

**Stinton Cascade Nature Reserve (R19662)
Environmental Assessment
2020**



Prepared for: Department of Biodiversity, Conservation and Attractions
(DBCA)
Perth Hills District
District Nature Conservation Program

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EXECUTIVE SUMMARY

This report has been prepared by Del Botanics on behalf of Department of Biodiversity, Conservation and Attractions (DBCA) to review remnant flora, fauna and vegetation on Stinton Cascade Nature Reserve (R19662). A site survey was undertaken in November 2020 and April 2021. The site is approximately 38.7 kilometres south east of the Perth central area, in the City of Armadale.

Stinton Cascade Nature Reserve (R19662) consists of approximately 132.8 hectares of Jarrah (*Eucalyptus marginata*) Woodland with occasional Granite heath in the low-lying areas. The purpose of this reserve is to conserve the flora and fauna.

A large portion of the vegetation within Stinton Cascade Nature Reserve (R19662) is in “Excellent” condition with very few areas containing weed species. This reserve provides a very good example of the vegetation communities and condition, which dominated the area prior to European settlement. During the site visits, vegetation communities were broadly mapped and described by recording the dominant tree species and upper-level flora species. The vegetation described on site can be categorised into two broad vegetation communities.

Stinton Cascade Nature Reserve (R19662) is a conservation reserve for the protection of flora and fauna. The reserve is currently in predominantly Excellent condition and provides a valuable habitat for fauna with diverse habitats and an array of flora species.

STATEMENT OF LIMITATIONS

This environmental report has been prepared in accordance with the scope of services set out in the original quotation. In preparing the report, Del Botanics has relied on data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report. Del Botanics has not verified the accuracy or completeness of the data to the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Del Botanics will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, unavailable, misrepresented or otherwise not fully disclosed.

In accordance with the scope of services, Del Botanics has have relied on publically available data and information supplied by DBCA and have conducted environmental field monitoring in the preparation of the report. The nature and extent of monitoring conducted is described in the report. Within the limitations imposed by the scope of services, the monitoring and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care. No other warranty, express or implied, is made.

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1. INTRODUCTION

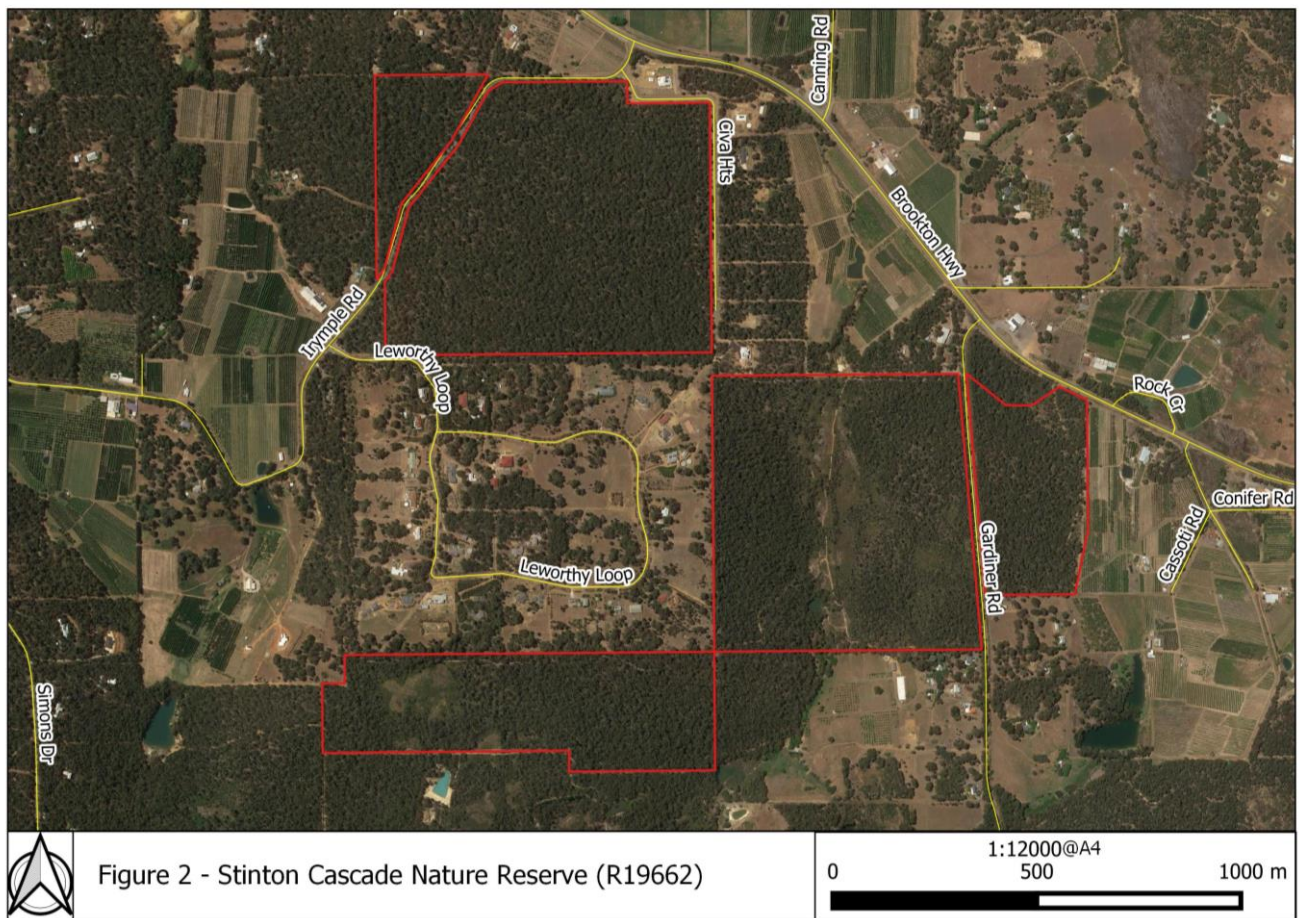
1.1 STINTON CASCADE NATURE RESERVE (R19662)

This report has been prepared by Del Botanics on behalf of Department of Biodiversity, Conservation and Attractions (DBCA) to review remnant flora, fauna and vegetation at Stinton Cascade Nature Reserve (R19662). A site survey was undertaken in November 2020 and April 2021. The site is approximately 37.8 kilometres south east of the Perth central area, in the City of Armadale. The location of the site is shown on **Figure 1** below.



The City of Armadale covers an area of 560 square kilometres, much of which is state forest rising into the Darling Scarp to the east. Stinton Cascade Nature Reserve (R19662) is approximately 10.8 km east of the Armadale town site and is shown on **Figure 2** below. The purpose of this reserve is for the conservation of flora and fauna.

Stinton Cascade Nature Reserve (R19662) consists of approximately 132.8 hectares of Jarrah (*Eucalyptus marginata*) Woodland with occasional Granite heath in the low-lying areas.



1.2 HISTORY

Historically the city of Armadale was the Township of Kelmscott, which was gazetted and declared in 1830. Initially the townsite served as a military outpost to protect the early settlers and explorers. The Canning River locality provided the early Settlers with fertile soils and a vital water supply. Timber had become an important industry in Kelmscott and Roleystone with the milling of Jarrah ('West Australian Mahogany'), Red Gum and Sheoak. This timber was used to construct railway sleepers, the first bridge over the Swan River, the Rockingham Jetty, the Bunbury telegraph line, and bridges over the Canning River in Kelmscott. Native vegetation in the City of Armadale has been significantly cleared for logging for timber and agricultural purposes.

The City of Armadale (the City) falls within the wider Upper Canning Southern River Wungong catchment. The catchment comprises two major rivers, the Wungong and Canning Rivers, both of which are tributaries to the larger Swan River Estuary.



Photo 1: Stinton Cascade Nature Reserve (R19662)

2. EXISTING ENVIRONMENT

2.1 SOILS AND LANDFORMS

2.1.1 Landforms

Stinton Cascade Nature Reserve occurs on the Darling Scarp. The Darling Scarp is the steep rise in topography from the eastern edge of the Swan Coastal Plain up to the hills. The terms Darling Scarp and Darling Plateau go together as official physiographic divisions, the Scarp being restricted to the relatively steep western termination of the Plateau (the local surface expression of the Darling Fault), while the Plateau extends well to the east. The scarp extends for almost 1000 km, from east of Shark Bay, in the State's northwest, to Point D'Entrecasteaux on the south coast. Rapid erosion of the rocks along the scarp prior to the Cretaceous period has caused the scarp to retreat 1–3 km inland of the actual line of the fault. The Darling Scarp is a major and ancient geological discontinuity separating the Archaean Yilgarn Craton in the east from the younger Pinjarra Orogen and overlying Phanerozoic Perth Basin to the west (Gozzard, 2007).

Stinton Cascade NR occur's within the Western Darling Range Zone, which can be described as moderately dissected lateritic plateau on granite with deeply incised valleys and includes the Darling Scarp on the western margin.

2.1.2 Soils

The localised soils are formed in laterite, lateritic colluvium and weathered in-situ granite and gneiss. The soils found in Stinton Cascade NR are part of the Darling Scarp and foothills. The site is part of the following two soil systems, which are described below:

Dwellingup 2

Very gently to gently undulating terrain (<10%) with well drained, shallow to moderately deep gravelly brownish sands, pale brown sands and earthy sands overlying lateritic duricrust.

Murray 2

Gentle to moderately inclined side slopes (3-25%) and narrow valley floors with few areas of rock outcrop. Variable moderately well to well drained duplex and gradational soils.

2.2 VEGETATION

The survey area lies in the Drummond Botanical Subdistrict within the Southwest Botanical Province as described by Beard (1990). Flora composition has been described by Beard (1990) as predominantly consisting of Banksia Low Woodlands on leached sands with Melaleuca swamps where ill drained and Woodlands of Eucalyptus spp. on less leached soils. This area has been described by Beard (1990) as the Northern Jarrah Forrest Botanical District.

The updated mapping system IBRA (Interim Biogeographic Regionalisation for Australia) was developed in 1993-94 and is endorsed by all levels of government as a key tool for identifying land for conservation under Australia's Strategy for the National Reserve System 2009-2030.

The nationally agreed regionalisation was published in Thackway and Cresswell (1995), An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves.

The latest version, IBRA7, classifies Australia's landscapes into 89 large geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The IBRA description of vegetation for this area is best categorised as Jarrah Forest.

The southwest of Western Australia has been divided into districts, known as Natural Resource Zones, which are determined by their vegetation type, drainage/catchment system and rainfall. The City of Armadale is part of the Northern Jarrah Forrest Vegetation Zone.



Photo 2: Jarrah Woodland

Vegetation complexes are based on the pattern of vegetation at a regional scale as they reflect the underlying key determining factors of landforms, soils and climate. The Perth and Peel Regions are spread over two IBRA regions, the Swan Coastal Plain and Jarrah Forest. The Jarrah Forest IBRA region can be divided into two sub-regions, the Northern Jarrah Forest, and the Southern Jarrah Forest. The Perth and Peel Region extends only to the Northern Jarrah Forest IBRA sub-region. Stinton Cascade NR falls within the Northern Jarrah Forest sub region.

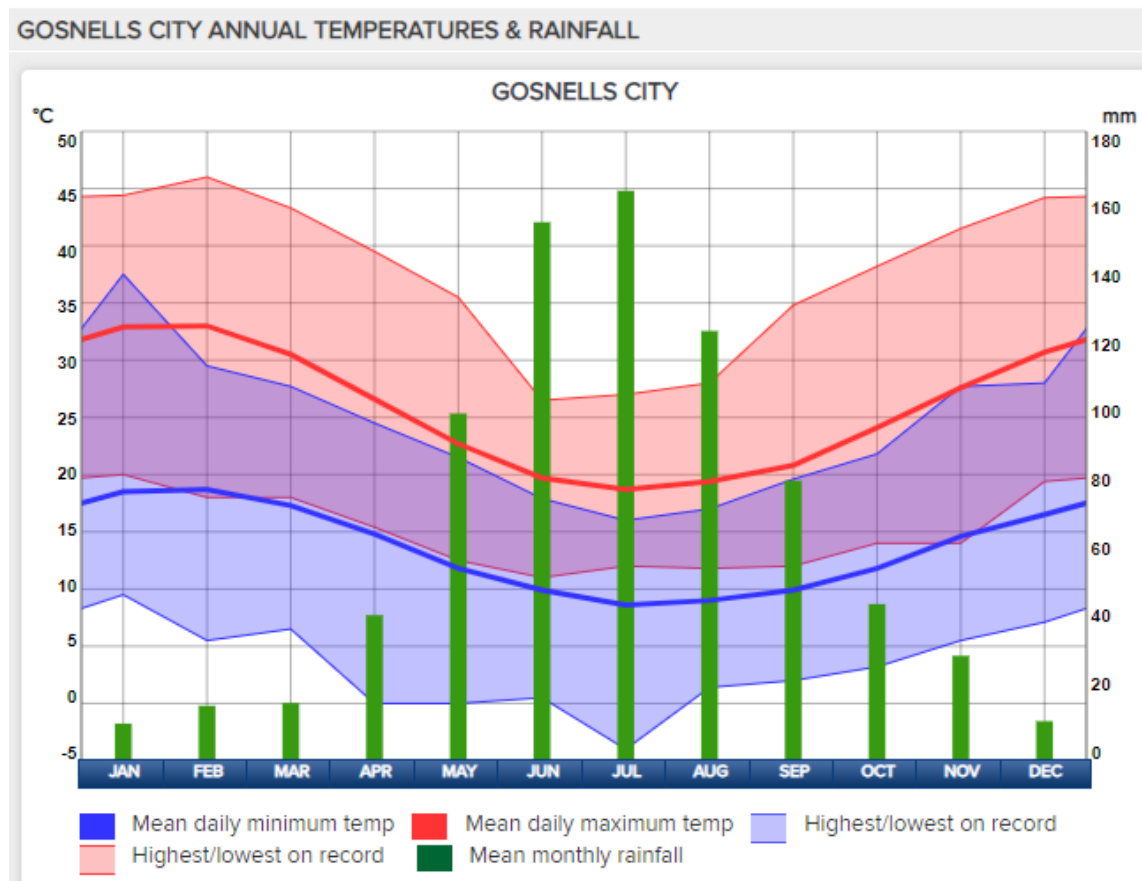
The following inputs were used to create a data layer of remnant vegetation extent by vegetation complexes for the Swan Coastal Plain and the Jarrah Forest IBRA, including the Perth and Peel Region Scheme areas:

- DAFWA (2014) - Current extent of native vegetation (Remnant vegetation)
- Heddle et al (1980) - Vegetation of the Darling System, Department of Environment and Conservation (south of Moore River)

- Matiske & Havel (2000) - Vegetation complex mapping for the South West Forest Region and for the Swan Coastal Plain in the Busselton area.

2.3 CLIMATE

The Shire's climate consists of a warm Mediterranean climate with hot dry summers and mild wet winters. The City of Gosnells, which is the closest weather station with complete data to the City of Armadale receives, on average 793 mm rainfall per annum. Average maximum temperatures range from 33°C in February and 19.7°C in June, while average minimum temperatures range from 18.7°C in February to 8.6°C in June.



Graph 1: City of Gosnells yearly weather data

3. FLORA, FAUNA AND VEGETATION

3.1 FLORA

The site is dominated by Jarrah (*Eucalyptus marginata*) Woodland with occurrences of Granite heath in the low-lying areas. There is a high species diversity of understorey species and low densities of weed species, which are predominantly along the fence line boundaries adjoining private properties.

A species list is available in **Appendix A**, this provides a list of flora species identified during the field survey.



Photo 3: *Patersonia occidentalis*



Photo 4: *Verticordia* sp



Photo 5: *Gompholobium polymorphum*

3.1.1 Threatened flora

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database identified nine Threatened (T), nine Priority 4 (P4), twelve Priority 3 (P3), four Priority 2 (P2), and three Priority 1 (P1) species within a 10 km radius, that are likely to occur within the area. These species are listed in **Table 1** below.

Table 1: NatureMap listed flora species

Genus /Species	Common Name	Priority
<i>Acacia anomala</i>	Grass Wattle	T
<i>Conospermum undulatum</i>		T
<i>Darwinia apiculata</i>	Scarp Darwinia	T
<i>Diuris drummondii</i>	Tall Donkey Orchid	T
<i>Diuris purdiei</i>	Purdie's Donkey Orchid	T
<i>Gonocarpus pycnostachyus</i>		T
<i>Goodenia arthrotricha</i>		T
<i>Grevillea thelemanniana</i>	Spider Net Grevillea	T
<i>Thelymitra stellata</i>	Star Orchid	T
<i>Eriochilus</i> sp. <i>Roleystone</i>		P1
<i>Ptilotus sericostachyus</i> subsp. <i>roseus</i>		P1
<i>Thelymitra magnifica</i>	Crystal Brook Star Orchid	P1
<i>Andersonia</i> sp. <i>blepharifolia</i>		P2
<i>Bossiaea modesta</i>		P2
<i>Paracaleana</i> sp. <i>Laterite</i>		P2
<i>Thysanotus</i> sp. <i>Badgingarra</i>		P2
<i>Acacia horridula</i>		P3
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>		P3
<i>Allocasuarina grevilleoides</i>		P3
<i>Amanita fibrillopes</i>		P3
<i>Asteridea gracilis</i>		P3
<i>Banksia kippistiana</i> var. <i>paenepeccata</i>		P3
<i>Beaufortia purpurea</i>	Purple Beaufortia	P3
<i>Grevillea manglesii</i> subsp. <i>dissectifolia</i>		P3
<i>Halgania corymbosa</i>		P3
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>		P3
<i>Stackhousia</i> sp. <i>Red-blotched corolla</i>		P3
<i>Thysanotus anceps</i>		P3
<i>Acacia oncinophylla</i> subsp. <i>patulifolia</i>		P4
<i>Boronia tenuis</i>	Blue Boronia	P4
<i>Calothamnus accedens</i>		P4
<i>Calothamnus graniticus</i> subsp. <i>leptophyllus</i>		P4
<i>Grevillea pimeleoides</i>		P4
<i>Lasiopetalum bracteatum</i>	Helena Velvet Bush	P4
<i>Pimelea rara</i>	Summer Pimelea	P4

<i>Stylidium striatum</i>	Fan-leaved Triggerplant	P4
<i>Thysanotus glaucus</i>		P4

A search of the Department of Agriculture, Water and the Environment (DAWE) Protected Matters database identified nine flora species of significance within a 10 km radius, which are likely to occur within the area. Seven flora species have been listed as Vulnerable, eleven species are listed as Endangered and two are listed as Critically Endangered. These species are listed in **Table 2** below.

Table 2: DAWE Protected Matters listed flora species

Genus /Species	Common Name	Priority
<i>Synaphea</i> sp. Serpentine		Critically Endangered
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)	Selena's Synaphea	Critically Endangered
<i>Eucalyptus x balanites</i>	Cadda Road Mallee, Cadda Mallee	Endangered
<i>Darwinia apiculata</i>	Scarp Darwinia	Endangered
<i>Diplolaena andrewsii</i>		Endangered
<i>Diuris purdiei</i>	Purdie's Donkey-orchid	Endangered
<i>Drakaea elastica</i>	Glossy-leaved Hammer Orchid, Warty Hammer Orchid	Endangered
<i>Goodenia arthrotricha</i>		Endangered
<i>Lasiopetalum pterocarpum</i>	Wing-fruited Lasiopetalum	Endangered
<i>Synaphea</i> sp. Pinjarra Plain		Endangered
<i>Thelymitra dedmaniarum</i>	Cinnamon Sun Orchid	Endangered
<i>Thelymitra stellata</i>	Star Sun-orchid	Endangered
<i>Verticordia fimbrialepis</i> subsp. <i>Fimbrialepis</i>	Shy Featherflower	Endangered
<i>Eleocharis keigheryi</i>	Keighery's Eleocharis	Vulnerable
<i>Acacia anomala</i>	Grass Wattle, Chattering Grass Wattle	Vulnerable
<i>Anthocercis gracilis</i>	Slender Tailflower	Vulnerable
<i>Conospermum undulatum</i>	Wavy-leaved Smokebush	Vulnerable
<i>Diuris drummondii</i>	Tall Donkey Orchid	Vulnerable
<i>Diuris micrantha</i>	Dwarf Bee-orchid	Vulnerable
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid	Vulnerable

3.1.2 Weeds

Invasive plants are widespread in fragmented landscapes that have been highly modified, and where nutrient enrichment of soils and frequent disturbance encourages the establishment of weeds over native vegetation. Established weeds compete with native plants, affecting their recruitment and survival, therefore reducing the habitat quality for native fauna.

Grassy weeds can also increase the flammability of the vegetation, increasing fire frequency and intensity. Once established, weeds become a long-term and potentially costly management issue.

Weed densities are a low on average across the site. Weeds are dominant along the edges of the reserve, adjacent to roads and private properties and very scattered throughout the reserve. Weed control may be applied to the areas along the boundary fence lines and roads, however due to weed infestations occurring on neighbouring properties weeds may continue to be an issue. It is important to minimise the encroachment of weeds into bushland areas. The majority of the dominant weeds are grasses. Dense weed locations were recorded and are shown on **Figure's 4 & 5**.



Photo 6: Weeds adjacent to the reserve on neighbouring private properties

3.2 FAUNA

This reserve is an important stepping stone of native vegetation in this landscape. This reserve is large and separated into three sections, however these sections are linked through bushland to provide a valuable fauna habitat. The site has numerous fauna habitat available with large trees containing hollows, granite outcropping with a natural stream, fallen logs and dense understorey for ground dwelling fauna. During the survey a number of bird species were observed, as well as scats from Emu's and Kangaroo's. There was evidence of Echidna and Quenda diggings. A species list is available in **Appendix B**, this provides a list of fauna species identified during the field survey.



Photo 7: Forest Red tailed Black Cockatoo's (*Calyptorhynchus banksii subsp. naso*) located within the reserve.



Photo 8: Marri nuts eaten by Forest Red tailed Black Cockatoo's (*Calyptorhynchus banksii subsp. naso*) within the reserve.



Photo 9: Echidna diggings (*Tachyglossus aculeatus*) recorded within the reserve

3.2.1 Threatened Fauna.

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database identified twenty priority species within a 10 km radius, which are likely to occur within the area. Of these, ten are listed as Threatened (T), one is listed as Priority 1 (P1), four are listed as Priority 3 (P3) and five as Priority 4 (P4) species. The list is provided in **Table 3** below.

Table 3: NatureMap listed fauna species

Genus /Species	Common Name	Priority
<i>Bettongia penicillata subsp. ogilbyi</i>	Woylie, Brush-tailed Bettong	T
<i>Botaurus poiciloptilus</i>	Australasian Bittern	T
<i>Calyptorhynchus banksii subsp. Naso</i>	Forest Red-tailed Black Cockatoo	T
<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo	T
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo	T
<i>Calyptorhynchus sp.</i>	White-tailed black cockatoo	T
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	T
<i>Myrmecobius fasciatus</i>	Numbat, Walpurti	T
<i>Setonix brachyurus</i>	Quokka	T
<i>Westralunio carteri</i>	Carter's Freshwater Mussel	T
<i>Kawaniphila pachomai</i>	Grey Vernal Katydid (southwest), cricket	P1
<i>Acanthophis antarcticus</i>	Southern Death Adder	P3

<i>Euoplos inornatus</i>	Inornate trapdoor spider (northern Jarrah Forest)	P3
<i>Geotria australis</i>	Pouched Lamprey	P3
<i>Lerista lineata</i>	Perth Slider, Lined Skink	P3
<i>Ctenotus delli</i>	Dell's skink, Darling Range southwest Ctenotus	P4
<i>Hydromys chrysogaster</i>	Water-rat, Rakali	P4
<i>Isoodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4
<i>Notamacropus irma</i>	Western Brush Wallaby	P4
<i>Oxyura australis</i>	Blue-billed Duck	P4

A search of the Department of Agriculture, Water and the Environment (DAWE) Protected Matters database identified thirteen fauna species of significance likely to occur within a 10km radius of the reserve. Three fauna species is listed as Critically Endangered, five species have been listed as Endangered and five species are listed as Vulnerable. These species are listed in **Table 4** below.

Table 4: DAWE Protected Matters listed fauna species

Genus /Species	Common Name	Priority
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Critically Endangered
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit	Critically Endangered
<i>Bettongia penicillata ogilbyi</i>	Woylie	Endangered
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered
<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo, Long-billed Black-Cockatoo	Endangered
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo, Short-billed Black-Cockatoo	Endangered
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo, Karrak	Vulnerable
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Vulnerable
<i>Leipoa ocellata</i>	Malleefowl	Vulnerable
<i>Setonix brachyurus</i>	Quokka	Vulnerable
<i>Westralunio carteri</i>	Carter's Freshwater Mussel, Freshwater Mussel	Vulnerable

3.2.2 Feral Animals

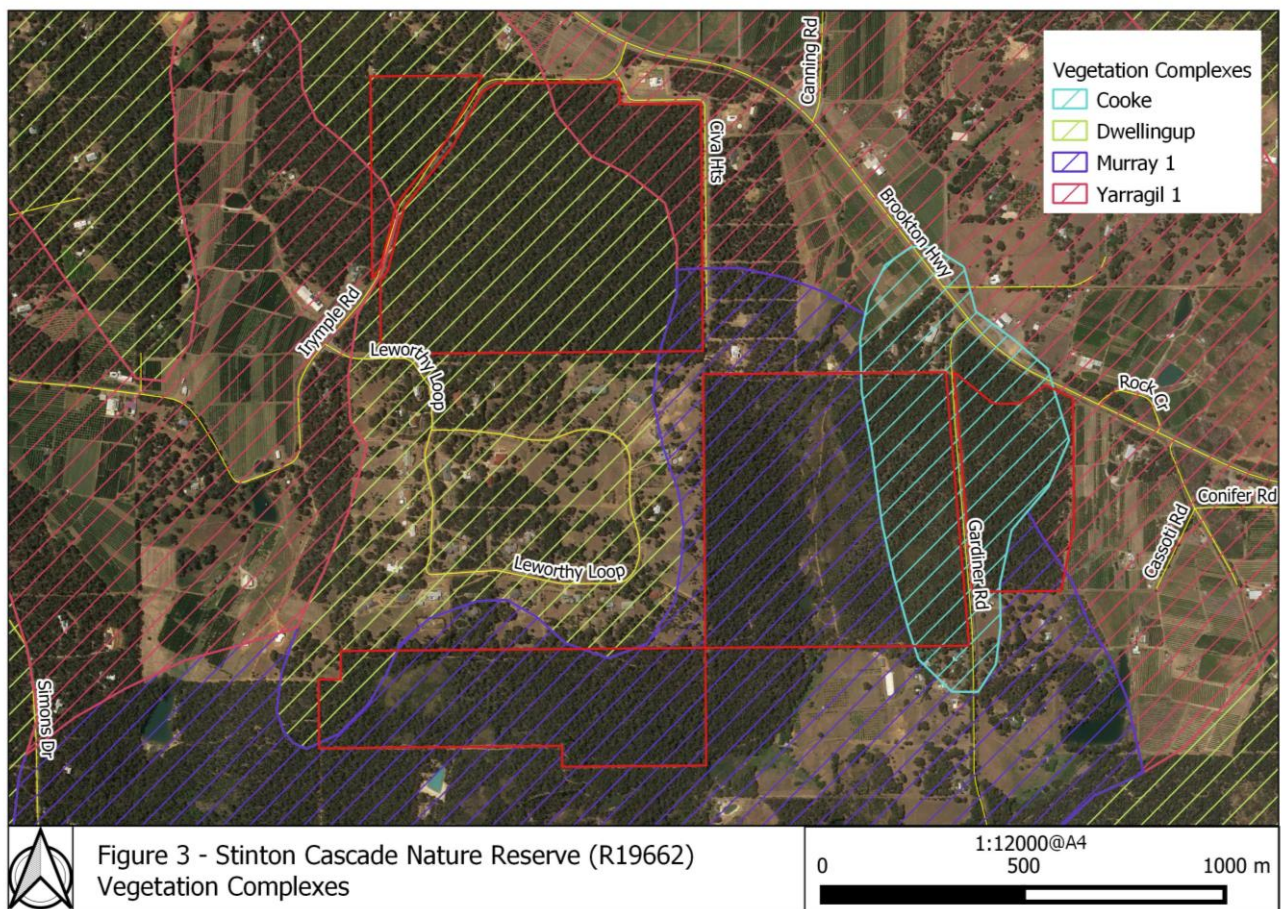
Several species of invasive animals have established in the region, which have impacted upon native vegetation and fauna. Feral cats (*Felis catus*) and the European fox (*Vulpes vulpes*) are key predators that prey upon ground-dwelling native fauna. The European rabbit (*Oryctolagus cuniculus*) causes direct loss of plant species, and indirect loss of native plant and animal species through changes to soil structure and nutrient dynamics by their digging, burrowing and grazing activities. There was no evidence of rabbits or foxes occurring in this reserve; however, it would be common to find both species present.

3.3 VEGETATION

Stinton Cascade Nature Reserve (R19662) is in Excellent condition with only 1.3% of the site in less than good condition. The vegetation is dominated with Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*), with pockets of Sheoak (*Allocasuarina fraseriana*) and a diverse range of understorey species. The low-lying areas are dominated with granite outcrops with a diverse range of granite dependant flora species, independent of those occurring in the adjoining Jarrah Woodland.

3.3.1 Vegetation Complexes

There are 27 vegetation complexes represented within the Swan Coastal Plain and 18 vegetation complexes represented within the Jarrah Forest portions of the Perth and Peel Scheme Regions. The vegetation complexes shown on **Figure 3** provides the vegetation distribution coverage of pre-1750 south west forest region of Western Australia. This mapping was undertaken by Mattiske and Havel (1998) as part of the biodiversity assessment for the comprehensive regional assessment for the south west forest region. Local vegetation complexes occurring within Stinton Cascade Nature Reserve are shown below on **Figure 3**:



3.3.2 *Vegetation complexes found within Stinton Cascade Nature Reserve (R19662)*

Cooke

Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* (subhumid zone) and open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* (semiarid and arid zones) and on deeper soils adjacent to outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on granite rocks and associated soils in all climate zones, with some *Eucalyptus laeliae* (semiarid), and *Allocasuarina huegeliana* and *Eucalyptus wandoo* (mainly semiarid to perarid zones)

Dwellingup 2

Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in subhumid and semiarid zones.

Murray 1

Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Eucalyptus patens* on valley slopes to woodland of *Eucalyptus rudis-Melaleuca raphiophylla* on the valley floors in humid and subhumid zones.

Yarragil 1

Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.

3.3.3 *Stinton Cascade Nature Reserve Local Vegetation Communities*

During the site visits, vegetation communities were broadly mapped and described by recording the dominant tree species and upper-level flora species. The vegetation described on site can be categorised into two broad vegetation communities. These communities are described in **Table 5** and shown on **Figure 5**.

Table 5: Vegetation Communities

Community Description	
Vegetation Community 1 – Jarrah Forest (<i>Eucalyptus marginata</i>)	
1	Open forest of <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> over low woodland of <i>Banksia grandis</i> woodland over shrubland of <i>Xanthorrhoea preissii</i> , <i>Leucopogon verticillatus</i> , <i>Bossiaea aquifolium</i> , <i>Macrozamia riedlei</i> over herbland of <i>Platysace compressa</i> and <i>Desmocladius flexuosus</i>
Community Description	
Vegetation Community 2 – Granite Heath	
2	Open heath of <i>Babingtonia camphorosmae</i> , <i>Verticordia huegelii</i> , <i>Verticordia acerosa</i> var. <i>preissii</i> over open sedgeland of <i>Lepidosperma gladiatum</i> over herbland of <i>Borya</i> sp and <i>Siloxerus</i> sp



Photo 10: Jarrah Forest



Photo 11: Jarrah Forest



Photo 12: Granite Heath



Photo 13: Granite Heath

3.3.4 *Threatened Ecological Communities*

The EPBC Act provides for the strong protection of TEC's, which are listed under section 181 of the Act and are described as 'Critically Endangered', 'Endangered' or 'Vulnerable' under section 182. Schedules of protected TECs maintained pursuant to the EPBC Act are based on the same Floristic Community Type's (FCT's) as adopted by DBCA, however not all TEC's listed by the DBCA are scheduled under the EPBC Act.

A Department of Agriculture, Water and the Environment (DAWE) Protected Matters report indicated there are two known Threatened Ecological Communities (TEC's) likely to occur in the area, which is listed below in **Table 6**.

Table 6: DAWE listed Threatened Ecological Communities

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may occur within area

The vegetation recorded onsite does not contain the dominant flora species which characterise these ecological communities. The site therefore does not contain the two listed TEC's.

3.3.5 Vegetation Condition

Many bushland remnants have been historically subject to ongoing degradation and are especially susceptible to disturbances arising as a result of indirect impacts from surrounding developments and human activity. Degradation is caused by a wide range of factors, including isolation and edge effects, weed invasion, plant diseases, changes in fire frequency and behaviour, landscape fragmentation, illegal firewood cutting, rubbish/refuse dumping, off-road motorbikes and 4WD's, increased predation on native fauna by feral animals, decrease in species richness and general modification of ecological function. These issues can affect the biodiversity rating and ecological viability of areas of remnant vegetation and should be assessed in line with conservation values.

The vegetation condition was rated according to the Vegetation Condition Scale used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). The definitions are described in **Table 7** below.

Table 7: Vegetation Condition Scale (Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016)).

Vegetation Condition	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds,	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds

	partial clearing, dieback and grazing.	
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
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 comprising weed or crop species with isolated native trees and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e., areas that are cleared or ‘parkland cleared’ with their flora comprising weed or crop species with isolated native trees or shrubs

In general, the vegetation condition ranged from “Degraded” to “Excellent” with 98.7% of the vegetation in good or better condition recorded in the study area. Vegetation condition mapping is provided on **Figure 5**.

4. ACCESS, FIRE BREAKS, SIGNAGE AND ILLEGAL ACTIVITY

4.1 ACCESS AND FIREBREAK CONDITION

Stinton Cascade Nature Reserve is accessible from various points due to the fragmentation of the reserve. The northern section of the reserve is accessible from Leworthy Loop through a vehicle gate. Irymple Road also dissects the reserve on both the western and eastern sections and is accessible from each point where Irymple Road and the reserve intercepts. There are well defined firebreaks around the perimeter of the northern section of the reserve.

The southern section of Stinton Cascade Nature Reserve is accessible from the eastern section of the reserve off Gardiner Road. There is a firebreak around the boundary of the reserve, which adjoins private properties.

The eastern section of Stinton Cascade Nature Reserve is accessible off Gardiner Road, one access point at the southern end of the reserve where it meets the Gardiner Road and one in the northern end of the reserve where it meets Gardiner Road. There is an access track through the middle of the reserve running in a north-south direction. This track goes through the low-lying granite out crop area and provides access to the southern section of the reserve. There is a firebreak around the perimeter of the site.

Stinton Cascade Nature Reserve has firebreaks in good condition around the perimeter of each of the three sections of the reserve. The eastern section of the reserve also has a firebreak through the centre of the section in a north-south direction. There are no other firebreaks that cut through any of the sections of the reserve. Maintenance of the firebreaks will be required to ensure the entire site is accessible.

Apart from the firebreaks, there are no obvious additional tracks. There are no signs of vehicle use or rubbish dumping. There appears to be some evidence of historic logging scattered throughout the reserve.



Photo 14: Fire break in eastern section of the Reserve



Photo 15: Fire break in southern section of the Reserve

4.2 FENCING

The overall condition of the boundary fences appears to be in good condition. Ongoing maintenance is important as the reserve is bounded by private properties. There is a small area of fence damage, most likely due to kangaroo's, along the northern boundary of the eastern section of the reserve. There is no fencing along Irymple Road or Gardiner Road. There is post and rail fencing along Civa Heights.



Photo 16: Fencing in the eastern section of the Reserve



Photo 17: Damaged fencing in the eastern section of the Reserve



Photo 18: Fencing in the northern section of the Reserve

4.3 SIGNAGE

During the site visit, seven nature reserve signs were observed. Three signs are in the northern section both along Irymple Road, one in north where the reserve meets Irymple Road and one in the south where the reserve meets Irymple Road. The third sign is off Brookton Highway on the corner of Irymple Road and Civa Heights. There is one sign in the western corner southern section. There are three signs in the eastern section, two along Gardiner Road, one in north where the reserve meets Gardiner Road and one in the south where the reserve meets Gardiner Road. The third sign is located between the eastern section and the southern section of the reserve. Reserve sign locations are shown on **Figures 4 & 5**.



Photo 19: Stinton Cascade Nature Reserve signage



Photo 20: Stinton Cascade Nature Reserve signage



Photo 21: Stinton Cascade Nature Reserve signage

4.4 ILLEGAL ACTIVITY

There are no current signs of motorbikes or 4WD's accessing the reserve. There appears to be limited activity in this area. There are historic signs of woodcutting scattered throughout the site. There are BMX jumps in the eastern section of the site. The location is shown on **Figures 4 & 5**.

5. FIRE

Prior to European settlement, fires occurred through lightning strikes and Indigenous burning of the landscape. Indigenous burning practices had been adopted for up to 60 000 years and likely comprised a mosaic of frequent, small-scale fires. Since European settlement, fires still occur through lightning strikes. However, they now also originate from prescribed burning operations (including escapes from planned fires), arson or accidental ignition due to a range of sources. The nature and impacts of fire are influenced by other threats in the landscape. Fragmentation into small remnants and the surrounding modified land use can affect the intensity and impact of fires across a patch. The type of understorey may promote or suppress fire spread. Frequency of fire is one important consideration in addition to fire intensity and season. Too frequent fires may eliminate sensitive species. For example: obligate seeder species that require fire to stimulate seed germination may die out if recurring fires kill plants before they have a chance to mature and develop new seeds; and fauna may decline due to the loss of food and shelter resources after frequent fires.

It is important to develop appropriate fire management with the use of mosaic burning to maintain the diversity of habitats for flora and fauna. There are no immediate signs of recent fire activity. Evidence on the vegetation suggests the last fire may have been more than 5 years ago. There is a maintained fire break around the perimeter of the reserve.



Photo 22: Stinton Cascade Nature Reserve flora

6. CONCLUSION AND RECOMMENDATIONS

Stinton Cascade Nature Reserve is a conservation reserve for the protection of flora and fauna. The reserve is an important bushland as it contains excellent vegetation which provides valuable habitat for flora and fauna species. The segmented reserve is providing a valuable stepping stone of vegetation for fauna.

Based on the results of this assessment, Del Botanics proposes the following reserve management recommendations:

- Undertake a dieback assessment;
- Implement a weed management plan with communication provided to adjacent landholders;
- Undertake fire break maintenance;
- Undertake a Level two flora survey;
- Undertake a targeted Declared Rare Flora Search for the species listed below. These species have been selected as a result of a background search of the site; however, the search should not be limited to these species but should also include any DRF found within the reserve.
- Undertake a Targeted Fauna Search for the species listed below. These species have been selected as a result of a background search of the site; however, the search should not be limited to these species but should also include any Threatened fauna found within the reserve.



Targeted Flora Search List species

Genus /Species	Common Name	State Listed	Federal Listed
<i>Acacia oncinophylla</i> subsp. <i>patulifolia</i>		P4	
<i>Eleocharis keigheryi</i>	Keighery's Eleocharis		Vulnerable
<i>Eucalyptus x balanites</i>	Cadda Road Mallee, Cadda Mallee		Endangered
<i>Synaphea</i> sp. Serpentine			Critically Endangered
<i>Acacia anomala</i>	Grass Wattle, Chittering Grass Wattle	T	Vulnerable
<i>Acacia horridula</i>		P3	
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>		P3	
<i>Allocasuarina grevilleoides</i>		P3	
<i>Amanita fibrilloses</i>		P3	
<i>Andersonia</i> sp. <i>blepharifolia</i>		P2	
<i>Anthocercis gracilis</i>	Slender Tailflower		Vulnerable
<i>Asteridea gracilis</i>		P3	
<i>Banksia kippistiana</i> var. <i>paenepeccata</i>		P3	
<i>Beaufortia purpurea</i>	Purple Beaufortia	P3	
<i>Boronia tenuis</i>	Blue Boronia	P4	
<i>Bossiaea modesta</i>		P2	
<i>Calothamnus accedens</i>		P4	
<i>Calothamnus graniticus</i> subsp. <i>leptophyllus</i>		P4	
<i>Conospermum undulatum</i>	Wavy-leaved Smokebush	T	Vulnerable
<i>Darwinia apiculata</i>	Scarp Darwinia	T	Endangered
<i>Diplolaena andrewsii</i>			Endangered
<i>Diuris drummondii</i>	Tall Donkey Orchid	T	Vulnerable
<i>Diuris micrantha</i>	Dwarf Bee-orchid		Vulnerable
<i>Diuris purdiei</i>	Purdie's Donkey Orchid	T	Endangered
<i>Drakaea elastica</i>	Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid		Endangered
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid		Vulnerable
<i>Eriochilus</i> sp. Roleystone		P1	
<i>Gonocarpus pycnostachyus</i>		T	
<i>Goodenia arthrotricha</i>		T	Endangered
<i>Grevillea manglesii</i> subsp. <i>dissectifolia</i>		P3	
<i>Grevillea pimeleoides</i>		P4	
<i>Grevillea thelemanniana</i>	Spider Net Grevillea	T	
<i>Halgania corymbosa</i>		P3	
<i>Lasiopetalum bracteatum</i>	Helena Velvet Bush	P4	

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<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>		P3	
<i>Lasiopetalum pterocarpum</i>	Wing-fruited Lasiopetalum		Endangered
<i>Paracaleana</i> sp. Laterite		P2	
<i>Pimelea rara</i>	Summer Pimelea	P4	
<i>Ptilotus sericostachyus</i> subsp. <i>roseus</i>		P1	
<i>Stackhousia</i> sp. Red-blotched corolla		P3	
<i>Stylidium striatum</i>	Fan-leaved Triggerplant	P4	
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)	Selena's Synaphea		Critically Endangered
<i>Synaphea</i> sp. Pinjarra Plain			Endangered
<i>Thelymitra dedmaniarum</i>	Cinnamon Sun Orchid		Endangered
<i>Thelymitra magnifica</i>	Crystal Brook Star Orchid	P1	
<i>Thelymitra stellata</i>	Star Orchid	T	Endangered
<i>Thysanotus anceps</i>		P3	
<i>Thysanotus glaucus</i>		P4	
<i>Thysanotus</i> sp. Badgingarra		P2	
<i>Verticordia fimbrialepis</i> subsp. <i>fimbrialepis</i>	Shy Featherflower		Endangered

Targeted Fauna Search List species

Genus /Species	Common Name	State Listed	Federal Listed
<i>Acanthophis antarcticus</i>	Southern Death Adder	P3	
<i>Bettongia penicillata</i> subsp. <i>ogilbyi</i>	Woylie	T	Endangered
<i>Botaurus poiciloptilus</i>	Australasian Bittern	T	Endangered
<i>Calidris ferruginea</i>	Curlew Sandpiper		Critically Endangered
<i>Calyptorhynchus banksii</i> subsp. <i>Naso</i>	Forest Red-tailed Black-Cockatoo, Karrak	T	Vulnerable
<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo	T	Endangered
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo	T	Endangered
<i>Calyptorhynchus</i> sp.	White-tailed black cockatoo	T	
<i>Ctenotus delli</i>	Dell's skink, Darling Range southwest Ctenotus	P4	
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	T	Vulnerable
<i>Euoplos inornatus</i>	Inornate trapdoor spider (northern Jarrah Forest)	P3	
<i>Geotria australis</i>	Pouched Lamprey	P3	
<i>Hydromys chrysogaster</i>	Water-rat, Rakali	P4	
<i>Isodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4	
<i>Kawaniphila pachomai</i>	Grey Vernal Katydid (southwest), cricket	P1	
<i>Leipoa ocellata</i>	Malleefowl		Vulnerable
<i>Lerista lineata</i>	Perth Slider, Lined Skink	P3	
<i>Myrmecobius fasciatus</i>	Numbat, Walpurti	T	
<i>Notamacropus irma</i>	Western Brush Wallaby	P4	
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew		Critically Endangered
<i>Oxyura australis</i>	Blue-billed Duck	P4	
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit		Critically Endangered
<i>Rostratula australis</i>	Australian Painted Snipe		Endangered
<i>Setonix brachyurus</i>	Quokka	T	Vulnerable
<i>Westralunio carteri</i>	Carter's Freshwater Mussel	T	Vulnerable

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FIGURES

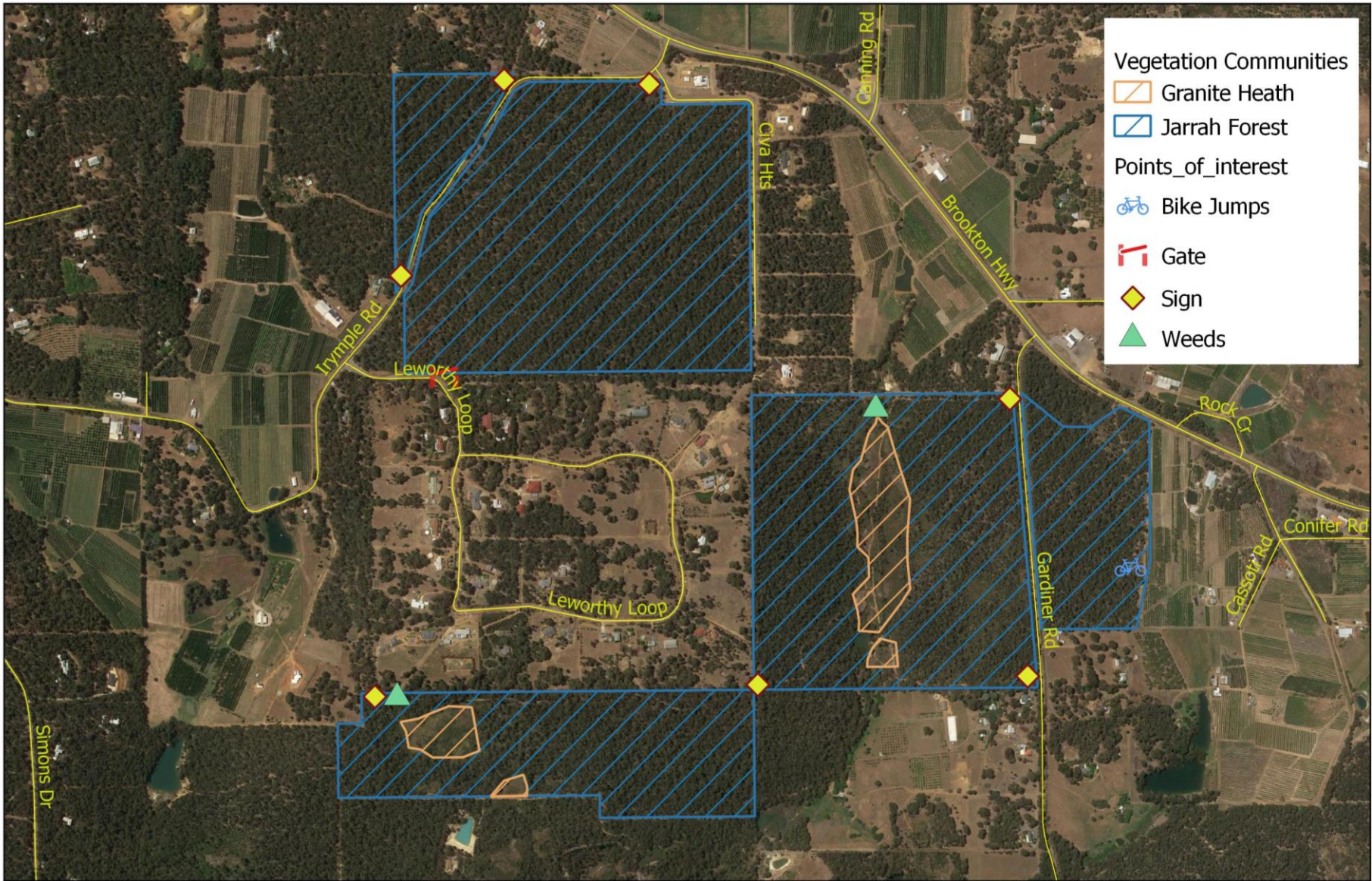


Figure 4 - Vegetation Communities within Stinton Cascade Nature Reserve (R19662)

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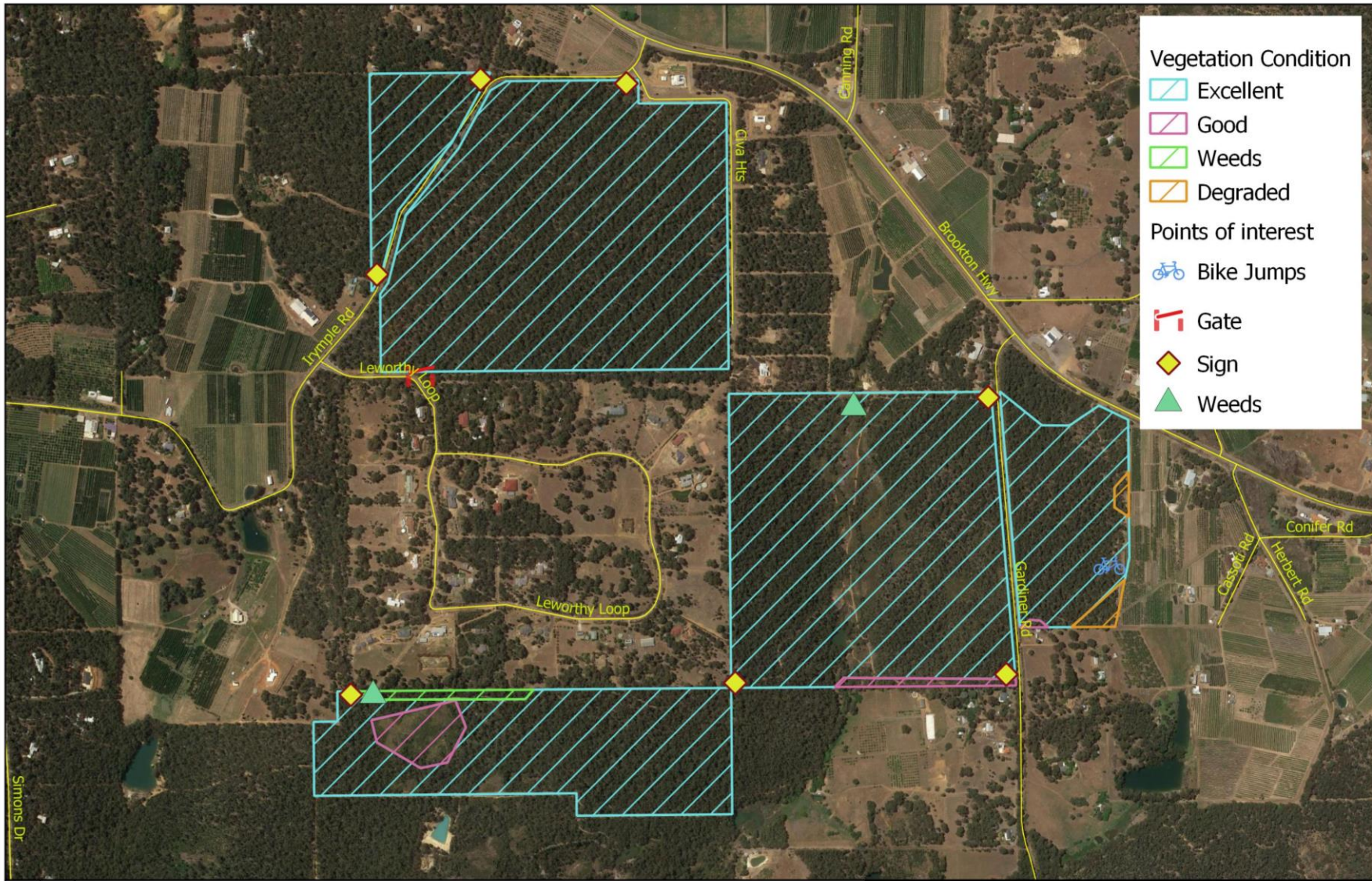


Figure 5 - Vegetation Conditions within Stinton Cascade Nature Reserve (R19662)



APPENDIX A
FLORA SPECIES RECORDED

Appendix A: Flora species recorded at Stinton Cascade Nature Reserve (R19662) in November 2020 and April 2021.

Family	Genus /Species
Allocasuarinaceae	<i>Allocasuarina fraseriana</i>
Amaranthaceae	<i>Ptilotus manglesii</i>
Amaryllidaceae	* <i>Allium triquetrum</i>
Anarthriaceae	<i>Lyginia</i> sp
Apiaceae	<i>Pentapeltis peltigera</i> <i>Xanthosia huegelii</i> <i>Xanthosia</i> sp <i>Platysace compressa</i>
Apocynaceae	* <i>Vinca ?major</i>
Araliaceae	<i>Trachymene pilosa</i>
Asparagaceae	* <i>Asparagus asparagoides</i>
Asparagaceae	<i>Dichopogon fimbriatus</i> <i>Lomandra ? preissii</i> <i>Lomandra preissii</i> <i>Lomandra purpurea</i> <i>Lomandra</i> sp <i>Thysanotus ?multiflorus</i> <i>Thysanotus dichotomus</i> <i>Thysanotus multiflorus</i>
Asteraceae	* <i>Dittrichia graveolens</i> * <i>Erigeron bonariensis</i> * <i>Hypochaeris glabra</i> * <i>Lactuca serriola</i> * <i>Sonchus oleraceus</i> * <i>Taraxacum khatoonae</i> * <i>Taraxicum offinale</i> * <i>Ursinia anthemoides</i> <i>Hyalosperma cotula</i> <i>Olearia paucidentata</i> <i>Pterochaeta paniculata</i> <i>Senecio hispidulus</i> <i>Siloxerus</i> sp
Boryaceae	<i>Borya</i> sp
Campanulaceae	* <i>Wahlenbergia capensis</i> <i>Isotoma hypocrateriformis</i>
Celastraceae	<i>Tripterococcus brunonis</i>
Colchicaceae	<i>Burchardia congesta</i>
Cyperaceae	<i>Baumea</i> sp <i>Cyathochaeta avenacea</i> <i>Gahnia ?aristata</i> <i>Lepidosperma gladiatum</i> <i>Lepidosperma</i> sp <i>Lepidosperma</i> sp (flat) <i>Morelotia octandra</i>
Dasypogonaceae	<i>Dasypogon bromeliifolius</i>
Dennstaedtiaceae	<i>Pteridium esculentum</i>
Dilleniaceae	<i>Conostylis setosa</i>

Dilleniaceae	<i>Conostylis</i> sp <i>Hibbertia</i> sp 1 <i>Hibbertia hypericoides</i> <i>Hibbertia</i> sp 2
Droseraceae	<i>Drosera</i> sp
Ericaceae	<i>Andersonia</i> sp <i>Leucopogon</i> sp <i>Leucopogon verticillatus</i> <i>Styphelia pallida</i>
Fabaceae	* <i>Chamaecytisus palmensis</i> * <i>Lotus angustissimus</i> <i>Acacia ? willenowiana</i> <i>Acacia alata</i> <i>Acacia pulchella</i> <i>Acacia</i> sp (diamond leaves) <i>Bossiaea aquifolium</i> <i>Bossiaea ornata</i> <i>Daviesia decurrens</i> <i>Gompholobium marginatum</i> <i>Gompholobium polymorphum</i> <i>Hovea chorizemifolia</i> <i>Kennedia coccinea</i> <i>Kennedia prostrata</i> <i>Mirbelia ? dilatata</i> <i>Mirbelia dilatata</i> <i>Viminaria juncea</i>
Fumariaceae	* <i>Fumaria capreolata</i>
Goodeniaceae	<i>Dampiera alata</i> <i>Dampiera linearis</i> <i>Goodenia ? micrantha</i> <i>Lechenaultia biloba</i> <i>Scaevola ? pilosa</i> <i>Scaevola calliptera</i> <i>Scaevola</i> sp (white)
Haemodoraceae	<i>Anigozanthos manglesii</i> <i>Haemodorum</i> sp
Hemerocallidaceae	<i>Agrostocrinum hirsutum</i> <i>Caesia micrantha</i> <i>Dianella revoluta</i> <i>Tricoryne elatior</i>
Iridaceae	* <i>Gladiolus caryophyllaceus</i>
Iridaceae	* <i>Gladiolus undulata</i>
Iridaceae	* <i>Romulea rosea</i>
Iridaceae	* <i>Watsonia</i> sp <i>Patersonia occidentalis</i> <i>Patersonia pygmaea</i> <i>Patersonia umbrossa</i>
Malvaceae	<i>Lasiopetalum bracteatum</i>
Morcaeae	* <i>Ficus carica</i>

Myrtaceae	<i>Babingtonia camphorosmae</i>
	<i>Calytrix flavescens</i>
	<i>Corymbia calophylla</i>
	<i>Dianella revoluta</i>
	<i>Eucalyptus marginata</i>
	<i>Hypocalymma ?angustifolia</i>
	<i>Hypocalymma angustifolium</i>
	<i>Melaleuca ? parviceps</i>
	<i>Melaleuca</i> sp
	<i>Taxandria linearifolia</i>
	<i>Verticordia ?huegelii</i>
	<i>Verticordia acerosa</i> var. <i>preissii</i>
	<i>Verticordia huegelii</i>
	<i>Viminea juncea</i>
Oleaceae	* <i>Olea europaea</i>
Orchidiaceae	* <i>Disa bracteata</i>
	<i>Thelymitra dedmaniarum</i>
Oxalidaceae	* <i>Oxalis purpurea</i>
Phyllanthaceae	<i>Phyllanthus calycinus</i>
Pittosporaceae	<i>Billardiera heterophylla</i>
	<i>Marianthus</i> sp
Plantaginaceae	* <i>Plantago</i> sp
Poaceae	* <i>Aira caryophyllea</i>
	* <i>Briza maxima</i>
	* <i>Briza minor</i>
	* <i>Ehrharta calycina</i>
	* <i>Paspalum</i> sp
	<i>Amphipogon</i> sp
	<i>Austrostipa ?flavescens</i>
	<i>Austrostipa</i> sp
	<i>Microlaena stipoides</i>
	<i>Neurachne alopecuroidea</i>
	<i>Rytidosperma</i> sp
	<i>Tetrarrhena laevis</i>
Polygalaceae	<i>Comesperma virgatum</i>
Primulaceae	* <i>Lysimachia arvensis</i>
Proteaceae	<i>Adenanthos barbiger</i>
	<i>Banksia grandis</i>
	<i>Banksia nivea</i>
	<i>Banksia sessilis</i>
	<i>Conospermum</i> sp
	<i>Daviesia</i> sp
	<i>Grevillea bipinnafida</i>
	<i>Grevillea manglesii</i>
	<i>Grevillea synapheae</i>
	<i>Hakea lissocarpha</i>
	<i>Hakea</i> sp
	<i>Hakea trificata</i>
	<i>Hakea undulata</i>

	<i>Persoonia elliptica</i>
	<i>Persoonia longifolia</i>
	<i>Petrophile biloba</i>
	<i>Synaphea</i> sp
Ranunculaceae	<i>Clematis pubescens</i>
Restionaceae	<i>Desmocladus ?fasciculatus</i>
	<i>Desmocladus flexuosus</i>
Rhamnaceae	<i>Trymalium ledifolium</i>
	<i>Trymalium odoratissimum</i>
Rubiaceae	<i>Opercularia vaginata</i>
Sapindaceae	<i>Diplopeltis huegelii</i>
Solanaceae	* <i>Solanum americanum</i>
	* <i>Solanum nigrum</i>
Stylidiaceae	<i>Levenhookia pusilla</i>
	<i>Stylidium</i> sp1
	<i>Stylidium</i> sp2
	<i>Stylidium</i> sp3
	<i>Stylidium</i> sp4
Thymelaeaceae	<i>Pimelea</i> sp
Typhaceae	<i>Typha domingensis</i>
Xanthorrhoeaceae	<i>Xanthorrhoea brunonis</i>
	<i>Xanthorrhoea gracilis</i>
	<i>Xanthorrhoea preissii</i>
Zamiaceae	<i>Macrozamia riedlei</i>

APPENDIX B
FAUNA SPECIES RECORDED

Appendix B: Fauna species recorded at Stinton Cascade Nature Reserve (R19662) in November 2020 and April 2021

Family	Genus/Species	Common Name
Alcedinidae	<i>?Todiramphus sanctus</i>	Sacred Kingfisher
Cacatuidae	<i>Calyptorhynchus banksii</i>	Forest Red-Tailed Cockatoo
	<i>Eolophus roseicapilla</i>	Pink and Grey Galah
	<i>Dromaius novaehollandiae</i>	Emu
Columbidae	<i>Phaps chalcoptera</i>	Bronzewing Pigeon
Corvidae	<i>Gymnorhina tibicen</i>	Australian Magpie
	<i>Corvus orru</i>	Australian Crow
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo
Meliphagidae	<i>Acanthorhynchus sp</i>	Spinebill
	<i>Anthochaera sp</i>	Wattlebird
	<i>Phylidonyris novaehollandiae</i>	New holland honey eater
Peramelidae	<i>Isoodon fusciventer</i>	Quenda
Psittaculidae	<i>Barnardius zonarius</i>	Australian ringneck
	<i>Trichoglossus moluccanus</i>	Rainbow lorikeet
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short- Beaked Echidna