City of Nedlands

Mt Claremont Oval Bushland Management Plan

2019–2024

nedlands.wa.gov.au

ACRONYMS AND ABBREVIATIONS

ACRONYM/ ABBREVIATION	DESCRIPTION
DBCA	Department of Biodiversity Conservation and Attractions
DEC	Department of Environment and Conservation
DFES	Department of Fire and Emergency Services
DPaW	Department of Parks and Wildlife
EPBC Act	Environmental Protection and Biodiversity Conservation Act
GPS	Global Positioning System
ha	Hectare
the City	City of Nedlands
WALGA	Western Australian Local Government Association
WESROC	Western Suburbs Regional Organisation of Councils

All photos courtesy of Sally Wallace
Cover photo: Mt Claremont Oval Bushland

Contents

2. ACKNOWLEDGEMENTS

The City of Nedlands would like to acknowledge and thank the following organisations that assisted in the development of this Management Plan.

City of Nedlands Health and Compliance Department
Friends of Hollywood Reserve
Ian Fordyce and Associates
Syrinx Environmental Pl
Technology One Limited

3. SUMMARY

This Management Plan is dedicated specifically to the management of Mt Claremont Oval Bushland. Detailed information and actions relating to all natural areas within the City such as surveying methods, rehabilitation, environmental weed control, climate, geomorphology and soils, planning context, interpretation, priority flora and fauna, fire management, community involvement, access and feral animal management has been detailed on pages 1–102 of the Natural Areas Management Plan 2019-2024.

The Mt Claremont Oval Bushland Management Plan 2019-2024 has drawn heavily from the following documents:

- Mt Claremont Oval Reserve Management Plan 2013-2018 (City of Nedlands, 2014)
- The City of Nedlands Natural Area Initial Assessments (Orsini, 2008)
- Weed Mapping of Bushland at Mt Claremont Oval Reserve (Ecoscape, 2006).

A five year Management Plan has been developed that provides management actions and strategies for the conservation and restoration of the bushland at Mt Claremont Oval. A summary of key actions are listed below.

Table 1: Summary of Actions 2019-2024

Management Actions 2019-2024	
BUSHLAND BOUNDARIES	
1.	Manage Mt Claremont Oval Bushland on the basis of three Zones.
REHABILITATION	
2.	Focus revegetation at selected degraded sites within Zones.
3.	Focus management on better condition bushland areas within Zones.
4.	Only revegetate Zones 1 and 3 with similar existing local native species.
5.	Implement ‘Asbestos’, ‘Plant Pathogen’ and ‘Rehabilitation’ actions detailed in the Natural Areas Management Plan 2019-2024.
REVEGETATION	
6.	Careful consideration should be provided to the types of revegetation species used in areas where Black Flag is present.
7.	Only use plant species for rehabilitation if they would have naturally occurred on site.
8.	Implement ‘Revegetation’ actions detailed in the Natural Areas Management Plan 2019-2024.
WEED CONTROL	
9.	Control the following weeds as a high priority: Geraldton Carnation Weed, Bridal Creeper, *Lachenalia aloides*, Perennial Veldt Grass, Annual Veldt Grass, Wild Oats, Black Flag, Wild Radish, Wild Lettuce, *Lupinus*, *Freesia* and woody weeds.
10.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
11.	Monitor, control and document the distribution of new invasive weeds as they arise.
12.	Remove juvenile seedlings of Geraldton Wax and Coast Teatree if required.
13.	Do not undertake removal of historically planted non-indigenous Australian native plants unless they are invasive.

14.	Undertake ongoing maintenance of weeds in restoration sites.
13.	Control priority weeds in accordance with management notes detailed in Appendix 4.
15.	Where native vegetation exists, mature Black Flag plants that have the potential to set seed should be hand wiped with herbicides or hand weeded to stop them from seeding.
16.	Implement 'Weed Control' actions in the Natural Areas Management Plan 2019-2024.
MONITORING	
17.	Monitor, control and document the distribution of new invasive weeds as they arise.
18.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
19.	Undertake annual monitoring and control of African Cornflag, *Watsonia bulbillifera*, *Arctotis stoechadifolia* and *Acacia iteaphylla* to ensure they do not spread or reestablish.
FIRE MANAGEMENT	
20.	Implement 'Fire Management' actions in the Natural Areas Management Plan 2019-2024.
ACCESS	
21.	Implement 'Access' actions in the Natural Areas Management Plan 2019-2024.
NATIVE ANIMALS	
22.	Survey native fauna when funding is available.
23.	Minimise fires that may destroy tree hollows.
24.	Retain tree hollows for their habitat value.
25.	Undertake ongoing control of feral European Bees.
26.	Continue implementing feral cat and fox control programs.
27.	Contribute to regional feral bird control programs coordinated by WALGA.
28.	Implement 'Feral Animal' actions detailed in the Natural Areas Management Plan 2019-2024.

4. BACKGROUND

4.1 Study Site

Mt Claremont Oval Bushland is located within the City of Nedlands approximately 7.5 km west of the Perth Central Business District. It is bordered by Cleland Street to the north, Mt Claremont Oval, Alfred Road and Lake Claremont to the south, Lisle Villages to the west and Montgomery Avenue to the east.

The bushland at Mt Claremont Oval Reserve is vested in the City of Nedlands as A Class Reserve 26102 for "Parks and Recreation". The City of Nedlands has the "Power to Lease" on Reserve 26102 and it covers an area of 2.21 hectares (ha), as shown in Figure 1.

Figure 1: Mt Claremont Oval Bushland

4.2 Disturbance Factors

The bushland at Mt Claremont Oval has had a long history of disturbance. Originally part of the bushland was excavated to construct the playing fields along Alfred Road. This resulted in a steep embankment in the central part of the bushland that has largely been planted with a mixture of exotic trees. However, remnant bushland exists in the eastern and western portions of the Reserve and consists of Marri woodland to the east and *Acacia* shrublands with scattered Tuarts to the west.

The bushland was completely burnt by a fire in 1983 and the eastern portion of the bushland again in 1997. Other disturbance factors include the presence of old reticulation pipes from past irrigation works, history of clearing with areas in the northern portion of the bushland along Cleland Street still devoid of vegetation and illegal dumping, primarily of garden waste, which is still occurring periodically along the boundary of Lisle Villages

and the verge along on Cleland Street. The bushland has a high proportion of invasive weeds dominating the understorey especially bulbous weeds.

4.3 Implementation of Previous Management Plans

Mt Claremont Oval Bushland has been actively managed by the City of Nedlands since approximately 2005. Prior to the development of the 2013 Management Plan there were no previous management plans developed for the bushland at Mt Claremont Oval. Weed mapping was undertaken in 2006 to guide the management of environmental weeds on site and in 2008 assessments of the bushland were undertaken using the WALGA Local Biodiversity Program Natural Area Initial Assessment Templates.

The 2019-2024 Management Plan consolidates information regarding conservation activities that have been undertaken since the development of the 2013 Management Plan along with reviewing and updating the 2013 Plan. Of the twenty four actions that were developed for the 2013 Management Plan, nineteen were implemented and five were partially implemented as shown in Table 2 below.

Table 2: Actions from the 2013-2018 Management Plan not Implemented

	ACTIONS	IMPLEMENTED	REASON
REHABILITATION			
1.	Only revegetate Zones 1 and 3 with similar existing local native species.	Partially	Some species in these Zones cannot be propagated for example Sand Lilly.
REVEGETATION			
2.	Consider only planting overstorey species in areas where Black Flag is present.	Partially	Due to issues with erosion revegetation using shrubs was required to stabilise the soil.
WEED CONTROL			
3.	Where native vegetation exists, mature Black Flag plants that have the potential to set seed should be hand wiped with herbicides to stop them from seeding.	Partially	Black Flag was generally hand weeded rather than wiped with herbicide.
NATIVE ANIMALS			
4.	Undertake ongoing surveying of native fauna if resources allow.	Partially	Only informal surveys undertaken.
5.	Contribute to regional programs being undertaken for feral bird control by DPaW.	Partially	This is being undertaken at a WESROC Council level.

4.4 Management Challenges and Success

Since the 2006 weed mapping was undertaken a significant reduction in the density and/or distribution of the following environmental weeds has occurred:

- African Cornflag (*Chasmanthe floribunda)*
- Annual Veldt Grass (*Ehrharta longiflora*)

- Black Flag (*Ferraria crispa*) – density only
- Brazilian Pepper Trees (*Schinus terebinthifolia)*
- Freesias (*Freesia alba x leichtlinii)*
- Geraldton Wax (*Chamelaucium uncinatum*)
- Geraldton Carnation Weed (*Euphorbia terracina*)
- Lupins (*Lupinus*)
- *Pelargonium* (*Pelargonium capitatum*)
- Perennial Veldt Grass (*Ehrharta calycina*)
- White Arctotis *(Arctotis stoechadifolia*).

Black Flag (*Ferraria crispa*) was widely distributed across the bushland prior to 2006 where it formed dense mats across the majority of the bushland. It has reduced its density significantly through herbicide spraying and the use of the herbicide Dalapon is assisting in controlling Black Flag where it grows amongst native plants. As Black Flag is difficult to control and hand removal is not appropriate, careful consideration should be given to revegetating areas with dense ground covers or spreading shrubs where Black Flag occurs. These species will prove challenging where they are establishing if Black Flag is present. Black Flag also seeds prolifically and where native vegetation exists mature plants that have the potential to set seed should be hand wiped with herbicides or hand weeded to stop them from seeding.

Woody weeds such as Brazilian Pepper Trees have largely been removed from the Reserve. Occasionally some isolated plants reseed or resprout from previously removed infestations and these require ongoing monitoring and control.

There are some mature specimens of Coast Teatree and Geraldton Wax in the western part of the Reserve. No recent control program has been undertaken on these populations. These mature specimens should remain, unless they are removed as part of an intensive restoration program, as they provide habitat and stabilisation and complete removal of them would leave large open patches devoid of vegetation. However, any juvenile trees should be removed as required.

In 2014 herbicide resistance was discovered in the Annual Veldt Grass population at Hollywood Reserve following scientific testing of both Annual and Perennial Veldt Grass. Furthermore, in 2018 herbicide resistance in Perennial Veldt Grass, whilst not scientifically tested, has been presumed to be occurring at certain isolated areas across a few reserves. In order to address herbicide resistance the City has modified its grass spraying program ensuring that at all reserves hand weeding of Perennial Veldt Grass (and annual grasses provided resources are available) occurs following completion of the annual grass control program. This program includes Mt Claremont Oval Bushland.

There are informal tracks being made through the bushland from Cleland Street to Mt Claremont Oval on an ongoing basis. These tracks are a result of pedestrians and at times cyclists traversing the bushland. This is occurring as the bushland has no fencing to delineate it as a conservation zone along Cleland Street. Whilst the City attempts to restore these areas the informal tracks damage native vegetation and cause ongoing management issues for the City.

Management Actions 2019-2024	
REVEGETATION	
1.	Careful consideration should be provided to the types of revegetation species used in areas where Black Flag is present.
WEED CONTROL	
2.	Where native vegetation exists, mature Black Flag plants that have the potential to set seed should be hand wiped with herbicides or hand weeded to stop them from seeding.

5. BIOLOGICAL ENVIRONMENT

5.1 Landscape Elements

Mt Claremont Oval Bushland occupies a long embankment extending from Cleland Street with varying degrees of steepness down to Alfred Road and the playing fields on the corner of Alfred Road and Montgomery Avenue. The embankment is the remnant of a coastal dune. The most western and eastern portions of the bushland maintain part of the natural dune vegetation. The middle portion contains a very steep embankment that was excavated to construct the playing fields and planted with a mixture of non-indigenous trees.

The highest point of the bushland is along Cleland Street which is approximately 30 m above sea level and the lowest points are between 9-13 m above sea level which are located along the playing fields and Alfred Road. The elevated position of Mt Claremont Oval Bushland offers views of Lake Claremont and nearby residential areas.

5.2 Soils and Geomorphology

Much of Mt Claremont Oval Bushland is underlain by what appears to be Karrakatta Sand. This is misleading, because the Karrakatta Sand has probably been introduced to the bank (as well as the oval itself) from the adjacent Spearwood Dune System. The current landform is a highly modified one. The oval was probably excavated from a bank of the Quindalup Dune System (possibly from the very outer edge of the blow-out mass that extends inland from Swanbourne, including much of Bold Park and the Rochdale Road area of Mt Claremont). The slope at the western end of the Reserve is made up largely or entirely of Safety Bay Sand; it is probably a remnant of the Quindalup Dune System.

5.3 Vegetation

Vegetation Complex Heddle et al (1980)

On a regional scale, Mt Claremont Oval Bushland has been mapped as occurring on the Karrakatta Complex – Central and South. This Complex consists predominantly of an Open Forest of Tuart-Jarrah-Marri. In the deeper sands Tuart is replaced by Jarrah, while Marri (*Corymbia calophylla*) is more dominant around moister sites.

Floristic Community Type Gibson (1994)

Floristic Community Types (FCTs) classify vegetation into groups of plant species that tend to co-occur in small to medium areas. Mt Claremont Oval Bushland forms part of Super Group 4 - Uplands Centred on Spearwood and Quindalup Dunes. It has not been sampled or inferred as containing a specific FCT.

Structural Plant Communities - Natural Area Initial Assessments 2008

Two plant communities were identified through the Natural Area Initial Assessments undertaken in 2008 these included:

- Acacia (*Acacia cyclops and rostellifera)* Shrubland with scattered Tuarts (*Eucalyptus gomphocephala*)
- Marri (*Corymbia calophylla*) Woodland.

This information is detailed on the WALGA Local Biodiversity Program Natural Area Assessment database for Mt Claremont Oval Bushland.

Figure 2: Structural Plant Communities at Mt Claremont Oval Bushland

Dominant plants identified in the Acacia (*Acacia cyclops and rostellifera*) Shrubland with scattered Tuarts (*Eucalyptus gomphocephala*) included tall Tuart trees along with the smaller *Acacia cyclops and Acacia rostellifera* trees. Other common native species were identified as *Melaleuca systena, Grevillea crithmifolia, Grevillea vestita, Guichenotia ledifolia, Hakea prostrata, Banksia menziesii, Allocasuarina fraseriana, Lepidosperma gladiatum, Olearia axillaris* and *Calothamnus quadrifidus.*

Dominant plants identified in the Marri (*Corymbia calophylla*) *Woodland* included Marri trees, middle storey shrubs such as *Macrozamia* and *Xanthorrhoea preissii* and lower storey shrubs *such as Stirlingia latifolia.* Other common native species were identified as *Hardenbergia comptoniana, Allocasuarina fraseriana, Acacia saligna, Acacia cochlearis, Jacksonia furcellata, Jacksonia sternbergiana, Hakea prostrata, Conostylis candicans, Corynotheca micrantha, Banksia menziesii, Leucopogon propinquus, Senecio pinnatifolius* and *Schoenus grandiflorus.*

5.4 Corridor Value

Mt Claremont Oval Bushland forms an important ecological corridor with Lake Claremont and Bold Park (via Montgomery Avenue). It is listed in the Western Suburbs Greening Plan (Ecoscape 2002) as an area for securing linkages as it assists by linking Bold Park to Lake Claremont. It also provides ecological linkages with other small remnant vegetation at Lake Claremont, Swanbourne Estate, Cottesloe Golf Course, Pine Tree Park, Mt Claremont Community Centre, Mooro Drive and Heritage Lane.

5.5 Bushland Condition

The methodology followed for bushland condition assessments undertaken in 2018 is detailed on pages 34-36 of the Natural Areas Management Plan 2019-2024. Bushland condition is useful in tracking large changes over time and should continue to be

measured each time this Management Plan is reviewed. This allows changes to be regularly monitored and recorded.

Historical Bushland Condition Assessment Data

Over the years bushland condition was mapped using different methods. Bushland condition was mapped in 2006, where it mapped the Overstorey and Understorey vegetation. Areas characterised by Overstorey and Understorey were provided a *Fair* condition rating. Areas containing either Overstorey or Understorey were provided a *Poor* condition rating and those with no Over or Understorey were provided a *Very Poor* condition rating. The bushland condition was assessed strictly on the basis of local native species present.

The bushland condition mapping undertaken in 2008 using the Keighery Scale through the Natural Area Initial Assessments assessed 53 percent (%) as *Completely Degraded*, 32% as *Degraded* and 15% as *Good*. This survey was undertaken in spring 2008 and condition ratings were not allocated strictly on the basis of local native species present. These maps were not digitised and did not use 20 x 20 m polygons.

2013 and 2018 Bushland Condition Assessment

Bushland condition mapping in 2013 and 2018 was undertaken in spring by adapting the Keighery Scale and divided the bushland into 20 x 20 m polygons.

The Keighery Scale was adapted to assess the impact of disturbance on vegetation structure. Each 20 x 20 m polygon was provided a rating from *Very Good, Good, Degraded* to *Completely Degraded.* The main disturbance factors that influenced the condition rating included fire, environmental weeds, clearing and the selective removal of species (for example from plant pathogens, frequent fires, grazing and logging). The existence on non-indigenous native plants such as *Eucalyptus utilis*, did not reduce the condition rating (except in the *Very Good* rated areas) unless they were considered invasive to the site and/or if they were found in isolation with no other local provenance species present.

In 2018 approximately half the bushland was assesed as *Good* and half as*, Degraded* with some small *Completely Degraded* areas as shown in Table 3 below.

Table 3: Extent of Bushland Condition by Class 2018

Very Good	Good	Degraded	Completely Degraded	Total Area
0 ha	1.02 ha	1.05 ha	0.14 ha	2.21 ha

No areas were rated as *Very Good* condition. This is because to attain a *Very Good* condition rating the area needed the following characteristics:

- Contain good vegetation strata expected for the location
- Show signs of natural recruitment
- Contain established local provenance species with a similar abundance and diversity that would be expected naturally.

There were no areas with the above characteristics at Mt Claremont Oval Bushland.

The *Good* condition rated areas consisted of a band of differing levels of condition (some of these were considered more on the *Degraded* or the *Very Good* side of *Good* condition). In the *Good* condition bushland areas, weed cover consisted of mostly annual species or invasive weeds in low abundance. Some introduced native Western Australian plants may also have formed part of the vegetation structure (such as *Eucalyptus utilis*), however they needed to be found cohabiting with provenance native species and considered to provide good habitat value.

The areas that were rated as *Degraded* had a combination of the following criteria:

- Sparse native vegetation cover
- High density of invasive weeds
- Comprised of newly revegetated areas.

There were also small areas that were rated as *Completely Degraded*. These areas had a combination of the following criteria that resulted their *Completely Degraded* rating:

- Lawn, building or infrastructure that covered entire quadrant
- No local provenance or Western Australian native flora
- Only a small proportion of native shrubs or seedlings and the remainder weed species.

5.6 Flora

There are 129 flora species recorded at Mt Claremont Oval Bushland, of these 51 are identified as native species and 78 as introduced weed species. The flora list for Mt Claremont Oval Bushland is comprehensive and has been based on a number of surveys undertaken over the years which have been updated as additional species are discovered or renamed. These include:

- Ian Fordyce 2013 and 2018
- Ongoing observations by City of Nedlands staff
- Orsini 2008
- Ecoscape 2006 (opportunistically when weed mapping was undertaken).

The suite of species originally present at Mt Claremont Oval Bushland cannot be directly observed due to the long history of degradation at the site such as excavation works to construct the playing fields.

Species previously recorded in 2006 and/or 2008 that have not been observed since 2013 include:

- *Gompholobium tomentosum*
- *Leucopogon propinquus*
- *Pithocarpa cordata*
- *Tetraria octandra*
- *Tricoryne elatior*.

Since 2013, the following native plants have been surveyed which were not planted and were also not previously detailed on the flora inventory for Mt Claremont Oval Bushland:

- *Isolepis marginata* (Coarse Club-rush)
- *Pterostylis* (Snail Orchid).

5.7 Plant Pathogens

A survey of plant pathogens undertaken across the City's natural areas in 2010 isolated the following plant pathogens from 12 trees at Mt Claremont Oval Bushland (2 Tuarts, 6 Jarrahs and 4 Marris):

- *Phytophthora sp. ohioensis* (2 Marris)
- *Phytophthora multivora* (2 Marris and 2 Jarrahs)
- Quambalaria canker (3 Marris).

The majority of trees displayed symptoms of stress such as crown thinning and epicormic growth. Three were also being attacked by stem-boring insects and one by Leaf Minors and a further two trees had possible *Armillaria luteobubalina* infections and one a possible *Omphalotus nidiformis* fungal pathogen infection.

The identification and management of plant pathogens and other causes of tree decline has been on pages 55-60 of the Natural Areas Management Plan 2019-2024.

5.8 Weeds

Of the 88 weeds recorded at Mt Claremont Oval Bushland (listed in Appendix 1) the distribution and density of 8 of these and woody weeds were mapped in 2018. They are shown in the map section in Appendix 6.

Some non-indigenous native plants are listed in the weed inventory in Appendix 1 such as River Red Gums and Coastal Moort. Whilst these species are not considered native to Mt Claremont Oval Bushland they are not proposed for removal. These species provide much needed habitat and they are not causing management issues. Non-indigenous native plants at Mt Claremont Oval Bushland should only be removed if they are invasive. However, as these species come to the end of their natural life they should be replaced with local provenance species.

Weed mapping

The methodology applied for weed mapping is detailed on pages 34-36 of the Natural Areas Management Plan 2019-2024. Weed mapping was undertaken in spring 2018 using 20 x 20 m polygons and the Department of Environment and Conservation (DEC) Standard Operating Procedure SOP 22.1. *Techniques for Mapping Weed Distribution and Cover in Bushland and Wetlands.* These procedures were developed to address the subjectivity that can be encountered when different people undertake mapping. In order to address this subjectivity the below listed broad cover classes were developed and were used to undertake the 2013 and 2018 weed mapping:

- Individual plants (mapped as GPS points – this was limited to woody weeds)
- Less than 5%
- 6-75%
- 76-100%.

Using SOP 22.1 for the weed mapping undertaken in spring 2013 and 2018 addressed the subjectivity involved in mapping weed cover. However, in order to refine weed management for the 2014-2019 Management Plan actual cover was also mapped. These cover classes included:

- Less than 1%
- 2-5%

- 6-10%
- 11-20%
- Then 9% increments until 100%.

The purpose of additionally mapping actual cover in 2018 was to allow for more refined and focussed reporting of weed cover and density. Whilst the broad cover classes assisted with standardising the mapping process, addressing issues with subjectivity and identifying focus areas and actions. The cover classes did not accurately reflect weed management programs success or failures. For example, if a weed species was mapped as 6-75% in the 2013-2018 Management Plan it may have undergone a significant reduction after five years of management however it had the potential to still be mapped in the same cover class for the 2019-2024 Management Plan.

Furthermore, the City has undertaken long term management of some species such as Perennial Veldt Grass which was primarily mapped as less than 5% in 2013. However, in reality the cover of Perennial Veldt grass is now less than 1% in some reserves and it would have still been mapped as less than 5% in 2018 if the broad cover classes were used in isolation.

In the map section in Appendix 6 only four 'Actual Cover' maps have been provided. These maps are for the species that had high weed cover above 5%. Generally, the majority of the weed species mapped had broad cover classes of less than 5% and an actual cover of less than 1%.

Target Species for Weed Mapping 2018
In 2018 the weeds listed in Table 4 were mapped:

Table 4: Weed Species Mapped in 2018

No	SPECIES	Actual Cover Map
1.	Black Flag *(Ferraria crispa)*	Yes
2.	Bridal Creeper *(Asparagus asparagoides*)	No
3.	*Freesia (Freesia alba x leichtlinii*)	No
4.	Fumitory	Yes
5.	Geraldton Carnation Weed *(Euphorbia terracina)*	No
6.	*Oxalis Pes-Caprae* (Soursob)	Yes
7.	Perennial Veldt Grass *(Ehrharta calycina)*	Yes
8.	Pretty Betsy *(Centranthus macrosiphon)*	No
9.	Woody weeds	No

Limitations of weed mapping
Only the above listed priority weeds were mapped due to the time and the cost involved with mapping. Unfortunately, there are always going to be limitations encountered with weed mapping including timing of the survey and weather variations. These are detailed further below.

Timing of Survey
Surveying should always be undertaken in spring when weeds are active. There are six natural areas in the City that require mapping and they all cannot all be surveyed

simultaneously. Therefore at the time of surveying some weeds may have germinated, may not be flowering, may be covered over by taller weeds (and therefore not visible) or they may have been removed through weeding activities. Also some weeds do not flower every year and therefore they may be difficult to identify at the time of the survey.
Weather variations from year to year

Some years can have early rain which will provide an early flowering and germination period. Other years have late rain that extends into spring which provides successive germination events by which time the survey could have concluded.

5.9 Fungi

No Fungi Forays have been held at Mt Claremont Oval Bushland and prior to the development of the 2013 Management Plan no previous inventories were compiled. Only 2 fungi have been noted as occurring at Mt Claremont Oval Bushland which are listed in Appendix 2. These have been opportunistically noted by City staff. It is therefore likely that there are a significantly higher number of fungi on site than has been recorded to date. The fungi list for Mt Claremont Oval Bushland should be continually updated as new species are recorded.

5.10 Native Fauna

A total of 9 birds and 4 reptiles have been recorded at Mt Claremont Oval Bushland these are listed in Appendix 3. The native fauna inventories have been opportunistically noted by City staff and volunteers, and require continually updating as new species are recorded.

Birds

Of the 9 bird species identified in Appendix 3 one species is listed under the Environmental Protection Biodiversity Conservation Act 1999 (EPBC Act) the Carnaby's Black-Cockatoo *(Calyptorhynchus latirostris)* which is listed as *Endangered*.

Mammals

No mammals have been recorded at Mt Claremont Oval Bushland to date. However due to their distribution it is likely that Brushtail Possums (*Trichosurus vulpecula*), Gould's Wattled Bats (*Chalinolobus gouldii)* and the White-striped Mastiff Bat (*Tadarida australis)* occur at Mt Claremont Oval Bushland.

Herpetofauna (Reptiles & Amphibians)

A total of 4 herpetofauna species have been confirmed at Mt Claremont Oval Bushland. These include the Fence Skink (*Cyptoblepharus buchananii*), the West Coast Ctenotus (*Ctenotus fallens*), the Western Bobtail (*Tiliqua rugosa*) and the Western Marbled Gecko (*Christinus marmoratus*).

The 4 species listed above would only form part of the herpetofaunal species at Mt Claremont Oval Bushland and further informal surveys should be undertaken to update the current species list.

Invertebrates

No native invertebrates have been confirmed onsite. Like herpetofauna invertebrates should also be informally surveyed and species lists compiled.

5.11 Introduced Fauna

Feral animal management strategies have been detailed on pages 85-90 of the Natural Areas Management Plan 2019-2024.

Mammals

Mt Claremont Oval Bushland contains only one confirmed introduced mammal the fox *(Vulpes vulpes*). Other possible (unconfirmed) introduced fauna include the Cat (*Felis catus*), the House Mouse (*Mus musculus*) and the Black House Rat (*Rattus rattus)*.

Invertebrates

One introduced invertebrate of concern at Mt Claremont Oval Bushland includes the European Honey Bee *(Apis mellifera).*

Birds

There are 6 recorded introduced or feral birds within Mt Claremont Oval Bushland these include the Spotted Dove (*Streptopelia chinensis*), Laughing Dove (*Streptopelia senegalensis*), Rainbow Lorikeet (*Trichoglossus haematodus*), Laughing Kookaburra (*Dacelo novaeguineae*) and Little and Long-billed Corellas' (Cacatua sanguinea and *tenuirostris*).

6. PLAN FOR MANAGEMENT

General management principles and weed control strategies that relate to all natural areas has been detailed in the 'Plan For Management' section on pages 39-51 of the Natural Areas Management Plan 2019-2024.

6.1 Management Zones

External Boundaries

For management purposes it is important to distinguish between parkland and bushland zones. At Mt Claremont Oval Bushland, the boundary between bushland and parkland areas are well defined on the southern side of the Reserve by lawn areas, pathways and fencing. However along the northern and north eastern side of the bushland the boundary between bushland and parkland/residential areas is not well defined.

This is causing ongoing management issues with informal access as well as damage to wildlife as dogs have been observed attacking Bobtail lizards. Distinguishing the boundaries on the northern and north eastern side of the bushland can be achieved through the installation of fencing. This will not only reduce informal access it will stop potential illegal vehicle access into the bushland from Cleland Street.

Internal Boundaries

For management purposes the bushland should be divided into three Zones as this will facilitate the establishment of guidelines for managing areas of similar terrain and degradation. The Zones include Zone 1 (west of the main pathway) which is characterised by the *Acacia* Shrubland community, Zone 2 which consists of the steep embankment area that has largely been planted with non-indigenous trees and has a high proportion of *Degraded* areas and issues with erosion and Zone 3 at the eastern end of the bushland which contains the Marri woodland.

Figure 3: Management Zones at Mt Claremont Oval Bushland.

Management Actions 2019-2024	
1.	Manage Mt Claremont Oval Bushland on the basis three Zones.

6.2 Rehabilitation

The improvement of bushland condition at Mt Claremont Oval will be achieved by assisting natural regeneration through weed control in *Good* condition bushland areas and reconstruction in degraded areas.

Sites

Sites are areas within Zones where resources for rehabilitation and monitoring are focused. Areas where rehabilitation has previously occurred are also considered sites. A rehabilitation plan should be developed for each area requiring reconstruction to minimise any possible detrimental impacts such as trampling, erosion, spraying native species in low abundance or the introduction of weed species.

The priority for rehabilitation is the consolidation and expansion of better condition bushland in all Zones. The Bradley Method should be followed which focuses on targeting better condition bushland areas within these Zones. Restoration of the more *Degraded* bushland areas should be a focus if resources allow, in areas affected by erosion and in areas directly adjacent to *Good* bushland. If internal funding is not available then these sites could be the focus of grant funded projects.

All Zones require annual weed control of priority weeds. Zones 1 and 3 have a higher proportion of local provenance plants and are more representative of the natural plant communities that originally existed in the bushland. Therefore if revegetation work is proposed within Zone 1 and 3, these areas should be reconstructed with similar species that naturally exist in these Zones to maintain the natural plant community.

Management Actions 2019-2024	
1.	Focus revegetation at selected degraded sites within Zones.
2.	Focus management on better condition bushland areas within Zones.
3.	Only revegetate Zone 1 and 3 with similar existing local native species.
4.	Implement ‘Asbestos’, ‘Plant Pathogen’ and ‘Rehabilitation’ actions detailed in the Natural Areas Management Plan 2019-2024.

6.3 Revegetation

Species Selection

Ideally species used for revegetation in reconstruction sites would consist of the entire collection of plants that naturally occur at Mt Claremont Oval Bushland such as those that naturally occur in nearby Bold Park. However this is not always possible as not all species can be propagated.

Management Actions 2019-2024	
1.	Only use plant species for rehabilitation if they would have naturally occurred on site.
2.	Implement ‘Revegetation’ actions detailed in the Natural Areas Management Plan 2019-2024.

6.4 Environmental Weed Control

A total of 23 priority weeds have been listed for management in Mt Claremont Oval Bushland (Table 5). Each priority weed has been provided management notes and the Weed Prioritisation Process rating (DBCA 2016). Priority weeds will be managed according to management notes provided on the DBCA Florabase website at https://florabase.dpaw.wa.gov.au and are detailed in Appendix 4.

Priority weeds have been selected from:

- Swan Region Weed Prioritisation Process (DPaW 2013)
- Swan Impact and Invasiveness Ratings (DBCA 2016)
- State and Federal weed lists
- Their ability to contribute to fuel loads
- Their ability to be controlled without causing disturbance to natural areas.

Table 5: Priority Weeds for Control – (Ratings taken from DBCA 2016 (Swan Region))

	Species Name	Common Name	Notes	Rating
1.	*Arctotis stoechadifolia*	Arctotis	Requires ongoing monitoring and removal as required.	Unrated/Slow
2.	*Argyranthemum frutescens*	Marguerite Daisy	Ongoing control required.	Unrated/Slow
3.	*Asparagus asparagoides*	Bridal Creeper	Requires ongoing monitoring and control.	High/Rapid
4.	*Avena fatua*	Wild Oat	Ongoing control required in conjunction with grass spraying program.	High/Medium
5.	*Carpobrotus edulis*	Coastal Pigface	Requires ongoing monitoring and control. Control only to take place when in flower so that it is not confused with native Pigface.	High/Rapid
6.	*Chamelaucium uncinatum*	Geraldton Wax	Remove juvenile seedlings as required.	Medium/Slow
7.	*Chasmanthe floribunda*	African Cornflag	Requires ongoing monitoring and removal as required.	High/Medium
8.	*Ehrharta calycina*	Perennial Veldt Grass	Ongoing control required.	High/Rapid
9.	*Ehrharta longiflora*	Annual Veldt Grass	Ongoing control required in conjunction with grass spraying program.	Medium/Rapid
10.	*Euphorbia terracina*	Geraldton Carnation Weed	Ongoing hand weeding required.	High/Rapid
11.	*Ferraria crispa*	Black Flag	Ongoing control required.	High/Rapid
12.	*Freesia alba x leichtlinii*	*Freesia*	Ongoing control required.	High/Rapid
13.	*Fumaria capreolata*	Whiteflower Fumitory	Hand weeding required if resources allow.	High/Rapid
14.	*Lachenalia aloides*	Soldiers	Ongoing monitoring and control required. Hand remove populations in degraded sites.	High/Unrated

	Species Name	Common Name	Notes	Rating
15.	*Lactuca serriola*	*Prickly Lettuce*	Ongoing control required.	High/Rapid
16.	*Leptospermum laevigatum*	Coast Teatree	Remove juvenile seedlings as required.	High/Rapid
17.	*Lupinus angustifolius*	Narrowleaf Lupin	Ongoing hand weeding required.	High/Medium
18.	*Lupinus cosentinii*	Sandplain Lupin	Ongoing hand weeding required.	High/Medium
19.	*Lycium ferocissimum*	African Boxthorn	Requires ongoing monitoring for re-infestation/ resprouting.	High/Medium
20.	*Pelargonium capitatum*	Rose Pelargonium	Ongoing monitoring and control required.	High/Rapid
21.	*Raphanus raphanistrum*	Wild Radish	Ongoing hand weeding required.	Unrated/Medium
22.	*Schinus terebinthifolia*	Brazilian Pepper	Requires ongoing monitoring for re-infestation/ resprouting.	High/Medium
23.	*Vicia sativa*	Common Vetch	Control required in conjunction with Freesia spraying if resources allow.	Unrated

Strategy

Priority weeds should be controlled in all Zones and in accordance with management notes in Appendix 4. Of the priority weeds listed in Table 5 above the following weeds are considered the highest priority for management:

- Geraldton Carnation Weed
- Bridal Creeper
- *Lachenalia aloides*
- Perennial Veldt Grass
- Annual Veldt Grass
- Wild Oats
- Black Flag
- *Oxalis*
- Wild Radish
- *Lupinus*
- *Freesia*
- Wild Lettuce
- Woody weeds.

Fumitory and *Oxalis*

With the removal of many annual and perennial grass weeds Fumitory (*Fumaria*) and *Oxalis* (*Oxalis*) are continuing to increase across the bushland. *Oxalis* and Fumitory can be targeted at the same time, using the same method that is already being used to control Freesias and they need to be incorporated into the environmental weed control program before their distribution increases to levels where they cannot be controlled. Fumitory can also be successfully removed by hand provided a sufficient amount of labour and funding is available.

Geraldton Wax

Geraldton Wax was previously removed from the bushland. A few mature specimens remain which provide habitat for birds. The mature specimens should be retained, unless they are removed as part of an intensive restoration project and the bushland should be monitored for the germination of seedlings which should be removed as required.

Coast Teatree

Coast Teatree is a highly invasive weed particularly along the coast. There are some mature specimens along the boundary near Lisle Villages. There has been no control undertaken on these populations and they are not increasing their distribution. Therefore they should remain unless they are removed as part of an intensive restoration project. However any juvenile seedlings should be removed as required.

Geraldton Carnation Weed is a highly invasive weed found across the bushland. Its impact has had a significant decrease over the years due to persistent hand removal. Ongoing removal is required to stop it from increasing in distribution and density.

Wild Lettuce
Wild Lettuce has significantly increased in the bushland. This is likely the result of the removal of many grass weeds and the reduction in density of bulbous weeds. Wild Lettuce requires ongoing management before significant thickets establish across the bushland.

Maintenance Areas
Numerous weeds are present in restoration sites along the embankment. These restoration sites previously suffered from erosion and they were stabilised using jute erosion matting and terracing. These sites require ongoing weed management as they contain various weed species that will inhibit the success of the restoration work if they are not managed.

6.5 Monitoring

Of the 88 weeds identified as occurring within Mt Claremont Oval Bushland, the distribution and density of 8 weeds were mapped as well as woody weeds. They should continue to be mapped every five years as part of management plan reviews.

Highly invasive weeds with the potential to expand their distribution should be monitored and mapped annually (if they have increased their distribution) so that their current distribution can be monitored and controlled as required. These species include Black Flag, Bridal Creeper and Freesias. New invasive weeds should also be mapped as they arise and controlled as necessary.

Species that either have small populations or have previously been removed from the bushland require annual monitoring and control. These include:

- African Cornflag
- *Watsonia bulbillifera*
- *Arctotis stoechadifolia*
- *Acacia iteaphylla*.

Management Actions 2019-2024	
WEED CONTROL	
1.	Control the following weeds as a high priority: Geraldton Carnation Weed, Bridal Creeper, *Lachenalia aloides*, Perennial Veldt Grass, Annual Veldt Grass, Wild Oats, Black Flag, Wild Radish, Wild Lettuce, *Lupinus*, *Freesia* and woody weeds.
2.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
3.	Monitor, control and document the distribution of new invasive weeds as they arise.
4.	Remove juvenile seedlings of Geraldton Wax and Coast Teatree if required.
5.	Do not undertake removal of historically planted non-indigenous Australian native plants unless they are invasive.
6.	Undertake ongoing maintenance of weeds in restoration sites.
7.	Control priority weeds in accordance with management notes detailed in Appendix 4.
8.	Implement actions for ‘Weed Control’ in the Natural Areas Management Plan 2019-2024.

MONITORING	
9.	Monitor, control and document the distribution of new invasive weeds as they arise.
10.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
11.	Undertake annual monitoring and control of African Cornflag, *Watsonia bulbillifera*, *Arctotis stoechadifolia* and *Acacia iteaphylla* to ensure they do not spread or reestablish.

7. FIRE MANAGEMENT

Fire management actions for all natural areas has been detailed on pages 61-67 of the Natural Areas Management Plan 2019-2024 and the fire history map shown in the map section in Appendix 6.

Summary of Current Practices
The City undertakes the following fire management practices at Mt Claremont Oval Bushland:

- Annual review of the Fire Pre-Plan with Department of Fire and Emergency Services (DFES)
- Maintenance of firebreaks prior to the 30th November annually
- Annual program to manually reduce fuel loads by removing fine fuels especially within asset protection zones
- Ongoing management of grass weeds
- Fuel load assessments (as required) to monitor fuel loads and respond accordingly
- Follow up maintenance of bush fire risk assessment actions.

DFES has a Fire Pre-Plan for Mt Claremont Oval Bushland, which was developed in conjunction with relevant stakeholders and is reviewed annually. This plan details: site information, ecological requirements, vulnerable property, risk management strategies and responsibilities; a communications plan, hazards and fire suppression strategies and tactics.

In 2013 the City undertook bushfire risk assessments in all of City's natural areas using Australian Standard AS 3959 (Buildings in Bush Fire Prone Areas) and ISO AS/NZ 31000-2009 (Risk Management - Principles and Guidelines). Whilst this was not a requirement for the City and is only a legislative requirement for developments occurring in bush fire prone areas. It was undertaken as a proactive measure by the City to assist in managing fire risk. As a result of these assessments several actions were identified and implemented for Mt Claremont Oval and follow up maintenance has been scheduled (as required) in order to maintain these actions.

Fuel load assessments were undertaken for all natural areas in 2015 using methodology described within the DFES Visual Fuel Load Guide for the Swan Coastal Plain and Darling Scarp (DFES, 2015). Following these assessments, a number of actions were undertaken to reduce fuel loads at Mt Claremont Oval Bushland. In addition to this, the City also has an annual grass weed management program that reduces fuels loads and a manual fuel load reduction program.

Management Actions 2019-2024	
1.	Implement 'Fire Management' actions in the Natural Areas Management Plan 2019-2024.

8. ACCESS

“Access” has been detailed for all natural areas on pages 68-73 of the Natural Areas Management Plan 2019-2024.

In summary the number and location of paths within Mt Claremont, Oval Bushland is considered appropriate and all paths were upgraded in 2017/18.

There is currently pine and ring lock fencing along the southern boundary of the bushland. This is to be retained to restrict access to the bushland from the playing fields. However there no fencing along the northern and north eastern boundary on Cleland Street where informal access continues to be problematic. This is creating informal tracks through the bushland, which is contributing, to erosion and damage to native vegetation, revegetation programs and wildlife.

In order to address this issue one action is identified in the “Access” section of the Natural Areas Management Plan 2019-2024 that is listed below:

- Install conservation fencing along the bushland on Cleland Street.

Management Actions 2019-2024	
1.	Implement ‘Access’ actions in the Natural Areas Management Plan 2019-2024.

9. CULTURAL HERITAGE, INTERPRETATION & EDUCATION

Cultural Heritage, Interpretation and Education has been detailed for all natural areas on pages 74-82 of the Natural Areas Management Plan 2019-2024.

The Whadjuk Trail Network is a project that is being undertaken by the Western Suburbs Regional Organisation of Councils (WESROC) and natural area 'Friends of' groups in the Western Suburbs. The Whadjuk Trail Network consists of a series of walking trails that link all natural areas in the Western Suburbs, including the Cities of Stirling, Fremantle and Perth.

Currently six out of seven trails have been installed. The trail that traverses Mt Claremont Oval Bushland is the Yange Kep Bidi. It extends from Jetty Road in Claremont and traverses a series of wetland areas including Lake Claremont, Perry Lakes and Herdsmans Lake. The Yange Kep Bidi connects to the Karak Bidi, the Bidi Bo Djinoong, the Bush to Beach Trail and the Karda Bidi trails within the Whadjuk Trail Network. Directional signage on pathways and bollards directs walkers through Mt Claremont Bushland on the Yange Kep Bidi Trail. Interpretive signage is also located along the trail detailing the environmental, Aboriginal and European significance of Mt Claremont Oval Bushland.

10. NATIVE ANIMALS

Background

There are 13 confirmed native animal species in Mt Claremont Oval Bushland (9 birds and 4 reptiles). Ongoing surveying of native fauna should be undertaken if resources are available.

At present, all these species are managed indirectly through improving bushland condition and control of feral animals which have the potential to predate, compete with or displace native animals. This is discussed in the feral animal management section on pages 85-90 of the Natural Areas Management Plan 2019-2024.

Strategy for Protection of Native Animals

Birds

Of the 9 bird species identified in Appendix 3 one species is listed as *Endangered* under the EPBC Act the Carnaby's Black-Cockatoo *(Calyptorhynchus latirostris).* Carnaby's are often seen foraging in the bushland and have nearby confirmed roost sites at Perry Lakes and Hollywood Hospital.

Feral birds

Feral birds compete with native birds for foraging material and nesting hollows. Some also carry diseases, which have the potential to infect native bird populations such as Rainbow Lorikeets that carry Beak and Feather disease. The Department of Biodiversity Conservation and Attractions (DBCA) undertook a five-year regional feral bird control program focussing on Rainbow Lorikeets and Long-billed Corellas. This program has now been taken over by the Western Australian Local Government Association (WALGA) who are currently seeking funding from local governments to continue this program.

The protection of the mammals and birds at Mt Claremont Oval Bushland can be achieved through:

- Fire risk management to minimise fires that may destroy tree hollows
- Retaining hollows for refuges in large old and dead trees
- Controlling feral European Bees
- Protecting nests of Rainbow Bee-eaters
- Ongoing feral cat and fox control programs
- Contributing to regional feral bird programs coordinated by WALGA.

Management Actions 2019- 2024	
1.	Survey native fauna when funding is available.
2.	Minimise fires that may destroy tree hollows.
3.	Retain tree hollows for their habitat value.
4.	Undertake ongoing control of feral European Bees.
5.	Continue implementing feral cat and fox control programs.
6.	Contribute to regional feral bird control programs coordinated by WALGA.
7.	Implement 'Feral Animal' actions detailed in the Natural Areas Management Plan 2019-2024.

11. COMMUNITY INVOLVEMENT

The objectives and strategies for community involvement for the City's 'Friends of' groups are detailed on pages 83-84 of the Natural Areas Management Plan 2019-2024. In summary the activities of bushland community groups should continue to be supported by the City through the Community Friends Group Policy and assistance should be provided to help 'Friends of' groups remain sustainable through advertising, social media and the volunteer referral centre.

The City also has the opportunity to engage students from Mt Claremont Primary School, which is located directly adjacent to the bushland. There are opportunities to hold educational events in the bushland with the school such as Clean Up Australia Day and planting or weeding days. This would increase the students interest in the environment and specifically the conservation of Mt Claremont Oval Bushland.

12. REFERENCES

Arbor Carbon 2011, *Disease Assessment Bush and Green Reserves City of Nedlands*. Unpublished report for the City of Nedlands, Perth.

Bettink, K., Keighery, G., Swan Catchment Council (SCC) and Department of Environment and Conservation (DEC) 2008, *Environmental weed census and prioritisation, Swan NRM Region.* Department of Environment and Conservation, Perth.

Bettink, K., Keighery, G., Swan Catchment Council (SCC) and Department of Environment and Conservation (DEC) 2008, Environmental Weed Assessment. Department of Environment and Conservation, Perth.

Brown, K., Bettink, K., Grazyna, P., Culity, J. and French, S., Geographic Information Systems and Department of Environment and Conservation (DEC) 2011, *Standard Operating Procedure - SOP 22.1 Techniques for Mapping Weed Distribution and Cover in Bushland and Wetlands*. Department of Environment and Conservation, Perth.

Department of Biodiversity, Conservation and Attractions (Parks and Wildlife Service) 2016, Species-led Ecological Impact and Invasiveness Ranking – Swan Region https://www.dpaw.wa.gov.au/plants-and-animals/plants/weeds/156-how-does-dpaw-manage-weeds Accessed various dates December 2018 - April 2019.

Department of Fire and Emergency Services [DFES] (2015) Visual Fuel Load Guide for the Swan Coastal Plain and Darling Scarp 3rd Edition. Environmental Protection Branch, August 2015. Available at: https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx#1 Accessed: 14th January 2019.

Department of Parks and Wildlife 2013, Weed Prioritisation Process for DPaW (formerly DEC*) – "An integrated approach to Weed Management of DPaW managed lands in WA".* Department of Parks and Wildlife, Perth.

Ecoscape 2002, *Western Suburbs Greening Plan*. Unpublished report for the Western Suburbs Regional Organisations of Councils, Perth.

Ecoscape 2005, *Allen Park Management Plan 2005-2010*. Unpublished report for the City of Nedlands, Perth.

Ecoscape 2005, *Shenton Bushland Management Plan 2005-2010*. Unpublished report for the City of Nedlands, Perth.

Ecoscape 2006, *Weed Mapping of Bushland at Mount Claremont Oval*. Unpublished report for the City of Nedlands, Perth.

Fordyce, I. 2014, City of Nedlands Volunteer Botanist. Information provided for Soils and Geomorphology section.

Heddle, E.M., Loneragan, O.W. and Havel, J.J. 1980, *Vegetation Complexes of the Darling System Western Australia*, In: *Atlas of Natural Resources Darling System Western Australia*. Department of Conservation and Environment, Perth.

Gibson, N., Keighery, B.J., Keighery G.J., Burbidge, A.H. and Lyons, M.N. 1994, *A Floristic Survey of the Swan Southern Coastal Plain.* Unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia Inc, Perth.

Jean-Paul Orsini and Associates 2008, Perth Biodiversity Project *Natural Area Initial Assessment Templates for Mount Claremont Oval Reserve*. Unpublished assessment templates for the City of Nedlands, Perth.

Keighery, B and Wildflower Society of Western Australia 1994, *Bushland Plant Survey: A guide to plant community survey for the community.* Wildflower Society of WA (Inc.), Nedlands, W.A.

Lipple, S.L. and Shaw, L.D. 2002, *City of Nedlands – Natural Landscape Inventory – A report on the Natural Resources Particularly Native Vegetation Remnants within the Urban Environment of the City of Nedlands (Volume 1)*. Unpublished report for the City of Nedlands.

Parks and Wildlife Service *Department of Biodiversity Conservation* and Attractions https://www.dpaw.wa.gov.au/. Various dates between November 2018 – April 2019.

Perth Biodiversity Project, South West Biodiversity Project and WALGA 2009, *Local Government Guidelines for Bushland Management in the Perth and Coastal South-West Natural Resource Management Regions*. Perth Biodiversity Project and Western Australian Local Government Association, Perth.

Perth Biodiversity Project and WALGA, 2010, *Remnant Vegetation by Vegetation Complex Dataset for Perth and Peel*. WALGA, Perth.

Western Australian Herbarium (1998–2019). FloraBase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ (Accessed various dates between November 2018 – April 2019).

Appendix 1: Flora Inventory

Native Plant Inventory

Species	Common Name	Notes
Acacia cochlearis	Rigid Wattle (narrow phyllode variant)	
Acacia cyclops	Coastal Wattle	
Acacia lasiocarpa	Panjang	
Acacia pulchella	Prickly Moses	
Acacia saligna	Orange Wattle	
Acacia rostellifera	Summer-scented Wattle	
Acanthocarpuus preissii	Prickle Lily	
Allocasuarina fraseriana	Sheoak	
Allocasuarina humilis	Dwarf Sheoak	
Banksia attenuata	Slender Banksia	
Banksia menziesii	Firewood Banksia	
Banksia prionotes	Acorn Banksia	Planted?
Banksia sessilis	Parrot Bush	
Caladenia flava	Cowslip Orchid	
Caladenia latifolia	Pink Fairy Orchid	
Callitris preissii	Rottnest Island Pine	
Calothamnus quadrifidus	One-sided Bottlebrush	
Conostylis candicans	Grey Cottonhead	
Corynotheca micrantha		
Corymbia calophylla	Marri	
Crassula colorata	Dense Stonecrop	
Dianella revoluta var. *divaricata*		
Eremophila glabra	Tar Bush	
Eucalyptus gomphocephala	Tuart	
Eucalyptus marginata	Jarrah	
Grevillea crithmifolia		
Grevillea preissii	Coastal Spider-net Grevillea	
Grevillea vestita		
Guichenotia ledifolia	Guichenotia	
Hakea prostrata	Harsh Hakea	
Hardenbergia comptoniana	Native Wisteria	
Isolepis marginata	Coarse Club-rush	
Jacksonia furcellata	Grey Stinkwood	
Jacksonia sternbergiana	Stinkwood	
Lepidosperma gladiatum	Coast Sword-Sedge	
Lechenaultia linarioides	Yellow Leschenaultia	
Macrozamia fraseri	Zamia	
Melaleuca huegelii	Chenille Honeymyrtle	
Melaleuca lanceolata	Rottnest Teatree	Planted likely non-provenance
Melaleuca systena		

Species	Common Name	Notes
Microtis media	Mignonette Orchid	
Myoporum insulare	Blueberry Tree	Planted?
Olearia axillaris	Coastal Daisybush	
Rhagodia baccata	Berry Saltbush	
Scaevola crassifolia	Thick-leaved Fan-flower	
Senecio pinnatifolius		
Schoenus grandiflorus	Large Flowered Bogrush	
Spyridium globulosum	Basket Bush	
Stirlingia latifolia	Blueboy	
Templetonia retusa	Cockies Tongues	Planted?
Xanthorrhoea preissii	Grass Tree	

Native plant inventory reviewed and updated by Ian Fordyce and Associates.

Weed Inventory

Species	Common Name
Agonis flexuosa	Peppermint
**Aira caryophyllea*	Silvery Hairgrass
**Allium triquetrum*	Three-cornered Garlic
**Arctotheca calendula*	Cape Weed
**Arctotis stoechadifolia*	White Arctotis
**Asparagus asparagoides*	Bridal Creeper
**Avena barbata*	Bearded Oat
**Avena fatua*	Wild Oat
**Briza maxima*	Blowfly Grass
**Briza minor*	Shivery Grass
**Bromus diandrus*	Great Brome
Callistemon sp. 1	Bottlebrush (narrow leaved)
Callistemon sp. 2	Bottlebrush (broad leaved)
**Carpobrotus edulis*	Pigface
**Centranthus macrosiphon*	Pretty Betsy
Chamelaucium uncinatum	Geraldton Wax
**Chasmanthe floribunda*	African Cornflag
**Conyza bonariensis*	Flaxleaf Fleabane
Corymbia ficifolia	Red-flowering Gum, Albany Red Gum
Corymbia maculata	Spotted Gum
**Cotula turbinate*	Funnel Weed
**Cupressus* sp.	Cypress Pine
**Cynodon dactylon*	Couch
**Dischisma capitatum*	Woolly-headed Dischisma
**Ehrharta calycina*	Perennial Veldt Grass
**Ehrharta longifolia*	Annual Veldt Grass
Eucalyptus camaldulensis	River Red Gum
Eucalyptus conferruminata	Bald Island Marlock
Eucalyptus macrocarpa	Mottlecah
**Eucalyptus utilis*	Coastal Moort
**Euphorbia peplus*	Petty Spurge

Species	Common Name
**Euphorbia terracina*	Geraldton Carnation Weed
**Ferraria crispa*	Black Flag
**Ficus carica*	Edible Fig
Ficus macrophylla	Moreton Bay Fig
**Freesia alba x leichtlinii*	Freesia
**Fumaria capreolata*	Whiteflower Fumitory
**Gazania linearis*	Gazania
**Geranium mole*	Dove's Foot Cranesbill
Hibbertia scandens	Climbing Guinea Flower
**Hypochaeris glabra*	Flatweed
**Lachenalia aloides*	
**Lactuca serriola*	Prickly Lettuce
**Lagurus ovatus*	Hare's Tail Grass
Leptospermum laevigatum	Coast Tea Tree
**Lobularia maritima*	(Sweet) Alyssum
**Lolium perenne*	Perennial Ryegrass
**Lupinus angustifolius*	Narrowleaf Lupin
**Lupinus cosentinii*	Sandplain Lupin
**Lycium ferocissimum*	African Boxthorn
**Lysimachia arvensis*	Pimpernel
**Medicago polymorpha*	Burr Medic
Melaleuca armillaris	Bracelet Honeymyrtle
Melaleuca nesophila	Mindiyed
**Orobanche minor*	Lesser Broomrape
**Lysimachia arvensis*	Pimpernel
**Oxalis pes-caprae*	Soursob
**Pelargonium capitatum*	Rose Pelargonium
**Petrorhagia dubia*	Velvet Pink
**Pinus pinaster*	Pinaster Pine
**Pinus radiata*	Radiata Pine, Monterey Pine
**Pittosporum ralphii*	Karo
**Plantago lanceolata*	Ribwort Plantain
**Raphanus raphanistrum*	Wild Radish
**Schinus terebinthifolia*	Brazilian Pepper
**Sonchus asper*	Rough Sowthistle
**Sonchus oleraceus*	Common Sowthistle
**Stellaria media*	Chickweed
**Tecoma capensis*	Cape Honeysuckle
**Trifolium arvense*	Hare's Foot Clover
**Trifolium campestre*	Hop Clover
**Tropaeolum majus*	Garden Nasturtium
**Urospermum picroides*	False Hawkbit
**Ursinia anthemoides*	Ursinia
**Vicia sativa*	Common Vetch
**Vulpia myuros*	Rat's Tail Fescue
**Wahlenbergia capensis*	Cape Bluebell

Weed inventory reviewed and updated by Ian Fordyce and Associates.

Appendix 2: Fungi Inventory

Species	Common Name	Habitat	Life Mode
Pycnoporus coccineus	Scarlet Bracket Fungus	Dead wood	Saprotrophic
Scleroderma cepa	Earthball Fungus	Litter/ground	Mycorrhizal

Appendix 3: Fauna Inventory

Bird Inventory

Common Name	Species	Introduced
Australian Magpie	*Cracticus tibicen*	
Australian Raven	*Corvus coronoides*	
Australian Ringneck	*Bernardius zonarius*	
Carnaby's Black-Cockatoo	*Calyptorhynchus latirostris*	
Galah	*Eolophus roseicapilla*	
Grey Butcherbird	*Cracticus torquatus*	
*Laughing Dove	*Streptopelia senegalensis*	*
*Laughing Kookaburra	*Dracelo novaeguineae*	*
*Little Corella	*Cacatua sanguinea*	*
*Long-billed Corella	*Cacatua tenuirostris*	*
Magpie Lark	*Grallina cyanoleuca*	
*Rainbow Lorikeet	*Trichoglossus haematodus*	*
Red Wattlebird	*Anthochaera carunculata*	
*Spotted Dove	*Streptopelia chinensis*	*
Willy Wagtail	*Rhipidura leucophrys*	

Mammals and Reptile Inventory

Mammals		Introduced
Fox	*Vulpes vulpes*	*
Reptiles		
Fence Skink	*Cyptoblepharus buchananii*	
Western Bobtail	*Tiliqua rugosa*	
West Coast Ctenotus	*Ctenotus fallens*	
Western Marbled Gecko	*Christinus marmoratus*	

Appendix 4: Priority Weed Management Notes (Compiled from WA Herbarium DBCA Florabase website)

Species Name		Common Name	Management Strategy	Timing (optimal)
1.	*Arctotis stoechadifolia*	White Arctotis	Manually remove populations.	Mar - Oct
2.	*Argyranthemum frutescens*	Marguerite Daisy	Manually remove populations.	June - Oct
3.	*Asparagus asparagoides*	Bridal Creeper	Dig out juvenile seedlings in degraded areas. Spray 0.2 g metsulfuron methyl + Pulse in 15 L water (or 2.5 - 5g /ha + Pulse). Best results achieved when flowering. Biological control agents available such as the Leafhopper and the Rust.	July - Aug
4.	*Avena fatua*	Wild Oat	Spray at 3-5 leaf stage with Fusilade Forte at 16 ml/10 L and wetting agent. Repeat treatment over following 2 years. Prevent seed production and seedbank inputs each year. For small infestations hand removal may be feasible.	Aug - Nov
5.	*Carpobrotus edulis*	Hottentot Fig	Manual methods appear to be the most effective means of control. Roll up large mats removing all roots and stem fragments and remove from site. Follow up with removal of any germinating plants. Only remove when flowering.	Sept - Nov
6.	*Chamelaucium uncinatum*	Geraldton Wax	Cut to base and paint with 50% glyphosate. Control seedlings following fire.	All Year
7.	*Chasmanthe floribunda*	African Cornflag	Dig out isolated plants.	June - Sept
8.	*Ehrharta calycina*	Perennial Veldt Grass	For small infestations, cut out plants ensuring crown removal. Do not slash. Alternatively spray with Fusilade Forte 13 ml/L or 3.3-6.6 L/ha + wetting agent on actively growing and unstressed plants. Use higher rate in dense undergrowth or on older less vigorous plants. Follow-up in subsequent years. Use unplanned fires to spray regrowth and seedlings within 4-6 weeks of germination.	June - Sep (herbicide) and Nov - Feb (manual)
9.	*Ehrharta longiflora*	Annual Veldt Grass	Hand remove small infestations. Alternatively spray with Fusilade Forte 30 ml/10 L or 1.6 L/ha (based on 500 L water/ha) + wetting agent before flowering stem emerges, or at 3-5 leaf stage.	Aug - Oct
10.	*Euphorbia terracina*	Geraldton Carnation Weed	Manually remove populations. Undertake control after any fire event.	June – Nov

	Species Name	Common Name	Management Strategy	Timing (optimal)
11.	*Ferraria crispa*	Black Flag	Hand remove very small populations in degraded sites. Sift soil to find all corms. Spray 2,2 DPA 10 g/L + Pulse when flowering. In degraded sites try glyphosate 1% + metsulfuron methyl 0.2 g/15 L + Pulse. Takes a number of years to control populations.	Aug - Sept
12.	*Freesia alba x leichtlinii*	Freesia	Spot spray metsulfuron methyl 0.2 g/15 L + Pulse or 2.5-5 g/ha + Pulse. Apply just on flowering at corm exhaustion.	July - Aug
13.	*Fumaria capreolata*	Whiteflower Fumitory	Hand remove seedlings in good bushland areas.	July - Aug
14.	*Lachenalia aloides*		Spot spray metsulfuron methyl 0.2 g/15 L + Pulse or 2.5-5 g/ha + Pulse. Apply just on flowering at corm exhaustion.	July - Sept
15.	*Leptospermum laevigatum*	Coast Teatree	Remove juvenile seedlings.	All year
16.	*Lupinus angustifolius*	Narrowleaf Lupin	Manually remove populations.	June - Oct
17.	*Lupinus cosentinii*	Sandplain Lupin	Manually remove populations.	June - Oct
18.	*Lycium ferocissimum*	African Boxthorn	Hand pull or dig out small seedlings ensuring removal of all roots. For mature plants cut and paint with 50% glyphosate and follow up treatment on regrowth or apply 250 ml Access® in 15 L of diesel to basal 50 cm of stem (basal bark).	March - May Sept - Nov
19.	*Pelargonium capitatum*	Rose Pelargonium	Only control when native vegetation has established. Hand pull isolated plants taking care to remove the entire stem as it can reshoot from below ground level. Spot spray metsulfuron methyl 5 g/ha + Pulse. Easily controlled after fire.	June - Oct

	Species Name	Common Name	Management Strategy	Timing (optimal)
20.	*Raphanus raphanistrum*	Wild Radish	Manually remove populations.	June - Oct
21.	*Schinus terebinthifolia*	Brazilian Pepper	Hand pull seedlings ensuring removal of all root material. Stem inject older plants using 50% glyphosate or basal bark with 250 ml Access® in 15 L of diesel to bottom 50 cm of trunk during summer. Avoid root disturbance until trees are confirmed dead.	Dec - March
22.	*Vicia sativa*	Common Vetch	Hand remove small/isolated populations. Lontrel® 10 mL/10 L + wetting agent provides effective control in early growth stages, otherwise apply metsulfuron methyl 0.1 g/10 L + wetting agent.	July - Sept

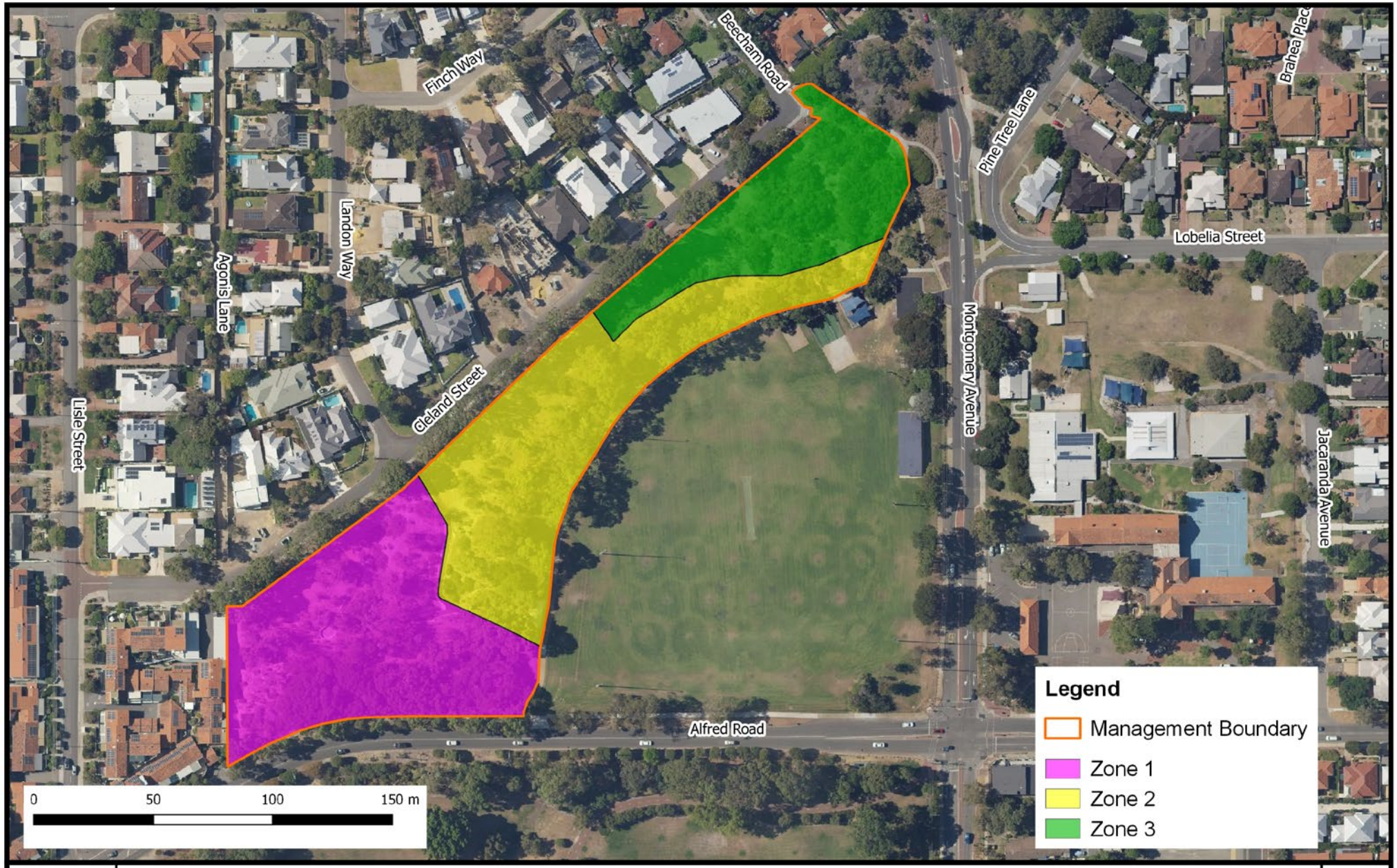
Appendix 5: Implementation of the 2013-2018 Management Plan

ACTIONS		IMPLEMENTED YES/NO PARTIALLY
BUSHLAND BOUNDARIES		
1.	Manage Mount Claremont Oval Reserve on the basis of three Zones.	Yes
REHABILITATION		
2.	Focus revegetation at selected degraded sites within Zones.	Yes
3.	Focus management on better condition bushland areas within Zones.	Yes
4.	Seek advice from DPaW or BGPA in regards to rehabilitation of areas that have dense Black Flag infestations.	Yes
5.	Only revegetate Zones 1 and 3 with similar existing local native species.	Partially
REVEGETATION		
6.	Consider only planting overstorey species in areas where Black Flag is present.	Partially
7.	Only use plant species for rehabilitation if they would have naturally occurred on site.	Yes
WEED CONTROL		
8.	Control the following weeds as a high priority: Geraldton Carnation Weed, Bridal Creeper, *Lachenalia aloides*, Perennial Veldt Grass, Annual Veldt Grass, Wild Oats, Black Flag, Wild Radish, *Lupinus*, *Freesia* and woody weeds.	Yes
9.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.	Yes
10.	Monitor, control and document the distribution of new invasive weeds as they arise.	Yes
11.	Remove juvenile seedlings of Geraldton Wax and Coast Teatree if required.	Yes
12.	Do not undertake removal of historically planted non-indigenous Australian native plants (such as River Red Gums) unless they become invasive.	Yes
13.	Control priority weeds in accordance with management notes detailed in Appendix 4.	Yes
14.	Where native vegetation exists, mature Black Flag plants that have the potential to set seed should be hand wiped with herbicides to stop them from seeding.	Partially
MONITORING		
15.	Monitor, control and document the distribution of new invasive weeds as they arise.	Yes

ACTIONS		IMPLEMENTED YES/NO PARTIALLY
16.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.	Yes
17.	Undertake annual monitoring and control of African Cornflag, *Watsonia bulbillifera*, *Arctotis stoechadifolia* and *Acacia iteaphylla* to ensure they do not spread or reestablish.	Yes
FIRE MANAGEMENT		
18.	Undertake annual management of grass weeds to reduce fuel loads.	Yes
NATIVE ANIMALS		
19.	Undertake ongoing surveying of native fauna if resources allow.	Partially
20.	Minimise fires that may destroy tree hollows.	Yes
21.	Retain hollows for refuges in large old and dead trees.	Yes
22.	Control feral European Bees as they can displace native animals.	Yes
23.	Continue the fox control program.	Yes
24.	Contribute to regional programs being undertaken for feral bird control by DPaW.	Partially

Appendix 2 and 3 compiled from infrequent observations from volunteers and staff

Appendix 6
Maps



Map 1: Management Zones

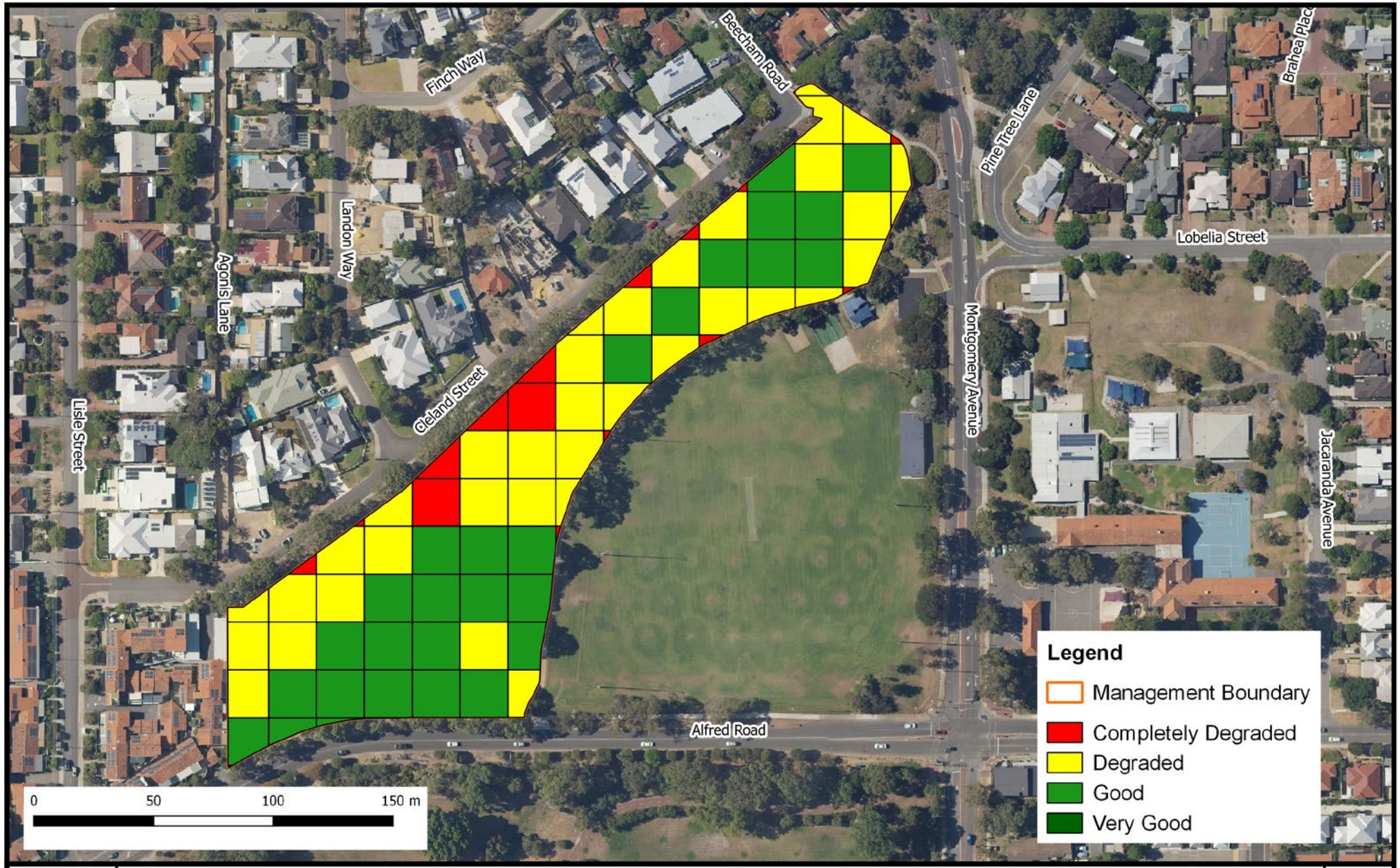
Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Bushland Land Map.qgs

Map 2: Vegetation Types

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Bushland Management Zones.qgs



Map 3: Bushland Condition

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Bushland Vegetation Types.qgs

Map 4: Fire History

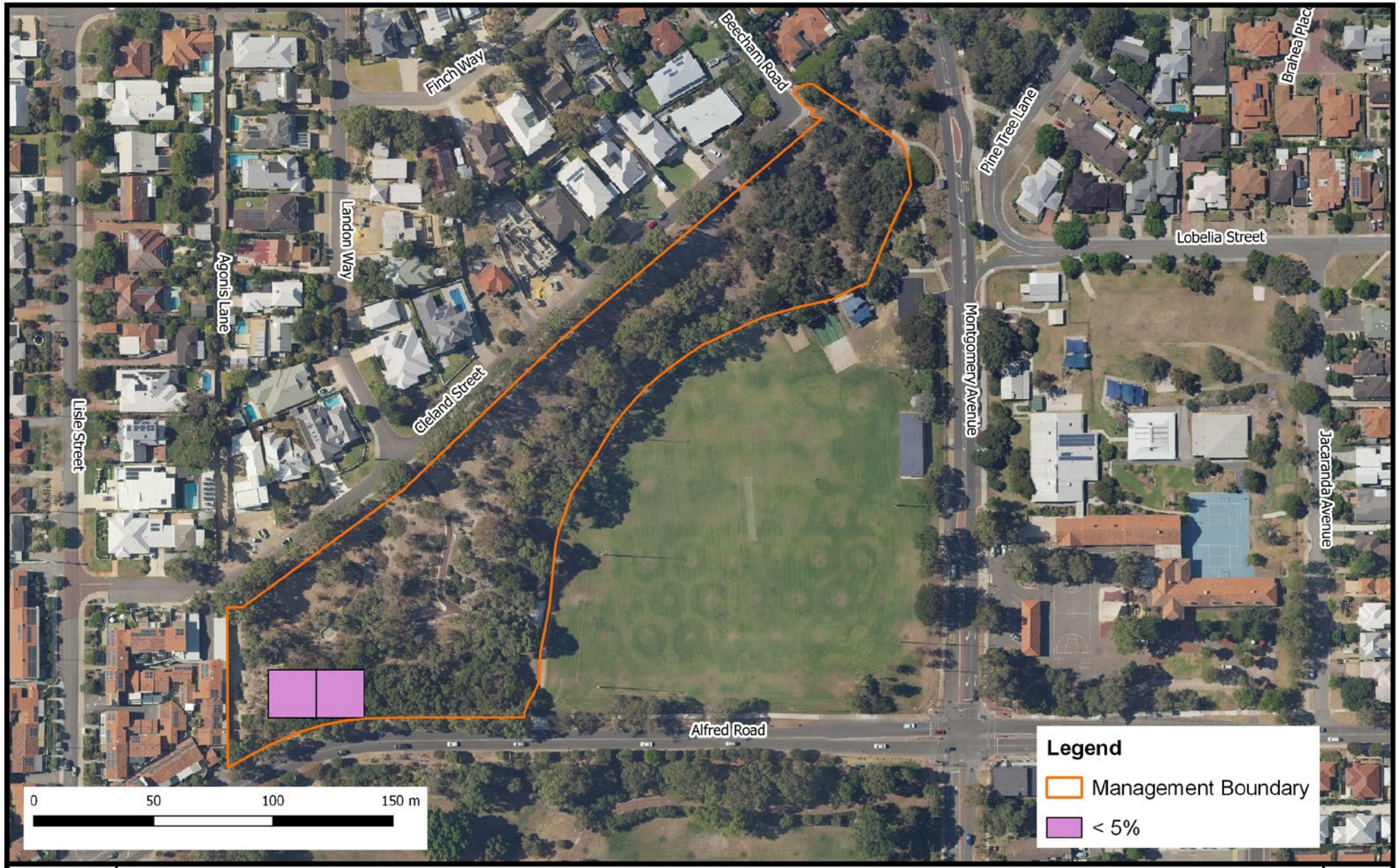
Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Fire History.qgs

Map 5: Access and Pathways

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Fire History.qgs



Map 6: *Asparagus asparagoides* - Bridal Creeper

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Access and Pathways.qgs

Map 7: *Centranthus macrosiphon* - Pretty Betsy

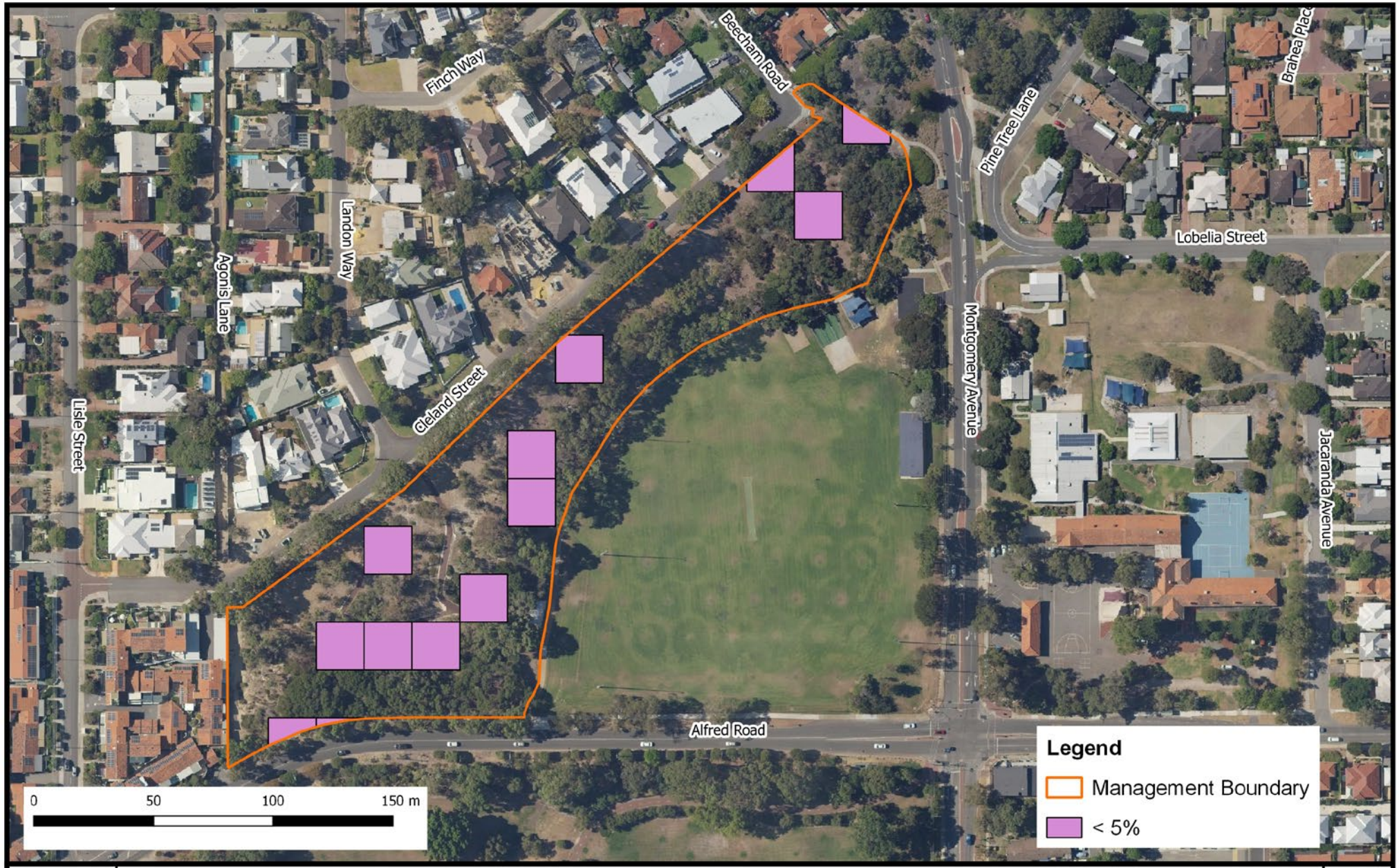
Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Asparagus asparagoides - Bridal Creeper.qgs

Map 8*: Ehrharta calycina* - Perennial Veldt Grass

Mt Claremont Oval Bushland Management Plan 2019-2024

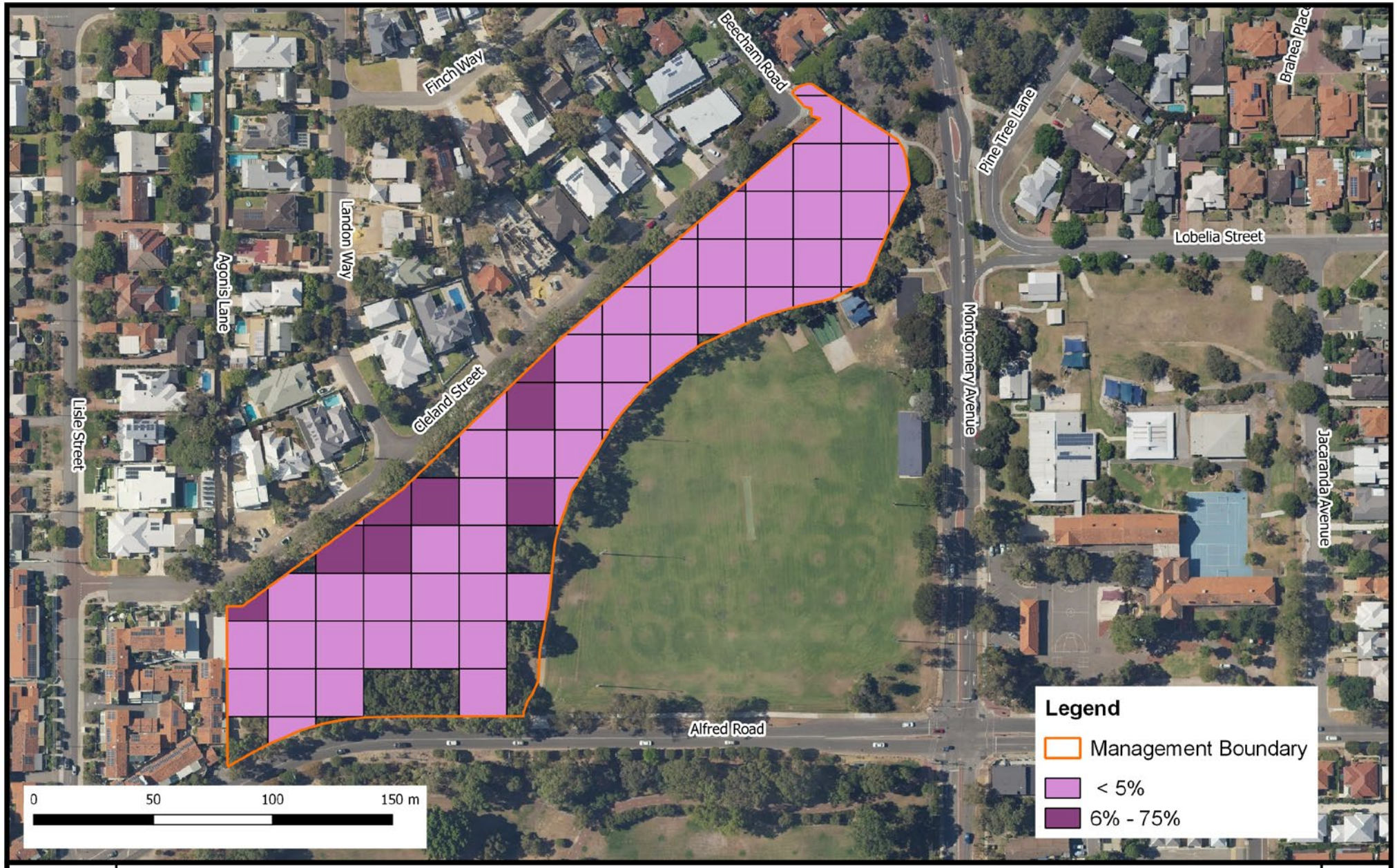
\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Centranthus macrosiphon Pretty Betsy.qgs



Map 9: *Euphorbia terracina* - Geraldton Carnation Weed

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Ehrharta calycina - Perennial Veldt Grass.qgs



Map 10: *Ferraria crispa* - Black Flag

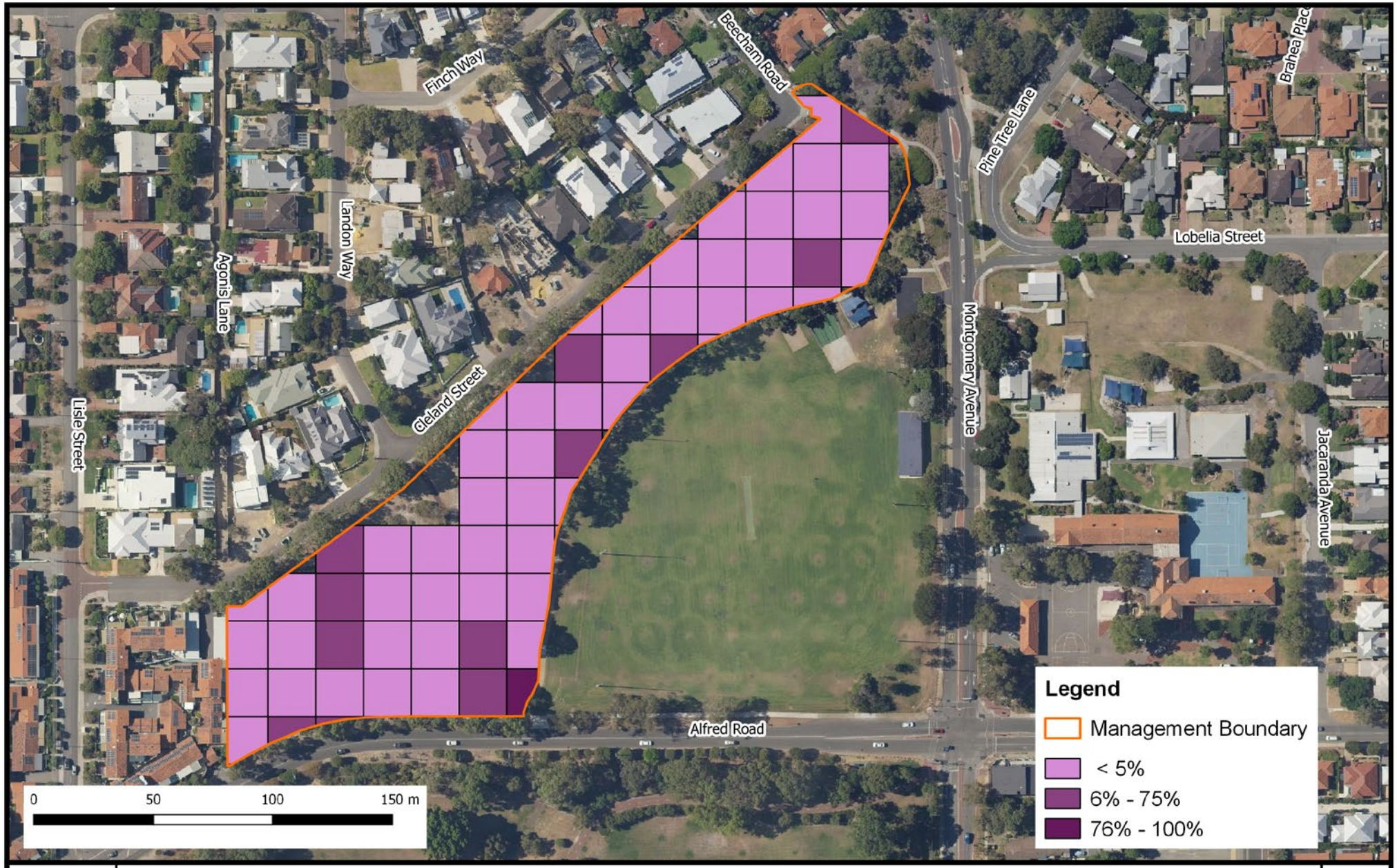
Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Euphorbia terracina - Geraldton Carnation Weed.qgs

Map 11: *Freesia alba × leichtlinii - Freesia*

Mt Claremont Oval Bushland Management Plan 2019-2024

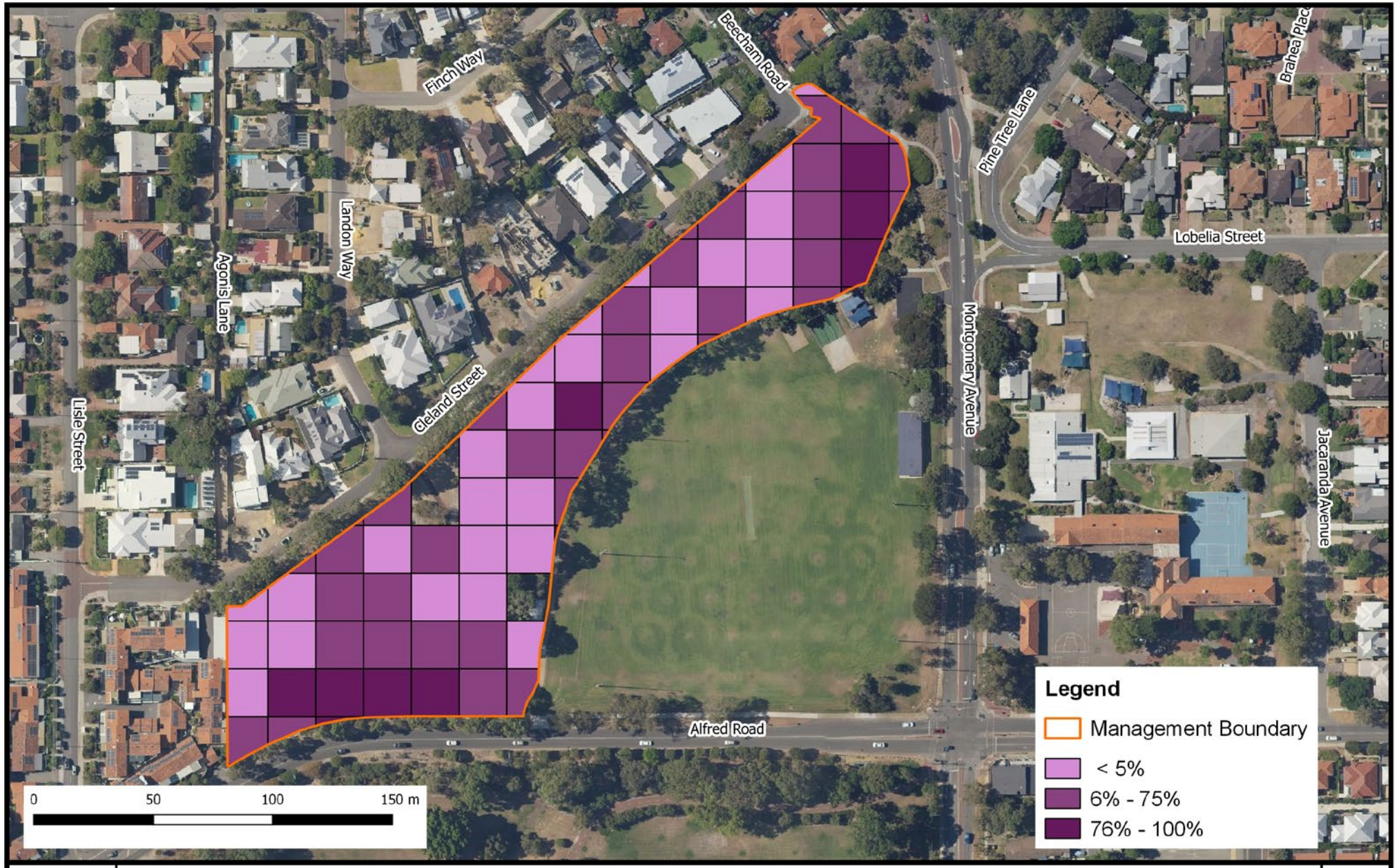
\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Ferraria crispa - Black Flag.qgs



Map 12: *Fumaria* – Fumitory

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Bushland Freesia alba x leichtlinii - Freesia.qgs



Map 13: *Oxalis* - Soursob

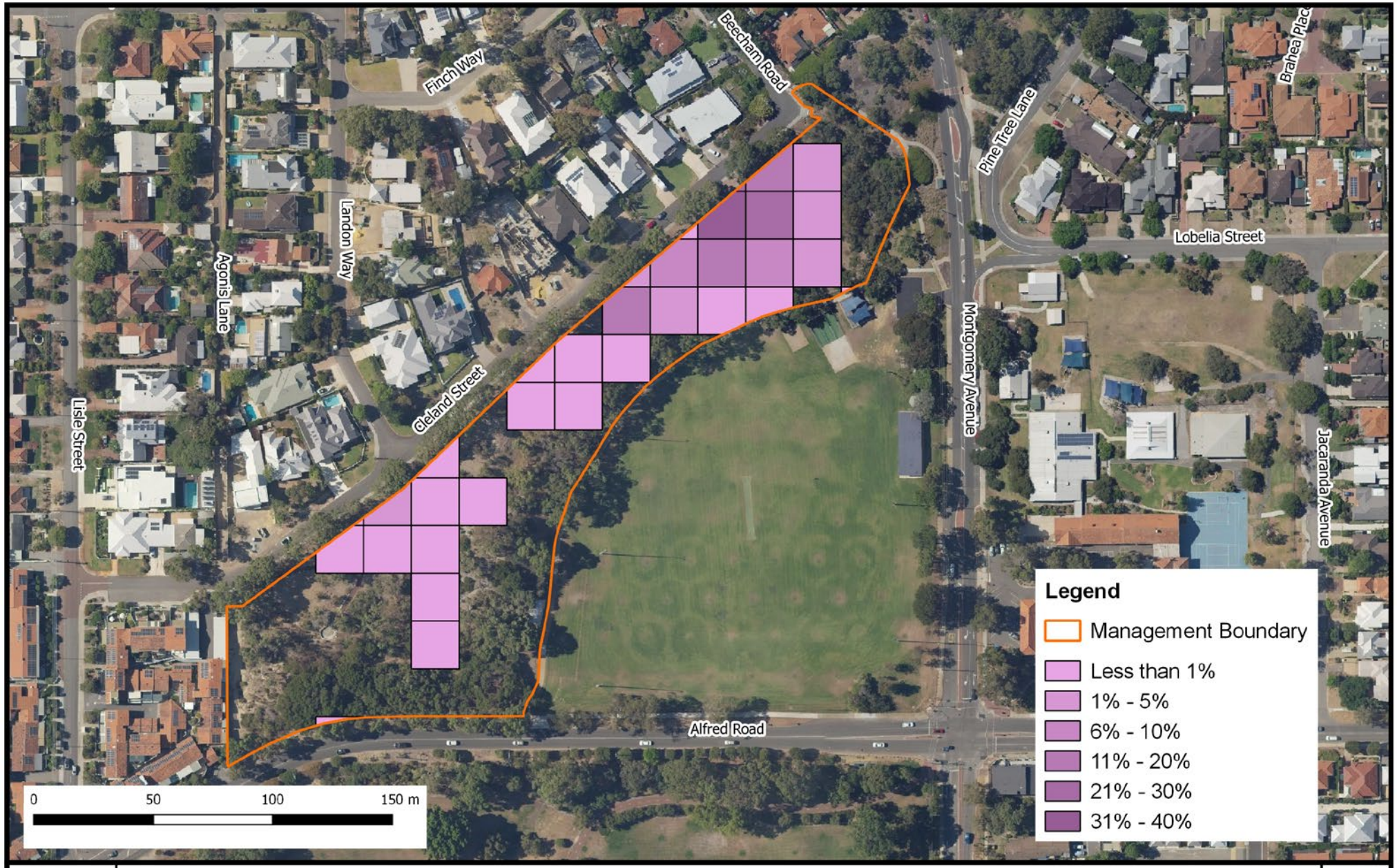
Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Fumaria sp – Fumitory.qgs

Map 14: Woody Weeds

Mt Claremont Oval Bushland Management Plan 2019-2024

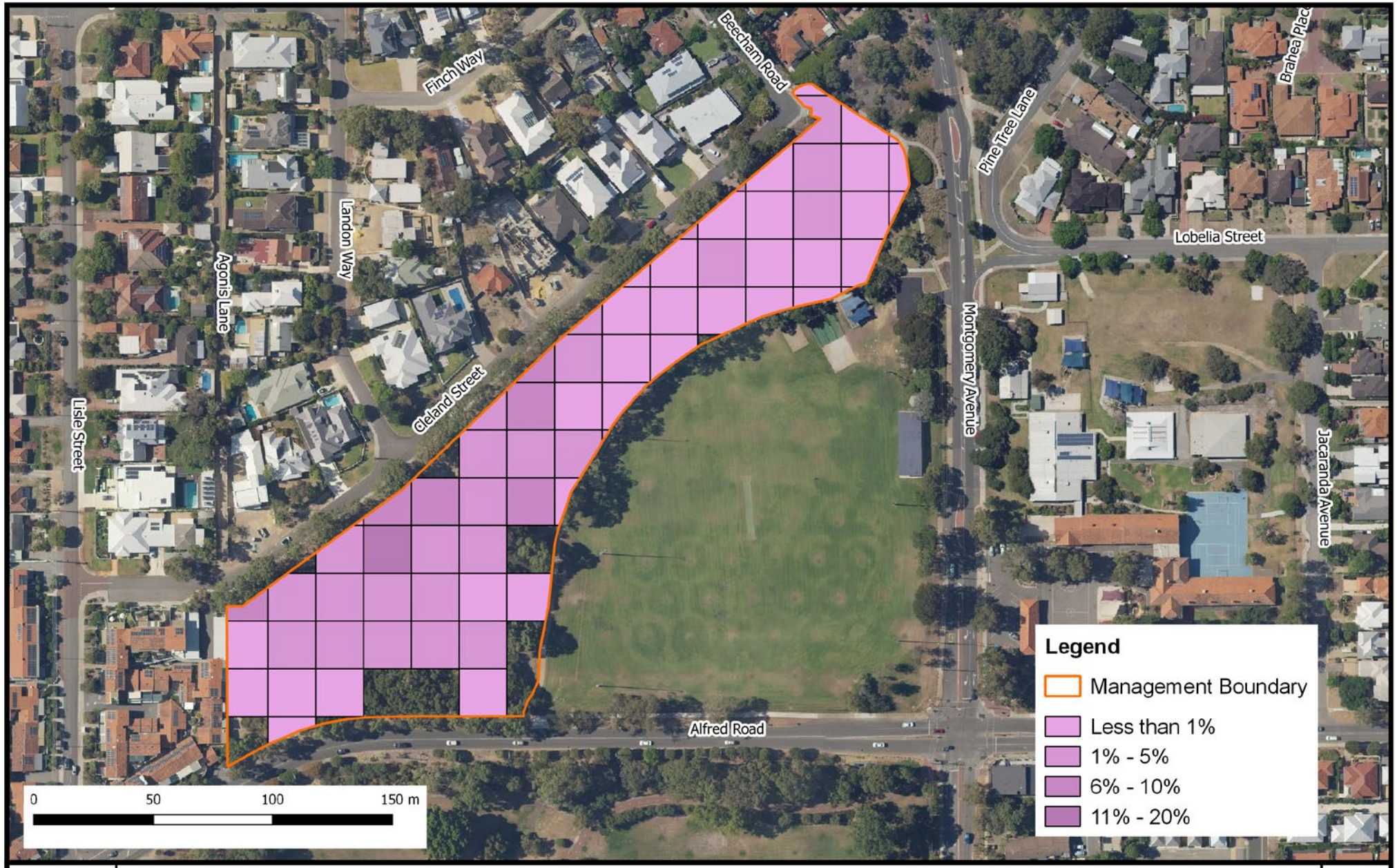
\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Bushland Woody Weeds.qgs



Map 15: Actual Cover *Ehrharta calycina* - Perennial Veldt Grass

Mt Claremont Oval Bushland Management Plan 2019-2024

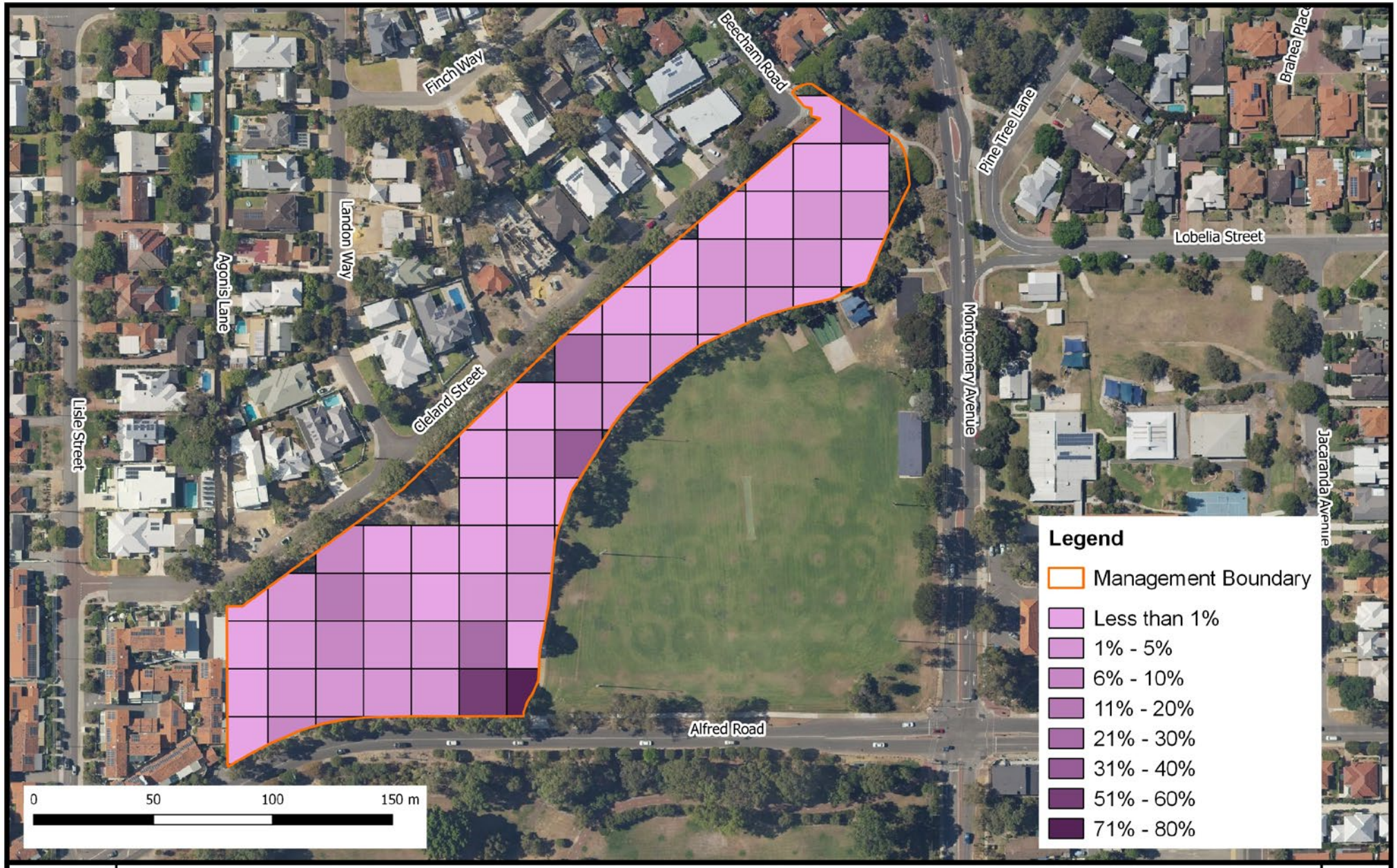
\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Oxalis sp - Soursob.qgs



Map 16: Actual Cover *Ferraria crispa* - Black Flag

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Actual Cover Ehrharta calycina - Perennial Veldt Grass.qgs



Map 17: Actual Cover *Fumaria* – Fumitory

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Actual Cover Ferraria crispa - Black Flag.qgs

Map 18: Actual Cover *Oxalis* - Soursob

Mt Claremont Oval Bushland Management Plan 2019-2024

\\admgisserv01\Management Plan Maps\QGIS\New Base Projects\Mt Claremont Oval\Mt Claremont Actual Cover Fumaria sp – Fumitory.qgs

Appendix 7
Natural Areas Management Plan 2019-2024

City of Nedlands

71 Stirling Hwy, Nedlands WA 6009
9273 3500
council@nedlands.wa.gov.au

nedlands.wa.wa.gov.au