

**Lot 1 Chittering Road and  
Bush Forever site 88  
Bullsbrook.**

**Weed Assessment**



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

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## **EXECUTIVE SUMMARY**

Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook retains biodiversity values which are threatened by weed invasion. Thirty five species of weeds have been identified in the study area. These include significant environmental weeds, Weeds of National Significance and Declared Pest Plants.

This report has been prepared by Del Botanics on behalf of the Department of Biodiversity Conservation and Attractions (DBCA) to review current weed control priorities for Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook. The survey area is shown on **Figure 1**.

Five weed species which pose the biggest threat to the biodiversity of the site have been identified. This report outlines priority actions for the control of these weeds.

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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.

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## **1. INTRODUCTION**

### **1.1 BACKGROUND**

The Bullsbrook local area encompasses a large diversity of vegetation complexes corresponding to the variations in the landscape from the Darling Scarp, alluvial plains and sandy dunes. Bush Forever sites have been identified by the Urban Bushland Council to reflect areas which have regionally significant bushland requiring retention and protection. There are 16 Bush Forever sites within the Bullsbrook local area, however some are in private ownership and not afforded any formal protection (City of Swan, 2018).

This weed assessment covers Lot 1 Chittering Road and Bush Forever site 88 in Bullsbrook. The site is part of the Northern Jarrah Forrest and consists of the Mogumber Complex- South which can be described as Open woodland of *Corymbia calophylla*, with some admixture of *Eucalyptus marginata* (Jarrah) and a second storey of *Eucalyptus todtiana* (Pricklybark) - *Banksia attenuata* - *Banksia menziesii* (Firewood Banksia) - *Banksia ilicifolia* (Holly-leaved Banksia) (WALGA, 2020).

### **1.2 PURPOSE OF THE REPORT**

This report has been prepared by Del Botanics on behalf of the Department of Biodiversity, Conservation and Attractions (DBCA) to review current weed control priorities at Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook. The assessment was undertaken over the entire site shown on **Figure 1 & 2**. This report provides an indication of where the priority weeds exist on site, this information is shown on **Figure 3**.

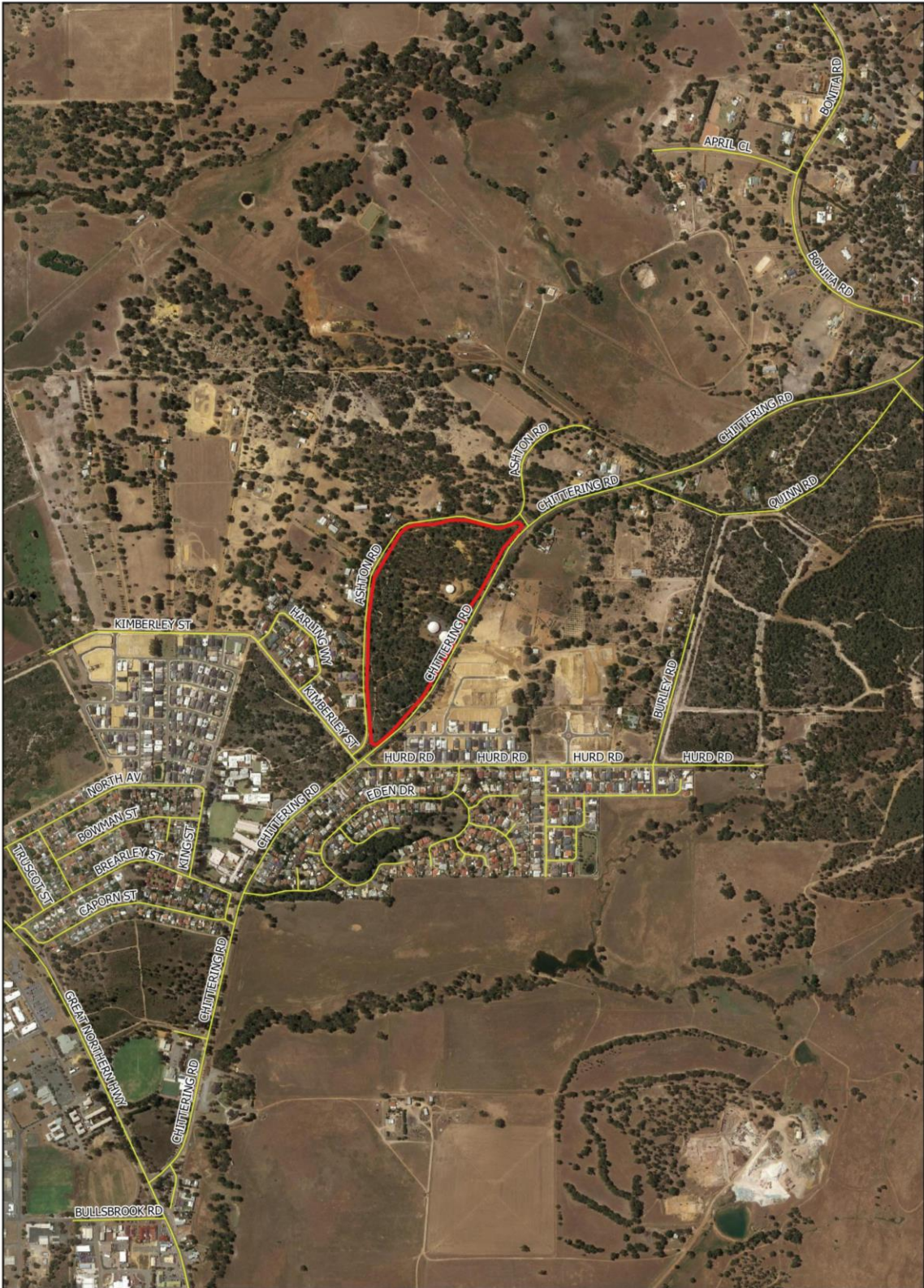


Figure 1 - Site Location

1:15000 @A4  
0 250 500 m



Figure 2 - Subject Area

1:3000 @A4  
0 50 100 m

### 1.3 DESCRIPTION OF WEED CATEGORIES

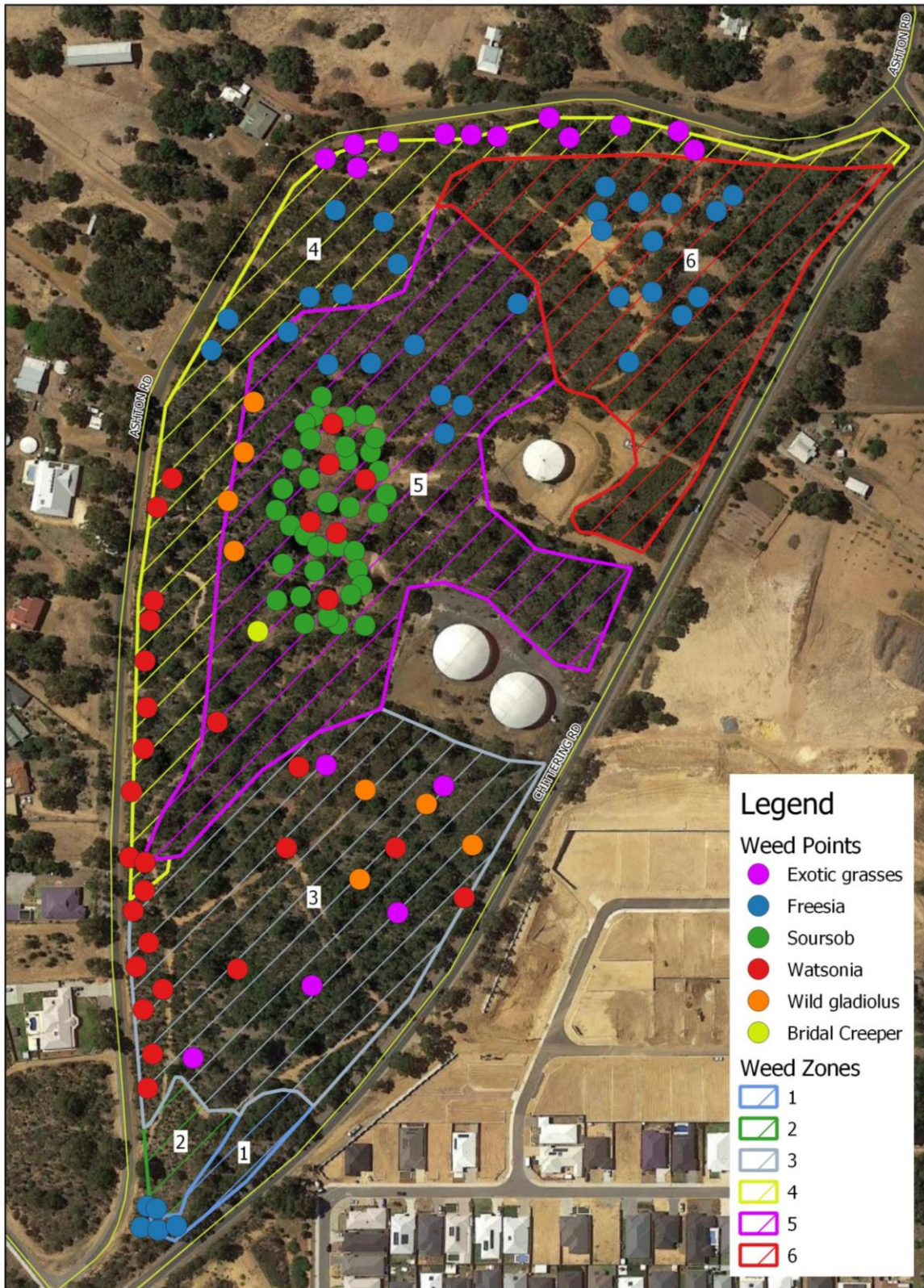
The weeds recorded from Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook have been categorised into one of three categories, which have been described below.

1. Environmental weeds are introduced species which invade bushland, threaten native flora and fauna and degrade natural systems and processes.

2. Declared Pest Plants are those species listed under the *Biosecurity and Agriculture Management Act, 2007*, regulated by the Department of Agriculture and Food in Western Australia.

3. Weeds of National Significance' (WoNS) are those species listed by the Australian Government based on their invasiveness, potential for spread and environmental, social and economic impacts.

Thirty five species of weeds were identified on the site, during the site visits, with several posing a significant threat to biodiversity. There are a number of environmental weeds recorded onsite that invade the bushland including Eastern States *Acacia* spp, *\*Watsonia meriana* var. *bulbillifera* (Watsonia) and *\*Ehrharta calycina* (Veldt Grass) which appear to have the greatest impact on this site. One of the species found on site is listed as a Weeds of National Significance. Only one plant of *\*Asparagus asparagoides* (Bridal Creeper) was recorded within the search area and it is shown on **Figure 3**. Two species *Moraea miniata* (Cape Tulip) and *Asparagus asparagoides* (Bridal Creeper) are listed as Declared Pest Plants. Department of Biodiversity, Conservation and Attractions (DBCA) has a legal responsibility to manage Weeds of National Significance and Declared weed species on crown land, where practical. General weed locations are shown on **Figure 3**.



**Legend**

**Weed Points**

- Exotic grasses
- Freesia
- Soursob
- Watsonia
- Wild gladiolus
- Bridal Creeper

**Weed Zones**

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



Figure 3 - Weed Zones

1:3000 @A4  
 0 50 100 m

## EXISTING ENVIRONMENT

Lot 1 Chittering Road and Bush Forever site 88 retains significant biodiversity values. This site has vegetation in predominately Good condition. There are areas of localised disturbances; however for a small area it presents a valuable bushland remnant. Numerous weed species have been identified on the site, which pose a significant threat to these biodiversity values.

The site has three vegetation communities recorded, with a high diversity and density of native flora species and highly valuable fauna habitat. The vegetation condition ranges from Completely Degraded to Very Good. Recent fires have impacted the condition of the vegetation and aided in significant weed introduction. A number of habitat trees were observed during the survey.

There are five dominant weed species that currently present a significant impact on the site. Although there are other weeds contributing to the condition of the site, the five dominant weeds are having the greatest impact. Control of these weeds and rehabilitation with local native flora species will see a significant increase in vegetation condition on the site.

### 2.1 GEOLOGY AND SOILS

Lot 1 Chittering Road and Bush Forever site 88 is underlain by the Guildford Clay formation. The Guildford Clay consists of mostly brown, silty and slightly sandy clay. It is up to 35mm thick and commonly contains lenses of fine to coarse grained, very poorly sorted conglomeratic and sometimes shelly sand at its base, particularly in the swan valley area (GSWA, 1986), The Guildford Clay is predominately of Fluvial origin (Bush Forever, 2000).

### 2.2 LOCAL VEGETATION COMMUNITIES

The survey area, although relatively small in size, contains three distinct vegetation communities. Vegetation community mapping was undertaken on a broad scale whilst undertaking a weed assessment of the site. The vegetation predominately consisted of Wandoo (*Eucalyptus wandoo*) Woodland and Marri (*Corymbia calophylla*) Woodland. The Marri woodland occurred on the lower grounds, in the southern and eastern areas of the site. The Wandoo woodland occurred in the higher grounds, in the northern section of the site. There is a small area of Banksia woodland in the very southern section of the site. **(Figure 4)**

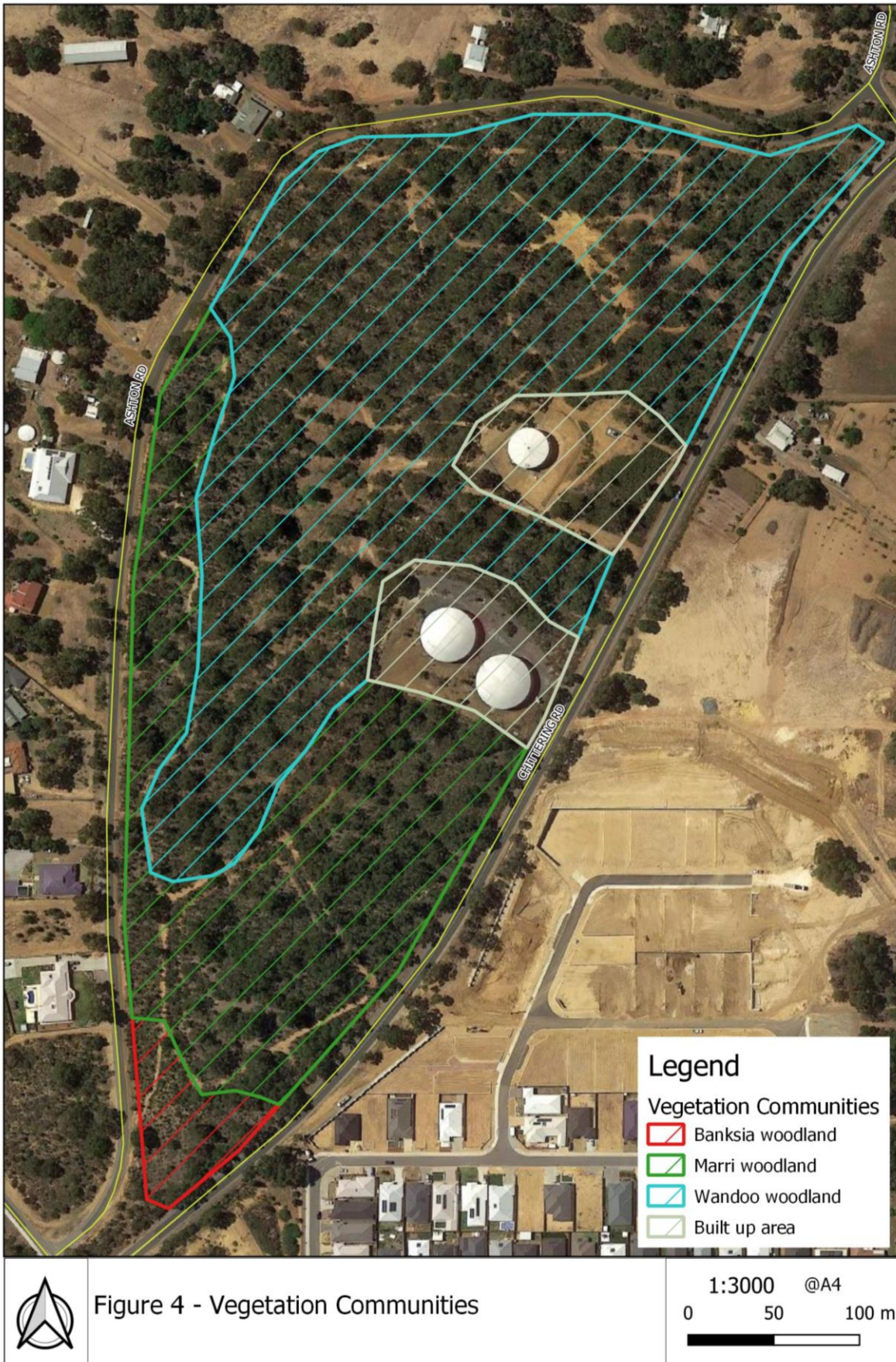


Figure 4 - Vegetation Communities

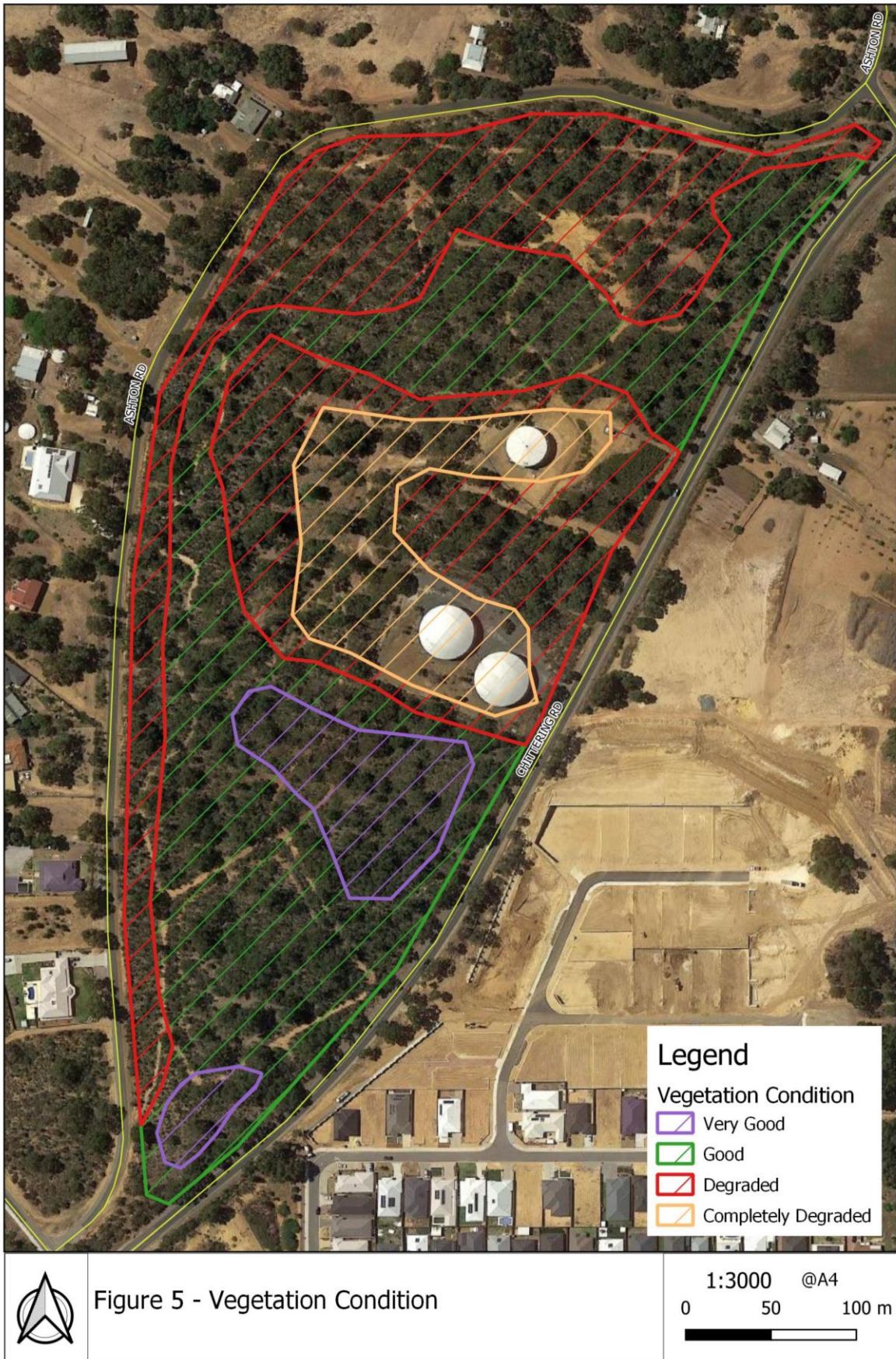
## 2.3 VEGETATION CONDITION

The vegetation condition ranged from “Completely Degraded” to “Very Good”, shown on **Figure 5**. Recent fires have impacted the condition of the vegetation and aided in significant weed introduction.

The vegetation condition was rated according to the Vegetation Condition Scale commonly used in the Perth Metropolitan Region (Government of WA 2000). The definitions are described below in **Table 1**.

**Table 1: Vegetation Condition Scale (Technical Guidance Statement, 2016)**

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



### 3. SITE ASSESSMENT

The site assessment was undertaken on 24<sup>th</sup> June 2020. The assessment was undertaken after recent rainfall to best determine new weed germinates on the site. Some of the site appears to be impacted by a recent fire which has increased bare areas for weed germination.

Weed locations were mapped based on vegetation communities, condition and location. Weed maps and information collected are useful in a number of ways. They allow for strategic control work to protect bushland in good vegetation condition. They help to understand the distribution of weeds in bushland and at which points to start weed control. Weeds maps aid in monitoring the spread of established weeds and the effectiveness of control programs, which allows for setting priorities and developing works programs.

Thirty five weeds were recorded during the site visit. Of these, five species have been determined as the most significant on site in terms of posing the greatest threat and having the potential to make the greatest environmental impact. The top five are as follows:

1. \**Oxalis pes-caprae* (Soursob)
2. \**Watsonia meriana* var. *bulbillifera* (Watsonia)
3. \**Gladiolus caryophyllaceus* (Wild Gladiolus)
4. \**Freesia alba x leichtlinni* (Freesia)
5. \**Ehrharta calycina* (Veldt Grass) and \**Eragrostis curvula* (Love Grass)

The following weed species shown in **Table 2** below were recorded on site during the survey.

**Table 2: Weed species identified within Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook.**

FAMILY	SPECIES	COMMON NAME
Apocynaceae	* <i>Vicia benhalensis</i>	Purple vetch
Asparagaceae	* <i>Asparagus asparagoides</i>	Bridal Creeper
Asparagaceae	* <i>Chlorophytum comosum</i>	Pineapple Plant
Asteraceae	* <i>Arctotheca calendula</i>	Cape Weed
Asteraceae	* <i>Dittrichia graveolens</i>	Stinkwort
Asteraceae	* <i>Hypochaeris glabra</i>	Flatweed
Asteraceae	* <i>Hypochaeris radicata</i>	Flatweed
Asteraceae	* <i>Sonchus asper</i>	Prickly Sowthistle
Asteraceae	* <i>Sonchus oleraceus</i>	Common Sowthistle
Asteraceae	* <i>Taraxacum khatoonae</i>	Dandelion

Asteraceae	* <i>Ursinia anthemoides</i>	Ursinia
Euphorbiaceae	* <i>Euphorbia peplus</i>	Petty Spurge
Fabaceae	* <i>Acacia iteaphylla</i>	Flinders Range Wattle
Fabaceae	* <i>Chamaecytisus palmensis</i>	Tagasaste
Fabaceae	* <i>Trifolium</i> sp.	Clover
Iridaceae	* <i>Freesia alba</i> × <i>leichtlinii</i>	Freesia
Iridaceae	* <i>Gladiolus caryophyllaceus</i>	Wild Gladiolus
Iridaceae	* <i>Homeria flaccida</i>	One-leaf Cape Tulip
Iridaceae	* <i>Moraea miniata</i>	Two-leaf Cape Tulip
Iridaceae	* <i>Romulea rosea</i> var. <i>communis</i>	Guildford Grass
Iridaceae	* <i>Romulea</i> sp.	Guildford Grass
Iridaceae	* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	Watsonia
Myrtaceae	* <i>Leptospermum laevigatum</i>	Victorian Tea-Tree
Oxalidaceae	* <i>Oxalis glabra</i>	Finger-leaf Oxalis
Oxalidaceae	* <i>Oxalis pes-caprae</i>	Soursob
Oxalidaceae	* <i>Oxalis purpurea</i>	Four O'clock, Purple wood Sorrel
Papaveraceae	* <i>Fumaria capreolata</i>	Climbing Fumitory
Poaceae	* <i>Briza maxima</i>	Blowfly Grass
Poaceae	* <i>Cynodon dactylon</i>	Couch Grass
Poaceae	* <i>Ehrharta calycina</i>	Perennial Veldt Grass
Poaceae	* <i>Ehrharta longiflora</i>	Annual Veldt Grass
Poaceae	* <i>Eragrostis curvula</i>	Love Grass
Poaceae	* <i>Pennisetum clandestinum</i>	Kikuyu
Poaceae	* <i>Poa annua</i>	Winter Grass
Scrophulariaceae	* <i>Verbascum virgatum</i>	Green Mullein, Twiggy Mullein

The site has been divided into six areas based on vegetation communities, vegetation condition and the dominant weed species, shown on **Figure 3**. In each of the areas, weeds have been assigned a category using the cover classes of less than 5%, 6-75% or 76-100%, using the Department of Biodiversity, Conservation and Attractions (DBCA) Standard Operating Procedure (SOP) **No: 22.1 Techniques for mapping weed distribution and cover in bushland and wetlands**. These cover classes are very broad but reflect the fact that mapping cover at a broader scale can be very subjective. The classes recommended best capture the general distribution and will provide the most useful categories on which to base management actions.

<b>Area 1: <i>Corymbia calophylla</i> with <i>Banksia sessilis</i> woodland</b>	
<b>Degraded vegetation condition</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
* <i>Eragrostis curvula</i>	76-100%
* <i>Gladiolus caryophyllaceus</i>	76-100%
* <i>Trifolium</i> sp.	Less than 5%
* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	6-75%
* <i>Oxalis purpurea</i>	Less than 5%

<b>Area 2: <i>Banksia menezesii</i> woodland</b>	
<b>Good vegetation condition</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
* <i>Romulea rosea</i> var. <i>communis</i>	Less than 5%
* <i>Gladiolus caryophyllaceus</i>	Less than 5%
* <i>Poa annua</i>	76-100%
* <i>Ehrharta calycina</i>	Less than 5%
* <i>Briza maxima</i>	Less than 5%
* <i>Arctotheca calendula</i>	Less than 5%
* <i>Ursinia anthemoides</i>	Less than 5%

<b>Area 3: <i>Corymbia calophylla</i> woodland</b>	
<b>Very Good vegetation condition</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
* <i>Hypochaeris</i> sp.	Less than 5%
* <i>Gladiolus caryophyllaceus</i>	Less than 5%
* <i>Taraxacum khatoonae</i>	Less than 5%

<b>Area 4: <i>Eucalyptus wandoo</i> woodland</b>	
<b>Degraded vegetation condition</b>	
<b>Area has been recently burnt</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
<i>*Watsonia meriana</i> var. <i>bulbillifera</i>	76-100%
<i>*Vicia benhalensis</i>	Less than 5%
<i>*Acacia iteaphylla</i>	Less than 5%
<i>*Ehrharta calycina</i>	6-75%
<i>*Oxalis purpurea</i>	76-100%
<i>*Oxalis pes-caprae</i>	76-100%
<i>*Chamaecytisus palmensis</i>	Less than 5%
<i>*Ursinia anthemoides</i>	Less than 5%

<b>Area 5: <i>Eucalyptus wandoo</i> woodland</b>	
<b>Good vegetation condition</b>	
<b>Area has been recently burnt, contains an old tip site and possible gravel extraction area</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
<i>*Freesia alba</i> × <i>leichtlinii</i>	6-75%
<i>*Poa annua</i>	6-75%
<i>*Ehrharta calycina</i>	Less than 5%
<i>*Oxalis pes-caprae</i>	6-75%
<i>*Gladiolus caryophyllaceus</i>	6-75%
<i>*Chlorophytum comosum</i>	Less than 5%
<i>*Pennisetum cladestinum</i>	Less than 5%

<b>Area 6: <i>Eucalyptus wandoo</i> woodland</b>	
<b>Degraded vegetation condition</b>	
<b>Area has varoius tracks</b>	
<b>Weed Species</b>	<b>Cover Class (less than 5%, 6-75% or 76-100%)</b>
<i>*Gladiolus caryophyllaceus</i>	6-75%
<i>*Asparagus asparagoides</i>	Less than 5%
<i>*Fumaria capreolata</i>	Less than 5%

#### 4. PRIORITIES FOR MANAGEMENT

Environmental weed management techniques include prevention, eradication, manual, chemical and biological controls and containment. An adaptive management strategy is most effective for overall site management and restoration of the natural environment. Priorities for weed management are determined by factors such as; impacts on native species particularly threatened or priority flora, fauna or ecological communities; legislative requirements; size of infestations; invasiveness; resources; public safety, and; aesthetics at popular visitor sites.

These factors were considered during the development of this plan. Species that are considered high priorities for control at Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook are listed in **Table 3** below and the areas are shown on **Figure 3**.

**Table 3: Priority weeds for control at Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook.**

Priority ranking	Species	Common Name
1	<i>Oxalis pes-caprae</i>	Soursob
2	<i>Watsonia meriana</i> var. <i>bulbillifera</i>	Watsonia
3	<i>Gladiolus caryophyllaceus</i>	Wild gladiolus
4	<i>Freesia alba x leichtlinii</i>	Freesia
5	<i>Ehrharta calycina</i> and <i>Eragrostis curvula</i>	Veldt Grass and Love Grass

These species were chosen as they pose the highest threat to the biodiversity values on Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook. The Action Plan (**Section 6**) prioritises these weeds and the areas they were recorded in for control.

#### 5. FUTURE MANAGEMENT AND MONITORING

Future management should apply the following principles to the priority species listed in **Table 2**, as far as is practicable.

- Undertake weed control in the highest conservation value and best condition bushland as a priority.
- Take advantage of opportunities such as fire. Where burns are planned, undertake control of priority weed species before and after a burn, when and where possible.
- Control the most invasive species first.
- Undertake coordinated weed control efforts.

- Control outlying or isolated populations of weeds as a priority.
- Schedule weed control works 3 months in advance where possible. Refer to the management calendar included in this report as **Table 4**.

## 5.1 MONITORING

Simple and time effective monitoring methods can be used to evaluate management efforts and monitor vegetation condition. The following methods are suggested;

- Set up photo monitoring points to regularly monitor areas of interest such as weed control areas and bushland areas in good or better condition. Photo points should be recorded each season if possible or annually in Spring.
- Update mapping after monitoring to provide an updated area of weed infestations for following years of weed control.

**Table 4: Management calendar showing the optimum time for treatment of each priority species.**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Species</b>												
<i>Oxalis pes-caprae</i> (Oxalis)						Y	Y					
<i>Watsonia meriana</i> var. <i>bulbillifera</i> (Watsonia)									Y			
<i>Gladiolus caryophyllaceus</i> (Wild Gladiolus)							Y	Y	Y			
<i>Freesia alba x leichtlinii</i> (Freesia)						O	Y	Y				
<i>Ehrharta calycina</i> and <i>Eragrostis curvula</i> Veldt Grass and Love Grass						Y	Y	Y	O	O	O	O

**Legend:** Y = Yes, regularly, O = Occasionally.

## 6. ACTION PLAN

The following Action Plan outlines priority weed control tasks and areas.

Species	Priority	Priority Location	Prescription
<i>Oxalis pes-caprae</i> (Soursob)	1	Area 4 & 5	Spot spray metsulfuron methyl 0.2 g/15 L + Pulse®, or 1% glyphosate. Apply at bulb exhaustion, generally just on flowering. Exercise care if manually removing as physical removal can result in spread of bulbils
<i>Watsonia meriana</i> var. <i>bulbillifera</i> (Watsonia)	1	Area 1 & 4	Spray with 2,2-Dichloropropanoic acid (Dalapon/atlapon etc)
<i>Gladiolus caryophyllaceus</i> (Wild Gladiolus)	1	Areas 1, 2, 3,5 & 6	Wipe individual leaves with glyphosate 10 % or spray dense infestations in degraded areas with 1% glyphosate just on flowering at corm exhaustion.
<i>Freesia alba x leichtlinii</i> (Freesia)	1	Area 5	Spot spray metsulfuron methyl 0.2 g/15 L + Pulse® or 2.5-5 g/ha + Pulse®. Apply just on flowering at corm exhaustion.
<i>Ehrharta calycina</i> (Annual Veldt grass), <i>Eragrostis curvula</i> (Love Grass) and <i>Poa annua</i> (Winter Grass)	1	Area 1,2 & 5	For small infestations, cut out plants ensuring crown removal. Do not slash. Alternatively spray with Fusilade® Forte 13 ml/L or 6.5 L/ha + wetting agent on actively growing and unstressed plants. For generic fluazifop-p (212g/L active ingredient) 8ml/L or 4L/ha +wetting agent. Follow-up in subsequent years. Use unplanned fires to spray regrowth and seedlings within 4-6 weeks of germination

## **5. CONCLUSIONS AND RECOMMENDATIONS**

There are more than 35 introduced weed species at Lot 1 Chittering Road and Bush Forever site 88 Bullsbrook. Undertaking priority weed control actions and controlling the most invasive species in the best condition bushland areas is vital. The following additional recommendations are made;

- Seek opportunities to encourage volunteering on the site and work with other organisations to increase the capacity to undertake priority weed management actions;
- Restrict access into the area to reduce the spread of weeds;
- Update weed mapping regularly as per recommendations in the report;
- Undertake weed control priorities in accordance with the Action Plan;
- Undertake a Flora, Vegetation and Habitat Tree Assessment;
- Potentially develop a revegetation plan to assist in the reintroduction of native vegetation; and
- Update the Action Plan annually and review management priorities every 5 years.

## 7. REFERENCES

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## **PHOTOGRAPHIC PLATES**



**Plate 1:** Soursob infestation in area 4.



**Plate 2:** Germination of *Gladiolus caryophyllaceus* (Wild Gladiolus)



**Plate3:** Banksia Woodland.