Flora and Vegetation Assessment

Cape Leeuwin Trail:
Dead Finish to Cape Leeuwin

Prepared December 2019
for the Shire of Augusta Margaret River

Litoria Ecoservices
Environmental Assessment, Planning & Management

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1.0 INTRODUCTION

1.1 Background

Litoria Ecoservices (LE) was commissioned by the Shire of Augusta Margaret River to undertake a flora and vegetation assessment to guide the development of the Cape Leeuwin dual use trail between Dead Finish and Cape Leeuwin.

1.2 Description of the proposal

The Augusta Margaret River Shire proposes to construct a walk and cycle path up to 2.5m wide from Dead Finish to the Cape Leeuwin Lighthouse, a distance of approximately 2,500m. This path would link with existing trails, as well as other trails currently under construction between the Augusta Boat Harbour and Dead Finish, to provide a trail linking Cape Leeuwin to Augusta.

The Shire has worked with Common Ground Trails to develop a proposed alignment between Leeuwin Road and the coast. Alternative alignments have also been identified in some areas.

1.3 Assessment Objectives and Scope

The assessment was undertaken in September, October and November 2019, with the following objectives:

1. To assess the condition, natural and conservation significance of native vegetation onsite, particularly targeted at priority listed, rare and threatened species and ecological communities previously recorded from the surrounding area; and
2. To identify management issues and develop recommendations to ensure conservation values are protected and enhanced during any trail construction.

This assessment of the site's flora and vegetation represents a targeted survey as described by the EPA's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

This level of survey is considered appropriate at this stage of the proposal.

2. EXISTING INFORMATION

2.1 Site Description

The site ranges between 40m and 300m in width, bounded by Leeuwin Road and the coast. It consists coastal vegetation communities intermixed with exposed granite. Vegetation within the site ranges from primary sand dune communities through to dense heathland, open granite areas and low, closed peppermint forest. It is undulating, with predominantly south facing slope, with some steeper hillsides and vertical rockfaces through the eastern portion of the site. The site includes a number of formal and informal pedestrian and vehicle beach tracks, lookouts and formal and informal coastal carparks.

2.2 Previous studies

Prior to undertaking this assessment, the following previous studies were reviewed from adjoining areas or the parts of the actual survey site:

- '2017 Flora and Vegetation Assessment, Augusta Boat Harbour to Dead Finish by Litoria Ecoservices;
- '2014 Spring Flora and Vegetation Surveys, Flinders Bay and Margaret River Foreshore Areas' by Eco Logic Environmental Services Pty Ltd;
- '2013 Cape Leeuwin Tourism Precinct: Level 2 Flora and Vegetation Survey' by Onshore Environmental.

It is noted that these studies identified the Endangered species *Kennedia lateritia* within 2 kilometres of the survey area and the then P4 listed priority species *Bossiaea disticha* within a few kilometres of the survey area – it is noted that *Bossiaea disticha* is no longer priority listed.

2.3 Bioregional context

Augusta Margaret River Shire is situated within the South West Botanical Province of WA, which is internationally recognised as a biodiversity hotspot. Within this, the site lies in the Boranup System of the Western Botanical subdistrict within the Darling Botanical District. The Western Botanical subdistrict spans from Cape Naturalist to Albany with Augusta/Cape Leeuwin falling within the Boranup System. This broader system is described as Tall Forest of Karri (*Eucalyptus diversicolor*) on red earths and Forest of Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) on the red and yellow podzolic soils. Extensive paperbark (*Melaleuca* spp.) and sedge swamps occur in the valleys and flood plains. (Beard 1990)

3. SURVEY METHODOLOGY

3.1 Desktop Study and Preparation

Prior to commencing the field component of the survey, a review of relevant previous surveys was undertaken. A search was conducted of DBCA's database of Threatened and Priority Flora and Ecological Communities. An additional search was undertaken of the Department of Environment and Energy's Protected Matters Search Tool to identify Matters of National Environmental Significance that may be relevant to the subject site. In addition, an online search the DBCA and Western Australian Museum's NatureMap Database was conducted.

These lists and relevant species were reviewed in order to structure survey timing and methodology.

3.2 Field Assessment

The assessment was undertaken by Drew M^{c}Kenzie BAppSc (Env) Hons. of Litoria Ecoservices, Margaret River. Drew has over 19 years of professional experience in vegetation assessment and management, including over 14 years of experience in native vegetation survey, assessment and management within south-west WA.

The field assessment was undertaken over four days including 27th September, 6th October, 8th November and 25th November 2019, with over 24 hours spent on site.

The assessment involved walking transects along and adjacent to the proposed trail alignment/s covering approximately 50m wide corridor. A more general assessment was made of the broader reserve adjoining the proposed alignments.

The assessment included the following elements:

- Ground truthing of the corridor and broader reserve;
- Development of preliminary species list for the site;
- Mapping and recording of vegetation condition, structure and floristics; and
- Collection of specimens for identification off site (where required);

All relevant elements and items were mapped using a Bad Elf Bluetooth GPS and a remote GIS mapping system.

The onsite records of vegetation communities and condition were used in combination with high resolution aerial photography to create maps covering the relevant portions of the Shire reserves.

3.2 Post Field Work

Following the field work, a number of specimens were confirmed using a number of references, raw mapping data was analysed and processed into the final figures using QGIS GIS mapping system. GIS mapping produced both digital and hard copy maps using the IBSA templates. Species lists were compiled and an overview of the site considered prior to making final conclusions and recommendations.

3.2.1 Vegetation Description

Vegetation communities were described and mapped based on floristic and structural characteristics in accordance with the classes of Muir (1977) and Aplin (1979) (shown in Table 1).

Table 1. Vegetation structural classification (adapted from Muir 1977 and Aplin 1979)

Strata	Canopy Cover				
	<2%	2-10%	10 – 30%	30 -70%	70 -100%
Trees over 30m	Scattered Tall Trees	Tall Open Woodland	Tall Woodland	Tall Open Forest	Tall Closed Forest
Trees 10 – 30m	Scattered Trees	Open Woodland	Woodland	Open Forest	Closed Forest
Trees under 10m	Scattered Low Trees	Open Woodland	Woodland	Low Open Forest	Low Closed Forest
Shrubs over 2m	Scattered Tall Shrubs	Tall Open Shrubland	Tall Shrubland	Tall Open Scrub	Tall Closed Scrub
Shrubs 1-2m	Scattered Low Shrubs	Open Shrubland	Shrubland	Open Heath	Closed Heath
Shrub under 1m	Scattered Low Shrubs	Low Open Shrubland	Low Shrubland	Low Open Heath	Low Closed Heath
Grasses	Scattered Grasses	Very Open Grassland	Open Grassland	Grassland	Closed Grassland
Herbs and Sedges	Scattered Sedges/ Herbs	Very Open Sedgeland/ Herbland	Open Sedgeland/ Herbland	Sedgeland/ Herbland	Closed Sedgeland/ Herbland

3.2.2 Vegetation Condition

Vegetation condition was assessed, categorised and mapped based on the condition rating scale adapted from Keighery (1994) and shown in Table 2.

Table 2. Vegetation Condition Scale (adapted from Keighery 1994)

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

3.3 Limitations of the Botanical Survey

The potential limitations of the botanical survey are detailed within Table 3 below.

Table 3. Statement of survey constraints

Variable	Constraints	Details
Experience levels and resources	No constraints	The scientist that undertook the assessment was regarded as suitably qualified for the level of assessment undertaken.
Proportion of flora identified	No constraints	Native and weed species observed during the reconnaissance survey were identified
Sources of Information	No constraints	The Capes region has been covered by a number of targeted biological surveys. Documented information regarding the site was limited, however, the assessment was able to utilise a number of relevant databases and local records.
Proportion of the task achieved and further work to be undertaken	No Constraints	There is no requirement for further work.
Timing, weather, season, cycle	Minor Constraints	The survey was undertaken during Spring 2019. While this period will pick up most annual species, and flowering period for most of the target species. It is noted that it was a particularly dry Winter/ Spring influencing flowering of several species. Surveys undertaken over multiple seasons and years will record additional species.

Intensity of Survey	No constraints	The area was mapped and searched at a high intensity for a this level of survey
Completeness	No constraints	The area was mapped and searched at a high intensity for a this level of survey
Resources	No constraints	Extensive local knowledge and relevant keys and guides utilised
Remoteness or access	Minor constraints	The extreme density of vegetation within 2m of ground height through parts of the survey area provided challenges with regard to access with some small areas considered impenetrable and requiring diversion around and observation from the edge.
Availability of contextual information for the survey area	No constraints	Several relevant references and reports available and utilised.

4. RESULTS

After following the methodology detailed in Section 3, the following results were determined:

4.1 Rare and Priority Flora Searches

A search was undertaken of the relevant DBCA database to identify significant plant species known as occurring within the nearby locality. The result of this search is provided below as Table 4.

Table 4: State listed plant species known from surrounding areas

Taxon	Status	Rank
Acacia lateriticola var. Glabrous variant (B.R.Maslin 6765)	3	
Adenanthos detmoldii	4	
Banksia meisneri subsp. ascendens	4	
Banksia nivea subsp. uliginosa	T	EN
Banksia sessilis var. cordata	4	
Blennospora doliiformis	3	
Boronia anceps	3	
Boronia exilis	T	EN
Caladenia abbreviata	3	
Caladenia lodgeana	T	CR
Calothamnus lateralis var. crassus	3	
Chordifex gracilior	3	
Conospermum quadripetalum	2	
Cyathochaeta stipoides	3	
Darwinia ferricola	T	EN
Galium leptogonium	3	
Gastrolobium formosum	3	
Gonocarpus pusillus	4	
Grevillea brachystylis subsp. australis	T	EN
Grevillea papillosa	3	
Hemiandra sp. Windy Harbour (B.J. Conn & J.A. Scott BJC 3344)	3	
Hybanthus volubilis	2	
Isopogon formosus subsp. dasylepis	3	
Kennedia lateritia	T	EN
Lambertia orbifolia subsp. Scott River Plains (L.W. Sage 684)	T	EN
Leptomeria dielsiana	X	EX
Leptomeria furtiva	2	
Loxocarya magna	3	
Philydrella pygmaea subsp. minima	1	
Schoenus loliaceus	2	
Stylidium leeuwinense	4	
Synaphea nexosa	1	
Tripterococcus sp. Brachylobus (A.S. George 14234)	4	
Verticordia lehmannii	4	
Verticordia plumosa var. vassensis	T	EN

Conservation Codes

Declared Rare Flora - Extant Taxa
Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.

X: Declared Rare Flora - Presumed Extinct Taxa
Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.

Priority One - Poorly known Taxa
Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

Priority Two - Poorly Known Taxa
Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

Priority Three - Poorly Known Taxa
Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.

Priority Four - Rare Taxa
Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

An additional search was also undertaken of the Department of Environment and Energy's Protected Matters Search Tool to identify Matters of National Environmental Significance that may be relevant to the subject site. The report generated out of this search identified the Nationally listed plant species that may be likely to occur within 10km of the subject site. The results of this search are summarised below as Table 5.

Table 5: Nationally significant plant species known from surrounding areas

Taxon	EPBC Status
Banksia nivea subsp. uliginosa	Endangered
Caladenia lodgeana	Critically Endangered
Calectasia cyanea	Critically Endangered
Drakea micrantha	Vulnerable
Grevillea brachystylis subsp. australis	Vulnerable
Kennedia lateritia	Endangered
Lambertia orbifolia	Endangered
Leptomeria dielsiana	Vulnerable
Sphenotoma drummondii	Endangered
Verticordia plumosa var. vassensis	Endangered

4.2 NatureMap database search

An online search of the DBCA and Western Australian Museum's NatureMap database produced a list of flora species previously recorded within a 10km radius of the site. This list included 656 flora species including many significant species – the list is contained within the Appendix 2.

4.3 Threatened and Priority Ecological Communities

An 'ecological community' is a naturally occurring grouping of plants and/or animals that together with their habitat form ecosystems. A threatened ecological community (TEC) is one which is deemed to be subject to processes which threaten to destroy or significantly modify it across much of its range and which are found to fit into one of the following categories: 'presumed totally destroyed', 'critically endangered', 'endangered' or 'vulnerable' (DEC, 2007).

Possible TECs which are not yet adequately defined or do not meet the criteria for the above categories are identified under the DBCA's Priority Ecological Community (PEC) List under Priorities 1, 2 and 3 in order of priority for definition, evaluation and survey. Other ecological communities that are rare but adequately known, not threatened, are listed as Priority 4 and require regular monitoring.

A search of the DBCA Threatened and Priority Ecological Communities Database for known records of TEC and/or PEC within a 10km radius of the site and an EPBC Act online Protected Matters Report within a 10km radius were undertaken. These identified the following communities:

- Nationally and State listed Endangered Threatened Ecological Community (TEC): 'Rimstone Pools and Cave structures formed by microbial activity on the marine shoreline: Augusta Microbial – (Aquatic rootmat community Number 1 in caves of the Leeuwin – Naturalist Ridge.)'
- Nationally Vulnerable and State Listed Priority 3 (PEC) and (EPBC) Threatened/Priority ecological community (TEC) : 'Coastal saltmarsh – Subtropical and Temperate Coastal Saltmarsh.)'
- State Listed Priority 1 Ecological Community (PEC): 'Sedgelands of Cape Leeuwin Spring - Tall closed sedgelands on shallow soils derived from granite gneiss on the Leeuwin Naturaliste Ridge'

4.4 Vegetation Representation

The broadscale vegetation mapping of Mattiske and Havel (1998) identifies three vegetation complex across the site:

- Wilyabrup Wr: Woodland of Corymbia calophylla-Eucalyptus marginata subsp. marginata with closed heath of Myrtaceae-Proteaceae-Papilionaceae spp. on steep rocky slopes in the hyperhumid zone.
- Wilyabrup WE: Mosaic of coastal heath and low woodland to woodland of Corymbia calophylla-Eucalyptus marginata subsp. marginata-Banksia spp. on westward slope in hyperhumid to humid zones.
- Gracetown GE: Closed heath of Olearia axillaris-Rhagodia baccata-Agonis flexuosa on seaward slopes in hyperhumid to humid zones.

The extent remaining of this complex was assessed using the data available from the Department of Agriculture and Food (2014).

The State Government's commitment to the National Objectives Targets for Biodiversity Conservation includes a target to prevent the clearance of ecological communities with extents below 30% of their pre European coverage or less than 1500 ha total extent remaining.

With 73%, 69.7% and 97.5% of the original pre European extent remaining, the Wilyabrup Wr, Wilyabrup WE and Gracetown GE vegetation complexes do not trigger the criteria of less than 30% remaining.

4.5 Flora and Species Diversity

Appendix 1 shows all flora species, native and introduced, that were identified during the course of this survey.

A total of 110 species were recorded during the survey. Of these, 75 native species from 37 genera were recorded.

4.6 Rare and Priority Flora Occurrences

Following extensive searching within and surrounding the proposed trail alignments, a single priority species was recorded by this survey. This species was the State listed P4 species *Banksia sessilis var.cordata* which was recorded just east of Groper Bay. Over 50 individual were estimated to occur within the subject area. The location of this occurrence is identified within Figure 2. It is noted that this population extends beyond the survey area to the north across Leeuwin Road.

It is noted that whilst not recorded on site during the survey it is possible that some rare and priority flora eg) *Kennedia laterita* exist in the seed bank within the site and have the potential to germinate and provide 'new occurences' following fire or other disturbance.

4.7 Introduced Flora

A total of 35 introduced species were recorded during the course of the survey. These species are denoted by an asterisk in Appendix 1.

Of these, one species (Arum lily (*Zantedeschia aethiopica*) is declared under Section 22 of the *Biosecurity and Agriculture Management Act 2007* was identified on site. Within the Shire of Augusta Margaret River both of these species are categorised as C3 (Management) declared pests. It is noted that Arum lily was found in low densities (less than 10%) throughout much of the Low Closed Forest of *Agonis flexuosa*.

A number of other environmental weed species considered as high priorities for control were identified and mapped as part of the assessment. these were prioritised either due to the level of invasiveness and impact of the species under local conditions and due to relatively restricted nature of the current infestation. These include:

- Dolichos pea (*Dipogon lignosus*);
- Wavy Gladioli (*Gladiolus undulatus*); and
- Bridal creeper (*Asparagus asparagoides*).

The location of the isolated priority environmental weeds are shown on figure 3.

4.8 Threatened and Priority Ecological Communities occurences

The Endangered (at both State and Commonwealth level) Threatened Ecological Community (TEC): 'Rimstone Pools and Cave structures formed by microbial activity on the marine shoreline: Augusta Microbial – (Aquatic rootmat community Number 1 in caves of the Leeuwin – Naturalist Ridge.)' was identified on site and confirmed during a site visit with

Clare Forward and Natasha Moore both from DBCA. These occurences represent previously unmapped communities not currently on the register or existing databases.

In addition to the above mentioned endangered TEC, the Priority 2 listed ecological community (PEC) : '*Melaleuca lanceolata* forests (*Melaleuca lanceolata* forests, Leeuwin Naturaliste Ridge)' was recorded from western most portion of the site. This community was not identified within the database searches covering a 10km radius around the site. It is noted that this community continues also occurs immediately west of the site across Leeuwin Rd.

Whilst not listed as a PEC or TEC community it is noted that the granitic outcrop vegetation of the Margaret River plateau (which includes the Augusta and Cape Leeuwin granites) is of significant conservation value and considered as "regionally significant". (Webb 2013)

These systems are known to contain a number of significant isolated or morphologically variant species, which require additional study to determine if they deserve taxonomic recognition (Keighery et al. 2011).

Furthermore, these vegetation communities are fragile systems at a high risk of loss through disease or weed introduction, climate change, inappropriate development and other disturbance events (Webb 2013). The open nature of these systems make access control difficult and prone to trampling.

It has previously been recommended (Webb 2013) that as a minimum, development activities that may cause impact to granite outcrops in areas of formal reservation need to be prevented.

The locations of the TEC and PEC occurrences are identified in Figure 2.

4.9 Vegetation Units

Vegetation units were described and mapped based on structural and floristic characteristics using the system detailed in Appendix 3. In total, six units were identified across the site as shown in Figure 4, with representative photographs provided in Appendix 4.

The vegetation units are described as follows:

Veg Unit 1: Very Good Condition **Low Closed Forest of *Agonis flexuosa*** over open grassland/ sedgeland/herbland of *Lepidosperma gladiatum, Rhagodia baccata, Dichondra repens, Microlaena stipoides, Pteridium esculentum, Muehlenbeckia adpressa* and *Acanthocarpus preissii*.

Veg Unit 2: Very Good Condition **Closed Heath** of *Spyridium globulosum, Olearia axillaris, Scaevola crassifolia, Agonis flexuosa* and *Leucopogon parviflorus* over a predominantly sedgeland/herbland of *Lepidosperma gladiatum, Rhagodia baccata, Muehlenbeckia adpressa, Acanthocarpus preissii, Senecio elegans, Phyllanthus calycinus, Ficinia nodosa, Lagurus ovatus* and *Carpobrotus viresecens.*

Veg Unit 3: Very Good to Excellent condition **Tall closed scrub** *Spyridium globulosum, Olearia axillaris,* and *Leucopogon parviflorus, Corymbia callophylla, Banksia sessilis var. cordata* with scattered *Agonis flexuosa,* over a open grassland/ sedgeland of *Lepidosperma gladiatum, Hibbertia grossularifolia, Dichondra repens, Clematis pubescen, Dianella revoluta and Hardenbergia comptoniana*

Veg Unit 4: Very Good to Excellent Condition **Low Closed Heath** of *Eutaxia myrtifolia, Pimelea ferrugineae, Agonis flexuosa, Acacia saligna, Dodonaea ceratophylla, Xanthorrea preissi, Hakea oliefolia, Acacia pulchella, Spyridium globulosum and Leucopogon parviflorus*

over a sedgeland/grassland/herbland of *Lepidosperma gladiatum, Lepidosperma squamatum*, introduced annual grasses and *Carpobrotus virescens* interspersed with patches of exposed granite.

Veg Unit 5: Degraded to Good Condition **Low Shrubland** of *Dodonaea ceratophylla, Eutaxia myrtifolia, Pimelea ferrugineae* and *Agonis flexuosa,* over a grassland of introduced annual and perennial grasses. interspersed with patches of exposed granite.

Veg Unit 6: Very Good condition **Low Closed Forest of *Melaleuca lanceolata*** over sparse *Rhagodia baccata, Lepidosperma gladiatum, Spyridium globulosum*

4.10 Vegetation Condition

The vegetation of the site was assessed using a condition assessment based on the Vegetation Condition Scale of Keighery (1994) as per Table 2.

Based on this system, condition ratings across the site are as shown on Figure 5 and summarised as follows:

- The vast majority of the site vegetation is assessed as very good condition or better;
- Degradation and high levels of environmental weed infestation are largely limited to small patches and edges related to past or continuing disturbance; and
- Vegetation condition in many areas could be relatively easily approved through environmental weed control, erosion control and better management of vehicle and pedestrian access.

4.11 Ecological Connectivity

Based on the South West Regional Ecological Linkages mapping the property is identified as having a 1a proximity value – ie with an edge touching or <100m from an edge.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The site contains significant conservation values worthy of protection and where possible enhancement. It represents some of the most ecologically significant and in tact bushland reserves managed by the Shire. It contains a range of significant tracts of very good or excellent condition vegetation, significant vegetation units, threatened and priority ecological communities and priority listed vegetation species. Values of specific note include:

- The vast majority of the site represents good, very good or excellent condition remnant vegetation;
- A high level of existing ecological connectivity and linkage with surrounding tracts of native vegetation to the North, West and East;
- Areas of the Endangered (at both State and Commonwealth level) Threatened Ecological Community (TEC): 'Rimstone Pools and Cave structures formed by microbial activity on the marine shoreline: Augusta Microbial – (Aquatic rootmat community Number 1 in caves of the Leeuwin – Naturalist Ridge.)'
- Areas of the P2 listed Priority Ecological Community (PEC) '*Melaleuca lanceolata* forests (*Melaleuca lanceolata* forests, Leeuwin Naturaliste Ridge)'
- Significant areas of 'regionally significant' granitic outcrop vegetation;
- Significant areas of Low Closed Peppermint Forest, Tall Closed Scrub and Dense Heath confirmed or predicted to be utilised by the critically endangered Western Ringtail Possums;
- At least one pocket of groundwater dependent vegetation supporting the endangered Leeuwin Freshwater Snail;
- Considerable areas of Very Good to Good condition areas of coastal granite vegetation communities considered as 'regionally significant'
- A diverse range of vegetation mapping units across the site;
- A diverse array of flora species were recorded, with significantly more expected if a more detailed assessment was undertaken across the year;
- Parts of the site represent important buffer areas for coastal erosion and protection of the reserve and carpark and the adjoining road;

5.2 Recommendations

Management recommendations to protect and enhance the identified vegetation values of the site include:

1. Wherever possible, avoid clearing and disturbance of good or better condition native vegetation;
2. Where possible utilise existing paths, vehicle access paths;
3. Wherever possible, limit any clearing to the pathway corridor, use this corridor for the movement of all material in and out of the site;
4. Avoid trail construction through the *Melaleuca lanceolata* PEC community within the western most portion of the site.
5. Avoid disturbance to the TEC listed Tufa communities including the adjacent vegetation and hydrology which supports the Tufa community.
6. Consult closely with DBCA with respect to the protection and management of the Tufa TEC including consideration given to boardwalking the adjacent section of trail in order to prevent disturbance to groundwater and the spring which the Tufa community is dependant upon.

7. Wherever possible avoid disturbance or development within the regionally significant granitic outcrop vegetation communities;
8. Consult closely with DBCA regarding the protection and enhancement of the granitic outcrop vegetation within the site;
9. Ensure the population of *Banksia sessilis var cordata* within the reserve and the proposed trail alignment is protected both from trail construction but also follow on impacts including disease spread/ introduction (Banksia species very susceptible to Phytophthora dieback)
10. The Low Closed Forest of *Agonis flexuosa*, the Tall Closed Scrub and the dense heath vegetation units represent confirmed or predicted habitat for the critically endangered Western Ringtail Possum. Clearing and disturbance within these communities should be minimised and where possible maintain branch and canopy connectivity alongside and over the pathway to minimise impacts on WRP habitat;
11. The potential exists to recover some plant material from within the pathway alignment prior to clearing eg) *Lepidosperma gladiatum.* This could be valuable for use in local revegetation projects including revegetation of the disturbed edges of the pathway.
12. Rapidly mulch/ brush and revegetate any disturbed areas.
13. Ensure that the priority environmental weed species are not spread as part of the proposal;
14. Undertake bush regeneration works to improve the condition of the degraded and good condition portions of the reserve;
15. Prepare and implement a management plan for the Cape Leeuwin reserves impacted by the project to ensure best practice management of these key ecological, recreational and amenity assets. Such a plan would need to address construction and post construction impacts of the project and broader use and management of the reserves including inappropriate four wheel drive access. A plan would need to address issues such as ; access, environmental weed management, revegetation of degraded areas, feral animal control, interpretive signage;
16. Actively control the priority environmental weed species recorded within the Reserve;
17. Conduct additional flora surveys at alternative times of the year and following any fire events in order to expand the species list for the site.
18. Ensure hygiene management protocols are followed to address the potential spread and introduction of diseases such dieback and environmental weeds into the site.

6. REFERENCES

Beard, J.S (1990) *Plant Life of Western Australia*. Kangaroo Press, Kenthurst.

Conservation and Land Management (1999) *Environmental Weeds Strategy for Western Australia (ENSWA)*, Department of Conservation and Land Management, Como.

Department of Agriculture (2003) Land Profiler, Shires of Capel, Busselton and Augusta-Margaret River, Perth, Western Australia.

Department of Conservation and Land Management (2003) Declared Rare and Priority Flora List. Publicly available list prepared by the then Department of Conservation of Land Management, Western Australia.

Department of Environment and Conservation (DEC) (2007) Definitions, categories and criteria for threatened and priority ecological communities.

Department of Environment and Conservation (DEC) (2010) List of Threatened Ecological Communities on the TEC Database endorsed by the Minister for the Environment

Department of Environment and Conservation (DEC) (2010) Priority ecological communities list (May 2010)

Eco Logic Environmental Services Pty Ltd (2014) Spring Flora and Vegetation Surveys, Flinders Bay and Margaret River Foreshore Areas. Report prepared for the Shire of Augusta Margaret River

Environmental Protection Authority (2016) *Technical Guidance:Flora and Vegetation Surveys for Environmental Impact Assessment* Guidance Statement 51, Environmental Protection Authority, Perth, Western Australia.

Florabase (2017) Department of Environment and Conservation, Western Australian Herbarium. Accessed online, November 2017.

Hussey, B.M.J, Keighery, G.J, Dodd, J, Lloyd S.G and Cousens, R.D (2007) Western Weeds: A guide to the weeds of Western Australia. The Weed Society of WA Inc.

Keighery, B.J. (1994) *Bushland Plant Survey. A Guide to Plant Community Survey for the Community.* Wildflower Society of WA (Inc.), Western Australia.

Keighery, G, Lyons, M, Gibson,N and Keighery, B (2011) *Vascular Flora of Leeuwin Naturaliste National Park* in Conservation Science W. Aust

Litoria Ecoservices (2017) Flora and Vegetation Assessment: Augusta Boat Harbour to Dead Finish Foreshore.

Mattiske, E. M and Havel J.J. (1998) *Vegetation Complexes of the South-West Forest Region of Western Australia.* Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Mattiske Consulting Pty Ltd (2002) *Review of Management Options for Poorly Represented Vegetation Complexes*, Prepared for Conservation Commission

Molloy, S., O'Connor, T., Wood, J. and Wallrodt, S. (2007), *Local Government Biodiversity Planning Guidelines: Addendum to the South West Biodiversity Project Area*, Western Australian Local Government Association, West Perth.

Molloy, S., Wood, J., Hall, S., Wallrodt, S and Whisson, G. (2009). *South West Regional Ecological Linkages Technical Report*. Western Australian Local Government Association (WALGA) and the Department of Environment and Conservation (DEC), West Perth.

Onshore Environmental Consultants Pty Ltd (2013) Cape Leeuwin Tourism Precinct, Level 2 Flora and Vegetation Survey. Report prepared for the Shire of Augusta Margaret River.

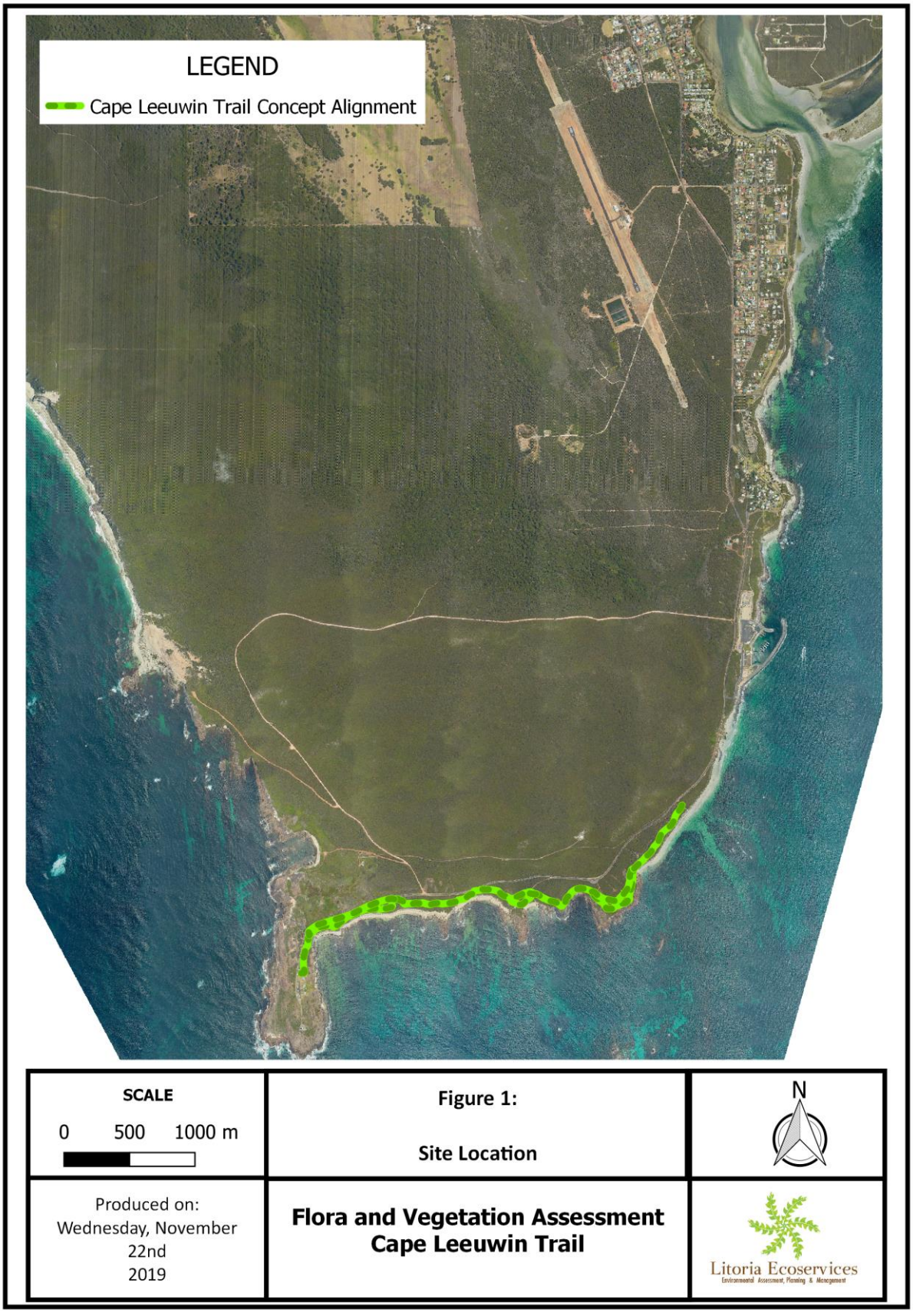
Rippey, E and Rowland, B (2004) Coastal Plants: Perth and the South-West Region. UWA Press

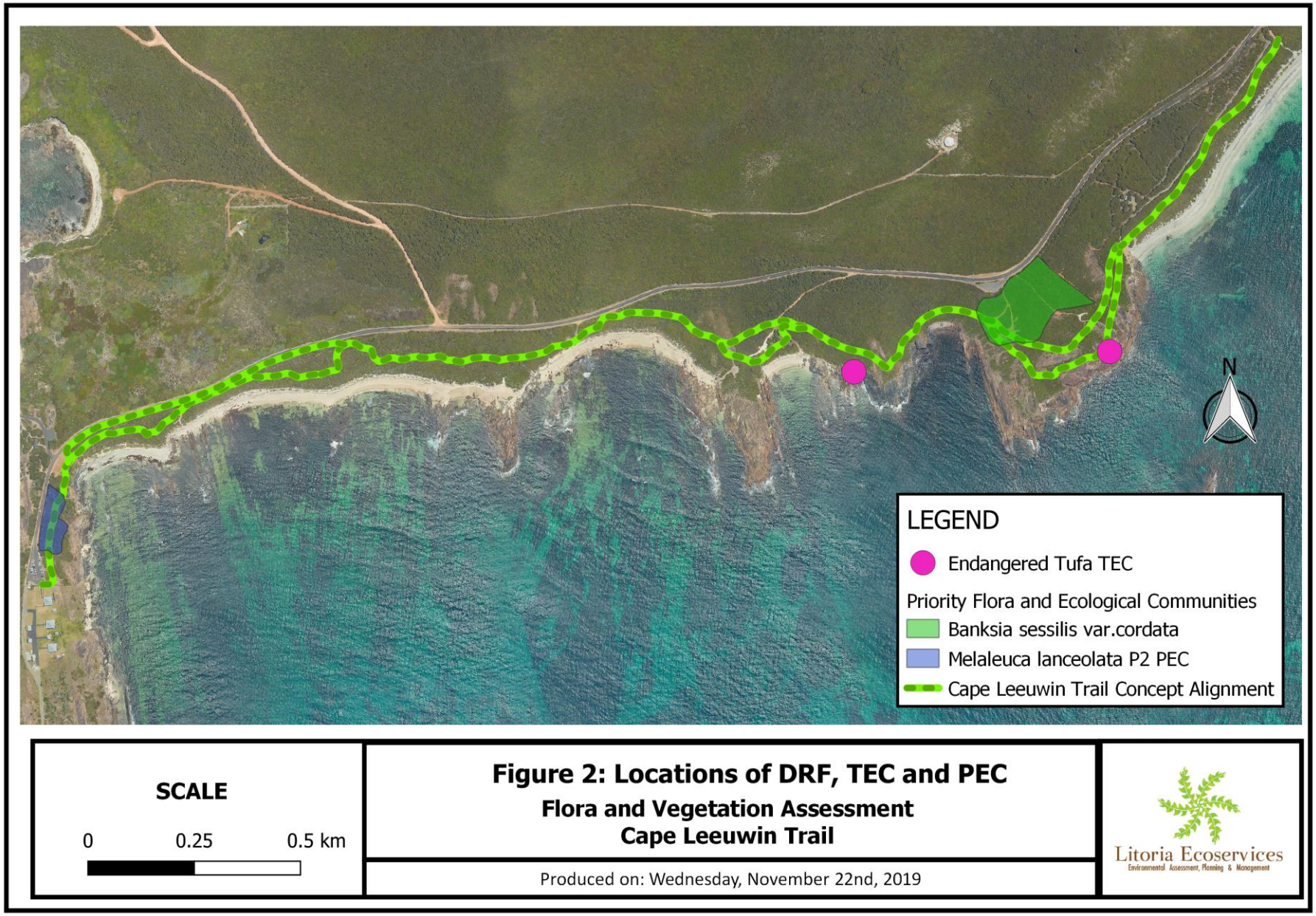
Scott, J and Negus, P (2013) Wildflowers of Southwest Australia: Augusta Margaret River Region. Cape to Cape Publishing

Webb, A (2013) Preliminary Notes on the Granite outcrops of Margaret River Plateau extent of the Leeuwin Block major landform. (Unpublished Report)

Wheeler, J., Marchant, N and Lewington, M. (2002) Flora of the South West. Bunbury-Augusta-Denmark. Volumes 1 and 2. UWA Press.

FIGURES


LEGEND
Cape Leeuwin Trail Concept Alignment
SCALE
0 500 1000 m
Figure 1:
Site Location
N
Produced on:
Wednesday, November
22nd
2019
Flora and Vegetation Assessment
Cape Leeuwin Trail
Litoria Ecoservices
Environmental Assessment, Planning & Management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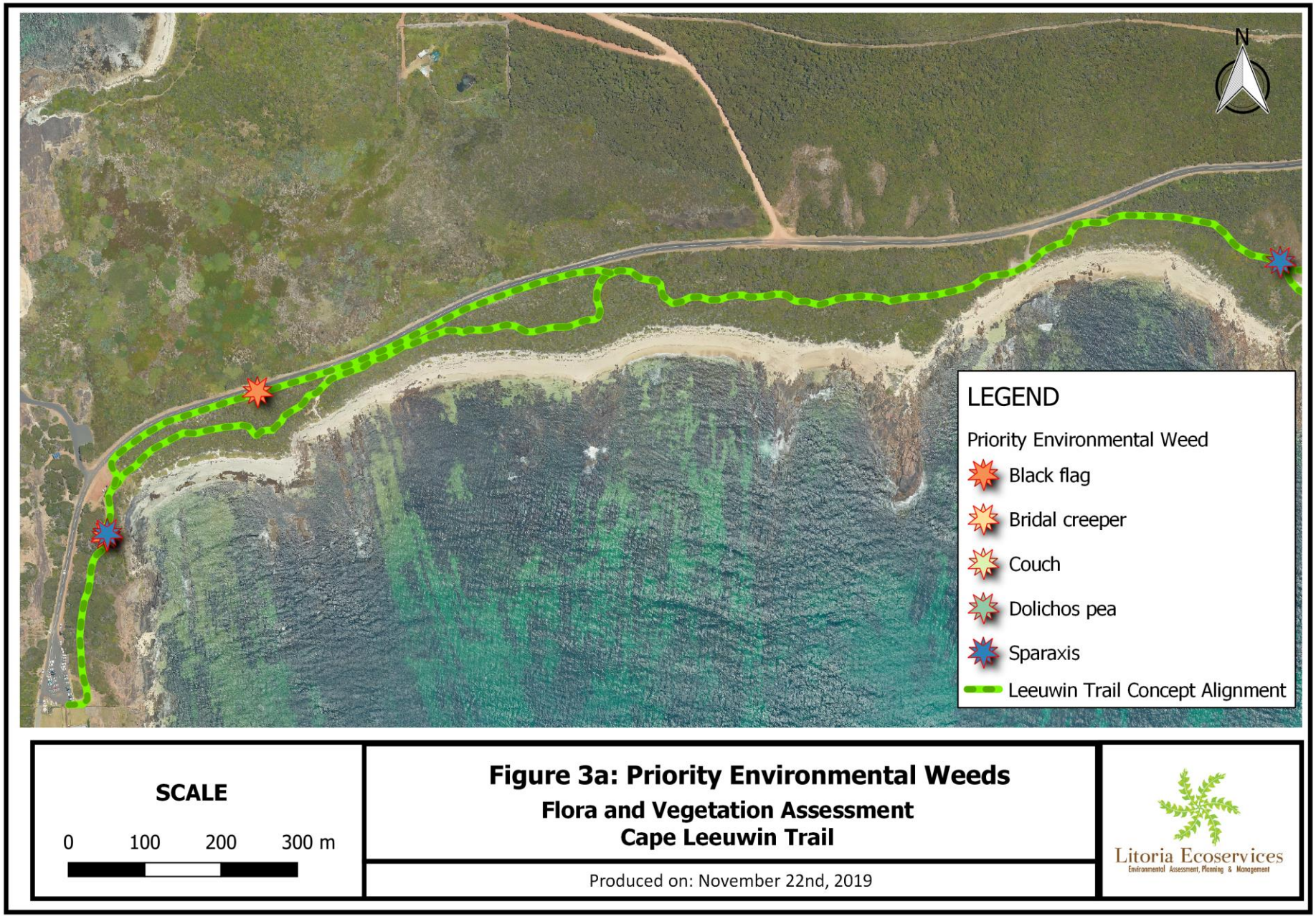
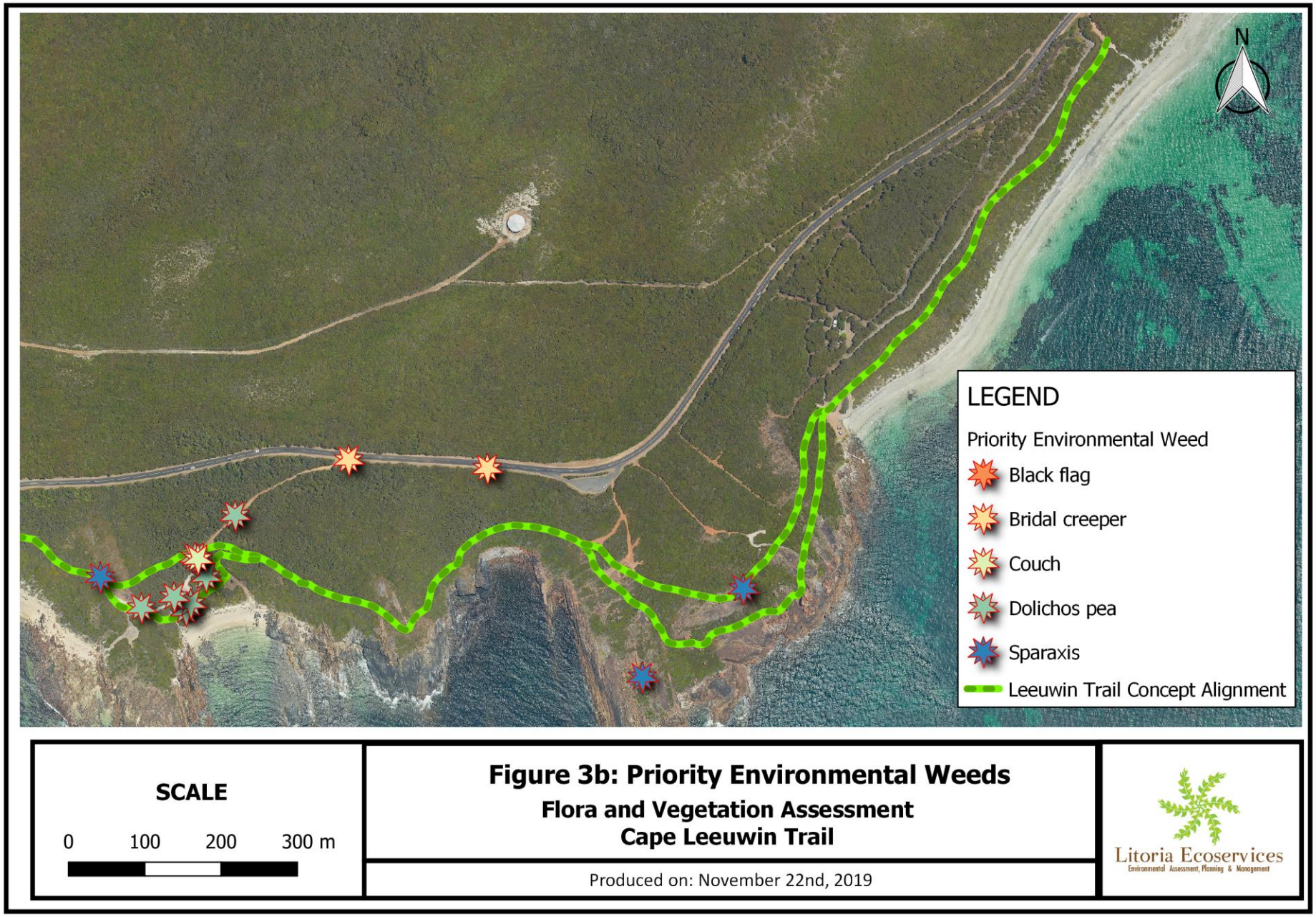
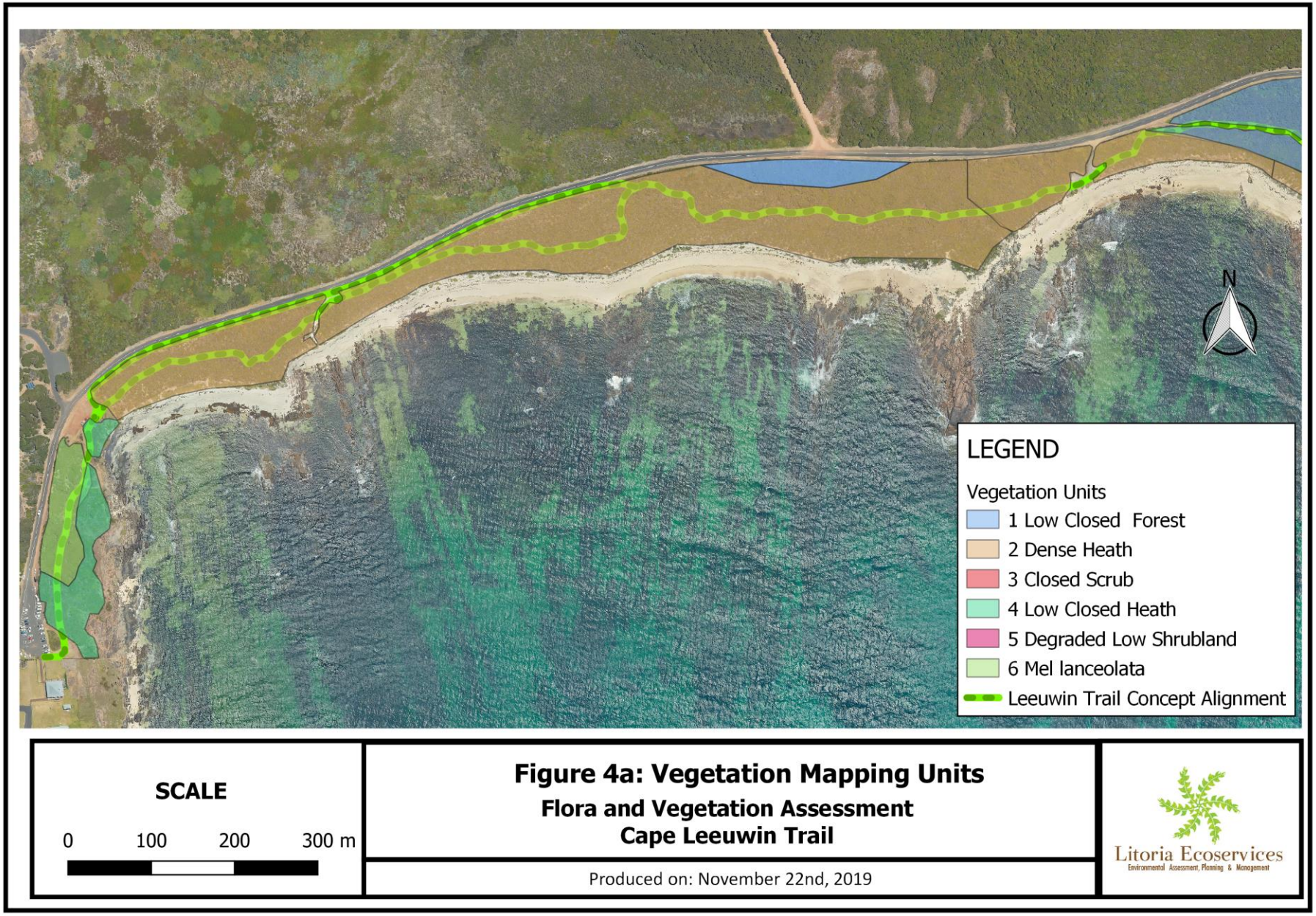
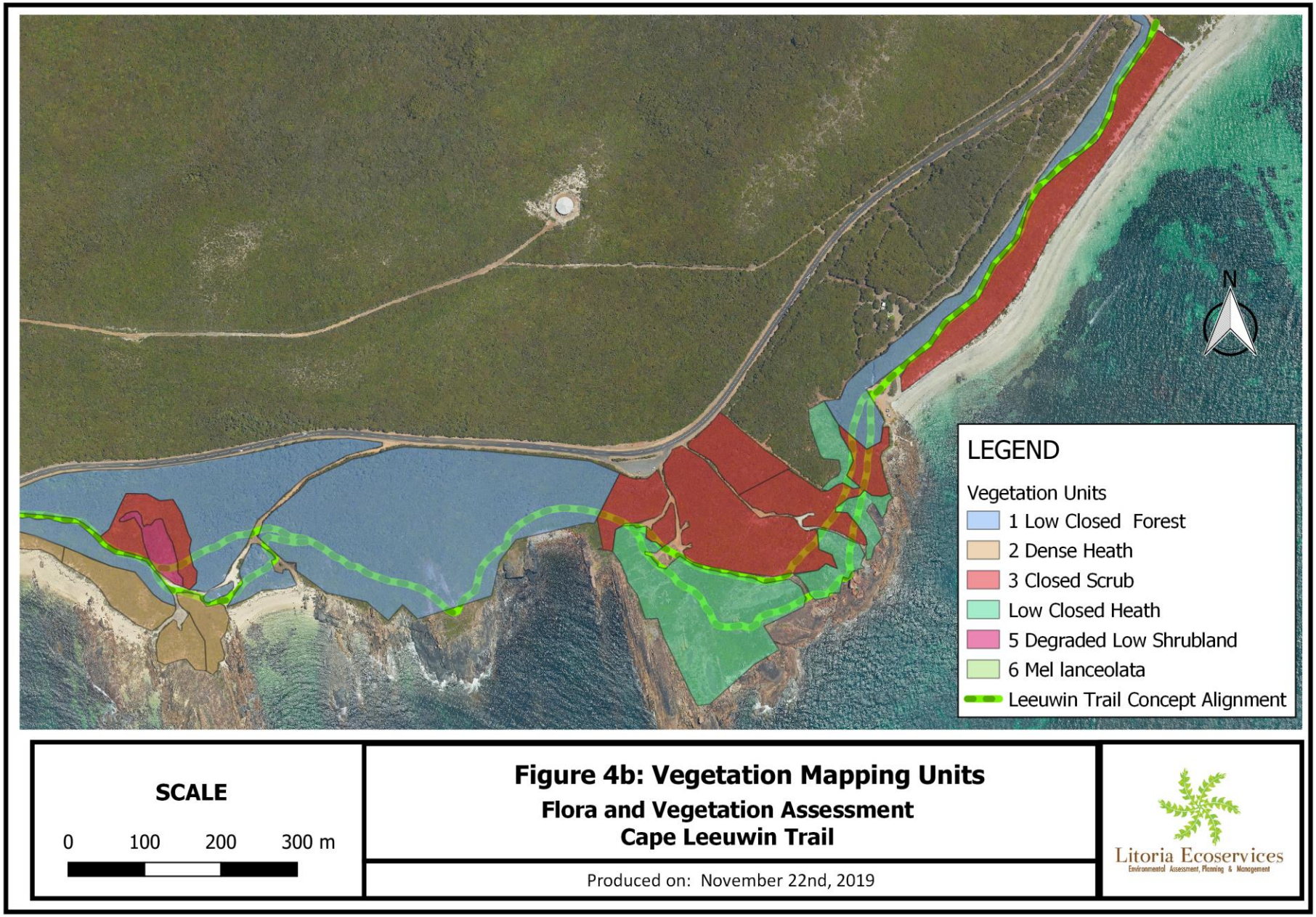
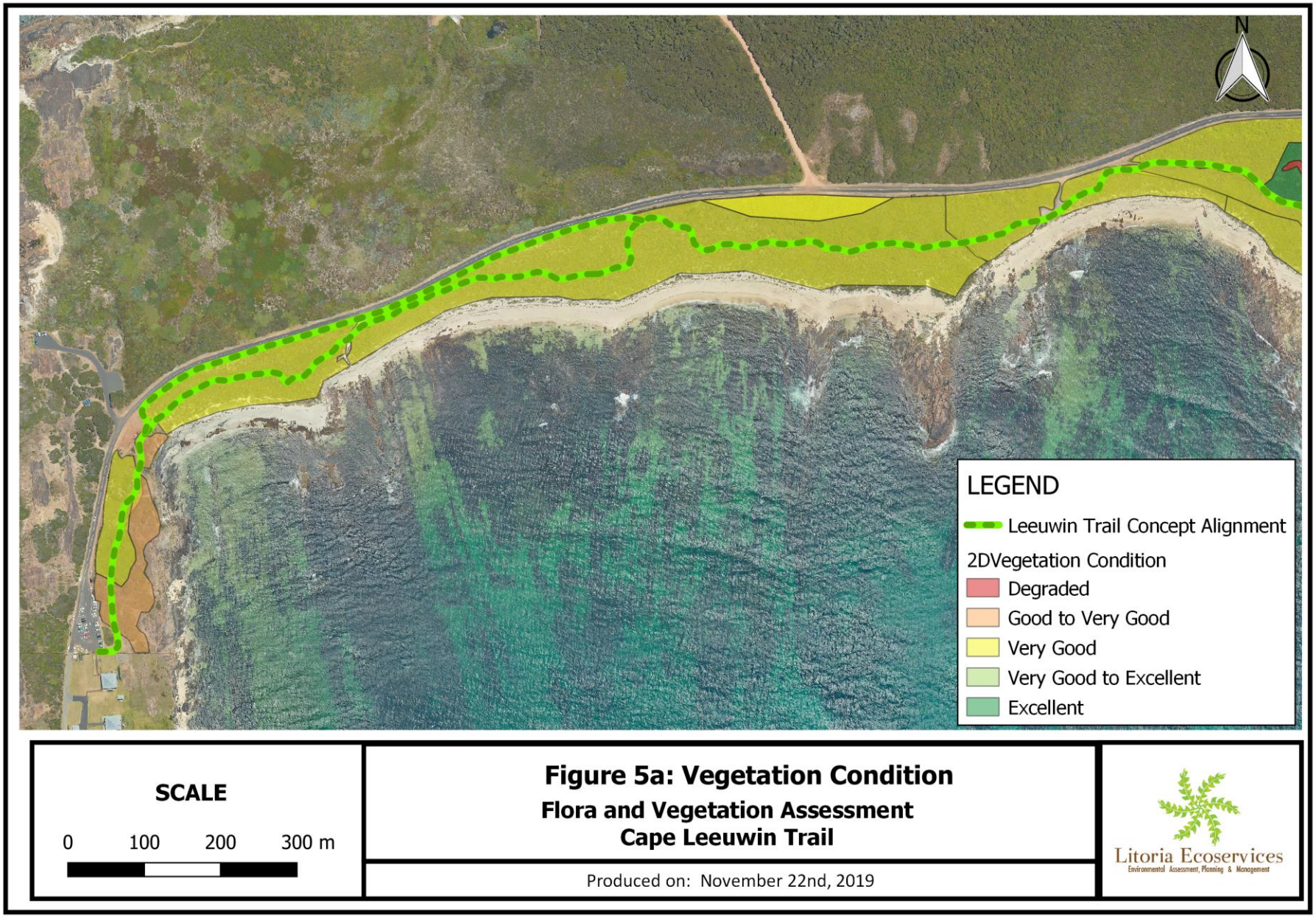
LEGEND
Endangered Tufa TEC
Priority Flora and Ecological Communities
Banksia sessilis var.cordata
Melaleuca lanceolata P2 PEC
Cape Leeuwin Trail Concept Alignment
SCALE
0
0.25
0.5 km
Figure 2: Locations of DRF, TEC and PEC
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: Wednesday, November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management

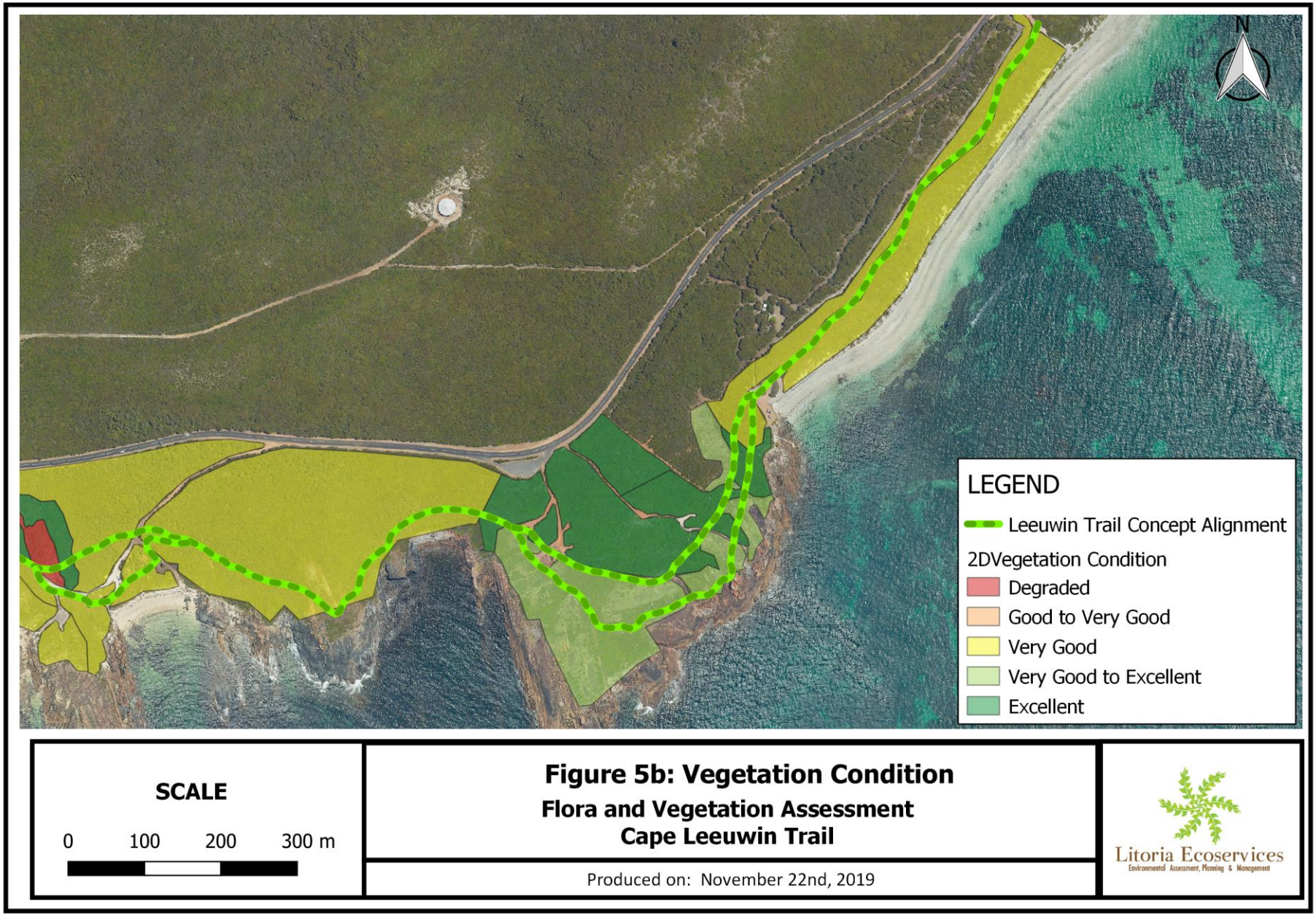

N
LEGEND
Priority Environmental Weed
Black flag
Bridal creeper
Couch
Dolichos pea
Sparaxis
Leeuwin Trail Concept Alignment
SCALE
0 100 200 300 m
Figure 3a: Priority Environmental Weeds
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management


N
LEGEND
Priority Environmental Weed
Black flag
Bridal creeper
Couch
Dolichos pea
Sparaxis
Leeuwin Trail Concept Alignment
SCALE
0
100
200
300 m
Figure 3b: Priority Environmental Weeds
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management


N
LEGEND
Vegetation Units
1 Low Closed Forest
2 Dense Heath
3 Closed Scrub
4 Low Closed Heath
5 Degraded Low Shrubland
6 Mel lanceolata
Leeuwin Trail Concept Alignment
SCALE
0 100 200 300 m
Figure 4a: Vegetation Mapping Units
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management


N
LEGEND
Vegetation Units
1 Low Closed Forest
2 Dense Heath
3 Closed Scrub
Low Closed Heath
5 Degraded Low Shrubland
6 Mel lanceolata
Leeuwin Trail Concept Alignment
SCALE
0 100 200 300 m
Figure 4b: Vegetation Mapping Units
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management


N
LEGEND
Leeuwin Trail Concept Alignment
2DVegetation Condition
Degraded
Good to Very Good
Very Good
Very Good to Excellent
Excellent
SCALE
0 100 200 300 m
Figure 5a: Vegetation Condition
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management


N
LEGEND
Leeuwin Trail Concept Alignment
2DVegetation Condition
Degraded
Good to Very Good
Very Good
Very Good to Excellent
Excellent
SCALE
0 100 200 300 m
Figure 5b: Vegetation Condition
Flora and Vegetation Assessment
Cape Leeuwin Trail
Produced on: November 22nd, 2019
Litoria Ecoservices
Environmental Assessment, Planning & Management

APPENDIX 1: FLORA SPECIES RECORDED ON-SITE

Family	Species	Weed
Aizoaceae	*Carpobrotus virescens*	
Aizoaceae	*Tetragonia decumbens*	*
Apiaceae	*Centella asiatica*	
Apiaceae	*Foeniculum vulgare*	*
Araceae	*Zantedeschia aethiopica*	*
Asparagaceae	*Asparagus asparagoides*	*
Asparagaceae	*Chamaescilla corymbosa*	
Asparagaceae	*Sowerbaea laxiflora*	
Asphodelaceae	*Trachyandra divaricata*	*
Asteraceae	*Arctotheca calendula*	*
Asteraceae	*Arctotheca populifolia*	*
Asteraceae	*Brachysome iberidifolia*	
Asteraceae	*Conyza sumatrensis*	*
Asteraceae	*Hypochaeris radicata*	*
Asteraceae	*Leucophyta brownii*	
Asteraceae	*Olearia axillaris*	
Asteraceae	*Ozothamnus cordatus*	
Asteraceae	*Rhodanthe citrina*	
Asteraceae	*Senecio elegans*	*
Asteraceae	*Taraxicum officinale*	*
Brassicaceae	*Cakile maritima*	*
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	
Chenopodiaceae	*Threlkeldia diffusa*	
Convolvulaceae	*Dichondra repens*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma pubisquameum*	
Cyperaceae	*Lepidosperma squamatum*	
Dasypogonaceae	*Acanthocarpus preisii*	
Dennstaedtiaceae	*Pteridium esculentum*	
Dilleniaceae	*Hibbertia cuneiformis*	
Dilleniaceae	*Hibbertia grossulariifolia*	
Droseraceae	*Drosera pallida*	
Euphorbiaceae	*Euphorbia paralias*	*
Euphorbiaceae	*Euphorbia peplus*	*
Ericaceae	*Leucopogon parviflorus*	
Ericaceae	*Leucopogon cordatus*	
Fabaceae	*Bossiaea disticha*	
Fabaceae	*Bossiaea linophylla*	
Fabaceae	*Dipogon lignosus*	*
Fabaceae	*Eutaxia myrtifolia*	
Fabaceae	*Gompholobium polymorphum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Isotropis cuneifolia*	
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Medicago polymorhpa*	*
Fumariaceae	*Fumaria capreolata*	*

Family	Species	Weed
Geraniaceae	*Pelargonium capitatum*	*
Goodenaceae	*Scaevola crassifolia*	
Haemodoraceae	*Anigozanthus manglesii*	
Haemodoraceae	*Conostylis aculeata*	
Hemerocallidaceae	*Dianella revoluta*	
Hemerocallidaceae	*Stypandra glauca*	
Iridaceae	*Ferraria crispa*	*
Iridaceae	*Gladiolis undulatus*	*
Iridaceae	*Moraea flaccida*	*
Iridaceae	*Orthrosanthus polystachyus*	
Iridaceae	*Pattersonia occidentalis*	
Iridaceae	*Sparaxis bulbifera*	*
Iridaceae	*Romulea rosea*	*
Lauraceae	*Cassytha racemosa*	
Malvaceae	*Thomasia triphylla*	
Mimosaceae	*Acacia alata*	
Mimosaceae	*Acacia cochlearis*	
Mimosaceae	*Acacia cyclops*	
Mimosaceae	*Acacia littorea*	
Mimosaceae	*Acacia pulchella*	
Mimosaceae	*Acacia saligna*	
Myrtaceae	*Agonis flexuosa*	
Myrtaceae	*Corymbia callophylla*	
Myrtaceae	*Melaleuca lanceolata*	
Orchidaceae	*Caladenia latifolia*	
Orchidaceae	*Thelymitra granitora*	
Orobanchacae	*Orobanche minor*	*
Oxalidaceae	*Oxalis incarnata*	*
Phyllanthaceae	*Phyllanthus calycinus*	
Pittosporaceae	*Billardiera fusiformis*	
Pittosporaceae	*Marianthus candidus*	
Plantaginaceae	*Plantago lanceolata*	*
Poaceae	*Avena barbata*	*
Poaceae	*Briza maxima*	*
Poaceae	*Briza minor*	*
Poaceae	*Cynodon dactylon*	*
Poaceae	*Lagurus ovatus*	*
Poaceae	*Cenchrus clandestinus*	*
Poaceae	*Microlaena stipoides*	
Poaceae	*Spinifex hirsutus*	
Poaceae	*Sporobolus virginicus*	
Poaceae	*Stenotaphrum secundatum*	*
Polygalaceae	*Comesperma confertum*	
Proteaceae	*Banksia sessilis var.cordata (P4)*	
Proteaceae	*Banksia grandis*	
Proteaceae	*Hakea oleifolia*	
Proteaceae	*Persoonia longifolia*	
Polygonaceae	*Muehlenbeckia adpressa*	
Ranunculaceae	*Clematis pubescens*	
Rhamnaceae	*Spyridium globulosum*	

Family	Species	Weed
Rutaceae	*Boronia alata*	
Rutaceae	*Chorilaena quercifolia*	
Sapindaceae	*Dodonea ceratocarpa*	
Santalaceae	*Exocarpus sparteus*	
Scrophulariaceae	*Myoporum insulare*	
Scrophulariaceae	*Verbascum virgatum*	*
Solonaceae	*Solanum nigrum*	*
Thymelaeaceae	*Pimelea ferrugineae*	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	
Zamiaceae	*Macrozamia riedlei*	

APPENDIX 2: RESULTS OF THE NATUREMAP SEARCH

Plantae

480.	3207	*Acacia alata (Winged Wattle)*			
481.	15429	*Acacia alata var. alata*			
482.	11731	*Acacia browniana var. browniana*			
483.	3262	*Acacia cochlearis (Rigid Wattle)*			
484.	3307	*Acacia divergens*			
485.	3347	*Acacia gilbertii*			
486.	3374	*Acacia huegelii*			
487.	18217	*Acacia iteaphylla*	Y		
488.	3424	*Acacia littorea*			
489.	3453	*Acacia myrtifolia*			
490.	3464	*Acacia obovata*			
491.	3502	*Acacia pulchella (Prickly Moses)*			
492.	15483	*Acacia pulchella var. pulchella*			
493.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
494.	3527	*Acacia saligna (Orange Wattle, Kudjong)*			
495.	3588	*Acacia uliginosa*			
496.	3591	*Acacia urophylla*			
497.	1208	*Acanthocarpus preissii*			
498.	44678	*Acanthus mollis*	Y		
499.	13146	*Acetabularia peniculus*			
500.	6295	*Acrotriche cordata (Coast Ground Berry)*			
501.	6206	*Actinotus omnifertilis*			
502.	7818	*Actites megalocarpus (Dune Thistle)*			
503.	1776	*Adenanthos detmoldii (Scott River Jugflower)*			P4
504.	1790	*Adenanthos meisneri*			
505.	1791	*Adenanthos obovatus (Basket Flower)*			
506.	28281	*Adenanthos sp. Whicher Range (G.J. Keighery 9736)*			
507.	5316	*Agonis flexuosa (Peppermint, Wonil)*			
508.	17202	*Agonis flexuosa var. flexuosa*			
509.	184	*Aira caryophyllea (Silvery Hairgrass)*	Y		
510.	35159	*Ammophila arenaria subsp. arenaria*	Y		
511.	1062	*Anarthria prolifera*			
512.	1063	*Anarthria scabra*			
513.	6306	*Andersonia caerulea (Foxtails)*			
514.	1407	*Anigozanthos flavidus (Tall Kangaroo Paw)*			
515.	6949	*Anthocercis littorea (Yellow Tailflower)*			
516.	202	*Anthoxanthum odoratum (Sweet Vernal Grass)*	Y		
517.	3685	*Aotus cannata*			P4
518.	6210	*Apium annuum*			
519.	12040	*Apium prostratum subsp. prostratum var. prostratum (Sea Celery)*			
520.	26481	*Apiohnia laetevirens*			
521.	7838	*Arctotheca calendula (Cape Weed, African Marigold)*	Y		
522.	7839	*Arctotheca populifolia (Dune Arctotheca, Beach Pumpkin, Coast Capeweed, Beach Daisy)*	Y		
523.	26484	*Areschougia ligulata*			
524.	26485	*Asparagopsis armata*			

525.	20752	*Asparagus aethiopicus*	Y		
526.	16943	*Asparagus declinatus*	Y		
527.	20283	*Astartea scoparia (Common Astartea)*			
528.	4401	*Asteromiasla squamuligera*			
529.	6323	*Astroloma ciliatum (Candle Cranberry)*			
530.	6334	*Astroloma pallidum (Kick Bush)*			
531.	2462	*Atriplex hypoleuca*			
532.	2471	*Atriplex prostrata (Hastate Orache)*	Y		
533.	26495	*Austrocionium charoides*			Y
534.	17234	*Austrostipa compressa*			
535.	32525	*Banksia formosa (Showy Dryandra)*			
536.	1819	*Banksia grandis (Bull Banksia, Pulgarla)*			
537.	1822	*Banksia ilicifolia (Holly-leaved Banksia)*			
538.	1830	*Banksia littoralis (Swamp Banksia, Pungura)*			
539.	17107	*Banksia meisneri subsp. ascendens (Scott River Banksia)*		P4	
540.	1837	*Banksia occidentalis (Red Swamp Banksia)*			
541.	32078	*Banksia sessilis var. cordata*		P4	
542.	32315	*Barbula calycina*			
543.	740	*Baumea arthrophylla*			
544.	741	*Baumea articulata (Jointed Rush)*			
545.	743	*Baumea juncea (Bare Twigrush)*			
546.	744	*Baumea laxa*			
547.	748	*Baumea vaginalis (Sheath Twigrush)*			
548.	5392	*Beaufortia sparsa (Swamp Bottlebrush)*			
549.	7853	*Berkheya rigida (African Thistle, Hamelin Thistle)*	Y		
550.	12686	*Berula erecta (Narrowleaf Water Parsnip)*	Y		
551.	3157	*Billardiera floribunda (White-flowered Billardiera)*			
552.	25798	*Billardiera fusiformis (Australian Bivebell)*			
553.	3165	*Billardiera variifolia*			
554.	4403	*Boronia alata (Winged Boronia)*			
555.	16313	*Boronia anceps*		P3	
556.	4413	*Boronia crenulata (Aniseed Boronia)*			
557.	29274	*Boronia crenulata subsp. crenulata*			
558.	11503	*Boronia crenulata subsp. crenulata var. crenulata*			
559.	16632	*Boronia juncea subsp. minima*			
560.	4441	*Boronia spathulata (Boronia)*			
561.	4442	*Boronia stricta*			
562.	20392	*Boronia tenuior*			
563.	1272	*Borya scirpoidea*			
564.	3708	*Bossiaea disticha*			
565.	3710	*Bossiaea eriocarpa (Common Brown Pea)*			
566.	3713	*Bossiaea linophylla*			
567.	14291	*Bossiaea praetermissa*			
568.	3718	*Bossiaea rufa*			
569.	26518	*Botrycladia sonderi*			
570.	6341	*Brachyloma preissii (Globe Heath)*			
571.	7878	*Brachyscome iberidifolia*			
572.	244	*Briza maxima (Blowfly Grass)*	Y		
573.	12770	*Burchardia congesta*			
574.	1385	*Burchardia multiflora (Dwarf Burchardia)*			
575.	1277	*Caesia occidentalis*			
576.	3002	*Cakile maritima (Sea Rocket)*	Y		
577.	13852	*Caladenia abbreviata*		P3	
578.	15328	*Caladenia applanata subsp. applanata*			
579.	13853	*Caladenia arrecta*			
580.	15332	*Caladenia attingens subsp. attingens*			
581.	15335	*Caladenia brownii*			
582.	1580	*Caladenia cairnsiana (Zebra Orchid)*			
583.	1581	*Caladenia corynephora*			
584.	10776	*Caladenia ensata*			
585.	13619	*Caladenia excelsa*		T	
586.	1592	*Caladenia flava (Cowslip Orchid)*			
587.	15351	*Caladenia gardneri*			
588.	1597	*Caladenia infundibularis*			
589.	1599	*Caladenia latifolia (Pink Fairy Orchid)*			
590.	18037	*Caladenia lodgeana*		T	
591.	15366	*Caladenia longicauda subsp. merrittii*			
592.	15372	*Caladenia nana subsp. unita*			
593.	15375	*Caladenia pholcoidea*			
594.	18034	*Caladenia pholcoidea subsp. augustensis*		P1	Y

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
595.	18033	*Caladenia pholcoidea subsp. pholcoidea*			
596.	15379	*Caladenia serotina*			
597.	2845	*Calandrinia brevipedata (Short-stalked Pursiane)*			
598.	40827	*Calandrinia tholiformis*			
599.	10861	*Callistachys lanceolata (Wonnich)*			
600.	26534	*Callophycus dorsifer*			
601.	26536	*Callophycus oppositifolius*			
602.	35799	*Calothamnus lateralis var. crassus*		P3	
603.	32461	*Campylopus bicolor var. bicolor*			
604.	43241	*Carex thecata*			
605.	2952	*Cassytha glabella (Tangled Dodder Laurel)*			
606.	2956	*Cassytha pomiformis (Dodder Laurel)*			
607.	2957	*Cassytha racemosa (Dodder Laurel)*			
608.	11242	*Cassytha racemosa forma pilosa*			
609.	11799	*Cassytha racemosa forma racemosa*			
610.	26555	*Caulerpa brownii*			
611.	26556	*Caulerpa cactoides*			
612.	48455	*Caulerpa geminata*			
613.	26570	*Caulerpa obscura*			
614.	26574	*Caulerpa scalpelliformis*			
615.	41564	*Cenchrus clandestinus (Kikuyu Grass)*	Y		
616.	6539	*Centaurium erythraea (Common Centaury)*	Y		
617.	6542	*Centaurium tenuiflorum*	Y		
618.	6214	*Centella asiatica*			
619.	1121	*Centrolepis aristata (Pointed Centrolepis)*			
620.	1125	*Centrolepis drummondiana*			
621.	13489	*Cerastium pumilum*	Y		
622.	26613	*Chaetomorpha valida*			
623.	11299	*Chamaescilla corymbosa var. corymbosa*			
624.	26622	*Chauvinlelia corilifolia*			
625.	2490	*Chenopodium glaucum (Glaucous Goosefoot)*	Y		
626.	20659	*Chlorophytum comosum*	Y		Y
627.	4448	*Chorilaena quercifolia (Chorilaena)*			
628.	13112	*Chorizema aciculare subsp. aciculare*			
629.	3754	*Chorizema diversifolium*			
630.	3760	*Chorizema reticulatum (Showy Flame Pea)*			
631.	26665	*Clavicionium ovatum*			
632.	2929	*Clematis pubescens (Common Clematis)*			
633.	4552	*Comesperma confertum*			
634.	4554	*Comesperma flavum*			
635.	4564	*Comesperma virgatum (Milkwort)*			
636.	40863	*Commersonia coryllfolia (Hazel-leaved Rulingia)*			
637.	15607	*Conospermum acerosum subsp. acerosum*			
638.	1862	*Conospermum caeruleum (Blue Brother)*			
639.	16878	*Conospermum caeruleum subsp. spathulatum*			
640.	16853	*Conospermum capitatum subsp. glabratum*			
641.	1418	*Conostylis aculeata (Prickly Conostylis)*			
642.	11826	*Conostylis aculeata subsp. aculeata*			
643.	1438	*Conostylis laxiflora*			
644.	11597	*Conostylis setigera subsp. setigera*			
645.	20074	*Conyza sumatrensis*	Y		
646.	29283	*Coprosma repens*	Y		
647.	48259	*Cortaderia selloana subsp. selloana*	Y		
648.	17104	*Corymbia calophylla (Marri)*			
649.	7945	*Cotula coronopifolia (Waterbuttons)*	Y		
650.	20271	*Crassula extrorsa*			
651.	1514	*Crocosmia x crocosmiiflora*	Y		
652.	17368	*Crotalaria agatiflora subsp. agatiflora*	Y		
653.	1627	*Cryptostylis ovata (Slipper Orchid)*			
654.	26712	*Curdiea obesa*			
655.	6663	*Cuscuta epithymum (Lesser Dodder, Greater Dodder)*	Y		
656.	283	*Cynodon dactylon (Couch)*	Y		
657.	783	*Cyperus congestus (Dense Flat-sedge)*	Y		
658.	792	*Cyperus eragrostis (Umbrella Sedge)*	Y		
659.	801	*Cyperus laevigatus*	Y		
660.	10916	*Cyrtostylis huegelii*			
661.	7444	*Dampiera hederacea (Karri Dampiera)*			
662.	7446	*Dampiera heteroptera*		P3	
663.	7454	*Dampiera linearis (Common Dampiera)*			
664.	18193	*Darwinia thymoides subsp. thymoides*			

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665.	26751	*Dasyclonium flaccidum*			
666.	26753	*Dasyphila preissii*			
667.	1218	*Dasypogon bromeliifolius (Pineapple Bush)*			
668.	19747	*Daviesia decurrens subsp. decurrens*			
669.	3811	*Daviesia flexuosa*			
670.	3817	*Daviesia inflata*			
671.	26757	*Delisea pulchra*			
672.	16595	*Desmocladus flexuosus*			
673.	1259	*Dianella revoluta (Blueberry Lily)*			
674.	7487	*Diaspasis filifolia (Thread-leaved Diaspasis)*			
675.	306	*Dichelachne crinita (Longhair Plumegrass)*			
676.	6616	*Dichondra repens (Kidney Weed)*			
677.	29616	*Dichotomaria marginata*			
678.	34959	*Dichotomaria spathulata*			
679.	32345	*Didymodon australasiae*			
680.	17736	*Digitaria aequiglumis*	Y		
681.	311	*Digitaria ciliaris (Summer Grass)*	Y		
682.	320	*Digitaria sanguinalis (Crab Grass)*	Y		
683.	4454	*Diplolaena dampieri (Southern Diplolaena)*			
684.	4457	*Diplolaena microcephala (Lesser Diplolaena)*			
685.	3011	*Diplotaxis muralis (Wall Rocket)*	Y		
686.	3867	*Dipogon lignosus (Dolichos Pea)*	Y		
687.	44140	*Diuris jonesii*			
688.	1633	*Diuris laevis (Nannygoat Orchid)*			
689.	1635	*Diuris longifolia (Common Donkey Orchid)*			
690.	49036	*Diuris sp. Augusta (G. Brockman GBB 1460)*			Y
691.	4757	*Dodonaea ceratocarpa*			
692.	17338	*Dodonaea viscosa subsp. viscosa*	Y		
693.	1640	*Drakaea glyptodon (King-in-his-carriage)*			
694.	48751	*Drosera drummondii*			
695.	3096	*Drosera glanduligera (Pimpernel Sundew)*			
696.	3102	*Drosera huegelii (Bold Sundew)*			
697.	11368	*Dysphania glomulifera subsp. glomulifera*			
698.	1643	*Elythranthera brunonis (Purple Enamel Orchid)*			
699.	6131	*Epilobium billardiereanum (Glabrous Willow Herb)*			
700.	11570	*Epilobium billardiereanum subsp. billardiereanum (Smooth Willow Herb)*			
701.	3149	*Eremosyne pectinata*			
702.	15410	*Eriochilus dilatatus subsp. dilatatus*			
703.	4333	*Erodium cicutarium (Common Storksbill)*	Y		
704.	6219	*Eryngium pinnatifidum (Blue Devils)*			
705.	15446	*Eryngium pinnatifidum subsp. pinnatifidum*			
706.	26822	*Erythrocionium sedoides*			
707.	5605	*Eucalyptus cornuta (Yate, Yeld)*			
708.	5625	*Eucalyptus diversicolor (Karri)*			
709.	13547	*Eucalyptus marginata subsp. marginata (Jarrah)*			
710.	4636	*Euphorbia paralias (Sea Spurge)*	Y		
711.	4638	*Euphorbia peplus (Petty Spurge)*	Y		
712.	20214	*Eutaxia myrtifolia*			
713.	3880	*Eutaxia virgata*			
714.	834	*Evandra aristata*			
715.	10907	*Exocarpos odoratus (Scented Ballart)*			
716.	10765	*Exocarpos sparteus (Broom Ballart, Djuk)*			
717.	11445	*Ferraria crispa subsp. crispa*	Y		
718.	20216	*Ficinia nodosa (Knotted Club Rush)*			
719.	32470	*Fissidens tenellus var. australiensis*			
720.	6221	*Foeniculum vulgare (Fennel)*	Y		
721.	1945	*Franklandia triaristata (Lanoline Bush)*		P4	
722.	31532	*Fumaria muralis subsp. muralis*	Y		
723.	907	*Gahnia trifida (Coast Saw-sedge)*			
724.	34216	*Galium leptogonium*		P3	
725.	20473	*Gastrolobium ebracteolatum*			
726.	20504	*Gastrolobium formosum*		P3	
727.	26841	*Gayralia oxysperma*			
728.	16311	*Gazania linearis*	Y		
729.	32380	*Gemmabryum pachythecum*			
730.	4340	*Geranium retrorsum*			
731.	26852	*Gibsmithia womersleyi*			
732.	26854	*Gigartina disticha*			
733.	26864	*Glolosaccion brownii*			
734.	3948	*Gompholobium capitatum*			

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735.	3953	*Gompholobium ovatum*			
736.	3954	*Gompholobium polymorphum*			
737.	6146	*Gonocarpus benthamii*			
738.	16746	*Gonocarpus benthamii subsp. benthamii*			
739.	7505	*Goodenia eatoniana*			
740.	13165	*Goodenia pusilla*			
741.	26876	*Gracilaria verrucosa*			
742.	37500	*Grammatotheca bergiana var. bergiana*	Y		
743.	14010	*Grevillea brachystylis subsp. australis*		T	
744.	2080	*Grevillea quercifolia (Oak-leaf Grevillea)*			
745.	1472	*Haemodorum simplex*			
746.	1475	*Haemodorum spicatum (Mardja)*			
747.	2128	*Hakea amplexicaulis (Prickly Hakea)*			
748.	2137	*Hakea ceratophylla (Horned Leaf Hakea)*			
749.	2159	*Hakea falcata*			
750.	2170	*Hakea lasiantholdes*			
751.	2191	*Hakea oleifolia (Dungyn)*			
752.	2203	*Hakea ruscifolia (Candle Hakea)*			
753.	47213	*Hallmedia versatilis*			
754.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
755.	3016	*Hellophila pusilla*	Y		
756.	11451	*Hemarthria uncinata var. uncinata*			
757.	6839	*Hemiandra pungens (Snakebush)*			
758.	38322	*Hemiandra sp. Windy Harbour (B.J. Conn & J.A. Scott BJC 3344)*		P3	
759.	26915	*Hennedya crispa*			
760.	26940	*Heterothamnion platythallae*			Y
761.	31115	*Heterozostera polychlamys*			
762.	5109	*Hibbertia amplexicaulis*			
763.	5117	*Hibbertia cuneiformis (Cutleaf Hibbertia)*			
764.	5118	*Hibbertia cunninghamii*			
765.	20051	*Hibbertia diamesogenos*			
766.	5132	*Hibbertia grossularifolia*			
767.	45534	*Hibbertia hypericoides subsp. hypericoides*			
768.	5137	*Hibbertia inconspicua*			
769.	19687	*Hibbertia notibractea*			
770.	5154	*Hibbertia perfoliata*			
771.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
772.	5169	*Hibbertia serrata (Serrate Leaved Guinea Flower)*			
773.	5171	*Hibbertia spicata*			
774.	1294	*Hodgsoniola junciformis*			
775.	6222	*Homalosciadium homalocarpum*			
776.	5816	*Homalospermum firmum*			
777.	449	*Hordeum leporinum (Barley Grass)*	Y		
778.	18137	*Homungia procumbens*	Y		
779.	3964	*Hovea chorizemifolia (Holly-leaved Hovea)*			
780.	3965	*Hovea elliptica (Tree Hovea)*			
781.	3968	*Hovea trisperma (Common Hovea)*			
782.	12859	*Hovea trisperma var. trisperma*			
783.	5218	*Hybanthus debilissimus*			
784.	6224	*Hydrocotyle blepharocarpa*			
785.	6229	*Hydrocotyle diantha*			
786.	6237	*Hydrocotyle plebeya*			
787.	6241	*Hydrocotyle tetragonocarpa*			
788.	452	*Hyparrhenia hirta (Tambookie Grass)*	Y		
789.	5182	*Hypericum perforatum (St John's Wort)*	Y		
790.	26971	*Hypnea ramentacea*			
791.	5817	*Hypocalymma angustifolium (White Myrtle, Kudjid)*			
792.	5819	*Hypocalymma ericifolium*			
793.	43120	*Hypocalymma minus*			
794.	5825	*Hypocalymma robustum (Swan River Myrtle)*			
795.	17841	*Hypolaena pubescens*			
796.	6630	*Ipomoea indica (Morning Glory)*	Y		
797.	20199	*Isolepis cernua var. cernua*			
798.	20200	*Isolepis cernua var. setiformis*			
799.	917	*Isolepis marginata (Coarse Club-rush)*			
800.	10831	*Isolepis prolifera (Budding Club-rush)*	Y		
801.	7396	*Isotoma hypocrateriformis (Woodbridge Poison)*			
802.	7399	*Isotoma scapigera (Long-scaped Isotome)*			
803.	19700	*Isotropis cuneifolia subsp. cuneifolia*			
804.	1532	*Ixia maculata (Yellow Ixia)*	Y		

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805.	1533	*Ixia paniculata*	Y		
806.	8092	*Ixiolaena viscosa (Sticky Ixiolaena)*			
807.	4012	*Jacksonia furcellata (Grey Stinkwood)*			
808.	4017	*Jacksonia horrida*			
809.	1297	*Johnsonia lupulina (Hooded Lily)*			
810.	1177	*Juncus articulatus (Jointed Rush)*	Y		
811.	1178	*Juncus bufonius (Toad Rush)*	Y		
812.	1179	*Juncus caespiticius (Grassy Rush)*			
813.	1184	*Juncus holoschoenus (Jointleaf Rush)*			
814.	1185	*Juncus kraussii (Sea Rush)*			
815.	11922	*Juncus kraussii subsp. australiensis*			
816.	1190	*Juncus planifolius (Broadleaf Rush)*			
817.	1195	*Juncus subsecundus (Finger Rush)*			
818.	4036	*Kennedia carinata*			
819.	4037	*Kennedia coccinea (Coral Vine)*			
820.	37960	*Kennedia coccinea subsp. calcaria*			
821.	33518	*Kennedia lateritia (Augusta Kennedia)*		T	Y
822.	26995	*Kuetzingia canaliculata*			
823.	17461	*Kunzea micrantha subsp. micrantha*			
824.	5841	*Kunzea recurva*			
825.	14776	*Kunzea rostrata*			
826.	14775	*Kunzea spathulata*			
827.	18585	*Lagenophora huegelii*			
828.	14646	*Lagunaria patersonia*	Y		
829.	467	*Lagurus ovatus (Hare's Tail Grass)*	Y		
830.	1309	*Laxmannia squarrosa*			
831.	7572	*Lechenaultia expansa*			
832.	44490	*Leontodon rhagadioloides*	Y		
833.	8099	*Leontodon saxatilis (Hairy Hawkbit)*	Y		
834.	925	*Lepidosperma angustatum*			
835.	932	*Lepidosperma effusum (Spreading Sword-sedge)*			
836.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
837.	940	*Lepidosperma pubisquameum*			
838.	20398	*Lepidosperma sp. Blackwood (R. Davis 7696)*			
839.	945	*Lepidosperma squamatum*			
840.	46376	*Leptocarpus denmarkicus*			
841.	1080	*Leptocarpus scariosus*			
842.	15418	*Leptoceras menziesii*			
843.	2355	*Leptomeria squarrulosa*			
844.	17852	*Leptorhynchos scaber (Lanky Buttons)*			
845.	5850	*Leptospermum laevigatum (Coast Teatree)*	Y		
846.	17552	*Lepyrodia porterae*			
847.	28292	*Leucanthemum x superbum (Shasta Daisy)*	Y		
848.	16449	*Leucophyta brownii*			
849.	6360	*Leucopogon australis (Spiked Beard-heath)*			
850.	6367	*Leucopogon capitellatus*			
851.	6387	*Leucopogon distans*			
852.	6402	*Leucopogon hirsutus*			
853.	6417	*Leucopogon obovatus*			
854.	40941	*Leucopogon obovatus subsp. revolutus*			
855.	35499	*Leucopogon paradoxus*			
856.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
857.	6428	*Leucopogon pendulus*			
858.	6436	*Leucopogon propinquus*			
859.	34718	*Leucopogon sp. Southern Forests (B.G. Hammersley 1000)*			
860.	35559	*Leucopogon tenuicaulis*			
861.	6454	*Leucopogon verticillatus (Tassel Flower)*			
862.	7676	*Levenhookia pusilla (Midget Stylewort)*			
863.	59	*Lindsaea linearis (Screw Fern)*			
864.	4362	*Linum marginale (Wild Flax)*			
865.	4363	*Linum trigynum (French Flax)*	Y		
866.	36160	*Liparophyllum capitatum*			
867.	36180	*Liparophyllum latifolium*			
868.	9289	*Lobelia anceps (Angled Lobelia)*			
869.	7408	*Lobelia tenuior (Slender Lobelia)*			
870.	6515	*Loganla vaginalis (White Spray)*			
871.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
872.	1223	*Lomandra caespitosa (Tufted Mat Rush)*			
873.	1229	*Lomandra integra*			
874.	14542	*Lomandra micrantha subsp. micrantha*			

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875.	1234	*Lomandra nigricans*			
876.	1238	*Lomandra pauciflora*			
877.	1239	*Lomandra preissii*			
878.	1240	*Lomandra purpurea (Purple Mat Rush)*			
879.	1244	*Lomandra sonderi*			
880.	4059	*Lotus angustissimus (Narrowleaf Trefoil)*	Y		
881.	1198	*Luzula meridionalis (Field Woodrush)*			
882.	18049	*Lyginia imberbis*			
883.	1656	*Lyperanthus serratus (Rattle Beak Orchid)*			
884.	36375	*Lysimachia arvensis (Pimpernel)*	Y		
885.	6456	*Lysinema ciliatum (Curry Flower)*			
886.	6457	*Lysinema conspicuum*			
887.	34736	*Lysinema pentapetalum*			
888.	5281	*Lythrum hyssopifolia (Lesser Loosestrife)*	Y		
889.	85	*Macrozamia riedlei (Zamia, Djiridji)*			
890.	17637	*Marianthus candidus (White Marianthus)*			
891.	17630	*Marianthus tenuis*			
892.	4072	*Medicago arabica (Spotted Medic)*	Y		
893.	34676	*Meionectes brownii (Swamp Raspwort)*			
894.	36296	*Melaleuca armillaris subsp. armillaris*	Y		
895.	5900	*Melaleuca cuticularis (Saltwater Paperbark)*			
896.	13271	*Melaleuca huegelii subsp. huegelii*			
897.	5921	*Melaleuca incana (Grey Honeymyrtle)*			
898.	13273	*Melaleuca incana subsp. incana*			
899.	5922	*Melaleuca lanceolata (Rottnest Teatree, Moonah)*			
900.	5952	*Melaleuca preissiana (Moonah)*			
901.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
902.	5980	*Melaleuca thymoides*			
903.	17682	*Melanostachya ustulata*			
904.	6883	*Mentha pulegium (Pennyroyal)*	Y		
905.	6884	*Mentha spicata (Spearmint)*	Y		
906.	953	*Mesomelaena graciliceps*			
907.	957	*Mesomelaena tetragona (Semaphore Sedge)*			
908.	27069	*Metagoniolithon stelliferum*			
909.	34158	*Microtis alboviridis*			
910.	15419	*Microtis media subsp. media*			
911.	8105	*Millotia myosotidifolia*			
912.	4090	*Mirbelia dilatata (Holly-leaved Mirbelia)*			
913.	2412	*Muehlenbeckia adpressa (Climbing Lignum)*			
914.	7292	*Myoporum oppositifolium (Twin-leaf Myoporum)*			
915.	18330	*Nephrolepis cordifolia*	Y		
916.	27103	*Nizymenia conferta*			
917.	8127	*Olearia axillaris (Coastal Daisybush)*			
918.	8130	*Olearia cassiniae*			
919.	8133	*Olearia elaeophila*			
920.	8143	*Olearia paucidentata (Autumn Scrub Daisy)*			
921.	8149	*Olearia rudis (Rough Daisybush)*			
922.	7346	*Opercularia echinocephala (Bristly Headed Stink Weed)*			
923.	7348	*Opercularia hispidula (Hispid Stinkweed)*			
924.	46316	*Orianthera serpyllifolia subsp. angustifolia*			
925.	36181	*Ornduffia parnassifolia*			
926.	7122	*Orobanche minor (Lesser Broomrape)*	Y		
927.	1539	*Orthrosanthus multiflorus (Morning Iris)*			
928.	1540	*Orthrosanthus polystachyus (Many Spike Orthrosanthus)*			
929.	27107	*Osmundaria prolifera*			
930.	4349	*Oxalis corniculata (Yellow Wood Sorrel)*	Y		
931.	30375	*Oxalis exilis*			
932.	4352	*Oxalis glabra*	Y		
933.	4354	*Oxalis incarnata*	Y		
934.	17114	*Paraserianthes lophantha subsp. lophantha*			
935.	7089	*Parentucellia latifolia (Common Bartsia)*	Y		
936.	1546	*Patersonia juncea (Rush Leaved Patersonia)*			
937.	1550	*Patersonia occidentalis (Purple Flag, Koma)*			
938.	30472	*Patersonia occidentalis var. occidentalis*			
939.	1553	*Patersonia umbrosa (Yellow Flags)*			
940.	11550	*Patersonia umbrosa var. xanthina (Yellow Flags)*			
941.	43760	*Paurida occidentalis*			
942.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
943.	4346	*Pelargonium littorale*			
944.	15501	*Pericalymma spongiocaule*			

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945.	2267	*Persoonia longifolia (Snottygobble)*			
946.	27129	*Peyssonnelia novae-hollandiae*			
947.	27131	*Phacelocarpus elatus*			
948.	27133	*Phacelocarpus labillardieri*			
949.	18529	*Philotheca spicata (Pepper and Salt)*			
950.	1478	*Phlebocarya ciliata*			
951.	16825	*Phyllangium divergens*			
952.	4675	*Phyllanthus calycinus (False Boronia)*			
953.	6983	*Physalis peruviana (Cape Gooseberry)*	Y		
954.	14370	*Picris angustifolia subsp. angustifolia*			
955.	8160	*Picris squarrosa*			
956.	5231	*Pimelea angustifolia (Narrow-leaved Pimelea)*			
957.	5239	*Pimelea clavata*			
958.	5243	*Pimelea ferruginea*			
959.	5249	*Pimelea hispida (Bristly Pimelea)*			
960.	5252	*Pimelea lanata*			
961.	5255	*Pimelea longiflora*			
962.	18117	*Pimelea rosea subsp. rosea*			
963.	5269	*Pimelea sylvestris*			
964.	42281	*Pithocarpa cordata*			
965.	42280	*Pithocarpa ramosa*			
966.	7303	*Plantago lanceolata (Ribwort Plantain)*	Y		
967.	6249	*Platysace compressa (Tapeworm Plant)*			
968.	6259	*Platysace tenuissima*			
969.	27156	*Plocamium mertensii*			
970.	27157	*Plocamium preissianum*			
971.	577	*Poa poiformis (Coastal Poa)*			
972.	578	*Poa porphyroclados*			
973.	86	*Podocarpus drouynianus (Wild Plum, Kula)*			
974.	8175	*Podolepis gracilis (Slender Podolepis)*			
975.	2905	*Polycarpon tetraphyllum (Fourleaf Allseed)*	Y		
976.	8395	*Polygala myrtifolia (Myrtleleaf Milkwort)*	Y		
977.	4578	*Polygala virgata*	Y		
978.	4688	*Poranthera drummondii*			
979.	4690	*Poranthera huegelii*			
980.	122	*Posidonia angustifolia*			
981.	110	*Potamogeton drummondii*			
982.	1668	*Prasophyllum brownii*			
983.	1671	*Prasophyllum elatum (Tall Leek Orchid)*			
984.	1677	*Prasophyllum macrostachyum (Laughing Leek Orchid)*			
985.	44084	*Prasophyllum sp. early (G. Brockman GBB 1626)*			
986.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
987.	27194	*Psilothallia striata*			
988.	40080	*Psoralea arborea*	Y		
989.	57	*Pteridium esculentum (Bracken)*			
990.	27195	*Pterocladia lucida*			
991.	27196	*Pterocladia rectangularis*			
992.	44526	*Pterostylis karri*			
993.	1693	*Pterostylis recurva (Jug Orchid)*			
994.	1694	*Pterostylis rogersii (Curled-tongue Shell Orchid)*			
995.	48683	*Pterostylis serotina*			
996.	10998	*Pterostylis turfosa (Bird Orchid)*			
997.	15856	*Ptilotus sericostachyus subsp. sericostachyus*			
998.	2763	*Ptilotus stirlingii (Stirling's Mulla Mulla)*			
999.	20195	*Pultenaea brachytropis*			
1000.	4181	*Pultenaea reticulata*			
1001.	2932	*Ranunculus colonorum (Common Buttercup)*			
1002.	2933	*Ranunculus muricatus (Sharp Buttercup)*	Y		
1003.	32421	*Rhacocarpus purpurascens*			
1004.	18547	*Rhadinothamnus anceps*			
1005.	2578	*Rhagodia baccata (Berry Saltbush)*			
1006.	11341	*Rhagodia baccata subsp. baccata*			
1007.	36279	*Rhizoclonium riparium*			
1008.	13300	*Rhodanthe citrina*			
1009.	27220	*Rhodopeltis australis*			
1010.	3066	*Rorippa nasturtium-aquaticum (Watercress)*	Y		
1011.	32426	*Rosulabryum campylothecium*			
1012.	20506	*Rubus anglocandicans*	Y		
1013.	17718	*Rubus rugosus*	Y		
1014.	115	*Ruppia megacarpa*			

	Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
1015.	2908	*Sagina maritima*	Y		
1016.	6484	*Samolus repens (Creeping Brookweed)*			
1017.	6485	*Samolus valerandi (Water Pimpernel)*	Y		
1018.	7602	*Scaevola calliptera*			
1019.	7614	*Scaevola globulifera*			
1020.	7626	*Scaevola nitida (Shining Fanflower)*			
1021.	986	*Schoenus efoliatus*			
1022.	1004	*Schoenus nitens (Shiny Bog-rush)*			
1023.	16269	*Schoenus sp. Grassy (E. Gude & J. Harvey 250)*		P2	
1024.	44487	*Schoenus sp. Little black fruit (A.C. Beauglehole ACB 12538)*			
1025.	19946	*Schoenus sp. South coast (R. Davis 10239)*			
1026.	8204	*Senecio elegans (Purple Groundsel)*	Y		
1027.	8208	*Senecio hispidulus (Hispid Fireweed)*			
1028.	25884	*Senecio pinnatifolius var. latilobus*			
1029.	25882	*Senecio pinnatifolius var. maritimus (Coastal Groundsel)*			
1030.	8218	*Senecio ramosissimus (Auricled Groundsel)*			
1031.	8225	*Siloxerus humifusus (Procumbent Siloxerus)*			
1032.	7020	*Solanum linnaeanum (Apple of Sodom)*	Y		
1033.	7022	*Solanum nigrum (Black Berry Nightshade)*	Y		
1034.	7037	*Solanum symonii*			
1035.	1765	*Soleirolia soleirolii (Baby's Tears)*	Y		
1036.	8230	*Sonchus asper (Rough Sowthistle)*	Y		
1037.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
1038.	1312	*Sowerbaea laxiflora (Purple Tassels)*			
1039.	1558	*Sparaxis bulbifera*	Y		
1040.	31931	*Sphenotoma capitata*			
1041.	31952	*Sphenotoma gracilis (Swamp Paper-heath)*			
1042.	27301	*Spongocladium conspicuum*			
1043.	14915	*Sporadanthus strictus*			
1044.	8710	*Sporobolus africanus (Parramatta Grass)*	Y		
1045.	635	*Sporobolus virginicus (Marine Couch)*			
1046.	4828	*Spyridium globulosum (Basket Bush)*			
1047.	9069	*Stackhousia huegelii*			
1048.	2918	*Stellaria media (Chickweed)*	Y		
1049.	3080	*Stenopetalum robustum*			
1050.	636	*Stenotaphrum secundatum (Buffalo Grass)*	Y		
1051.	44492	*Stuckenia pectinata*			
1052.	7684	*Stylidium amoenum (Lovely Triggerplant)*			
1053.	30278	*Stylidium androsaceum*			
1054.	39960	*Stylidium angustifolium subsp. angustifolium*			
1055.	7708	*Stylidium crassifolium (Thick-leaved Triggerplant)*			
1056.	19251	*Stylidium eriopodum*			
1057.	7725	*Stylidium fasciculatum (Pale Beaked Triggerplant)*			
1058.	7734	*Stylidium guttatum (Dotted Triggerplant)*			
1059.	17850	*Stylidium ireneae*		P4	
1060.	7773	*Stylidium petiolare (Horn Triggerplant)*			
1061.	7774	*Stylidium piliferum (Common Butterfly Triggerplant)*			
1062.	7787	*Stylidium rhynchocarpum (Black-beaked Triggerplant)*			
1063.	7798	*Stylidium schoenoides (Cow Kicks)*			
1064.		*Stylidium sp.*			
1065.	7799	*Stylidium spathulatum (Creamy Triggerplant)*			
1066.	1260	*Stypandra glauca (Blind Grass)*			
1067.	49143	*Styphelia sp. Nannup (R.D. Royce 3978)*			
1068.	2639	*Suaeda australis (Seablite)*			
1069.	25902	*Symphyotrichum squamatum (Bushy Starwort)*	Y		
1070.	16883	*Synaphea damopsis*			
1071.	32437	*Syntrichia antarctica*			
1072.	45613	*Taraxacum khatoonae*	Y		
1073.	20113	*Taxandria inundata*			
1074.	20135	*Taxandria linearifolia*			
1075.	20133	*Taxandria parviceps*			
1076.	4256	*Templetonia retusa (Cockies Tongues)*			
1077.	2820	*Tetragonia decumbens (Sea Spinach)*	Y		
1078.	1036	*Tetraria octandra*			
1079.	35582	*Tetraria sp. Mt Madden (C.D. Turley 40 BP/897)*			
1080.	667	*Tetrarrhena laevis (Forest Ricegrass)*			
1081.	4533	*Tetratheca filiformis*			
1082.	4544	*Tetratheca setigera*			
1083.	134	*Thalassodendron pachyrhizum*			
1084.	1704	*Thelymitra cornicina (Lilac Sun Orchid)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1085.	1705	*Thelymitra crinita (Blue Lady Orchid)*			
1086.	1708	*Thelymitra fuscolutea (Chestnut Sun Orchid)*			
1087.	18248	*Thelymitra granitora*			
1088.	5092	*Thomasia paucifiora (Few Flowered Thomasia)*			
1089.	5105	*Thomasia triphylla*			
1090.	2644	*Threlkeldia diffusa (Coast Bonefruit)*			
1091.	19716	*Thunbergia alata*	Y		
1092.	27331	*Thuretia quercifolia*			
1093.	1319	*Thysanotus arenarius*			
1094.	1328	*Thysanotus dichotomus (Branching Fringe Lily)*			
1095.	1338	*Thysanotus manglesianus (Fringed Lily)*			
1096.	1339	*Thysanotus multiflorus (Many-flowered Fringe Lily)*			
1097.	1354	*Thysanotus tenellus*			
1098.	32443	*Tortella flavovirens*			
1099.	6280	*Trachymene pilosa (Native Parsnip)*			
1100.	4547	*Tremandra diffusa*			
1101.	4548	*Tremandra stelligera*			
1102.	1481	*Tribonanthes australis (Southern Tiumdin)*			
1103.	1485	*Tribonanthes violacea (Violet Tiumdin)*			
1104.	8251	*Trichocline spathulata (Native Gerbera)*			
1105.	1362	*Tricoryne humilis*			
1106.	4302	*Trifolium ligusticum (Ligurian Clover)*	Y		
1107.	14738	*Trifolium resupinatum var. resupinatum*	Y		
1108.	151	*Triglochin striata*			
1109.	152	*Triglochin trichophora*			
1110.	32451	*Triquetrella papillata*			
1111.	33438	*Trymalium odoratissimum subsp. trifidum*			
1112.	99	*Typha orientalis (Bulrush, Cumbungi)*			
1113.	17680	*Tyrbastes glaucescens*			
1114.	35126	*Ulva linza*			
1115.	7145	*Utricularia menziesii (Redcoats)*			
1116.	7148	*Utricularia multifida*			
1117.	7662	*Velleia macrophylla (Large-leaved Velleia)*			
1118.	7665	*Velleia trinervis*			
1119.	7110	*Veronica distans*			
1120.	4322	*Vicia sativa (Common Vetch)*	Y		
1121.	11474	*Vicia sativa subsp. nigra*	Y		
1122.	12070	*Vicia sativa subsp. sativa*	Y		
1123.	4325	*Viminaria juncea (Swishbush, Kowela)*			
1124.	7388	*Wahlenbergia multicaulis*			
1125.	13333	*Waitzia suaveolens var. suaveolens*			
1126.	27362	*Webervanbossea splachnoides*			
1127.	27364	*Wollastoniella myriophylloides*			
1128.	12072	*Wurmbea dioica subsp. alba*			
1129.	1398	*Wurmbea monantha*			
1130.	1256	*Xanthorrhoea preissii (Grass tree, Balga)*			
1131.	6283	*Xanthosia atkinsoniana*			
1132.	6284	*Xanthosia candida*			
1133.	6289	*Xanthosia huegelii*			
1134.	19330	*Xanthosia tasmanica*			
1135.	2331	*Xylomelum occidentale (Woody Pear, Djandin)*			

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

APPENDIX 3: PHOTOS OF THE VARIOUS VEGETATION MAPPING UNITS IDENTIFIED ON SITE

Veg Unit 1: Low Closed Forest

Veg Unit 2: Tall Closed Scrub

Veg Unit 3: Closed Heath

Veg Unit 4: Low Closed Heath with exposed Granite

Veg Unit 5: Low Shrubland over grassland

Veg Unit 6: Low Closed forest of Melaleuca Lanceolata

Endangered Tufa Threatened Ecological Community

P2 Melaleuca lanceolate PEC

Regionally Significant Granite Vegetation