2000).
Mapping reliability	Nil	The vegetation of the Study Area was mapped at a scale of 1:10,000, using aerial photography captured in 2013. As the majority of the Study Area had not been burnt for over five years, fire is not considered to have an impact upon the vegetation type or condition identified during the survey.

Limitation	Constraint	Impact on survey outcomes
Timing, weather, season	Moderate	The initial phase of the vegetation survey was conducted in winter, which is not the optimal time for assessing vegetation on the Swan Coastal Plain. If present within the Study Area, many species would not have been observed as many taxa (e.g. shrubs, herbs, sedges and grasses) would not yet be flowering and many annual species (e.g. orchids) would not yet have emerged (most appear after winter rains). However, the second phase of the vegetation survey was conducted during spring, which is considered to be the optimal time. Flora composition changes over time, with flora species having specific growing periods, especially annuals and ephemerals (some plants lasting for a markedly brief time, some only a day or two). Therefore, the results of future botanical surveys in this location may differ from the results of this survey. Additionally, climatic and stochastic events (such as fire) may affect the presence of plant species. Species that have a very low abundance in the area are more difficult to locate, due to the aforementioned factors. Complete flora and fauna surveys can require multiple surveys over a period of a number of years to enable observation of all species present. Information from previous surveys within the Study Area are available and this information has been incorporated into this report where relevant. In the period June–August, 2013, the Gingin Aero Bureau of Meteorology weather station (9178) (located 25 km north-east of the Study Area) recorded 333.2 mm of rainfall (BoM, 2013). This is five percent lower than the long term average for the same period (349.6 mm) (BoM, 2013). In the 20 days spent in the field, nine experienced rain, with a total of 27.2 mm recorded.
Disturbances (fire, flood, accidental human intervention etc)	Nil	As the Study Area is within the Perth metropolitan region, humans and domestic animals (especially dogs) are a frequent occurrence. It is not considered that these disturbances impacted the survey.
Intensity (in retrospect, was the intensity adequate?)	Nil	The Study Area was sufficiently covered by GHD ecologists for a Level 2 survey with a total of 28 quadrats described as well as grid-based searching for conservation significant flora species.
Resources	Nil	Adequate resources were employed during the survey. Up to 20 person days were spent conducting the flora survey, and nine person days spent conducting the fauna survey, in conjunction with the black cockatoo habitat assessment.
Access problems	Nil	The majority of the Study Area was accessible. However, there were two small fenced areas adjacent to the railway that could not be accessed during the initial phase of the survey. These areas were successfully accessed during the second phase of the field survey.
Experience levels	Nil	The ecologists who executed the survey were practitioners suitably qualified in their respective fields.

4. Results & discussion

4.1 Bioregion

The Study Area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion, Perth Sub-Region (SWA02). This sub-region is dominated by woodlands of Banksia and Tuart on sandy soils, sheoak on outwash plains, and paperbark in swampy areas. The colluvial and aeolian sand areas represent three phases of Quaternary marine sand dune development (which provide relief), and include a complex series of seasonal fresh water wetlands, alluvial river flats, coastal limestone and several off-shore islands. Younger sandy areas and limestone are dominated by heath and/or Tuart woodlands, while Banksia and Jarrah–Banksia woodlands are found on the older dune systems (Mitchell et al., 2002).

4.2 Climate

The Study Area experiences a Mediterranean climate, with mild wet winters and hot dry summers. The closest Bureau of Meteorology (BoM) weather station to the Study Area is located 25 km north-east at Gingin Aero (station number 9178). A summary of the climatic data (BoM, 2013) for this weather station is below:

- Mean maximum temperature: 18.3 °C (July) to 33.3 °C (February)
- Mean minimum temperature: 6.1 °C (July) to 17.0 °C (February)
- Rainfall: 649.0 mm
- Mean number of days of rain ≥ 1 mm: 76.3

4.3 Environmentally Sensitive Areas

A large proportion of the Study Area is classified as an Environmentally Sensitive Area (ESA) (Government of Western Australia, 2012) (Figure 2, Appendix A). The ESA is associated with Bush Forever sites and TECs.

There is an ESA that covers much of the Study Area which is associated with Bush Forever site 383. Two small sections of ESA are associated with Bush Forever Sites 384 and 299 .Bush Forever sites are discussed further in Section 4.4.

The round ESAs located towards the northern end of the freeway alignment and Wanneroo Rd are associated with the buffer of the TEC '*Melaleuca huegelii–M. acerosa* [now *M. systena*] shrublands on limestone ridges' (discussed further in Section 4.7).

4.4 Reserves & conservation areas

The following two DPaW-managed reserves occur within the Study Area (Government of Western Australia, 2012) (Figure 2, Appendix A):

- Neerabup National Park (4.93 ha within the Study Area)
- Neerabup Nature Reserve (east of Wanneroo Rd) (1.78 ha within the Study Area)

In addition, the Study Area is surrounded by the following three DPaW-managed reserves (Government of Western Australia, 2012):

- Lake Joondalup Nature Reserve (south of the Study Area)
- Gnangara–Moore River State Forest (east of the Study Area)

- Marmion Marine Park (west of the Study Area)

The following three Bush Forever sites occur within the boundaries of the Study Area (Government of Western Australia, 2012) (Figure 2, Appendix A):

- Yellagonga Regional Park, Wanneroo/Woodvale/Kingsley (site 299) (0.03 ha within the Study Area)
- Neerabup National Park, Lake Nowergup Nature Reserve and adjacent bushland, Neerabup (site 383) (147.87 ha within the Study Area)
- Neerabup Lake and adjacent bushland, Neerabup (site 384) (0.04 ha within the Study Area).

4.5 Broad vegetation types

Broadscale vegetation mapping of the area (Beard, 1979) identified the following four vegetation associations present within the Study Area (Figure 2, Appendix A):

- Medium woodland; tuart [*Eucalyptus gomphocephala*] & jarrah [*E. marginata*] (association 6)
- Shrublands; teatree [*Agonis flexuosa*] thicket (association 37)
- Low woodland; banksia [*Banksia* spp.] (association 949)
- Medium woodland; tuart [*E. gomphocephala*] (association 998)

The Heddle et al. (1980) mapping identified the following vegetation complexes on Aeolian Deposits of the Swan Coastal Plain within the Study Area (Government of Western Australia, 2000) (Figure 2, Appendix A):

Quindalup dunes

- ***Quindalup complex:*** Coastal dune complex consisting mainly of two alliances – the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata – Callitris preissii* and the closed scrub of *Acacia rostellifera*: Occurs at the western end of Romeo Rd.

Spearwood Dunes

- ***Cottesloe complex – central and south:*** Mosaic of woodland of *Eucalyptus gomphocephala* and open forest of *E. gomphocephala – E. marginata – E. calophylla* [now *Corymbia calophylla*]; closed heath on the Limestone outcrops: Occurs across the majority of the Study Area.
- ***Karrakatta complex – central and south:*** Predominantly open forest of *E. gomphocephala – E. marginata – C. calophylla* and woodland of *E. marginata – Banksia* species: Occurs at the southern section of Wanneroo Rd.

Wetlands

- ***Herdsman complex:*** Sedgelands and fringing woodland of *E. rudis – Melaleuca* species: intersects a small section of the Study Area at Wanneroo Rd and Burns Beach Rd

The mapping of Beard (1979) and Heddle et al. (1980) is broad-scale and used for desktop assessment. The vegetation types present within the Study Area do not necessarily reflect this broad-scale mapping. Vegetation types specific to the Study Area have been determined from the field assessment (see below – Section 4.6)

4.6 Vegetation type & condition

4.6.1 Vegetation type

The majority of the Study Area is located alongside established residential areas, roads, tracks and the Clarkson line railway. As such, much of the Study Area has been highly disturbed and is cleared or has been revegetated with native or introduced plant species. The vegetation types of each Stage of the Study Area are provided in Table 7.

The remnant vegetation (208 ha – 47 percent) within the Study Area consists of six vegetation types (Table 8). In addition, the Study Area is composed of mosaics[1] of two vegetation types. These vegetation types are generally associated with the landforms upon which they lie, with tall woodlands to forests in lower-lying areas with deep soils, low shrublands and heaths on shallow soils on hilltops and ridges, and woodlands in intermediate landforms. The remnant vegetation of the Study Area appears to align with the following Gibson et al. (1980) vegetation complexes (Table 8):

- FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 PEC)
- FCT 26a: *Melaleuca acerosa* [now *M. systena*]/*M. huegelii* shrublands on limestone ridges (Endangered TEC)
- FCT 28: Spearwood *Banksia attenuata* or *Banksia attenuata*/*Eucalyptus* woodlands.

The PATN analysis grouped all GHD quadrats together, separate from Gibson et al. (1994) quadrats of each FCT (Appendix D). This indicates that the GHD quadrats from each different vegetation type were distinctly dissimilar to all analysed Gibson FCTs.

PATN analysis identified GHD quadrats as being similar to one another (e.g. quadrats 17 and 18 were grouped together and both are within VT3). However, many other GHD quadrats were identified as containing similar species to each another, but have been assigned to different vegetation types. GHD quadrats 11, 12, 13 and 20 were correctly grouped as containing similar species. Even though these vegetation types share many species (as determined by PATN analysis), the landforms are dissimilar and provide different habitats. As a result, these quadrats have been split between VT4 and VT5. Although not corroborated by PATN analysis, field assessment has determined that the Study Area contains vegetation matching the aforementioned FCT.

The Gibson et al. (1994) data contains taxa which are no longer current (e.g. *Dryandra sessilis* has been superseded by *Banksia sessilis*; **Anagallis arvensis* is more recently known as **Lysimachia arvensis*). As PATN analyses text for similarities and differences, the currency of taxa is necessary to provide a significant output. The discrepancies between Gibson et al. (1994) and GHD taxa has limited the output provided by PATN analysis. DPaW has not updated the Gibson et al. (1994) dataset since 2005 and has advised against altering the data in any way.

The vegetation of the Study Area is mapped in Figure 3 (Appendix A).

[1] Mosaics are vegetation/habitat units with more than one vegetation/habitat type within them. These mosaics are examples of "structurally and floristically different vegetation[/habitat] types within one map unit that are not uniquely tied together ecologically (e.g. are part of the patterning of the landscape)" (ESCAVI 2003). These mosaics occur because occurrences of each vegetation/habitat type are smaller than the scale of the minimum mapping unit (i.e. 1:10,000).

Table 7 GHD vegetation types within each Stage of the Study Area

Vegetation type	Stage 1	Stage 2	Stage 3
1: *Banksia* woodland	×	×	×
2: Jarrah–*Banksia* woodland	×	×	×
3: Tuart woodland[i]	×	×	×
4: Mixed low heath on limestone[i]	×	×	
5: *Melaleuca huegelii–M. systena* shrubland on limestone[ii]		×	×
6: *Banksia sessilis* closed tall scrub[i]	×	×	
7: Mosaic of vegetation types 1 & 4	×	×	
8: Disturbed/roads/tracks/railway	×	×	×
9: Rehabilitation	×		
10: Planted			×

[i] Floristic Community Type 24: Northern Spearwood shrublands and woodlands (Department of Parks and Wildlife Priority 3 Priority Ecological Community)
[ii] Floristic Community Type 26a: *Melaleuca acerosa* [now *M. systena*]/*M. huegelii* shrublands on limestone ridges (Department of Parks and Wildlife Endangered Threatened Ecological Community)

Table 8 Vegetation types within the Study Area

Vegetation type	Vegetation description	Area of Study Area (ha)	Location	Potential corresponding Gibson et al. (1994) vegetation complex	Indicative photograph
1: *Banksia* woodland	Woodland of *Banksia attenuata*/*B. menziesii* (with occasional *Eucalyptus*/*Corymbia* species and *Allocasuarina fraseriana*) over shrubland of *Hibbertia hypericoides*, *Xanthorrhoea preissii* and *Acacia pulchella* over dense understorey of *Mesomelaena pseudostygia*, weedy grasses and herbs and *Desmocladus flexuosus* on grey to brown sand.	93.4	Occurs across the Study Area and is the dominant vegetation near Romeo Road and the northern section of Wanneroo Road Sampling points: Q01, Q02, Q03, Q04, Q05, Q14, Q15, Q19, Q22, PP01, PP03, PP13, PP14 Mosaic sampling points: Q18, Q23, Q24, PP11	FCT 28: Spearwood *Banksia attenuata* or *Banksia attenuata*/*Eucalyptus* woodlands	
2: Jarrah–*Banksia* woodland	Woodland of *Eucalyptus marginata* and *Banksia attenuata*/*B. menziesii* over shrubland of *Hibbertia hypericoides*, *Xanthorrhoea preissii* and *Acacia pulchella* over dense understorey of *Mesomelaena pseudostygia*, weedy grasses and herbs and *Desmocladus flexuosus* on grey to brown sand.	10.8	Isolated occurrences across the Study Area. This vegetation type was not large enough to conduct quadrat assessments. Sampling points: Q25, Q26, PP02, PP08, PP09, PP20	FCT 28: Spearwood *Banksia attenuata* or *Banksia attenuata*/*Eucalyptus* woodlands	
3: Tuart woodland	Woodland of *Eucalyptus gomphocephala* over sparse shrubland of *Xanthorrhoea preissii*, *Acacia saligna*, *Rhagodia baccata* and *Hakea lissocarpha* over sparse understorey of weedy grasses and herbs in deep dark brown sand.	59.2	Occurrences in the southern section of the freeway alignment, the Neerabup Road area and the southern section of Wanneroo Road as well as isolated occurrences in low-lying areas in the north of the Study Area. Sampling points: Q06, Q07, Q08, Q17, Q18, Q21, Q27, PP04, PP06, PP07, PP15, PP16, PP17, PP18, PP19	FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 PEC)	

Vegetation type	Vegetation description	Area of Study Area (ha)	Location	Potential corresponding Gibson et al. (1994) vegetation complex	Indicative photograph
4: Mixed low heath on limestone	Low heath of mixed species (dominated by *Melaleuca systena*, *Acacia lasiocarpa*, *Hibbertia hypericoides* and *Xanthorrhoea preissii*) over a dense mixed understorey (dominated by *Desmocladus flexuosus* and *Drosera erythrorhiza* and weedy grasses and herbs) on limestone.	22.3	Occurs on limestone ridges in the freeway alignment to the north of Lukin Drive. Sampling points: Q09, Q10, Q12, Q13 Mosaic sampling points: Q23, Q24, PP11	FCT 24: Northern Spearwood shrublands and woodlands (Priority 3 PEC)	
5: *Melaleuca huegelii–M. systena* shrubland on limestone	Shrubland of *Melaleuca huegelii*, *M. systena*, *Acacia pulchella* and *Grevillea preissii* subsp. *preissii* over a sparse understorey of *Desmocladus flexuosus*, *Lomandra* species and mixed weedy herbs and grasses on outcropping limestone.	0.6 plus small patches	Small, isolated occurrences on outcropping limestone ridges within the freeway alignment north of Lukin Drive. Sampling points: Q11, Q20	FCT 26a: *Melaleuca systena*/*M. huegelii* shrublands on limestone ridges (Endangered TEC)	
6: *Banksia sessilis* closed tall scrub	Closed tall scrub of *Banksia sessilis* over a sparse understorey of mixed weedy herbs and grasses on grey sand.	7.7	Occurs along the western end of the Romeo Road extension and isolated patches throughout the Study Area. Likely to be a disturbed vegetation type. Sampling points: Q16, Q24, Q28, PP12	This vegetation type may be a more disturbed form of the Priority 3 PEC FCT 24 (Northern Spearwood shrublands and woodlands)	
7: Mosaic of vegetation types 1 & 4		14.3	Occurs along the railway alignment. Sampling points: Q23, Q24, PP11	Combination of FCT 28 (Spearwood *Banksia attenuata* or *Banksia attenuata*/*Eucalyptus* woodlands) and FCT 24 (Northern Spearwood shrublands and woodlands – Priority 3 PEC)	
8: Degraded/roads/tracks/railway		210.9	Occurs throughout the Study Area.	-	
9: Planted		7.1	Occurs throughout the Study Area along roads.	-	

Vegetation type	Vegetation description	Area of Study Area (ha)	Location	Potential corresponding Gibson et al. (1994) vegetation complex	Indicative photograph
10: Rehabilitation		12.6	Occurs along the railway alignment and within the Burns Beach Road/Mitchell Freeway off-ramp.	-	

PEC Department of Parks and Wildlife Priority Ecological Community

TEC Department of Parks and Wildlife Threatened Ecological Community

4.6.2 Vegetation condition

Vegetation condition of the Study Area ranged from *Excellent* (2) to *Completely Degraded* (6) (Figure 4, Appendix A). Roads, tracks, the train line and other cleared areas were considered to be *Completely Degraded*. Vegetated areas may consist of remnant vegetation and roadside plantings (with native and exotic species) or rehabilitation. Roadside plantings were generally considered to be *Completely Degraded*. Depending on the stage of regrowth, rehabilitated areas have been assigned conditions of *Degraded* to *Completely Degraded*. Remnant vegetation ranged in condition from *Excellent* to *Completely Degraded*. In general, the greater distance from roads and residential areas, the better condition of the vegetation. Large portions of vegetation adjacent to the train line were in *Excellent* condition, whereas areas alongside arterial roads were in *Completely Degraded* condition. The majority of the Neerabup Road portion bounded by Neerabup National Park was in *Excellent* condition, in part due to restricted access to the general public.

4.7 Threatened & Priority Ecological Communities

Desktop investigations (DotE, 2013a; DPaW, 2013a; and DPaW 2013b) and surveys by HGM (2001) identified three conservation significant communities that occur or are predicted to occur within the Study Area (Figure 2, Appendix A). Of these, GHD observed one TEC (*Melaleuca huegelii–M. acerosa* [now *M. systena*] shrublands on limestone ridges) and one Priority 3 PEC (Northern Spearwood Shrublands and Woodlands) (Table 9) within the Study Area (Figure 5, Appendix A).

GHD observed no DotE listed TECs within the Study Area.

Table 9 Conservation significant communities occurring & possibly occurring within the Study Area

Conservation significant community	Status		Description	Presence within Study Area	
	State (WC Act/DPaW listing)	Federal (EPBC Act listing)		Desktop	GHD survey
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Critically Endangered TEC	Endangered TEC	This community occurs in linear damplands and occasionally sumplands, between Holocene dunes. Typical and common native species are the shrubs *Acacia rostellifera*, *A. saligna*, *Xanthorrhoea preissii*, the sedges *Baumea juncea*, *Ficinia nodosa*, *Lepidosperma gladiatum* and the grass *Poa porphyroclados* (English et al., 2002). Corresponds to Gibson et al. (1994) SCPFCT19.	Previous mapping in the area for the MRS amendment has not identified vegetation types corresponding to this vegetation type.	Not present.
Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges	Endangered TEC		Corresponds to Gibson et al. (1994) SCPFCT26a.	This corresponds to HGM (2001) vegetation type: Mixed Low Heath.	Present as vegetation type (0.6 ha and additional minor occurrences): • 5 (*Melaleuca huegelii–M. systena* shrubland on limestone) o Freeway alignment north of Lukin Drive.

Conservation significant community	Status		Description	Presence within Study Area	
	State (WC Act/DPaW listing)	Federal (EPBC Act listing)		Desktop	GHD survey
Northern Spearwood Shrublands and Woodlands	Priority 3 PEC		Heaths with scattered *Eucalyptus gomphocephala* occurring on deeper soils north from Woodman Point. Most sites occur on the Cottesloe unit of the Spearwood system. The heathlands in this group typically include *Dryandra sessilis* [now *Banksia sessilis*], *Calothamnus quadrifidus* and *Schoenus grandiflorus*. Corresponds to Gibson et al. (1994) SCPFCT24.	This corresponds to HGM (2001) vegetation types Tuart Woodland and *Banksia* (*Dryandra*) *sessilis* Heath and occurs throughout the MRS extent and it is expected to occur throughout Neerabup National Park.	Present as vegetation types (total of 82.0 ha): • 3 (Tuart woodland): o Southern section of freeway alignment, Neerabup Road, southern section of Wanneroo Road, isolated in the north • 4 (Mixed low heath on limestone): o Freeway alignment north of Lukin Drive May be present as vegetation type (7.7 ha): • 6 (*Banksia sessilis* closed tall scrub): o Western end of Romeo Road, isolated patches throughout.

DPaW	Department of Parks and Wildlife
PEC	Priority Ecological Community
SCPFCT	Swan Coastal Plain Floristic Community Type
TEC	Threatened Ecological Community
WC Act	Wildlife Conservation Act 1950

4.8 Flora diversity

The desktop assessment (DPaW, 2007–) identified 1023 plant taxa (including subspecies and varieties), representing 143 families and 483 genera, that have previously been recorded within 10 km of the Study Area. This total is comprised of 820 native species and 203 introduced (exotic) species. Dominant families recorded within 10 km of the Study Area include:

- Fabaceae: 90 species
- Asteraceae: 72 species
- Myrtaceae: 64 species

The GHD survey identified a total of 392 flora species from 79 families and 234 genera within the Study Area. This number included 246 native species and 146 introduced/planted species. Dominant families recorded during the survey Study Area were:

- Fabaceae: 49 taxa
- Asteraceae, Myrtaceae and Poaceae: 32 taxa each
- Proteaceae: 25 taxa

4.8.1 Conservation significant flora

Searches of the DPaW Threatened Flora (2012) and the Western Australian Herbarium (WAHERB) databases, EPBC Act PMST (DotE, 2013a) and Western Australian Museum/DPaW NatureMap records (DPaW, 2007–) identified one vascular flora species of conservation significance (*Acacia benthamii* – Priority 2) previously recorded within the Study Area. One non-vascular species (*Fabronia hampeana* – a Priority 2 moss) has also previously been recorded within the Study Area. An additional 36 species of conservation significance have been recorded or potentially occur within 10 km of the Study Area (Appendix B). Species of conservation significance previously recorded within 10 km of the Study Area have been mapped in Figure 2 (Appendix A).

No species listed under the EPBC Act or *Wildlife Conservation Act 1950* (WC Act) were recorded during the survey. *Fabronia hampeana* was not recorded during the field survey. However, five other DPaW Priority species were recorded within the Study Area:

- *Acacia benthamii* (Priority 2)
- *Eucalytpus caesia* (Priority 4)
- *Jacksonia sericea* (Priority 4)
- *Pimelea calcicola* (Priority 3)
- *Stylidium maritimum* (Priority 3)

Eucalyptus caesia was identified in roadside plantings. This species is widely grown as an ornamental plant. As a result, the individuals observed within the Study Area are not considered to be wild, naturally occurring specimens.

Acacia benthamii (DPaW Priority 2)

Acacia benthamii is described as a shrub around 1 m high, with yellow flowers present in August to September. This species is found in sandy soils, typically on limestone breakaways (WA Herbarium, 1998–). *Acacia benthamii* is restricted to the Kings Park and Subiaco areas of Perth, Wanneroo and near Yanchep (Maslin, 2001).

Two individuals of this species were observed (Plate 1, page 26) on sandy soils within a fenced off portion alongside the railway approximately 1.5 km north of Hester Avenue within vegetation

type 1 (*Banksia* woodland) (Stage 2) (Figure 5, Appendix A and Appendix D). The two plants had been individually fenced off using chicken wire, indicating that they have been previously identified for protection by the landholder. As no adequate flowering or fruiting material was present at the time of the survey, it is not possible to verify these specimens.

Jacksonia sericea (DPaW Priority 4)

Jacksonia sericea is described as a low spreading shrub to 60 cm high, with orange flowers (present in December or January to February), and is found in calcareous and sandy soils (WA Herbarium, 1998–). Research has shown *J. sericea* appears to be restricted to the highly populated area of Perth and occurs within highly fragmented reserves (Malcolm, 2012). In addition to the extensive clearing of habitat for development, this species is considered to be under threat of habitat loss due to dieback (*Phytophthora cinnamomi*), of which the species is moderately susceptible (Malcolm, 2012). Dieback is impacting on vegetation communities by changing species composition, degrading the habitat and allowing invasion of weedy species, which in turn leads to higher impacts from grazing and changes in fire regimes (Mitchell et al., 2002).

Discussion with the WA Herbarium (pers. comm.) determined that within the Wanneroo region (near the Study Area), *J. sericea* species intergrades with *J. calcicola* (Chappill et al., 2007), which is not listed under any legislation or as a Priority species. As a result, many individuals within the Wanneroo region possess intermediate characteristics or traits of both species. As no adequate flowering material was present at the time of the survey, it is not possible to verify these specimens.

Approximately 6,020 individuals of this species (Plate 2, page 27) were observed, scattered predominantly throughout vegetation type 1 (*Banksia* woodland) and alongside disturbed areas of the Study Area (Stages 1, 2 and 3) (Figure 5, Appendix A and Appendix D).

Pimelea calcicola (DPaW Priority 3)

Pimelea calcicola is described as an erect to spreading shrub, growing from 0.2 m to 1 m tall in sand on coastal limestone ridges (WA Herbarium, 1998–). It produces pink flowers in September to November.

Approximately 516 individuals of this species were observed (Plate 3, page 28) within GHD vegetation types 4 (Mixed low heath on limestone) and 5 (*Melaleuca huegelii–M. systena* shrubland on limestone) (Stages 2 and 3) (Figure 5, Appendix A and Appendix D).

Stylidium maritimum (DPaW Priority 3)

Stylidium maritimum is described as a caespitose perennial herb, growing up to 0.7 m high, with tufted, linear leaves. It produces white/purple/pink flowers in from September to November. This species grows in sand over limestone, on dune slopes, flats, coastal heath and shrubland and open *Banksia* woodland (WA Herbarium, 1998–).

Approximately 1,455 individuals of this species were observed (Plate 4, page 29) within vegetation type 4 (Mixed low heath on limestone) (Stages 2 and 3) (Figure 5, Appendix A and Appendix D).

Plate 1 *Acacia benthamii* & habitat as observed within the Study Area

Plate 2 *Jacksonia sericea* as observed within the Study Area

Plate 3 *Pimelea calcicola* & habitat as observed within the Study Area

Plate 4 *Stylidium maritimum* & habitat as observed within the Study Area

Likelihood of occurrence assessment

A likelihood of occurrence assessment of conservation significant species (based on the range, habitat requirements and previous records of the species as well as taking into account the intensity of field survey and season) was conducted for all conservation significant species identified in the desktop assessment (Appendix D). As the survey included a targeted search for species of conservation significance, the likelihood of occurrence assessment also took into account the ease of identification of each species and the probability that, if present, the species would have been observed. In addition to the five species of conservation significance identified during previous surveys and the GHD survey (Section 4.8.1), the likelihood of occurrence assessment determined that two species listed under both the EPBC Act and WC Act and eight DPaW Priority-listed species may occur within the Study Area (Table 10).

Table 10 Conservation significant flora species possibly occurring, likely or known to occur within the Study Area

Taxa	Common name	Status		Likelihood of occurrence	Recorded within Study Area
		State (WC Act/DPaW listing)	Federal (EPBC Act listing)		
Acacia benthamii		Priority 2		Known previously	GHD
Austrostipa mundula		Priority 2		Possible	-
Caladenia huegelii	Grand Spider Orchid	Threatened	Endangered	Possible	-
Conostylis bracteata		Priority 3		Possible	-
Conostylis pauciflora subsp. *euryrhipis*		Priority 4		Possible	-
Conostylis pauciflora subsp. *pauciflora*		Priority 4		Possible	-
Drakaea micrantha	Dwarf Hammer-orchid	Threatened	Vulnerable	Possible	-
Fabronia hampeana	A moss	Priority 2		Known	Previous
Jacksonia sericea	Waldjumi	Priority 4		Known	GHD
Lecania turicensis var. *turicensis*	A lichen	Priority 2		Possible	-
Pimelea calcicola		Priority 3		Known	GHD
Sarcozona bicarinata		Priority 3		Possible	-
Schoenus griffinianus		Priority 3		Possible	-
Stylidium maritimum		Priority 3		Known	GHD
Thelymitra variegata	Queen of Sheba	Priority 3		Possible	-

4.8.2 Other significant flora

In addition to the DPaW Priority species, the survey identified seven other significant flora within the Study Area. Of these, two are not considered to be naturally occurring as they have been used in roadside plantings (Table 11).

Table 11 Other significant flora identified within the Study Area

Species	Status (Government of Western Australia, 2000)						
	DPaW Priority	r	d	p	s	E	Planted
Agonis flexuosa		×			×		
Acacia benthamii	Priority 2			×	×	×	
Astroloma microcalyx					×		
Callitris preissii					×	×	×
Conospermum triplinervium		×			×		
Eucalyptus caesia	Priority 4						×
Jacksonia sericea	Priority 4			×	×	×	
Lechenaultia linarioides				×			
Melaleuca lanceolata			×		×		
Pimelea ?calcicola	Priority 3			×	×		

Significant flora codes (Government of Western Australia, 2000)

Geographical variation significance

r	Populations at the northern or southern limit of their known geographic range
d	Populations disjunct from their known geographic range
p	Considered to be poorly reserved (applies to all Threatened and Priority taxa)
s	Significant populations (applies to all Threatened and Priority taxa)

Regional ecological preferences

E	Taxa endemic to the Swan Coastal Plain in the Perth Metropolitan Region

4.8.3 Introduced flora

A total of 146 introduced (exotic) and planted species were recorded within the Study Area. Three species (apple of Sodom, arum lily and bridal creeper) are listed as Declared Pests under Section 22 of the BAM Act. Bridal creeper is also listed as a WoNS (Australian Weeds Committee, 2010). Information for each species are provided in Table 12, locations are provided in Appendix D and mapped in Figure 4, Appendix A.

Table 12 Locations of Declared Pests & Weeds of National Significance

Species	Common name	Status	Description (DPaW, 2013a)	Indicative photograph	Presence within the Study Area
Asparagus asparagoides	Bridal creeper	Declared Pest C3 Management for the Whole of the State; WoNS	Rhizomatous and tuberous, perennial, herb and climber, 1-5 m high. Fl. white, Aug to Sep. Sand, loam, clay, granite.		Approximately 12 individuals scattered throughout the Study Area.
Solanum linnaeanum	Apple of Sodom	Declared Pest C3 Management for the South West Land Division	Shrub, 0.6-1.6 m high. Fl. blue-purple, Jan or Mar or May or Aug or Oct. Weed of pastures & roadsides.		Approximately 13 individuals within the Tuart woodland (vegetation type 3) immediately south of Clarkson train station.

Species	Common name	Status	Description (DPaW, 2013a)	Indicative photograph	Presence within the Study Area
					
Zantedeschia aethiopica	Arum lily	Declared Pest C3 Management for the Whole of the State	Rhizomatous (tuber-like), perennial, herb, to 1 m high. Fl. white, Jul to Nov. Loam, sand. Swamps, rarely uplands.		Approximately 100 individuals at the intersection of Romeo and Wanneroo Roads.

Images with black borders obtained from WA Herbarium (1998–)

4.9 Fauna

4.9.1 Fauna habitat

Six broad fauna habitat types have been identified in the Study Area based on the predominant landforms, soil and vegetation structure in the area. These following habitat types closely correspond to the vegetation types outlined in section 4.6.1:

- Low heathland on limestone outcrops (22.3 ha)
- *Banksia* woodland on grey/brown sand (93.4 ha)
- Tuart (*Eucalyptus gomphocephala*) woodland in deep dark brown sand (59.2 ha)
- *Banksia sessilis* tall shrubland on grey sand and limestone outcropping (7.7 ha)
- Jarrah (*E. marginata*)–*Banksia* woodland on grey/brown sand (10.8 ha)
- Planted roadside vegetation/highly degraded/cleared (230.6 ha)

In addition to these six fauna habitat types, there were the following two mosaic vegetation types (mosaics are described in footnote 1, page 16):

- Mosaic of *Banksia* woodland and low heathland (14.3 ha)

The fauna habitat of the Study Area is mapped in Figure 6 (Appendix A).

The native vegetation within the Study Area consists predominantly of a combination of mixed eucalypt woodlands and *Banksia* woodlands. These habitat types consist of a dominant overstorey of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah), *Corymbia calophylla* (marri), *Banksia attenuata* and *B. menziesii* and were generally associated with grey sandy soils on plains or low undulating dune systems. The eucalypt and *Banksia* woodlands ranged from degraded to excellent condition and provided particularly high habitat value for fauna species due to the variety of microhabitats and various resource niches available (i.e. fallen logs, hollows, leaf litter, sandy soil).

The woodlands would be expected to support a high diversity of bird species. Across these woodlands are areas of loose sands that are particularly suitable for burrowing reptiles. The woodlands range from an open to closed canopy with a relatively sparse mid-storey and thick ground cover in some areas. This ground cover would provide foraging opportunities and refuge areas for ground-dwelling mammals such as the Echidna, Southern Brown Bandicoot/Quenda and Western Brush Wallaby and reptiles such as goannas and skinks. Micro-habitat features such as tree hollows and cavities provide habitat for a number of birds, reptiles and small mammal species. The presence of tuart, jarrah, marri, banksia and other proteaceous species provides key foraging habitat for conservation significant black cockatoo species. Some of the larger eucalypts also provide potential breeding and roosting habitat for black cockatoos.

The areas which have been highly degraded, cleared or contain planted species along roadsides provide very little to no habitat value for most fauna species as these areas are generally devoid of vegetation. Roadside vegetation may provide some shelter and opportunistic food for some bird species.

4.9.2 Fauna habitat connectivity

Habitat linkages are important to allow animals to move between areas of resource availability. They are important for ground and aerial fauna, providing cover, resources, and linking areas suitable for rest and reproduction. Fragmentation of habitat limits the resources available to species, particularly sedentary species, which means they may be more vulnerable to natural disasters or habitat changes over time. Fragmentation of habitat can also lead to edge effects,

leading to degradation of the habitat. Where the distance between habitat fragments is small, species may still be able to move between these habitat areas, but may be more exposed to predation pressures in the cleared areas.

Locally, the habitat within the Study Area located to the east and north of the railway is connected to habitat in the immediately adjacent Neerabup National Park and associated Bush Forever sites. The vegetation within the PTA rail boundary is currently fenced off with 2.5 m high chain mesh fencing which presents a barrier to movement of ground dwelling fauna between remnant vegetation to the east and west of the existing railway. The majority of the Study Area west of the railway has been cleared or is currently being cleared for urban development, with only small patches of remnant vegetation remaining.

The areas of remnant vegetation in and immediately surrounding the Study Area are part of a regionally significant contiguous bushland/wetland linkage (Government of Western Australia, 2000), with a large proportion of this vegetation currently protected as national park and a series of Bush Forever sites (Government of Western Australia, 2000). The vegetation within Neerabup National Park (Bush Forever site 383) is linked to vegetation to the north, south (Bush Forever site 299, across the road), east and west (Site 323, through bushland to Site 397); and is part of Greenways 35, 2, 5 (Tingay, Alan and Associates, 1998). Neerabup National Park provides a narrow corridor to allow movement of animals along the coastal plain and associated wetlands.

4.9.3 Fauna diversity

A NatureMap search (DPaW, 2007–) identified 456 fauna species as previously recorded within 10 km of the Study Area, of which 438 species are native and 18 are pest (introduced) species (Appendix B). These results consisted of 216 bird, 37 mammal, 65 reptile, 7 amphibian, 54 fish and 77 invertebrate species.

During the field surveys, a total of 61 fauna species, consisting of 47 birds, seven reptiles and seven mammals were recorded within the Study Area. Of these, nine are introduced (feral) species. The list of fauna species recorded during the survey is provided in Appendix E.

4.9.4 Conservation significant fauna

Searches of the EPBC Act PMST (DotE, 2013a) and Western Australian Museum/DPaW NatureMap records (DPaW, 2007–) identified the presence or potential presence of the following:

- 20 Threatened fauna listed under the EPBC Act
- 28 Migratory birds listed under the EPBC Act
- 24 Threatened or other specially protected species listed under the WC Act
- 13 Priority fauna species listed by the DPaW

In addition to these, the desktop searches identified a number of marine mammal, shark, reptile and bird species. These species have been excluded from this assessment as no marine habitat is present within the Study Area or will be impacted as a result of the proposed Project. The list of conservation significant fauna species identified in the desktop review is provided in Appendix B.

During the field survey one species listed as Endangered under the EPBC Act and Threatened under the WC Act and one species listed as Schedule 4 under the WC Act were recorded. They are as follows:

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)

- Carpet Python (*Morelia spilota imbricata*)

The field survey also identified the likely presence of the Priority 5 Quenda/Southern Brown Bandicoot (*Isoodon obesulus fusciventer*) which was identified from potential diggings.

A brief description of each of these species and their associated habitat types within the Study Area are described below.

Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*)

The Carnaby's Black Cockatoo is listed Endangered under the EPBC Act and Threatened (Schedule 1) under the WC Act. It is distributed across the south-west of Western Australia in uncleared or remnant areas of *Eucalyptus* woodland and shrubland of kwongan heath. The Carnaby's Black Cockatoo was recorded multiple times in the Study Area during the field surveys. Numbers of birds recorded at each sighting ranged from a pair of birds to flocks of over 100 individuals. Additionally, evidence of feeding was recorded throughout the Study Area in areas of suitable foraging habitat.

Generally, all the areas containing remnant native vegetation within the Study Area are considered to represent suitable foraging habitat as they all contain plant species documented as foraging habitat. The most dominant/obvious species include *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah), *E. todtiana* (coastal blackbutt), *Corymbia calophylla* (marri), *Banksia grandis, B. menziesii, B. attenuata, B. sessilis* and *Allocasuarina fraseriana* (sheoak).

The Study Area is partially located within the known breeding range for the Carnaby's Black Cockatoo (DotE, 2012). It nests in hollows in live or dead trees of *E. salmonophloia* (salmon gum), *E. wandoo* (wandoo), tuart, jarrah, *E. rudis* (flooded gum), *E. loxophleba* subsp. *loxophleba* (York gum), *E. accedens* (powderbark), *E. diversicolor* (karri) and marri. Of these species, tuart, jarrah, and marri were all recorded from the Study Area. The Tuart woodlands and to a lesser extent, the Jarrah-*Banksia* woodlands are considered to be the most valuable habitat types in terms of providing potential breeding habitat for black cockatoos within the Study Area.

One tree was identified as a potential roosting site. Suitable roosting habitat was identified in the Study Area based on the presence of suitable tall trees, close proximity of known roosting sites (Department of Planning, 2011) and presence of suitable foraging habitat. Although there is no standing water within the Study Area, there are a number of lake systems in the nearby area, including Lake Joondalup to the south and Neerabup and Nowergup lakes to the east.

A more detailed assessment on threatened black cockatoo habitat was undertaken by GHD for the Study Area, which is provided as a separate report (GHD, 2013).

Carpet Python (*Morelia spilota imbricata*)

The Carpet Python is listed as Schedule 4 (other specially protected fauna) under the WC Act. This subspecies inhabits temperate climatic areas with good winter rains and dry summers. It occurs in south-west Western Australia, from Northampton, south to Albany and eastwards to Kalgoorlie, including undisturbed remnant bushland near Perth and the Darling Ranges, Yanchep National Park, and Garden Island. It has been recorded in semi-arid coastal and inland habitats consisting of *Banksia* woodland, eucalypt woodlands, and grasslands (DEC, 2012).

This species was identified in the Study Area from a snake dropping within a tree hollow during the field survey. The majority of the Study Area containing remnant native vegetation provides suitable habitat for this species. It is likely that this species would generally inhabit the larger areas of contiguous native vegetation within the Study Area.

Quenda/Southern Brown Bandicoot (*Isoodon obesulus fusciventer*)

The Quenda, or Southern Brown Bandicoot, is listed as a Priority 5 by the DPaW. This species is widely distributed in the south west of the state from Guilderton, north of Perth, to east of Esperance. They are patchily distributed through the Swan Coastal Plain where they are often associated with wetlands. Quenda inhabit scrubby, often swampy, vegetation with dense cover up to 1 m high and often feed in adjacent forest and woodland (Van Dyck and Strahan, 2008).

Two distinctive conical diggings were observed in the Study Area during the survey. (Figure 6, Appendix A). Although there are no wetlands or wetland associated vegetation within the Study Area, the eucalypt and *Banksia* woodlands provide some suitable habitat for Quenda, particularly areas with a dense understorey.

Likelihood of occurrence assessment

In addition to the fauna species recorded during the field survey, a number of conservation significant fauna species were identified as potentially occurring within the Study Area during the desktop investigation. An assessment on the likelihood of these species occurring in the Study Area was undertaken. This assessment is based on species biology, habitat requirements, the quality and availability of suitable habitat and records of the species in the area. The assessment is provided in Appendix E.

The assessment concluded that two species are known to occur, eight species are likely to occur, four species could possibly occur, and forty species are considered unlikely or highly unlikely to occur within the Study Area. The species determined as present, likely to occur or could possibly occur within the Study Area are listed in Table 13.

Table 13 Conservation significant fauna species identified as present, likely to occur & possibly occurring within the Study Area

Taxa	Common name	Status		Likelihood of Occurrence
		State (WC Act/DPaW listing)	Federal (EPBC Act listing)	
Birds				
Calyptorhynchus latirostris	Carnaby's Black Cockatoo	Threatened	Endangered	Present
Falco peregrinus	Peregrine Falcon	Schedule 4		Likely
Apus pacificus	Fork-tailed Swift	Schedule 3	Migratory	Possible
Merops ornatus	Rainbow Bee-eater	Schedule 3	Migratory	Likely
Mammals				
Isoodon obesulus fusciventer	Quenda / Southern Brown Bandicoot	Priority 5		Likely
Macropus irma	Western Brush Wallaby	Priority 4		Likely
Reptiles				
Ctenotus gemmula (Swan Coastal Plain subspecies)	Jewelled Ctenotus	Priority 3		Possible
Morelia spilota imbricata	Carpet Python	Schedule 4		Present
Neelaps calonotos	Black-striped	Priority 3		Likely

Taxa	Common name	Status		Likelihood of Occurrence
		State (WC Act/DPaW listing)	Federal (EPBC Act listing)	
Birds				
	Snake			
Invertebrates				
Austrosaga spinifer	A cricket	Priority 3		Likely
Hylaeus globuliferus	A bee	Priority 3		Likely
Idiosoma nigrum	Shield-backed Trapdoor Spider	Threatened		Possible
Leioproctus contrarius	A bee	Priority 3		Likely
Synemon gratiosa	Graceful Sun Moth	Priority 4		Possible

4.9.5 Locally significant fauna

Locally significant fauna are those which are not formally listed under State or Commonwealth legislation or listed as Priority fauna by the DPaW but are considered to have a restricted distribution on the Swan Coastal Plain or have dramatically declined in numbers since European settlement.

Ten bird species recorded during the survey are considered to be significant birds of the Swan Coastal Plain portion of the Perth Metropolitan Region (Government of Western Australia, 2000). They include the Brown Goshawk, Carnaby's Black Cockatoo, Emu, Splendid Fairy-wren, New Holland Honeyeater, White-cheeked Honeyeater, Grey Shrike-thrush, Golden Whistler and Scarlet Robin. These species are either habitat specialists with a reduced distribution on the Swan Coastal Plain or are wide-ranging species with reduced populations on the Swan Coastal Plain. Additionally the Carpet Python and Echidna would also be considered to be locally significant fauna, even though they have large distributions they have declined on the Swan Coastal Plain.

The Study Area is also considered to contain suitable habitat for a number of other fauna species identified by NatureMap. A number of these species are considered to be locally significant and include the Honey Possum, White-striped Bat, Speckled Granite Gecko (Swan Coastal Plain population) and Little Eagle.

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Appendices

Appendix A – Figures

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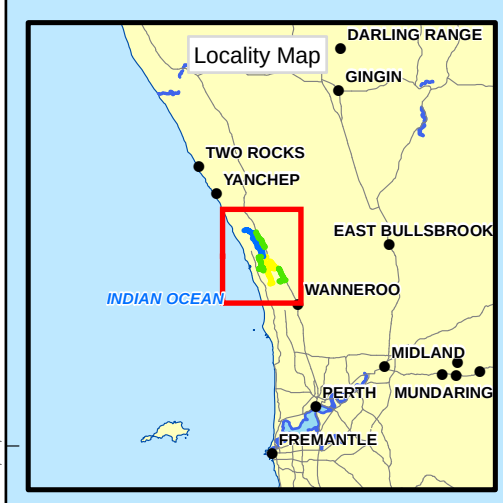
6,492,000
6,486,000

Indian Ocean



LEGEND

Stage

- Stage 1
- Stage 2
- Stage 3

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
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Locality

Figure 1

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239 Adelaide Terrace Perth WA 6004 Australia **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

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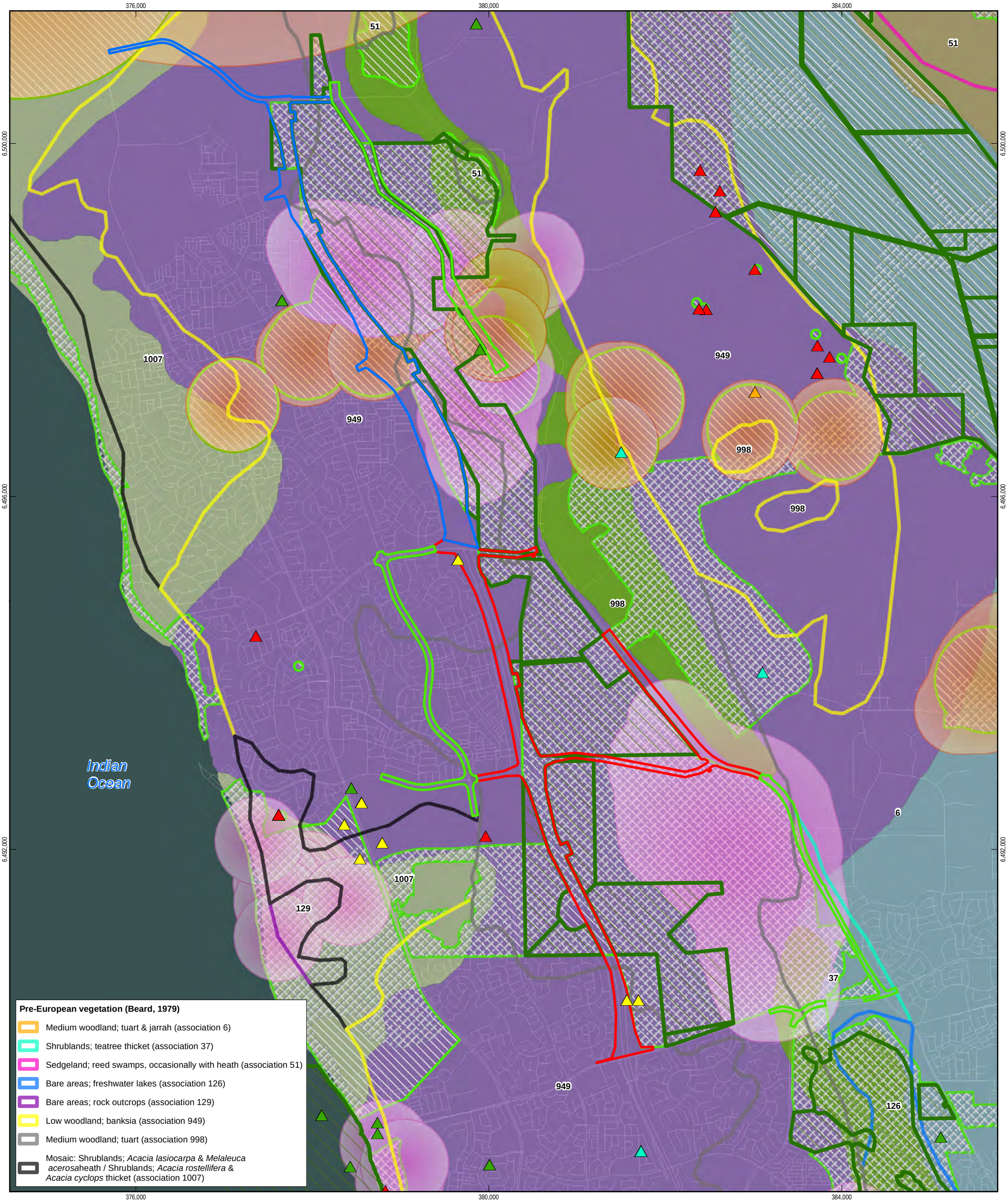

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

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Date	25 Nov 2013

Environmental Context

Figure 2

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Data source: GA: Topo 250k Series 3 - 2006; GHD: Stage - 20130905; DPaW: Decalred Rara & Priority Species - 20130520, Environmentall Sensitive Areas - 20130513, Threatened Ecological Community & Priority Ecological Community - 201306, DPaW managed estates - 20130513, Heddle et al. (1980) vegegattion complex - 20130513; Landgate: Roads - 20130513; DOP: Bush Forever Sites - 20130626; DAFWA: Pre-European Vegetation - 20130513. Created by: slee2, jrutherford

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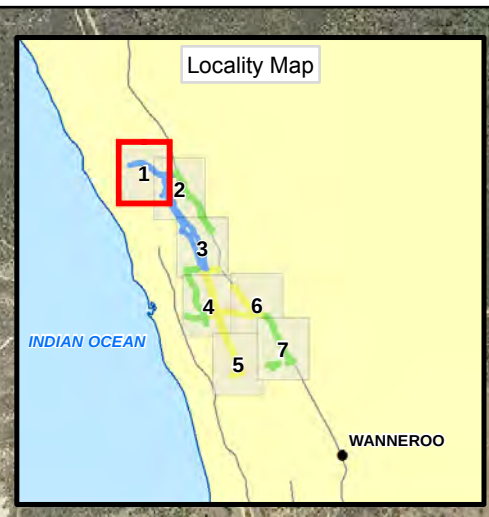
6,502,000 6,501,000 6,500,000 6,499,000



MARMION AV

Q16

PP01

ROMEO RD

Q01

Q03

Q02

Q15

Q10

Q09

Q08

Q07

SANTORINI PROM

KELLS RD

ARTAL

DENIALINK

BELLINI GDNS

NEWBURY WY

KENDAL TURN

MYRLEA TRL

BENENDEN AV

LANDBEACH BVD

CHARLBURY DR

BROADFORD AV

EASTWALL PWY

NEWBLISS GDNS

LEEYA

MELVICH GRN

PAISLEY LINK

BELPER WY

GLENKEENST

HOLLYFORD PDE

OBANWY

GLIN L

RANDSTONE PDE

ALLOA L

ARKLOW CNR

HELMSDALE LOOP

KESH PASS

LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

- 1 - *Banksia* woodland
- 2 - Jarrah–*Banksia* woodland
- 3 - Tuart woodland
- 4 - Mixed low heath on limestone
- 5 - *Melaleuca huegelii – M. systena* shrubland on limestone
- 6 - *Banksia sessilis* closed tall scrub
- 7 - Mosaic of vegetation types 1 & 4
- 9 - Degraded /roads / tracks / railway
- 10 - Planted
- 11 - Rehabilitation

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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GHD

mainroads WESTERN AUSTRALIA

SLIP ENABLER

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number 61-2943501
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Date 25 Nov 2013

Map Sheet 1 of 7

Vegetation types & sampling points

Figure 3

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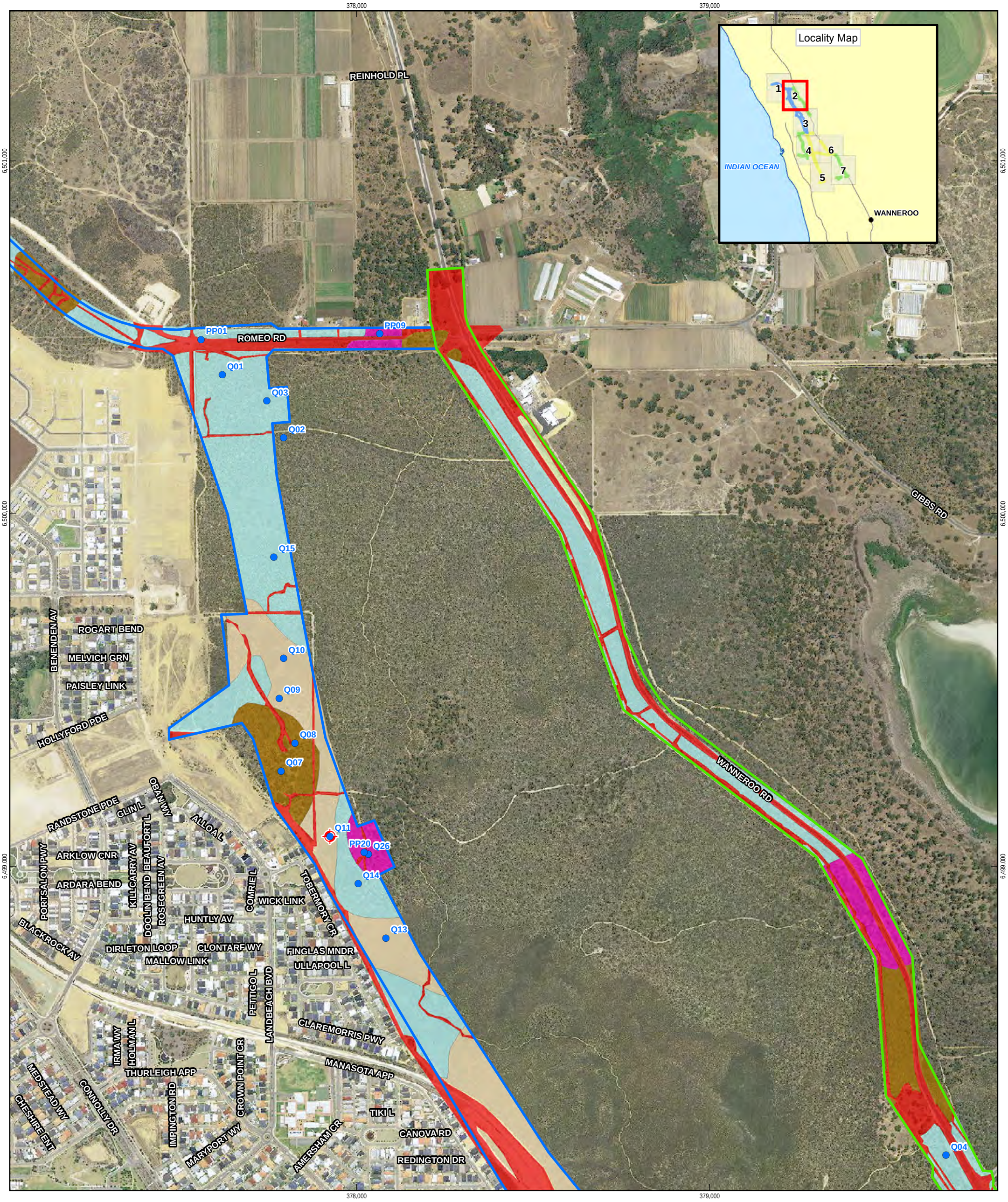
Data source: GA: Topo 250k Series 3 - 2006; GHD:Stage - 20130905, Sampling Points - 20131101,5 - *Melaleuca huegelii - M. systena* shrubland on limestone - 20130731; Vegetation Type - 20131122; Landgate: Metro Central Mosaic - 2013; MRWA: Roads - 2013. Created by: slee2, erice



LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

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- 9 - Degraded /roads / tracks / railway
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- 11 - Rehabilitation

1: 10,000 (at A3)

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number 61-2943501
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Map Sheet 2 of 7

Vegetation types & sampling points

Figure 3

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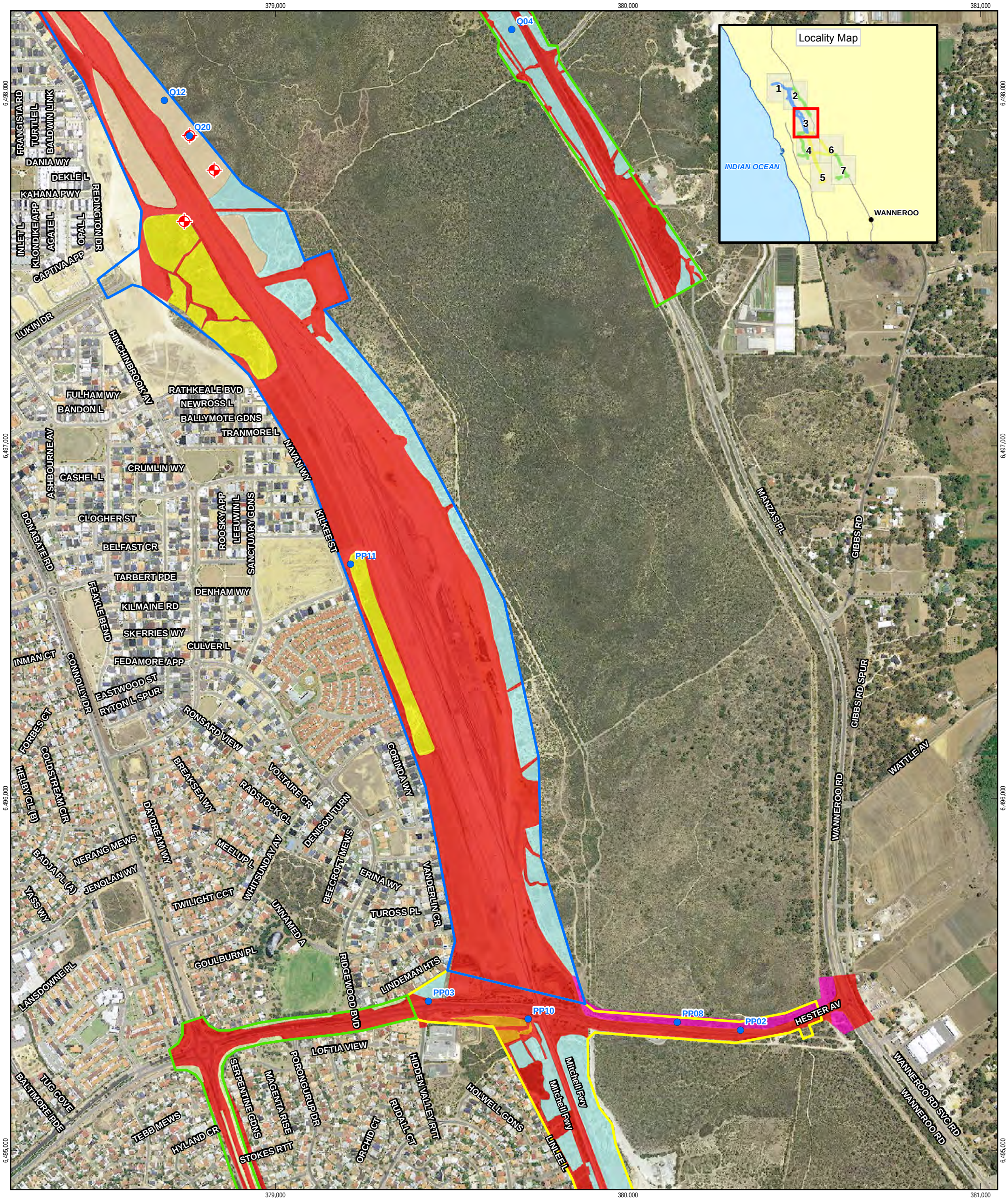

LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

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- 10 - Planted
- 11 - Rehabilitation

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
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Map Sheet 3 of 7

Vegetation types & sampling points

Figure 3

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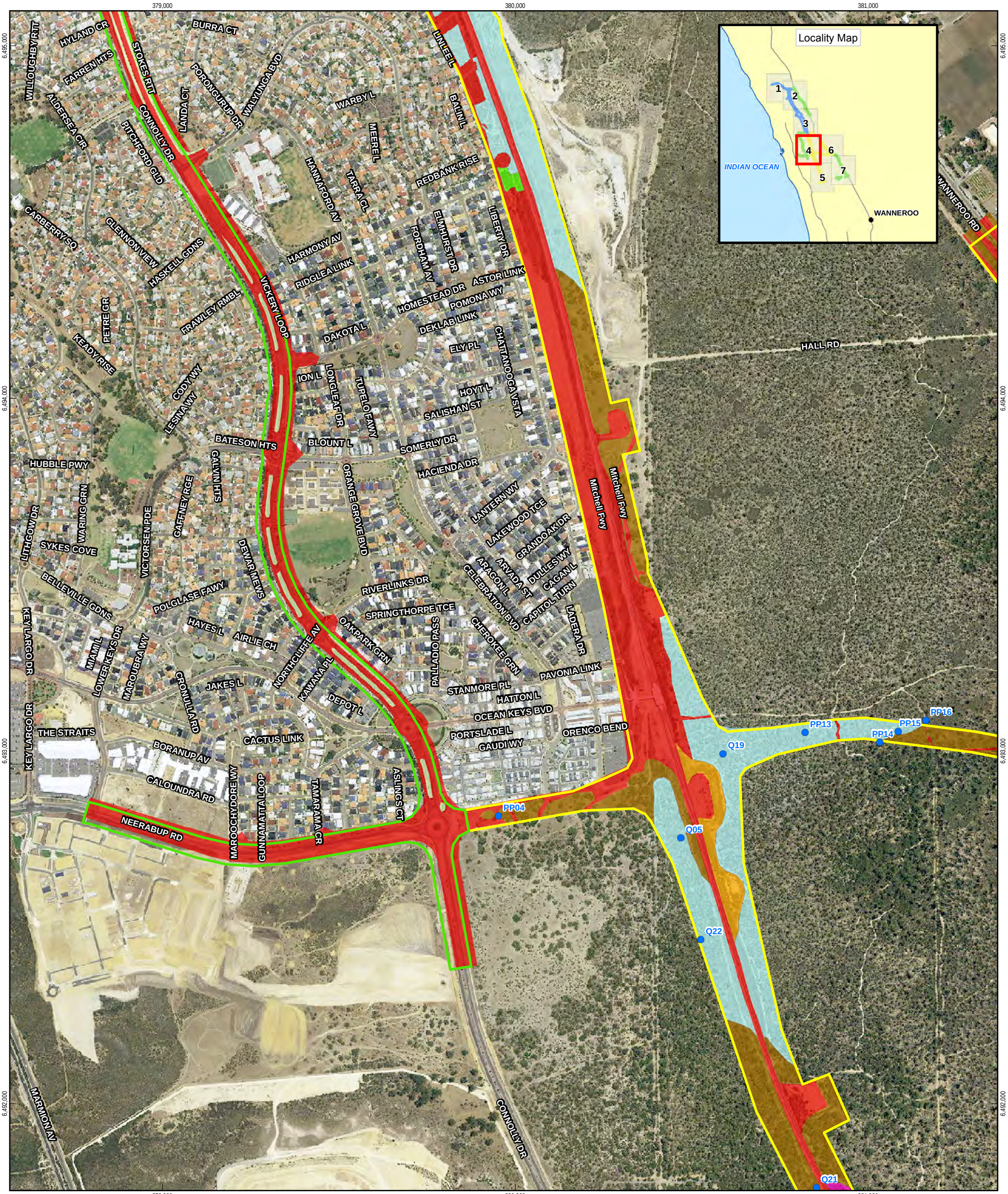

LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
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- 9 - Degraded /roads / tracks / railway
- 10 - Planted
- 11 - Rehabilitation

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

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Map Sheet 4 of 7

Vegetation types & sampling points

Figure 3

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Mitchell Fwy

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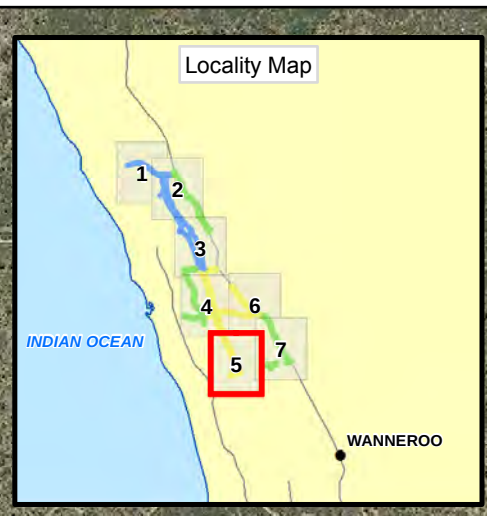

LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

- 1 - *Banksia* woodland
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- 10 - Planted
- 11 - Rehabilitation

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

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Map Sheet 5 of 7

Vegetation types & sampling points

Figure 3

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PP07
HALL RD
Q06
WANNEROO RD
FLYNN DR
PP17
PP18
PP19
Q17
Q18
BUSHLAND RTT

LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

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1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5
Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 6 of 7

Vegetation types & sampling points

Figure 3

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LEGEND

- Sampling points
- 5 - *Melaleuca huegelii - M. systena* shrubland on limestone

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation Type (Number - Description)

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- 11 - Rehabilitation

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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GHD

mainroads WESTERN AUSTRALIA

SLIP ENABLER

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 7 of 7

Vegetation types & sampling points

Figure 3

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ROMEO RD
SANTORINI PROM
MARMION AV
KELLS RD
ARTAL L
BELLINI GDNS
NEWBURY WY
KENDAL TURN
DENIA LINK
SANMARIA WY
MYRLEA TRL
BROADFORD AV
ELGIN WY
BENENDEN AV
MELVICH GRN
LANDBEACH BVD
CHARLBURY DR
EASTWALL PWY
ALVA L
YATE L
NEWBISS GDNS
PAISLEY LINK
BELPER WY
BRETTON GRA
GLENKEEN ST
REDHILL L
SORAN WY
HOLLYFORD PDE
RANDSTONE PDE
GLIN L
OBANNWY
MALDON L
ARKLOW CNR
LOCKERBIE TURN
KILLCARRY AV
BEAUFORT L
ROSEGREEN AV
COSTELLOE GDNS
ALLOA L
TOBERMORY CR

Locality Map

1 2 3 4 5 6 7

INDIAN OCEAN

Declared Pests (under the BAM Act) & Weeds of National Significance (WoNS) (Australian Weeds Committee, 2010)

- **Asparagus asparagoides* (bridal creeper) (Declared Pest C3 Management for the Whole of the State, WoNS)
- **Solanum linnaeanum* (apple of Sodom) (Declared Pest C3 Management for the South West Land Division)
- **Zantedeschia aethiopica* (arum lily) (Declared Pest C3 Management for the Whole of the State)

Roads

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation condition (Keighery, 1994)

- *Pristine* (1)
- *Excellent* (2)
- *Excellent - Very Good* (2 - 3)
- *Very Good* (3)
- *Very Good - Good* (3 - 4)
- *Good* (4)
- *Good - Degraded* (3)
- *Degraded* (5)
- *Degraded - Completely Degraded* (5 - 6)
- *Completely Degraded* (6)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

GHD

mainroads WESTERN AUSTRALIA

SLIP ENABLER

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 1 of 7

Vegetation condition & weed locations

Figure 4

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239 Adelaide Terrace Perth WA 6004 Australia **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

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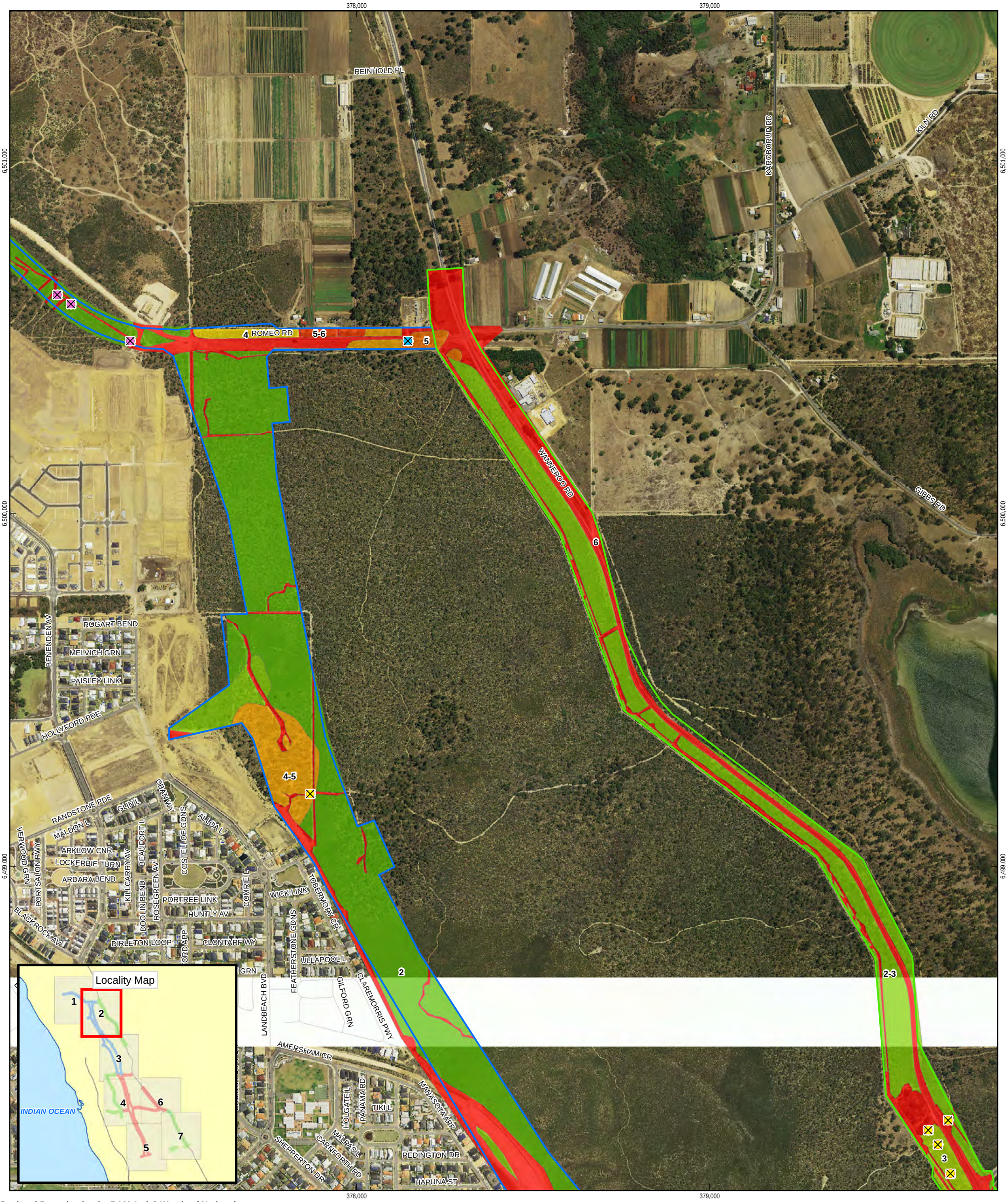

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Roads

Stage

- Stage 1
- Stage 2
- Stage 3

Vegetation condition (Keighery, 1994)

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0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

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N

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 2 of 7

Vegetation condition & weed locations

Figure 4

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379,000 380,000 381,000

6,498,000 6,497,000 6,496,000 6,495,000

NOWERCUP RD
DUNSTAN RD
REDINGTON DR
LUKIN DR
NAVAN WY
KILKEE ST
MANZAS RL
GIBBS RD
GIBBS RD SPUR
WANNEROO RD
WATTLE AV
HESTER AV
Mitchell Fwy
WANNEROO RD SVC RD
TURRILE L
BALDWIN LINK
DANIA WY
DEKLE L
KAHANA PWY
KLONDIKE APP
AGATE L
OPAL L
CAPTIVA APP
BRIGSLEY WY
FULHAM WY
BANDON L
RATHKEALE BVD
CLAXTON L
NEWROSS L
BALLYMOTE GDNS
TRANMORE L
SAINTFIELD CNR
RUSH L
CRUMLIN WY
CASHEL L
ASHBOURNE AV
BOYLE RD
CLOGHER ST
DONABATE RD
BELFAST CR
TARBERT PDE
PORTLAND WY
MUSGRAVE PROM
SANCTUARY GDNS
LEEUWIN L
ROOSKY APP
RENVILLE LINK
DENHAM WY
KILMAINE RD
FEAKLE BEND
SKERRIES WY
FEDAMORE APP
INMAN CT
CONNOLLY DR
HINCHINBROOK AV
EASTWOOD ST
RYTON L SPUR
WESTALL LINK
FORBES CT
HARCUS RTT
LEVEQUE RMBL
COLDSTREAM CIR
HELBY CL (B)
BREAKSEA WY
PRUDHOE MEWS
DAYDREAM WY
TWILIGHT CCT
MEELUP L
NERANG MEWS
BADJA PL (A)
YASS WY
JENOLAN WY
WHITSUNDAY AV
RADSTOCK CL
VOLTAIRE CR
DENISON TURN
RONSARD VIEW
CORINDA WY
BEECROFT MEWS
ERINA WY
VANDERLIN CR
PASCAL MEWS
UNNAMED A
RIDGEWOOD BVD
LINDEMAN HTS
SURADBROKE GDNS
PORONGURUP DR
LOFTIA VIEW
PENOLA CT
WALPOLE PL
SERPENTINE GDNS
MAGENTA RISE
BURRA CT
ORCHID CT
RUDALL CT
HIDDEN VALLEY RTT
HEMMINGS GL
HOLWELL GDNS
LINLEE L
STOKES RTT
TATHRA WY
WALYUNGA BVD
LENSWOOD RTT
ALDERSEA CIR

1 2 2-3 3 4 4-5 5 5-6 6

Locality Map
1 2 3 4 5 6 7
INDIAN OCEAN

Declared Pests (under the BAM Act) & Weeds of National Significance (WoNS) (Australian Weeds Committee, 2010)

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Roads

Stage

- Stage 1
- Stage 2
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Vegetation condition (Keighery, 1994)

- *Pristine* (1)
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1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

GHD

mainroads WESTERN AUSTRALIA

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 3 of 7

Vegetation condition & weed locations

Figure 4

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379,000 380,000 381,000

6,495,000 6,494,000 6,493,000 6,492,000

WILLOUGHBY RTT
FARREN HTS
HYLAND CR
BROOKES PASS
ALDERSEA CIR
NEWLIN MEWS
SHINNERS GRN
PITCHFORD GLD
KEMPTON CR
CARBERRY SQ
KEADY RISE
PETRE GR
FRAWLEY RMBL
HASKELL GDNS
STOKES RTT
KYARA CT
CONNOLLY DR
BURRA CT
ORCHID CT
PORONGURUP DR
WALYUNGA BVD
BEACHPORT RTT
HOPMAN RISE
TREPHINA MEWS
WARBY L
LENSWOOD RTT
LINLEE L
BALIN L
ORMISTON GDNS
HANNAFORD AV
TAFRA CL
ELKINGTON MEWS
REDBANK RISE
CORDOVA TURN
FORDHAM AV
ELMHURST DR
UTICA TCE
HARMONY AV
LOMITA LINKS
ASTOR LINK
POMONA WY
LIBERTY DR
DAKOTA L
HOMESTEAD DR
ELY PL
CHATTANOOGA VISTA
LA MIRADA AV
HOYT L
SALISHAN ST
SUFFOLK L
HACIENDA DR
SOMERLY DR
BLOUNT L
ION L
LONGLEAF DR
TUPELO FAWY
VICKERY LOOP
PRIDMORE GLEN
CODY WY
ALDRIDGE RISE
LESINA WY
BATESON HTS
DEWAR MEWS
HUBBLE PWY
CALVIN HTS
CAFFENEY RGE
WARING GRN
LITHGOW DR
SYKES COVE
VICTORSEN PDE
CONNORS RTT
PETERSEN CL
PENGILLY WY
BELLEVILLE GDNS
HOLLYWOOD HTS
CARIBBEAN CCT
MIAMI L
LOWER KEYS DR
WALLIS AV
HAYES L
AIRLIE CH
MAROUBRA WY
NORTHCLIFFE AV
KAWANA PL
JAKES L
PEEBLY WY
OBSERVATORY DR
THE STRAITS
KEY LARGO DR
BORANUP AV
CACTUS LINK
CALOUNDRA RD
COAL DALE LINK
MAROOCHYDORE WY
TAMARAMA CR
NINDUP LOOP
ASLINGS CT
YAROOMBA PL
NEERABUP RD
ORANGE GROVE BVD
CALDWELL TURN
RIVERLINKS DR
SPRINGTHORPE TCE
OAKPARK GRN
PALLADIO PASS
HAYMOUNT WY
CHEROKEE GRN
VERRADO WY
SANTA CLARA CR
TURNELL L
DEPOT L
HATTON L
OCEAN KEYS BVD
PORTSLADE L
GAUDI WY
KENTLANDS L
ORENCO BEND
PAVONIA LINK
LADERA DR
TUTOR L
BLISS WY
CAPITOL TURN
CAGAN L
DULLES WY
GRANDOAK DR
LAKEWOOD TCE
LANTIERN WY
ARAGON L
ARVADA ST
CELEBRATION BVD
Mitchell Fwy
MENGHETTI RD
WANNEROO RD
HALL RD
CONNOLLY DR
INDIAN OCEAN
5-6
4
4-5
5
6
2
2-3

Locality Map
1 2 3 4 5 6 7

Declared Pests (under the BAM Act) & Weeds of National Significance (WoNS) (Australian Weeds Committee, 2010)

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Roads

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1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

GHD

mainroads WESTERN AUSTRALIA

powered by SLIP ENABLER

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 4 of 7

Vegetation condition & weed locations

Figure 4

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381,000 382,000

6,491,000 6,490,000 6,489,000

2 2-3 5 4-5 4 3 6

Mitchell Fwy

CONNOLLY DR LOCHY CL CLYDEBANK PL LOCHMABEN RTT MACNAUCHTON CR AWE PASS DUNDAFF TURN ROLO CT COMYN L LOCHNAGAR WY MENTEITH PL OSSIAN WY GUNN PASS RUTHERGLEN CIR GLOMACH CCT ARBROATH CIR KEPPOCH CT CARNOCK WY GRANGEMOUTH TURN CRAIGNISH LOOP SELKIRK DR GLENCRAIG CR BROUGHTON HTS GIRVAN L BALLIOL ELB GARDINER HTS STONEHAVEN PDE CALLANDER AV STOWL KINGLASSIE CR CAIRNSMORE CH KIRKDALE TURN COPSOCK LOOP FISHERTON CCT KINROSS DR FAIRLIE GR WHIM CT GALLOWAY TURN STENTON GDNS LEVEN RISE GLENCOE LOOP MONKTON PL THORNTON RTT FALKIRK CT WHITHORN CIR AIRDRIE CNR SHETLAND RISE DARVEL CL BLAIR GR EARLSFERRY GRN DUNSCORE WY FORFAR GLEN KILMORY GR EMMA CT TAMAR L SUNJANDER DR CITADEL WY CURRAMBINE BVD IRVALL PL YATALA CL LUCY L SWINDON L GHAN PL CHIFLEY L BRUNEL CT METROLINER DR EASTLEIGH LOOP ROCNOKE L DE CRILLON WY SUSSEX WY ASCOT WY NEGRESSO TURN MARRIOT TURN ALLIANCE CT KOOPINGA PL MIRAMERE BVD EMDENL KOWLOON CNR CONTINENTAL BVD NORMANDY PDE RAPHAEL L RENOIR L PADDINGTON AV SOHO L AMBASSADOR DR RITZ WY CARLTON TURN WALDORF RMBL MITCHELL FWY PSP MITCHELL FWY

BURNS BEACH RD MANAPOURI MNDR FONTANA COVE ULLSWATER GLD SHINJI CT CAYUGA PL QUESNEL PL TALBINGO TURN ELSKE RISE BODENSEE GR JESSUP PASS JOLSTRA CR TUMBA CT ABITIBI TURN ONTARIO CR YELLOWSTONE WY KUTCHARO CR MANITO CT DAUPHINE PL CURRAN CT BONNEVILLE WY GAIRLOCH PL COLIBAN GR DILLON GLD MANARRA TURN MALAWI CT AMADEUS GDNS IVO PL IROQUOIS GDNS TULARE TURN KASBAH GR TAUPO GLD RANNOCH RISE SORELL GDNS PYA PL NANIKA CR SENECA GDNS CHARLOTTE COVE CARMEN CT CASTLE ROCK TURN SNOWBIRD GDNS KATRINE CR BLUE MOUNTAIN DR VAAL CR MOONDARRA WY ASWAN VIEW BURLOS CT WAKATIPU WY MUIRFIELD WY PRIMROSE HTS OTISCO CR LANSKIE CT SEO PL SIMCOE CT CANDLEWOOD BVD BOWSTRING PL

Locality Map

1 2 3 4 5 6 7

INDIAN OCEAN

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0 0.05 0.1 0.2 0.3 0.4 0.5 Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 5 of 7

Vegetation condition & weed locations

Figure 4

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382,000 383,000 384,000

6,495,000 6,494,000 6,493,000 6,492,000

HALL RD

WANNEROO RD

FLYNN DR

BUSHLAND RTT

INDIAN OCEAN

2 3 4 6 5-6

Locality Map

1 2 3 4 6 5 7

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Map Sheet 6 of 7

Vegetation condition & weed locations

Figure 4

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0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Job Number	61-2943501
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Map Sheet 7 of 7

Vegetation condition & weed locations

Figure 4

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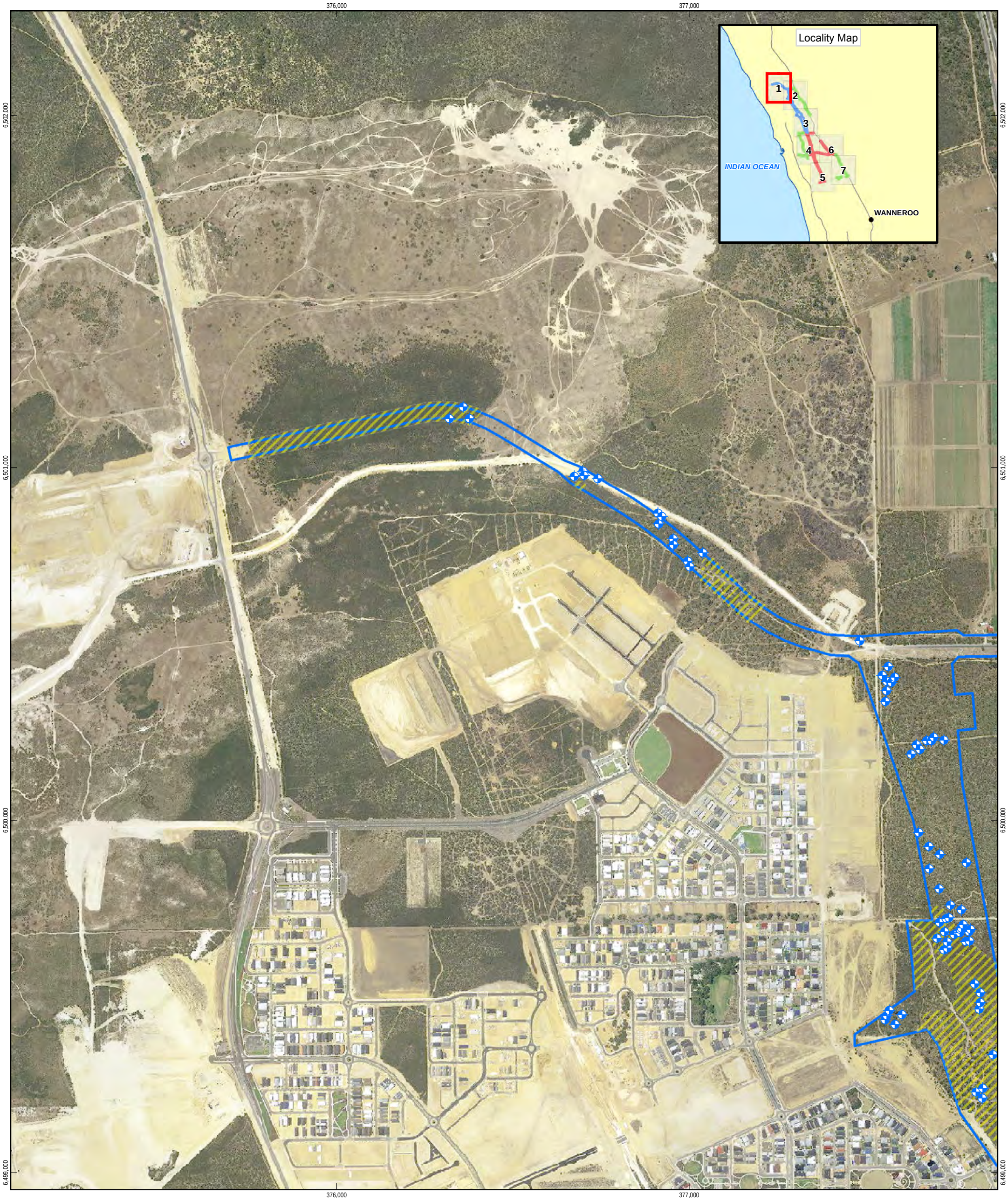

LEGEND

Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

Acacia ?benthamii (DPaW Priority 2)

Jacksonia sericea (DPaW Priority 4)

Pimelea calcicola (DPaW Priority 3)

Stylidium maritimum (DPaW Priority 3)

Priority Species Area

Jacksonia sericea (DPaW Priority 4)

Stylidium maritimum (DPaW Priority 3)

Stage

Stage 1

Stage 2

Stage 3

Melaleuca huegelii–M. systena shrubland on limestone

Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number 61-2943508
Revision 0
Date 25 Nov 2013

Map Sheet 1 of 7

Figure 5

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239 Adelaide Terrace Perth WA 6004 Australia **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

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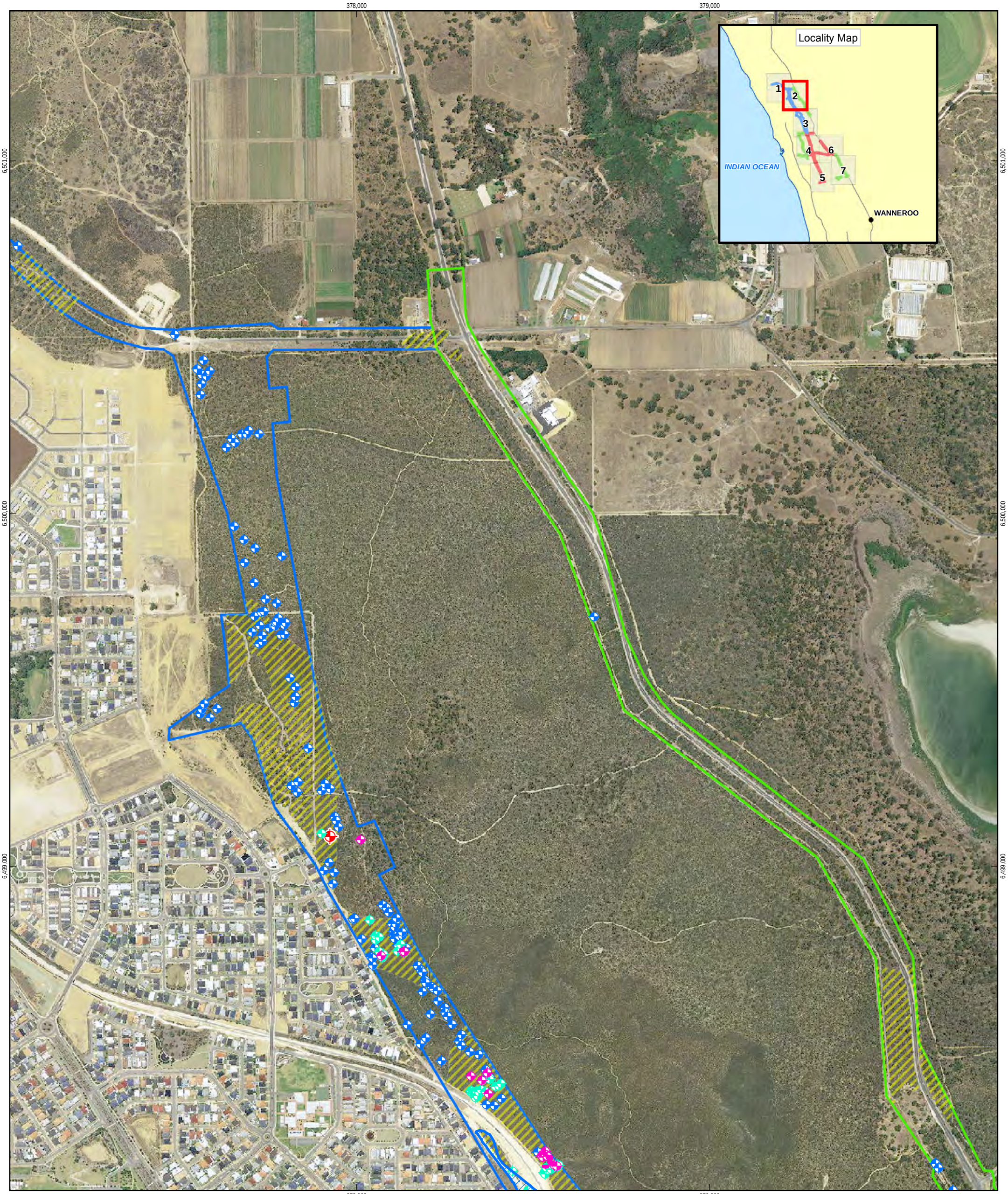
Data source: GA: Topo 250k Series 3 - 2006; MRWA: Road Names - 2013; GHD: Priority Flora - 20131122, Stage - 20130805, Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC) - 20130725, Melaleuca huegelii–M. acerosa now [M. systena] shrublands on limestone ridges (DPaW Endangered TEC) - 20130731; Landgate: Metro Central Mosaic - 2013. Created by: slee2, vdinh



LEGEND

- *Melaleuca huegelii–M. acerosa* [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

- *Acacia ?benthamii* (DPaW Priority 2)
- *Jacksonia sericea* (DPaW Priority 4)
- *Pimelea calcicola* (DPaW Priority 3)
- *Stylidium maritimum* (DPaW Priority 3)

Priority Species Area

- *Jacksonia sericea* (DPaW Priority 4)
- *Stylidium maritimum* (DPaW Priority 3)

Stage

- Stage 1
- Stage 2
- Stage 3

- *Melaleuca huegelii–M. systena* shrubland on limestone
- Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number 61-2943508
Revision 0
Date 25 Nov 2013

Map Sheet 2 of 7

Figure 5

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379,000 380,000 381,000

6,498,000 6,497,000 6,496,000 6,495,000

Melaleuca huegelii–M. systena shrubland on limestone

Locality Map

INDIAN OCEAN

WANNEROO

LEGEND

Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

Acacia ?benthamii (DPaW Priority 2)

Jacksonia sericea (DPaW Priority 4)

Pimelea calcicola (DPaW Priority 3)

Stylidium maritimum (DPaW Priority 3)

Priority Species Area

Jacksonia sericea (DPaW Priority 4)

Stylidium maritimum (DPaW Priority 3)

Stage

Stage 1

Stage 2

Stage 3

Melaleuca huegelii–M. systena shrubland on limestone

Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number 61-2943508
Revision 0
Date 25 Nov 2013

Map Sheet 3 of 7

Figure 5

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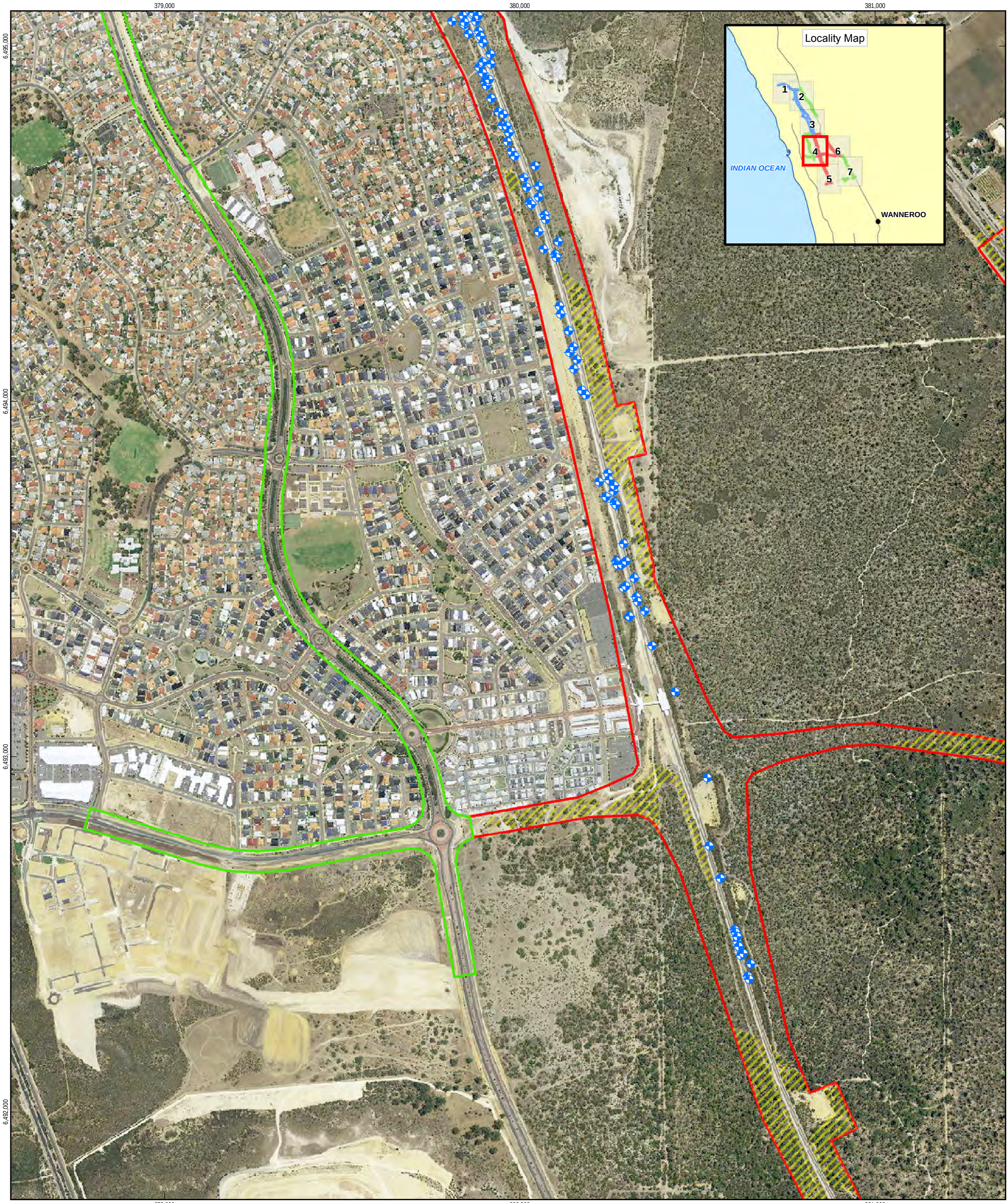

LEGEND

Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

Acacia ?benthamii (DPaW Priority 2)

Jacksonia sericea (DPaW Priority 4)

Pimelea calcicola (DPaW Priority 3)

Stylidium maritimum (DPaW Priority 3)

Priority Species Area

Jacksonia sericea (DPaW Priority 4)

Stylidium maritimum (DPaW Priority 3)

Stage

Stage 1

Stage 2

Stage 3

Melaleuca huegelii–M. systena shrubland on limestone

Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

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mainroads WESTERN AUSTRALIA

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number	61-2943508
Revision	0
Date	25 Nov 2013

Map Sheet 4 of 7

Figure 5

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381,000 382,000

6,491,000 6,490,000 6,489,000

LEGEND

- *Melaleuca huegelii–M. acerosa* [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

- *Acacia ?benthamii* (DPaW Priority 2)
- *Jacksonia sericea* (DPaW Priority 4)
- *Pimelea calcicola* (DPaW Priority 3)
- *Stylidium maritimum* (DPaW Priority 3)

Priority Species Area

- *Jacksonia sericea* (DPaW Priority 4)
- *Stylidium maritimum* (DPaW Priority 3)

Stage

- Stage 1
- Stage 2
- Stage 3

- *Melaleuca huegelii–M. systena* shrubland on limestone
- Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number	61-2943508
Revision	0
Date	25 Nov 2013

Map Sheet 5 of 7

Figure 5

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LEGEND

Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

Acacia ?benthamii (DPaW Priority 2)

Jacksonia sericea (DPaW Priority 4)

Pimelea calcicola (DPaW Priority 3)

Stylidium maritimum (DPaW Priority 3)

Priority Species Area

Jacksonia sericea (DPaW Priority 4)

Stylidium maritimum (DPaW Priority 3)

Stage

Stage 1

Stage 2

Stage 3

Melaleuca huegelii–M. systena shrubland on limestone

Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number	61-2943508
Revision	0
Date	25 Nov 2013

Map Sheet 6 of 7

Figure 5

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LEGEND

Melaleuca huegelii–M. acerosa [now *M. systena*] shrublands on limestone ridges (DPaW Endangered TEC)

Priority Flora

Acacia ?benthamii (DPaW Priority 2)

Jacksonia sericea (DPaW Priority 4)

Pimelea calcicola (DPaW Priority 3)

Stylidium maritimum (DPaW Priority 3)

Priority Species Area

Jacksonia sericea (DPaW Priority 4)

Stylidium maritimum (DPaW Priority 3)

Stage

Stage 1

Stage 2

Stage 3

Melaleuca huegelii–M. systena shrubland on limestone

Northern Spearwood Shrublands and Woodland (DPaW Priority 3 PEC)

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Conservation significant vegetation & flora

Job Number 61-2943508
Revision 0
Date 25 Nov 2013

Map Sheet 7 of 7

Figure 5

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376,000

377,000

6,502,000

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6,500,000

6,499,000

Locality Map

1

2

3

4

5

6

7

INDIAN OCEAN

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number 61-2943501
Revision 0
Date 25 Nov 2013

Map Sheet 1 of 7

Figure 6

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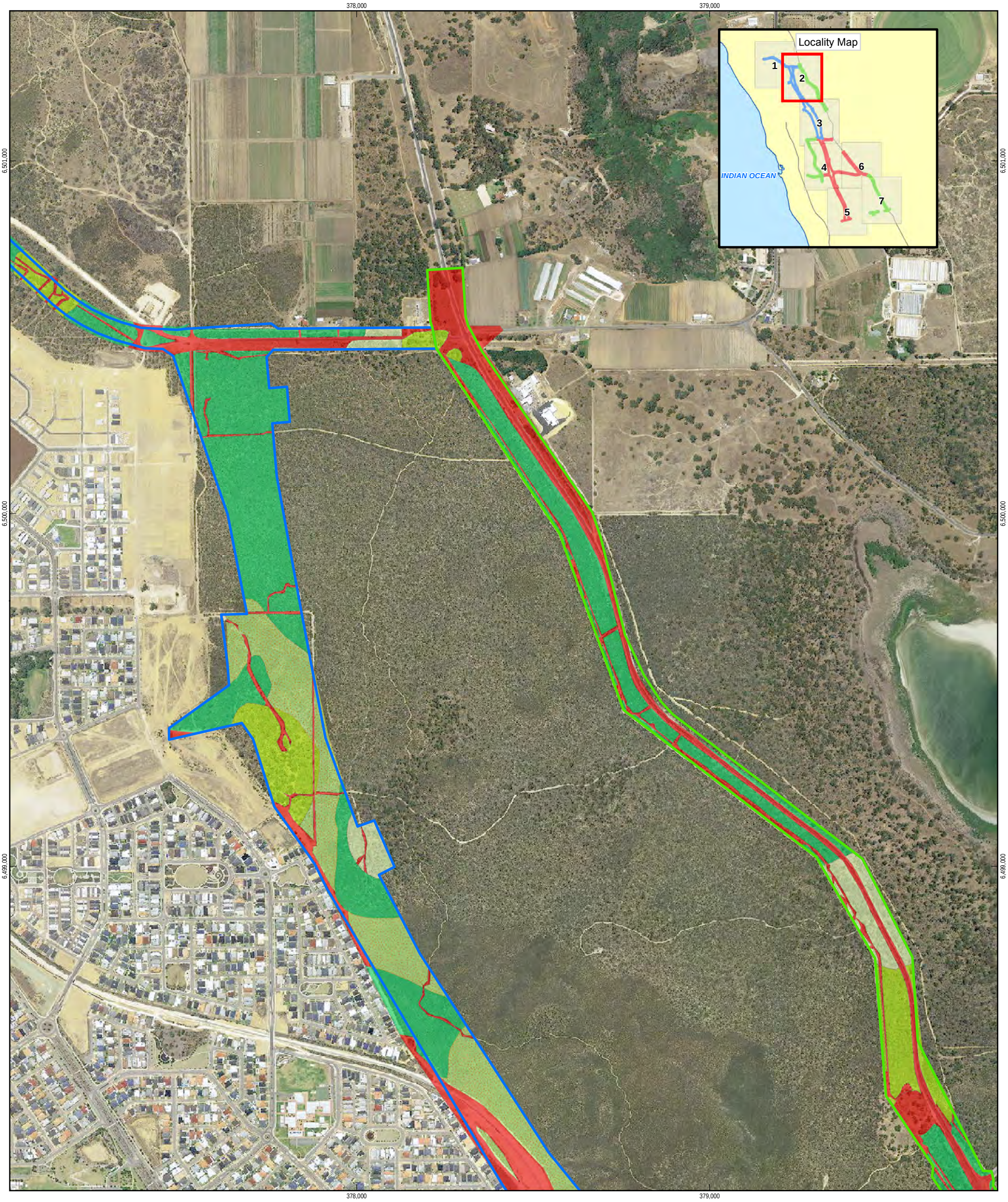

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number 61-2943501
Revision 0
Date 25 Nov 2013

Map Sheet 2 of 7

Figure 6

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379,000 380,000 381,000

6,498,000 6,497,000 6,496,000 6,495,000

Locality Map

1 2 3 4 5 6 7

INDIAN OCEAN

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number 61-2943501
Revision 0
Date 25 Nov 2013

Map Sheet 3 of 7

Figure 6

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379,000 380,000 381,000

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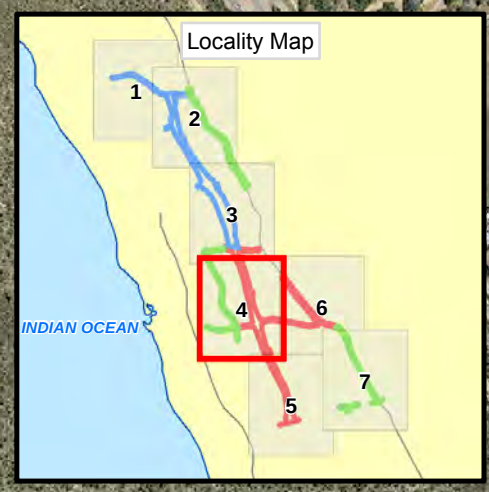

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 4 of 7

Figure 6

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381,000

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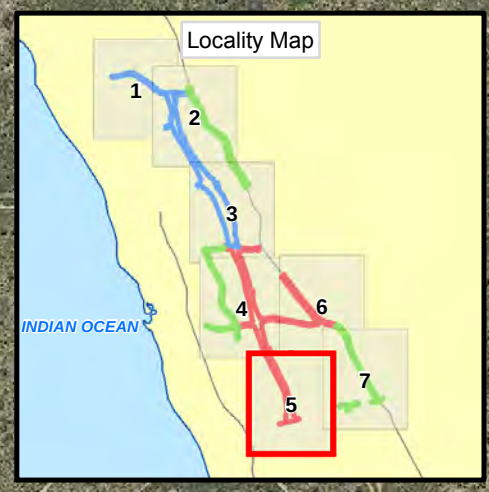

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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mainroads WESTERN AUSTRALIA

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 5 of 7

Figure 6

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382,000 383,000 384,000

6,495,000 6,494,000 6,493,000 6,492,000

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

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Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 6 of 7

Figure 6

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239 Adelaide Terrace Perth WA 6004 Australia **T** 61 8 6222 8222 **F** 61 8 6222 8555 **E** permail@ghd.com.au **W** www.ghd.com.au

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Data source: GA: Topo 250k Series 3 - 2006; GHD: Stage - 20131125, Habitat type - 20130730; MRWA: Metro Central Mosaic - 2013, Roads - IRIS network - 2013. Created by: slee2, vdinh

383,000 384,000 385,000

6,492,000

6,491,000

6,490,000

LEGEND

Road

Stage

Stage 1

Stage 2

Stage 3

Habitat type

Banksia sessilis tall schrubland

Banksia woodland

Jarrah–*Banksia* woodland

Low heatland

Mosaic *Banksia* woodland and low heathland

Mosaic *Banksia* woodland and tuart woodland

Tuart woodland

Planted roadside vegetation / highly disturbed / cleared

1: 10,000 (at A3)

0 0.05 0.1 0.2 0.3 0.4 0.5

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 50

N

GHD

mainroads WESTERN AUSTRALIA

SLIP ENABLER

Main Roads Western Australia
Mitchell Freeway - Level 1 flora & fauna survey

Fauna habitat types & conservation significant fauna records

Job Number	61-2943501
Revision	0
Date	25 Nov 2013

Map Sheet 7 of 7

Figure 6

G:\61\29435\GIS\Maps\MXD\612943501_G008_Fig06_Rev0.mxd

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Data source: GA: Topo 250k Series 3 - 2006; GHD: Stage - 20131125, Habitat type - 20130730; MRWA: Metro Central Mosaic - 2013, Roads - IRIS network - 2013. Created by: slee2, vdinh

Appendix B – Desktop searches

Environment Protection and Biodiversity Conservation Act 1999 Protected Matters Search Tool results

NatureMap flora search results

NatureMap fauna search results

Australian Government

Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report

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

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

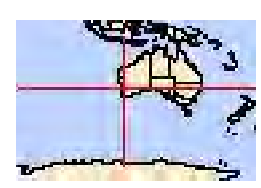
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 29/05/13 17:05:14

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 10.0Km



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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	1
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	47
Listed Migratory Species:	36

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate.

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	62
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

Place on the RNE:	24
State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	41
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	2

Details

Matters of National Environmental Significance

Commonwealth Marine Areas [Resource Information]

Approval may be required for a proposed activity that is likely to have a significant impact on the environment in a Commonwealth Marine Area, when the action is outside the Commonwealth Marine Area, or the environment anywhere when the action is taken within the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name

EEZ and Territorial Sea

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to a Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name

South-west

Listed Threatened Ecological Communities [Resource Information]

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.

Name	Status	Type of Presence
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calyptorhynchus baudinii		
Baudin's Black-Cockatoo, Long-billed Black-Cockatoo [769]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Calyptorhynchus latirostris Carnaby's Black-Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Diomedea exulans amsterdamensis Amsterdam Albatross [82330]	Endangered	Species or species habitat may occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Insects		
Synemon gratiosa Graceful Sun Moth [66757]	Endangered	Species or species habitat known to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area

Name	Status	Type of Presence
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Neophoca cinerea		
Australian Sea-lion [22]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Andersonia gracilis		
Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Anigozanthos viridis subsp. terraspectans		
Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area
Centrolepis caespitosa		
[6393]	Endangered	Species or species habitat likely 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 likely to occur within area
Diuris purdiei		
Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may 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 may occur within area
Epiblema grandiflorum var. cyaneum		
Baby Blue Orchid, Blue Babe-in-the-cradle Orchid, Blue Babe-in-a-cradle [67182]	Endangered	Species or species habitat may occur within area
Eucalyptus argutifolia		
Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat likely to occur within area
Grevillea curviloba subsp. curviloba		
Curved-leaf Grevillea [64908]	Endangered	Species or species habitat likely to occur within area
Grevillea curviloba subsp. incurva		
Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area
Isopogon uncinatus		
Hook-leaf Isopogon [20871]	Endangered	Species or species habitat may occur within area
Lepidosperma rostratum		
Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area
Thelymitra manginii K.Dixon & Batty ms.		
[67443]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
[Villarsia calthifolia](#)		
Mountain Villarsia [10886]	Endangered	Species or species habitat likely to occur within area
Reptiles		
[Caretta caretta](#)		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#)		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Dermochelys coriacea](#)		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Natator depressus](#)		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
[Carcharias taurus (west coast population)](#)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may occur within area
[Carcharodon carcharias](#)		
Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Rhincodon typus](#)		
Whale Shark [66680]	Vulnerable	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
[Diomedea amsterdamensis](#)		
Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
[Diomedea dabbenena](#)		
Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
[Diomedea exulans (sensu lato)](#)		
Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Macronectes giganteus](#)		
Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
[Macronectes halli](#)		
Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
[Puffinus carneipes](#)		
Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
[Sterna anaethetus](#)		
Bridled Tern [814]		Breeding known to occur within area
[Sterna caspia](#)		
Caspian Tern [59467]		Foraging, feeding or

Name	Threatened	Type of Presence
		related behaviour known to occur within area
[Sterna dougallii](#) Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
[Thalassarche cauta (sensu stricto)](#) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area
[Caperea marginata](#) Pygmy Right Whale [39]		Species or species habitat may occur within area
[Carcharodon carcharias](#) Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Migratory Terrestrial Species		
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area
Tringa glareola Wood Sandpiper [829]		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 - Defence - MUCHEA ARMAMENT RANGE

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Muchea / Pearce Air Weapons Range	WA	Indicative Place

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		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
[Ardea ibis](#) Cattle Egret [59542]		Species or species habitat likely to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		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
[Catharacta skua](#) Great Skua [59472]		Species or species habitat may occur within area
[Charadrius ruficapillus](#) Red-capped Plover [881]		Species or species habitat known to occur within area
[Diomedea amsterdamensis](#) Amsterdam Albatross [64405]	Endangered*	Species or species habitat may occur within area
[Diomedea dabbenena](#) Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
[Diomedea exulans (sensu lato)](#) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
[Halobaena caerulea](#) Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
[Himantopus himantopus](#) Black-winged Stilt [870]		Species or species habitat known to occur within area
[Larus novaehollandiae](#) Silver Gull [810]		Breeding known to occur within area
[Larus pacificus](#) Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area
[Macronectes giganteus](#) Southern Giant-Petrel [1060]	Endangered	Species or species habitat may occur within area
[Macronectes halli](#) Northern Giant-Petrel [1061]	Vulnerable	Species or species habitat may occur within area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely 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]	Vulnerable*	Species or species habitat may occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion [22]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Reptiles		
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence
		to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

Places on the RNE	[Resource Information]

Note that not all Indigenous sites may be listed.

Name	State	Status
Natural		
Marmion Marine Park	WA	Indicative Place
Muchea / Pearce Air Weapons Range	WA	Indicative Place
Ridges Management Priority Area	WA	Indicative Place
Ridges Management Priority Area and State Forest No 65	WA	Indicative Place
Wanneroo Wetlands Eastern Chain	WA	Indicative Place
Whitfords Coastal Strip	WA	Indicative Place
Hepburn Heights - Pinnaroo Park Area	WA	Interim List
Jandabup Lake Nature Reserve	WA	Registered
Lake Joondalup Reserves	WA	Registered
Neerabup National Park	WA	Registered
Nowergup Lake Fauna Reserve	WA	Registered
Wanneroo Research Station	WA	Registered
Yanchep National Park	WA	Registered
Yeal - Gnangara Area	WA	Registered
Indigenous		
Doogarch Site	WA	Indicative Place
Orchestra Shell Cave	WA	Registered
Wanneroo Scarred Tree	WA	Registered
Historic		
Administration Building Yanchep National Park	WA	Registered
Cockman House	WA	Registered
Concrete Bunkers	WA	Registered
Eglinton Shipwreck	WA	Registered
Gloucester Lodge including Garden and Pool	WA	Registered
McNess House	WA	Registered
Yanchep Inn and Garden	WA	Registered

State and Territory Reserves	[Resource Information]
Name	State
Jandabup	WA
Lake Joondalup	WA
Marmion	WA
Neerabup	WA
Neerabup	WA
Unnamed WA21176	WA
Unnamed WA43290	WA
UnnamedW A46926	WA
Woodvale Nature Reserve	WA
Yanchep	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
Sturnus vulgaris Common Starling [389]		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

Name	Status	Type of Presence
[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 declinatus](#) Bridal Veil, Bridal Veil Creeper, Pale Berry Asparagus Fern, Asparagus Fern, South African Creeper [66908]		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 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 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

Name	Status	Type of Presence
		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
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
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		
Hemidactylus frenatus		
Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus		
Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Joondalup Lake	WA
Loch McNess System	WA

Key Ecological Features (Marine) [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Commonwealth marine environment within and	South-west
Western rock lobster	South-west

Coordinates

-31.610185 115.713426,-31.618216 115.687847,-31.730051 115.736329,-31.716369 115.78481,-31.609888 115.713129

Caveat

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Acknowledgements

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

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-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 Flora Species Report 10 km

Created By Melissa Longman on 29/05/2013

Kingdom Plantae
Current Names Only Yes
Core Datasets Only Yes
Method 'By Line'
Group By Family

Family	Species	Records
Acrotylaceae	2	7
Aizoaceae	6	17
Amaranthaceae	11	38
Anacardiaceae	1	1
Anarthriaceae	2	3
Apiaceae	10	66
Apocynaceae	2	2
Araceae	2	4
Araliaceae	8	50
Arecaceae	1	2
Areschougiaceae	5	10
Asparagaceae	32	166
Asteraceae	72	308
Bonnemaisoniaceae	2	3
Brassicaceae	14	43
Bryaceae	4	10
Campanulaceae	8	34
Caprifoliaceae	1	4
Caryophyllaceae	9	39
Casuarinaceae	4	22
Caulerpaceae	10	36
Celastraceae	3	10
Centrolepidaceae	5	28
Ceramiaceae	11	14
Champiaceae	1	2
Chenopodiaceae	7	21
Cladophoraceae	2	3
Codiaceae	5	6
Colchicaceae	4	11
Commelinaceae	1	2
Convolvulaceae	3	4
Corallinaceae	6	6
Crassulaceae	7	27
Cucurbitaceae	2	3
Cupressaceae	1	2
Cymodoceaceae	2	2
Cyperaceae	51	239
Cystocloniaceae	2	2
Dasyaceae	1	1
Dasypogonaceae	4	16
Delesseriaceae	3	3
Dennstaedtiaceae	1	1
Dicranaceae	1	4
Dicranemataceae	1	2
Dilleniaceae	9	96
Ditrichaceae	2	2
Droseraceae	10	69
Elaeocarpaceae	1	3
Ericaceae	25	180
Euphorbiaceae	5	12
Fabaceae	90	423
Fabroniaceae	1	7
Faucheaceae	1	2
Fissidentaceae	1	1
Frankeniaceae	1	1
Funariaceae	1	1
Gelidiaceae	3	4
Gentianaceae	2	3
Geraniaceae	7	33
Gigaspermaceae	1	1
Goodeniaceae	16	57
Gracilariaceae	3	5
Gyrostemonaceae	2	7
Haemodoraceae	24	138
Halimedaceae	1	3
Haloragaceae	6	18
Halymeniaceae	5	16
Hemerocallidaceae	10	55
Hydatellaceae	1	1
Hydrocharitaceae	1	1
Hypneaceae	4	5
Iridaceae	10	58
Juncaceae	1	3
Juncaginaceae	3	9
Kallymeniaceae	2	2
Lamiaceae	11	31
Lauraceae	5	19
Lentibulariaceae	4	9
Linaceae	1	1

Loganiaceae	2	7
Loranthaceae	1	9
Lythraceae	1	2
Malvaceae	5	14
Meliaceae	1	1
Menyanthaceae	2	2
Molluginaceae	2	3
Moraceae	1	1
Mychodeaceae	1	2
Myrtaceae	64	252
Nitrariaceae	1	1
Nizymeniaceae	1	4
Olacaceae	1	2
Oleaceae	1	1
Onagraceae	8	23
Orchidaceae	41	133
Orobanchaceae	4	11
Orthotrichaceae	1	4
Oxalidaceae	2	2
Papaveraceae	2	2
Passifloraceae	1	1
Phacelocarpaceae	2	2
Phyllanthaceae	5	42
Phytolaccaceae	1	4
Pittosporaceae	4	7
Plantaginaceae	5	6
Plocamiaceae	3	6
Plumbaginaceae	1	1
Poaceae	58	210
Polygalaceae	3	15
Polygonaceae	6	20
Portulacaceae	5	11
Posidoniaceae	4	11
Potamogetonaceae	1	1
Pottiaceae	6	10
Primulaceae	1	1
Proteaceae	41	252
Pteridaceae	1	1
Racopilaceae	1	2
Ranunculaceae	4	10
Restionaceae	11	42
Rhamnaceae	8	47
Rhodomelaceae	21	52
Rhodymeniaceae	3	7
Rubiaceae	3	13
Rutaceae	7	28
Santalaceae	5	12
Sapindaceae	2	4
Sarcomeniaceae	1	1
Schizymeniaceae	2	2
Scrophulariaceae	8	24
Siphonocladaceae	1	1
Solanaceae	8	31
Stylidiaceae	26	118
Thuidiaceae	1	1
Thymelaeaceae	9	31
Typhaceae	1	1
Ulvaceae	2	4
Urticaceae	2	6
Verbenaceae	2	4
Violaceae	2	23
Vitaceae	1	1
Xanthorrhoeaceae	1	30
Zamiaceae	1	13
TOTAL	**1023**	**4135**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acrotylaceae					
1.	26665	*Claviclonium ovatum*			
2.	26915	*Hennedya crispa*			
Aizoaceae					
3.	2795	*Carpobrotus edulis (Hottentot Fig)*	Y		
4.	2798	*Carpobrotus virescens (Coastal Pigface, Kolboko)*			
5.	11571	*Galenia pubescens var. pubescens*	Y		
6.	17543	*Sarcozona bicarinata*		P3	
7.	2820	*Tetragonia decumbens (Sea Spinach)*	Y		
8.	40680	*Tetragonia tetragonioides (New Zealand Spinach)*			
Amaranthaceae					
9.	2652	*Alternanthera nodiflora (Common Joyweed)*			
10.	2653	*Alternanthera pungens (Khaki Weed)*	Y		
11.	25840	*Amaranthus blitum*	Y		
12.	2668	*Amaranthus powellii (Powell's Amaranth)*	Y		
13.	2671	*Amaranthus viridis (Green Amaranth)*	Y		
14.	2718	*Ptilotus drummondii (Narrowleaf Mulla Mulla)*			
15.	11260	*Ptilotus drummondii var. drummondii (Pussytail)*			
16.	2742	*Ptilotus manglesii (Pom Poms, Mulamula)*			
17.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
18.	15856	*Ptilotus sericostachyus subsp. sericostachyus*			
19.	40841	*Ptilotus stirlingii subsp. stirlingii*			
Anacardiaceae					
20.	11027	*Schinus terebinthifolius*	Y		
Anarthriaceae					
21.	1097	*Lyginia barbata*			
22.	18049	*Lyginia imberbis*			
Apiaceae					
23.	6205	*Actinotus leucocephalus (Flannel Flower)*			
24.	6210	*Apium annuum*			
25.	8595	*Apium graveolens (Wild Celery)*	Y		
26.	12040	*Apium prostratum var. prostratum (Sea Celery)*			
27.	6214	*Centella asiatica*			
28.	6218	*Daucus glochidiatus (Australian Carrot)*			
29.	6219	*Eryngium pinnatifidum (Blue Devils)*			
30.	6222	*Homalosciadium homalocarpum*			
31.	18355	*Petroselinum crispum (Parsley)*	Y		
32.	6289	*Xanthosia huegelii*			
Apocynaceae					
33.	6565	*Alyxia buxifolia (Dysentery Bush)*			
34.	11051	*Gomphocarpus physocarpus*	Y		
Araceae					
35.	28342	*Landoltia punctata (Thin Duckweed)*			
36.	1051	*Lemna disperma (Duckweed)*			
Araliaceae					
37.	6224	*Hydrocotyle blepharocarpa*			
38.	6226	*Hydrocotyle callicarpa (Small Pennywort)*			
39.	6229	*Hydrocotyle diantha*			
40.	6232	*Hydrocotyle hispidula*			
41.	11546	*Hydrocotyle pilifera var. glabrata*			
42.	20649	*Tetrapanax papyrifer*	Y		Y
43.	19041	*Trachymene coerulea subsp. coerulea*			
44.	6280	*Trachymene pilosa (Native Parsnip)*			
Arecaceae					
45.	17910	*Washingtonia filifera*	Y		
Areschougiaceae					
46.	26503	*Betaphycus speciosum*			
47.	26534	*Callophycus dorsifer*			
48.	26535	*Callophycus harveyanus*			
49.	26536	*Callophycus oppositifolius*			
50.	26821	*Erythroclonium muelleri*			
Asparagaceae					

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
51.	1208	*Acanthocarpus preissii*			
52.	20752	*Asparagus aethiopicus*	Y		
53.	1201	*Asparagus officinalis (Asparagus)*	Y		
54.	1280	*Chamaescilla corymbosa (Blue Squill)*			
55.	11299	*Chamaescilla corymbosa var. corymbosa*			
56.	1287	*Dichopogon capillipes*			
57.	16091	*Lachenalia bulbifera*	Y		
58.	1370	*Lachenalia reflexa*	Y		
59.	1307	*Laxmannia ramosa (Branching Lily)*			
60.	11911	*Laxmannia ramosa subsp. ramosa*			
61.	1308	*Laxmannia sessiliflora (Nodding Lily)*			
62.	11464	*Laxmannia sessiliflora subsp. australis*			
63.	1309	*Laxmannia squarrosa*			
64.	1223	*Lomandra caespitosa (Tufted Mat Rush)*			
65.	1228	*Lomandra hermaphrodita*			
66.	1231	*Lomandra maritima*			
67.	1232	*Lomandra micrantha (Small-flower Mat-rush)*			
68.	14542	*Lomandra micrantha subsp. micrantha*			
69.	1234	*Lomandra nigricans*			
70.	1239	*Lomandra preissii*			
71.	1243	*Lomandra sericea (Silky Mat Rush)*			
72.	1246	*Lomandra suaveolens*			
73.	1312	*Sowerbaea laxiflora (Purple Tassels)*			
74.	1318	*Thysanotus arbuscula*			
75.	1319	*Thysanotus arenarius*			
76.	1338	*Thysanotus manglesianus (Fringed Lily)*			
77.	1339	*Thysanotus multiflorus (Many-flowered Fringe Lily)*			
78.	1343	*Thysanotus patersonii*			
79.	1348	*Thysanotus rectantherus*			
80.	1351	*Thysanotus sparteus*			
81.	1357	*Thysanotus thyrsoideus*			
82.	1358	*Thysanotus triandrus*			
Asteraceae					
83.	7818	*Actites megalocarpus (Dune Thistle)*			
84.	7838	*Arctotheca calendula (Cape Weed)*	Y		
85.	7839	*Arctotheca populifolia (Dune Arctotheca)*	Y		
86.	7840	*Arctotis stoechadifolia (White Arctotis)*	Y		
87.	7851	*Asteridea pulverulenta (Common Bristle Daisy)*			
88.	7867	*Brachyscome bellidioides*			
89.	7878	*Brachyscome iberidifolia*			
90.	7883	*Brachyscome pusilla*			
91.	7909	*Carduus pycnocephalus (Slender Thistle)*	Y		
92.	7916	*Centaurea melitensis (Maltese Cockspur)*	Y		
93.	7937	*Cirsium vulgare (Spear Thistle)*	Y		
94.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		
95.	7941	*Conyza parva*	Y		
96.	20074	*Conyza sumatrensis*	Y		
97.	7943	*Cotula australis (Common Cotula)*			
98.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
99.	42009	*Craspedia sp. Yalgorup National Park (G.J. Keighery 14449)*			
100.	15137	*Euchiton sphaericus*			
101.	7976	*Galinsoga parviflora (Potato Weed)*	Y		
102.	16311	*Gazania linearis*	Y		
103.	8005	*Gnephosis uniflora*			
104.	29594	*Helichrysum luteoalbum (Jersey Cudweed)*			
105.	8027	*Helichrysum macranthum*			
106.	8084	*Helminthotheca echioides*	Y		
107.	12741	*Hyalosperma cotula*			
108.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
109.	9352	*Hypochaeris radicata (Flat Weed)*	Y		
110.	8096	*Lactuca serriola (Prickly Lettuce)*	Y		
111.	29046	*Lactuca serriola forma serriola*	Y		
112.	18585	*Lagenophora huegelii*			
113.	17852	*Leptorhynchos scaber (Lanky Buttons)*			
114.	8105	*Millotia myosotidifolia*			
115.	8106	*Millotia tenuifolia (Soft Millotia)*			
116.	29418	*Monoculus monstrosus*	Y		
117.	8127	*Olearia axillaris (Coastal Daisybush)*			
118.	32716	*Olearia lehmanniana*			
119.	8149	*Olearia rudis (Rough Daisybush)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
120.	42281	*Pithocarpa cordata*			
121.	8163	*Pithocarpa corymbulosa (Corymbose Pithocarpa)*		P3	
122.	8165	*Pithocarpa pulchella (Beautiful Pithocarpa)*			
123.	18352	*Pithocarpa pulchella var. melanostigma*			
124.	18353	*Pithocarpa pulchella var. pulchella*			
125.	8172	*Podolepis canescens (Bright Podolepis, Grey Podolepis)*			
126.	8175	*Podolepis gracilis (Slender Podolepis)*			
127.	8177	*Podolepis lessonii*			
128.	8182	*Podotheca angustifolia (Sticky Longheads)*			
129.	8183	*Podotheca chrysantha (Yellow Podotheca)*			
130.	8184	*Podotheca gnaphalioides (Golden Long-heads)*			
131.	8195	*Quinetia urvillei*			
132.	13300	*Rhodanthe citrina*			
133.	15035	*Rhodanthe corymbosa*			
134.	13312	*Rhodanthe pyrethrum*			
135.	8208	*Senecio hispidulus (Hispid Fireweed)*			
136.	20663	*Senecio multicaulis subsp. multicaulis*			
137.	25884	*Senecio pinnatifolius var. latilobus*			
138.	8218	*Senecio ramosissimus (Auricled Groundsel)*			
139.	8220	*Senecio vulgaris (Common Groundsel)*	Y		
140.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
141.	8230	*Sonchus asper (Rough Sowthistle)*	Y		
142.	9367	*Sonchus hydrophilus (Native Sowthistle)*			
143.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
144.	8245	*Taraxacum officinale (Dandelion)*	Y		
145.	8254	*Urospermum picroides (False Hawkbit)*	Y		
146.	8255	*Ursinia anthemoides (Ursinia)*	Y		
147.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		
148.	8257	*Vellereophyton dealbatum (White Cudweed)*	Y		
149.	15725	*Verbesina encelioides*	Y		
150.	13331	*Waitzia acuminata var. acuminata*			
151.	13328	*Waitzia nitida*			
152.	8282	*Waitzia suaveolens (Fragrant Waitzia)*			
153.	13333	*Waitzia suaveolens var. suaveolens*			
154.	19938	*Xerochrysum bracteatum*			
Bonnemaisoniaceae					
155.	26485	*Asparagopsis armata*			
156.	26486	*Asparagopsis taxiformis*			
Brassicaceae					
157.	11187	*Brassica barrelieri subsp. oxyrrhina (Smooth-stem Turnip)*	Y		
158.	2993	*Brassica fruticulosa (Twiggy Turnip)*	Y		
159.	3000	*Brassica tournefortii (Mediterranean Turnip)*	Y		
160.	3002	*Cakile maritima (Sea Rocket)*	Y		
161.	3005	*Cardamine hirsuta (Common Bittercress)*	Y		
162.	18555	*Cardamine sp. Jandakot (P. Luff s.n. 4/7/1969)*	Y		
163.	3011	*Diplotaxis muralis (Wall Rocket)*	Y		
164.	3016	*Heliophila pusilla*	Y		
165.	3042	*Lepidium pseudotasmanicum*		P4	
166.	3044	*Lepidium rotundum (Veined Peppercress)*			
167.	3049	*Matthiola incana (Common Stock)*	Y		
168.	3061	*Raphanus raphanistrum (Wild Radish)*	Y		
169.	19403	*Stenopetalum gracile*			
170.	3080	*Stenopetalum robustum*			
Bryaceae					
171.	32331	*Bryum lanatum*			
172.	32380	*Gemmabryum pachythecum*			
173.	32381	*Gemmabryum preissianum*			
174.	32425	*Rosulabryum billarderi*			
Campanulaceae					
175.	37500	*Grammatotheca bergiana var. bergiana*	Y		
176.	7396	*Isotoma hypocrateriformis (Woodbridge Poison)*			
177.	9289	*Lobelia anceps (Angled Lobelia)*			
178.	7408	*Lobelia tenuior (Slender Lobelia)*			
179.	7384	*Wahlenbergia capensis (Cape Bluebell)*	Y		
180.	7386	*Wahlenbergia gracilenta (Annual Bluebell)*			
181.	7388	*Wahlenbergia multicaulis*			
182.	7389	*Wahlenbergia preissii*			

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Caprifoliaceae					
183.	7368	*Scabiosa atropurpurea (Purple Pincushion)*	Y		
Caryophyllaceae					
184.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
185.	16693	*Minuartia mediterranea*	Y		
186.	19825	*Petrorhagia dubia*	Y		
187.	2905	*Polycarpon tetraphyllum (Fourleaf Allseed)*	Y		
188.	2906	*Sagina apetala (Annual Pearlwort)*	Y		
189.	2909	*Silene gallica (French Catchfly)*	Y		
190.	15972	*Silene gallica var. gallica*	Y		
191.	2910	*Silene nocturna (Mediterranean Catchfly)*	Y		
192.	2918	*Stellaria media (Chickweed)*	Y		
Casuarinaceae					
193.	1728	*Allocasuarina fraseriana (Sheoak, Kondil)*			
194.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
195.	13908	*Allocasuarina lehmanniana subsp. lehmanniana*			
196.	18314	*Casuarina cunninghamiana subsp. cunninghamiana*	Y		
Caulerpaceae					
197.	26556	*Caulerpa cactoides*			
198.	26560	*Caulerpa distichophylla*			
199.	26561	*Caulerpa ellistoniae*			
200.	26562	*Caulerpa fergusonii*			
201.	26563	*Caulerpa flexilis*			
202.	27382	*Caulerpa longifolia forma crispata*			
203.	26570	*Caulerpa obscura*			
204.	26573	*Caulerpa racemosa*			
205.	26574	*Caulerpa scalpelliformis*			
206.	27388	*Caulerpa sedoides forma geminata*			
Celastraceae					
207.	4733	*Stackhousia monogyna*			
208.	4737	*Tripterococcus brunonis (Winged Stackhousia)*			
209.	16998	*Tripterococcus paniculatus*		P4	
Centrolepidaceae					
210.	1121	*Centrolepis aristata (Pointed Centrolepis)*			
211.	1125	*Centrolepis drummondiana*			
212.	1131	*Centrolepis inconspicua*			
213.	1132	*Centrolepis mutica*			
214.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
Ceramiaceae					
215.	26468	*Anotrichium licmophorum*			
216.	26471	*Antithamnion armatum*			
217.	26475	*Antithamnion hanovioides*			
218.	26511	*Bornetia binderiana*			
219.	26600	*Ceramium pusillum*			
220.	26830	*Euptilota articulata*			
221.	26884	*Griffithsia ovalis*			
222.	26886	*Griffithsia teges*			
223.	26900	*Haloplegma preissii*			
224.	26942	*Hirsutithallia laricina*			
225.	27301	*Spongoclonium conspicuum*			
Champiaceae					
226.	26621	*Champia zostericola*			
Chenopodiaceae					
227.	2452	*Atriplex cinerea (Grey Saltbush)*			
228.	2483	*Chenopodium album (Fat Hen)*	Y		
229.	2490	*Chenopodium glaucum (Glaucous Goosefoot)*	Y		
230.	2491	*Chenopodium macrospermum*	Y		
231.	11341	*Rhagodia baccata subsp. baccata*			
232.	11930	*Rhagodia baccata subsp. dioica (Sea Berry Saltbush)*			
233.	2591	*Sarcocornia blackiana*			
Cladophoraceae					
234.	26481	*Apjohnia laetevirens*			
235.	26654	*Cladophora lehmanniana*			
Codiaceae					
236.	26671	*Codium duthieae*			

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237.	26672	*Codium galeatum*			
238.	26674	*Codium harveyi*			
239.	26675	*Codium laminarioides*			
240.	26678	*Codium muelleri*			
Colchicaceae					
241.	12770	*Burchardia congesta*			
242.	1385	*Burchardia multiflora (Dwarf Burchardia)*			
243.	1398	*Wurmbea monantha*			
244.	1401	*Wurmbea pygmaea*			
Commelinaceae					
245.	1162	*Cartonema philydroides*			
Convolvulaceae					
246.	11021	*Cuscuta planiflora*	Y		
247.	31597	*Dichondra micrantha*	Y		Y
248.	6620	*Ipomoea cairica (Coast Morning Glory)*	Y		
Corallinaceae					
249.	26458	*Amphiroa anceps*			
250.	26463	*Amphiroa gracilis*			
251.	13141	*Haliptilon roseum*			
252.	26988	*Jania verrucosa*			
253.	27068	*Metagoniolithon radiatum*			
254.	27070	*Metamastophora flabellata*			
Crassulaceae					
255.	3136	*Crassula alata*	Y		
256.	3137	*Crassula colorata (Dense Stonecrop)*			
257.	11709	*Crassula colorata var. acuminata*			
258.	11563	*Crassula colorata var. colorata*			
259.	11349	*Crassula decumbens var. decumbens*			
260.	3140	*Crassula glomerata*	Y		
261.	3146	*Crassula thunbergiana*	Y		
Cucurbitaceae					
262.	7370	*Citrullus lanatus (Pie Melon)*	Y		
263.	25825	*Cucurbita pepo*	Y		Y
Cupressaceae					
264.	96	*Callitris preissii (Rottnest Island Pine, Maro)*			
Cymodoceaceae					
265.	127	*Amphibolis griffithii*			
266.	134	*Thalassodendron pachyrhizum*			
Cyperaceae					
267.	740	*Baumea arthrophylla*			
268.	741	*Baumea articulata (Jointed Rush)*			
269.	743	*Baumea juncea (Bare Twigrush)*			
270.	745	*Baumea preissii*			
271.	15837	*Baumea preissii subsp. laxa*			
272.	15836	*Baumea preissii subsp. preissii*			
273.	749	*Bolboschoenus caldwellii (Marsh Club-rush)*			
274.	753	*Carex appressa (Tall Sedge)*			
275.	754	*Carex divisa (Divided Sedge)*	Y		
276.	755	*Carex fascicularis (Tassel Sedge)*			
277.	757	*Carex preissii*			
278.	760	*Caustis dioica*			
279.	16245	*Cyathochaeta teretifolia*		P3	
280.	18318	*Cyperus involucratus*	Y		
281.	810	*Cyperus rotundus (Nut Grass)*	Y		
282.	816	*Cyperus tenuiflorus (Scaly Sedge)*	Y		
283.	20216	*Ficinia nodosa (Knotted Club Rush)*			
284.	907	*Gahnia trifida (Coast Saw-sedge)*			
285.	910	*Isolepis cernua (Nodding Club-rush)*			
286.	20200	*Isolepis cernua var. setiformis*			
287.	917	*Isolepis marginata (Coarse Club-rush)*	Y		
288.	919	*Isolepis oldfieldiana*			
289.	921	*Isolepis producta*			
290.	925	*Lepidosperma angustatum*			
291.	932	*Lepidosperma effusum (Spreading Sword-sedge)*			
292.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
293.	936	*Lepidosperma leptostachyum*			

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294.	937	*Lepidosperma longitudinale (Pithy Sword-sedge)*			
295.	940	*Lepidosperma pubisquameum*			
296.	944	*Lepidosperma scabrum*			
297.	36060	*Lepidosperma sp. Coastal Dunes (R.J. Cranfield 9963)*			
298.	945	*Lepidosperma squamatum*			
299.	946	*Lepidosperma striatum*			
300.	953	*Mesomelaena graciliceps*			
301.	955	*Mesomelaena pseudostygia*			
302.	969	*Schoenoplectus validus (Lake Club-rush)*			
303.	973	*Schoenus asperocarpus (Poison Sedge)*			
304.	979	*Schoenus caespititius*			
305.	982	*Schoenus clandestinus*			
306.	984	*Schoenus curvifolius*			
307.	985	*Schoenus discifer*			
308.	992	*Schoenus grandiflorus (Large Flowered Bogrush)*			
309.	997	*Schoenus lanatus (Woolly Bog-rush)*			
310.	1002	*Schoenus nanus (Tiny Bog Rush)*			
311.	1006	*Schoenus odontocarpus*			
312.	1018	*Schoenus subfascicularis*			
313.	1023	*Schoenus tenellus*			
314.	1026	*Schoenus unispiculatus*			
315.	1036	*Tetraria octandra*			
316.	35581	*Tetraria sp. Chandala (G.J. Keighery 17055)*		P2	
317.	12048	*Tricostularia neesii var. neesii*			
Cystocloniaceae					
318.	26704	*Craspedocarpus venosus*			
319.	27222	*Rhodophyllis volans*			
Dasyaceae					
320.	26735	*Dasya cliftonii*			
Dasypogonaceae					
321.	1213	*Calectasia cyanea (Blue Tinsel Lily)*		T	
322.	19309	*Calectasia narragara*			
323.	29103	*Calectasia sp. Pinjar (C. Tauss 557)*		P1	
324.	1218	*Dasypogon bromeliifolius (Pineapple Bush)*			
Delesseriaceae					
325.	26622	*Chauviniella coriifolia*			
326.	27056	*Martensia elegans*			
327.	27149	*Platysiphonia mutabilis*			
Dennstaedtiaceae					
328.	41651	*Pteridium esculentum subsp. esculentum*			
Dicranaceae					
329.	32338	*Campylopus introflexus*	Y		
Dicranemataceae					
330.	27347	*Tylotus obtusatus*			
Dilleniaceae					
331.	5112	*Hibbertia aurea*			
332.	5133	*Hibbertia helianthemoides*		P4	
333.	5134	*Hibbertia huegelii*			
334.	5135	*Hibbertia hypericoides (Yellow Buttercups)*			
335.	5154	*Hibbertia perfoliata*			
336.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
337.	20034	*Hibbertia sp. Gnangara (J.R. Wheeler 2329)*			
338.	11461	*Hibbertia spicata subsp. leptotheca*		P3	
339.	5173	*Hibbertia subvaginata*			
Ditrichaceae					
340.	32462	*Ceratodon purpureus subsp. convolutus*			
341.	32351	*Eccremidium pulchellum*			
Droseraceae					
342.	3092	*Drosera bulbosa (Red-leaved Sundew)*			
343.	3095	*Drosera erythrorhiza (Red Ink Sundew)*			
344.	3106	*Drosera macrantha (Bridal Rainbow)*			
345.	14298	*Drosera macrantha subsp. macrantha*			
346.	3109	*Drosera menziesii (Pink Rainbow)*			
347.	13216	*Drosera menziesii subsp. penicillaris*			
348.	3116	*Drosera omissa (Bright Sundew)*			

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349.	3118	*Drosera pallida (Pale Rainbow)*			
350.	31233	*Drosera patens*			
351.	30712	*Drosera x sidjamesii*		P1	
Elaeocarpaceae					
352.	4524	*Platytheca galioides*			
Ericaceae					
353.	6295	*Acrotriche cordata (Coast Ground Berry)*			
354.	6311	*Andersonia heterophylla*			
355.	6314	*Andersonia lehmanniana*			
356.	11471	*Andersonia lehmanniana subsp. lehmanniana*			
357.	6323	*Astroloma ciliatum (Candle Cranberry)*			
358.	6331	*Astroloma microcalyx (Native Cranberry)*			
359.	6334	*Astroloma pallidum (Kick Bush)*			
360.	6339	*Astroloma xerophyllum*			
361.	6347	*Conostephium minus (Pink-tipped Pearl flower)*			
362.	6348	*Conostephium pendulum (Pearl Flower)*			
363.	6349	*Conostephium preissii*			
364.	6360	*Leucopogon australis (Spiked Beard-heath)*			
365.	6374	*Leucopogon conostephioides*			
366.	6405	*Leucopogon insularis*			
367.	40801	*Leucopogon maritimus*		P1	
368.	6425	*Leucopogon oxycedrus*			
369.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
370.	6434	*Leucopogon polymorphus*			
371.	6436	*Leucopogon propinquus*			
372.	6440	*Leucopogon racemulosus*			
373.	19579	*Leucopogon sp. Murdoch (M. Hislop 1037)*			
374.	19460	*Leucopogon sp. Yanchep (M. Hislop 1986)*		P3	
375.	40803	*Leucopogon squarrosus subsp. squarrosus*			
376.	6456	*Lysinema ciliatum (Curry Flower)*			
377.	34736	*Lysinema pentapetalum*			
Euphorbiaceae					
378.	4638	*Euphorbia peplus (Petty Spurge)*	Y		
379.	4648	*Euphorbia terracina (Geraldton Carnation Weed)*	Y		
380.	4666	*Monotaxis occidentalis*			
381.	19942	*Ricinocarpos undulatus*			
382.	4713	*Stachystemon axillaris (Leafy Stachystemon)*			
Fabaceae					
383.	3207	*Acacia alata (Winged Wattle)*			
384.	15430	*Acacia alata var. tetrantha*			
385.	15466	*Acacia applanata*			
386.	15470	*Acacia barbinervis subsp. borealis*			
387.	3237	*Acacia benthamii*		P2	
388.	3262	*Acacia cochlearis (Rigid Wattle)*			
389.	3271	*Acacia costata*			
390.	3282	*Acacia cyclops (Coastal Wattle)*			
391.	3374	*Acacia huegelii*			
392.	3409	*Acacia lasiocarpa (Panjang)*			
393.	11611	*Acacia lasiocarpa var. lasiocarpa*			
394.	15721	*Acacia lasiocarpa var. sedifolia*			
395.	17861	*Acacia longifolia*	Y		
396.	3502	*Acacia pulchella (Prickly Moses)*			
397.	15481	*Acacia pulchella var. glaberrima*			
398.	15482	*Acacia pulchella var. goadbyi*			
399.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
400.	3527	*Acacia saligna (Orange Wattle, Kudjong)*			
401.	30032	*Acacia saligna subsp. saligna*			
402.	3541	*Acacia sessilis*			
403.	3557	*Acacia stenoptera (Narrow Winged Wattle)*			
404.	3584	*Acacia truncata*			
405.	3602	*Acacia willdenowiana (Grass Wattle)*			
406.	3604	*Acacia xanthina (White-stemmed Wattle)*			
407.	3692	*Aotus procumbens*			
408.	3710	*Bossiaea eriocarpa (Common Brown Pea)*			
409.	10861	*Callistachys lanceolata (Wonnich)*			
410.	18156	*Chamaecytisus palmensis (Tagasaste)*	Y		
411.	3793	*Daviesia angulata*			
412.	3805	*Daviesia decurrens (Prickly Bitter-pea)*			

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413.	3807	*Daviesia divaricata (Marno)*			
414.	18560	*Daviesia divaricata subsp. divaricata*			
415.	3815	*Daviesia horrida (Prickly Bitter-pea)*			
416.	3824	*Daviesia nudiflora*			
417.	16585	*Daviesia nudiflora subsp. nudiflora*			
418.	3832	*Daviesia physodes*			
419.	3833	*Daviesia podophylla*			
420.	3845	*Daviesia triflora*			
421.	3872	*Euchilopsis linearis (Swamp Pea)*			
422.	20475	*Gastrolobium capitatum*			
423.	20473	*Gastrolobium ebracteolatum*			
424.	20483	*Gastrolobium linearifolium*			
425.	20482	*Gastrolobium nervosum*			
426.	3945	*Gompholobium aristatum*			
427.	10909	*Gompholobium confertum*			
428.	3950	*Gompholobium knightianum*			
429.	19295	*Gompholobium pungens*			
430.	11083	*Gompholobium scabrum*			
431.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
432.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
433.	3966	*Hovea pungens (Devil's Pins, Puyenak)*			
434.	3967	*Hovea stricta*			
435.	3968	*Hovea trisperma (Common Hovea)*			
436.	12859	*Hovea trisperma var. trisperma*			
437.	3992	*Isotropis cuneifolia (Granny Bonnets)*			
438.	19700	*Isotropis cuneifolia subsp. cuneifolia*			
439.	14783	*Jacksonia calcicola*			
440.	4010	*Jacksonia floribunda (Holly Pea)*			
441.	4012	*Jacksonia furcellata (Grey Stinkwood)*			
442.	4027	*Jacksonia sericea (Waldjumi)*		P4	
443.	4029	*Jacksonia sternbergiana (Stinkwood, Kapur)*			
444.	4037	*Kennedia coccinea (Coral Vine)*			
445.	4044	*Kennedia prostrata (Scarlet Runner)*			
446.	4052	*Latrobea tenella*			
447.	19821	*Lessertia frutescens*	Y		
448.	4066	*Lupinus cosentinii*	Y		
449.	4075	*Medicago littoralis (Strand Medic)*	Y		
450.	4079	*Medicago polymorpha (Burr Medic)*	Y		
451.	4085	*Melilotus indicus*	Y		
452.	4100	*Mirbelia spinosa*			
453.	4155	*Psoralea pinnata (African Scurfpea)*	Y		
454.	4181	*Pultenaea reticulata*			
455.	19183	*Retama raetam*	Y		
456.	20348	*Sphaerolobium calcicola*		P3	
457.	17551	*Sphaerolobium drummondii*			
458.	4207	*Sphaerolobium medium*			
459.	4256	*Templetonia retusa (Cockies Tongues)*			
460.	4291	*Trifolium arvense (Hare's Foot Clover)*	Y		
461.	17542	*Trifolium arvense var. arvense*	Y		
462.	4292	*Trifolium campestre (Hop Clover)*	Y		
463.	17763	*Trifolium campestre var. campestre (Hop Clover)*	Y		
464.	4295	*Trifolium dubium (Suckling Clover)*	Y		
465.	4297	*Trifolium glomeratum (Cluster Clover)*	Y		
466.	4298	*Trifolium hirtum (Rose Clover)*	Y		
467.	14738	*Trifolium resupinatum var. resupinatum*	Y		
468.	4309	*Trifolium scabrum (Rough Clover)*	Y		
469.	4310	*Trifolium spumosum (Bladder Clover)*	Y		
470.	4322	*Vicia sativa (Common Vetch)*	Y		
471.	11474	*Vicia sativa subsp. nigra*	Y		
472.	4325	*Viminaria juncea (Swishbush, Koweda)*			

Fabroniaceae

473.	20162	*Fabronia hampeana*		P2	

Faucheaceae

474.	27362	*Webervanbossea splachnoides*			

Fissidentaceae

475.	32369	*Fissidens tenellus*			

Frankeniaceae

476.	5209	*Frankenia pauciflora (Seaheath)*			

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Funariaceae					
477.	32370	*Funaria hygrometrica*			
Gelidiaceae					
478.	26848	*Gelidium crinale*			
479.	27195	*Pterocladia lucida*			
480.	27206	*Ptilophora prolifera*			
Gentianaceae					
481.	6539	*Centaurium erythraea (Common Centaury)*	Y		
482.	6542	*Centaurium tenuiflorum*	Y		
Geraniaceae					
483.	4332	*Erodium botrys (Long Storksbill)*	Y		
484.	4333	*Erodium cicutarium (Common Storksbill)*	Y		
485.	4336	*Erodium moschatum (Musky Crowfoot)*	Y		
486.	4339	*Geranium molle (Dove's Foot Cranesbill)*	Y		
487.	4341	*Geranium solanderi (Native Geranium)*			
488.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
489.	4346	*Pelargonium littorale*			
Gigaspermaceae					
490.	32384	*Gigaspermum repens*			
Goodeniaceae					
491.	12724	*Anthotium junciforme*			
492.	7454	*Dampiera linearis (Common Dampiera)*			
493.	19286	*Goodenia pulchella subsp. Coastal Plain A (M. Hislop 634)*			
494.	7568	*Lechenaultia biloba (Blue Leschenaultia)*			
495.	7574	*Lechenaultia floribunda (Free-flowering Leschenaultia)*			
496.	7577	*Lechenaultia hirsuta (Hairy Leschenaultia)*			
497.	7580	*Lechenaultia linarioides (Yellow Leschenaultia)*			
498.	7586	*Lechenaultia stenosepala (Narrow-sepaled Leschenaultia)*			
499.	7603	*Scaevola canescens (Grey Scaevola)*			
500.	7606	*Scaevola crassifolia (Thick-leaved Fan-flower)*			
501.	7614	*Scaevola globulifera*			
502.	7626	*Scaevola nitida (Shining Fanflower)*			
503.	13181	*Scaevola repens var. angustifolia*			
504.	13182	*Scaevola repens var. repens*			
505.	13152	*Scaevola thesioides subsp. thesioides*			
506.	7666	*Verreauxia reinwardtii (Common Verreauxia)*			
Gracilariaceae					
507.	26712	*Curdiea obesa*			
508.	26871	*Gracilaria flagelliformis*			
509.	26876	*Gracilaria verrucosa*			
Gyrostemonaceae					
510.	2784	*Gyrostemon ramulosus (Corkybark)*			
511.	2791	*Tersonia cyathiflora (Button Creeper)*			
Haemodoraceae					
512.	1409	*Anigozanthos humilis (Catspaw)*			
513.	11434	*Anigozanthos humilis subsp. humilis*			
514.	11261	*Anigozanthos manglesii subsp. manglesii*			
515.	1418	*Conostylis aculeata (Prickly Conostylis)*			
516.	11826	*Conostylis aculeata subsp. aculeata*			
517.	11552	*Conostylis aculeata subsp. bromelioides*			
518.	11513	*Conostylis aculeata subsp. cygnorum*			
519.	1423	*Conostylis aurea (Golden Conostylis)*			
520.	1425	*Conostylis bracteata*		P3	
521.	1427	*Conostylis candicans (Grey Cottonhead)*			
522.	12027	*Conostylis candicans subsp. calcicola*			
523.	11438	*Conostylis candicans subsp. candicans*			
524.	1436	*Conostylis juncea*			
525.	1443	*Conostylis pauciflora (Dawesville Conostylis)*			
526.	11388	*Conostylis pauciflora subsp. euryrhipis*		P4	
527.	11657	*Conostylis pauciflora subsp. pauciflora*		P4	
528.	1454	*Conostylis setigera (Bristly Cottonhead)*			
529.	11597	*Conostylis setigera subsp. setigera*			
530.	11870	*Conostylis teretifolia subsp. teretifolia*			
531.	1468	*Haemodorum laxum*			
532.	1470	*Haemodorum paniculatum (Mardja)*			
533.	1475	*Haemodorum spicatum (Mardja)*			

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534.	1477	*Macropidia fuliginosa (Black Kangaroo Paw)*			
535.	1478	*Phlebocarya ciliata*			
Halimedaceae					
536.	26890	*Halimeda cuneata*			
Haloragaceae					
537.	33620	*Glischrocaryon angustifolium*			
538.	6143	*Glischrocaryon aureum (Common Popflower)*			
539.	6161	*Gonocarpus pithyoides*			
540.	34676	*Meionectes brownii (Swamp Raspwort)*			
541.	6192	*Myriophyllum drummondii*			
542.	6199	*Myriophyllum tillaeoides*			
Halymeniaceae					
543.	26709	*Cryptonemia undulata*			
544.	26850	*Gelinaria ulvoidea*			
545.	37640	*Halymenia floresii*			
546.	37641	*Halymenia floresii subsp. harveyana*			
547.	27112	*Pachymenia orbicularis*			Y
Hemerocallidaceae					
548.	1264	*Arnocrinum preissii*			
549.	1276	*Caesia micrantha (Pale Grass Lily)*			
550.	1285	*Corynotheca micrantha (Sand Lily)*			
551.	11283	*Corynotheca micrantha var. micrantha*			
552.	1259	*Dianella revoluta (Blueberry Lily)*			
553.	11636	*Dianella revoluta var. divaricata*			
554.	1293	*Hensmania turbinata*			
555.	1260	*Stypandra glauca (Blind Grass)*			
556.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
557.	1363	*Tricoryne tenella*			
Hydatellaceae					
558.	1141	*Trithuria submersa*			
Hydrocharitaceae					
559.	164	*Halophila ovalis (Sea Wrack)*			
Hypneaceae					
560.	35922	*Hypnea cornuta*			
561.	35898	*Hypnea musciformis*			
562.	26971	*Hypnea ramentacea*			
563.	26973	*Hypnea valentiae*			
Iridaceae					
564.	1513	*Chasmanthe floribunda (African Cornflag)*	Y		
565.	1520	*Gladiolus caryophyllaceus (Wild Gladiolus)*	Y		
566.	1526	*Hesperantha falcata*	Y		
567.	19179	*Moraea flaccida (One-leaf Cape Tulip)*	Y		
568.	1537	*Orthrosanthus laxus (Morning Iris)*			
569.	11749	*Orthrosanthus laxus var. laxus (Morning Iris)*			
570.	1550	*Patersonia occidentalis (Purple Flag, Koma)*			
571.	30472	*Patersonia occidentalis var. occidentalis*			
572.	1556	*Romulea rosea (Guildford Grass)*	Y		
573.	1558	*Sparaxis bulbifera*	Y		
Juncaceae					
574.	1188	*Juncus pallidus (Pale Rush)*			
Juncaginaceae					
575.	33276	*Triglochin isingiana*			
576.	18587	*Triglochin nana*			
577.	152	*Triglochin trichophora*			
Kallymeniaceae					
578.	26990	*Kallymenia cribrosa*			
579.	27329	*Thamnophyllis lacerata*			
Lamiaceae					
580.	16934	*Hemiandra glabra subsp. glabra*			
581.	6836	*Hemiandra incana*			
582.	6838	*Hemiandra linearis (Speckled Snakebush)*			
583.	6839	*Hemiandra pungens (Snakebush)*			
584.	38320	*Hemiandra sp. Jurien (B.J. Conn & M.E. Tozer BJC 3885)*			
585.	6871	*Hemigenia sericea (Silky Hemigenia)*			

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586.	41020	*Hemiphora bartlingii (Woolly Dragon)*			
587.	6880	*Leonotis leonurus (Lion's Ear)*	Y		
588.	15994	*Mentha x piperita var. citrata*	Y		
589.	6929	*Salvia verbenaca (Wild Sage)*	Y		
590.	6939	*Westringia dampieri*			
Lauraceae					
591.	2951	*Cassytha flava (Dodder Laurel)*			
592.	2952	*Cassytha glabella (Tangled Dodder Laurel)*			
593.	2956	*Cassytha pomiformis (Dodder Laurel)*			
594.	2957	*Cassytha racemosa (Dodder Laurel)*			
595.	11799	*Cassytha racemosa forma racemosa*			
Lentibulariaceae					
596.	7125	*Utricularia australis*			
597.	7131	*Utricularia dichotoma (Fairy Aprons)*			
598.	12493	*Utricularia gibba*			
599.	7158	*Utricularia volubilis (Twining Bladderwort)*			
Linaceae					
600.	4364	*Linum usitatissimum (Flax)*	Y		
Loganiaceae					
601.	6515	*Logania vaginalis (White Spray)*			
602.	16177	*Phyllangium paradoxum*			
Loranthaceae					
603.	2401	*Nuytsia floribunda (Christmas Tree, Mudja)*			
Lythraceae					
604.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
Malvaceae					
605.	4906	*Alyogyne huegelii (Lilac Hibiscus)*			
606.	15458	*Alyogyne huegelii var. huegelii*			
607.	5011	*Guichenotia ledifolia*			
608.	5038	*Lasiopetalum membranaceum*		P3	
609.	5105	*Thomasia triphylla*			
Meliaceae					
610.	4516	*Melia azedarach (White Cedar)*			
Menyanthaceae					
611.	36160	*Liparophyllum capitatum*			
612.	36177	*Ornduffia albiflora*			
Molluginaceae					
613.	2838	*Macarthuria apetala*			
614.	2839	*Macarthuria australis*			
Moraceae					
615.	1747	*Ficus carica (Common Fig)*	Y		
Mychodeaceae					
616.	27081	*Mychodea gracilaria*			
Myrtaceae					
617.	20283	*Astartea scoparia*			
618.	34161	*Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)*		P1	
619.	5382	*Beaufortia elegans*			
620.	5411	*Calothamnus hirsutus*			
621.	5415	*Calothamnus lateralis*			
622.	5426	*Calothamnus quadrifidus (One-sided Bottlebrush, Kwowdjard)*			
623.	35816	*Calothamnus quadrifidus subsp. quadrifidus*			
624.	5429	*Calothamnus sanguineus (Silky-leaved Blood flower, Pindak)*			
625.	5439	*Calytrix angulata (Yellow Starflower)*			
626.	5458	*Calytrix flavescens (Summer Starflower)*			
627.	5460	*Calytrix fraseri (Pink Summer Calytrix)*			
628.	5476	*Calytrix sapphirina*			
629.	5479	*Calytrix strigosa*			
630.	5498	*Chamelaucium uncinatum (Geraldton Wax)*			
631.	17104	*Corymbia calophylla (Marri)*			
632.	13949	*Eremaea asterocarpa*			
633.	13950	*Eremaea asterocarpa subsp. asterocarpa*			
634.	5540	*Eremaea fimbriata*			
635.	5541	*Eremaea pauciflora*			
636.	14104	*Eremaea pauciflora var. pauciflora*			

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637.	13091	*Eucalyptus argutifolia (Wabling Hill Mallee)*		T	
638.	5615	*Eucalyptus decipiens (Limestone Marlock, Moit)*			
639.	13536	*Eucalyptus decipiens subsp. decipiens*			
640.	5649	*Eucalyptus foecunda (Narrow-leaved Red Mallee)*			
641.	5659	*Eucalyptus gomphocephala (Tuart, Duart)*			
642.	5708	*Eucalyptus marginata (Jarrah, Djara)*			
643.	13547	*Eucalyptus marginata subsp. marginata (Jarrah)*			
644.	20808	*Eucalyptus petiolaris*	Y		
645.	13541	*Eucalyptus petrensis*			
646.	18551	*Eucalyptus platypus subsp. platypus*			
647.	5763	*Eucalyptus rudis (Flooded Gum, Kulurda)*			
648.	13511	*Eucalyptus rudis subsp. rudis*			
649.	5790	*Eucalyptus todtiana (Coastal Blackbutt)*			
650.	5817	*Hypocalymma angustifolium (White Myrtle, Kudjid)*			
651.	5825	*Hypocalymma robustum (Swan River Myrtle)*			
652.	15498	*Kunzea glabrescens (Spearwood)*			
653.	5847	*Leptospermum erubescens (Roadside Teatree)*			
654.	5857	*Leptospermum spinescens*			
655.	5887	*Melaleuca cardiophylla (Tangling Melaleuca)*			
656.	5920	*Melaleuca huegelii (Chenille Honeymyrtle)*			
657.	13271	*Melaleuca huegelii subsp. huegelii*			
658.	18394	*Melaleuca parviceps*			
659.	5952	*Melaleuca preissiana (Moonah)*			
660.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
661.	5964	*Melaleuca seriata*			
662.	33022	*Melaleuca sp. Wanneroo (G.J. Keighery 16705)*		P1	Y
663.	18598	*Melaleuca systena*			
664.	5978	*Melaleuca teretifolia (Banbar)*			
665.	5983	*Melaleuca trichophylla*			
666.	5986	*Melaleuca urceolaris*			
667.	16477	*Pericalymma ellipticum var. ellipticum*			
668.	6012	*Regelia ciliata*			
669.	6014	*Regelia inops*			
670.	6033	*Scholtzia involucrata (Spiked Scholtzia)*			
671.	12388	*Verticordia acerosa var. preissii*			
672.	12402	*Verticordia chrysanthella*			
673.	12411	*Verticordia densiflora var. cespitosa*			
674.	15432	*Verticordia densiflora var. densiflora*			
675.	6077	*Verticordia drummondii (Drummond's Featherflower)*			
676.	15433	*Verticordia huegelii var. huegelii*			
677.	6101	*Verticordia nitens (Morrison Featherflower, Kodjeningara)*			
678.	10822	*Verticordia nobilis*			
679.	6103	*Verticordia ovalifolia*			
680.	6109	*Verticordia picta (Painted Featherflower)*			
Nitrariaceae					
681.	4366	*Nitraria billardierei (Nitre Bush)*			
Nizymeniaceae					
682.	27103	*Nizymenia conferta*			
Olacaceae					
683.	2365	*Olax benthamiana*			
Oleaceae					
684.	6503	*Olea europaea (Olive)*	Y		
Onagraceae					
685.	11570	*Epilobium billardiereanum subsp. billardiereanum (Smooth Willow Herb)*			
686.	11992	*Epilobium billardiereanum subsp. intermedium*			
687.	6132	*Epilobium ciliatum*	Y		
688.	6133	*Epilobium hirtigerum (Hairy Willow Herb)*			
689.	14289	*Epilobium tetragonum subsp. tetragonum*	Y		
690.	16390	*Oenothera drummondii subsp. drummondii*	Y		
691.	6139	*Oenothera glazioviana (Evening Primrose)*	Y		
692.	14293	*Oenothera indecora subsp. bonariensis*	Y		
Orchidaceae					
693.	15330	*Caladenia arenicola*			
694.	11038	*Caladenia bicalliata*			
695.	1592	*Caladenia flava (Cowslip Orchid)*			
696.	15348	*Caladenia flava subsp. flava*			
697.	15352	*Caladenia georgei*			

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698.	1595	*Caladenia hirta (Sugar Candy Orchid)*			
699.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
700.	15360	*Caladenia longicauda subsp. borealis*			
701.	15361	*Caladenia longicauda subsp. calcigena*			
702.	15377	*Caladenia reptans subsp. reptans*			
703.	15114	*Cyanicula gemmata*			
704.	10916	*Cyrtostylis huegelii*			
705.	19649	*Disa bracteata*	Y		
706.	11049	*Diuris corymbosa*			
707.	1635	*Diuris longifolia (Common Donkey Orchid)*			
708.	12939	*Diuris magnifica*			
709.	1640	*Drakaea glyptodon (King-in-his-carriage)*			
710.	1643	*Elythranthera brunonis (Purple Enamel Orchid)*			
711.	1644	*Elythranthera emarginata (Pink Enamel Orchid)*			
712.	1645	*Epiblema grandiflorum (Babe-in-a-cradle)*			
713.	1646	*Eriochilus dilatatus (White Bunny Orchid)*			
714.	15410	*Eriochilus dilatatus subsp. dilatatus*			
715.	1653	*Leporella fimbriata (Hare Orchid)*			
716.	15418	*Leptoceras menziesii*			
717.	34158	*Microtis alboviridis*			
718.	15419	*Microtis media subsp. media*			
719.	1667	*Paracaleana nigrita (Flying Duck Orchid)*			
720.	20460	*Pheladenia deformis*			
721.	1672	*Prasophyllum fimbria (Fringed Leek Orchid)*			
722.	1680	*Prasophyllum parvifolium (Autumn Leek Orchid)*			
723.	15426	*Pterostylis aspera*			
724.	17267	*Pterostylis brevisepala*			
725.	1693	*Pterostylis recurva (Jug Orchid)*			
726.	12217	*Pterostylis sanguinea*			
727.	18645	*Pterostylis sp. limestone (B.J. Keighery & G.J. Keighery 65)*			
728.	18658	*Pterostylis sp. short sepals (W. Jackson BJ259)*			
729.	1698	*Pterostylis vittata (Banded Greenhood)*			
730.	16367	*Pyrorchis nigricans (Red beaks, Elephants ears)*			
731.	1705	*Thelymitra crinita (Blue Lady Orchid)*			
732.	1708	*Thelymitra fuscolutea (Chestnut Sun Orchid)*			
733.	1717	*Thelymitra variegata (Queen of Sheba)*		P3	
Orobanchaceae					
734.	15037	*Bartsia trixago*	Y		
735.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
736.	7089	*Parentucellia latifolia (Common Bartsia)*	Y		
737.	7090	*Parentucellia viscosa (Sticky Bartsia)*	Y		
Orthotrichaceae					
738.	36218	*Zygodon menziesii*			
Oxalidaceae					
739.	30375	*Oxalis exilis*			
740.	4356	*Oxalis pes-caprae (Soursob)*	Y		
Papaveraceae					
741.	2971	*Fumaria muralis (Wall Fumitory)*	Y		
742.	2967	*Romneya coulteri (California Tree Poppy)*	Y		
Passifloraceae					
743.	5225	*Passiflora filamentosa*	Y		
Phacelocarpaceae					
744.	27134	*Phacelocarpus peperocarpos*			
745.	27135	*Phacelocarpus sessilis*			
Phyllanthaceae					
746.	4675	*Phyllanthus calycinus (False Boronia)*			
747.	17794	*Phyllanthus tenellus*	Y		
748.	4688	*Poranthera drummondii*			
749.	4689	*Poranthera ericoides (Heath Poranthera)*			
750.	4691	*Poranthera microphylla (Small Poranthera)*			
Phytolaccaceae					
751.	2793	*Phytolacca octandra (Red Ink Plant)*	Y		
Pittosporaceae					
752.	25788	*Billardiera fraseri (Elegant Pronaya)*			
753.	25819	*Marianthus paralius*		T	
754.	19744	*Pittosporum angustifolium*			

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755.	19745	*Pittosporum ligustrifolium*			
Plantaginaceae					
756.	16346	*Bacopa monnieri*	Y		
757.	7299	*Plantago debilis*			
758.	7304	*Plantago major (Greater Plantain)*	Y		
759.	7109	*Veronica calycina (Cup Speedwell)*			
760.	7110	*Veronica distans*			
Plocamiaceae					
761.	27155	*Plocamium cartilagineum*			
762.	27156	*Plocamium mertensii*			
763.	27157	*Plocamium preissianum*			
Plumbaginaceae					
764.	6489	*Limonium sinuatum (Perennial Sea Lavender)*	Y		
Poaceae					
765.	184	*Aira caryophyllea (Silvery Hairgrass)*	Y		
766.	185	*Aira cupaniana (Silvery Hairgrass)*	Y		
767.	20184	*Amphipogon laguroides subsp. laguroides*			
768.	200	*Amphipogon turbinatus*			
769.	226	*Arundo donax (Giant Reed)*	Y		
770.	17234	*Austrostipa compressa*			
771.	17240	*Austrostipa flavescens*			
772.	35317	*Austrostipa mundula*		P2	
773.	17246	*Austrostipa nitida*			
774.	17254	*Austrostipa tenuifolia*			
775.	231	*Avellinia michelii*	Y		
776.	233	*Avena barbata (Bearded Oat)*	Y		
777.	244	*Briza maxima (Blowfly Grass)*	Y		
778.	245	*Briza minor (Shivery Grass)*	Y		
779.	247	*Bromus arenarius (Sand Brome)*			
780.	249	*Bromus diandrus (Great Brome)*	Y		
781.	250	*Bromus hordeaceus (Soft Brome)*	Y		
782.	253	*Bromus rubens (Red Brome)*	Y		
783.	13685	*Catapodium rigidum (Rigid Fescue)*	Y		
784.	258	*Cenchrus ciliaris (Buffel Grass)*	Y		
785.	277	*Cortaderia selloana (Pampas Grass)*	Y		
786.	283	*Cynodon dactylon (Couch)*	Y		
787.	299	*Deyeuxia quadriseta (Reed Bentgrass)*			
788.	306	*Dichelachne crinita (Longhair Plumegrass)*			
789.	320	*Digitaria sanguinalis (Crab Grass)*	Y		
790.	11485	*Ehrharta brevifolia var. cuspidata*	Y		
791.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
792.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
793.	376	*Eragrostis curvula (African Lovegrass)*	Y		
794.	439	*Hemarthria uncinata (Matgrass)*			
795.	443	*Heteropogon contortus (Bunch Speargrass)*			
796.	444	*Holcus lanatus (Yorkshire Fog)*	Y		
797.	445	*Holcus setiger (Annual Fog)*	Y		
798.	449	*Hordeum leporinum (Barley Grass)*	Y		
799.	20019	*Lachnagrostis filiformis*			
800.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
801.	8682	*Lolium loliaceum (Stiff Ryegrass)*	Y		
802.	475	*Lolium multiflorum (Italian Ryegrass)*	Y		
803.	476	*Lolium perenne (Perennial Ryegrass)*	Y		
804.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
805.	485	*Microlaena stipoides (Weeping Grass)*			
806.	532	*Paspalum urvillei (Vasey Grass)*	Y		
807.	40423	*Pentameris airoides (False Hairgrass)*	Y		
808.	571	*Poa annua (Winter Grass)*	Y		
809.	573	*Poa drummondiana (Knotted Poa)*			
810.	577	*Poa poiformis (Coastal Poa)*			
811.	578	*Poa porphyroclados*			
812.	582	*Polypogon monspeliensis (Annual Beardgrass)*	Y		
813.	10970	*Rostraria cristata*	Y		
814.	40426	*Rytidosperma occidentale*			
815.	624	*Spinifex hirsutus (Hairy Spinifex)*			
816.	635	*Sporobolus virginicus (Marine Couch)*			
817.	10874	*Thinopyrum distichum*	Y		
818.	708	*Triticum aestivum (Wheat)*	Y		

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819.	716	*Urochloa mutica*	Y		
820.	11137	*Vulpia fasciculata*	Y		
821.	724	*Vulpia myuros (Rat's Tail Fescue)*	Y		
822.	33101	*Vulpia myuros forma myuros*	Y		
Polygalaceae					
823.	4550	*Comesperma calymega (Blue-spike Milkwort)*			
824.	4552	*Comesperma confertum*			
825.	4554	*Comesperma flavum*			
Polygonaceae					
826.	17774	*Acetosella vulgaris*	Y		
827.	2415	*Muehlenbeckia polybotrya*			
828.	13911	*Persicaria decipiens*			
829.	16984	*Persicaria lapathifolia*	Y		
830.	2433	*Rumex crispus (Curled Dock)*	Y		
831.	2440	*Rumex pulcher (Fiddle Dock)*	Y		
Portulacaceae					
832.	2845	*Calandrinia brevipedata (Short-stalked Purslane)*			
833.	2848	*Calandrinia corrigioloides (Strap Purslane)*			
834.	2854	*Calandrinia granulifera (Pygmy Purslane)*			
835.	2856	*Calandrinia liniflora (Parakeelya)*			
836.	40827	*Calandrinia tholiformis*			
Posidoniaceae					
837.	122	*Posidonia angustifolia*			
838.	105	*Posidonia coriacea*			
839.	124	*Posidonia ostenfeldii*			
840.	125	*Posidonia sinuosa*			
Potamogetonaceae					
841.	110	*Potamogeton drummondii*			
Pottiaceae					
842.	32315	*Barbula calycina*			
843.	32345	*Didymodon australasiae*			
844.	32346	*Didymodon torquatus*			
845.	32437	*Syntrichia antarctica*			
846.	32438	*Syntrichia pagorum*			
847.	32450	*Trichostomum eckelianum*			
Primulaceae					
848.	6483	*Samolus junceus*			
Proteaceae					
849.	11837	*Adenanthos cygnorum subsp. cygnorum (Common Woollybush)*			
850.	1800	*Banksia attenuata (Slender Banksia, Piara)*			
851.	32580	*Banksia dallanneyi var. dallanneyi*			
852.	1819	*Banksia grandis (Bull Banksia, Pulgarla)*			
853.	1822	*Banksia ilicifolia (Holly-leaved Banksia)*			
854.	11386	*Banksia leptophylla var. melletica*			
855.	1830	*Banksia littoralis (Swamp Banksia, Pungura)*			
856.	1834	*Banksia menziesii (Firewood Banksia)*			
857.	32077	*Banksia sessilis var. cygnorum*			
858.	1857	*Conospermum acerosum (Needle-leaved Smokebush)*			
859.	15607	*Conospermum acerosum subsp. acerosum*			
860.	15511	*Conospermum boreale*			
861.	15513	*Conospermum boreale subsp. boreale*			
862.	1859	*Conospermum brachyphyllum*			
863.	15516	*Conospermum canaliculatum subsp. canaliculatum*			
864.	1876	*Conospermum incurvum (Plume Smokebush)*			
865.	1882	*Conospermum stoechadis (Common Smokebush)*			
866.	15611	*Conospermum stoechadis subsp. stoechadis (Common Smokebush)*			
867.	1885	*Conospermum triplinervium (Tree Smokebush)*			
868.	15521	*Conospermum unilaterale*			
869.	1982	*Grevillea crithmifolia*			
870.	15839	*Grevillea preissii subsp. preissii*			
871.	33737	*Grevillea sp. Ocean Reef (D. Pike Joon 4)*		P1	Y
872.	2119	*Grevillea vestita*			
873.	12824	*Grevillea vestita subsp. vestita*			
874.	2146	*Hakea costata (Ribbed Hakea)*			
875.	2175	*Hakea lissocarpha (Honey Bush)*			
876.	2197	*Hakea prostrata (Harsh Hakea)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
877.	2203	*Hakea ruscifolia (Candle Hakea)*			
878.	2214	*Hakea trifurcata (Two-leaf Hakea)*			
879.	2258	*Persoonia comata*			
880.	2273	*Persoonia saccata (Snottygobble)*			
881.	20368	*Petrophile axillaris*			
882.	2286	*Petrophile brevifolia*			
883.	2299	*Petrophile linearis (Pixie Mops)*			
884.	2301	*Petrophile macrostachya*			
885.	2309	*Petrophile serruriae*			
886.	2316	*Stirlingia latifolia (Blueboy)*			
887.	2329	*Synaphea spinulosa*			
888.	15532	*Synaphea spinulosa subsp. spinulosa*			
889.	2331	*Xylomelum occidentale (Woody Pear, Djandin)*			
Pteridaceae					
890.	45	*Pteris vittata (Chinese Brake)*			
Racopilaceae					
891.	32480	*Racopilum cuspidigerum var. convolutaceum*			
Ranunculaceae					
892.	10804	*Clematis linearifolia*			
893.	2929	*Clematis pubescens (Common Clematis)*			
894.	2932	*Ranunculus colonorum (Common Buttercup)*			
895.	2933	*Ranunculus muricatus (Sharp Buttercup)*	Y		
Restionaceae					
896.	1056	*Alexgeorgea nitens*			
897.	17833	*Chordifex microcodon*			
898.	17663	*Desmocladus asper*			
899.	17691	*Desmocladus fasciculatus*			
900.	16595	*Desmocladus flexuosus*			
901.	1070	*Hypolaena exsulca*			
902.	17841	*Hypolaena pubescens*			
903.	1075	*Lepidobolus preissianus*			
904.	18074	*Lepidobolus preissianus subsp. preissianus*			
905.	1090	*Lepyrodia muirii*			
906.	17694	*Meeboldina scariosa*			
Rhamnaceae					
907.	4802	*Cryptandra mutila*			
908.	4809	*Cryptandra pungens*			
909.	4810	*Cryptandra scoparia*			
910.	4828	*Spyridium globulosum (Basket Bush)*			
911.	15066	*Stenanthemum notiale subsp. chamelum*			
912.	19704	*Stenanthemum sublineare*		P2	
913.	11665	*Trymalium ledifolium var. ledifolium*			
914.	33418	*Trymalium odoratissimum subsp. odoratissimum*			
Rhodomelaceae					
915.	26688	*Coeloclonium tasmanicum*			
916.	26752	*Dasyclonium incisum*			
917.	26761	*Dictyomenia harveyana*			
918.	26762	*Dictyomenia sonderi*			
919.	26763	*Dictyomenia tridens*			
920.	26919	*Herposiphonia rostrata*			
921.	26922	*Herposiphonia versicolor*			
922.	26925	*Heterocladia caudata*			
923.	26995	*Kuetzingia canaliculata*			
924.	26998	*Laurencia brongniartii*			
925.	27000	*Laurencia elata*			
926.	27001	*Laurencia filiformis*			
927.	27008	*Laurencia shepherdii*			
928.	27011	*Lenormandia latifolia*			
929.	27013	*Lenormandia spectabilis*			
930.	27107	*Osmundaria prolifera*			
931.	27108	*Osmundaria spiralis*			
932.	27162	*Pollexfenia pedicellata*			
933.	27173	*Polysiphonia decipiens*			
934.	27190	*Protokuetzingia australasica*			
935.	27360	*Vidalia spiralis*			
Rhodymeniaceae					
936.	26864	*Gloiosaccion brownii*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
937.	27015	*Leptosomia rosea*			
938.	27224	*Rhodymenia sonderi*			
Rubiaceae					
939.	7323	*Galium murale (Small Goosegrass)*	Y		
940.	7348	*Opercularia hispidula (Hispid Stinkweed)*			
941.	18255	*Opercularia vaginata (Dog Weed)*			
Rutaceae					
942.	17665	*Boronia purdieana subsp. purdieana*			
943.	11381	*Boronia ramosa subsp. anethifolia*			
944.	11564	*Boronia ramosa subsp. ramosa*			
945.	4453	*Diplolaena angustifolia (Yanchep Rose)*			
946.	4454	*Diplolaena dampieri (Southern Diplolaena)*			
947.	18529	*Philotheca spicata (Pepper and Salt)*			
948.	18547	*Rhadinothamnus anceps*			
Santalaceae					
949.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
950.	2344	*Leptomeria empetriformis*			
951.	2350	*Leptomeria pauciflora (Sparse-flowered Currant Bush)*			
952.	2352	*Leptomeria preissiana*			
953.	2356	*Santalum acuminatum (Quandong, Warnga)*			
Sapindaceae					
954.	4746	*Diplopeltis huegelii*			
955.	18541	*Diplopeltis huegelii subsp. huegelii*			
Sarcomeniaceae					
956.	27229	*Sarcomenia delesserioides*			
Schizymeniaceae					
957.	27144	*Platoma cyclocolpum*			
958.	27268	*Schizymenia dubyi*			
Scrophulariaceae					
959.	7054	*Dischisma arenarium*	Y		
960.	7215	*Eremophila glabra (Tar Bush)*			
961.	17175	*Eremophila glabra subsp. albicans*			
962.	7289	*Myoporum caprarioides (Slender Myoporum)*			
963.	7291	*Myoporum insulare (Blueberry Tree, boobialla)*			
964.	7295	*Myoporum tetrandrum (Boobialla)*			
965.	19161	*Nemesia strumosa*	Y		
966.	7107	*Verbascum virgatum (Twiggy Mullein)*	Y		
Siphonocladaceae					
967.	27318	*Struvea plumosa*			
Solanaceae					
968.	11725	*Anthocercis ilicifolia subsp. ilicifolia*			
969.	6949	*Anthocercis littorea (Yellow Tailflower)*			
970.	10900	*Lycopersicon esculentum*	Y		
971.	6983	*Physalis peruviana (Cape Gooseberry)*	Y		
972.	6988	*Solanum americanum (Glossy Nightshade)*	Y		
973.	7020	*Solanum linnaeanum (Apple of Sodom)*	Y		
974.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
975.	7037	*Solanum symonii*			
Stylidiaceae					
976.	7676	*Levenhookia pusilla (Midget Stylewort)*			
977.	7677	*Levenhookia stipitata (Common Stylewort)*			
978.	7679	*Stylidium adpressum (Trigger-on-stilts)*			
979.	30278	*Stylidium androsaceum*			
980.	25831	*Stylidium araeophyllum*			
981.	7693	*Stylidium brunonianum (Pink Fountain Triggerplant)*			
982.	7694	*Stylidium bulbiferum (Circus Triggerplant)*			
983.	7696	*Stylidium calcaratum (Book Triggerplant)*			
984.	7709	*Stylidium crossocephalum (Posy Triggerplant)*			
985.	7710	*Stylidium cygnorum*			
986.	7713	*Stylidium dichotomum (Pins-and-needles)*			
987.	7716	*Stylidium diuroides (Donkey Triggerplant)*			
988.	11808	*Stylidium diuroides subsp. diuroides*			
989.	7717	*Stylidium divaricatum (Daddy-long-legs)*			
990.	25801	*Stylidium hesperium*			
991.	7745	*Stylidium junceum (Reed Triggerplant)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
992.	7756	*Stylidium longitubum (Jumping Jacks)*		P3	
993.	13127	*Stylidium maritimum*		P3	
994.	25829	*Stylidium neurophyllum*			
995.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			
996.	7785	*Stylidium repens (Matted Triggerplant)*			
997.	20521	*Stylidium rigidulum*			
998.	25806	*Stylidium scariosum*			
999.	7798	*Stylidium schoenoides (Cow Kicks)*			
1000.	25830	*Stylidium sp. Darling Range (H. Bowler 371)*			
1001.	7806	*Stylidium utricularioides (Pink Fan Triggerplant)*			
Thuidiaceae					
1002.	32486	*Thuidium sparsum var. hastatum*			
Thymelaeaceae					
1003.	5232	*Pimelea argentea (Silvery Leaved Pimelea)*			
1004.	5237	*Pimelea calcicola*		P3	
1005.	5243	*Pimelea ferruginea*			
1006.	5244	*Pimelea floribunda*			
1007.	11402	*Pimelea imbricata var. piligera*			
1008.	5254	*Pimelea leucantha*			
1009.	18117	*Pimelea rosea subsp. rosea*			
1010.	5268	*Pimelea sulphurea (Yellow Banjine)*			
1011.	5272	*Pimelea villifera*			
Typhaceae					
1012.	99	*Typha orientalis (Bulrush, Cumbungi)*	Y		
Ulvaceae					
1013.	35263	*Ulva flexuosa*			
1014.	27352	*Ulva lactuca*			
Urticaceae					
1015.	12670	*Parietaria cardiostegia*			
1016.	1762	*Parietaria debilis (Pellitory)*			
Verbenaceae					
1017.	18197	*Phyla nodiflora*	Y		
1018.	6734	*Phyla nodiflora var. nodiflora*	Y		
Violaceae					
1019.	5216	*Hybanthus calycinus (Wild Violet)*			
1020.	12007	*Hybanthus floribundus subsp. floribundus*			
Vitaceae					
1021.	17042	*Vitis vinifera*	Y		
Xanthorrhoeaceae					
1022.	1256	*Xanthorrhoea preissii (Grass tree, Palga)*			
Zamiaceae					
1023.	85	*Macrozamia riedlei (Zamia, Djiridji)*			

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.

NatureMap
Mapping Western Australia's biodiversity

NatureMap Fauna Species Report

Created By Guest user on 31/05/2013

Kingdom Animalia
Current Names Only Yes
Core Datasets Only Yes
Method 'By Line'
Group By Species Group

Species Group	Species	Records
Amphibian	7	134
Bird	216	9682
Fish	54	80
Invertebrate	77	876
Mammal	37	216
Reptile	65	740
TOTAL	**456**	**11728**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Amphibian					
1.	25400	*Crinia insignifera (Squelching Froglet)*			
2.	25410	*Heleioporus eyrei (Moaning Frog)*			
3.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
4.	25378	*Litoria adelaidensis (Slender Tree Frog)*			
5.	25388	*Litoria moorei (Motorbike Frog)*			
6.	25420	*Myobatrachus gouldii (Turtle Frog)*			
7.	25433	*Pseudophryne guentheri (Crawling Toadlet)*			
Bird					
8.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
9.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
10.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
11.	24262	*Acanthiza inornata (Western Thornbill)*			
12.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
13.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
14.	24281	*Accipiter cirrocephalus subsp. cirrocephalus (Collared Sparrowhawk)*			
15.	25536	*Accipiter fasciatus (Brown Goshawk)*			
16.	24282	*Accipiter fasciatus subsp. fasciatus (Brown Goshawk)*			
17.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
18.	24831	*Acrocephalus australis subsp. gouldi (Australian Reed Warbler)*			
19.	41323	*Actitis hypoleucos (Common Sandpiper)*		IA	
20.	24310	*Anas castanea (Chestnut Teal)*			
21.	24312	*Anas gracilis (Grey Teal)*			
22.	24313	*Anas platyrhynchos (Mallard)*			
23.	24315	*Anas rhynchotis (Australasian Shoveler)*			
24.	24316	*Anas superciliosa (Pacific Black Duck)*			
25.	24506	*Anous tenuirostris subsp. melanops (Australian Lesser Noddy)*		T	
26.	24561	*Anthochaera carunculata (Red Wattlebird)*			
27.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
28.	24599	*Anthus australis subsp. australis (Australian Pipit)*			
29.	25554	*Apus pacificus (Fork-tailed Swift)*		IA	
30.	24285	*Aquila audax (Wedge-tailed Eagle)*			
31.	25538	*Aquila morphnoides (Little Eagle)*			
32.	24286	*Aquila morphnoides subsp. morphnoides (Little Eagle)*			
33.	25558	*Ardea ibis (Cattle Egret)*		IA	
34.	41324	*Ardea modesta (Eastern Great Egret)*		IA	
35.	24340	*Ardea novaehollandiae (White-faced Heron)*			
36.	24341	*Ardea pacifica (White-necked Heron)*			
37.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
38.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
39.	24356	*Artamus personatus (Masked Woodswallow)*			
40.	24318	*Aythya australis (Hardhead)*			
41.	24319	*Biziura lobata (Musk Duck)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
42.	24345	*Botaurus poiciloptilus (Australasian Bittern)*		T	
43.	25713	*Cacatua galerita (Sulphur-crested Cockatoo)*			
44.	24721	*Cacatua galerita subsp. galerita (Sulphur-crested Cockatoo)*	Y		
45.	25714	*Cacatua pastinator (Western Long-billed Corella)*			
46.	25715	*Cacatua roseicapilla (Galah)*			
47.	25716	*Cacatua sanguinea (Little Corella)*			
48.	24727	*Cacatua sanguinea subsp. westralensis (Little Corella)*			
49.	24729	*Cacatua tenuirostris (Eastern Long-billed Corella)*	Y		
50.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
51.	24427	*Cacomantis flabelliformis subsp. flabelliformis (Fan-tailed Cuckoo)*			
52.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
53.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
54.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
55.	25717	*Calyptorhynchus banksii (Red-tailed Black-Cockatoo)*			
56.	24733	*Calyptorhynchus baudinii (Baudin's Cockatoo (long-billed black-cockatoo), Baudin's Cockatoo)*		T	
57.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)*		T	
58.	25625	*Carduelis carduelis (Goldfinch, European Goldfinch)*	Y		
59.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
60.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
61.	24488	*Cheramoeca leucosternus (White-backed Swallow)*			
62.	24431	*Chrysococcyx basalis (Horsfield's Bronze Cuckoo)*			
63.	24432	*Chrysococcyx lucidus subsp. plagosus (Shining Bronze Cuckoo)*			
64.	24834	*Cincloramphus mathewsi (Rufous Songlark)*			
65.	24288	*Circus approximans (Swamp Harrier)*			
66.	24289	*Circus assimilis (Spotted Harrier)*			
67.	24774	*Cladorhynchus leucocephalus (Banded Stilt)*			
68.	24396	*Climacteris rufa (Rufous Treecreeper)*			
69.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
70.	24613	*Colluricincla harmonica subsp. rufiventris (Grey Shrike-thrush)*			
71.	24399	*Columba livia (Domestic Pigeon)*	Y		
72.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
73.	24416	*Corvus bennetti (Little Crow)*			
74.	25592	*Corvus coronoides (Australian Raven)*			
75.	24417	*Corvus coronoides subsp. perplexus (Australian Raven)*			
76.	24671	*Coturnix pectoralis (Stubble Quail)*			
77.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
78.	25595	*Cracticus tibicen (Australian Magpie)*			
79.	24422	*Cracticus tibicen subsp. dorsalis (White-backed Magpie)*			
80.	25596	*Cracticus torquatus (Grey Butcherbird)*			
81.	24424	*Cracticus torquatus subsp. torquatus (Grey Butcherbird)*			
82.	24322	*Cygnus atratus (Black Swan)*			
83.	30901	*Dacelo novaeguineae (Laughing Kookaburra)*	Y		
84.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
85.	24325	*Dendrocygna eytoni (Plumed Whistling Duck)*			
86.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
87.	30908	*Diomedea chlororhynchos (Yellow-nosed Albatross)*		T	
88.	24468	*Diomedea chrysostoma (Grey-headed Albatross)*		T	
89.	24469	*Diomedea melanophris subsp. melanophris (Black-browed Albatross)*		T	
90.	24470	*Dromaius novaehollandiae (Emu)*			
91.	24290	*Elanus caeruleus subsp. axillaris (Australian Black-shouldered Kite)*			
92.	24652	*Eopsaltria georgiana (White-breasted Robin)*			
93.	24567	*Epthianura albifrons (White-fronted Chat)*			
94.	24818	*Eudyptula minor subsp. novaehollandiae (Little Penguin)*			
95.	24368	*Eurostopodus argus (Spotted Nightjar)*			
96.	25621	*Falco berigora (Brown Falcon)*			
97.	24471	*Falco berigora subsp. berigora (Brown Falcon)*			
98.	25622	*Falco cenchroides (Australian Kestrel)*			
99.	24472	*Falco cenchroides subsp. cenchroides (Australian Kestrel)*			
100.	25623	*Falco longipennis (Australian Hobby)*			
101.	25624	*Falco peregrinus (Peregrine Falcon)*		S	
102.	24475	*Falco peregrinus subsp. macropus (Australian Peregrine Falcon)*		S	
103.	24616	*Falcunculus frontatus subsp. leucogaster (Western Shrike-tit, Crested Shrike-tit)*		P4	
104.	25727	*Fulica atra (Eurasian Coot)*			
105.	25729	*Gallinula tenebrosa (Dusky Moorhen)*			
106.	24763	*Gallinula tenebrosa subsp. tenebrosa (Dusky Moorhen)*			
107.	25730	*Gallirallus philippensis (Buff-banded Rail)*			
108.	25530	*Gerygone fusca (Western Gerygone)*			
109.	24271	*Gerygone fusca subsp. fusca (Western Gerygone)*			

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110.	24735	*Glossopsitta porphyrocephala (Purple-crowned Lorikeet)*			
111.	24443	*Grallina cyanoleuca (Magpie-lark)*			
112.	24293	*Haliaeetus leucogaster (White-bellied Sea-Eagle)*		IA	
113.	24295	*Haliastur sphenurus (Whistling Kite)*			
114.	24689	*Halobaena caerulea (Blue Petrel)*			
115.	25734	*Himantopus himantopus (Black-winged Stilt)*			
116.	24491	*Hirundo neoxena (Welcome Swallow)*			
117.	25629	*Hirundo nigricans (Tree Martin)*			
118.	24347	*Ixobrychus flavicollis subsp. australis (Australian Black Bittern)*		P3	
119.	25563	*Ixobrychus minutus (Little Bittern)*		P4	
120.	24348	*Ixobrychus minutus subsp. dubius (Australian Little Bittern)*		P4	
121.	24367	*Lalage tricolor (White-winged Triller)*			
122.	25637	*Larus novaehollandiae (Silver Gull)*			
123.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
124.	25638	*Larus pacificus (Pacific Gull)*			
125.	25659	*Lichenostomus leucotis (White-eared Honeyeater)*			
126.	25661	*Lichmera indistincta (Brown Honeyeater)*			
127.	24582	*Lichmera indistincta subsp. indistincta (Brown Honeyeater)*			
128.	24690	*Macronectes giganteus (Southern Giant Petrel)*		P4	
129.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
130.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
131.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
132.	24549	*Malurus leucopterus subsp. leuconotus (White-winged Fairy-wren)*			
133.	25654	*Malurus splendens (Splendid Fairy-wren)*			
134.	24552	*Malurus splendens subsp. splendens (Splendid Fairy-wren)*			
135.	24583	*Manorina flavigula (Yellow-throated Miner)*			
136.	25758	*Megalurus gramineus (Little Grassbird)*			
137.	24838	*Megalurus gramineus subsp. gramineus (Little Grassbird)*			
138.	25663	*Melithreptus brevirostris (Brown-headed Honeyeater)*			
139.	24598	*Merops ornatus (Rainbow Bee-eater)*		IA	
140.	25693	*Microeca fascinans (Jacky Winter)*			
141.	25610	*Myiagra inquieta (Restless Flycatcher)*			
142.	24738	*Neophema elegans (Elegant Parrot)*			
143.	25748	*Ninox novaeseelandiae (Boobook Owl)*			
144.	24820	*Ninox novaeseelandiae subsp. boobook (Boobook Owl)*			
145.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
146.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
147.	24328	*Oxyura australis (Blue-billed Duck)*			
148.	25679	*Pachycephala pectoralis (Golden Whistler)*			
149.	24623	*Pachycephala pectoralis subsp. fuliginosa (Golden Whistler)*			
150.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
151.	24624	*Pachycephala rufiventris subsp. rufiventris (Rufous Whistler)*			
152.	24693	*Pachyptila desolata (Antarctic Prion)*			
153.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
154.	25682	*Pardalotus striatus (Striated Pardalote)*			
155.	24630	*Pardalotus striatus subsp. westraliensis (Striated Pardalote)*			
156.	25687	*Passer domesticus (House Sparrow)*	Y		
157.	24641	*Passer domesticus subsp. domesticus (House Sparrow)*	Y		
158.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
159.	24658	*Petroica cucullata (Hooded Robin)*			
160.	24659	*Petroica goodenovii (Red-capped Robin)*			
161.	25695	*Petroica multicolor (Scarlet Robin)*			
162.	24660	*Petroica multicolor subsp. campbelli (Scarlet Robin)*			
163.	25697	*Phalacrocorax carbo (Great Cormorant)*			
164.	25698	*Phalacrocorax melanoleucos (Little Pied Cormorant)*			
165.	24666	*Phalacrocorax melanoleucos subsp. melanoleucos (Little Pied Cormorant)*			
166.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
167.	25699	*Phalacrocorax varius (Pied Cormorant)*			
168.	24409	*Phaps chalcoptera (Common Bronzewing)*			
169.	25587	*Phaps elegans (Brush Bronzewing)*			
170.	24595	*Phylidonyris nigra subsp. gouldii (White-cheeked Honeyeater)*			
171.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
172.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
173.	24842	*Platalea regia (Royal Spoonbill)*			
174.	25720	*Platycercus icterotis (Western Rosella)*			
175.	24747	*Platycercus spurius (Red-capped Parrot)*			
176.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
177.	24750	*Platycercus zonarius subsp. semitorquatus (Twenty-eight Parrot)*			
178.	24843	*Plegadis falcinellus (Glossy Ibis)*		IA	
179.	25703	*Podargus strigoides (Tawny Frogmouth)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
180.	24679	*Podargus strigoides subsp. brachypterus (Tawny Frogmouth)*			
181.	25704	*Podiceps cristatus (Great Crested Grebe)*			
182.	24680	*Podiceps cristatus subsp. australis (Great Crested Grebe)*			
183.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
184.	25722	*Polytelis anthopeplus (Regent Parrot)*			
185.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
186.	24767	*Porphyrio porphyrio subsp. bellus (Purple Swamphen)*			
187.	24769	*Porzana fluminea (Australian Spotted Crake)*			
188.	25732	*Porzana pusilla (Baillon's Crake)*			
189.	24771	*Porzana tabuensis (Spotless Crake)*			
190.	24698	*Procellaria aequinoctialis subsp. aequinoctialis (White-chinned Petrel)*		T	
191.	24702	*Pterodroma brevirostris (Kerguelen Petrel)*			
192.	42340	*Ptilotula ornatus (Yellow-plumed Honeyeater)*			
193.	24712	*Puffinus carneipes (Fleshy-footed Shearwater)*		IA	
194.	24716	*Puffinus pacificus (Wedge-tailed Shearwater)*		IA	
195.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
196.	25613	*Rhipidura fuliginosa (Grey Fantail)*			
197.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
198.	24454	*Rhipidura leucophrys subsp. leucophrys (Willie Wagtail)*			
199.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
200.	24279	*Sericornis frontalis subsp. maculatus (White-browed Scrubwren)*			
201.	30948	*Smicrornis brevirostris (Weebill)*			
202.	24520	*Sterna anaethetus subsp. anaethetus (Bridled Tern)*			
203.	24530	*Sterna nereis subsp. nereis (Fairy Tern)*		T	
204.	24329	*Stictonetta naevosa (Freckled Duck)*			
205.	25597	*Strepera versicolor (Grey Currawong)*			
206.	25589	*Streptopelia chinensis (Spotted Turtle-Dove)*	Y		
207.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
208.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
209.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
210.	24844	*Threskiornis molucca (Australian White Ibis)*			
211.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
212.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
213.	24309	*Todiramphus sanctus subsp. sanctus (Sacred Kingfisher)*			
214.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
215.	24755	*Trichoglossus haematodus subsp. moluccanus (Rainbow Lorikeet)*	Y		
216.	24806	*Tringa glareola (Wood Sandpiper)*		IA	
217.	24808	*Tringa nebularia (Common Greenshank)*		IA	
218.	24809	*Tringa stagnatilis (Marsh Sandpiper)*		IA	
219.	24851	*Turnix velox (Little Button-quail)*			
220.	24852	*Tyto alba subsp. delicatula (Barn Owl)*			
221.	24855	*Tyto novaehollandiae subsp. novaehollandiae (Masked Owl (southern subsp))*		P3	
222.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			
223.	24856	*Zosterops lateralis subsp. gouldi (Grey-breasted White-eye)*			

Fish

224.	-14106	*Acanthaluteres vittiger*			
225.	-16038	*Acanthistius pardalotus*			
226.	-14144	*Acanthistius serratus*			
227.	-16089	*Aetapcus maculatus*			
228.	-14305	*Austrolabrus maculatus*			
229.	-14346	*Batrachomoeus rubricephalus*			
230.	-14142	*Bostockia porosa*			
231.	-16939	*Brachaluteres jacksonianus*			
232.	-15846	*Caesioscorpis theagenes*			
233.	-14699	*Capropygia unistriata*			
234.	-14099	*Carassius auratus*			
235.	-14126	*Centroberyx australis*			
236.	-13996	*Chaetodermis penicilligera*			
237.	-15430	*Chaetodon assarius*			
238.	-15420	*Cheilodactylus gibbosus*			
239.	-16983	*Cheilodactylus rubrolabiatus*			
240.	-15176	*Chelidonichthys kumu*			
241.	-13810	*Chelmonops curiosus*			
242.	-16773	*Cleidopus gloriamaris*			
243.	-13874	*Cookeolus japonicus*			
244.	-15613	*Coris auricularis*			
245.	-16807	*Edelia vittata*			
246.	-16738	*Engraulis australis*			
247.	34028	*Galaxias occidentalis (Western Minnow)*			
248.	-16769	*Gambusia affinis*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
249.	-16934	*Girella tephraeops*			
250.	-16833	*Gymnothorax prasinus*			
251.	-14892	*Gymnothorax woodwardi*			
252.	-15129	*Hemiramphus robustus*			
253.	-16798	*Heterodontus portusjacksoni*			
254.	-13724	*Hyporhamphus melanochir*			
255.	-16876	*Metavelifer multiradiatus*			
256.	-16790	*Meuschenia freycineti*			
257.	-14101	*Neatypus obliquus*			
258.	-16784	*Notolabrus parilus*			
259.	-16083	*Odax cyanomelas*			
260.	-14000	*Ophisurus serpens*			
261.	-15332	*Parapercis ramsayi*			
262.	-15132	*Parascyllium variolatum*			
263.	-16986	*Parma victoriae*			
264.	-16867	*Parupeneus chrysopleuron*			
265.	-15658	*Phyllopteryx taeniolatus*			
266.	-14151	*Platycephalus endrachtensis*			
267.	-16812	*Platycephalus sp.*			
268.	-16898	*Pseudogobius olorum*			
269.	-14392	*Pseudorhombus jenynsii*			
270.	-15941	*Pterygotrigla polyommata*			
271.	-14438	*Seriola lalandi*			
272.	-16901	*Sillago schomburgkii*			
273.	-15932	*Siphonognathus argyrophanes*			
274.	-17031	*Strongylura leiura*			
275.	-13990	*Thysanophrys cirronasus*			
276.	-17265	*Torquigener vicinus*			
277.	-16754	*Upeneichthys stotti*			
Invertebrate					
278.	-11879	*Akamptogonus novarae*			
279.	-12933	*Amblyomma triguttatum*			
280.	-12611	*Aname mainae*			
281.	-11615	*Aname tepperi*			
282.	-12215	*Antichiropus whistleri*			
283.	-11963	*Araneus cyphoxis*			
284.	-13041	*Araneus eburneiventris*			
285.	-13331	*Araneus senicaudatus*			
286.	-13220	*Arkys alticephala*			
287.	-13221	*Arkys walckenaeri*			
288.	-13049	*Artoria linnaei*			
289.	-12248	*Austracantha minax*			
290.	-12306	*Australomimetus aurioculatus*			
291.	-12193	*Australomimetus djuka*			
292.	-12334	*Australomimetus ovidi*			
293.	-12826	*Austrochthonius australis*			
294.	33973	*Austrosaga spinifer (cricket)*		P3	
295.	-11712	*Badumna insignis*			
296.	-12605	*Baiami tegenarioides*			
297.	-13254	*Ballarra longipalpus*			
298.	-12610	*Cercophonius granulosus*			
299.	-13241	*Cercophonius sulcatus*			
300.	-12618	*Cormocephalus aurantiipes*			
301.	-12273	*Cormocephalus novaehollandiae*			
302.	-11852	*Cormocephalus rubriceps*			
303.	-12690	*Cormocephalus strigosus*			
304.	-13273	*Cormocephalus turneri*			
305.	-11913	*Cyclosa trilobata*			
306.	-11863	*Dingosa serrata*			
307.	-12568	*Eodelena convexa*			
308.	-13252	*Eriophora biapicata*			
309.	-12688	*Ethmostigmus rubripes*			
310.	-12136	*Henicops dentatus*			
311.	-11697	*Hogna crispipes*			
312.	33977	*Hylaeus globuliferus (bee)*		P3	
313.	-11853	*Idiommata blackwalli*			
314.	33917	*Idiosoma nigrum (Shield-backed Trapdoor Spider)*		T	
315.	-12514	*Idiosoma sigillatum*			
316.	-11644	*Isometroides vescus*			
317.	-12606	*Isopeda leishmanni*			

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318.	-12830	*Lampona yanchep*			
319.	33982	*Leioproctus contrarius (bee)*		P3	
320.	-12145	*Lycosa australicola*			
321.	-11923	*Lycosa gilberta*			
322.	-11620	*Lycosa godeffroyi*			
323.	-12919	*Masasteron sampeyae*			
324.	-11896	*Masasteron tuart*			
325.	-11910	*Missulena granulosa subsp. granulosa*			
326.	-13260	*Missulena occatoria*			
327.	-11650	*Myandra cambridgei*			
328.	-12564	*Notiasemus glauerti*			
329.	-12948	*Occiperipatoides gilesii*			
330.	-13075	*Oecobius navus*			
331.	-12807	*Ommatoiulus moreletii*			
332.	-13235	*Oratemnus curtus*			
333.	-12415	*Oxidus gracilis*			
334.	-11695	*Parapallene haddoni*			
335.	-11981	*Paraplectanoides crassipes*			
336.	-12292	*Pholcus phalangioides*			
337.	-12921	*Pinkfloydia harveii*			
338.	-12094	*Protochelifer cavernarum*			
339.	-12924	*Raveniella arenacea*			
340.	-12621	*Raveniella cirrata*			
341.	-12104	*Raveniella peckorum*			
342.	-12329	*Servaea melaina*			
343.	-13155	*Simonus lineatus*			Y
344.	-12300	*Steatoda capensis*			
345.	-11770	*Stylopallene cheilorhynchus*			
346.	33992	*Synemon gratiosa (Graceful Sunmoth)*		P4	
347.	-13304	*Synothele mullaloo*			
348.	-12009	*Tamopsis perthensis*			
349.	-11915	*Taphiassa robertsi*			
350.	-11859	*Tasmanicosa leuckartii*			
351.	-13208	*Urodacus novaehollandiae*			
352.	-12224	*Venator immansueta*			
353.	34113	*Westralunio carteri (Carter's Freshwater Mussel)*		P4	
354.	-12219	*Westrarchaea spinosa*			
Mammal					
355.	24209	*Arctocephalus tropicalis (Sub-antarctic Fur Seal)*			
356.	24161	*Bettongia lesueur subsp. graii (Boodie, Burrowing Bettong)*			
357.	24162	*Bettongia penicillata subsp. ogilbyi (Woylie, Brush-tailed Bettong)*		T	
358.	24251	*Bos taurus (European Cattle)*	Y		
359.	24254	*Camelus dromedarius (Dromedary, Camel)*	Y		
360.	30883	*Canis lupus subsp. familiaris (Dog)*	Y		
361.	24086	*Cercartetus concinnus (Western Pygmy-possum, Mundarda)*			
362.	24186	*Chalinolobus gouldii (Gould's Wattled Bat)*			
363.	24187	*Chalinolobus morio (Chocolate Wattled Bat)*			
364.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
365.	24043	*Eubalaena australis (Southern Right Whale)*		T	
366.	24041	*Felis catus (Cat)*	Y		
367.	25478	*Isoodon obesulus (Southern Brown Bandicoot)*		P5	
368.	24153	*Isoodon obesulus subsp. fusciventer (Quenda, Southern Brown Bandicoot)*		P5	
369.	24070	*Kogia breviceps (Pygmy Sperm Whale)*			
370.	24132	*Macropus fuliginosus (Western Grey Kangaroo)*			
371.	24133	*Macropus irma (Western Brush Wallaby)*		P4	
372.	24051	*Megaptera novaeangliae (Humpback Whale)*		T	
373.	24076	*Mesoplodon bowdoini (Andrew's Beaked Whale)*			
374.	24223	*Mus musculus (House Mouse)*	Y		
375.	24210	*Neophoca cinerea (Australian Sea Lion)*		S	
376.	24194	*Nyctophilus geoffroyi (Lesser Long-eared Bat)*			
377.	24085	*Oryctolagus cuniculus (Rabbit)*	Y		
378.	34016	*Ovis aries (Sheep)*			
379.	24142	*Petrogale lateralis subsp. lateralis (Black-flanked Rock-wallaby, Black-footed Rock-wallaby)*		T	
380.	24073	*Physeter macrocephalus (Sperm Whale)*		P4	
381.	24230	*Pseudomys albocinereus (Ash-grey Mouse)*			
382.	24243	*Rattus fuscipes (Western Bush Rat)*			
383.	24245	*Rattus rattus (Black Rat)*	Y		
384.	24108	*Sminthopsis crassicaudata (Fat-tailed Dunnart)*			
385.	24207	*Tachyglossus aculeatus (Short-beaked Echidna)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
386.	24185	*Tadarida australis (White-striped Freetail-bat)*			
387.	24167	*Tarsipes rostratus (Honey Possum, Noolbenger)*			
388.	25521	*Trichosurus vulpecula (Common Brushtail Possum)*			
389.	24158	*Trichosurus vulpecula subsp. vulpecula (Common Brushtail Possum)*			
390.	24069	*Tursiops truncatus (Bottlenose Dolphin)*			
391.	24040	*Vulpes vulpes (Red Fox)*	Y		
Reptile					
392.	42368	*Acritoscincus trilineatus*			
393.	25241	*Antaresia stimsoni subsp. stimsoni (Stimson's Python)*			
394.	24991	*Aprasia repens*			
395.	42380	*Brachyurophis fasciolatus subsp. fasciolatus*			
396.	42381	*Brachyurophis semifasciatus*			
397.	25335	*Caretta caretta (Loggerhead Turtle)*		T	
398.	25337	*Chelodina oblonga (Oblong Turtle)*			
399.	25336	*Chelonia mydas (Green Turtle)*		T	
400.	24980	*Christinus marmoratus (Marbled Gecko)*			
401.	24918	*Crenadactylus ocellatus subsp. ocellatus (Clawless Gecko)*			
402.	30893	*Cryptoblepharus buchananii*			
403.	25020	*Cryptoblepharus plagiocephalus*			
404.	30899	*Ctenophorus adelaidensis (Southern Heath Dragon, Western Heath Dragon)*			
405.	30900	*Ctenophorus adelaidensis subsp. adelaidensis (Southern Heath Dragon, Western Heath Dragon)*			
406.	25027	*Ctenotus australis*			
407.	25039	*Ctenotus fallens*			
408.	25040	*Ctenotus gemmula (Jewelled South-west Ctenotus (Swan Coastal Plain pop P3), skink)*			
409.	25047	*Ctenotus impar*			
410.	25087	*Cyclodomorphus celatus*			
411.	30906	*Delma concinna*			
412.	30905	*Delma concinna subsp. concinna*			
413.	25766	*Delma fraseri (Fraser's Legless Lizard)*			
414.	24999	*Delma grayii*			
415.	25296	*Demansia psammophis subsp. reticulata (Yellow-faced Whipsnake)*			
416.	25346	*Dermochelys coriacea (Leatherback Turtle)*		T	
417.	24929	*Diplodactylus granariensis subsp. granariensis*			
418.	24939	*Diplodactylus polyophthalmus*			
419.	25251	*Echiopsis curta (Bardick)*			
420.	25096	*Egernia kingii (King's Skink)*			
421.	25100	*Egernia napoleonis*			
422.	25250	*Elapognathus coronatus (Crowned Snake)*			
423.	25119	*Hemiergis quadrilineata*			
424.	25133	*Lerista elegans*			
425.	25148	*Lerista lineopunctulata*			
426.	25165	*Lerista praepedita*			
427.	25005	*Lialis burtonis*			
428.	25184	*Menetia greyii*			
429.	25240	*Morelia spilota subsp. imbricata (Carpet Python)*		S	
430.	25191	*Morethia lineoocellata*			
431.	25192	*Morethia obscura*			
432.	25344	*Natator depressus (Flatback Turtle)*		T	
433.	25248	*Neelaps bimaculatus (Black-naped Snake)*			
434.	25249	*Neelaps calonotos (Black-striped Snake)*		P3	
435.	25252	*Notechis scutatus (Tiger Snake)*			
436.	25253	*Parasuta gouldii*			
437.	25255	*Parasuta nigriceps*			
438.	-18153	*Pelamis platurus*			
439.	25007	*Pletholax gracilis subsp. gracilis (Keeled Legless Lizard)*			
440.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
441.	24905	*Pogona minor subsp. minima (Dwarf Bearded Dragon (Houtman Abrolhos Is.), Dwarf Bearded Dragon)*		T	
442.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
443.	25511	*Pseudonaja affinis (Dugite)*			
444.	25259	*Pseudonaja affinis subsp. affinis (Dugite)*			
445.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
446.	25271	*Ramphotyphlops australis*			
447.	25285	*Ramphotyphlops pinguis*			
448.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
449.	24936	*Strophurus michaelseni*			
450.	24943	*Strophurus spinigerus subsp. inornatus*			
451.	24942	*Strophurus spinigerus subsp. spinigerus*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
452.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
453.	25519	*Tiliqua rugosa*			
454.	25207	*Tiliqua rugosa subsp. rugosa*			
455.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
456.	25526	*Varanus tristis (Racehorse Monitor)*			

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.

Appendix C – Conservation codes

C.1 Legislation

C.1.1 Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance (MNES).

The biological aspects listed as MNES include:

- Nationally threatened flora and fauna species and ecological communities.
- Migratory species.

A person must not take an action that has, will have, or is likely to have a significant impact MNES, without approval from the Federal Minister for the Environment.

C.1.2 State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. It provides for an Environmental Protection Authority (EPA), for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the above.

Clearing of native vegetation in Western Australia requires a permit from the Department of Parks and Wildlife (DPaW) (formerly the Department of Environment and Conservation – DEC), unless exemptions apply. Native vegetation includes aquatic and terrestrial vegetation indigenous to Western Australia, and intentionally planted vegetation declared by regulation to be native, but not vegetation planted in a plantation or planted with commercial intent.

In the EP Act Section 51A, clearing is defined as the killing or destruction of; the removal of; the severing or ringbarking of trunks or stems of; or the doing of substantial damage of some or all of the native vegetation in an area, including the flooding of land, the burning of vegetation, the grazing of stock or an act or activity that results in the above.

When making a decision to grant or refuse a permit to clear native vegetation the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

a. Native vegetation should not be cleared if it comprises a high level of biodiversity.

b. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.

c. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.

d. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.

e. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

f. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

g. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

h. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

i. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

j. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

There are a number of Environmentally Sensitive Areas (ESA) within Western Australia where exemptions in regulations do not apply. ESA include locations of threatened communities and species.

C.1.3 State *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*

ESA are declared by a notice under Section 51B of the EP Act. Table C.1 outlines the aspects of areas declared as ESA (under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* – Reg 6).

Table C.1 Aspects of Environmentally Sensitive Areas

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
An area that is registered on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a TEC.
A Bush Forever Site.
The areas covered by the following policies:
a. The *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
b. The *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002*.
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (SCPL) (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.
Areas of fringing native vegetation in the policy area as defined in the *Environmental Protection (Swan and Canning Rivers) Policy 1997*.

C.1.4 State *Wildlife Conservation Act 1950*

The *Wildlife Conservation Act 1950* (WC Act) provides for the conservation and protection of wildlife. It is administered by the DPaW and applies to both flora and fauna. Any person wanting to capture, collect, disturb or study fauna requires a permit to do so. A permit is required under the WC Act if removal of threatened species is required.

C.1.5 State *Biosecurity and Agriculture Management Act 2007*

Under the *Biosecurity and Agriculture Management Act 2007* (BAM Act), a Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) is in force. The Department of Agriculture and Food Western Australia (DAFWA) maintains a list of Declared Pests for Western Australia. If a Pest is declared for the whole of the State or for particular Local Government Areas, all landholders are obliged to comply with the specific category of control. Declared plants are gazetted under categories, which define the action required. The category may apply to the whole of the State, districts, individual properties or even paddocks. Categories of control are defined in Table C.2. Among the factors considered in categorising Declared Pests are:

- The impact of the plant on individuals, agricultural production and the community in general
- Whether it is already established in the area
- The feasibility and cost of possible control measures

The BAM Act replaces the repealed *Agriculture and Related Resources Protection Act 1976*.

Table C.2 Department of Agriculture and Food (Western Australia) Categories for Declared Pests under the *Biosecurity and Agriculture Management Act 2007*

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia 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.

C.2 Background information & conservation codes

C.2.1 Reserves & conservation areas

Bush Forever, which was released in December 2000 and proclaimed in 2010, is a Government initiate aimed to retain and protect regionally significant bushland on the Swan Coastal Plain within the Perth Metropolitan Region. Bush Forever aims to protect more than 51,000 hectares of regionally significant bushland within 287 sites across the metropolitan portion of the Swan Coastal Plain (Government of Western Australia, 2000).

C.2.3 Vegetation extent & status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia, 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia's

Biological Diversity (ANZECC, 2000) and in EPA Position Statement No. 2 on environmental protection of native vegetation in Western Australia (EPA, 2000c).

From a purely biodiversity perspective and taking no account of any other land degradation issues, there are a number of key criteria now being applied to the clearing of native vegetation in Western Australia (EPA, 2000c).

- The "threshold level" below which species loss appears to accelerate exponentially at an ecosystem level is regarded as being at a level of 30 percent of the pre-European extent of the vegetation type.
- A level of 10 percent of the original extent is regarded as being a level representing Endangered.
- Clearing which would put the threat level into the class below should be avoided.
- From a biodiversity perspective, stream reserves should generally be in the order of at least 200 metres (m) wide.

Within the Swan Coastal Plain, EPA Position Statement No. 9 (EPA, 2006b) identifies vegetation complexes with 30 percent or less or their pre-clearing extent remaining in a bioregion, or 10 percent or less of their pre-clearing extent remaining in constrained areas (i.e. areas of urban development in cities and major town) on the Swan Coastal Plain, to be critical assets.

The extent of remnant native vegetation has been assessed by Shepherd et al. (2002) and the Government of Western Australia (2013), based on broadscale vegetation association mapping by Beard (1979).

The EPA Guidance Statement No. 10 (EPA, 2006a) assesses the extent of Heddle et al. (1980) vegetation complexes currently present against presumed pre-European extents. It is important to note that the "*remnant native vegetation mapping used in the Region is derived from dated aerial photography (in this case 1998) with limited ground-truthing. As a consequence, the percentages of ecological communities remaining are generally an overestimate of the native vegetation remaining at present and at the date of this Guidance (2006). The principal factors contributing to this overestimation are:*

- *The preferential mapping of treed landscapes, leading to some mapping of areas that are parkland cleared or completely degraded*
- *The inclusion of areas that are approved for clearing through development approvals and/or clearing permits*
- *Some areas that have been cleared since the time of the aerial photography*

It is therefore important to bear these issues in mind when the percentage of the vegetation complexes remaining is approaching 30 percent" (EPA, 2006a). Furthermore, as a result of the clearing of the Swan Coastal Plain since 1998, it is likely that the actual percentage remaining of each vegetation type is less.

C.2.4 Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State WC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Conservation significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth, 1997). Federally listed Threatened Ecological Communities (TEC) are protected under the EPBC Act administered by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). The DPaW also maintains a list of TEC for Western Australia; some of which are also protected under the EPBC Act. TEC are ecological communities that have been assessed and assigned to one of four categories related to the status of the threat to the community, i.e. Presumed Totally Destroyed, Critically Endangered, Endangered and Vulnerable (Table C.3).

Possible TEC that do not meet survey criteria are added to the DPaW Priority Ecological Community (PEC) List under Priorities 1, 2 and 3 (Table C.4). These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PEC 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. PEC are not listed under any formal Federal or State legislation.

Table C.3 Conservation codes & definitions for Threatened Ecological Communities (TEC) endorsed by the Western Australian Minister for the Environment & listed under the EPBC Act

Western Australia conservation categories		Federal Government Conservation Categories (EPBC Act)	
Presumed Totally Destroyed (PD)	The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.	Critically Endangered (CR)	If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated	Endangered (EN)	If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.	Vulnerable (VU)	If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium-term future
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.		

Table C.4 Conservation categories & definitions for Priority Ecological Communities (PEC) as listed by the DPaW

Category	Description
Priority 1	**Poorly known ecological communities.** Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. 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 2	**Poorly known ecological communities.** Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate 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 3	**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 with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; (iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. 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 4	**Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.** (i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. (ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (iii) Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	**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.

Other significant vegetation

Vegetation may be significant for a range of reasons, other than a statutory listing as TEC or because the extent is below a threshold level. The EPA (2004a) states that significant vegetation may include vegetation that includes the following:

- Scarcity
- Unusual species
- Novel combinations of species
- A role as a refuge
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of the range of a unit (particularly, a good local and/or regional example of a unit in 'prime' habitat, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range)
- A restricted distribution

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

Conservation significant flora & fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the WC Act can warrant referral to the DSEWPaC and/or the EPA. According to the DPaW (WA Herbarium, 1998–): "Threatened flora are plants which have been assessed as being at risk of extinction. In Western Australia the term Declared Rare Flora (DRF) is applied to Threatened flora due to the laws regarding threatened flora conservation. The WC Act is the primary wildlife conservation legislation in the State and the Minster for the Environment can declare taxa (species, subspecies or variety) as "Rare Flora" if they are considered to be in danger of extinction, rare or otherwise in need of special protection." For the purposes of this report, flora listed by the WC Act as DRF is described as Threatened.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act (Table C.5). The significance levels for fauna used in the EPBC Act are those recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN).

The State conservation level of fauna species and their significance status is assessed under the State WC Act (*Wildlife Conservation (Specially Protected Fauna) Notice 2010(2)*). This Act uses a set of Schedules (Table C.6) but also classifies species using some of the IUCN categories. Schedule 3 fauna species are those which are "subject to an agreement between the Government of Australia and the Governments of Japan, China and the Republic of Korea relating to the protection of migratory birds, are declared to be fauna that is in need of special protection".

In Western Australia, the DPaW also maintains a list of Priority listed flora species. Conservation codes for Priority species are assigned by the DPaW to define the level of conservation significance (Table C.6). Priority species are not currently protected under the WC Act.

In addition to conservation significant species flora and fauna can be considered important if they are significant either on the Swan Coastal Plain or in the Perth metropolitan region. This

includes species discussed in Government of Western Australia (2000) as being rare, poorly known, restricted in distribution or with some other distinctive feature.

For the purposes of this assessment, all species listed under the EPBC Act, WC Act and DPaW Priority species are considered conservation significant.

Table C.5 Conservation categories & definitions for *Environment Protection and Biodiversity Conservation Act 1999* listed flora & fauna species

Conservation category	Definition
Extinct	Taxa not definitely located in the wild during the past 50 years
Extinct in the Wild	Taxa known to survive only in captivity
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Taxa facing a very high risk of extinction in the wild in the near future
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium-term
Near Threatened	Taxa that risk becoming Vulnerable in the wild
Conservation Dependent	Taxa whose survival depends upon ongoing conservation measures. Without these measures, a conservation dependent taxon would be classified as Vulnerable or more severely threatened.
Data Deficient (Insufficiently Known)	Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.
Least Concern	Taxa that are not considered Threatened

Table C.6 Conservation codes and descriptions for Western Australian flora & fauna

Code	Conservation category	Description
Wildlife Conservation Act 1950		
T	Schedule 1 under the WC Act	**Threatened Fauna (Fauna that is rare or is likely to become extinct)** **Threatened Flora (Declared Rare Flora – Extant)** Taxa that 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. ***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.

Code	Conservation category	Description
X	Schedule 2 under the WC Act	**Presumed Extinct Fauna** **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.
IA	Schedule 3 under the WC Act	**Birds protected under an international agreement.** Birds that are subject to an agreement between governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction.
S	Schedule 4 under the WC Act	**Other specially protected fauna.** Fauna that is in need of special protection, otherwise than for the reasons mentioned in the above schedules.
DPaW Priority Listed		
1	Priority One: Poorly-known taxa	Taxa that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. 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.
2	Priority Two: Poorly-known taxa	Taxa that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. 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.
3	Priority Three: Poorly-known taxa	Taxa that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. 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.
4	Priority Four: Rare, Near Threatened and other taxa in need of monitoring	(a) Rare. Taxa 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 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.
5	Priority 5: 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.

Migratory species listed under the EPBC Act

The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

Introduced plants (weeds)

Weeds of National Significance

The spread of weeds across a range of land uses or ecosystems is important in the context of socio-economic and environmental values. The assessment of Weeds of National Significance (WoNS) is based on four major criteria:

- Invasiveness
- Impacts
- Potential for spread
- Socio-economic and environmental values

Australian state and territory governments have identified thirty two Weeds of National Significance (WoNS); a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012 (Australian Government, 2012).

Information on species considered to be Declared Pests is provided in C.1.5.

Other significant flora & fauna

A total of “178 vascular plant taxa recorded on the Swan Coastal Plain are of particular interest as they are rare, poorly known, restricted in distribution or have some other distinctive feature” (Government of Western Australia, 2000).

Other significant fauna are “those birds that are habitat specialists with a reduced distribution on the Swan Coastal Plain or wide-ranging species with reduced populations on the Swan Coastal Plain; those mammals that have few populations on the Swan Coastal Plain; and those reptile species that have reduced ranges or few recent records on the Swan Coastal Plain” (Government of Western Australia, 2000).

Appendix D – Flora results

PATN analysis

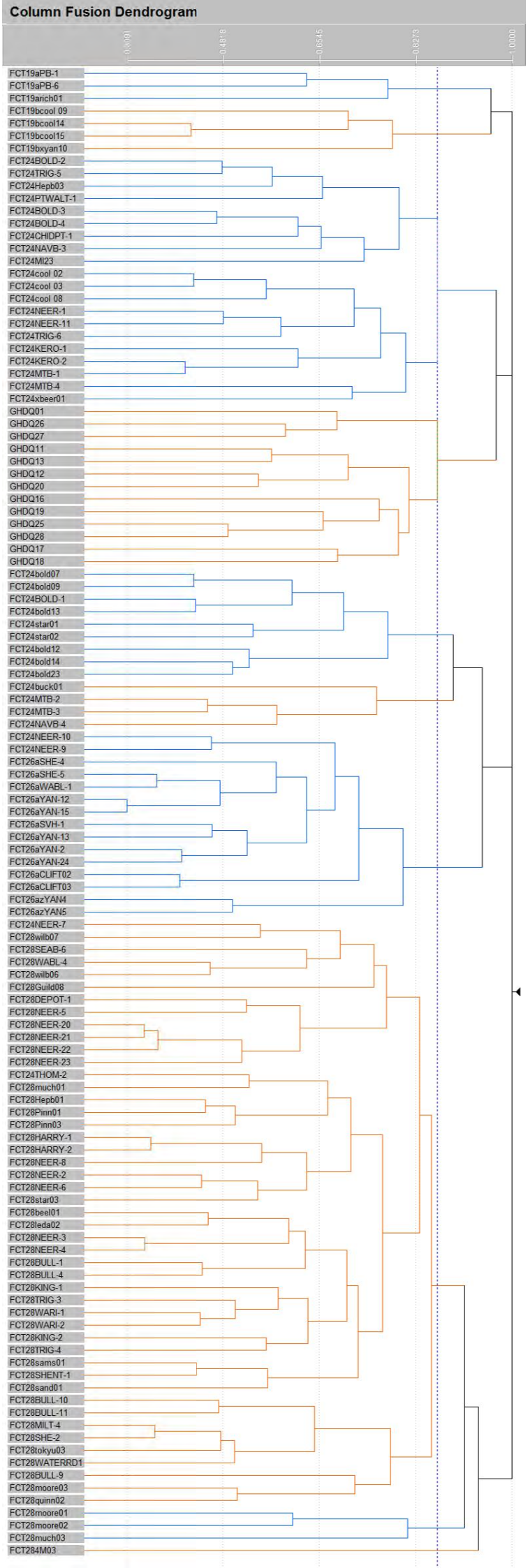
Quadrat data & photographs

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Declared Pest flora species & Weeds of National Significance recorded within the Study Area during the field surveys (May-October 2013)

Likelihood of occurrence assessment of conservation significant flora identified in the desktop assessment as potentially occurring within the Study Area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FCT19aPB-6
FCT19arich01
FCT19bcool 09
FCT19bcool14
FCT19bcool15
FCT19bxyan10
FCT24BOLD-2
FCT24TRIG-5
FCT24Hepb03
FCT24PTWALT-1
FCT24BOLD-3
FCT24BOLD-4
FCT24CHIDPT-1
FCT24NAVB-3
FCT24MI23
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FCT24cool 03
FCT24cool 08
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FCT24NEER-11
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FCT28Pinn01
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FCT28HARRY-2
FCT28NEER-8
FCT28NEER-2
FCT28NEER-6
FCT28star03
FCT28beel01
FCT28leda02
FCT28NEER-3
FCT28NEER-4
FCT28BULL-1
FCT28BULL-4
FCT28KING-1
FCT28TRIG-3
FCT28WARI-1
FCT28WARI-2
FCT28KING-2
FCT28TRIG-4
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FCT28SHENT-1
FCT28sand01
FCT28BULL-10
FCT28BULL-11
FCT28MILT-4
FCT28SHE-2
FCT28tokyu03
FCT28WATERRD1
FCT28BULL-9
FCT28moore03
FCT28quinn02
FCT28moore01
FCT28moore02
FCT28much03
FCT284M03

Quadrat data & photographs

Site	Q01	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	16/05/2013, 25/09/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	377619 mE	6500394 mN
Location:	Near Romeo Rd		
Landform:	Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Yellow-grey sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds, light native herbivore grazing, dieback		
Bare ground (%):	30-70	**Logs (%):**	Nil
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70

16/05/2013

25/09/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia attenuata*		U1	2-10	4
Proteaceae	*Banksia menziesii*		M1	<2	3
Proteaceae	*Hakea prostrata*		M1	<2	2.5
Fabaceae	*Jacksonia sternbergiana*		M1	<2	2.1
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	10-30	1.8
Zamiaceae	*Macrozamia fraseri*		M2	2-10	1.7
Fabaceae	*Acacia pulchella*		M2	<2	1.4
Casuarinaceae	*Allocasuarina fraseriana*		M2	<2	0.9
Proteaceae	*Grevillea vestita* subsp. *vestita*		M2	<2	0.5
Thymelaeaceae	*Pimelea* sp.		M2	<2	0.2
Proteaceae	*Synaphea* sp.		M3	2-10	0.6
Proteaceae	*Petrophile macrostachya*		M3	<2	0.8
Fabaceae	*Sphaerolobium medium*		M3	<2	0.5
Proteaceae	*Hakea lissocarpha*		M3	<2	0.5
Proteaceae	*Petrophile brevifolia*		M3	<2	0.3
Proteaceae	*Banksia dallanneyi*		M3	<2	0.2
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.8
Poaceae	*Ehrharta calycina*	*	G1	<2	0.8
Poaceae	*Ehrharta* sp.	*	G1	<2	0.8
Hemerocallidaceae	*Dianella revoluta*		G1	<2	0.6
Haemodoraceae	*Conostylis aculeata* subsp. *aculeata*		G1	<2	0.4
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.4
Goodeniaceae	*Scaevola canescens*		G1	<2	0.3
Restionaceae	*Desmocladus flexuosus*		G2	10-30	0.3
Asteraceae	*Ursinia anthemoides*	*	G2	2-10	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	2-10	0.1
Asteraceae	*Hypochaeris glabra*	*	G2	2-10	prostrate
Colchicaceae	*Burchardia congesta*		G2	<2	0.4
Proteaceae	*Synaphea spinosa*		G2	<2	0.4
Amaranthaceae	*Ptilotus drummondii*		G2	<2	0.3
Asparagaceae	*Sowerbaea laxiflora*		G2	<2	0.3
Poaceae	*Briza maxima*	*	G2	<2	0.3
Restionaceae	*Lepidobolus preissianus*		G2	<2	0.3
Violaceae	*Hybanthus calycinus*		G2	<2	0.3
Asteraceae	*Podolepis lessonii*		G2	<2	0.2
Asteraceae	*Podotheca chrysantha*		G2	<2	0.1
Asteraceae	*Podotheca gnaphalioides*		G2	<2	0.1
Asteraceae	*Sonchus oleraceus*	*	G2	<2	0.1
Asteraceae	*Waitzia suaveolens*		G2	<2	0.1
Campanulaceae	*Wahlenbergia capensis*	*	G2	<2	0.1
Caryophyllaceae	*Petrorhagia dubia*	*	G2	<2	0.1
Haemodoraceae	*Haemodorum* sp.		G2	<2	0.1
Hemerocallidaceae	*Corynotheca micrantha*		G2	<2	0.1
Hemerocallidaceae	*Arnocrinum preissii*		G2	<2	0.1
Iridaceae	*Romulea rosea*	*	G2	<2	0.1
Orchidaceae	*Caladenia flava*		G2	<2	0.1
Orchidaceae	*Caladenia longicauda*		G2	<2	0.1

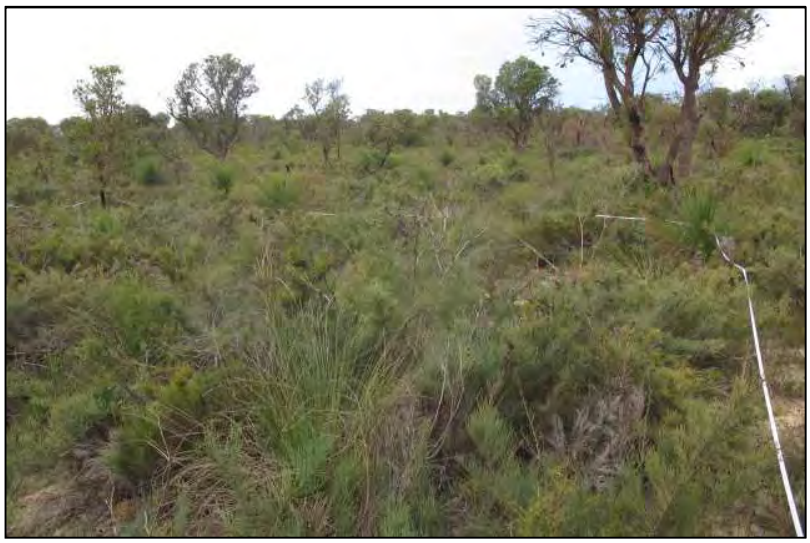
Family	Species	Status	Stratum	Cover (%)	Height (m)
Portulacaceae	*Calandrinia liniflora*		G2	<2	0.1
Stylidiaceae	*Stylidium calcaratum*		G2	<2	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Cyperaceae	*Schoenus curvifolius*		G2	<2	0.05
Poaceae	*Rytidosperma caespitosum*		G2	<2	0.05
Poaceae	*Vulpia myuros*	*	G2	<2	0.05
Restionaceae	*Desmocladus asper*		G2	<2	0.05
Rubiaceae	*Opercularia vaginata*		G2	<2	0.05
Droseraceae	*Drosera erythrorhiza*		G2	<2	prostrate
Orchidaceae	*Pyrorchis nigricans*		G2	<2	prostrate

Site	Q02	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	377793 mE	6500215 mN
Location:	Near Romeo Rd		
Landform:	Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Yellow-grey sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Excellent (2) – Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds, dieback, rubbish		
Bare ground (%):	10-30	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia menziesii*		U1	2-10	4
Casuarinaceae	*Allocasuarina fraseriana*		U1	<2	4
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	2.1
Proteaceae	*Banksia attenuata*		M1	<2	2.5
Proteaceae	*Banksia menziesii*		M1	<2	2.5
Casuarinaceae	*Allocasuarina fraseriana*		M2	2-10	1.5
Casuarinaceae	*Allocasuarina humilis*		M2	<2	1.3
Casuarinaceae	*Allocasuarina humilis*		M3	30-70	0.8
Dilleniaceae	*Hibbertia hypericoides*		M3	2-10	0.5
Ericaceae	*Conostephium pendulum*		M3	2-10	0.2
Ericaceae	*Leucopogon polymorphus*		M3	2-10	0.4
Dasypogonaceae	*Calectasia narragara*		M3	<2	0.4
Fabaceae	*Bossiaea eriocarpa*		M3	<2	0.3
Fabaceae	*Gastrolobium capitatum*		M3	<2	0.2
Fabaceae	*Gompholobium tomentosum*		M3	<2	0.3
Myrtaceae	*Calytrix fraseri*		M3	<2	0.6
Proteaceae	*Hakea lissocarpha*		M3	<2	0.7
Proteaceae	*Petrophile linearis*		M3	<2	0.4
Proteaceae	*Petrophile macrostachya*		M3	<2	0.5
Proteaceae	*Stirlingia latifolia*		M3	<2	0.7
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.6
Colchicaceae	*Burchardia congesta*		G1	<2	0.3
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.2
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.5
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.2
Aizoaceae	*Carpobrotus* sp.	*	G2	<2	0.1
Asteraceae	*Hypochaeris* sp.	*	G2	<2	prostrate
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.01
Droseraceae	*Drosera* sp.		G2	<2	0.1
Haemodoraceae	*Conostylis setigera*		G2	<2	0.05

Site	Q03	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	377745 mE	6500320 mN
Location:	Near Romeo Rd		
Landform:	Valley		
Drainage:	Good drainage		
Soil colour & type:	Yellow-grey sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Excellent (2) – Very Good (3)		
Fire age & intensity:	Old (>5 years), few trees killed, most resprouting		
Disturbances:	Weeds, dieback, track nearby		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	<2
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70



Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus todtiana*		U1	2-10	4
Proteaceae	*Banksia menziesii*		U1	<2	4.5
Zamiaceae	*Macrozamia fraseri*		M1	<2	1.8
Casuarinaceae	*Allocasuarina humilis*		M2	30-70	0.8
Proteaceae	*Petrophile macrostachya*		M2	2-10	0.5
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	2-10	0.9
Myrtaceae	*Eremaea pauciflora*		M3	2-10	0.5
Aizoaceae	*Carpobrotus* sp.	*	M3	<2	0.1
Ericaceae	*Astroloma pallidum*		M3	<2	0.1
Ericaceae	*Leucopogon propinquus*		M3	<2	0.4
Fabaceae	*Acacia pulchella*		M3	<2	0.6
Fabaceae	*Bossiaea eriocarpa*		M3	<2	0.2
Fabaceae	*Daviesia decurrens*		M3	<2	0.4
Fabaceae	*Gastrolobium capitatum*		M3	<2	0.6

Family	Species	Status	Stratum	Cover (%)	Height (m)
Fabaceae	*Gompholobium tomentosum*		M3	<2	0.3
Goodeniaceae	*Scaevola canescens*		M3	<2	0.2
Proteaceae	*Banksia dallanneyi*		M3	<2	0.3
Proteaceae	*Petrophile linearis*		M3	<2	0.5
Proteaceae	*Stirlingia latifolia*		M3	<2	0.5
Proteaceae	*Synaphea* sp.		M3	<2	0.1
Thymelaeaceae	*Pimelea* sp.		M3	<2	0.4
Thymelaeaceae	*Pimelea* sp.		M3	<2	0.2
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.6
Asparagaceae	*Lomandra purpurea*		G1	<2	0.3
Cyperaceae	*Lepidosperma angustatum*		G1	<2	0.6
Cyperaceae	*Lepidosperma leptostachyum*		G1	<2	0.6
Cyperaceae	*Lepidosperma leptostachyum*		G1	<2	0.2
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.2
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.2
Poaceae	*Briza maxima*	*	G1	<2	0.2
Poaceae	*Ehrharta* sp.	*	G1	<2	0.2
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.1
Apiaceae	*Xanthosia huegelii*		G2	<2	0.1
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.05
Droseraceae	*Drosera erythrorhiza*		G2	<2	prostrate
Stylidiaceae	*Stylidium piliferum*		G2	<2	0.2

Site	Q04	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	679670 mE	6498181 mN
Location:	Wanneroo Rd, west side		
Landform:	Plain		
Drainage:	Good drainage		
Soil colour & type:	Yellow-brown loamy sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), no damage		
Disturbances:	Weeds, dieback, rubbish		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	10-30

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Casuarinaceae	*Allocasuarina fraseriana*		U1	2-10	8
Proteaceae	*Banksia attenuata*		U1	2-10	6
Proteaceae	*Banksia attenuata*		M1	<2	3
Proteaceae	*Banksia attenuata*		M2	<2	1.8
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	1.4
Dilleniaceae	*Hibbertia hypericoides*		M3	30-70	0.6
Fabaceae	*Acacia pulchella*		M3	2-10	0.4
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M3	2-10	0.8
Ericaceae	*Leucopogon propinquus*		M3	<2	0.4
Fabaceae	*Gastrolobium capitatum*		M3	<2	0.1
Lauraceae	*Cassytha* sp.		M3	<2	climbing
Proteaceae	*Petrophile macrostachya*		M3	<2	0.6
Cyperaceae	*Mesomelaena pseudostygia*		G1	30-70	0.7
Colchicaceae	*Burchardia congesta*		G1	<2	0.5
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.3
Haemodoraceae	*Haemodorum* sp.		G1	<2	0.8
Hemerocallidaceae	*Dianella revoluta*		G1	<2	0.3
Iridaceae	*Patersonia* sp.		G1	<2	0.2
Poaceae	*Avena barbata*	*	G1	<2	0.5
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.1
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.1
Iridaceae	*Gladiolus caryophyllaceus*	*	G2	<2	0.2
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.1

Site	Q05	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	380470 mE	6492754 mN
Location:	Adjacent to the railway south of the Neerabup Rd crossing		
Landform:	Slope – upper		
Drainage:	Good drainage		
Soil colour & type:	Grey-brown loamy sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3) – Good (4)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds, dieback, close to train, clearing nearby		
Bare ground (%):	10-30	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	30-70
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus marginata*		U1	2-10	8
Casuarinaceae	*Allocasuarina fraseriana*		U1	<2	6
Proteaceae	*Banksia attenuata*		M1	<2	1.7
Dilleniaceae	*Hibbertia hypericoides*		M2	10-30	0.6
Proteaceae	*Stirlingia latifolia*		M2	2-10	0.7
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	2-10	0.8
Chenopodiaceae	*Rhagodia baccata*		M2	<2	0.8
Fabaceae	*Bossiaea eriocarpa*		M2	<2	0.2
Fabaceae	*Gompholobium tomentosum*		M2	<2	0.2
Fabaceae	*Hardenbergia comptoniana*		M2	<2	climbing
Proteaceae	*Petrophile linearis*		M2	<2	0.3
Cyperaceae	*Mesomelaena pseudostygia*		G1	2-10	0.6
Anarthriaceae	*Lyginia barbata*		G1	<2	0.5
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.4
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.6
Poaceae	*Briza maxima*	*	G1	<2	0.2
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.1
Asteraceae	*Lagenophora huegelii*		G2	<2	prostrate

Site	Q06	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	381612 mE	6494075 mN
Location:	Wanneroo Rd		
Landform:	Slope – middle (gradual)		
Drainage:	Good drainage		
Soil colour & type:	Dark brown loamy sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Good (4) – Degraded (5)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Clearing, weeds, light rabbit grazing		
Bare ground (%):	<2	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	70-100
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	2-10	20
Myrtaceae	*Corymbia calophylla*		U1	<2	14
Myrtaceae	*Corymbia calophylla*		U2	2-10	6
Myrtaceae	*Corymbia calophylla*		M1	10-30	4
Fabaceae	*Acacia saligna*		M1	2-10	4
Fabaceae	*Jacksonia sternbergiana*		M1	<2	4
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	2-10	2
Asteraceae	*Conyza sumatrensis*	*	M2	<2	2
Ranunculaceae	*Clematis pubescens*	0	M2	<2	climbing
Scrophulariaceae	*Verbascum virgatum*	*	M2	<2	2
Zamiaceae	*Macrozamia fraseri*		M2	<2	2
Chenopodiaceae	*Rhagodia baccata*		M3	2-10	0.3
Ericaceae	*Leucopogon propinquus*		M3	<2	0.6
Solanaceae	*Solanum nigrum*	*	M3	<2	0.4
Poaceae	Weedy grasses	*	G1	70-100	0.1
Papaveraceae	*Fumaria* sp.	*	G1	2-10	0.1
?Boraginaceae	?Boraginaceae sp.	*	G1	<2	prostrate
Asteraceae	*Sonchus* sp.	*	G1	<2	0.1
Euphorbiaceae	*Euphorbia peplus*	*	G1	<2	0.1
Oxalidaceae	*Oxalis caprina*	*	G1	<2	0.1

Site	Q07	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	377786 mE	6499270 mN
Location:	Railway alignment south of Romeo Rd		
Landform:	Flat		
Drainage:	Good drainage		
Soil colour & type:	Yellow sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Good (4)		
Fire age & intensity:	Moderate (1–5 years), minor impact, scars on most trees		
Disturbances:	Clearing, weeds, light native herbivore grazing, road nearby		
Bare ground (%):	30-70	**Logs (%):**	<2
Twigs (%):	10-30	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	2-10

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	10-30	15
Myrtaceae	*Eucalyptus gomphocephala*		U2	2-10	3
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	2
Solanaceae	*Anthocercis littorea*		M1	<2	2.5
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	2-10	2
Fabaceae	*Acacia saligna*		M2	<2	1.5
Fabaceae	*Jacksonia sternbergiana*		M2	<2	2
Chenopodiaceae	*Rhagodia baccata*		M3	<2	0.6
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.2
Ericaceae	*Astroloma microcalyx*		G1	<2	0.2
Fabaceae	*Hardenbergia comptoniana*		G1	<2	0.1
Fabaceae	*Kennedia* sp.		G1	<2	0.1
Fabaceae	*Lupinus angustifolius*	*	G1	<2	0.1
Geraniaceae	*Geranium molle*	*	G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Geraniaceae	*Pelargonium capitatum*	*	G1	<2	0.2
	Weedy grasses/herbs	*	G2	10-30	0.1
Asteraceae	*Hypochaeris* sp.	*	G2	<2	0.1
Asteraceae	*Sonchus* sp.	*	G2	<2	0.1
Fabaceae	*Medicago* sp.	*	G2	<2	0.1
Poaceae	Poaceae sp.		G2	<2	0.1

Site	Q08	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	377825 mE	6499349 mN
Location:	Railway alignment south of Romeo Rd		
Landform:	Flat, slight drainage depression		
Drainage:	Good drainage		
Soil colour & type:	Yellow sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Very Good (3) – Good (4)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Clearing, weeds, light native herbivore and rabbit grazing, road nearby		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	2-10	15
Myrtaceae	*Eucalyptus gomphocephala*		U2	<2	3
Myrtaceae	*Eucalyptus gomphocephala*		M1	10-30	2
Solanaceae	*Anthocercis littorea*		M1	10-30	3
Fabaceae	*Acacia saligna*		M1	2-10	3
Solanaceae	*Anthocercis littorea*		M2	10-30	2
Fabaceae	*Acacia saligna*		M2	2-10	2
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	1.5
Phyllanthaceae	*Phyllanthus calycinus*		M3	10-30	0.8
Proteaceae	*Hakea lissocarpha*		M3	10-30	0.8
Chenopodiaceae	*Rhagodia baccata*		M3	2-10	0.8
Fabaceae	*Acacia saligna*		M3	<2	0.3
Euphorbiaceae	*Euphorbia terracina*	*	G1	10-30	0.1
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.3
Ericaceae	*Astroloma ciliatum*		G1	<2	0.1
Fabaceae	*Jacksonia sericea*	P4	G1	<2	0.3
Haemodoraceae	*Conostylis candicans*		G1	<2	0.1
Haemodoraceae	*Conostylis setigera*		G1	<2	0.1
Proteaceae	*Banksia dallanneyi*		G1	<2	0.3
Restionaceae	*Desmocladus flexuosus*		G1	<2	0.1
	Weedy grasses/herbs	*	G2	30-70	0.1
Fabaceae	*Kennedia* sp.		G2	<2	prostrate
Fabaceae	*Medicago polymorpha*	*	G2	<2	0.1
Geraniaceae	*Erodium* sp.	*	G2	<2	prostrate

Site	Q09	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	377780 mE	6499476 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Yellow-orange sand		
Vegetation type:	Mixed low heath on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Moderate (1–5 years), minor impact, scars on most trees		
Disturbances:	Weeds		
Bare ground (%):	10-30	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	<2
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	2-10 limestone	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	1.5
Proteaceae	*Banksia sessilis*		M2	<2	1.3
Fabaceae	*Acacia lasiocarpa*		M3	30-70	0.9
Myrtaceae	*Calothamnus quadrifidus*		M3	30-70	0.9
Fabaceae	*Jacksonia calcicola*		M3	10-30	0.2
Dilleniaceae	*Hibbertia hypericoides*		M3	2-10	0.8
Myrtaceae	*Melaleuca systena*		M3	2-10	0.9
Proteaceae	*Banksia sessilis*		M3	2-10	1
Chenopodiaceae	*Rhagodia baccata*		M3	<2	0.5
Fabaceae	*Gastrolobium capitatum*		M3	<2	0.5
Goodeniaceae	*Lechenaultia linarioides*		M3	<2	0.2
Hemerocallidaceae	*Dianella revoluta*		M3	<2	0.8
Haemodoraceae	*Conostylis candicans*		G1	2-10	0.2
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Asparagaceae	*Acanthocarpus preissii*		G1	<2	0.1
Asparagaceae	*Lomandra caespitosa*		G1	<2	0.1
Asteraceae	*Ursinia anthemoides*	*	G1	<2	0.1
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.6
Fabaceae	*Gompholobium tomentosum*		G1	<2	0.1
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.2
Primulaceae	*Lysimachia arvensis*	*	G1	<2	0.1
Proteaceae	*Banksia dallanneyi*		G1	<2	0.1
Restionaceae	*Desmocladus flexuosus*		G1	<2	0.1
Droseraceae	*Drosera erythrorhiza*		G2	10-30	prostrate
	Weedy herbs	*	G2	10-30	prostrate
Asteraceae	*Arctotheca calendula*	*	G2	<2	prostrate
Fabaceae	*Kennedia* sp.		G2	<2	prostrate
Fabaceae	*Medicago polymorpha*	*	G2	<2	0.1
Geraniaceae	*Geranium molle*	*	G2	<2	prostrate

Site	Q10	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	377793 mE	6499589 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Yellow-orange sand		
Vegetation type:	Mixed low heath on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Moderate (1–5 years), minor impact, scars on most trees		
Disturbances:	Weeds, light rabbit grazing		
Bare ground (%):	30-70	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	<2
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	2-10 limestone	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Fabaceae	*Acacia pulchella*		M1	30-70	1.3
Proteaceae	*Banksia sessilis*		M1	10-30	1.3
Proteaceae	*Hakea trifurcata*		M1	10-30	1.6
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	1.5
Myrtaceae	*Melaleuca systena*		M2	10-30	1
Dilleniaceae	*Hibbertia hypericoides*		M2	2-10	0.6
Fabaceae	*Acacia lasiocarpa*		M2	2-10	0.8
Fabaceae	*Jacksonia calcicola*		M2	<2	0.5
Phyllanthaceae	*Phyllanthus calycinus*		G1	10-30	0.4
Asteraceae	*Ursinia anthemoides*	*	G1	2-10	0.1
Restionaceae	*Desmocladus flexuosus*		G1	2-10	0.1
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1
Asparagaceae	*Lomandra caespitosa*		G1	<2	0.1
Asteraceae	*Conyza* sp.	*	G1	<2	0.7

Family	Species	Status	Stratum	Cover (%)	Height (m)
Cyperaceae	*Lepidosperma angustatum*		G1	<2	0.1
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.5
Ericaceae	*Leucopogon parviflorus*		G1	<2	0.1
Fabaceae	*Acacia lasiocarpa*		G1	<2	0.3
Fabaceae	*Gompholobium tomentosum*		G1	<2	0.1
Goodeniaceae	*Lechenaultia linarioides*		G1	<2	0.2
Haemodoraceae	*Conostylis candicans*		G1	<2	0.2
Haemodoraceae	*Conostylis setigera*		G1	<2	0.1
Hemerocallidaceae	*Dianella revoluta*		G1	<2	0.6
Hemerocallidaceae	*Tricoryne elatior*		G1	<2	0.3
Myrtaceae	*Calothamnus quadrifidus*		G1	<2	0.5
Restionaceae	*Loxocarya cinerea*		G1	<2	0.1
Fabaceae	*Kennedia* sp.		G2	2-10	prostrate
	Weedy grasses/herbs	*	G2	2-10	prostrate
Asparagaceae	*Lomandra* sp.		G2	<2	0.1
Droseraceae	*Drosera erythrorhiza*		G2	<2	prostrate
Fabaceae	*Hardenbergia comptoniana*		G2	<2	prostrate

Site	Q11	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013, 10/10/2013	**Described by:**	JH & ML, CB & ML
Co-ordinates:	MGA 50	377924 mE	6499085 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Slope – upper		
Drainage:	Good drainage		
Soil colour & type:	Brown sand		
Vegetation type:	*Melaleuca huegelii–M. systena* shrubland on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	<2
Rocks <2 cm (%):	2-10 limestone	**Rocks 2-30 cm (%):**	2-10 limestone
Rocks >30 cm (%):	10-30 limestone	**Veg. ground layer (%):**	70-100

24/05/2013

10/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Melaleuca huegelii*		M1	10-30	1.6
Solanaceae	*Anthocercis littorea*		M1	<2	0.5
Myrtaceae	*Melaleuca systena*		M2	30-70	0.8
Proteaceae	*Grevillea preissii* subsp. *preissii*		M2	10-30	0.5
Fabaceae	*Acacia lasiocarpa*		M2	2-10	0.6
Asteraceae	*Olearia rudis*		M2	<2	0.9
Ericaceae	*Leucopogon parviflorus*		M2	<2	0.5
Fabaceae	*Bossiaea eriocarpa*		M2	<2	0.3
Goodeniaceae	*Scaevola anchusifolia*		M2	<2	0.5
Hemerocallidaceae	*Dianella revoluta*		M2	<2	0.6
Phyllanthaceae	*Phyllanthus calycinus*		M2	<2	0.3
Proteaceae	*Banksia sessilis*		M2	<2	0.5
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	0.3
Restionaceae	*Desmocladus flexuosus*		G1	30-70	0.2
Asparagaceae	*Lomandra caespitosa*		G1	10-30	0.3
Rubiaceae	*Opercularia vaginata*		G1	10-30	0.2
Poaceae	*Austrostipa compressa*		G1	<2	0.7
Stylidiaceae	*Stylidium maritimum*	P3	G1	<2	0.7
Haemodoraceae	*Anigozanthos manglesianus*		G1	<2	0.4
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.3
Cyperaceae	*Lepidosperma costale*		G1	<2	0.2
Goodeniaceae	*Lechenaultia linarioides*		G1	<2	0.1
	Weedy herbs	*	G2	30-70	prostrate
Asteraceae	*Ursinia anthemoides*	*	G2	10-30	0.2
Primulaceae	*Lysimachia arvensis*	*	G2	2-10	prostrate
Poaceae	*Ehrharta longiflora*	*	G2	<2	0.4
Caryophyllaceae	*Petrorhagia dubia*	*	G2	<2	0.3
Haemodoraceae	*Conostylis aculeata*		G2	<2	0.2
Poaceae	*Vulpia bromoides*	*	G2	<2	0.2
Aizoaceae	*Carpobrotus* sp.	*	G2	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Asparagaceae	*Thysanotus* sp.		G2	<2	0.1
Asteraceae	*Hypochaeris* sp.	*	G2	<2	0.1
Cyperaceae	*Lepidosperma angustatum*		G2	<2	0.1
Fabaceae	*Gompholobium tomentosum*		G2	<2	0.1
Poaceae	*Briza maxima*	*	G2	<2	0.1
Poaceae	*Lolium rigidum*	*	G2	<2	0.1
Restionaceae	*Desmocladus fasciculatus*		G2	<2	0.1
Rhamnaceae	*Cryptandra scoparia*		G2	<2	0.1
Haemodoraceae	*Conostylis candicans*		G2	<2	prostrate
Fabaceae	*Kennedia prostrata*		G2	<2	prostrate

Site	Q12	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	378685 mE	6497980 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Slope – upper		
Drainage:	Good drainage		
Soil colour & type:	Orange-brown sand		
Vegetation type:	Mixed low heath on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds, light native herbivore grazing		
Bare ground (%):	10-30	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	<2
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	2-10 limestone
Rocks >30 cm (%):	30-70 limestone	**Veg. ground layer (%):**	70-100

24/05/2013

04/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Melaleuca systena*		M1	30-70	0.8
Dilleniaceae	*Hibbertia hypericoides*		M1	10-30	0.8
Fabaceae	*Acacia lasiocarpa*		M1	10-30	0.8
Fabaceae	*Templetonia retusa*		M1	<2	0.5
Proteaceae	*Hakea trifurcata*		M1	<2	0.4
Santalaceae	*Leptomeria pauciflora*		M1	<2	0.4
Thymelaeaceae	*Pimelea calcicola*	P3	M1	<2	0.4
Rutaceae	*Philotheca spicata*		M1	<2	0.2
Convolvulaceae	*Cuscuta epithymum*	*	M1	<2	climbing
Droseraceae	*Drosera* sp.		M1	<2	climbing
Goodeniaceae	*Scaevola nitida*		G1	2-10	0.4
Proteaceae	*Grevillea preissii* subsp. *preissii*		G1	2-10	0.5
Proteaceae	*Banksia dallanneyi*		G1	2-10	0.2
Brassicaceae	*Brassica tournefortii*	*	G1	<2	0.4
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.3
Caryophyllaceae	*Silene gallica*	*	G1	<2	0.3
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.3
Phyllanthaceae	*Phyllanthus calycinus*		G1	<2	0.3
Asteraceae	*Hypochaeris* sp.	*	G1	<2	0.2
Asteraceae	*Sonchus oleraceus*	*	G1	<2	0.2
Fabaceae	*Jacksonia calcicola*		G1	<2	0.2
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.2
Poaceae	*Briza maxima*	*	G1	<2	0.2
Poaceae	*Briza minor*	*	G1	<2	0.2
Proteaceae	*Petrophile serruriae*		G1	<2	0.2
Violaceae	*Hybanthus calycinus*		G1	<2	0.2
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1
Apiaceae	*Daucus glochidiatus*		G1	<2	0.1
Asteraceae	*Urospermum picroides*	*	G1	<2	0.1
Asteraceae	*Ursinia anthemoides*	*	G1	<2	0.1
Fabaceae	*Gompholobium tomentosum*		G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.1
Poaceae	*Ehrharta longiflora*	*	G1	<2	0.1
Restionaceae	*Desmocladus flexuosus*		G2	10-30	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Asteraceae	*Millotia myosotidifolia*		G2	<2	0.05
Brassicaceae	*Heliophila pusilla*	*	G2	<2	0.05
Crassulaceae	*Crassula colorata*		G2	<2	0.05
Cyperaceae	*Schoenus curvifolius*		G2	<2	0.05
Fabaceae	*Trifolium arvense*	*	G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Poaceae	*Catapodium rigidum*	*	G2	<2	0.05
Poaceae	*Phleum arenarium*	*	G2	<2	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.05

Site	Q13	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013, 10/10/2013	**Described by:**	JH & ML, CB & ML
Co-ordinates:	MGA 50	378083 mE	6498797 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Flat		
Drainage:	Good drainage		
Soil colour & type:	Orange-brown sand		
Vegetation type:	Mixed low heath on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Old (>5 years), minor impact, scars on most trees		
Disturbances:	Weeds, light native herbivore and rabbit grazing		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

24/05/2013

10/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	2.3
Proteaceae	*Hakea prostrata*		M1	<2	1.8
Myrtaceae	*Melaleuca systena*		M2	30-70	1.5
Fabaceae	*Acacia lasiocarpa*		M2	10-30	1.5
Proteaceae	*Hakea lissocarpha*		M2	10-30	1.5
Casuarinaceae	*Allocasuarina humilis*		M2	<2	0.4
Myrtaceae	*Melaleuca systena*		M3	30-70	0.8
Fabaceae	*Acacia lasiocarpa*		M3	10-30	0.8
Proteaceae	*Hakea lissocarpha*		M3	10-30	0.8
Asteraceae	*Hypochaeris* sp.	*	M3	<2	0.4
Myrtaceae	*Calothamnus quadrifidus*		M3	<2	0.4
Asparagaceae	*Lomandra maritima*		G1	10-30	0.3
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.3
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.3
Ericaceae	*Leucopogon propinquus*		M3	<2	0.2
Fabaceae	*Bossiaea eriocarpa*		M3	<2	0.2
Proteaceae	*Banksia dallanneyi*		M3	<2	0.2
Rubiaceae	*Opercularia vaginata*		G1	<2	0.3
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.2
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1
Ericaceae	*Leucopogon insularis*		G1	<2	0.1
Fabaceae	*Gompholobium tomentosum*		G1	<2	0.1
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.1
Rhamnaceae	*Cryptandra scoparia*		G1	<2	0.1
Primulaceae	*Lysimachia arvensis*	*	G2	30-70	0.05
Restionaceae	*Desmocladus flexuosus*		G2	10-30	0.1
Asteraceae	*Ursinia anthemoides*	*	G2	2-10	0.1
Brassicaceae	*Heliophila pusilla*	*	G2	2-10	0.05
Droseraceae	*Drosera erythrorhiza*		G2	2-10	prostrate
Poaceae	*Briza maxima*	*	G2	<2	0.1
Poaceae	*Briza minor*	*	G2	<2	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Asteraceae	*Millotia myosotidifolia*		G2	<2	0.05

Family	Species	Status	Stratum	Cover (%)	Height (m)
Poaceae	*Aira cupaniana*	*	G2	<2	0.05
Poaceae	*Bromus hordeaceus*	*	G2	<2	0.05
Portulacaceae	*Calandrinia liniflora*		G2	<2	0.05
Stylidiaceae	*Stylidium rigidulum*		G2	<2	0.05
	Weedy herbs	*	G2	<2	prostrate

Site	Q14	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	378004 mE	6498951 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Flat		
Drainage:	Good drainage		
Soil colour & type:	Yellow sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Light native herbivore and rabbit grazing, dieback		
Bare ground (%):	30-70	**Logs (%):**	<2
Twigs (%):	10-30	**Leaves (%):**	30-70
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	10-30

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Casuarinaceae	*Allocasuarina fraseriana*		U1	2-10	4
Proteaceae	*Banksia attenuata*		U1	2-10	5
Proteaceae	*Banksia attenuata*		U2	<2	1.3
Proteaceae	*Banksia menziesii*		U2	<2	1.9
Fabaceae	*Acacia pulchella*		M1	10-30	1.5
Proteaceae	*Hakea ruscifolia*		M1	<2	1.8
Zamiaceae	*Macrozamia fraseri*		M1	<2	1.6
Dilleniaceae	*Hibbertia hypericoides*		M2	10-30	0.5
Proteaceae	*Hakea trifurcata*		M2	10-30	0.9
Fabaceae	*Acacia pulchella*		M2	2-10	0.8
Ericaceae	*Conostephium pendulum*		M3	<2	0.3
Ericaceae	*Leucopogon propinquus*		M3	<2	0.3
Goodeniaceae	*Lechenaultia linarioides*		M3	<2	0.3
Phyllanthaceae	*Phyllanthus calycinus*		M3	<2	0.2

Family	Species	Status	Stratum	Cover (%)	Height (m)
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M3	<2	0.5
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.6
Celastraceae	*Tripterococcus brunonis*		G1	<2	0.4
Haemodoraceae	*Haemodorum* sp.		G1	<2	0.8
Asteraceae	*Hypochaeris* sp.	*	G2	2-10	prostrate
Asteraceae	*Podotheca gnaphalioides*		G2	2-10	0.1
Droseraceae	*Drosera erythrorhiza*		G2	2-10	prostrate
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.1
Asparagaceae	*Lomandra maritima*		G2	<2	0.2
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.1
Haemodoraceae	*Conostylis aculeata*		G2	<2	0.1
Haemodoraceae	*Conostylis setigera*		G2	<2	0.1
Poaceae	*Briza maxima*	*	G2	<2	0.1

Site	Q15	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	377765 mE	6499877 mN
Location:	Railway alignment south of Romeo Rd		
Landform:	Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Yellow sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), no damage		
Disturbances:	Weeds, light native herbivore and rabbit grazing, dieback		
Bare ground (%):	30-70	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia attenuata*		U1	2-10	4
Proteaceae	*Banksia menziesii*		U1	2-10	4
Proteaceae	*Banksia attenuata*		U2	<2	2.5
Proteaceae	*Banksia menziesii*		U2	<2	2.3
Fabaceae	*Acacia pulchella*		M1	2-10	1.2
Dilleniaceae	*Hibbertia hypericoides*		M2	10-30	0.8
Myrtaceae	*Calothamnus quadrifidus*		M2	10-30	0.5
Proteaceae	*Hakea costata*		M2	2-10	0.9
Casuarinaceae	*Allocasuarina humilis*		M2	<2	0.6
Ericaceae	*Leucopogon polymorphus*		M3	<2	0.5
Fabaceae	*Jacksonia calcicola*		M3	<2	0.3
Myrtaceae	*Calytrix flavescens*		M3	<2	0.3
Proteaceae	*Hakea lissocarpha*		M3	<2	0.5
Proteaceae	*Petrophile linearis*		M3	<2	0.4

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Petrophile macrostachya*		M3	<2	0.4
Cyperaceae	*Mesomelaena pseudostygia*		G1	10-30	0.6
Asparagaceae	*Lomandra caespitosa*		G1	<2	0.2
Haemodoraceae	*Conostylis aculeata*		G1	<2	0.1
Asteraceae	*Hypochaeris* sp.	*	G2	2-10	prostrate
Asteraceae	*Podotheca gnaphalioides*		G2	2-10	0.1
Droseraceae	*Drosera erythrorhiza*		G2	2-10	prostrate
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.1
Iridaceae	*Gladiolus caryophyllaceus*	*	G2	<2	0.1
Orchidaceae	*Pyrorchis nigricans*		G2	<2	prostrate
Poaceae	*Briza maxima*	*	G2	<2	0.1
Restionaceae	*Desmocladus flexuosus*		G2	<2	0.1
	Weedy grasses/herbs	*	G2	<2	prostrate

Site	Q16	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	05/06/2013	**Described by:**	MD & ML, CB & ML
Co-ordinates:	MGA 50	376298 mE	6501157 mN
Location:	North-west of Romeo Rd		
Landform:	Slope – upper		
Drainage:	Good drainage		
Soil colour & type:	Orange sand		
Vegetation type:	*Banksia sessilis* closed tall scrub		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Old (>5 years), no damage		
Disturbances:	Weeds		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	2-10	**Leaves (%):**	30-70
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	2-10 limestone	**Veg. ground layer (%):**	70-100

05/06/2013

10/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia sessilis*		M1	70-100	2.5
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	10-30	2.8
Myrtaceae	*Calothamnus quadrifidus*		M2	10-30	1.9
Proteaceae	*Hakea trifurcata*		M2	2-10	1.9
Fabaceae	*Acacia pulchella*		M2	<2	1.5
Myrtaceae	*Melaleuca systena*		M2	<2	1.9
Myrtaceae	*Melaleuca systena*		M3	2-10	0.8
Dilleniaceae	*Hibbertia hypericoides*		M3	<2	0.5
Rhamnaceae	*Spyridium globulosum*		M3	<2	0.3
Asparagaceae	*Lomandra maritima*		G1	<2	0.3
Droseraceae	*Drosera* sp.		G1	<2	climbing
Lauraceae	*Cassytha* sp.		G1	<2	climbing
Poaceae	*Austrostipa flavescens*		G1	<2	0.7
Poaceae	*Ehrharta longiflora*	*	G1	30-70	0.6
Poaceae	*Briza maxima*	*	G1	10-30	0.2
Solanaceae	*Solanum nigrum*	*	G1	<2	0.7
Poaceae	*Ehrharta calycina*	*	G1	<2	0.6
Apiaceae	*Daucus glochidiatus*		G1	<2	0.2
Asteraceae	*Hypochaeris* sp.	*	G2	2-10	0.1
Poaceae	*Bromus hordeaceus*	*	G2	2-10	0.1
Restionaceae	*Desmocladus flexuosus*		G2	<2	0.2
Asteraceae	*Urospermum picroides*	*	G2	<2	0.1
Poaceae	*Aira cupaniana*	*	G2	<2	0.1
Apiaceae	*Trachymene pilosa*		G2	<2	0.05
Geraniaceae	*Geranium molle*	*	G2	<2	0.05

Site	Q17	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	18/06/2013	**Described by:**	JH & ML, MD & ML
Co-ordinates:	MGA 50	381893 mE	6492927 mN
Location:	Neerabup Rd alignment near Wanneroo Rd		
Landform:	Slope – middle (gentle SW)		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on most trees		
Disturbances:	Weeds, rabbit grazing, evidence of horses		
Bare ground (%):	10-30	**Logs (%):**	2-10
Twigs (%):	2-10	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	30-70

18/06/2013

03/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	30-70	15
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	1.5
Fabaceae	*Acacia rostellifera*		M1	<2	1.5
Ranunculaceae	*Clematis linearifolia*		M2	30-70	climbing
Chenopodiaceae	*Rhagodia baccata*		M2	10-30	0.5
Dilleniaceae	*Hibbertia hypericoides*		M2	10-30	0.5
Proteaceae	*Hakea lissocarpha*		M2	2-10	0.8
Fabaceae	*Acacia xanthina*		M2	<2	0.8
Phyllanthaceae	*Phyllanthus calycinus*		M2	<2	0.5
Scrophulariaceae	*Myoporum caprarioides*		M2	<2	0.5
Rhamnaceae	*Spyridium globulosum*		M2	<2	0.3
Scrophulariaceae	*Pimelea argentea*		M2	<2	0.3
Solanaceae	*Solanum nigrum*	*	M2	<2	0.3
Iridaceae	*Moraea* sp.	*	G1	2-10	0.4
Campanulaceae	*Wahlenbergia capensis*	*	G1	<2	0.4
Asteraceae	*Senecio* sp.		G1	<2	0.2
Hemerocallidaceae	*Tricoryne elatior*		G1	<2	0.3
Brassicaceae	*Heliophila pusilla*	*	G1	<2	0.2
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1
Fabaceae	*Bossiaea eriocarpa*		G1	<2	0.1
Fabaceae	*Vicia sativa*	*	G1	<2	0.1
Oxalidaceae	*Oxalis* sp.	*	G1	<2	0.05
Poaceae	Weedy grasses	*	G1	<2	0.05
Poaceae	*Ehrharta longiflora*	*	G2	<2	0.1
Poaceae	*Vulpia bromoides*	*	G2	2-10	0.1
Asteraceae	*Sonchus oleraceus*	*	G2	<2	0.05
Cyperaceae	*Isolepis cernua*		G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Iridaceae	*Romulea rosea*	*	G2	<2	0.05
Poaceae	*Aira* sp.	*	G2	<2	0.05
Poaceae	*Briza minor*	*	G2	<2	0.05
Poaceae	*Vulpia myuros*	*	G2	<2	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.05

Family	Species	Status	Stratum	Cover (%)	Height (m)
Restionaceae	*Desmocladus flexuosus*		G2	<2	0.05

Site	Q18	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	18/06/2013, 03/10/2013	**Described by:**	JH & ML, MD & ML
Co-ordinates:	MGA 50	382146 mE	6492849 mN
Location:	Neerabup Rd alignment near Wanneroo Rd		
Landform:	Slope – middle (gentle)		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on most trees with few trees killed, most resprouting		
Disturbances:	Weeds		
Bare ground (%):	2-10	**Logs (%):**	2-10
Twigs (%):	10-30	**Leaves (%):**	10-30
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

18/06/2013

03/10/2013

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Corymbia calophylla*		U1	2-10	20
Myrtaceae	*Corymbia calophylla*		U2	2-10	10
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	10-30	1.6
Scrophulariaceae	*Pimelea argentea*		M1	2-10	1.1
Fabaceae	*Acacia saligna*		M1	<2	1.9
Proteaceae	*Hakea prostrata*		M1	<2	0.2
Zamiaceae	*Macrozamia fraseri*		M2	<2	0.6
Phyllanthaceae	*Phyllanthus calycinus*		M2	<2	0.5
Proteaceae	*Hakea lissocarpha*		M2	<2	0.5
Dilleniaceae	*Hibbertia hypericoides*		M2	<2	0.4
Dilleniaceae	*Hibbertia racemosa*		M2	<2	0.4
Ericaceae	*Leucopogon propinquus*		M2	<2	0.4
Apiaceae	*Daucus glochidiatus*		G1	<2	0.2
Asparagaceae	*Lomandra caespitosa*		G1	<2	0.2
Hemerocallidaceae	*Caesia micrantha*		G1	<2	0.2
Orchidaceae	*Microtis media*		G1	<2	0.2
Poaceae	*Ehrharta longiflora*	*	G1	<2	0.2
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.1
Asteraceae	*Conyza* sp.	*	G1	<2	0.05
Asteraceae	*Sonchus oleraceus*	*	G2	<2	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Caryophyllaceae	*Cerastium glomeratum*	*	G2	<2	0.05
Caryophyllaceae	*Silene gallica*	*	G2	<2	0.05
Cyperaceae	*Cyperaceae* sp.		G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Fabaceae	*Trifolium hirtum*	*	G2	<2	0.05
Geraniaceae	*Geranium* sp.	*	G2	<2	0.05
Orchidaceae	*Caladenia* sp.		G2	<2	0.05
Poaceae	*Aira cupaniana*	*	G2	<2	0.05
Poaceae	Weedy grasses	*	G2	<2	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.05

Family	Species	Status	Stratum	Cover (%)	Height (m)
Phyllanthaceae	*Poranthera drummondii*		G2	<2	0.05
Asteraceae	*Hypochaeris* sp.	*	G2	<2	prostrate

Site	Q19	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	18/06/2013, 03/10/2013	**Described by:**	JH & ML, MD & ML
Co-ordinates:	MGA 50	380589 mE	6492992 mN
Location:	Neerabup Rd alignment near the railway alignment, east of Clarkson station		
Landform:	Slope – middle (gentle NW)		
Drainage:	Good drainage		
Soil colour & type:	Yellow/grey sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds, dieback		
Bare ground (%):	30-70	**Logs (%):**	2-10
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	10-30

18/06/2013

03/10/2013

Species list

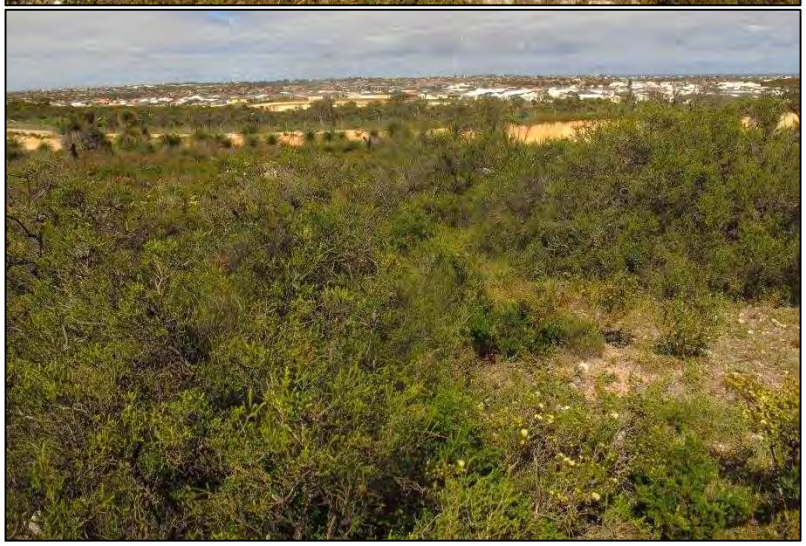
Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia attenuata*		U1	30-70	4
Casuarinaceae	*Allocasuarina fraseriana*		U1	2-10	4
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	1.9
Dilleniaceae	*Hibbertia hypericoides*		M2	30-70	0.5
Rutaceae	*Philotheca spicata*		M2	2-10	0.4
Proteaceae	*Petrophile linearis*		M2	2-10	0.2
Proteaceae	*Stirlingia latifolia*		M2	<2	0.3
Dilleniaceae	*Hibbertia racemosa*		M2	<2	0.2
	Weedy grasses/herbs	*	G1	30-70	0.05
Asteraceae	*Ursinia anthemoides*	*	G1	2-10	0.05
Brassicaceae	*Brassica tournefortii*	*	G1	<2	0.5
Restionaceae	*Desmocladus flexuosus*		G1	<2	0.3
Aizoaceae	*Carpobrotus* sp.	*	G1	<2	0.1
Asteraceae	*Podotheca gnaphalioides*		G1	<2	0.1
Brassicaceae	*Heliophila pusilla*	*	G1	<2	0.1
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.1
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.1
Fabaceae	*Hovea trisperma*		G1	<2	0.1
Poaceae	*Briza maxima*	*	G1	<2	0.1
Poaceae	*Ehrharta longiflora*	*	G1	<2	0.1
Droseraceae	*Drosera erythrorhiza*		G2	2-10	prostrate
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Asteraceae	*Millotia myosotidifolia*		G2	<2	0.05
Asteraceae	*Podotheca chrysantha*		G2	<2	0.05
Asteraceae	*Quinetia urvillei*		G2	<2	0.05
Crassulaceae	*Crassula* sp.		G2	<2	0.05
Cyperaceae	*Isolepis marginata*	*	G2	<2	0.05
Iridaceae	*Gladiolus caryophyllaceus*	*	G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Phyllanthaceae	*Poranthera drummondii*		G2	<2	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.05

Family	Species	Status	Stratum	Cover (%)	Height (m)
Asteraceae	*Hypochaeris* sp.	*	G2	<2	prostrate
Asteraceae	*Lagenophora huegelii*		G2	<2	prostrate

Site	Q20	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	20/06/2013, 03/10/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	378756 mE	6497880 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Landform:	Hill crest, ridge		
Drainage:	Good drainage		
Soil colour & type:	Brown/grey sand		
Vegetation type:	*Melaleuca huegelii–M. systena* shrubland on limestone		
Vegetation condition:	Excellent (2)		
Fire age & intensity:	Moderate (1-5 years), minor impact, scars on some shrubs		
Disturbances:	Weeds		
Bare ground (%):	10-30	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	2-10 limestone
Rocks >30 cm (%):	2-10 limestone	**Veg. ground layer (%):**	30-70

20/06/2013

03/10/2013



Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Melaleuca huegelii*		M1	30-70	1.5
Fabaceae	*Acacia lasiocarpa*		M2	10-30	0.6
Myrtaceae	*Melaleuca systena*		M2	10-30	0.7
Fabaceae	*Templetonia retusa*		M2	<2	0.7
Rubiaceae	*Opercularia vaginata*		M2	<2	0.4
Fabaceae	*Acacia pulchella*		M2	<2	0.3
Phyllanthaceae	*Phyllanthus calycinus*		M2	<2	0.3
Restionaceae	*Desmocladus flexuosus*		G1	2-10	0.2
Proteaceae	*Banksia dallanneyi*		G1	2-10	0.1
Primulaceae	*Lysimachia arvensis*	*	G1	2-10	0.05
Asteraceae	*Urospermum picroides*	*	G1	<2	0.3
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.2
Brassicaceae	*Heliophila pusilla*	*	G1	<2	0.1
Hemerocallidaceae	*Dianella revoluta*		G1	<2	0.1
Poaceae	*Briza maxima*	*	G1	<2	0.1
Poaceae	*Ehrharta longiflora*	*	G1	<2	0.1
Poaceae	*Lolium* sp.	*	G1	<2	0.1
Poaceae	*Vulpia bromoides*	*	G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Grevillea preissii* subsp. *preissii*		G1	<2	0.1
Rhamnaceae	*Cryptandra mutila*		G1	<2	0.1
Amaranthaceae	*Ptilotus polystachyus*		G1	<2	0.05
Iridaceae	*Romulea rosea*	*	G1	<2	0.05
Convolvulaceae	*Cuscuta epithymum*	*	G1	<2	climbing
Droseraceae	*Drosera* sp.		G1	<2	climbing
Lauraceae	*Cassytha pomiformis*		G1	<2	climbing
Fabaceae	*Trifolium campestre*	*	G2	2-10	prostrate
Poaceae	Weedy grasses	*	G2	2-10	prostrate
	Weedy herbs	*	G2	2-10	prostrate
	Mosses		G2	2-10	prostrate
Asteraceae	*Brachyscome glandulosa*		G2	<2	0.05
Asteraceae	*Millotia myosotidifolia*		G2	<2	0.05
Caryophyllaceae	*Cerastium glomeratum*	*	G2	<2	0.05
Crassulaceae	*Crassula* sp.		G2	<2	0.05
Geraniaceae	*Erodium cicutarium*	*	G2	<2	0.05
Orobanchaceae	*Parentucellia viscosa*	*	G2	<2	0.05
Oxalidaceae	*Oxalis* sp.	*	G2	<2	0.05
Poaceae	*Briza minor*	*	G2	<2	0.05
Poaceae	*Phleum arenarium*	*	G2	<2	0.05
Asteraceae	*Hypochaeris glabra*	*	G2	<2	prostrate
Brassicaceae	*Brassica tournefortii*	*	G2	<2	prostrate
Fabaceae	*Trifolium scabrum*	*	G2	<2	prostrate

Site	Q21	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	03/07/2013	**Described by:**	ML
Co-ordinates:	MGA 50	380854 mE	6491762 mN
Location:	Railway alignment south of Neerabup Rd alignment, north of Burns Beach Rd		
Landform:	Plain, flat		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Moderate (1-5 years), minor impact, scars on most trees		
Disturbances:	Weeds		
Bare ground (%):	<2	**Logs (%):**	2-10
Twigs (%):	2-10	**Leaves (%):**	70-100
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	2-10	12
Casuarinaceae	*Allocasuarina fraseriana*		U2	10-30	8
Myrtaceae	*Eucalyptus marginata*		U2	2-10	8
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	<2	1.5
Dilleniaceae	*Hibbertia hypericoides*		M2	10-30	0.4
Proteaceae	*Hakea lissocarpha*		M2	2-10	0.4
Ericaceae	*Leucopogon propinquus*		M2	<2	0.2
Fabaceae	*Hovea trisperma*		M2	<2	0.2
Phyllanthaceae	*Phyllanthus calycinus*		M2	<2	0.4
Rhamnaceae	*Spyridium globulosum*		M2	<2	0.3
Solanaceae	*Solanum nigrum*	*	M2	<2	0.3
Cyperaceae	*Lepidosperma longitudinale*		G1	<2	0.3
Iridaceae	*Moraea* sp.	*	G1	<2	0.4
	Weedy grasses/herbs	*	G2	10-30	0.05

Family	Species	Status	Stratum	Cover (%)	Height (m)
Asteraceae	*Hypochaeris* sp.	*	G2	2-10	prostrate
Droseraceae	*Drosera erythrorhiza*		G2	2-10	prostrate
Fabaceae	*Trifolium campestre*	*	G2	2-10	0.05
Araliaceae	*Trachymene* sp.		G2	<2	0.05
Asteraceae	*Lagenophora huegelii*		G2	<2	prostrate
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.05
Iridaceae	*Romulea rosea*	*	G2	<2	0.05

Site	Q22	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	03/07/2013	**Described by:**	ML
Co-ordinates:	MGA 50	380526 mE	6492465 mN
Location:	Railway alignment south of Neerabup Rd alignment, north of Burns Beach Rd		
Landform:	Slope – upper (gentle)		
Drainage:	Good drainage		
Soil colour & type:	Yellow/grey sand		
Vegetation type:	*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some trees		
Disturbances:	Weeds		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Casuarinaceae	*Allocasuarina fraseriana*		U1	<2	3.5
Proteaceae	*Banksia attenuata*		U1	<2	5
Fabaceae	*Acacia saligna*		M1	<2	3
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	<2	2.1
Fabaceae	*Jacksonia sternbergiana*		M2	<2	1.3
Proteaceae	*Banksia menziesii*		M2	<2	1.6
Dilleniaceae	*Hibbertia hypericoides*		M3	70-100	0.6
Droseraceae	*Drosera* sp.		M3	<2	0.3
Ericaceae	*Conostephium pendulum*		M3	<2	0.3
Fabaceae	*Acacia saligna*		M3	<2	0.3
Phyllanthaceae	*Phyllanthus calycinus*		M3	<2	0.7
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M3	<2	0.8
Fabaceae	*Isotropis cuneifolia*		G1	<2	0.05
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Iridaceae	*Moraea* sp.	*	G1	<2	0.3
Amaranthaceae	*Ptilotus manglesii*		G2	<2	prostrate
Araliaceae	*Trachymene* sp.		G2	<2	prostrate
Asteraceae	*Hypochaeris* sp.	*	G2	<2	prostrate
Asteraceae	*Ursinia anthemoides*	*	G2	<2	prostrate
Brassicaceae	*Brassicaceae* sp.	*	G2	<2	prostrate
Droseraceae	*Drosera erythrorhiza*		G2	<2	prostrate
Iridaceae	*Romulea rosea*	*	G2	<2	prostrate
Orchidaceae	*Pyrorchis nigricans*		G2	<2	prostrate
	Weedy grasses/herbs	*	G2	<2	prostrate

Site	Q23	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	04/07/2013	**Described by:**	ML
Co-ordinates:	MGA 50	381459 mE	6489813 mN
Location:	Railway alignment north of Burns Beach Rd		
Landform:	Slope – upper (moderate S)		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	Mosaic of *Banksia* woodland and Mixed low heath on limestone		
Vegetation condition:	Excellent (2) – Very Good (3)		
Fire age & intensity:	Old (>5 years), minor impact, scars on some grasstrees		
Disturbances:	Weeds, illegal rubbish dumping		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	<2	**Leaves (%):**	2-10
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia menziesii*		U1	<2	4.5
Casuarinaceae	*Allocasuarina humilis*		M1	2-10	1.8
Proteaceae	*Hakea trifurcata*		M1	<2	1.9
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	<2	1.5
Dilleniaceae	*Hibbertia hypericoides*		M2	70-100	0.8
Casuarinaceae	*Allocasuarina humilis*		M2	10-30	0.9
Proteaceae	*Hakea trifurcata*		M2	2-10	0.8
Droseraceae	*Drosera* sp.		M2	<2	0.4
Fabaceae	*Daviesia triflora*		M2	<2	0.6
Fabaceae	*Gompholobium tomentosum*		M2	<2	0.3
Proteaceae	*Banksia dallanneyi*		M2	<2	0.2
Proteaceae	*Hakea lissocarpha*		M2	<2	0.4
Proteaceae	*Petrophile brevifolia*		M2	<2	0.4
Proteaceae	*Petrophile macrostachya*		M2	<2	0.4

Family	Species	Status	Stratum	Cover (%)	Height (m)
Rhamnaceae	*Cryptandra arbutiflora*		M2	<2	0.4
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	0.7
Colchicaceae	*Burchardia congesta*		G1	<2	0.3
Cyperaceae	*Lepidosperma squamatum*		G1	<2	0.3
Cyperaceae	*Mesomelaena pseudostygia*		G1	<2	0.4
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.5
Poaceae	*Briza maxima*	*	G1	<2	0.3
Asteraceae	*Hypochaeris* sp.	*	G2	10-30	prostrate
Droseraceae	*Drosera erythrorhiza*		G2	10-30	prostrate
Cyperaceae	*Schoenus curvifolius*		G2	2-10	0.05
	Weedy grasses/herbs	*	G2	2-10	0.05
Araliaceae	*Trachymene* sp.		G2	<2	0.05
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.05
Geraniaceae	*Geraniaceae* sp.		G2	<2	prostrate
Haemodoraceae	*Conostylis setigera*		G2	<2	0.05
Primulaceae	*Lysimachia arvensis*	*	G2	<2	0.05
Stylidiaceae	*Stylidium ?carnosum*		G2	<2	0.2

Site	Q24	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	04/07/2013	**Described by:**	ML
Co-ordinates:	MGA 50	381694 mE	6490072 mN
Location:	Railway alignment north of Burns Beach Rd		
Landform:	Slope – middle (gentle N)		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	Mosaic of *Banksia* woodland and mixed low heath on limestone		
Vegetation condition:	Good (4) – Degraded (5)		
Fire age & intensity:	Old (>5 years), no damage		
Disturbances:	Weeds, light rabbit grazing, illegal rubbish dumping		
Bare ground (%):	<2	**Logs (%):**	<2
Twigs (%):	10-30	**Leaves (%):**	70-100
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia sessilis*		M1	10-30	3
Proteaceae	*Banksia sessilis*		M2	30-70	1.7
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	1.9
Dilleniaceae	*Hibbertia hypericoides*		M3	10-30	0.8
Fabaceae	*Acacia pulchella*		M3	<2	0.3
Fabaceae	*Gompholobium tomentosum*		M3	<2	0.5
Poaceae	Weedy grasses	*	G1	30-70	0.3
Fabaceae	*Lupinus cosentinii*	*	G1	<2	0.2
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.3
Poaceae	*Briza maxima*	*	G1	<2	0.3
Poaceae	Weedy grasses	*	G2	2-10	0.05
Araliaceae	*Trachymene* sp.		G2	<2	0.05
Asteraceae	*Hypochaeris* sp.	*	G2	<2	prostrate
Fabaceae	*Kennedia* sp.		G2	<2	prostrate

Family	Species	Status	Stratum	Cover (%)	Height (m)
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05

Site	Q25	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	09/10/2013	**Described by:**	CB & ML
Co-ordinates:	MGA 50	381466 mE	6490154 mN
Location:	Railway just north of Burns Beach Road		
Landform:	Flat, Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange loamy sand		
Vegetation type:	Jarrah–*Banksia* woodland		
Vegetation condition:	Good (4)		
Fire age & intensity:	Old (>5 years), Minor impact, scars on some trees		
Disturbances:	Weeds, light grazing, illegal rubbish dumping, residential impact nearby		
Bare ground (%):	<2	**Logs (%):**	<2
Twigs (%):	10-30	**Leaves (%):**	30-70
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus marginata*		U1	70-100	10
Rhamnaceae	*Spyridium globulosum*		M1	<2	2.2
Dilleniaceae	*Hibbertia hypericoides*		M2	30-70	0.8
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	2-10	1.6
Zamiaceae	*Macrozamia fraseri*		M2	<2	1.9
Poaceae	*Ehrharta longiflora*	*	M3	10-30	0.8
Fabaceae	*Acacia pulchella*		M3	<2	0.8
Haemodoraceae	*Haemodorum* sp.		M3	<2	0.8
Proteaceae	*Hakea lissocarpha*		M3	<2	0.8
Geraniaceae	*Pelargonium capitatum*	*	M3	<2	0.6
Poaceae	*Ehrharta* sp.	*	G1	30-70	0.4
Poaceae	*Briza maxima*	*	G1	30-70	0.2
Poaceae	*Bromus diandrus*	*	G1	10-30	0.4
Asparagaceae	*Lomandra* sp.		G1	2-10	0.2

Family	Species	Status	Stratum	Cover (%)	Height (m)
Cyperaceae	*Lepidosperma* sp.		G1	<2	0.5
Asteraceae	*Podotheca gnaphalioides*		G1	<2	0.4
Iridaceae	*Gladiolus caryophyllaceus*	*	G1	<2	0.3
Asteraceae	*Urospermum picroides*	*	G1	<2	0.1
Asteraceae	*Ursinia anthemoides*	*	G1	<2	0.1
Fabaceae	*Hardenbergia comptoniana*		G1	<2	climbing
Restionaceae	*Desmocladus flexuosus*		G2	10-30	0.1
Asteraceae	*Hypochaeris* sp.	*	G2	2-10	prostrate
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Asteraceae	*Sonchus oleraceus*	*	G2	<2	0.05
Caryophyllaceae	*Silene gallica*	*	G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Geraniaceae	*Geranium molle*	*	G2	<2	0.05
Orchidaceae	*Caladenia* sp.		G2	<2	0.05
Orchidaceae	*Pterostylis* sp.		G2	<2	0.05
Poaceae	*Aira cupaniana*	*	G2	<2	0.05
Poaceae	*Briza minor*	*	G2	<2	0.05

Site	Q26	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	10/10/2013	**Described by:**	CB & ML
Co-ordinates:	MGA 50	378033 mE	6499034 mN
Location:	Railway between Romeo Road and Hester Avenue		
Landform:	Flat, Slope – middle		
Drainage:	Good drainage		
Soil colour & type:	Brown/grey sand		
Vegetation type:	Jarrah–*Banksia* woodland		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), Minor impact, scars on most trees		
Disturbances:	Weeds, light rabbit grazing, illegal rubbish dumping, residential impact nearby		
Bare ground (%):	<2	**Logs (%):**	2-10
Twigs (%):	10-30	**Leaves (%):**	70-100
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus marginata*		U1	30-70	8
Fabaceae	*Acacia pulchella*		M1	10-30	1.6
Fabaceae	*Acacia pulchella*		M2	2-10	0.9
Zamiaceae	*Macrozamia fraseri*		M2	2-10	0.9
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	0.9
Colchicaceae	*Burchardia congesta*		M2	<2	0.5
Dilleniaceae	*Hibbertia hypericoides*		M3	30-70	0.5
Casuarinaceae	*Allocasuarina humilis*		M3	<2	0.5
Rutaceae	*Philotheca spicata*		M3	<2	0.5
Cyperaceae	*Mesomelaena pseudostygia*		M3	<2	0.4
Fabaceae	*Bossiaea eriocarpa*		M3	<2	0.4
Haemodoraceae	*Haemodorum* sp.		M3	<2	0.4
Ericaceae	*Conostephium pendulum*		M3	<2	0.2
Fabaceae	*Gompholobium tomentosum*		M3	<2	0.2
Fabaceae	*Gastrolobium capitatum*		M3	<2	0.1
Asparagaceae	*Lomandra caespitosa*		G1	2-10	0.2
Asteraceae	*Hypochaeris* sp.	*	G1	2-10	0.2
Poaceae	*Briza maxima*	*	G1	2-10	0.2
Orchidaceae	*Caladenia flava*		G1	<2	0.4
Apiaceae	*Daucus glochidiatus*		G1	<2	0.2
Asteraceae	*Podotheca gnaphalioides*		G1	<2	0.2
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.2
Orchidaceae	*Caladenia* sp.		G1	<2	0.2
Stylidiaceae	*Stylidium rigidulum*		G1	<2	0.2
Asparagaceae	*Thysanotus patersonii/manglesianus* complex		G1	<2	climbing
Fabaceae	*Hardenbergia comptoniana*		G1	<2	climbing
Fabaceae	*Trifolium campestre*	*	G2	30-70	0.1
Restionaceae	*Desmocladus flexuosus*		G2	2-10	0.2
Haemodoraceae	*Conostylis aculeata*		G2	<2	0.2
Poaceae	*Ehrharta calycina*	*	G2	<2	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Asteraceae	*Lagenophora huegelii*		G2	<2	0.05

Site	Q27	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	09/10/2013	**Described by:**	CB & ML
Co-ordinates:	MGA 50	380832 mE	6491734 mN
Location:	Railway south of Neerabup, north of Burns Beach Road		
Landform:	Flat		
Drainage:	Good drainage		
Soil colour & type:	Brown/grey sand		
Vegetation type:	Tuart woodland		
Vegetation condition:	Good (4)		
Fire age & intensity:	Old (>5 years), No damage		
Disturbances:	Weeds, light rabbit grazing		
Bare ground (%):	<2	**Logs (%):**	2-10
Twigs (%):	10-30	**Leaves (%):**	70-100
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	<2
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Myrtaceae	*Eucalyptus gomphocephala*		U1	70-100	30
Fabaceae	*Acacia saligna*		M1	2-10	2.2
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M1	2-10	2.0
Asparagaceae	*Asparagus asparagoides*	* Declared Pest C3 Management for the Whole of the State, WoNS	M1	<2	creeper
Xanthorrhoeaceae	*Xanthorrhoea preissii*		M2	<2	1.5
Fabaceae	*Acacia cyclops*		M2	<2	1.3
Rhamnaceae	*Spyridium globulosum*		M2	<2	1.2
Asparagaceae	*Acanthocarpus preissii*		M3	2-10	0.9
Proteaceae	*Hakea lissocarpha*		M3	2-10	0.4

Family	Species	Status	Stratum	Cover (%)	Height (m)
Chenopodiaceae	*Rhagodia baccata*		M3	2-10	0.2
Haemodoraceae	*Haemodorum laxum*		M3	<2	0.8
Fabaceae	*Acacia cyclops*		M3	<2	0.5
Proteaceae	*Petrophile macrostachya*		M3	<2	0.4
Fabaceae	*Gompholobium tomentosum*		M3	<2	0.2
Zamiaceae	*Macrozamia fraseri*		M3	<2	0.1
Cyperaceae	*Mesomelaena pseudostygia*		G1	30-70	0.6
Iridaceae	*Moraea* sp.	*	G1	30-70	0.6
Poaceae	*Ehrharta calycina*	*	G1	10-30	0.3
Poaceae	*Briza maxima*	*	G1	10-30	0.2
Amaranthaceae	*Ptilotus drummondii*		G1	2-10	0.3
Aizoaceae	*Carpobrotus edulis*	*	G1	2-10	0.2
Poaceae	*Avena barbata*	*	G1	2-10	0.2
Poaceae	*Bromus diandrus*	*	G1	2-10	0.2
Geraniaceae	*Geranium* sp.	*	G1	2-10	0.1
Asparagaceae	*Lomandra hermaphrodita*		G1	<2	0.4
Cyperaceae	*Lepidosperma* sp.		G1	<2	0.3
Apiaceae	*Daucus glochidiatus*		G1	<2	0.2
Asparagaceae	*Lomandra* sp.		G1	<2	0.2
Asparagaceae	*Sowerbaea laxiflora*		G1	<2	0.2
Caryophyllaceae	*Petrorhagia dubia*	*	G1	<2	0.2
Asteraceae	*Urospermum picroides*	*	G1	<2	0.1
Fabaceae	*Trifolium campestre*	*	G2	30-70	0.1
Restionaceae	*Desmocladus flexuosus*		G2	30-70	0.05
Iridaceae	*Romulea rosea*	*	G2	10-30	0.1
Primulaceae	*Lysimachia arvensis*	*	G2	10-30	0.1
Asteraceae	*Ursinia anthemoides*	*	G2	<2	0.1
Haemodoraceae	*Conostylis aculeata*		G2	<2	0.1
Araliaceae	*Trachymene pilosa*		G2	<2	0.05
Fabaceae	*Hardenbergia comptoniana*		G2	<2	0.05
Orchidaceae	*Caladenia* sp.		G2	<2	0.05
Asteraceae	*Lagenophora huegelii*		G2	<2	prostrate
Droseraceae	*Drosera erythrorhiza*		G2	<2	prostrate

Site	Q28	Project	Mitchell Freeway
Type:	Quadrat	**Size:**	10 × 10 m
Date:	09/10/2013	**Described by:**	CB & ML
Co-ordinates:	MGA 50	381592 mE	6489820 mN
Location:	Railway just north of Burns Beach Road		
Landform:	Slope – upper		
Drainage:	Good drainage		
Soil colour & type:	Brown/orange sand		
Vegetation type:	*Banksia sessilis* closed tall scrub		
Vegetation condition:	Very Good (3)		
Fire age & intensity:	Old (>5 years), No damage		
Disturbances:	Weeds, light rabbit grazing, clearing		
Bare ground (%):	2-10	**Logs (%):**	<2
Twigs (%):	10-30	**Leaves (%):**	30-70
Rocks <2 cm (%):	<2	**Rocks 2-30 cm (%):**	2-10
Rocks >30 cm (%):	<2	**Veg. ground layer (%):**	70-100

Species list

Family	Species	Status	Stratum	Cover (%)	Height (m)
Proteaceae	*Banksia sessilis*		M1	30-70	2.5
Dilleniaceae	*Hibbertia hypericoides*		M2	30-70	1.0
Poaceae	*Austrostipa flavescens*		M2	<2	1.0
Iridaceae	*Gladiolus caryophyllaceus*	*	M2	<2	0.5
Geraniaceae	*Pelargonium capitatum*	*	M2	<2	0.3
Asteraceae	*Hypochaeris* sp.	*	G1	30-70	0.2
Poaceae	*Ehrharta longiflora*	*	G1	10-30	0.3
Asteraceae	*Podotheca gnaphalioides*		G1	2-10	0.3
Asteraceae	*Urospermum picroides*	*	G1	2-10	0.2
Haemodoraceae	*Haemodorum* sp.		G1	<2	0.3
Asteraceae	*Lagenophora huegelii*		G1	<2	0.2
Asteraceae	*Ursinia anthemoides*	*	G1	<2	0.2
Poaceae	*Bromus diandrus*	*	G1	<2	0.2
Primulaceae	*Lysimachia arvensis*	*	G2	10-30	0.1

Family	Species	Status	Stratum	Cover (%)	Height (m)
Araliaceae	*Trachymene pilosa*		G2	10-30	0.05
Apiaceae	*Daucus glochidiatus*		G2	<2	0.1
Asteraceae	*Podolepis gracilis*		G2	<2	0.1
Asteraceae	*Sonchus oleraceus*	*	G2	<2	0.1
Geraniaceae	*Erodium botrys*	*	G2	<2	0.1
Orchidaceae	*Caladenia flava*		G2	<2	0.1
Orobanchaceae	*Orobanche minor*	*	G2	<2	0.1
Poaceae	*Briza minor*	*	G2	<2	0.1
Asteraceae	*Millotia myosotidifolia*		G2	<2	0.05
Caryophyllaceae	*Petrorhagia dubia*	*	G2	<2	0.05
Fabaceae	*Acacia ?pulchella*		G2	<2	0.05
Fabaceae	*Trifolium campestre*	*	G2	<2	0.05
Orchidaceae	*Caladenia* sp.		G2	<2	0.05
Poaceae	*Pentameris airoides*	*	G2	<2	0.05

Site	PP01	Project	Mitchell Freeway
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	377559 mE	6500494 mN
Location:	Romeo Rd		
Vegetation type:	*Banksia* woodland		

Site	PP02	Project	Mitchell Freeway
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	380319 mE	6495342 mN
Location:	Hester Avenue		
Vegetation type:	Jarrah–*Banksia* woodland		

Site	PP03	Project	Mitchell Freeway
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	379434 mE	6495424 mN
Location:	Hester Ave		
Vegetation type:	*Banksia* woodland		

Site	PP04	Project	Mitchell Freeway
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	379953 mE	6492816 mN
Location:	Between Connolly Rd and Railway, on Neerabup Rd alignment		
Vegetation type:	Tuart woodland		

Site	PP05	Project	Mitchell Freeway
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	384348 mE	6490517 mN
Location:	Wanneroo Rd, near Burns Beach Rd		
Vegetation type:	Degraded roadside vegetation		

Site	PP06	Project	Mitchell Freeway
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	383704 mE	6491746 mN
Location:	Wanneroo Rd		
Vegetation type:	Tuart woodland		

Site	PP07	Project	Mitchell Freeway
Date:	17/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	381932 mE	6494328 mN
Location:	Wanneroo Rd		
Vegetation type:	Tuart woodland		

Site	PP08	Project	Mitchell Freeway
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	380140 mE	6495365 mN
Location:			
Vegetation type:	Jarrah–*Banksia* woodland		

Site	PP09	Project	Mitchell Freeway
Date:	16/05/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	378065 mE	6500510 mN
Location:	Hester Ave		
Vegetation type:	Jarrah–*Banksia* woodland		

Site	PP10	Project	Mitchell Freeway
Date:	18/06/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	379717 mE	6495373 mN
Location:	Within PTA land alongside railway		
Vegetation type:	Degraded		

Site	PP11	Project	Mitchell Freeway
Date:	19/06/2013	**Described by:**	MD & ML
Co-ordinates:	MGA 50	379213 mE	6496664 mN
Location:	Bushland near PTA land		
Vegetation type:	Mosaic of *Banksia* woodland and mixed low heath on limestone		

Site	PP12	Project	Mitchell Freeway
Date:	04/07/2013	**Described by:**	ML
Co-ordinates:	MGA 50	381406 mE	6490602 mN
Location:	Railway near Burns Beach Rd		
Vegetation type:	*Banksia sessilis* closed tall scrub		

Site	PP13	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	380822 mE	6493052 mN
Location:	Neerabup Rd		
Vegetation type:	*Banksia* woodland		

Site	PP14	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381033 mE	6493025 mN
Location:	Neerabup Rd		
Vegetation type:	*Banksia* woodland		

Site	PP15	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381086 mE	6493055 mN
Location:	Neerabup Rd		
Vegetation type:	Tuart woodland		

Site	PP16	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381164 mE	6493087 mN
Location:	Neerabup Rd		
Vegetation type:	Tuart woodland		

Site	PP17	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381481 mE	6492999 mN
Location:	Neerabup Rd		
Vegetation type:	Tuart woodland		

Site	PP18	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381718 mE	6492940 mN
Location:	Neerabup Rd		
Vegetation type:	Tuart woodland		

Site	PP19	Project	Mitchell Freeway
Date:	25/06/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	381825 mE	6492910 mN
Location:	Neerabup Rd		
Vegetation type:	Tuart woodland		

Site	PP20	Project	Mitchell Freeway
Date:	24/05/2013	**Described by:**	JH & ML
Co-ordinates:	MGA 50	378021 mE	6499040 mN
Location:	Railway alignment south of Romeo Rd, north of Hester Ave		
Vegetation type:	Jarrah–*Banksia* woodland		

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
?Boraginaceae	?Boraginaceae sp.	*
Aizoaceae	*Carpobrotus edulis*	*
Aizoaceae	*Tetragonia decumbens*	*
Amaranthaceae	*Ptilotus drummondii*	
Amaranthaceae	*Ptilotus manglesii*	
Amaranthaceae	*Ptilotus polystachyus*	
Anacardiaceae	*Schinus terebinthifolius*	*
Anarthriaceae	*Lyginia barbata*	
Apiaceae	*Daucus glochidiatus*	
Apiaceae	*Eryngium pinnatifidum*	
Apiaceae	*Foeniculum vulgare*	*
Apiaceae	*Homalosciadium homalocarpum*	
Apiaceae	*Xanthosia huegelii*	
Apocynaceae	*Gomphocarpus fruticosus*	*
Araceae	*Zantedeschia aethiopica*	* Declared Pest C3 Management for the Whole of the State
Araliaceae	*Trachymene pilosa*	
Araliaceae	*Trachymene* sp.	
Arecaceae	Arecaceae sp.	*
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Agave americana*	*
Asparagaceae	*Asparagus asparagoides*	* Declared Pest C3 Management for the Whole of the State, WoNS
Asparagaceae	*Laxmannia ramosa*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Lomandra maritima*	
Asparagaceae	*Lomandra purpurea*	
Asparagaceae	*Lomandra* sp.	
Asparagaceae	*Sowerbaea laxiflora*	
Asparagaceae	*Thysanotus arbuscula*	
Asparagaceae	*Thysanotus patersonii/manglesianus* complex	
Asparagaceae	*Thysanotus* sp.	
Asparagaceae	*Thysanotus triandrus*	
Asparagaceae	*Yucca aloifolia*	*
Asphodelaceae	*Aloe vera*	*
Asphodelaceae	*Asphodelus fistulosus*	*
Asphodelaceae	*Trachyandra divaricata*	*
Asteraceae	*Arctotheca calendula*	*
Asteraceae	*Conyza* sp.	*
Asteraceae	*Conyza sumatrensis*	*
Asteraceae	*Cotula* sp.	*
Asteraceae	*Dimorphotheca ecklonis*	*
Asteraceae	*Gazania linearis*	*
Asteraceae	*Helichrysum luteoalbum*	
Asteraceae	*Hypochaeris glabra*	*
Asteraceae	*Hypochaeris* sp.	*
Asteraceae	*Lactuca serriola*	*
Asteraceae	*Lagenophora huegelii*	
Asteraceae	*Millotia myosotidifolia*	
Asteraceae	*Monoculus monstrosus*	*
Asteraceae	*Olearia axillaris*	
Asteraceae	*Olearia rudis*	
Asteraceae	*Ozothamnus cordatus*	
Asteraceae	*Pithocarpa cordata*	
Asteraceae	*Podolepis gracilis*	

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Asteraceae	*Podolepis lessonii*	
Asteraceae	*Podotheca chrysantha*	
Asteraceae	*Podotheca gnaphalioides*	
Asteraceae	*Quinetia urvillei*	
Asteraceae	*Senecio pinnatifolius*	
Asteraceae	*Senecio* sp.	
Asteraceae	*Sonchus asper*	*
Asteraceae	*Sonchus oleraceus*	*
Asteraceae	*Tagetes minuta*	*
Asteraceae	*Taraxacum officinale*	*
Asteraceae	*Urospermum picroides*	*
Asteraceae	*Ursinia anthemoides*	*
Asteraceae	*Verbesina encelioides*	*
Asteraceae	*Waitzia suaveolens* var. *suaveolens*	
Boraginaceae	*Echium plantagineum*	*
Brassicaceae	*Brassica napus*	*
Brassicaceae	*Brassica tournefortii*	*
Brassicaceae	Brassicaceae sp.	*
Brassicaceae	*Heliophila pusilla*	*
Brassicaceae	*Lobularia maritima*	*
Brassicaceae	*Raphanus raphanistrum*	*
Brassicaceae	*Stenopetalum gracile*	
Cactaceae	*Opuntia* sp.	*
Campanulaceae	*Lobelia heterophylla*	
Campanulaceae	*Wahlenbergia capensis*	*
Campanulaceae	*Wahlenbergia preissii*	
Caprifoliaceae	*Centranthus macrosiphon*	*
Caprifoliaceae	*Scabiosa atropurpurea*	*
Caryophyllaceae	*Cerastium glomeratum*	*
Caryophyllaceae	*Petrorhagia dubia*	*
Caryophyllaceae	*Silene gallica*	*
Casuarinaceae	*Allocasuarina fraseriana*	
Casuarinaceae	*Allocasuarina humilis*	
Casuarinaceae	*Casuarina equisetifolia*	*
Celastraceae	*Stackhousia monogyna*	
Celastraceae	*Tripterococcus brunonis*	
Chenopodiaceae	*Enchylaena tomentosa*	
Chenopodiaceae	*Rhagodia baccata*	
Colchicaceae	*Burchardia congesta*	
Convolvulaceae	*Cuscuta epithymum*	*
Convolvulaceae	*Ipomoea indica*	*
Crassulaceae	*Crassula colorata*	
Crassulaceae	*Crassula glomerata*	*
Cucurbitaceae	*Citrullus lanatus*	*
Cupressaceae	*Callitris preissii*	s, E, planted
Cyperaceae	Cyperaceae sp.	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Isolepis cernua*	
Cyperaceae	*Isolepis marginata*	*
Cyperaceae	*Lepidosperma angustatum*	
Cyperaceae	*Lepidosperma costale*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma leptostachyum*	
Cyperaceae	*Lepidosperma longitudinale*	
Cyperaceae	*Lepidosperma pubisquameum*	
Cyperaceae	*Lepidosperma* sp.	
Cyperaceae	*Lepidosperma squamatum*	

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Cyperaceae	*Mesomelaena pseudostygia*	
Cyperaceae	*Schoenus clandestinus*	
Cyperaceae	*Schoenus curvifolius*	
Cyperaceae	*Schoenus grandiflorus*	
Dasypogonaceae	*Calectasia narragara*	
Dasypogonaceae	*Calectasia* sp.	
Dilleniaceae	*Hibbertia huegelii*	
Dilleniaceae	*Hibbertia hypericoides*	
Dilleniaceae	*Hibbertia racemosa*	
Dilleniaceae	*Hibbertia subvaginata*	
Droseraceae	*Drosera erythrorhiza*	
Droseraceae	*Drosera* sp.	
Ericaceae	*Astroloma ciliatum*	
Ericaceae	*Astroloma microcalyx*	s
Ericaceae	*Astroloma pallidum*	
Ericaceae	*Conostephium pendulum*	
Ericaceae	*Conostephium preissii*	
Ericaceae	*Leucopogon insularis*	
Ericaceae	*Leucopogon parviflorus*	
Ericaceae	*Leucopogon polymorphus*	
Ericaceae	*Leucopogon propinquus*	
Ericaceae	*Lysinema ciliatum*	
Euphorbiaceae	*Euphorbia australis*	*
Euphorbiaceae	*Euphorbia peplus*	*
Euphorbiaceae	*Euphorbia terracina*	*
Euphorbiaceae	*Ricinus communis*	*
Fabaceae	*Acacia ?benthamii*	P2, p, s, E
Fabaceae	*Acacia alata*	
Fabaceae	*Acacia applanata*	
Fabaceae	*Acacia cochlearis*	
Fabaceae	*Acacia cyclops*	
Fabaceae	*Acacia huegelii*	
Fabaceae	*Acacia iteaphylla*	*
Fabaceae	*Acacia lasiocarpa*	
Fabaceae	*Acacia longifolia*	*
Fabaceae	*Acacia pulchella*	
Fabaceae	*Acacia pulchella* var. *goadbyi*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna*	
Fabaceae	*Acacia* sp.	
Fabaceae	*Acacia* sp.	planted
Fabaceae	*Acacia truncata*	
Fabaceae	*Acacia willdenowiana*	
Fabaceae	*Acacia xanthina*	
Fabaceae	*Bossiaea eriocarpa*	
Fabaceae	*Daviesia decurrens*	
Fabaceae	*Daviesia divaricata*	
Fabaceae	*Daviesia divaricata* subsp. *divaricata*	
Fabaceae	*Daviesia triflora*	
Fabaceae	*Gastrolobium capitatum*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Hovea trisperma*	
Fabaceae	*Isotropis cuneifolia*	
Fabaceae	*Jacksonia calcicola*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Jacksonia sericea*	P4, p, s, E

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Fabaceae	*Jacksonia sternbergiana*	
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Lupinus angustifolius*	*
Fabaceae	*Lupinus cosentinii*	*
Fabaceae	*Medicago polymorpha*	*
Fabaceae	*Medicago* sp.	*
Fabaceae	*Melilotus indicus*	*
Fabaceae	*Ornithopus compressus*	*
Fabaceae	*Podalyria sericea*	*
Fabaceae	*Sphaerolobium medium*	
Fabaceae	*Templetonia retusa*	
Fabaceae	*Trifolium angustifolium*	*
Fabaceae	*Trifolium arvense*	*
Fabaceae	*Trifolium campestre*	*
Fabaceae	*Trifolium hirtum*	*
Fabaceae	*Trifolium scabrum*	*
Fabaceae	*Vicia sativa*	*
Fabaceae	*Vicia* sp.	*
Geraniaceae	*Erodium botrys*	*
Geraniaceae	*Erodium cicutarium*	*
Geraniaceae	*Erodium* sp.	*
Geraniaceae	Geraniaceae sp.	
Geraniaceae	*Geranium molle*	*
Geraniaceae	*Geranium* sp.	
Geraniaceae	*Pelargonium capitatum*	*
Goodeniaceae	*Lechenaultia floribunda*	
Goodeniaceae	*Lechenaultia linarioides*	p
Goodeniaceae	*Scaevola anchusifolia*	
Goodeniaceae	*Scaevola canescens*	
Goodeniaceae	*Scaevola crassifolia*	
Goodeniaceae	*Scaevola globulifera*	
Goodeniaceae	*Scaevola nitida*	
Gyrostemonaceae	*Gyrostemon ramulosus*	
Haemodoraceae	*Anigozanthos humilis*	
Haemodoraceae	*Anigozanthos manglesii*	
Haemodoraceae	*Conostylis aculeata*	
Haemodoraceae	*Conostylis aculeata* subsp. *aculeata*	
Haemodoraceae	*Conostylis candicans*	
Haemodoraceae	*Conostylis candicans* subsp. *calcicola*	
Haemodoraceae	*Conostylis setigera*	
Haemodoraceae	*Haemodorum laxum*	
Haemodoraceae	*Haemodorum* sp.	
Haemodoraceae	*Haemodorum spicatum*	
Haloragaceae	*Glischrocaryon aureum*	
Hemerocallidaceae	*Arnocrinum preissii*	
Hemerocallidaceae	*Caesia micrantha*	
Hemerocallidaceae	*Corynotheca micrantha*	
Hemerocallidaceae	*Dianella revoluta*	
Hemerocallidaceae	*Tricoryne elatior*	
Iridaceae	*Freesia alba* x *leichtlinii*	*
Iridaceae	*Gladiolus angustus*	*
Iridaceae	*Gladiolus caryophyllaceus*	*
Iridaceae	*Moraea flaccida*	*
Iridaceae	*Moraea* sp.	*
Iridaceae	*Orthrosanthus laxus*	
Iridaceae	*Patersonia* sp.	
Iridaceae	*Romulea rosea*	*

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Juncaceae	*Luzula meridionalis*	
Lamiaceae	*Hemiandra pungens*	
Lamiaceae	*Lavandula stoechas*	*
Lamiaceae	*Rosmarinus officinalis*	*
Lauraceae	*Cassytha racemosa*	
Lauraceae	*Cassytha* sp.	
Loranthaceae	*Nuytsia floribunda*	
Malvaceae	*?Alyogyne huegelii*	
Malvaceae	*Thomasia triphylla*	
Meliaceae	*Melia azedarach*	
Myrtaceae	*Agonis flexuosa*	r, s
Myrtaceae	*Baeckea robusta*	
Myrtaceae	*Callistemon* sp.	*
Myrtaceae	*Calothamnus quadrifidus*	
Myrtaceae	*Calothamnus sanguineus*	
Myrtaceae	*Calytrix flavescens*	
Myrtaceae	*Calytrix fraseri*	
Myrtaceae	*Chamelaucium uncinatum*	*
Myrtaceae	*Corymbia calophylla*	
Myrtaceae	*Corymbia maculata*	*
Myrtaceae	*Eremaea pauciflora*	
Myrtaceae	*Eucalyptus ?maculata*	planted
Myrtaceae	*Eucalyptus caesia*	P4, planted
Myrtaceae	*Eucalyptus decipiens*	
Myrtaceae	*Eucalyptus erythrocorys*	planted
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Eucalyptus leucoxylon*	*
Myrtaceae	*Eucalyptus marginata*	
Myrtaceae	*Eucalyptus platypus*	planted
Myrtaceae	*Eucalyptus* sp.	planted
Myrtaceae	*Eucalyptus todtiana*	
Myrtaceae	*Kunzea glabrescens*	
Myrtaceae	*Leptospermum laevigatum*	*
Myrtaceae	*Melaleuca huegelii*	
Myrtaceae	*Melaleuca lanceolata*	d, s
Myrtaceae	*Melaleuca nesophila*	planted
Myrtaceae	*Melaleuca quinquenervia*	planted
Myrtaceae	*Melaleuca systena*	
Myrtaceae	Myrtaceae sp. 1	planted
Myrtaceae	Myrtaceae sp. 2	planted
Myrtaceae	*Regelia ciliata*	
Myrtaceae	*Scholtzia involucrata*	
Oleaceae	*Olea europaea*	*
Onagraceae	*Oenothera glazioviana*	*
Onagraceae	*Oenothera* sp.	*
Orchidaceae	*Caladenia arenicola*	
Orchidaceae	*Caladenia flava*	
Orchidaceae	*Caladenia longicauda*	
Orchidaceae	*Diuris longifolia*	
Orchidaceae	*Elythranthera brunonis*	
Orchidaceae	*Leptoceras menziesii*	
Orchidaceae	*Microtis media*	
Orchidaceae	*Pterostylis recurva*	
Orchidaceae	*Pterostylis* sp.	
Orchidaceae	*Pyrorchis nigricans*	
Orchidaceae	*Thelymitra macrophylla*	
Orobanchaceae	*Orobanche minor*	*

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Orobanchaceae	*Parentucellia latifolia*	*
Orobanchaceae	*Parentucellia viscosa*	*
Oxalidaceae	*Oxalis caprina*	*
Oxalidaceae	*Oxalis compressa*	*
Oxalidaceae	*Oxalis pes-caprae*	*
Oxalidaceae	*Oxalis* sp.	*
Papaveraceae	*Fumaria* sp.	*
Phyllanthaceae	*Phyllanthus calycinus*	
Phyllanthaceae	*Poranthera drummondii*	
Phytolaccaceae	*Phytolacca octandra*	*
Platanaceae	*Platanus* sp.	*
Plumbaginaceae	*Plumbago* sp.	*
Poaceae	*Aira cupaniana*	*
Poaceae	*Aira* sp.	*
Poaceae	*Austrostipa compressa*	
Poaceae	*Austrostipa elegantissima*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Austrostipa* sp.	
Poaceae	*Avena barbata*	*
Poaceae	*Briza maxima*	*
Poaceae	*Briza minor*	*
Poaceae	*Bromus diandrus*	*
Poaceae	*Bromus hordeaceus*	*
Poaceae	*Catapodium rigidum*	*
Poaceae	*Cenchrus clandestinus*	*
Poaceae	*Cenchrus setaceus*	*
Poaceae	*Cortaderia selloana*	*
Poaceae	*Cynodon dactylon*	*
Poaceae	*Ehrharta calycina*	*
Poaceae	*Ehrharta longiflora*	*
Poaceae	*Eragrostis curvula*	*
Poaceae	*Hordeum* sp.	*
Poaceae	*Hyparrhenia hirta*	*
Poaceae	*Lagurus ovatus*	*
Poaceae	*Lolium rigidum*	*
Poaceae	*Melinis repens*	*
Poaceae	*Neurachne alopecuroidea*	
Poaceae	*Pentameris airoides*	*
Poaceae	*Phleum arenarium*	*
Poaceae	*Poa porphyroclados*	
Poaceae	Poaceae sp.	
Poaceae	*Rytidosperma occidentale*	
Poaceae	*Vulpia bromoides*	*
Poaceae	*Vulpia myuros*	
Polygonaceae	*Rumex pulcher*	*
Portulacaceae	*Calandrinia liniflora*	
Primulaceae	*Lysimachia arvensis*	*
Proteaceae	*Adenanthos obovatus*	
Proteaceae	*Banksia attenuata*	
Proteaceae	*Banksia dallanneyi*	
Proteaceae	*Banksia grandis*	
Proteaceae	*Banksia menziesii*	
Proteaceae	*Banksia sessilis*	
Proteaceae	*Conospermum triplinervium*	r, s
Proteaceae	*Grevillea olivacea* x *Grevillea preissii*	planted
Proteaceae	*Grevillea preissii* subsp. *preissii*	
Proteaceae	*Grevillea* sp.	

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
Proteaceae	*Grevillea vestita*	
Proteaceae	*Grevillea vestita* subsp. *vestita*	
Proteaceae	*Hakea costata*	
Proteaceae	*Hakea lissocarpha*	
Proteaceae	*Hakea prostrata*	
Proteaceae	*Hakea ruscifolia*	
Proteaceae	*Hakea trifurcata*	
Proteaceae	*Persoonia comata*	
Proteaceae	*Petrophile brevifolia*	
Proteaceae	*Petrophile linearis*	
Proteaceae	*Petrophile macrostachya*	
Proteaceae	*Petrophile serruriae*	
Proteaceae	*Stirlingia latifolia*	
Proteaceae	*Synaphea* sp.	
Proteaceae	*Synaphea spinosa*	
Ranunculaceae	*Clematis linearifolia*	
Ranunculaceae	*Clematis pubescens*	
Restionaceae	*Desmocladus asper*	
Restionaceae	*Desmocladus fasciculatus*	
Restionaceae	*Desmocladus flexuosus*	
Restionaceae	*Lepidobolus preissianus*	
Restionaceae	*Loxocarya cinerea*	
Rhamnaceae	*Cryptandra arbutiflora*	
Rhamnaceae	*Cryptandra mutila*	
Rhamnaceae	*Cryptandra scoparia*	
Rhamnaceae	*Spyridium globulosum*	
Rhamnaceae	*Stenanthemum notiale*	
Rhamnaceae	*Trymalium ledifolium* var. *ledifolium*	
Rubiaceae	*Galium murale*	*
Rubiaceae	*Opercularia vaginata*	
Rutaceae	*Philotheca spicata*	
Santalaceae	*Exocarpos sparteus*	
Santalaceae	*Leptomeria pauciflora*	
Scrophulariaceae	*Eremophila glabra*	
Scrophulariaceae	*Myoporum caprarioides*	
Scrophulariaceae	*Verbascum virgatum*	*
Solanaceae	*Anthocercis littorea*	
Solanaceae	*Solanum linnaeanum*	* Declared Pest C3 Management for the South West Land Division
Solanaceae	*Solanum nigrum*	*
Solanaceae	*Solanum symonii*	
Stylidiaceae	*Styldium maritimum*	P3, p, s
Stylidiaceae	*Stylidium brunonianum*	
Stylidiaceae	*Stylidium calcaratum*	
Stylidiaceae	*Stylidium piliferum*	
Stylidiaceae	*Stylidium rigidulum*	
Thymelaeaceae	*Pimelea argentea*	
Thymelaeaceae	*Pimelea calcicola*	P3, p, s
Thymelaeaceae	*Pimelea* sp.	
Tropaeolaceae	*Tropaeolum majus*	*
Urticaceae	*Parietaria cardiostegia*	
Violaceae	*Hybanthus calycinus*	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	
Zamiaceae	*Macrozamia fraseri*	
Zygophyllaceae	*Tribulus terrestris*	*
	Mosses	

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Acacia ?benthamii	P2	1	379440.5374	6496903.499
Acacia ?benthamii	P2	1	379474.6913	6496942.884
Jacksonia sericea	P4	1	376320	6501139
Jacksonia sericea	P4	4	376359	6501172
Jacksonia sericea	P4	1	376377	6501140
Jacksonia sericea	P4	2	376674	6500975
Jacksonia sericea	P4	1	376699	6500990
Jacksonia sericea	P4	3	376702	6500978
Jacksonia sericea	P4	3	376741	6500969
Jacksonia sericea	P4	31	376912	6500870
Jacksonia sericea	P4	4	376914	6500840
Jacksonia sericea	P4	51	376914	6500840
Jacksonia sericea	P4	5	376923	6500862
Jacksonia sericea	P4	32	376955	6500782
Jacksonia sericea	P4	2	376955	6500798
Jacksonia sericea	P4	5	376956	6500781
Jacksonia sericea	P4	10	376996	6500734
Jacksonia sericea	P4	10	377002	6500719
Jacksonia sericea	P4	1	377039	6500759
Jacksonia sericea	P4	5	377484	6500508
Jacksonia sericea	P4	30	377548	6500410
Jacksonia sericea	P4	5	377556	6499433
Jacksonia sericea	P4	10	377557	6500337
Jacksonia sericea	P4	15	377560	6500367
Jacksonia sericea	P4	2	377561	6499445
Jacksonia sericea	P4	15	377561	6500394
Jacksonia sericea	P4	10	377565	6500435
Jacksonia sericea	P4	2	377568	6499460
Jacksonia sericea	P4	1	377574	6500390
Jacksonia sericea	P4	5	377583	6500405
Jacksonia sericea	P4	2	377584	6499420
Jacksonia sericea	P4	1	377604	6499447
Jacksonia sericea	P4	15	377630	6500187
Jacksonia sericea	P4	5	377645	6500213
Jacksonia sericea	P4	1	377652	6499964
Jacksonia sericea	P4	5	377655	6500200
Jacksonia sericea	P4	8	377674	6500225
Jacksonia sericea	P4	1	377680	6499925
Jacksonia sericea	P4	1	377681	6499861
Jacksonia sericea	P4	10	377688	6500225
Jacksonia sericea	P4	10	377694	6500235
Jacksonia sericea	P4	10	377703	6499664
Jacksonia sericea	P4	10	377709	6499804
Jacksonia sericea	P4	1	377710	6499709
Jacksonia sericea	P4	1	377711	6499902
Jacksonia sericea	P4	2	377723	6499631
Jacksonia sericea	P4	30	377723	6500226
Jacksonia sericea	P4	15	377725	6499682
Jacksonia sericea	P4	3	377729	6499720
Jacksonia sericea	P4	20	377732	6499637
Jacksonia sericea	P4	20	377732	6499654
Jacksonia sericea	P4	15	377737	6499722
Jacksonia sericea	P4	30	377741	6499758
Jacksonia sericea	P4	20	377752	6499675
Jacksonia sericea	P4	3	377768	6499680
Jacksonia sericea	P4	20	377769	6499690
Jacksonia sericea	P4	8	377772	6499693
Jacksonia sericea	P4	3	377772	6499745

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Jacksonia sericea	P4	5	377777	6499703
Jacksonia sericea	P4	10	377785	6499655
Jacksonia sericea	P4	1	377787	6499879
Jacksonia sericea	P4	30	377794	6499683
Jacksonia sericea	P4	20	377795	6499657
Jacksonia sericea	P4	1	377798	6499690
Jacksonia sericea	P4	10	377810	6499534
Jacksonia sericea	P4	1	377814	6499228
Jacksonia sericea	P4	5	377823	6499463
Jacksonia sericea	P4	4	377826	6499481
Jacksonia sericea	P4	2	377826	6499509
Jacksonia sericea	P4	1	377831	6499210
Jacksonia sericea	P4	2	377833	6499239
Jacksonia sericea	P4	7	377862	6499334
Jacksonia sericea	P4	3	377900	6499214
Jacksonia sericea	P4	100	377906	6498987
Jacksonia sericea	P4	1	377909	6499233
Jacksonia sericea	P4	1	377921	6499010
Jacksonia sericea	P4	1	377925	6499219
Jacksonia sericea	P4	500	377932	6498949
Jacksonia sericea	P4	100	377935	6498983
Jacksonia sericea	P4	3	377937	6499139
Jacksonia sericea	P4	30	377941	6499129
Jacksonia sericea	P4	5	377948	6499111
Jacksonia sericea	P4	10	377989	6498849
Jacksonia sericea	P4	100	377994	6498852
Jacksonia sericea	P4	5	378014	6498793
Jacksonia sericea	P4	2	378040	6498743
Jacksonia sericea	P4	50	378045	6498718
Jacksonia sericea	P4	50	378045	6498739
Jacksonia sericea	P4	5	378051	6498768
Jacksonia sericea	P4	5	378073	6498889
Jacksonia sericea	P4	5	378084	6498881
Jacksonia sericea	P4	110	378090	6498868
Jacksonia sericea	P4	20	378099	6498836
Jacksonia sericea	P4	20	378103	6498815
Jacksonia sericea	P4	10	378104	6498804
Jacksonia sericea	P4	5	378107	6498794
Jacksonia sericea	P4	20	378107	6498827
Jacksonia sericea	P4	20	378110	6498837
Jacksonia sericea	P4	20	378112	6498852
Jacksonia sericea	P4	1	378116	6498776
Jacksonia sericea	P4	5	378120	6498801
Jacksonia sericea	P4	3	378128	6498804
Jacksonia sericea	P4	1	378128	6498812
Jacksonia sericea	P4	1	378140	6498768
Jacksonia sericea	P4	7	378143	6498549
Jacksonia sericea	P4	1	378172	6498717
Jacksonia sericea	P4	6	378180	6498495
Jacksonia sericea	P4	1	378181	6498705
Jacksonia sericea	P4	5	378185	6498699
Jacksonia sericea	P4	100	378186	6498643
Jacksonia sericea	P4	10	378193	6498676
Jacksonia sericea	P4	1	378195	6498512
Jacksonia sericea	P4	1	378195	6498669
Jacksonia sericea	P4	50	378208	6498580
Jacksonia sericea	P4	1	378211	6498657
Jacksonia sericea	P4	1	378217	6498653

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Jacksonia sericea	P4	1	378228	6498646
Jacksonia sericea	P4	1	378229	6498617
Jacksonia sericea	P4	1	378240	6498447
Jacksonia sericea	P4	1	378249	6498598
Jacksonia sericea	P4	1	378250	6498585
Jacksonia sericea	P4	3	378257	6498573
Jacksonia sericea	P4	100	378270	6498551
Jacksonia sericea	P4	5	378289	6498503
Jacksonia sericea	P4	20	378296	6498490
Jacksonia sericea	P4	100	378296	6498522
Jacksonia sericea	P4	20	378320	6498473
Jacksonia sericea	P4	5	378345	6498465
Jacksonia sericea	P4	5	378365	6498422
Jacksonia sericea	P4	10	378367	6498323
Jacksonia sericea	P4	5	378369	6498412
Jacksonia sericea	P4	10	378377	6498399
Jacksonia sericea	P4	10	378389	6498320
Jacksonia sericea	P4	10	378410	6498341
Jacksonia sericea	P4	1	378495	6498026
Jacksonia sericea	P4	1	378512	6498001
Jacksonia sericea	P4	1000	378512	6498188
Jacksonia sericea	P4	1000	378513	6498188
Jacksonia sericea	P4	1	378522	6497991
Jacksonia sericea	P4	50	378529	6497981
Jacksonia sericea	P4	11	378549	6497941
Jacksonia sericea	P4	13	378570	6497913
Jacksonia sericea	P4	8	378573	6497902
Jacksonia sericea	P4	5	378575	6497889
Jacksonia sericea	P4	200	378600	6497852
Jacksonia sericea	P4	1	378621	6497636
Jacksonia sericea	P4	2	378625	6497758
Jacksonia sericea	P4	5	378634	6497744
Jacksonia sericea	P4	10	378639	6498032
Jacksonia sericea	P4	3	378641	6497739
Jacksonia sericea	P4	20	378645	6497779
Jacksonia sericea	P4	20	378649	6497805
Jacksonia sericea	P4	2	378672	6499707
Jacksonia sericea	P4	50	378692	6497675
Jacksonia sericea	P4	50	378698	6497684
Jacksonia sericea	P4	10	378723	6497895
Jacksonia sericea	P4	1	378845	6497751
Jacksonia sericea	P4	1	378849	6497769
Jacksonia sericea	P4	1	378871	6497262
Jacksonia sericea	P4	7	378895	6497255
Jacksonia sericea	P4	2	378905	6497252
Jacksonia sericea	P4	2	378922	6497232
Jacksonia sericea	P4	2	378923.2763	6497657.433
Jacksonia sericea	P4	10	378948	6497680
Jacksonia sericea	P4	4	378971	6497667
Jacksonia sericea	P4	1	379032.4252	6497609.374
Jacksonia sericea	P4	1	379037.6357	6497596.316
Jacksonia sericea	P4	1	379218	6496726
Jacksonia sericea	P4	1	379268	6496496
Jacksonia sericea	P4	5	379291	6496557
Jacksonia sericea	P4	2	379345	6496366
Jacksonia sericea	P4	1	379347	6496370
Jacksonia sericea	P4	8	379359	6496363
Jacksonia sericea	P4	4	379367	6496330

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Jacksonia sericea	P4	3	379372	6496303
Jacksonia sericea	P4	2	379384	6496298
Jacksonia sericea	P4	1	379585	6496676
Jacksonia sericea	P4	1	379639	6498156
Jacksonia sericea	P4	1	379640	6498155
Jacksonia sericea	P4	38	379648	6498143
Jacksonia sericea	P4	1	379684	6495289
Jacksonia sericea	P4	3	379689	6495284
Jacksonia sericea	P4	38	379689	6498080
Jacksonia sericea	P4	5	379696	6495253
Jacksonia sericea	P4	2	379697	6495265
Jacksonia sericea	P4	1	379707	6498054
Jacksonia sericea	P4	1	379712	6495782
Jacksonia sericea	P4	1	379712	6498038
Jacksonia sericea	P4	85	379720	6498026
Jacksonia sericea	P4	3	379741.6232	6495258.087
Jacksonia sericea	P4	3	379745.5668	6495258.687
Jacksonia sericea	P4	1	379750.768	6495259.856
Jacksonia sericea	P4	2	379768.6835	6495268.379
Jacksonia sericea	P4	3	379779	6495113
Jacksonia sericea	P4	85	379786	6497925
Jacksonia sericea	P4	2	379803.4427	6495187.298
Jacksonia sericea	P4	3	379808	6497904
Jacksonia sericea	P4	5	379809	6495070
Jacksonia sericea	P4	71	379813	6497896
Jacksonia sericea	P4	2	379814.9054	6495234.364
Jacksonia sericea	P4	10	379815	6497895
Jacksonia sericea	P4	1	379824	6497904
Jacksonia sericea	P4	3	379834.1773	6495117.996
Jacksonia sericea	P4	3	379840.3378	6495085.547
Jacksonia sericea	P4	4	379844.2594	6495060.833
Jacksonia sericea	P4	2	379844.8249	6495066.568
Jacksonia sericea	P4	3	379845.7992	6495159.52
Jacksonia sericea	P4	3	379849.1009	6495147.363
Jacksonia sericea	P4	3	379855.3188	6495033.8
Jacksonia sericea	P4	3	379860.7288	6495112.207
Jacksonia sericea	P4	1	379866.6785	6495089.733
Jacksonia sericea	P4	2	379868.8498	6495093.269
Jacksonia sericea	P4	2	379875.5614	6495114.042
Jacksonia sericea	P4	25	379876.085	6495068.963
Jacksonia sericea	P4	3	379877	6497807
Jacksonia sericea	P4	5	379883.0086	6495085.082
Jacksonia sericea	P4	3	379884.7808	6495041.348
Jacksonia sericea	P4	1	379885.3204	6494940.468
Jacksonia sericea	P4	50	379889.3742	6495026.805
Jacksonia sericea	P4	1	379891	6497758
Jacksonia sericea	P4	10	379891	6497790
Jacksonia sericea	P4	10	379894	6497763
Jacksonia sericea	P4	2	379895.4673	6494923.957
Jacksonia sericea	P4	3	379896.092	6494954.525
Jacksonia sericea	P4	20	379896.3805	6495008.593
Jacksonia sericea	P4	1	379899	6497745
Jacksonia sericea	P4	3	379901.7629	6494898.901
Jacksonia sericea	P4	3	379905.8437	6494887.677
Jacksonia sericea	P4	4	379913.5375	6494905.504
Jacksonia sericea	P4	2	379917.7401	6494977.146
Jacksonia sericea	P4	20	379918.401	6494949.352
Jacksonia sericea	P4	4	379919.2134	6494852.171

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Jacksonia sericea	P4	71	379924	6497723
Jacksonia sericea	P4	1	379940.3526	6494814.353
Jacksonia sericea	P4	1	379950.1268	6494775.479
Jacksonia sericea	P4	4	379954.4991	6494807.2
Jacksonia sericea	P4	2	379963.0247	6494775.149
Jacksonia sericea	P4	1	379964.8739	6494730.196
Jacksonia sericea	P4	2	379969.6986	6494755.603
Jacksonia sericea	P4	2	379976.4088	6494702.984
Jacksonia sericea	P4	5	379985.1033	6494689.042
Jacksonia sericea	P4	2	380011.4637	6494628.816
Jacksonia sericea	P4	3	380018.695	6494602.071
Jacksonia sericea	P4	1	380027.2101	6494560.004
Jacksonia sericea	P4	1	380032.6654	6494552.861
Jacksonia sericea	P4	2	380043.4195	6494661.729
Jacksonia sericea	P4	10	380052.6374	6494574.712
Jacksonia sericea	P4	5	380052.9898	6494476.232
Jacksonia sericea	P4	3	380053.7408	6494604.867
Jacksonia sericea	P4	3	380067.2984	6494427.802
Jacksonia sericea	P4	10	380070.1274	6494524.471
Jacksonia sericea	P4	3	380072.6537	6494511.012
Jacksonia sericea	P4	2	380099.8661	6494412.659
Jacksonia sericea	P4	1	380102.975	6494403.456
Jacksonia sericea	P4	5	380108.3563	6494449.01
Jacksonia sericea	P4	2	380111.6697	6494266.825
Jacksonia sericea	P4	2	380114.9242	6494245.059
Jacksonia sericea	P4	2	380137.7234	6494197.467
Jacksonia sericea	P4	3	380140.8316	6494136.528
Jacksonia sericea	P4	1	380150.6679	6494152.163
Jacksonia sericea	P4	1	380152.4302	6494090.1
Jacksonia sericea	P4	1	380160.2686	6494117.241
Jacksonia sericea	P4	1	380174.0674	6494030.927
Jacksonia sericea	P4	1	380185.7923	6494017.205
Jacksonia sericea	P4	1	380222.9368	6493773.292
Jacksonia sericea	P4	2	380242.6769	6493730.505
Jacksonia sericea	P4	2	380247.6214	6493797.413
Jacksonia sericea	P4	1	380251.6333	6493778.428
Jacksonia sericea	P4	5	380264.134	6493746.148
Jacksonia sericea	P4	2	380265.4062	6493761.978
Jacksonia sericea	P4	3	380265.9642	6493714.293
Jacksonia sericea	P4	2	380270.4646	6493707.693
Jacksonia sericea	P4	1	380271.8203	6493549.728
Jacksonia sericea	P4	1	380274.6321	6493538.859
Jacksonia sericea	P4	1	380286.5912	6493540.328
Jacksonia sericea	P4	2	380291.0248	6493474.008
Jacksonia sericea	P4	5	380292.2747	6493598.006
Jacksonia sericea	P4	2	380297.9093	6493479.816
Jacksonia sericea	P4	1	380299.3101	6493549.861
Jacksonia sericea	P4	2	380307.7764	6493391.793
Jacksonia sericea	P4	2	380308.2161	6493394.755
Jacksonia sericea	P4	4	380321.8906	6493502.321
Jacksonia sericea	P4	3	380328.1258	6493449.124
Jacksonia sericea	P4	3	380331.593	6493436.23
Jacksonia sericea	P4	2	380351.5173	6493408.96
Jacksonia sericea	P4	1	380372.2266	6493310.87
Jacksonia sericea	P4	3	380437.0094	6493181.982
Jacksonia sericea	P4	2	380527.7109	6492940.165
Jacksonia sericea	P4	2	380532.6112	6492748.612
Jacksonia sericea	P4	2	380564.7758	6492656.629

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Jacksonia sericea	P4	1	380604.8601	6492511.828
Jacksonia sericea	P4	10	380607.6287	6492504.654
Jacksonia sericea	P4	3	380611.7143	6492479.203
Jacksonia sericea	P4	1	380612.0978	6492492.828
Jacksonia sericea	P4	2	380616.3015	6492465.028
Jacksonia sericea	P4	5	380622.1267	6492439.412
Jacksonia sericea	P4	5	380629.2295	6492445.11
Jacksonia sericea	P4	10	380641.7518	6492381.62
Jacksonia sericea	P4	100	380645.6538	6492372.057
Jacksonia sericea	P4	20	380650.1692	6492415.85
Jacksonia sericea	P4	3	381156	6491091
Jacksonia sericea	P4	5	381168	6491071
Jacksonia sericea	P4	1	381186	6491041
Jacksonia sericea	P4	1	381197	6491022
Jacksonia sericea	P4	1	381427	6490415
Jacksonia sericea	P4	1	381434.9421	6490607.877
Jacksonia sericea	P4	1	381442	6490291
Jacksonia sericea	P4	1	381444.2856	6490578.236
Jacksonia sericea	P4	3	381512.9094	6490284.916
Jacksonia sericea	P4	3	381524.0897	6489886.621
Jacksonia sericea	P4	1	381602	6489691
Jacksonia sericea	P4	50	382891	6492870
Jacksonia sericea	P4	30	382934	6492861
Jacksonia sericea	P4	1	382940	6492862
Jacksonia sericea	P4	10	382955	6492856
Jacksonia sericea	P4	5	382961	6492854
Jacksonia sericea	P4	30	382977	6492847
Jacksonia sericea	P4	1	383011	6492836
Jacksonia sericea	P4	10	383062	6492797
Jacksonia sericea	P4	55	383065	6492812
Jacksonia sericea	P4	5	383068	6492783
Jacksonia sericea	P4	5	383208	6492714
Pimelea calcicola	P3	5	377900	6499091
Pimelea calcicola	P3	1	378036	6498846
Pimelea calcicola	P3	2	378053	6498790
Pimelea calcicola	P3	1	378053	6498802
Pimelea calcicola	P3	1	378063	6498757
Pimelea calcicola	P3	1	378063	6498798
Pimelea calcicola	P3	2	378071	6498739
Pimelea calcicola	P3	1	378076	6498749
Pimelea calcicola	P3	1	378115	6498758
Pimelea calcicola	P3	1	378124	6498777
Pimelea calcicola	P3	3	378134	6498756
Pimelea calcicola	P3	6	378323	6498358
Pimelea calcicola	P3	8	378323	6498362
Pimelea calcicola	P3	3	378327	6498357
Pimelea calcicola	P3	1	378328	6498354
Pimelea calcicola	P3	10	378331	6498354
Pimelea calcicola	P3	10	378333	6498348
Pimelea calcicola	P3	10	378336	6498343
Pimelea calcicola	P3	2	378338	6498352
Pimelea calcicola	P3	5	378339	6498358
Pimelea calcicola	P3	2	378339	6498361
Pimelea calcicola	P3	10	378342	6498346
Pimelea calcicola	P3	4	378342	6498348
Pimelea calcicola	P3	1	378345	6498358
Pimelea calcicola	P3	4	378351	6498365
Pimelea calcicola	P3	3	378365	6498359

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Pimelea calcicola	P3	1	378376	6498394
Pimelea calcicola	P3	1	378392	6498374
Pimelea calcicola	P3	25	378402	6498376
Pimelea calcicola	P3	10	378408	6498382
Pimelea calcicola	P3	1	378441	6498133
Pimelea calcicola	P3	1	378484	6498079
Pimelea calcicola	P3	6	378529	6498183
Pimelea calcicola	P3	4	378530	6498130
Pimelea calcicola	P3	2	378533	6498126
Pimelea calcicola	P3	3	378536	6498145
Pimelea calcicola	P3	5	378546	6498147
Pimelea calcicola	P3	1	378548	6498147
Pimelea calcicola	P3	1	378550	6498139
Pimelea calcicola	P3	2	378553	6498150
Pimelea calcicola	P3	5	378558	6498150
Pimelea calcicola	P3	1	378560	6497966
Pimelea calcicola	P3	2	378564	6498150
Pimelea calcicola	P3	13	378567	6498146
Pimelea calcicola	P3	3	378567	6498152
Pimelea calcicola	P3	1	378572	6498151
Pimelea calcicola	P3	3	378578	6497867
Pimelea calcicola	P3	3	378589	6497911
Pimelea calcicola	P3	9	378590	6497922
Pimelea calcicola	P3	0	378591	6497910
Pimelea calcicola	P3	1	378592	6497915
Pimelea calcicola	P3	3	378593	6497907
Pimelea calcicola	P3	12	378595	6497858
Pimelea calcicola	P3	2	378595	6497904
Pimelea calcicola	P3	3	378596	6497851
Pimelea calcicola	P3	1	378597	6497904
Pimelea calcicola	P3	3	378600	6497901
Pimelea calcicola	P3	1	378620	6497985
Pimelea calcicola	P3	1	378620	6497989
Pimelea calcicola	P3	1	378622	6497979
Pimelea calcicola	P3	1	378622	6497986
Pimelea calcicola	P3	1	378623	6497987
Pimelea calcicola	P3	1	378623	6497991
Pimelea calcicola	P3	1	378629	6498002
Pimelea calcicola	P3	1	378631	6497991
Pimelea calcicola	P3	3	378640	6498001
Pimelea calcicola	P3	2	378642	6498001
Pimelea calcicola	P3	4	378650	6498037
Pimelea calcicola	P3	1	378652	6497960
Pimelea calcicola	P3	1	378653	6497944
Pimelea calcicola	P3	1	378654	6498036
Pimelea calcicola	P3	1	378657	6498048
Pimelea calcicola	P3	1	378660	6498001
Pimelea calcicola	P3	1	378660	6498009
Pimelea calcicola	P3	1	378664	6498007
Pimelea calcicola	P3	1	378665	6497929
Pimelea calcicola	P3	1	378665	6497940
Pimelea calcicola	P3	1	378667	6497938
Pimelea calcicola	P3	1	378671	6497953
Pimelea calcicola	P3	1	378672	6497914
Pimelea calcicola	P3	1	378674	6497920
Pimelea calcicola	P3	1	378674	6498000
Pimelea calcicola	P3	2	378676	6497995
Pimelea calcicola	P3	1	378679	6497966

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Pimelea calcicola	P3	1	378679	6498000
Pimelea calcicola	P3	2	378681	6497953
Pimelea calcicola	P3	3	378682	6497947
Pimelea calcicola	P3	1	378682	6497964
Pimelea calcicola	P3	1	378682	6497977
Pimelea calcicola	P3	3	378683	6497954
Pimelea calcicola	P3	7	378684	6497956
Pimelea calcicola	P3	2	378684	6497994
Pimelea calcicola	P3	5	378686	6497959
Pimelea calcicola	P3	9	378686	6497983
Pimelea calcicola	P3	1	378686	6497986
Pimelea calcicola	P3	2	378686	6497986
Pimelea calcicola	P3	6	378687	6497963
Pimelea calcicola	P3	3	378688	6497985
Pimelea calcicola	P3	2	378689	6497975
Pimelea calcicola	P3	1	378689	6497978
Pimelea calcicola	P3	1	378690	6497933
Pimelea calcicola	P3	1	378692	6497965
Pimelea calcicola	P3	2	378693	6497949
Pimelea calcicola	P3	9	378693	6497968
Pimelea calcicola	P3	2	378693	6497970
Pimelea calcicola	P3	3	378693	6497981
Pimelea calcicola	P3	2	378693	6497988
Pimelea calcicola	P3	1	378693	6497989
Pimelea calcicola	P3	4	378694	6497986
Pimelea calcicola	P3	1	378694	6497990
Pimelea calcicola	P3	2	378695	6497969
Pimelea calcicola	P3	3	378695	6497970
Pimelea calcicola	P3	1	378695	6497980
Pimelea calcicola	P3	1	378695	6497993
Pimelea calcicola	P3	2	378698	6497991
Pimelea calcicola	P3	3	378699	6497991
Pimelea calcicola	P3	1	378705	6497938
Pimelea calcicola	P3	1	378711	6497682
Pimelea calcicola	P3	1	378712	6497687
Pimelea calcicola	P3	1	378714	6497657
Pimelea calcicola	P3	1	378714	6497658
Pimelea calcicola	P3	2	378714	6497905
Pimelea calcicola	P3	4	378716	6497950
Pimelea calcicola	P3	11	378716	6497955
Pimelea calcicola	P3	1	378719	6497956
Pimelea calcicola	P3	1	378725	6497654
Pimelea calcicola	P3	2	378727	6497654
Pimelea calcicola	P3	1	378729	6497817
Pimelea calcicola	P3	1	378730	6497811
Pimelea calcicola	P3	1	378732	6497808
Pimelea calcicola	P3	8	378737	6497801
Pimelea calcicola	P3	2	378738	6497893
Pimelea calcicola	P3	3	378741	6497890
Pimelea calcicola	P3	5	378741	6497892
Pimelea calcicola	P3	3	378741	6497902
Pimelea calcicola	P3	3	378743	6497798
Pimelea calcicola	P3	1	378746	6497846
Pimelea calcicola	P3	6	378747	6497783
Pimelea calcicola	P3	1	378748	6497851
Pimelea calcicola	P3	6	378749	6497797
Pimelea calcicola	P3	11	378749	6497802
Pimelea calcicola	P3	7	378749	6497862

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Pimelea calcicola	P3	3	378751	6497792
Pimelea calcicola	P3	4	378753	6497774
Pimelea calcicola	P3	1	378754	6497799
Pimelea calcicola	P3	1	378755	6497786
Pimelea calcicola	P3	1	378757	6497786
Pimelea calcicola	P3	2	378757	6497925
Pimelea calcicola	P3	4	378758	6497862
Pimelea calcicola	P3	3	378759	6497785
Pimelea calcicola	P3	1	378760	6497916
Pimelea calcicola	P3	3	378761	6497863
Pimelea calcicola	P3	1	378762	6497801
Pimelea calcicola	P3	2	378762	6497863
Pimelea calcicola	P3	4	378766	6497863
Pimelea calcicola	P3	1	378772	6497768
Pimelea calcicola	P3	2	378776	6497860
Pimelea calcicola	P3	3	378777	6497862
Pimelea calcicola	P3	1	378777	6497865
Pimelea calcicola	P3	2	378779	6497859
Pimelea calcicola	P3	2	378779	6497862
Pimelea calcicola	P3	2	378780	6497869
Pimelea calcicola	P3	2	378781	6497863
Pimelea calcicola	P3	2	378782	6497860
Pimelea calcicola	P3	1	378784	6497868
Pimelea calcicola	P3	1	378784	6497873
Pimelea calcicola	P3	3	378785	6497869
Pimelea calcicola	P3	1	378792	6497874
Pimelea calcicola	P3	1	378808	6497834
Pimelea calcicola	P3	1	378809	6497827
Pimelea calcicola	P3	1	378811	6497832
Pimelea calcicola	P3	1	378817	6497832
Pimelea calcicola	P3	1	378817	6497833
Pimelea calcicola	P3	1	378819	6497765
Pimelea calcicola	P3	1	378821	6497830
Pimelea calcicola	P3	1	378824	6497771
Pimelea calcicola	P3	1	378825	6497824
Pimelea calcicola	P3	1	378826	6497827
Pimelea calcicola	P3	2	378827	6497738
Pimelea calcicola	P3	1	378828	6497832
Pimelea calcicola	P3	1	378830	6497820
Pimelea calcicola	P3	2	378833	6497760
Pimelea calcicola	P3	1	378833	6497764
Pimelea calcicola	P3	1	378839	6497749
Pimelea calcicola	P3	1	378841	6497826
Pimelea calcicola	P3	1	378842	6497819
Pimelea calcicola	P3	1	378849	6497751
Pimelea calcicola	P3	1	378850	6497747
Pimelea calcicola	P3	1	378855	6497751
Pimelea calcicola	P3	1	379895	6497779
Pimelea calcicola	P3	1	379896	6497766
Pimelea calcicola	P3	1	379897	6497774
Pimelea calcicola	P3	1	379908	6497730
Pimelea calcicola	P3	1	379997	6497602
Pimelea calcicola	P3	1	380005	6497580
Pimelea calcicola	P3	2	380008	6497580
Stylidium maritimum	P3	10	378010	6499073
Stylidium maritimum	P3	1	378068	6498744
Stylidium maritimum	P3	50	378130	6498755
Stylidium maritimum	P3	30	378134	6498756

Priority flora species recorded within the Study Area during the field surveys (May-October 2013)

Species	Status	Count	Location	
Stylidium maritimum	P3	200	378322	6498403
Stylidium maritimum	P3	200	378353	6498390
Stylidium maritimum	P3	10	378369	6498412
Stylidium maritimum	P3	1	378372	6498352
Stylidium maritimum	P3	2	378523	6498176
Stylidium maritimum	P3	6	378527	6498172
Stylidium maritimum	P3	2	378533	6498190
Stylidium maritimum	P3	4	378534	6498180
Stylidium maritimum	P3	2	378539	6498175
Stylidium maritimum	P3	7	378559	6498150
Stylidium maritimum	P3	4	378566	6498147
Stylidium maritimum	P3	4	378622	6497990
Stylidium maritimum	P3	12	378626	6497995
Stylidium maritimum	P3	23	378628	6497999
Stylidium maritimum	P3	6	378640	6498013
Stylidium maritimum	P3	1	378649	6497968
Stylidium maritimum	P3	8	378655	6498003
Stylidium maritimum	P3	9	378656	6498007
Stylidium maritimum	P3	2	378657	6498009
Stylidium maritimum	P3	130	378658	6498045
Stylidium maritimum	P3	1	378667	6497945
Stylidium maritimum	P3	40	378668	6498036
Stylidium maritimum	P3	1	378672	6498012
Stylidium maritimum	P3	7	378673	6497979
Stylidium maritimum	P3	1	378675	6497981
Stylidium maritimum	P3	5	378676	6498002
Stylidium maritimum	P3	5	378677	6497983
Stylidium maritimum	P3	7	378678	6498000
Stylidium maritimum	P3	1	378692	6497981
Stylidium maritimum	P3	7	378748	6497853
Stylidium maritimum	P3	3	378751	6497853
Stylidium maritimum	P3	3	378773	6497872
Stylidium maritimum	P3	1	378794	6497880
Stylidium maritimum	P3	2	379977	6497632
Stylidium maritimum	P3	4	379981	6497629
Stylidium maritimum	P3	3	379992	6497616
Stylidium maritimum	P3	11	379996	6497607
Stylidium maritimum	P3	5	380004	6497590
Stylidium maritimum	P3	8	380006	6497579
Stylidium maritimum	P3	15	380018	6497562
Stylidium maritimum	P3	10	380022	6497546
Stylidium maritimum	P3	1	380034	6497534
Stylidium maritimum	P3	90		
Stylidium maritimum	P3	70		
Stylidium maritimum	P3	180		
Stylidium maritimum	P3	120		
Stylidium maritimum	P3	130		

P2 Department of Parks and Wildlife Priority 2
P3 Department of Parks and Wildlife Priority 3
P4 Department of Parks and Wildlife Priority 4

Flora species list recorded within the Study Area during the field surveys (May-October 2013)

Family	Taxa	Status
	Weedy grasses/herbs	*

* Introduced (weed) species
P3 Department of Parks and Wildlife (DPaW) Priority 3 species
P4 Department of Parks and Wildlife (DPaW) Priority 4 species

Significant flora codes (Government of Western Australia, 2000)

Geographical variation significance

r
Populations at the northern or southern limit of their known geographic range
d Populations disjunct from their known geographic range
p
Considered to be poorly reserved (applies to all Threatened and Priority taxa)
s Significant populations (applies to all Threatened and Priority taxa)
X Considered lost in the Perth Metropolitan Region

Regional ecological preferences

e Taxa endemic to the Swan Coastal Plain
E
Taxa endemic to the Swan Coastal Plain in the Perth Metropolitan Region

Declared Pest flora species Weeds of National Significance recorded within the Study Area during the field surveys (May-October 2013)

Species	Common name	Status	Location		Count
Asparagus asparagoides	Bridal creeper	Declared Pest C3 Management for the Whole of the State, WoNS	379683	6498128	1
			379647	6498211	1
			379620	6498251	1
			379676	6498280	1
			380378	6495352	1
			380420	6495359	1
			380573	6495453	1
			377868	6499205	1
			380569	6495478	1
			378594	6497892	1
			380605	6495354	1
			381637	6494042	1
Solanum linnaeanum	Apple of Sodom	Declared Pest C3 Management for the South West Land Division	380011	6492841	1
			380048	6492845	1
			380052	6492866	1
			380233	6492852	1
			380138	6492822	1
			379827	6492611	1
			377358	6500489	1
			377190	6500594	1
			377151	6500620	1
			376927	6500771	1
			378529	6497914	1
			376417	6501156	1
			381171	6493039	1
Zantedeschia aethiopica	Arum lily	Declared Pest C3 Management for the Whole of the State	378145	6500489	100

WoNS Weeds of National Significance

Likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Taxa	Common name	Status		Search			Description & habitat requirements	Likelihood of occurrence
		State	Federal	NatureMap	WAHERB /TPFL	EPBC PMST		
Acacia benthamii		P2		X	X		Shrub, ca 1 m high. Fl. yellow, Aug to Sep. Sand. Typically on limestone breakaways.	Known within the Study Area from previous surveys and the GHD survey.
Andersonia gracilis	Slender Andersonia	T	E			X	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple, Sep to Nov. White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 100 km north of the Study Area and the Study Area does not contain optimal habitat for this species.
Anigozanthos viridis subsp. *terraspectans*	Dwarf Green Kangaroo Paw	T	V			X	Rhizomatous, perennial, herb, 0.05-0.2 m high. Fl. green/yellow-green, Aug to Sep. Grey sand, clay loam. Winter-wet depressions.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 50 km north-east of the Study Area.
Austrostipa mundula		P2		X	X		Perennial caespitose grass 0.35-0.5 m high x 0.05-0.2 m wide. Fl. brown, purple, Sep-Nov. Dry grey sand, shallow cream sand and limestone. Plain, road verge, plateau of coastal cliffs, coastal dunes.	Possible.
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425) PN		P1			X		Compact shrub, 1.2-2 m high, 1 m wide. Fl. pale pink, white, Jun, Oct-Dec. Grey/yellow-brown sand over limestone. Hill, limestone ridge.	Unlikely.
Caladenia huegelii	Grand Spider Orchid	T	E	X		X	Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red, Sep to Oct. Grey or brown sand, clay loam.	Possible.
Calectasia cyanea	Blue Tinsel Lily	T	CE	X			Rhizomatous, clump forming, woody perennial, herb, 0.1-0.6 m high, to 0.3 m wide. Fl. blue/purple, Jun to Oct. White, grey or yellow sand, gravel.	Highly unlikely. Only known from a location 10 km south of Albany with records elsewhere considered to be mis-identifications.
Calectasia sp. Pinjar (C. Tauss 557)		P1			X		Perennial, herb, to 0.4 m high, with multiple stems and roots. Deep grey quartz soils. Gentle slopes, above damplands.	Unlikely.
Centrolepis caespitosa		P4	E			X	Tufted annual, herb (forming a rounded cushion up to 25 mm across). Fl. Oct to Dec. White sand, clay. Salt flats, wet areas.	Unlikely. The nearest record on the Swan Coastal Plain is approximately 30 km south-east of the Study Area at the foothills of the Darling Scarp. The Darling Scarp experiences very different conditions and would provide a very different habitat to what is found at the Study Area.
Conostylis bracteata		P3		X	X		Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. yellow, Aug to Sep. Sand, limestone. Consolidated sand dunes.	Possible.
Conostylis pauciflora subsp. *euryrhipis*		P4		X	X		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.06-0.18 m high. Fl. yellow, Aug to Oct. White, grey or yellow sand. Consolidated dunes.	Possible.
Conostylis pauciflora subsp. *pauciflora*		P4		X	X		Rhizomatous, stoloniferous perennial, grass-like or herb, 0.1-0.35 m high. Fl. yellow, Aug to Oct. Grey sand, limestone. Hillslopes, consolidated dunes.	Possible.
Darwinia foetida	Muchea Bell	T	CE			X	Erect, or spreading, shrub to 0.7 m high, often using other shrubs for support. Young branches are slender, green-brown with prominent, decurrent leaf bases, becoming grey and woody. Fl. green, Oct to Nov. Grey or white sand, swampy, seasonally wet sites.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 20 km east of the Study Area at the foothills of the Darling Scarp. The Darling Scarp experiences very different conditions and would provide a very different habitat to what is found at the Study Area.

Likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Taxa	Common name	Status		Search			Description & habitat requirements	Likelihood of occurrence
		State	Federal	NatureMap	WAHERB /TPFL	EPBC PMST		
Diuris micrantha	Dwarf Bee-orchid	T	V			X	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown, Sep to Oct. Brown loamy clay. Winter-wet swamps, in shallow water.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 65 km south of the Study Area and the Study Area does not contain optimal habitat for this species.
Diuris purdiei	Purdie's Donkey-orchid	T	V			X	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. yellow, Sep to Oct. Grey-black sand, moist. Winter-wet swamps.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 50 km south of the Study Area. The Study Area does not contain optimal habitat for this species.
Drakaea elastica	Glossy-leafed Hammer-orchid	T	E			X	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow, Oct to Nov. White or grey sand. Low-lying situations adjoining winter-wet swamps.	Highly unlikely. The nearest record on the Swan Coastal Plain is approximately 30 km north of the Study Area. The Study Area does not contain optimalm habitat for this species.
Drakaea micrantha	Dwarf Hammer-orchid	T	V			X	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow, Sep to Oct. White-grey sand.	Possible. The nearest record on the Swan Coastal Plain is approximately 50 km south of the Study Area.
Drosera x *sidjamesii*		P1			X		Fibrous-rooted perennial, herb, to 0.06 m high. Fl. green-pink, Nov to Dec or Jan to Mar. Peaty sand. Along lake margins, close to winter high-water line.	Unlikely. The Study Area does not contain optimal habitat for this species.
Eucalyptus argutifolia	Wabling Hill Mallee	T	V	X	X	X	Mallee, 1.5-4 m high, bark smooth. Fl. white, Mar to Apr. Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops.	Unlikely.
Fabronia hampeana		P2		X	X		Moss, white. Growing on cycad, *Melaleuca lanceolata* . Between limestone outcrops with yellow sand.	Known within the Study Area from previous surveys.
Grevillea elongata		T	V		X		Shrub, 1.5-2 m high. Fl. white-cream, Oct. Gravelly clay, sandy clay, sand. Road verges, swamps, creek banks.	Unlikely. The Study Area does not contain optimal habitat for this species.
Grevillea thelemanniana subsp. *thelemanniana*		P4			X		Widely spreading shrub 0.2-1.5 m high, 0.5-1.5 m wide. Fl. red, May-Nov. Moist grey-brown sandy loam over clay, yellow sand/grey clay soils. Edge of seasonal clay depression, on slightly deeper sandier soils, winter-wet, swampy area, flat.	Unlikely. The Study Area does not contain optimal habitat for this species.
Grevillea sp. Ocean Reef (D. Pike Joon 4)		P1		X	X		Erect, spreading shrub, 1.5-2 m high, 3 m wide. Fl. November. Dry brown/grey sand, yellow-brown sand. Sandy dune, gully.	Unlikely.
Hibbertia spicata subsp. *leptotheca*		P3		X	X		Erect or spreading shrub, 0.2-0.5 m high. Fl. yellow, Jul to Oct. Sand. Near-coastal limestone ridges, outcrops & cliffs.	Unlikely.
Isopogon uncinatus	Hook-leaf Isopogon	T	E			X	Tufted spreading or prostrate, non-lignotuberous shrub, 0.05-0.4 m high. Fl. yellow/cream, Oct to Nov. Loam or sand on granite, peaty sand. Swampy depressions, hillslopes.	Highly unlikely. The nearest record is located in Albany and the Study Area does not contain optimal habitat for this species.
Jacksonia sericea	Waldjumi	P4		X	X		Low spreading shrub, to 0.6 m high. Fl. orange, usually Dec or Jan to Feb. Calcareous & sandy soils.	Known within the Study Area from the GHD survey.
Lecania turicensis var. *turicensis*		P2			X		Lichen. Coastal rocks, limestone.	Possible.
Lepidosperma rostratum	Beaked Lepidosperma	T	E			X	Rhizomatous, tufted perennial, grass-like or herb (sedge), 0.5 m high. Fl. brown. Peaty sand, clay.	Highly unlikely. The nearest records on the Swan Coastal Plain are approximately 50 km north and south of the Study Area and the Study Area does not contain optimal habitat for this species.

Likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Taxa	Common name	Status		Search			Description & habitat requirements	Likelihood of occurrence
		State	Federal	NatureMap	WAHERB /TPFL	EPBC PMST		
Leucopogon maritimus		P1			X		Spreading shrub, 0.2-0.4 m high, 0.2-0.5 m wide. Fl. white, Mar-Jun, Aug, Nov. Dry pale yellow/white sand over limestone. Upper slopes of coastal dunes.	Unlikely.
Leucopogon sp. Yanchep (M. Hislop 1986)		P3		X	X		Erect shrub, 0.15-1 m high, to 0.6 m wide. Fl. white/pink, Apr to Jun or Sep. Light grey-yellow sand, brown loam, limestone, laterite, granite. Coastal plain, breakaways, valley slopes, low hills.	Unlikely.
Marianthus paralius		T		X	X		Almost prostrate, eventually scandent, woody shrub. Fl. red, Sep to Nov. White sand over limestone. Low coastal cliffs.	Unlikely.
Melaleuca sp. Wanneroo (G.J. Keighery 16705)		P1		X	X		Slender erect shrub, 2-3 m high, 1-2 m wide. Fl. yellow, December. Mossy black sand. Rugged limestone ridge.	Unlikely.
Pimelea calcicola		P3		X	X		Erect to spreading shrub, 0.2-1 m high. Fl. pink, Sep to Nov. Sand. Coastal limestone ridges.	Known within the Study Area from the GHD survey.
Sarcozona bicarinata		P3		X	X		Shrub, ca 0.1 m high. Fl. white, Aug. White sand.	Possible.
Schoenus griffinianus		P3			X		Small, tufted perennial, grass-like or herb (sedge), to 0.1 m high. Fl. Sep to Oct. White sand.	Possible.
Stylidium maritimum		P3		X	X		Caespitose perennial, herb, 0.3-0.7 m high, Leaves tufted, linear to narrowly oblanceolate, 10-40 cm long, 1-5.5 mm wide, apex acute to mucronate, margin involute, glabrous. Membraneous scale leaves present at base of mature leaves. Scape glandular throughout. Inflorescence paniculate. Fl. white/purple, Sep to Nov. Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.	Known within the Study Area from the GHD survey.
Tetraria sp. Chandala (G.J. Keighery 17055)		P2		X	X		Slender, erect, rhizomatous sedge, 1.5-1.6 m high, 0.3-1 m wide. Fl. brown, Feb, Jul. Peaty sand, black peat over clay. Mound spring.	Unlikely. The Study Area does not contain optimal habitat for this species
Thelymitra variegata	Queen of Sheba	P3		X	X		Tuberous, perennial, herb, 0.1-0.35 m high. Fl. orange & red & purple & pink, Jun to Sep. Sandy clay, sand, laterite.	Possible.

Conservation codes are provided in Appendix C

The likelihood of occurrence assessment has been based on the range, habitat requirements and previous records of the species and takes into account the intensity of the field survey.

Likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Likelihood of occurrence	Definition
Known	Species definitely recorded within the Project Area either from previous records or field survey results.
Likely	Species previously recorded within 5 km and suitable habitat occurs at the Project Area.
Possible	Species previously recorded within 5 km with marginally suitable habitat occurring at the Project Area. OR Species not previously recorded within 5 km, but suitable habitat does occur at the Project Area. OR Species not identified during the field survey. However, the cryptic nature of the species or discrepancy in flowering time means it may be present but not observed during the field survey.
Unlikely	Species previously recorded within 5 km but suitable habitat does not occur at the Project Area. OR Species considered to be easily observed. However, was not observed during the field survey so not considered to be present within the Study Area.
Highly unlikely	Species not previously recorded within 5 km, suitable habitat does not occur at the Project Area and/ or Project Area is outside the species' natural distribution.

Appendix E – Fauna results

Fauna species recorded within the Study Area during the field surveys (May-July 2013)

Fauna likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Fauna species recorded within the Study Area during the field surveys (May-July 2013)

Family	Taxon	Common Name	EPBC Act	WC Act	DPaW	Locally significant	Introduced
Birds							
Acanthizidae	*Smicrornis brevirostris occidentalis*	Weebill					
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill					
Acanthizidae	*Gerygone fusca*	Western Gerygone					
Accipitridae	*Haliastur sphenurus*	Whistling Kite				×	
Accipitridae	*Elanus axillaris*	Black-shouldered Kite					
Accipitridae	*Accipiter fasciatus*	Brown Goshawk				×	
Artamidae	*Artamus personatus*	Masked Woodswallow					
Artamidae	*Cracticus tiibicen dorsalis*	Australian Magpie					
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird					
Artamidae	*Cracticus torquatus*	Grey Butcherbird					
Cacatuidae	*Eolophus roseicapilla*	Galah					
Cacatuidae	*Cacatua pastinator*	Western Corella					
Cacatuidae	*Cacatua sanguinea*	Little Corella					
Cacatuidae	*Calyptorhynchus latirostris*	Carnaby's Black Cockatoo	Endangered	Threatened		×	
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike					
Casuariidae	*Dromaius novaehollandiae*	Emu				×	
Columbidae	*Ocyphaps lophotes*	Crested Pigeon					
Columbidae	*Phaps chalcoptera*	Common Bronzewing					
Columbidae	*Streptopelia senegalensis*	Laughing Dove					×
Columbidae	*Streptopelia chinensis*	Spotted Dove					×
Columbidae	*Columba livia*	Feral Pigeon					×
Corvidae	*Corvus coronoides perplexus*	Australian Raven					
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo					
Falconidae	*Falco cenchroides cenchroides*	Nankeen Kestrel					

Family	Taxon	Common Name	EPBC Act	WC Act	DPaW	Locally significant	Introduced
Halcyonidae	*Dacelo novaequineae*	Laughing Kookaburra					×
Hirundinidae	*Petrochelidon nigricans*	Tree Martin					
Hirundinidae	*Hirundo neoxena*	Welcome Swallow					
Maluridae	*Malurus splendens*	Splendid Fairy-wren				×	
Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater				×	
Meliphagidae	*Phylidonyris niger*	White-cheeked Honeyeater				×	
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird					
Meliphagidae	*Lichenostomus virescens virescens*	Singing Honeyeater					
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater					
Monarchidae	*Grallina cyanoleuca*	Magpie-lark					
Motacillidae	*Anthus novaeseelandiae*	Richards Pipit					
Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush				×	
Pachycephalidae	*Pachycephala pectoralis*	Golden Whistler				×	
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler					
Pardalotidae	*Pardalotus striatus*	Striated Pardalote					
Petroicidae	*Petroica boodang*	Scarlet Robin				×	
Petroicidae	*Microeca fascinans*	Jacky Winter					
Podargidae	*Podargus strigoides*	Tawny Frogmouth					
Psittacidae	*Barnardius zonarius semitorquatus*	Twenty-eight Parrot					
Psittacidae	*Purpureicephalus spurius*	Red-capped Parrot					
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet					×
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail					
Rhipiduridae	*Rhipidura leucophrys leucophrys*	Willie Wagtail					
Timaliidae	*Zosterops lateralis*	Silvereye					
Reptiles							
Agamidae	*Pogona minor minor*	Western Bearded Dragon					

Family	Taxon	Common Name	EPBC Act	WC Act	DPaW	Locally significant	Introduced
Boidae	*Morelia spilota imbricata*	Carpet Python		Schedule 4		×	
Elapidae	*Neelaps bimaculatus*	Black-naped Snake					
Scincidae	*Cryptoblephorus buchananii*	Fence Skink					
Scincidae	*Cyclodomorphus celatus*	Western Slender Blue-tongue					
Scincidae	*Hemiergis quadrilineata*	Two-toed Earless Skink					
Scincidae	*Tiliqua rugosa*	Bobtail					
Mammals							
Canidae	*Vulpes vulpes*	Red Fox					×
Canidae	*Canis lupus*	Domestic Dog					×
Felidae	*Felis catus*	Cat					×
Leporidae	*Oryctolagus cuniculus*	European Rabbit					×
Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo					
Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum					
Tachyglossidae	*Tachyglossus aculeatus*	Echidna					

Fauna likelihood of occurrence assessment of conservation significant fauna identified in the desktop assessment as potentially occurring within the Study Area

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Birds							
Anous tenuirostris melanops Australian Lesser Noddy	Vu	T		X	X	The Australian Lesser Noddy usually occupies coral-limestone islands that are densely fringed with White Mangrove Avicennia marina. It occasionally occurs on shingle or sandy beaches. The Australian Lesser Noddy roosts mainly in mangroves, especially at night but may sometimes rest on beaches (DotE, 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Botaurus poiciloptilus Australasian Bittern	En	T		X	X	Densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands. In the southwest of Western Australia, the Bittern is found in beds of tall rush mixed with or near short fine sedge or open pools. It also occurs around swamps, lakes, pools, rivers and channels fringed with *Lignum muehlenbeckia*, canegrass *Eragrostis* or other dense vegetation. It occasionally ventures into areas of open water or onto banks (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Calidris ferruginea Curlew Sandpiper	Mi	T; S3			X	In Western Australia, the Curlew Sandpiper is widespread around coastal and sub-coastal plains from Cape Arid to south-west Kimberley Division, but are more sparsely distributed between Carnarvon and Dampier Archipelago. They mainly occur on intertidal mudflats in sheltered coastal areas as well as inland around ephemeral and permanent lakes, dams, waterholes and bore drain, usually with bare edges of mud or sand (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Calyptorhynchus baudinii Baudin's Black Cockatoo	Vu	T		X	X	This species occurs in high-rainfall areas, usually at sites that are heavily forested and dominated by Marri and Eucalyptus species, especially Karri and Jarrah. The species also occurs in woodlands of Wandoo, Blackbutt, Flooded Gum, and Yate (DotE 2012b).	Unlikely According to the EPBC Act Referral Guidelines (DotE 2012b) the Study Area is outside the currently known foraging and breeding range for this species.
Calyptorhynchus latirostris Carnaby's Black Cockatoo	En	T		X	X	This species mainly occurs in uncleared or remnant native eucalypt woodlands and in shrublands or kwongan heathland dominated by Hakea, Dryandra, Banksia and Grevillea species. The species also occurs in forests containing Marri, Jarrah or Karri (DotE 2012b).	Present This species was recorded in the Study Area during the field surveys. There is suitable foraging habitat and potential breeding and roosting habitat in the Study Area for this species, including the Banksia and Tuart woodlands.
Diomedea amsterdamensis Amsterdam Albatross	En; Mi	T		X		Albatrosses breed on subantarctic and other southern ocean islands and fly enormous distances in the southern oceans searching for food (Burbidge 2004). They are all marine, pelagic seabirds which generally sleep and rest on ocean waters when not breeding (DotE 2013b).	Highly unlikely There is no suitable habitat for theseis species within the Study Area.
Diomedea carteri Indian Yellow-nosed Albatross	Vu; Mi	T		X	X		

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Diomedea cauta Shy Albatross	Vu; Mi	T		X			
Diomedea chlororhynchos Atlantic Yellow-nosed Albatross	Mi	T			X		
Diomedea chrysostoma Grey-headed Albatross	En; Mi	T			X		
Diomedea dabbenena Tristan Albatross	En; Mi	T		X			
Diomedea exulans Wandering Albatross	Vu; Mi	T; S3		X			
Diomedea melanophris Black-browed Albatross	Vu; Mi	T		X	X		
Falco peregrinus Australian Peregrine Falcon		S4			X	The Peregrine Falcon is seen occasionally anywhere in the south-west of Western Australia. It is found everywhere from woodlands to open grasslands and coastal cliffs - though less frequently in desert regions. It is widespread and uncommon but is known to nest and hunt in the Perth CBD and is not considered at risk from urbanisation (Davis 2009)	Likely The closest known records of this species are at Lake Joondalup, less than 3 km south of the Study Area. These records are from 2005 and 2008 (DPaW and WAM 2013). There is suitable habitat for this species in the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Falcunculus frontatus leucogaster Western Shrike-tit, Crested Shrike-tit			P4		X	The Western Shrike-tit is found in south-west Western Australia. This subspecies occurs in woodlands, scrubs and more open forests of Eucalyptus, especially of Wandoo, Flat-topped Yate, Karri, Tingle, Flooded Gum, Salmon Gum and Gimlet. It is locally common (e.g. Cranbrook and Boyup Brook districts) but generally scarce and locally extinct (e.g. Swan Coastal Plain and much of the Wheatbelt). Its status on the Swan Coastal Plain is uncertain, perhaps formally a rare inhabitant of tuart forests in the western zone. Records are limited from Wanneroo (specimen, 1907 and 1943) and Bunbury (specimen 1902 and observations Whitlock (1930) over several years of a pair or more in the largest remaining tract of tuart) (Johnstone and Storr 2004).	Highly unlikely The closest known records of this species are near Lake Joondalup, less than 10 km south of the Study Area, recorded in 1907 and 1943 (DPaW and WAM 2013). This species is considered to be locally extinct from the Swan Coastal Plain (Government of Western Australia 2000). Given the Study Area has been highly fragmented and impacted by encroaching urban expansion; it is considered highly unlikely this species occurs in the Study Area.
Ixobrychus flavicollis australis Australian Black Bittern			P3		X	The Black Bittern inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, this species may occur in flooded grassland, forest, woodland, rainforest and mangroves (Marchant & Higgins 1990).	Highly unlikely There is no suitable habitat for the species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Ixobrychus minutus dubius Australian Little Bittern			P4		X	The species is most common in freshwater marshes with beds of bulrushes Typha spp., reeds Phragmites spp. (Hockey et al. 2005) or other dense aquatic vegetation, preferably also with deciduous bushes and trees. It may also occupy the margins of lakes, pools and reservoirs, wooded and marshy banks of streams and rivers (del Hoyo et al. 1992).	Highly unlikely There is no suitable habitat for the species within the Study Area.
Leipoa ocellata Malleefowl	Vu, Mi	T		X		Shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, Broombush Melaleuca uncinata vegetation or coastal heathlands (Nevill 2008). This species formally occurred on the northern Swan Coastal Plain at Beermullah (Johnstone and Storr 1998). This population died out in early this century (Johnstone and Storr 1998).	Highly unlikely The Study Area is outside the currently known distribution for this species.
Halobaena caerulea Blue Petrel	Vu			X		Petrels are a marine and oceanic bird that generally breed in Antarctic or sub-Antarctic waters.	Highly unlikely There is no suitable habitat for these species within the Study Area.
Macronectes giganteus Southern Giant Petrel	En; Mi		P4	X	X		
Macronectes halli Northern Giant Petrel	Vu; Mi			X			

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Procellaria aequinoctialis aequinoctialis White-chinned Petrel	Mi	T			X		
Pterodroma mollis Soft-plumaged Petrel	Vu			X			
Rostratula benghalensis australis Australian Painted Snipe	Vu, Mi	T		X		The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Australian Painted Snipe breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby (DotE 2013b).	Highly unlikely There is no suitable habitat for the species within the Study Area.
Sternula nereis nereis Australian Fairy Tern	Vu	T		X	X	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Migratory birds							
Actitis hypoleucos Common Sandpiper	Mi	S3			X	This species is widespread and in small numbers and is found along all coastlines of Australia and in many areas inland. It utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Apus pacificus Fork-tailed Swift	Mi	S3		X	X	In south-west WA there are sparsely scattered records along the south coast, ranging from the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and sub-coastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. This species is almost exclusively aerial, flying less than 1 m to at least 300 m above ground. This species is considered rare in the south-west region (DotE 2013b).	Possible The closest known record of this species are less than 2 km east of Wanneroo Road recorded in 2009 (DPaW and WAM 2013). There is potential this species may occur as an occasional vagrant however considering it is an almost exclusively aerial species, the Study Area is not considered to contain optimum habitat for this species.
Ardea modesta Eastern Great Egret	Mi	S3			X	The eastern Great Egret is widespread in Australia. They have been reported in a wide range of wetland habitats, include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pasture or agricultural lands; reservoirs; sewerage treatment ponds; drainage channels; salt pans; salt marshes; mangrove, and a range of coastal/marine habitats (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Ardea ibis Cattle Egret	Mi	S3		X	X	The Cattle Egret is a common and widespread species. Typical habitat includes tropical and temperate grasslands, wooded lands and terrestrial wetlands. It often forages away from water on low lying grasslands, improved pastures and croplands and roosts in trees, or amongst ground vegetation in or near lakes and swamps.	Highly unlikely There is no suitable habitat for this species within the Study Area.
Ardenna carneipes Fleshy-footed Shearwater	Mi	S3		X	X	The Fleshy-footed Shearwater is a marine species mainly found offshore over continental shelves. Its breeding season begins in September or October, with colonies forming on vegetated hills or slopes facing the sea (del Hoyo et al. 1992)	Highly unlikely There is no suitable habitat for this species within the Study Area.
Calidris acuminata Sharp-tailed Sandpiper	Mi	S3		X		This species is found from Carnarvon to Hamelin Bay occasionally on the coast but mostly in flooded samphire or the many bores with overfklow pools that create wet grassy areas. Found throughout many wetlands along the Swan Coastal Plain (Nevill 2008).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Calidris ruficollis Red-necked stint	Mi	S3		X	X	The Red-necked Stint is distributed along most of the Australian coastline with large densities on the Victorian and Tasmanian coasts. It is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, near spits, islets and banks (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Haliaeetus leucogaster White-bellied Sea-Eagle	Mi	S3		X	X	Coastal habitats (especially those close to the sea-shore as well as any habitat characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea) (Morcombe 2003).	Unlikely There is no suitable habitat for this species within the Study Area.
Hydroprogne caspia Caspian Tern	Mi	S3		X		Within Australia, the Caspian Tern has a widespread occurrence and can be found in both coastal and inland habitat. In WA, breeding occurs from Recherche Archipelago to Dirk Hartog Island and Faure Island in Shark Bay, and also in the Pilbara region and more rarely, in the Kimberley (DotE 2013b).	Unlikely There is no suitable habitat for this species within the Study Area.
Merops ornatus Rainbow Bee-eater	Mi	S3		X	X	Open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation. It also inhabits sand dune systems in coastal areas and at inland sites that are in close proximity to water (DotE 2013b).	Likely The Study Area contains suitable habitat for this species. The Rainbow Bee-eater has previously been recorded in the area.
Onychoprion anaethetus Bridled Tern	Mi	S3		X		In Australia, the Bridled Tern is widespread, breeding on offshore islands in western, northern and north-eastern Australia. The species forages in offshore, continental shelf waters and is only rarely recorded along mainland coasts (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Plegadis falcinellus Glossy Ibis	Mi	S3			X	Within Australia, the Glossy Ibis is generally located east of the Kimberley. The species is also known to be patchily distributed in the rest of Western Australia. Its preferred habitat for foraging and breeding are freshwater marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewerage ponds, rice-fields and cultivated areas under irrigation (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Sterna dougallii Roseate Tern	Mi	S3		X		In Australia, the Roseate Tern occurs in north-western and west coasts and islands from the Sir Graham Moore Is south to Mandurah and as far offshore as Ashmore Reef, Bedout Is and the Houtman Abrolhos. Its habitat consists of the blue-water seas close to land (especially islands) (Johnstone and Storr 1998).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Tringa glareola Wood Sandpiper	Mi	S3		X	X	The Wood Sandpiper has its largest numbers recorded in north-west Australia. Typical habitat includes well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. This species does not breed in Australia (DotE 2013b).	Highly unlikely There is no suitable habitat for this species within the Study Area.
Mammals							

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Bettongia penicillata ogilbyi Woylie, Brush-tailed Bettong	En	T			X	The preferred habitat of the Woylie includes dense undergrowth, logs and rock-cavities and occasionally in burrows (Burbidge 2004). Scattered Woylie populations may be found throughout the Jarrah forest in the south-west corner of Western Australia. Extant naturally occurring populations are restricted to three small wheatbelt reserves in WA – Dryandra Woodland, Tutanning Nature Reserve and Perup Forest. All are characterised by the presence of thickets of the plant Gastrolobium (Van Dyck and Strahan 2008).	Unlikely This species has experienced considerable population decline in the wild, and only naturally occurs in three wheatbelt reserves in WA. The highly fragmented nature of the Study Area and presence of feral cats and foxes would reduce the likelihood of the species.
Dasyurus geoffroii Chuditch	Vu	T		X	X	Eucalypt forest (especially Jarrah), dry woodland and mallee shrublands. In Jarrah forest, Chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest (DotE 2013b).	Highly unlikely The Chuditch had disappeared from the Swan Coastal Plain by the 1930s, according to Orell and Morris (1994).
Isoodon obesulus fusciventer Southern Brown Bandicoot / Quenda			P5		X	This species is found in forest, woodland, shrub and heath communities at localities in southern and eastern Australia, and these sites generally display a combination of sandy soils with dense healthy vegetation in the lower stratum (Van Dyck and Strahan 2008).	Likely The Study Area provides some suitable habitat for this species, restricted mainly to vegetation associated with a dense understorey. This species is known to occur in the Neerabup National Park and the nearby Nowergup Lake and Joondalup Lake (DPaW and WAM 2013). A potential digging was identified in the Study Area during the field survey.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Macropus irma Western Brush Wallaby			P4		X	Habitat includes open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland, and is uncommon in karri forest (Van Dyck and Strahan 2008).	Likely The Study Area provides some suitable habitat for this species. This species has been recorded previously within the Study Area in the Neerabup National Park (DPaW and WAM 2013). The Western Brush Wallaby is likely to only occur in larger areas of contiguous native vegetation within the Study Area.
Petrogale lateralis lateralis Black-flanked Rock-wallaby		T			X	The Black-flanked Rock-wallaby has undergone a large range restriction. It was once widespread but scattered in the Great Sandy, Little Sandy, Gibson and Great Victoria deserts, the Central Ranges region, Ashburton, North West Cape and the south-west from Kalbarri to the southern Wheatbelt. Their distribution is now greatly reduced, with remnant populations in the Wheatbelt, Cape Range, the southern edge of the Pilbara, Barrow and Salisbury islands and a very small colony in the Calvert Range (Burbidge 2004). The habitat varies between colonies but always involves grassland feeding habitat in close proximity to cliff, rock-pile, talus or escarpment refuge habitat.	Highly unlikely There is no suitable habitat present for this species within the Study Area which is outside the currently known distribution for this species.
Reptiles							

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Ctenotus gemmula (Swan Coastal Plain population)			P3		X	This species occurs in two isolated populations in Western Australia; one along the lower west coastal plain from Cataby south to Perth, the second along the south coast and adjacent interior, from Rocky Gully east to the beginning of the Great Australian Bight, and inland to Lake Magenta (Maryan and Shea 2010). Preferred habitat includes pale sand-plains supporting heaths in association with banksia or mallee woodland (Wilson and Swan, 2008).	Possible There is suitable habitat present for this species within the Study Area. The closest known record is less than 10 km east of the southern extent of the Study Area, recorded in 1977 (DPaW and WAM 2013).
Morelia spilota imbricata Carpet Python		S4			X	Semi-arid coastal and inland habitats, Banksia woodland, eucalypt woodlands, and grasslands. The carpet python generally occurs in large, undisturbed bush; and areas, preferring coastal limestone and woodlands on the Swan Coastal Plain (Bush et al. 1995; 2010).	Present This species was identified in the Study Area from a snake skin slough during the field survey. There is suitable habitat present for this species, and it has previously been recorded within the Study Area (DPaW and WAM 2013). It is likely that the Carpet Python would only occur in larger areas of contiguous native vegetation within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Neelaps calonotos Black-striped Snake			P3		X	This Black-striped Snake is restricted to the sandy coastal strip near Perth, between Mandurah and Lancelin. It occurs on dunes and sand-plains vegetated with heaths and eucalypt/banksia woodlands. This species is seriously threatened by increasing development within its restricted distribution (Wilson and Swan 2008). How and Shine (1999) suggest the Black-striped Snake and similar fossorial snakes require large areas of continuous habitat for long-term persistence.	Likely Suitable habitat for the Black-striped Snake is present within the Study Area and there are a number of records of this species within 10 km of the Study Area (DPaW and WAM 2013). It is likely to only occur in larger areas of contiguous native vegetation within the Study Area.
Pogona minor minima Dwarf Bearded Dragon (Houtman Abrolhos Is.)		T			X	This subspecies is restricted to the Houtman Abrolhos Islands off the lower west coast of Western Australia (Wilson and Swan, 2008).	Highly unlikely The Study Area is outside the currently known distribution for this species.
Invertebrates							
Austrosaga spinifer Cricket			P3		X	This species of cricket is an endemic to Australia. There is no habitat description available for this species.	Likely There are two records of this species within the Study Area, along Wanneroo Road, recorded in 1981 and 1982.
Hylaeus globuliferus Bee			P3		X	This native bee is thought to favour flowers of Adenanthos cygnorum for feeding, but has also been recorded on Banksia attenuata.	Likely The closest known records of this species are less than 3 km east of the Study Area, recorded in 1995 and 1996 (DPaW and WAM 2013). Suitable habitat is present within the Study Area.

Species name	Status			Source		Habitat requirements	Likelihood of occurrence
	EPBC Act	WC Act	DPaW	EPBC Act PMST	NatureMap search		
Idiosoma nigrum Shield-backed Trapdoor Spider		T			X	This spider occurs throughout the mid-west, south to Toodyay, Northam and Beverley, extending northwards to Nanga. Nests are usually located in litter within acacia woodland or shrubland, particularly in Acacia acuminata on granitic soils, but also in eucalypt woodlands on heavy soils (Burbidge, 2004).	Possible There is one recent record of this species less than 5 km south of the Study Area, recorded in 2011 (DPaW and WAM 2013). However the majority of habitat present in the Study Area is not considered suitable for this species.
Leioproctus contrarius Bee			P3		X	This species is apparently dependent on flowers of the Goodeniaceae family, particularly Leschenaultia spp. (PaDIL, 2013).	Likely There is one record of this species less than 10 km east of the Study Area (Melaleuca Park), recorded in 1982 (DPaW and WAM 2013). There is suitable habitat for this species within the Study Area.
Synemon gratiosa Graceful Sun Moth			P4		X	The Graceful Sun-moth (GSM) is closely associated with Banksia woodland. The species is also dependent upon *Lomandra maritima* and *L. hermaphrodita* being present for breeding.	Possible A GSM survey was conducted by GHD in March 2013. No GSM were recorded in the Study Area during this survey. However there are a number of records of this species in the surrounding region and suitable habitat is present within the Study Area.
Westralunio carteri Carter's Freshwater Mussel			P4		X	This species of mussel is south-west WA's only freshwater mussel. It is known from the Avon, Blackwood and Canning Rivers and is found in ponds, lakes, rivers, streams, and has been collected from a dam in WA. It is tolerant to human disturbance and organic pesticides, but sensitive to salinity levels.	Highly unlikely There is no suitable habitat for this species within the Study Area.

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