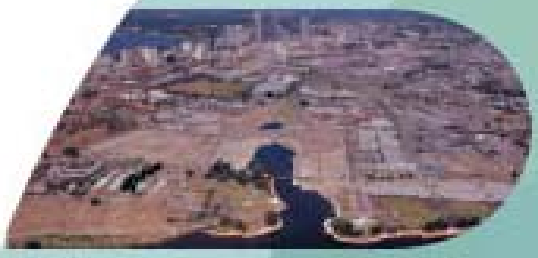
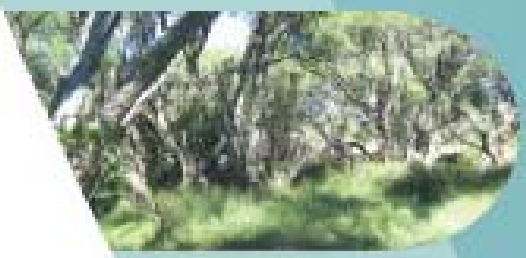


FLETCHER PARK
BUSHLAND MANAGEMENT PLAN



Fletcher Park
Bushland Management Plan

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Date: *26/07/2010*

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STATEMENT OF LIMITATIONS

Scope of Services

This environmental site assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and ENV.Australia Pty Ltd (ENV) ("scope of services"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

Reliance on Data

In preparing the report, ENV has relied upon 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 ("the data"). Except as otherwise stated in the report, ENV 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 ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. ENV will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to ENV.

Environmental Conclusions

In accordance with the scope of services, ENV has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

On all sites, varying degrees of non-uniformity of the vertical and horizontal soil or groundwater conditions are encountered. Hence no monitoring, common testing or sampling technique can eliminate the possibility that monitoring or testing results/samples are not totally representative of soil and/or groundwater conditions encountered. The conclusions are based upon the data and the environmental field monitoring and/or testing and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions. Also it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

Within the limitations imposed by the scope of services, the monitoring, testing, sampling and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. ENV assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of ENV or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

ENV will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

The scope of services did not include any assessment of the title to or ownership of the properties, buildings and structures referred to in the report nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

EXECUTIVE SUMMARY

Fletcher Park ('the Park') (Reserve 14217), located in Wungong is vested in the City of Armadale as a "Reserve for Recreation". The Park covers an area of approximately 19 hectares, 5 hectares of which is Good Condition bushland of national and regional significance. The Park is zoned as 'Parks and Recreation' in the City of Armadale Town Planning Scheme 4 and 'Rural' in the Metropolitan Region Scheme. Approximately 11 hectares is leased to the Wallangarra Riding and Pony Club (Inc) (WRPC) under a five year renewable lease which expired in September 2010, and is continuing on a month-to-month basis until another management arrangement can be reached. As most of the Park is exclusively leased to the WRPC, equestrian use is the most common recreational use of the reserve.

Fletcher Park forms part of the Bush Forever Site 264 *Lambert Lane Bushland,* Wungong. The vegetation has been mapped as Threatened Ecological Community (TEC) Floristic Community Type 3a *Corymbia calophylla – Kingia australis* woodlands on heavy soils. This TEC is listed under the *Environmental Protection and Biodiversity Conservation Act* as Endangered and Critically Endangered under the *Wildlife Conservation Act.* The site is known to contain 105 native flora species and 51 introduced species. Two species of Declared Rare Flora, *Eucalyptus balanites* and *Diuris purdiei* have also been recorded within the site. While limited fauna surveys have been undertaken in the Park, native species likely to inhabit the site include the Quenda, Common Brushtail Possum, Barking Gecko and Motorbike Frog. Feral species observed in the Park include cats, foxes and rabbits. No fungi surveys have been undertaken in the Park. Fletcher Park contains Conservation Category, Resource Enhancement and Multiple Use Wetlands. A seasonal stream flows along the north-eastern boundary of Fletcher Park.

Rehabilitation efforts have concentrated on undertaking weed control in Good Condition bushland areas, and planting local provenance seedlings into the stream-zone and more degraded upland bushland areas. Rehabilitation efforts to date have been very successful and it is recommended that these efforts are continued and expanded.

Dieback mapping undertaken in 2000 indicated that the reserve is an old dieback infestation, with a high level of disturbance and lack of indicator species meaning that a large proportion of the site was deemed uninterpretable. Based on this information, a number of management recommendations based on minimising the impact to the vegetation and reducing the risk of spread from the site have been incorporated in this plan.

Fire management objectives for Fletcher Park are to protect life and property, to minimise the risk to neighbouring properties, to protect and conserve the environmental values of the bushland, preserve ecological processes through appropriate fire management techniques, and to observe statutory obligations associated with bushfire management and control. Fire management is achieved through maintenance of fire access tracks and breaks weed control and fuel load management.

Access control to illegal off-road vehicles has been a problem within the southern portion of Fletcher Park. Fences and gates have been installed in an attempt to minimise this activity.

Forty-four recommendations were made for the Fletcher Park Bushland. These are listed in the table below and are based on fulfilling the principal management objectives for Fletcher Park which are to:

- Ensure the long-term conservation of the remnant bushland;
- Consolidate the environmental attributes and issues that have been raised to date from previous survey work;
- Develop clear and practical management actions;
- Outline timing and frequency of management actions; and
- Develop monitoring programs along with measurable assessment and performance criteria.

The following management framework is proposed for the implementation of this management plan.

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
1	The City of Armadale will seek to change the purpose of the Reserve 14217 to include conservation whilst permitting ongoing use of the reserve for passive recreation and horse riding.	High	2011	2012	CoA - Environment	Staff Resources
2	Resident pony clubs will abide by the recommendations in this management plan, which will also form part of any management arrangements entered into between the City of Armadale and the clubs.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
3	As opportunities arise participate in flora, fauna and fungi surveys within Fletcher Park	Low	Ongoing	Ongoing	CoA	Cost yet to be determined
4	Ensure that all vehicles leaving the Park are free of soil and vegetation	Low	2011	Ongoing	CoA, Resident pony clubs	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
5	Seek a modification to the DEC's *Geomorphic Wetlands Swan Coastal Plain* dataset to remove the wetland mapping from the areas within Fletcher Park that support upland vegetation types yet are mapped as wetlands.	Low	2012	2014	CoA - Environment	Staff Resources
6	Continue the horse impact study until 2015 to further enable the identification of any changes in vegetation associated with horse use that may occur over long periods of time.	High	2011	Ongoing	CoA - Environment	Staff Resources
7	As opportunities arise undertake a Spring survey following summer fire to determine the extent of Diuris purdiei throughout Fletcher Park.	Moderate	As required	N/A	CoA - Environment	Cost yet to be determined
8	Resident pony club appointed Environmental Officer to ensure DRF locations are kept free of horse movements. This can be carried out through educating new and existing members about the sensitive nature of parts of the bushland and by keeping tracks away from the plant.	High	2011	Ongoing	Resident Pony Clubs	N/A
9	CoA informs DEC of recent survey findings regarding TEC type 3a within Fletcher Park.	Moderate	2011	2011	CoA - Environment	N/A
10	Undertake vegetation condition mapping in 2014.	Moderate	2014	2014	CoA - Environment	Staff Resources

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
11	Undertake ongoing prioritised weed control over a period of five years using the strategies outlined in this management plan.	High	2011	2016	CoA – Environment and Parks	$25,000
12	Undertake monitoring to determine the effectiveness of weed control.	Moderate	2012	Ongoing	CoA - Environment	Staff Resources
13	Promote habitat for native fauna through rehabilitation efforts.	Moderate	2011	Ongoing	CoA - Environment	N/A
14	Maintain fencing around the reserve to reduce opportunities for unauthorised vehicle access.	High	2011	Ongoing	CoA – Environment and Parks	$5,000/annum
15	As opportunities arise participate in introduced fauna monitoring within Fletcher Park.	Low	2011	Ongoing	CoA - Environment	N/A
16	Undertake feral honey bee control within the Park.	Moderate	2012	2013	CoA - Environment	$2,000
17	Implement in accordance with the procedures of the City of Armadale's Dieback Policy, ENG 9 Managing Phytophthora Dieback and this management plan.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
18	Designate a brush down area to be designated for horses to remove traces of infested soil before leaving the Park.	Moderate	2011	Ongoing	Resident pony clubs	N/A
19	Emergency vehicle access tracks should be maintained as described in this management plan. No new access tracks should be created unless deemed necessary for safety purposes..	High	2011	Ongoing	CoA - Parks	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
20	Undertake fuel reduction activities by keeping grassed areas mowed and by annually controlling grassy weeds in bushland areas.	High	2011	Ongoing	CoA - Parks	$20,000/annum
21	Undertake fuel load assessment s of the bushland areas within Fletcher Park consistent with the City of Armadale fire maintenance program.	Moderate	2011	Ongoing	CoA - Rangers	Staff Resources
22	Undertake cool mosaic control burns if deemed necessary for safety.	High	2011	Ongoing	CoA - Rangers	$1,500/annum
23	A log of all environmental related tasks undertaken by the resident pony clubs and the City of Armadale will be kept. This log will be provided to the City on a bi-annual basis for inclusion into the City's record system.	High	2011	2016	CoA - Environment, Resident pony clubs	N/A
24	Resident pony clubs management committee to appoint one of their members to be responsible for liaising with the City on environmental management of the Park. The resident pony clubs management committee is to be cognisant of, and ensure all activities are consistent with, this management plan.	High	2011	Ongoing	Resident pony clubs	N/A
25	When each Environmental Officer is appointed the resident pony clubs management committee will inform the City of Armadale of the name of the Environmental Officer and	High	2011	Ongoing	Resident pony clubs	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	provide the city with their contact information.					
26	No further tracks within the bushland areas are created.	High	2011	2016	CoA, Resident pony clubs	N/A
27	Tracks shown in Figure 9 to be closed and rehabilitated.	Moderate	2011	2016	CoA - Environment,	$21,630.70
28	Investigate the need to install a substrate, such as river sand, to the tracks to remain open within the bushland.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
29	Remove unnecessary jumps within the tracks to be closed and rehabilitated.	High	2011	2011	WRPC	N/A
30	Resident pony clubs to provide statistics on horse usage to the City of Armadale annually.	High	2011	Ongoing	Resident Pony Clubs	N/A
31	Investigate options for relocating the cross country course within the environmentally sensitive areas to the area between Mitchell St and Moore St, including revegetating degraded areas.	High	2011	2012	CoA	N/A
32	The resident pony club provide a key to their locks to the City of Armadale property department.	High	Ongoing	Ongoing	Resident pony clubs	N/A
33	Maintenance of existing tracks within the bushland portion of the reserve shall only be undertaken in accordance with this management plan and in compliance with the relevant legislation.	High	Ongoing	Ongoing	CoA, Resident Pony Clubs	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
34	The City of Armadale discusses opportunities with the Public Transport Authority (PTA) to discourage access off the firebreaks on PTA lands to the west of Fletcher Park.	Moderate	2011	2016	CoA – Parks and Environment	Staff Resources
35	Any upgrades to facilities are assessed on the basis that no damage to native vegetation will occur.	High	2011	2016	CoA - Environment	N/A
36	Facilities will not undergo upgrades at the expense of conservation values of Fletcher Park.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
37	No facilities will be installed, upgraded or removed within the bushland sections of the reserve without approval by the City of Armadale Environmental Officer and Manager Parks.	High	2011	Ongoing	CoA – Parks and Environment, Resident pony clubs	N/A
38	Apply for a water extraction licence from the Department of Water for the bore within the Park.	High	2011	2012	CoA – Parks	Staff Resources
39	Adhere to the water allocation licence, if approved by the Department of Water.	High	2011	Ongoing	CoA - Parks	N/A
40	Place interpretive signage at the Park's main entrance and/or inside the park. Interpretive signs should include information on dieback and rehabilitation work.	High	2015	2016	CoA - Environment	2 signs @ $2,000 each = $4,000
41	Continue to concentrate intensive rehabilitation efforts in the High Priority Areas Shown	Moderate	2011	2016	CoA – Parks and Environment	Seedling propagation =

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	in Figure 8.					$44,895.60* Seedling planting = $19,953.60* * commercial costs
42	Collect native seeds from Fletcher Park for revegetation activities.	High	2011	2012	CoA - Environment	$4,635
43	Invite local community groups and schools to be involved in revegetation activities.	Low	2011	2016	CoA – Environment	N/A
44	Revegetation should be undertaken using the guiding principles outlined in this management plan.	High	2011	Ongoing	CoA - Environment	N/A

* - CoA = City of Armadale

Resident Pony Clubs = Any pony clubs using Fletcher Park under a lease or management arrangement with the City of Armadale.

1 INTRODUCTION

A Bushland Management Plan is a site specific document that provides a guideline for the management and rehabilitation of vegetation communities. This document will describe each task necessary for the implementation of the plan, duration and priority of actions. Maps, diagrams and plant species lists describe existing vegetation, constraints, vegetation and natural features to be retained, proposed rehabilitation, and stabilisation works. This Management Plan draws upon and updates the previous Fletcher Park Bushland Management Plan (City of Armadale, 2005).

1.1 FLETCHER PARK BACKGROUND

Fletcher Park is a 19 ha reserve (No. 14217) vested in the City of Armadale as a 'Reserve for Recreation', located in the suburb of Wungong (Figure 1). A portion of the reserve is leased to Wallangarra Riding and Pony Club (Inc) under a five year renewable lease that is due to expire in September 2010.

Approximately 5 ha of the reserve is bushland mapped as a Threatened Ecological Community (TEC) under Federal and State Legislation, being the *Environment Protection and Biodiversity Conservation Act 1999* and the *Environmental Protection Act 1986* respectively. The site also contains Declared Rare Flora (DRF) protected under the State *Wildlife Conservation Act 1950*.

In keeping with its conservation values and recreation purpose, the long-term vision is to ensure the good condition bushland and stream zone are protected and enhanced and ensures the Wallangarra Riding and Pony Club (Inc) utilises the reserve and bushland in a manner that protects its conservation values.

1.2 SUMMARY FLETCHER PARK MANAGEMENT PLAN 2005 – 2010

The previous Fletcher Park Management Plan was prepared in 2002 and adopted by the City of Armadale on 6 August 2002. This Management Plan has focussed on the main area of bushland located in the northern portion of the Park with management objectives and principles being to protect DRF and TECs through weed control and preventing damage. The implementation table of the actions of this plan can be found at Appendix A.

1.3 LEGISLATIVE FRAMEWORK

Flora species and native vegetation are protected formally and informally by various legislative and non-legislative measures, which are as follows:

Legislative Protection

- *Environment Protection and Biodiversity Conservation Act 1999* (Cth): a Federal Act;

- *Wildlife Conservation Act 1950* (WA): a State Act; and
- *Environmental Protection Act 1986* (WA): a State Act.

Non-Legislative Protection

- Western Australian Department of Environment and Conservation ('DEC') Priority lists for flora and vegetation;
- Informal recognition of locally significant populations; and
- Bush Forever (Government of Western Australia 2000a); and/or
- Levels of Assessment for Proposals Affecting Natural Areas within System 6 Region and Swan Coastal Plain Portion of the System 1 Region (EPA 2006).

A short description of these measures is given below, and definitions of the species conservation codes and ecological community categories are provided in Appendix B.

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) ('the EPBC Act') aims to protect matters of national environmental significance. Under the EPBC Act, the Commonwealth Department of Sustainability, Environment, Water, Population and Communities ('DSEWPC') lists threatened species and TECs in certain categories determined by criteria set out in the Act (*www.environment.gov.au/epbc/index.html*).

The Act provides for a national environmental assessment and approvals process for proposed actions likely to affect the prescribed matters of national environmental significance.

Fletcher Park contains a two DRF species (*Eucalyptus balanites and Diuris* purdiei) and a TEC (*Corymbia calophylla – Kingia australis woodland*) protected under the EPBC Act.

Wildlife Conservation Act 1950 (State)

The DEC, lists flora taxa under the provisions of the *Wildlife Conservation Act 1950* (WA*)* ('WC Act') as protected according to its need for protection.

Flora species are given Declared Rare status when their populations are geographically restricted or are threatened by local processes. In addition, under the WC Act, by Notice in the Western Australian Government Gazette of 9 October 1987, all native flora (spermatophytes, pteridophytes, bryophytes and thallophytes) is protected throughout the State. The Act makes it an offence to 'take' threatened species without appropriate Ministerial Authorisation.

Two species of DRF (*Eucalyptus balanites* and *Diuris purdiei*) have been recorded at Fletcher Park. Both species are listed as Threatened Flora under the EPBC Act and the WC Act.

Environment Protection Act 1986 (State)

DRF and TECs are given special consideration in environmental impact assessments and have special status as Environmentally Sensitive Areas ('ESAs') under the *Environmental Protection Act 1986* ('the EP Act') and the *Environmental Protection* (Clearing of Native Vegetation) *Regulations 2004.*

The protection of DRF and TECs is a 'clearing principle' for assessing applications for permits to clear native vegetation, where exemptions for a clearing permit under the *Environmental Protection* (Clearing of Native Vegetation) *Regulations 2004* do not apply.

DEC Priority Lists

The DEC lists 'Priority' flora species that have not been assigned statutory protection under the WC Act, but which are under consideration for declaration as 'Rare Flora' under the Act. Species assessed as Priorities 1-3 are in urgent need of further survey, whilst Priority 4 species require monitoring every 5-10 years (see Appendix B for definitions).

In addition, the DEC maintains a list of Priority Ecological Communities ('PECs') which identifies those communities that need further investigation before possible nomination for TEC status.

No PECs or Priority Flora has been recorded at Fletcher Park to date.

Informal Recognition of Flora and Vegetation

Certain populations or communities may be of local significance or interest because of their patterns of distribution and abundance. For example, flora may be locally significant because they are range extensions to the previously-known distribution or are newly-discovered taxa (and therefore have the potential to be of more than local significance). In addition, many species are in decline as a result of threatening processes (primarily land clearing), and relict populations of such species assume local importance.

Bush Forever

Bush Forever is a State Government Policy and program which identifies 51,200 hectares of regionally significant bushland for protection, covering 26 vegetation complexes. This amounts to about 18% of the original vegetation on the Swan Coastal Plain portion of the Perth Metropolitan Region, and excludes local conservation reserves (Government of Western Australia 2000a).

Regionally significant bushland has been identified on the basis of criteria relating to its conservation value. Important among these criteria is the achievement, where possible, of a comprehensive representation of all the ecological communities originally occurring

in the region, principally through protecting a target of at least 10 per cent of each vegetation complex (Government of Western Australia, 2000a).

The Government of Western Australia has endorsed Bush Forever as the means of seeking the appropriate protection and management of areas of regionally significant bushland on the Swan Coastal Plain Portion of the Perth Metropolitan Region and a balance between environmental, social and economic objectives. As an endorsed government policy it is used as a basis for decision-making and agreed framework for the protection and management of Bush Forever Sites through the implementation mechanisms identified in the plan (Government of Western Australia, 2000a).

Part of Fletcher Park Reserve is mapped as Bush Forever Site 264.

1.4 SCOPE / OBJECTIVES

The objectives in preparation of this management plan are to:

- Consolidate the environmental attributes and issues that have been raised to date from previous survey work;
- Develop clear and practical management actions;
- Outline timing and frequency of management actions; and
- Develop monitoring programs along with measurable assessment and performance criteria.

In preparing this plan the following actions were taken:

1. A survey was undertaken to map the vegetation condition, visit DRF and TEC locations, map weed species and determine areas in need of rehabilitation and revegetation;
2. Liaison with the City of Armadale and the Wallangarra Riding and Pony Club (Inc);
3. Review and analysis of all supporting documentation; and
4. Development of site specific practical management measures.

2 TENURE AND SURROUNDING LAND USE

2.1 TENURE

Fletcher Park is a 19ha reserve (No. 14217) vested in the City of Armadale for the purpose of recreation. Figure 1 is a location map of the Reserve. The Wallangarra Pony Club (1976) identified a portion of Fletcher Park known as the "10 acre" as a suitable area of Crown land vested for Recreation and suitable for establishing a club and facilities.

The first lease between the City of Armadale and the Wallangarra Riding and Pony Club Inc (WRPC) was drawn up in 1980, after which areas were cleared for the club's use and a cross-country riding course mapped out. The group received Community Employment Program funds in 1985, which were used for fencing, grassing, reticulation and electricity connection to the site. Further funding was received from the Community Employment Program in 1986 for the kitchen and ablution block, and subsequently funds were received for the adjoining hall.

In 1990 a second lease was obtained which included the "7 acre" portion of Fletcher Park which lies south of Moore Street. The lease was reviewed and a new lease came into effect in 2001. Figure 1 illustrates the portion of Fletcher Park which is leased to the Wallangarra Riding and Pony Club (WRPC). The lease contains several clauses that assist in protecting the bushland, including to keep and maintain the premises free from rubbish, refuse and disused material of any kind, permit access to the Park with or without workmen at all reasonable times, keep the premises free of pests and vermin, comply with all Acts, laws or regulations applicable to the premises and comply with the recommendations contained within the management plan.

The leasing arrangement between the City of Armadale and the WRPC which commenced in 2001, expired earlier in 2010. At the time of writing, the lease with the WRPC is on a month to month arrangement until such time as a new five year management arrangement could be determined for the use of the reserve. Negotiations between the City, the WRPC and the Kelmscott Pony Club are ongoing for the relocation of the Kelmscott Pony Club to Fletcher Park. This additional use by the Kelmscott Pony Club will also require a separate management arrangement for this club (see sections 3.6 and 4.2 for information on reserve usage). It is intended that any clubs using the reserve will abide by the stipulations of this management plan, and it will form part of any management arrangement. It is anticipated that if multiple clubs are utilising the reserve then a 'management committee' will be formed to over see the management arrangements and grounds maintenance.

Fletcher Park is zoned as Parks and Recreation in the City of Armadale Town Planning Scheme 4 (TPS 4) and Rural in the Metropolitan Region Scheme. Due to the environmental significance of the site, it is recommended that the purpose of the reserve

be amended to 'Conservation and Recreation' to formally acknowledge the site's environmental values while still allowing recreational use of the reserve.

Recommendation

1. City of Armadale to seek to change the purpose of the Reserve to 'Conservation and Recreation'.

2. Resident pony clubs will abide by the recommendations in this management plan, which will also form part of any management arrangements entered into between the City of Armadale and the clubs.

2.2 SURROUNDING LAND USE

Fletcher Park is located near the base of the Darling Range foothills of Armadale. Fletcher Park is bounded by the Australind Railway line, Eleventh Road and Stone Street. The surrounding land use is zoned as rural and is predominantly farmland.

Part of Fletcher Park is mapped as Bush Forever Site 264, which continues across the railway line into Lambert Lane Reserve. Lambert Lane Reserve is part of Greenways 106 and 128 as identified in A Strategic Plan for Perth's Greenways (Alan Tingay & Associates, 1998).

A Strategic Plan for Perth's Greenways (Alan Tingay & Associates, 1998) has identified existing and potential Greenways within the Perth Metropolitan Region. A Strategic Plan for Perth's Greenways builds on and connects areas of remnant vegetation, wetlands and walking trails within the Metropolitan Region. Priority was given to identifying strategic Greenways that provide east-west corridors that link the coast to freshwater and bushland habitats, linkages along foreshore areas and between wetlands and between large areas of remnant vegetation (ATA Environmental, 2004).

Adjacent to the western boundary of the Park runs a Water Corporation reserve (No. 380179) that has been set aside as a future infrastructure corridor. To the east, and along Mitchell Street also runs an easement for the Wungong Water Transfer Main which traverses across the Park. At the time of writing the Water Corporation were assessing the implications of this proposed management plan on the current and future use of these properties for water infrastructure.

3 EXISTING ENVIRONMENT AND RESERVE USAGE

3.1 TOPOGRAPHY AND SOILS

Fletcher Park lies on the Pinjarra Plain, which consists of alluvial materials on the eastern side of the Swan Coastal Plain. The topography of the Park is flat, with no significant areas of soil erosion.

According to the Environmental Geology Series mapping, the soil of Fletcher Park is described as gravelly silt – strong brown, tough, common pebbles of fine to coarse-grained, sub rounded granite, some dolerite and rare sandstone, variable sand content (Jordan, 1986).

3.2 FLORA AND VEGETATION

Vegetation

A vegetation complex is a combination of distinct site vegetation types, usually associated with a particular geomorphic, climatic, floristic and vegetation structural association. Vegetation complexes are based on the pattern of vegetation at a regional scale as it reflects the underlying key determining factors of landforms, climate and soil.

Vegetation present at Fletcher Park reflects that of the Forrestfield Complex (Government of Western Australia 2000a). Prior to European settlement, the Forrestfield Complex covered approximately 11,300 hectares of the Swan Coastal Plain. In 2000, there was only 1,020 ha, or 9% of the original extent of Forrestfield Complex bushland remaining (Government of Western Australia 2000a). Bush Forever aims at a 10% retention target, which is based on internationally agreed targets.

The Forrestfield Complex is dominated by an open forest of Marri *(Corymbia calophylla)*, Wandoo *(Eucalyptus wandoo)* and Jarrah *(Eucalyptus marginata)* on the heavier gravelly soils and open forest of Jarrah, Marri and Sheoak *(Allocasuarina fraseriana)* on the sandier soils (Heddle et. al, 1980).

Ecologia (2000) described the vegetation of Fletcher Park as typical of Darling Range/Scarp vegetation with *Corymbia calophylla* and *Eucalyptus marginata* woodland over a dense shrubland dominated by *Xanthorrhoea preissii, Kingia australis* and *Xylomelum occidentale. Eucalyptus rudis* and *Eucalyptus lane-poolei* occur along the creekline in the reserve (Ecoscape, 2002).

Bush Forever confirms the site as being of the Forrestfield Complex and the site is recognised as being regionally significant bushland.

Bush Forever describes the following Floristic Community Types (FCT) for Bush Forever Site 264 (Government of Western Australia, 2000b):

- **Supergroup 1: Foothills/Pinjarra Plain**

  - 3a *Corymbia calophylla – Kingia australis* woodlands on heavy soils

- **Supergroup 2: Seasonal Wetlands**

A seasonal stream flows for 315 m through the north-east corner of Fletcher Park in a south-east to north-west direction. It is a tributary of the Wungong River which collects water via overland flow and through the stormwater drainage system. The stream zone vegetation is recognised as providing an important ecological function. The condition of the vegetation ranges from Degraded to Very Good depending on the level of disturbance and structure of the vegetation.

Threatened Ecological Communities (TEC)

Fletcher Park Bushland is considered to be part of a regionally significant bushland. The reserve contains the Critically Endangered TEC, known as "*Corymbia calophylla – Kingia australis* woodlands on heavy soils" (Floristic Community Type 3a as described in Gibson et al, 1994). The community is found on sandy soils at the base of the Darling Scarp, associated with the Guildford and Forrestfield Complexes. The Community has very high species richness.

Vegetation Condition

The vegetation within Fletcher Park was assessed as being in Very Good to Completely Degraded condition and is illustrated in Figure 2. The Keighery Vegetation Condition Scale was used for this assessment (Government of Western Australia, 2000b). The definition of the condition scales is in Appendix C.

The bushland portions of the Park generally have a vegetation condition range of Good to Very Good, with the areas of intensive horse use having a vegetation condition range of Completely Degraded to Good. Disturbances to the vegetation within the park include past clearing, horse tracks, introduced species invasion and rubbish dumping.

The City of Armadale maps the vegetation condition of all of their bushland reserves on a three year cycle. It is recommended that this mapping regime continues and the vegetation condition in Fletcher Park is remapped in 2014 (see Section 6.1).

Revegetation works have taken place within Fletcher Park since 2005 these can be seen in Figure 3. These works are discussed in detail in section 7.

Flora

From existing information and site work undertaken in 2010 by ENV Australia, a species list has been compiled for Fletcher Park and is included in Appendix D. The site is known to contain 156 species, comprised of 105 native and 51 introduced taxa.

Flora species of significance that occur in or nearby Fletcher Park and their current status are listed in Table 1.

Table 1: Flora and Vegetation of Significance

Species	Current Listing
Eucalyptus balanites	Declared Rare Flora protected under EPBC Act as Endangered and WC Act.
Diuris purdiei	Declared Rare Flora protected under EPBC Act as Endangered and WC Act.
Eucalyptus lane-poolei	Not threatened, considered to be poorly reserved.
Lomandra spartea	Not listed. Local significance only, population at northern or southern limit of the known geographic range.

In accordance with the Department of Environment and Conservation policy not to publish the exact location of populations of Declared Rare Flora, details on the location and management of these species have been included in Appendix B which will not appear in the public version of this document.

Introduced Flora (Weeds)

Weeds represent a major issue contributing to degradation of native bushland areas and can severely hamper native vegetation and devastate rehabilitation efforts if not managed correctly. These weeds require control to maintain the natural integrity of bushland.

In an effort to minimise damage caused to the Western Australian environment from weeds, the then Department of Conservation and Land Management was commissioned by the Natural Heritage Trust Fund to develop an Environmental Weed Strategy for Western Australia. The Strategy (CALM 1999) contains criteria for the assessment and ranking of weeds in terms of their environmental impact on biodiversity. These criteria are as follows:

- **Invasiveness –** ability to invade bushland in good to excellent condition or ability to invade waterways.
- **Distribution** – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world.
- **Environmental Impacts** – ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community.

The rating of each weed is determined by the following scoring system:

- **High** - a weed species would have to score yes for all three criteria. Rating a weed species as high would indicate prioritising this weed for control and/or research i.e. prioritising funding to it.

- **Moderate** -a weed species would have to score yes for two of the above criteria. Rating a weed species as moderate would indicate that control or research effort should be directed to it if funds are available, however it should be monitored (possibly a reasonably high level of monitoring).

- **Mild** – a weed species scoring one of the criteria. A mild rating would indicate monitoring of the week and control where appropriate.

- **Low** – a weed species would score none of the criteria. A low ranking would mean that this species would require a low level of monitoring to be announced.

- **To Be Announced (TBA)** – a weed species meeting none of the criteria due to not enough information being known about the species.

Table 2 below contains the weed species identified during the field survey (carried out on 5 May 2010), and species found by the City of Armadale in 2008 during their weed mapping, with their ratings and criteria according to the Environmental Weed Strategy for Western Australia (CALM 1999). Weeds are further discussed in Section 6.2 and Figures 6a and 6b. Appendix E provides further information on the weed populations found in the Park.

Table 2: Weed Species Classification in the Environmental Weed Strategy for Western Australia

Taxon	Common Name	Criteria			
		Rating	Invasiveness	Distribution	Impacts
**Ehrharta calycina*	Veldt Grass	High	Yes	Yes	Yes
**Eragrostis curvula*	African Lovegrass	High	Yes	Yes	Yes
**Freesia hybrid*	Freesia	High	Yes	Yes	Yes
**Homeria flaccida*	One Leaf Cape Tulip	High	Yes	Yes	Yes
**Arctotheca calendula*	Cape Weed	Moderate	Yes	Yes	-
**Avena barbata*	Bearded Oat	Moderate	Yes	Yes	-
**Briza maxima*	Blowfly Grass	Moderate	Yes	Yes	-
**Cynodon dactylon*	Couch	Moderate	Yes	Yes	-
**Cyperus eragrostis*	Umbrella Sedge	Moderate	Yes	Yes	-
**Ehrharta longiflora*	Annual Veldt Grass	Moderate	Yes	Yes	-
**Gladiolus caryophyllaceus*	Wild Gladiolus	Moderate	Yes	Yes	-
**Gomphocarpus fruticosus*	Cotton Bush	Moderate	Yes	Yes	-
**Ursinia anthemoides*	Ursinia	Moderate	Yes	Yes	-
**Watsonia meriana*	Watsonia	Moderate	-	Yes	Yes
**Hypochaeris glabra*	Smooth Cat's Ear Flat Weed	Moderate	Yes	Yes	-
**Pennisetum clandestinum*	Kikuyu Grass	Moderate	Yes	Yes	-
**Solanum nigrum*	Black Berry Night Shade	Moderate	Yes	Yes	-
**Paspalum dilatatum*	Paspalum	Moderate	Yes	Yes	-

Taxon	Common Name	Criteria			
		Rating	Invasiveness	Distribution	Impacts
**Chamaecytisus palmensis*	Tagasaste	Mild	Yes	-	-
**Dittrichia graveolens*	Stinkwort	Mild	-	Yes	-
**Melinis repens*	-	Mild	-	Yes	-
**Oxalis pes-caprae*	Soursob	Mild	-	Yes	-
**Phytolacca octandra*	Ink Weed	Mild	Yes	-	-
**Oxalis glabra*	-	Mild	Yes	-	-
**Lathyrus tingitanus*	Perennial Sweet Pea	Low	-	-	-
**Oxalis purpurea*	Four O'Clock	Low	-	-	-
**Plantago lanceolata*	Ribwort Plantain	Low	-	-	-
**Acacia iteaphylla*	Flinders Range Wattle	Low	-	-	-
**Citrullus lanatus*	Pie Melon	Low	-	-	-
**Conyza bonariensis*	Flaxleaf Fleabane	Low	-	-	-
**Ricinus communis*	Castor Oil Plant	Low	-	-	-
**Digitaria sanguinalis*	Crab Grass	Low	-	-	-
**Echinochloa crus-galli*	Barnyard Grass	Low	-	-	-
**Echium plantagineum*	Patersons Curse	TBA	-	Yes	Yes
**Schinus terebinthifolius*	-	TBA	-	-	-
**Trifolium angustifolium* var. *angustifolium*	Narrow Leaf Clover	TBA	-	-	-
**Rumex sp*	Dock	TBA	-	-	-

Plants may also be "declared" by the Agriculture Protection Board under the *Agriculture and Related Resources Protection Act, 1979*. Declared Plants are gazetted under 5 categories (P1 – P5), which define the action required. The category may apply to the whole state, districts, individual properties or even paddocks. If a plant is declared, all landholders are obliged to control that plant on their properties (Department of Agriculture and Food, 2007).

One declared plant species was found within Fletcher Park Bushland, *Echium plantagineum* (Paterson's Curse), which is listed as P1 for the whole of the State. Category P1 plants means the movement of this plant or its seeds are prohibited within the State. This prohibits the movement of contaminated machinery and produce including livestock and fodder. It is recommended that all vehicles are free of soil and vegetation before leaving the Park.

Recommendation

3. As opportunities arise participate in flora, fauna and fungi surveys within Fletcher Park.

4. Ensure that all vehicles leaving the Park are free of soil and vegetation.

3.3 FAUNA

Limited fauna surveys have been undertaken in Fletcher Park (see Section 4.1 for further detail). Whilst undertaking the horse impact study, the City of Armadale undertook a fauna monitoring program in 2007 and 2008. A camera trap was installed on a tree in Fletcher Park, designed to take photographs of fauna utilising the track beneath. The trap itself, known as the BEAST (Behavioural, Environmental Animal Surveillance Technology) consisted of a movement sensitive trigger and a cannon camera. The camera was in place for 46 nights between March 2007 and June 2008. Besides the recreational users of the Park, only feral animals were observed (Pers. Comm., P. Haro, City of Armadale). Table 3 contains the camera dates and observations.

Table 3: BEAST dates and observations

Date	Observations
20-26 March 2007	no animals
6-14 October 2007	1 fox
15-19 February 2008	1 cat, 1 rabbit on two nights
22-17 February 2008	no animals
12-16 March 2008	1 fox
6-9 April 2008	1 fox
30 May -3 June 2008	1 fox

Although no native fauna was observed during the 46 nights the BEAST was in operation, given the nature of the vegetation and its condition it is likely that native fauna do persist at the site. Species likely to inhabit or visit the site are as follows:

- Quenda *(Isoodon obesulus fusciventer);*
- Common Brushtail Possum *(Trichosurus vulpecular vulpecular);*
- Barking Gecko *(Nephrurus milii);*
- Common Scaly Foot *(Pygopus lepidopodus);*
- Motorbike Frog *(Litoria moorei);*
- Western Tiger Snake (*Notechis scutatus occidentalis*);

- Bobtail Lizard *(Tiliqua rugosa);*
- Forest Red-tailed Black Cockatoo *(Calyptorrhynchus banksii naso);*
- Brown Goshawk *(Accipiter fasciatus fasciatus);* and
- White-naped Honeyeater *(Melithreptus lunatus).*

For a more comprehensive list of potentially occurring species refer to Appendix F.

The Quenda (Southern Brown Bandicoot) is listed as occurring within Bush Forever site 264 (Government of Western Australia, 2000b), which encompasses Fletcher Park and is anticipated it would occur in Fletcher Park Bushland. The Quenda is listed as a Priority 5 species under the WC Act.

A survey undertaken by Birds Australia in 2006 (Cole, 2006) recorded 43 species of birds, 15 of which are identified as being of conservation significance within the Bush Forever study area (Government of Western Australia 2000b). The species of significance included mobile species such as the Forest Red-tailed Black Cockatoo (*Calyptorrhynchus banksii naso*), Brown Goshawk (*Accipiter fasciatus fasciatus*) and White-naped Honeyeater (*Melithreptus lunatus*). The Forest Red-tailed Black Cockatoo is listed as Threatened under the WC Act and vulnerable under the EPBC Act. The survey also identified that a number of the sedentary insectivorous species like thornbills and fairy-wrens would also utilise the adjacent bushland (Cole, 2006). A full list of the species identified in this survey can be found in Appendix F.

3.4 WETLANDS

Western Australia has a significant wetland resource providing a broad range of ecological, hydrological and economic values. The State's wetlands are subject to ongoing degradation and loss through direct and indirect impacts of clearing and development including groundwater extraction, and large-scale processes such as salinisation and climate change.

The following table describes the different management categories for wetlands.

Table 4: Wetland Management Categories and Objectives

Management Category	General Description	Management Objectives
Conservation	Wetlands which support a high level of ecological attributes and functions.	Highest priority wetlands. Objective is to preserve and enhance the existing conservation values of the wetlands, through various mechanisms including: Reservation in national parks, crown reserves and state owned land, Protection under Environmental Protection Policies, and wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate. The EPA urges that all CCW's and their buffers are fully protected.
Resource Enhancement	Wetlands which may have been partially modified but still support substantial ecological attributes and functions.	Priority wetlands. The ultimate objective is to manage restore and protect towards improving their conservation value. These wetlands have the potential to be restored to conservation category. This can be achieved by restoring wetland function, structure and biodiversity. Protection is recommended through a number of mechanisms. The EPA urges that all reasonable measures are taken to minimise the potential impacts on REW's and their buffers.
Multiple Use	Wetlands with few remaining important attributes and functions.	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare. The EPA urges that all reasonable measures are taken to retain the wetland's hydrological functions (including onsite water infiltration and flood detention) and where possible, other wetland functions.

EPA 2008

Existing Wetlands

Fletcher Park Reserve contains Conservation Category, Resource Enhancement and Multiple Use wetlands. All wetlands are of the palusplain geomorphic type, which are seasonally waterlogged flats. Table 5 lists the wetlands within Fletcher Park Reserve, these are illustrated in Figure 4.

Table 5: Wetlands within Fletcher Park Reserve

Unique Feature Identifier (UFI)	Management Category	Classification	Total Area (ha)	Area within Site (ha)
15120	CCW	Palusplain	6.33	5.48
15470	CCW	Palusplain	3.81	3.81
15118	REW	Palusplain	1.15	1.13
15457	MU	Palusplain	7312.11	11.41

Wetland Mapping

The species present within UFI's 15120 and 15118 and part of 15470 do not include those typically associated with wetlands, suggesting these areas are not wetlands. Bush Forever (Government of Western Australia, 2000b) lists species typically associated with both upland and wetland vegetation types within the Bassendean Dunes.

The main upland associations are low forests to low woodlands associated with a very diverse understorey. These broad units and associated dominant species are as follows:

- **Forests and Woodlands**: *Eucalyptus marginata, Eucalyptus todtiana, Corymbia calophylla, Allocasuarina fraseriana, Banksia attenuata, Banksia menziesii, Banksia illicifolia, Banksia grandis, Nuytsia floribunda* and *Acacia saligna;*

- **Shrublands:** *Adenanthos cygnorum, Bossiaea eriocarpa, Hovea trisperma, Leucopogon conostephioides, Daviesia physodes, Dryandra lindleyana* subsp *lindleyana, Petrophile linearis, Stirlingia linearis, Scholtzia involucrata, Calytrix flavescens, Conostephium pendulum, Gompholobium tomentosum, Hibbertia hypericoides, H. huegelii, Xanthorrhoea preissii* and *Acacia pulchella;*

- **Herblands:** *Phlebocarya ciliata, Lomandra* species, *Conostylis aculeata, C. juncea, Patersonia occidentalis, Dampiera linearis, Burchardia congesta, Drosera* species, *Stylidium bulbiferum, S. repens, S. piliferum;*

- **Sedgelands:** *Schoenus curvifolius, Lyginia barbata, Lepidosperma angustatum, Desmocladus flexuosus; and*

- **Grasslands:** *Austrodanthonia occidentalis, Amphipogon turbinatus.*

The current wetland mapping does not impose any restrictions on the Park. However the City of Armadale may wish to seek a modification to the DEC's *Geomorphic Wetlands Swan Coastal Plain* dataset to remove the wetland mapping from the areas within Fletcher Park that support the vegetation types listed above that are mapped as wetland. Figure 4 illustrates the areas of upland vegetation in relation to the Geomorphic Wetland mapping.

Recommendation

5. Seek a modification to the Department of Environment and Conservation's Geomorphic Wetlands Swan Coastal Plain dataset to remove wetland mapping from the areas within Fletcher Park that support upland vegetation types yet are mapped as wetlands.

3.5 DIEBACK

Dieback is a plant disease caused by a soil-borne water mould *Phytophthora cinnamomi*. The pathogen invades a plant's roots and stems reducing the plant's ability to transport water and nutrients, eventually leading to the death of the plant. Dieback has the potential to effect around 40% of native plant species in the South West of Western Australia and a number of domestic garden species. Dieback is spread through movement of the pathogen spores in the soil and also plant root to root contact. Human activity is the most common vector for the spread of Dieback through the movement of soil infected with the disease.

A portion of Fletcher Park was first surveyed for the presence of *Phytophthora cinnamomi* (Dieback) in 2000. The findings of this survey suggest that the absence of susceptible species in Fletcher Park and the scattered dead grasstrees indicate that dieback has infested much of the site (Ecoscape, 2002) (Figure 5). Glevan Consulting undertook a dieback assessment in 2006, which described Fletcher Park as a highly degraded site with scattered remnant vegetation. It is likely to be an old Dieback infestation, but the high levels of understorey disturbance and lack of indicator species, meant that the site was deemed uninterpretable (Glevan Consulting, 2006).

The City of Armadale has Dieback Policy (ENG 9 Managing Phytophthora Dieback) to minimise the spread of dieback. This policy applies to Fletcher Park, and includes strategies and procedures to reduce the likelihood of dieback spread.

In addition to the procedures and strategies detailed in Eng 9, the following is recommended:

- Maintenance of infrastructure. Vehicle movement areas should be maintained to continue to disallow vehicle entry into bushland (currently the car parking areas are boarded by post and rail fencing).

- External infrastructure such as fences and gates within the park should be annually inspected to ensure they are fit for purpose in restricting entry by unauthorised vehicles. Damaged or ineffective infrastructure should be upgraded as soon as possible.

3.6 RESERVE USAGE

Fletcher Park is zoned as Parks and Recreation in TPS 4, with equine recreation being the formal recreational use of the reserve.

The WRPC has been in operation for 34 years at Fletcher Park. It supports two main clubs, the Wallangarra Riding and Pony Club, and the Wallangarra Adult Riders. Only a portion of Fletcher Park is leased to the WRPC (Figure1). The Club reports the following participation details:

- The club supports 65 junior riders and 5 senior riders;

- 28 of the riders are from within the City of Armadale, 42 are from outside the City; and

- The Club now has a waiting list as grounds are at capacity.

The WRPC holds monthly club rallies as well as numerous special events and training days. Generally, 11 to 12 monthly club rallies are held throughout each year. The rallies attract 40 to 70 horses and anywhere between 100 to 150 people at any given time (ABV, 2010).

Three One Day Events (ODE's) are held per year. ODE's can have between 110 to 130 horses in attendance and 200 to 300 people. It is a possibility that ODE's may change to two day events due to very high demand leading to many riders missing out. Fletcher Park grounds are closed to all Pony Club members and the public for a period of one month leading up to each ODE. This gives the grounds a chance to rest before exposure to a high number of horses and riders utilising the grounds in one day (Pers. Comm., M. Barnesby-Jones, WRPC).

The grounds are hired out to adult riders groups, local breed associations, riding school operators, other Pony Club Association of Western Australia Clubs, etc throughout the year. These associations usually support between 10 and 50 horses depending on the event and between 20 and 100 persons. The grounds are available for casual use for WRPC members at any time (ABV, 2010).

Studies are currently being undertaken by the City to identify the current and future facility needs of the equestrian clubs within the City and the likely development options

to satisfy these needs (see Section 4.2 for more information). The expected outcome of these studies is the relocation of Kelmscott Pony Club to Fletcher Park. At the time of writing, negotiations were being undertaken between the clubs and the City into the management arrangements of the reserve and facilities. The resultant management arrangement will be appended to this management plan once complete.

Any additional usage by the Kelmscott Pony Club at Fletcher Park will be directed away from the bushland areas of the Park in order to protect the environmental values of the Threatened Ecological Community, Declared Rare Flora and riparian area. The number of events and participants using the cross country course within the bushland portion of the reserve will not increase above and beyond the current levels.

One outcome of the Equestrian Facilities Study (see Section 4.2) was the determination of required upgrades to the equestrian areas within the City. At the time of writing the City had submitted a Department of Sport and Recreation Community Sporting Recreation Facilitates Fund (CRSFF) 2011/12 grant application to upgrade the equestrian areas at Palomino Park and Fletcher Park. If the application is successful then the facilities to be upgraded at Fletcher Park will include installing a new storage shed, reconstructing the sand arena, upgrading the clubroom and toilets, upgrading the car park and upgrading the cross country course. The upgrade would need to be undertaken with due consideration of the principles of this management plan, with any proposed changes to be considered by the City of Armadale independently.

4 OTHER STUDIES

4.1 ANALYSIS OF VEGETATION SURVEY DATA FLETCHER PARK 2006 TO 2009

Given the high values of the conservation assets within Fletcher Park there has been concern that the vegetation may be affected by the presence of horses. As a response to this risk to the biodiversity values of the park, the City of Armadale has been undertaking botanical surveys to measure the potential impact of horses on the vegetation health. In 2005 the City of Armadale in conjunction with Greening Australia, began a study into the impact of horses on vegetation degradation and regeneration in the Park. This experiment closed one horse track and annually monitored changes in vegetation from 2006 to 2009. This same monitoring was undertaken on a track that remained open to horse use. The City of Armadale commissioned Astron Environmental Services in 2010 to statistically analyse the data collected to determine any impacts or significant changes to the vegetation from the track closure.

Specifically the objective of the survey was to determine if overall, horses are having an impact on species composition over time.

Method

Vegetation survey data for each year (2006 to 2009) was obtained by the City of Armadale using botanical surveys of replicated one metre quadrats. Three quadrats were surveyed in a transect perpendicular to one of two tracks within Fletcher Park. Access to one track was closed in 2006, while the second track remained open to the public and to the movement of horses. These two tracks were referred to as 'Closed' and 'Open' tracks. A total of six transects comprising three quadrats each was surveyed every year of the study for both Closed and Open tracks. Therefore, 36 quadrats were surveyed each year giving a total of 144 samples over the four years of survey.

Conclusion

Astron Environmental Services (2009) found that vegetation at the open and closed tracks within Fletcher Park, and at distances from track edges, did not vary significantly over time. Between years vegetation patterns within this survey have not changed significantly suggesting exclusion of horses and the public from one track has not resulted in significant changes in the vegetation between 2006 and 2009. The report concluded that overall, any effects of horses on the vegetation of the Open track in comparison to the Closed track were not significant in the years 2006 to 2009 (Astron Environmental Services 2006-2009). The report also recommended that the monitoring regime continues to enable the identification of changes to the vegetation that might be occurring slowly over longer time periods.

Recommendation

6. Continue the horse impact study until 2015 to further to enable the identification of any changes in vegetation associated with horse use that may occur over long periods of time.

4.2 CITY OF ARMADALE EQUESTRIAN CLUB FACILITIES NEEDS ASSESSMENT

The City of Armadale is expanding, with a population growth of 63,000 persons estimated over the next 20 to 30 years. This presents significant challenges in the provision of community facilities and services. The City of Armadale must plan strategically for the future of equestrian club facilities to ensure the optimum and most efficient use of the land is being made for the entire Armadale community (ABV, 2010).

There are currently three equestrian club venues within the City of Armadale, Palomino Park, Pries Park and Fletcher Park. The City of Armadale engaged A Balanced View (ABV) Leisure Consultancy Services (2010) to conduct the "Equestrian Club Facilities Needs Assessment and Feasibility Study". This two staged approach aims to identify the current and future facility needs of the equestrian clubs within the City of Armadale and the likely development options to satisfy these needs (ABV, 2010). This study was undertaken as a direct result of the need for the City to relocate the Kelmscott Pony Club and Kelmscott Adult Riding Club from their current location at Pries Park, and the need determine how the needs of this group can be met by other means.

It was established that by looking to the long term, the City of Armadale is set to lose much of its rural and semi rural zoned land west of the hills as it is replaced by urban development. The implications are that Armadale will become less amenable for keeping of horses, with the likely result being that horses and related facilities and services will gradually move further out from the expanding metropolitan boundary. Therefore, this needs analysis does not identify a greater need for equestrian facilities into the future; rather, it identifies a need for the optimisation of the current facilities provided, to reduce duplication of resources and improve operational viability (ABV, 2010).

Based on the research undertaken as part of the Needs Assessment study and current high usage levels at Fletcher Park, the study supports the need to retain Fletcher Park and one other facility known as Palomino Park for horse related recreation, into the foreseeable future.

During workshops held between the City and all of the affected pony clubs, it was determined that due to the apparent scheduling issues which would arise if there were to be five clubs using Palomino Park that the relocation of Kelmscott Pony Club to Fletcher Park be investigated.

ABV noted the following as weaknesses of Fletcher Park as an area to facilitate additional horse clubs:

- The highly sensitive bushland restricts the movements of the club;
- The grounds are generally in a poor condition (riding arenas need upgrading, the grass area is used above capacity, the sand arenas have tree root intrusion and are littered with gum nuts, fencing is also in need of repair and the wash down area exhibits poor drainage); and
- The grassed arena is difficult to maintain to satisfactory condition and requires substantial watering.

At the time of writing, the recommendations of the study were under consideration by council. If endorsed the City will be working in collaboration with the equestrian clubs towards the recommendations. With regard to Fletcher Park the study recommends that equestrian activity is supported and retained there but that the environmental sensitivity of the area is considered in any future management agreements with equestrian clubs using this area.

Future management arrangements

At the time of writing, negotiations have been occurring between the City and clubs regarding the relocation. Discussions have indicated that due to the complexity of lease arrangements the two pony clubs will be put under separate management arrangements. It is anticipated that if multiple clubs are utilising the reserve then a 'management committee' will be formed to over see the management arrangements and grounds maintenance. It is intended that any clubs using the reserve will abide by the stipulations of this management plan, and it will form part of any management arrangement. Discussions have been progressing on the responsibilities of items such as maintenance and grounds upkeep. The management arrangements will also ensure that if additional riders are to be accommodated at Fletcher Park, this would have to occur in areas away from the Threatened Ecological Communities and Declared Rare Flora. The number of events and participants using the cross country course within the bushland portion of the reserve should not increase above and beyond the current levels.

Once completed, the management arrangements will be documented and appended to this document.

5 OPPORTUNITIES AND CONSTRAINTS

5.1 THREATENED, DECLARED RARE AND PRIORITY FLORA

The locations of both *Eucalyptus balanites* and *Diuris purdiei* are known to both the City of Armadale and WRPC. Protecting DRF is a priority and hence a management response is required (see Section 6.1).

5.2 THREATENED ECOLOGICAL COMMUNITIES

Previous assessment indicates the presence of *Corymbia calophylla – Kingia australis* woodlands on heavy soils (Type 3a as described in Gibson et al, 1994) at Fletcher Park. Several additional examples of this TEC were identified in the field survey carried out in April 2010. Locations can be seen in Appendix B.

Discussions with Jill Pryde of the Species and Communities Branch of the DEC, suggests the DEC are interested in all the upland vegetation within Fletcher Park and believe that all of this is vegetation type 3a.

5.3 VEGETATION CONDITION

Disturbance within the site is relatively high due to the clearing history and the use for equestrian purposes (almost 80%) and associated weed invasion. The disturbance is high even though the site is fenced off from the public. In addition, the vegetation structure is largely fragmented and was therefore considered to range from Very Good to Completely Degraded condition as listed in Table 6 which should be viewed in conjunction with Figure 2.

Table 6: The Varying Conditions of the Vegetation within Fletcher Park and their Percentage Occurrence

Condition Rating	Area within Fletcher Park (ha)	Percentage within Fletcher Park
Very Good	1.27	6.7
Very Good – Good	1.31	7.0
Good	1.01	5.4
Good – Degraded	0.68	3.6
Degraded	6.04	32.0
Completely Degraded	8.53	45.3

The total area of Fletcher Park is 18.857 ha (source: https://www.landgate.wa.gov.au/foundationr2/enter_new_channel.do?new-channel-id=8).

The condition of the vegetation needs to be enhanced, through access management and rehabilitation efforts (see Section 6.7 and 7).

5.4 WEEDS

Environmental weeds are plants that establish themselves in natural ecosystems and modify natural processes, resulting in the decline of the communities they invade. Impacts on ecosystem function by environmental weeds include:

- Resource competition, as weeds often out-compete native species;
- Prevention of seedling recruitment of native species;
- Alteration to geomorphological processes, such as increased erosion;
- Changes to soil nutrient status;
- Alteration of fire regime, usually through increased fire frequency;
- Changes to the abundance of indigenous fauna due to less diverse habitat;
- Loss of genetic diversity;
- Loss of species diversity; and
- Changes to the structure of vegetation communities, often by the removal of the shrub layer or native ground covers.

The fire-weed cycle that is a primary cause of the degradation of bushland and loss of understorey species is particularly prevalent on the deep sands of the coastal plain. The shrubs, herbs and sedges are gradually replaced by weed species, notably grassy weeds as fire frequency increases. Grassy weeds have characteristics which enable them respond quickly to fires, and which support more frequent fire events, than many of the native perennial understorey shrubs. Some of the contributing factors to the fire-weed cycle are summarised below:

- Weed species are often advantaged by the burst of nutrients available immediately after a fire;
- Weed species, particularly grassy weed species, accumulate biomass rapidly,
- Increasing fuel loads to levels that will sustain fires;

- High growth rates of weed species allows them to out compete native species;
- Grassy weeds, and many other weed species, are able to set seed within a single year;
- Grassy fuels have a different structure to shrubby fuels. The grasses have a fine, evenly spread structure, compared with the more heterogeneous, discrete structure of native understorey shrubs. This affects fire behaviour and rate of spread, particularly in the initial stages of a fire;
- Native seeder species require time between fires not only to set seed but also to replenish their seed stocks. This may take several years. Frequent fires deplete seed stocks, rapidly eliminating these species from the species assemblage; and
- Native resprouting species (i.e. species that have an underground lignotuber) can also succumb to frequent fires if fire recurs before the new growth has had time to harden.

The key processes that are likely to contribute to the spread of weeds within Fletcher Park include:

- Trampling by horses and people;
- Horse vehicles;
- Movement of weed seed, especially by vectors along the numerous tracks in the area; and
- Constant source of seeds and material from high density ongoing weed presence.

Both High Priority Environmental weeds and Declared Plants occur within Fletcher Park and are a constraint to maintaining or improving vegetation condition and effectively undertaking rehabilitation.

5.5 WETLANDS

The DEC encourages the development and implementation of a wetland management plan for all wetlands considered worthy of protection, with an aim of ensuring management will maintain, if not improve, the values of the wetland. This management plan incorporates wetland management plan recommendations.

It is not deemed necessary to prepare and implement a separate wetland management plan for wetlands mapped within Fletcher Park, as the wetland values can be managed through vegetation and access management strategies.

6 PLAN FOR MANAGEMENT

The main aim of this management plan is to protect the values of Fletcher Park Bushland. Overall the aim is to maintain and enhance the areas of native vegetation supporting a diverse range of species, which contribute to the local, regional and state environment in terms of the conservation, recreation and visual significance.

6.1 NATIVE VEGETATION AND FLORA

Fletcher Park Bushland contains large areas of regionally significant vegetation and conservation significant flora species. Therefore the objectives for native vegetation are to:

- Protect and maintain any Declared Rare Flora and Threatened Ecological Communities present; and
- Maintain and enhance all native vegetation within Fletcher Park Reserve.

Management

A spring Flora survey is recommended to determine the presence of any Priority listed species and to establish the extent of populations of *Diuris purdiei* within Fletcher Park Bushland. *Diuris purdiei* can only be surveyed during the spring that follows summer fire.

Buffers to DRF need to be determined (on a case by case basis) to ensure DRF are kept free of horse movements and pedestrian traffic. In 2007, a portion of the reserve area was excluded from the WRPC's lease and access from Eleventh Road closed, in order to restrict movement to areas in close proximity to *Diuris purdiei*.

The DEC has installed monitoring quadrats within Fletcher Park to determine the presence and monitor the TEC (see Section 3.2). This management plan recommends the City of Armadale write to the DEC indicating that the recent survey (5 May 2010) indicates that the TEC is more extensive than current data suggests.

Recommendations

7. As opportunities arise undertake a Spring survey following summer fire to determine the extent of *Diuris purdiei* throughout Fletcher Park;
8. Resident pony clubs appointed Environmental Officer to ensure DRF locations are kept free of horse movements. This can be carried out through educating new and existing members about the sensitive nature of parts of the bushland and by keeping tracks away from the plant;
9. CoA informs DEC of recent survey findings regarding TEC type 3a within Fletcher Park;

10. Undertake vegetation condition mapping in 2014.

6.2 WEED CONTROL

The objectives for weed control in Fletcher Park are to:

- Identify and control existing weeds with the highest priority for control;
- Prevent introduction of additional weed species;
- Prevent further encroachment of weeds into bushland areas;
- Minimise any detrimental effects of the weed control programme on the native biota; and
- Integrate the weed control programme with bushland restoration programmes.

Weed Control Strategy

Prioritisation

Weeds in Fletcher Park Bushland must be prioritised for control as individual weed species have different levels of invasiveness and impact on natural ecosystems. Appendix E documents the Weed Strategy developed for Fletcher Park. There are four forms of weed prioritisation:

1. Species-led control;
2. Site-led control;
3. Resources-led Control; and
4. Threatened Species / Communities led Control.

Fletcher Park Bushland will require a combination of all four forms of weed control due to different levels of infestation, vegetation communities and weed species. Site-based control is required where relatively small and discrete areas are degraded and where removing weeds may produce bare slopes that are unstable and aesthetically unpleasant. Species-based control is appropriate for highly invasive species.

1. Species-Led Control

Species-led control is a proactive strategy to prevent introduction, establishment, survival, reproduction and dispersal of an emerging weed before it becomes a major problem within the study area. Initiatives should be undertaken at a local level to prevent the introduction and spread of weed species through control of degrading processes.

Generally, it is recommended that species-led control be undertaken prior to site-led control.

Weed species were placed in this category if they:

- Have small populations;
- Are relatively easy to remove;
- Have a high potential to spread and therefore become a problem in the future; and
- Are located in areas that will not be continually reinfested from the soil weed seed bank or from surrounding areas.

These weed species should be tackled on a weed by weed basis, using the guiding principles described in Section 3.2.

Given the high diversity of weed species present, the species –led discussion below focuses only on highly invasive weeds, which can exclude native species that are difficult to control. It should be noted that some weeds occurring in the cleared areas will not be included in Species-led control methods even though they have a high rating. The cleared areas are used continuously by the WRPC, meaning weed control would be futile.

High Priority and Moderate Priority weed species in Fletcher Park Bushland are shown below in Table 7 and Figures 6a and 6b.

Table 7: High Priority and Moderate Weed Species within Fletcher Park Bushland.

Taxon	Common Name	Rating	Extent in Fletcher Park
**Ehrharta calycina*	Veldt Grass	High	Along length of park adjacent to Railway line, between Moore Street and Eleventh Road.
**Eragrostis curvula*	African Lovegrass	High	Some dense isolated patches throughout the Park, however, also found throughout entire area of the park
**Freesia hybrid*	Freesia	High	Isolated patch adjacent to good condition bushland
**Homeria flaccida*	One Leaf Cape Tulip	High	Located in the strip of bushland at the southern end of the park
**Arctotheca calendula*	Cape Weed	Moderate	Isolated patches throughout the park
**Avena barbata*	Bearded Oat	Moderate	See Figure 6a
**Cynodon dactylon*	Couch	Moderate	Three isolated patches in northern most bushland
**Cyperus eragrostis*	Umbrella Sedge	Moderate	Spot location only
**Ehrharta longiflora*	Annual Veldt Grass	Moderate	Spot location
**Gladiolus caryophyllaceus*	Wild Gladiolus	Moderate	Isolated patch within creekline

Taxon	Common Name	Rating	Extent in Fletcher Park
**Gomphocarpus fruticosus*	Cotton Bush	Moderate	Isolated patches in northern most bushland and along eastern boundary either side of Moore St.
**Hypochaeris glabra*	Smooth Cat's Ear Flat Weed	Moderate	Isolated patches throughout the Park
**Pennisetum clandestinum*	Kikuyu Grass	Moderate	Covers most of the area of Fletcher Park adjacent to Eleventh Rd as well as two isolated patches near the entrance gate.
**Solanum nigrum*	Black Berry Night Shade	Moderate	Small isolated patches throughout the Park
**Paspalum dilatatum*	Paspalum	Moderate	Spot location only
**Ursinia anthemoides*	Ursinia	Moderate	Isolated patch near south east boundary in ODE area.
**Watsonia meriana*	Watsonia	Moderate	Isolated patch south of Moore St next to western boundary line

Initial weed control should focus on weeds which have small populations and can be easily controlled through methods such as hand pulling and sponging or wiping leaves with herbicide. Weed densities are illustrated in Figures 6a and 6b. The control methods and the nominated delegate responsible for the management of the individual weed species are illustrated in Appendix E.

The cost for Weed Control by a commercial contractor for the entire area of Fletcher Park is provided in Appendix G.

2. Site – Led Control

Site-led control focuses on identifying areas that require weed control to maintain their ecological and commercial values. Generally, it is recommended that site-led control be undertaken after control of weeds recommended for species-led control. Weed species can be placed in this category if they:

1. Have wide-spread and well-established populations;

2. Require concentrated and/or long-term efforts to remove; and

3. Are highly detrimental to ecological functions of bushland if left unchecked.

Site–based weed control should always be undertaken in conjunction with revegetation to prevent reestablishment of invasive or disturbance-related weeds. Site led control is appropriate for much of the bushland in Good to Degraded condition and along the seasonal creekline.

Given the degraded nature of much of the study area a combination of species-led and site-led control will be appropriate, for example removal of Wild Gladiolus in the seasonal creekline.

3. Resource–Led Control

Resource-based weed control is recommended where a particular species is known to be within a defined area, and thereby can provide a focus for community projects. A resource led approach matches volunteer and professional labour to the best possible weed control outcomes. For example, volunteers may be best suited to target small populations of highly visible weeds which are readily removed by simple manual or chemical methods and are ideal for essential follow up and monitoring. Professional contractors should be used where spraying or machinery is required.

Weed removal in the creek zone is recommended as a community based project.

4. Threatened Species/Communities led Control

This approach to weed control focuses on the ecological significance of threatened flora species or vegetation types. If a particular site is known to contain either of these, weed control in these areas becomes a priority to protect the ecological integrity of the site, and thereby promote the long-term survival of the species or community.

Declared Rare Flora species, *Eucalyptus balanites* (Cadda Road Mallee) and *Diuris purdiei* (Purdie's Donkey Orchid) and the TEC *Corymbia calophylla – Kingia australis* woodland are recorded as occurring in Fletcher Park Bushland, and weed control should focus on minimising impacts of weeds on these values.

Guiding Principles for Weed Control

When undertaking weed control programmes, the primary guiding principle is to work from areas in the best condition to those in the worst condition, and all works should be undertaken in conjunction with a restoration strategy (Ecoscape, 2004). The vegetation condition map (Figure 2) has been used in preparing the map which shows priorities for rehabilitation (Figure 8) (see Section 7).

Using bushland condition to determining weed control priorities ensures that:

- Very Good - Excellent condition bushland is maintained;
- Good condition bushland is enhanced, moved closer to being in Very Good - Excellent condition, and prevented from deteriorating to Degraded condition bushland; and
- Degraded condition bushland is enhanced, moved closer to being Good or Very Good - Excellent condition, and prevented from deteriorating to Very Poor condition bushland.

The Degraded condition bushland areas are generally not suitable for targeted weed control in the absence of intensive rehabilitation works. Instead, weeds in these areas should be addressed within the context of a comprehensive restoration plan. As a portion of Fletcher Park is under management arrangements to the resident pony clubs, the areas

recognised as degraded are actively used for equestrian activities and will remain as is. Rehabilitation is not required in these areas whilst under the current use situation. However, it is the responsibility of the CoA to undertake weed control methods to maintain the grounds activities such as mowing and slashing the open areas.

Weed Control Action Plan

A general Weed Control Action Plan is shown in Table 8, based on the guiding principles and approaches outlined previously. It is provided as a general guide for determining the priority for weed control activities.

Table 8: General Weed Control Action Plan

Priority	General Procedures
Priority 1 Move to species-led control	Species-led control: 1. Select weeds for control on a species basis according to time of year and available resources. 2. For each weed species, use bushland condition maps to: • Start control efforts in Very Good-Excellent condition bushland • Move to Good condition bushland • Move to Degraded condition bushland The above represents primary weed control. Secondary weed control and long-term monitoring of weed populations will also need to be undertaken. Examples of weeds to target for Species-led control are: **Freesia hybrid, *Homeria flaccida, *Cyperus eragrostis* and **Gomphocarpus fruticosus* all of which are listed in Table 7.
Priority 2 Move to site led control	Site-led control: 1. Select sites suitable for site-based control. 2. Use bushland condition and weed distribution maps to: • Start control efforts in Very Good-Excellent condition bushland • Move to Good condition bushland • Move to Degraded condition bushland Depending on resources and time of year it may be necessary to undertake

Priority	General Procedures
	control of different site-led species, prior to moving to other areas. Again, the above represents primary weed control. Secondary weed control and long term monitoring of weed populations will also need to be undertaken. Examples of weeds to target for Site-led control methods are: **Freesia hybrid, *Watsonia meriana, *Hypochaeris glabra*
Priority 3 Move to resource-led control	Resource-led control: 1. Select sites suitable for resource-based control. 2. Use bushland condition and weed distribution maps to: • Start control efforts in Very Good-Excellent condition bushland • Move to Good condition bushland • Move to Degraded condition bushland Again, the above represents primary weed control. Secondary weed control and long-term monitoring of weed populations will also need to be undertaken.

Weed Control Methods

Control options for environmental weeds include:

- Controlling ecosystem degradation processes;
- Manual control; and
- Herbicides.

These options are further discussed below.

Controlling Ecosystem Degradation Processes

Controlling degradation processes that increase ecosystem vulnerability to weeds is often the most effective way to control weeds in the long term. The main degrading processes in the study area are caused by disturbance (mostly inappropriate access), plant pathogens and fragmentation.

Degradation processes are controlled through weed control and ensuring no new pathways or tracks are established through the bushland and people using the park utilise existing tracks only. This is further discussed in Section 6.6 and relates to Recommendation 26.

Manual Control

Manual control refers to the physical removal of the weed by mechanical or human effort. This includes hand weeding, pulling and digging or grubbing out and relates to small infestations of weeds (Dixon and Keighery, 1995). It is often the most expensive form of weed removal but it is generally the most appropriate method in circumstances where there are small infestations in largely natural bush areas. It is particularly valuable for small infestations, where chemical control is inappropriate and resources available.

Manual control needs to be carefully managed in order to avoid gross soil disturbance which can encourage further weed infestation. Hand-pulling of weeds can be as time-efficient as spraying where low numbers exist in a localised, well-vegetated area of bush and in these situations should be given priority over herbicide spraying.

Appendix E lists priority weed species and suggested removal and control methods.

Herbicide Control

The application of herbicides is often the most cost-effective method for weed control and a wide range of herbicides are available for different weed species. It is important that herbicides should always be used strictly in accordance with directions on the label and their application must be undertaken by personnel trained and licensed in the use of herbicide chemicals in public open spaces. Weeds in the bushland portions of Fletcher Park should only be spot sprayed to reduce the impact of herbicide application on the surrounding native vegetation. Recommended weed control techniques for the weeds occurring in Fletcher Park is found in Appendix E.

Post-fire Weed Management

Following fire, weed species have an opportunity to increase in density and abundance. Ongoing weed management must also include post-fire weed management to break the fireweed cycle. Training should be provided to staff carrying out these duties, or specialist bush regenerators employed in order to achieve the desired outcome without compromising the ability of the bushland to regenerate. The post-fire environment is susceptible to further damage, and weed control works should be undertaken at a time that will give the vegetation the greatest chance of successful regeneration.

Plan for Management

- If the fire occurs in early summer, weed control should be carried out three months after a fire to target those weed species which resprout after fire (see Appendix E);

- After later summer fires, inspections should be carried out at four, six and eight weeks after the fire in order to assess the most appropriate interval at which to carry out weed control which will be determined by weather;

- The affected area should be monitored and, if necessary, a follow-up treatment should be applied; and

- As with all weed control programmes in natural areas, it should be linked to a regeneration programme. Assessment of individual situations is required to determine the needs for each site.

Monitoring and Evaluation

Monitoring and evaluation are key actions that need to be undertaken during weed management to measure the success of control strategies. Performance indicators have been recommended below to objectively assess the success of weed control strategies. This will not only contribute to accountability where public funds are involved, but also provide a mechanism for modifying the strategy and maintaining its flexibility.

Monitoring

When monitoring site specific projects, the following strategies are suggested:

- Establish monitoring quadrats in areas subject to weed control programmes to record the effectiveness of control methods. Monitoring quadrats should be established in those areas where a result is expected, for example in those areas of good condition bushland and the seasonal creekline;

- For species-led control – monitor effectiveness of control of discrete weed populations or patches, including presence or absence, and, if present, the degree of new infestation. Species to target are those listed in Table 7;

- For site-led control – establish monitoring quadrats and survey and record annually. Species to target for site-led control are those located within the seasonal creekline and in or near to a TEC ; and

- Monitor quadrats for establishment of new weed species when undertaking weed mapping.

The overall extent and dominance of weeds is also measured indirectly through bushland condition mapping. Mapping using the same scale should be repeated every three years to provide an overall measure of the effectiveness of weed control and bushland restoration.

Performance Criteria

In order to determine the effectiveness of any weed control programme, there needs to a method of determining success and ongoing progress. The following are appropriate performance criteria:

- Removal of three priority weed species (i.e. High priority weeds such as **Homeria flaccida *Freesia hybrid* and **Arctotheca calendula*) from the targeted areas over the next five years; and

- Reductions in the area of priority weed infestations such as **Gomphocarpus fruticosus*, by 5% over 5 years.

Recommendations

11. Undertake ongoing prioritised weed control using the strategies outlined in this management plan;

12. Undertake monitoring to determine the effectiveness of weed control;

6.3 FAUNA

The site functions as an ecological link between Fletcher Park and Lambert Lane. Following revegetation and rehabilitation it is anticipated that some fauna species may also return to the area.

The following objectives are proposed to manage fauna onsite:

1. Create wildlife linkages through the rehabilitation of degraded areas of vegetation; and

2. Promote fauna habitat through revegetation and rehabilitation of remnant vegetation.

Revegetation of the Site (as discussed in Section 7) will provide vegetation cover, to enhance habitat values and encourage fauna to the site. Plantings to create areas of dense vegetation clusters will provide cover for resident and mobile animals.

Recommendations

13. Promote habitat for native fauna through rehabilitation efforts;

14. Maintain fencing around the reserve to reduce opportunities for unauthorised vehicle access will contribute to maintaining fauna habitat;

Introduced Fauna

Opportunities for the effective control of exotic fauna such as foxes and cats is limited. The use of poison bates such as 1080 is inappropriate in this area, although Pindone baiting to control rabbits could be undertaken. Prior to the undertaking of any rabbit, fox

or cat control measures in the Park, the current population of these species and an assessment of their potential impact on the Park should be undertaken.

As foxes and cats are widespread throughout the Perth Metropolitan Area, control of introduced fauna would need to be undertaken strategically and be ongoing. It is recommended that without further data on the population dynamics of the introduced fauna in the Park control strategies are not appropriate.

A number of feral honey bee hives have been found within the reserve, one near the club house and at least one within the bushland area near the stream. Bees are known to take over tree hollows which native animals and birds, such as the Forest Red-tailed Black Cockatoo, may use.

Recommendations

15. As opportunities arise participate in introduced fauna monitoring within Fletcher Park.

16. Undertake feral honey bee control within the Park.

6.4 DIEBACK

It appears only a portion of Fletcher Park has been assessed for dieback previously, with indications that most of the northern portion of the Park is infested with Dieback.

Management Actions

The City of Armadale has a Dieback Policy, ENG 9 Managing Phytophthora Dieback, to minimise the spread of Dieback in bushland areas. Table 9 contains Phytophthora Dieback Management Procedures for Bushland Reserves as set out in the Guidelines for Local Government and modified for application to Fletcher Park (Dieback Working Group, 2000).

Table 9: *Phytophthora* Dieback Management Procedures for Fletcher Park Bushland

Management	If a *Phytophthora* Dieback Management Plan has been completed for the Bushland reserve, then the recommendations should be implemented.
Timing	Activities such as fire break maintenance, slashing and removal of woody weeds to occur in dry soil conditions i.e. scheduled between November and March and postponed during and following rainfall
Bushland Restoration Activities	Weeding – If weeds are being manually removed, they should be immediately placed in a container, so plant material or soil is not dropped into other parts of the reserve. Revegetation • Purchase plants from nurseries with Wholesale Accreditation from the Nursery Industry Association, or nurseries with excellent hygiene procedures. Community groups completing revegetation activities to be advised to do the same. • If using mulch, ensure that it has been well composted (the heating part of composting kills *P. cinnamomi*).

Access	No new tracks should be created within the bushland (Figure 8 details current tracks). Minimise the number of tracks in Bushland reserves, and ensure that they have hard, dry and well drained surfaces. Avoid entering bushland areas and stay on the designated tracks when soil is wet and muddy. Visitors to bushland reserves are to ensure that their footwear is free of mud and soil before entering and leaving the Park. Horses should have hooves brushed down at a designated area before entering and leaving the Park, this also prevents the spread of weeds. The brush down area should be signposted and located near the horse holding yard.
Fire Protection Activities	Mow, slash or use herbicide on firebreaks, rather than plough or grade. The location of the firebreaks can be viewed in Figure 7.
Soil Movement	If soil, gravel, sand is to be imported into a bushland reserve, these materials are to be sourced from a supplier who is accredited by the Nursery Industry Association to ensure they are free of *P. cinnamomi*. Do not dump plant material or soil in bushland reserves.
Vehicles and Tools	All machinery and vehicles (including small tractors, ride on mowers, slashers and utes) to be free of mud and soil on tyres, mudflaps, body and under body when entering a bush land reserve, when moved into *P. cinnamomi* free areas, and when moved from one bushland reserve to another. All tools and equipment (including shovels, spades, trowels etc) to be free of mud and soil when entering a bushland reserve, when moved into *P. cinnamomi* free areas and when moved from one bushland reserve to another.
Water Management	Any water used in bushland reserves to be from scheme or bore supply, or sterilised Do not discharge drainage water into bushland reserves
Communication	A sign communicating these dieback principles shall be erected at the Park entrance (see Section 6.8 and recommendation 40.

Recommendations

17. Implement procedures within the City of Armadale's Dieback Policy, ENG 9 Managing Phytophthora Dieback and this management plan;

18. Designate a brush down area for horses to remove traces of infested soil before leaving the Park.

6.5 FIRE MANAGEMENT

This fire management plan proposes a strategy to ensure that all fires that occur in Fletcher Park may be controlled in a manner that protects life and property and meets the conservation objectives of the Park.

Bush fire hazard can be mitigated by: reducing fuel loads in bush areas (e.g. by modifying fuel zones, lessening scrub and leaf litter by chemical or mechanical means, or using controlled burns); maintaining fire breaks and providing adequate separation distances between buildings and bush fire fuel areas (Fire and Emergency Services Authority & Western Australian Planning Commission, 2010). Fire management should focus on prevention, with fire fighting capability a second line of defence.

The fire management objectives for Fletcher Park are:

- To protect human life and property from harm,
- To maintain the risk posed by wildfire to adjoining properties at an acceptable level,
- To protect and conserve the environmental values of the bushland,
- Preserve ecological and evolutionary processes through appropriate fire management techniques, and
- To observe statutory obligations associated with bushfire management and control.

The primary fire management technique used within the Park is the maintenance of appropriate fire access tracks (shown in Figure 7) and adequate management of the fire risk.

Fire History

There is limited fire history for Fletcher Park, with only two known fires documented in the past 10 years. A small area at the southern end near Eleventh Road, approximately 5000 m^2 in size, was burnt as a result of a wildfire in 2004. In 2005, a controlled burn was undertaken in a small area to the west of 53 Mitchell Street.

Thirteen farm style properties occur immediately to the east of the park, a brickworks facility abuts the north-western edge and a railway line creates a buffer for properties to the west. Facilities within the Park such as the club house would be vulnerable to fire within the Park.

Fire Access Tracks and Breaks

Fire access tracks allow for emergency vehicles to gain access throughout the reserve and allows rapid response to fires if they occur. The fire access tracks in Fletcher Park have been named Emergency Service Vehicle Access Tracks and are illustrated in Figure 8. It is recommended that the adequacy of these tracks be regularly assessed by the City of Armadale. The Emergency

Services Vehicle Access Tracks should be considered to be a strategic firebreak. It is anticipated that new firebreaks around the perimeter of the reserve will only be created if deemed necessary by the City of Armadale for property and life protection purposes.

The Emergency Services Vehicle Access Tracks should be maintained to enable access by emergency services vehicles and be 3 m wide with a 4 m high clearance. Overgrown vegetation may be trimmed to the existing width in accordance with the *Bush Fire Control Act*. Maintenance should only be undertaken by the City of Armadale.

The Public Transport Authority maintains a 3 m fire break adjacent to almost the entire length of the reserve from Eleventh Road to the northern portion of the Park and a 5 m firebreak to the west of Fletcher Park immediately adjacent to the railway line. The presence of these fire breaks also act to protect the Park and surrounding properties.

Access into the Park can be achieved through 5 gates; 3 off Moore Street, one off Stone Street and one off Mitchell Street. The gate at the end of Moore Street is duel-locked with a City of Armadale lock and a WRPC lock. Arrangements should be made to ensure the City of Armadale Parks and Reserves Department have a WRCP key to the property to open all locks in case of an emergency situation. Any new clubs accessing the reserve under a management arrangement will also need to be provided with adequate access to the reserve.

The track leading from Stone Street gate fords the creek near the north-western end of the Park, and so may not be suitable for tankers although fast access four wheel drives should have no difficulty with access. Access across the creek in areas other than the ford would be difficult for fast attack vehicles and impossible for tankers. The large irrigated oval is suitable for a helicopter landing (Ecoscape, 2002).

There has been some concern from the neighbouring properties to the south of the site regarding a heightened fire risk to landowners due to the bushland being too close to the fence line. The City of Armadale will need to undertake a risk assessment to establish if a controlled burn or rather a mosaic type burn is required along fence lines to reduce this risk.

Fuel Reduction

Fuel load levels within Fletcher Park should be periodically accessed as part of the overall City of Armadale bushfire maintenance program. Where fuel loads are deemed in excess of safe levels by the City of Armadale, a cool control burn undertaken in a mosaic pattern should be considered. Ongoing weed control must also be undertaken to reduce fuel levels.

Weed Reduction

Weeds, particularly annual grassy weeds, increase the fire risk within Fletcher Park in a number of interrelated ways, including:

- Forming a fine-textured fuel which is highly flammable;

- Producing a high fuel load annually depending on climate and growth rate. Native plants take much longer to reach the same fuel levels;
- Forming a continuous fuel bed, permitting a fire to spread quickly. Native plants usually have gaps between them which act to slow down the spread of fire; and
- Creating a very hot fire at ground level.

Weed cover within the Park is variable due to the fragmented nature of the bushland and the large cleared areas used by the pony club. Grasses such as *Erharta calycina, Briza maixma* and *Avena barbarta* are highly flammable and increase the fire risk and fuel loading in the reserve. Annual weed control programs to reduce the incidence of grassy weeds in bushland areas, and the regular mowing of turf areas should be undertaken to keep the fuel risk to a minimum.

Fire Management Plan

The Fire Management Plan prepared for the Fletcher Park Bushland in 2002 by Ecoscape is superseded by this management plan and the City's internal fire management procedures and policy.

Recommendations

19. Emergency vehicle assess tracks should be maintained as described in this management plan. No new access tracks should be created unless deemed necessary for safety purposes;
20. Undertake fuel reduction activities by keeping grassed areas mowed and by annually controlling grassy weeds in bushland areas;
21. Undertake fuel load assessments of the bushland areas within Fletcher Park, consistent with the City of Armadale fire maintenance program;
22. Undertake cool mosaic control burns if deemed necessary for safety.

6.6 WALLANGARRA RIDING AND PONY CLUB

Management of Horse and Club Activities

It is imperative that all existing members and any new members be made aware of the significant ecological vales of the Fletcher Park Bushland. Currently new members of the club are issued with an information package that explains the importance of the vegetation. The club also informs all members and guests at events the importance of the bushland through public announcements, newsletters and events programs.

The Wallangarra Riding and Pony Club (WRPC) have an established committee made up of members and friends who have elected at the Annual General Meeting. The purpose of the committee is to ensure that the club is run safely and in accordance with the Pony

Club Association of Western Australia guidelines. The committee oversee the day to day running of the club, which includes organising the rallies, maintenance and improvement of the club grounds, payments of bills, organising and running fund raisers and generally making sure that its club offers its members a well rounded program (WRPC, 2010).

Recommendations

23. A log of all environmental related tasks undertaken by the resident pony clubs and the City of Armadale will be kept. This log will be provided to the City on a bi-annual basis for inclusion into the City's record system.

24. Resident pony clubs management committee will appoint one of their members to be responsible for liaising with the City on environmental management of the Park and environmental aspects of the lease that have been acknowledged in this plan (See section 2.1) and protection of DRF and TECs. The resident pony clubs management committee Environment Officer is to be cognisant of, and ensure all activities are consistent with, this management plan.

25. When each Environmental Officer is appointed the resident pony clubs management committee will inform the City of Armadale of the name of the Environmental Officer and provide the city with their contact information.

Tracks and Jumps

In discussions with WRPC it was understood that for a Pony Club to hold an events or cross country type course the grounds need to be of a size large enough to provide the length needed for the course. WRPC have provided four colour coded mud maps (Appendix H). These mud maps are provided to persons participating in the cross country competition each ODE. The maps are colour coded to represent the grades of difficulty. The maximum length, grade B, is 2.26 km. Grade B is the highest grade available to participants of WRPC. WRPC have also indicated that the cross country course is rotated for each ODE so the same tracks are not used continually. The Eventing Series Maps are provided in Appendix H.

The City of Armadale has provided locations of the WRPC tracks and jumps to remain open within the bushland (Figure 8). The length of jumps tracks was calculated and the number of jumps tallied are as follows:

- Length of tracks is approximately 2.38 km; and
- There are 30 jumps throughout the cross country course.

Tracks are numerous creating many small fragments of bushland. The impact of tracks is that they can continuously widen if no hard edges are installed. This can result in increasing levels of degradation of surrounding bushland.

To ensure the bushland values are not further impacted on my equestrian use, it will be written into the WRPC's management arrangement that the number of events and number of horses using the bushland portions of the reserve will not increase from the current 2010 levels. Any additional clubs that may be using the reserve will also be restricted from entering the bushland portion of the reserve with their horses or vehicles and from using the cross country infrastructure. This restriction will also be written into any management arrangements for these clubs. Levels of usage of the reserve by the pony clubs should be provided on an annual basis to the City of Armadale to be included in the City's record system.

As track use by the WRPC is rotated between events, the closure and ultimate rehabilitation of many of the small tracks is recommended to maintain the values and integrity of the sensitive bushland.

This management plan has provided a map of the tracks which have been agreed by the City of Armadale officers and WRPC to remain open within the bushland (Figure 8). The total length of tracks recommended for closure and rehabilitation is 704 m approximately 0.14 ha. A number of jumps no longer required along the tracks to be closed will need to be removed. Horse jumps within the tracks to be closed and rehabilitated should be removed. Figure 9 shows the recommended track closures.

The tracks indicated as horse tracks are to be maintained to the current width (generally 1.5 metres) with the pruning of overhanging branches. Where vegetation is naturally occurring or naturally regenerates within the 1.5 width shall not be removed without the permission of City of Armadale and following application to the Department of Environment and Conservation under the *Environmental Protection Act.* Emergency services access tracks identified within the Reserve (Figure 8) should be considered to be a strategic firebreak and no new firebreaks around the perimeter of the reserve should be created. These tracks should be maintained to enable access by emergency services vehicles and should be 3 m wide with a 4 m high clearance. Overgrown vegetation may be trimmed to the existing width in accordance with the *Bush Fire Control Act*. Maintenance should only be undertaken by the City of Armadale.

Track rehabilitation is further discussed in Section 7.

To prevent Tracks from eroding and encroaching on native vegetation, it is recommended that the need to install a substrate, such as river sand to the cross country tracks within the bushland be investigated by the CoA and the resident pony clubs.

Outcomes of the vegetation survey monitoring occurring within the bushland area of the Park are unknown. Monitoring will be undertaken for a further five years as recommended by the statistical study undertaken in 2009, after which time all of the data collected will be statistically analysed again to determine if horse use in this area is having an impact on the vegetation. The use of this area would then need to be reconsidered in light of any findings.

It is recommended that options for relocating the cross country course within the environmentally sensitive bushland area be investigated and appropriate planning be undertaken if this area is not able to be used for this activity in the future. One such option for relocation is to upgrade the degraded area between Moore Street and Mitchell Street. This upgrading may include revegetation, surfacing of tracks and increasing the height of the land by adding fill to mitigate water logging of this area. If this relocation was to occur it could take a number of years to upgrade this area to an appropriate, usable standard, and as such should be investigated early in the planning process.

Recommendations

26. No further tracks within the bushland areas are created.
27. Tracks shown in Figure 9 to be closed and rehabilitated.
28. Investigate the need to install a substrate, such as river sand, to the tracks to remain open within the bushland.
29. Remove unnecessary jumps within the tracks to be closed and rehabilitated.
30. Resident pony clubs to provide statistics on horse usage to the City of Armadale annually.
31. Investigate options for relocating the cross country course within the environmentally sensitive areas to the area between Mitchell St and Moore St, including revegetating degraded areas.

6.7 ACCESS CONTROL AND FENCING

There are five main gates to the park:

1. The main entrance at the end of Moore Street;
2. Off Moore Street road verge on the right and left;
3. End of Stone Street, at the northern end of the Park;
4. At the end of Mitchell Street.

All five gates are kept locked. The WRPC has access via locks from all three gates. The City of Armadale has a lock on the gate at the end of Moore Street which is duel locked with the WRPC lock. The City of Armadale does not have a key to WRPC locks and in the past this has caused problems with access for contractors for the City. It is recommended at the City is provided a key to the WRPC lock to avoid this in future. This situation may change due to the changing management arrangements; however arrangements should

be made to enable the City and the resident pony clubs access the necessary sections of the park.

Currently the main access point to the reserve off Moore Street is along the firebreak on PTA land. At the time of writing the City is in the process of negotiations with the PTA to lease the section of land that leads into the Park from the end of Moore Street. Depending on the outcome of discussions, an alternative main entrance to the Park may be required to be established.

Due to the sensitive nature of the bushland within the Park, the current access gates are deemed sufficient, no further access points are required and distribution of keys should be restricted to resident pony clubs and City of Armadale representatives.

Illegal vehicle access off Eleventh Road has been an issue for the City and for the Public Transport Authority (PTA) in adjoining lands. In 2007 a fence was erected across the track leading onto Eleventh Road and in 2008 boulders were placed across the track to discourage the fence being cut. While this management technique has gone a long way to reducing the incidences of illegal access, observations of access by off-road motorbikes and horses have still been noted on the firebreaks on the PTA lands immediately adjacent to the Park. As this PTA land is an active rail reserve access by the general public is not accepted by the PTA.

The track leading from Stone Street gate fords the creek near the western end of the creek. Access within the Park is via several interconnected horse trails. These trails are generally clear of debris and vegetation through frequent use. The tracks indicated as horse tracks in Figure 8 are to be maintained to the current width (generally 1.5 metres) with the pruning of overhanging branches. Where vegetation is naturally occurring or naturally regenerates within the 1.5 width shall not be removed without the permission of City of Armadale and following application to the Department of Environment and Conservation under the *Environmental Protection Act* and the Commonwealth Government under the *Environmental Protection and Biodiversity Conservation Act 1999*.

Emergency services access tracks identified within the Reserve (Figure 8) should be maintained to a width of 3 m, with a 4 m high clearance. Overgrown vegetation may be trimmed to the existing width in accordance with the *Bush Fire Control Act*. Maintenance should only be undertaken by the City of Armadale.

Recommendations

32. The resident pony clubs provide a key to their locks to the City of Armadale property department;

33. Maintenance of existing tracks within the bushland portion of the reserve shall only be undertaken in accordance with this management plan and in compliance with the relevant legislation; and

34. The City of Armadale discusses opportunities with the Public Transport Authority (PTA) to discourage access off the firebreaks on PTA lands to the west of Fletcher Park.

6.8 6.8 CURRENT INFRASTRUCTURE AND FUTURE REQUIREMENTS

Current infrastructure within Fletcher Park includes the following (Figure 7):

Gates – There are five gates at Fletcher Park. Their locations are discussed in Section 6.7.

Fences – Fences exist around the perimeter of Fletcher Park. Bollards have been installed around the parking area adjacent to the northern portion of bushland in order to clearly define the two different areas.

Signs - Advisory signage within the Park consists of the wooden entry statement consisting of the name of the Park attached to the main gate and temporary track closure/rehabilitation work signs. A heritage plaque is positioned next on the road reserve adjacent to one of the gates off Moore Street.

Culvert – at one location along the stream in the northern portion of bushland has an existing culvert. This track is to remain open as the culvert ensures the horses do not damage the banks of the stream and create erosion while crossing over the stream.

An unmetered and unlicensed bore exists within the reserve which is used by the WRPC to water their grounds. This bore is currently not part of the City of Armadale allocation and as such is not monitored for usage. Excessive water use has the potential to impact on the bushland by reducing the availability water for the vegetation. It is recommended that a licence for the bore be sort, under the City's allocation, from the Department of Water. It is also recommended that a meter be attached to the bore in order for the City to monitor the water usage and allocation in the Park.

As detailed in Section 7, the tracks to be closed and rehabilitated may have token bollards or woody debris or logs installed at strategic locations along the closed tracks.The following interpretive signage should be incorporated in Fletcher Park:

- Guidelines for appropriate recreational use of the bushland, such as a Do's and Don'ts sign; and
- General information on the bushland which includes how rehabilitation is improving the function and aesthetic value of the bushland and dieback information.

Recommendations

35. Any upgrades to facilities be assessed on the basis that no damage to native vegetation will occur;

36. Facilities will not undergo upgrades at the expense of conservation values of Fletcher Park;

37. No facilities will be installed, upgraded or removed within the bushland sections of the reserve without approval by the City of Armadale Environmental Officer and Manager Parks.

38. Apply for a water extraction licence from the Department of Water for the bore within the Park.

39. Adhere to the water allocation licence if approved by the Department of Water.

40. Place interpretive signage at the Park's main entrance and or inside the park. Interpretive signs should include information on dieback and rehabilitation work.

7 REHABILITATION AND REVEGETATION

Previous Rehabilitation Works

There has been considerable revegetation already undertaken within Fletcher Park. This has been undertaken by the City of Armadale and Armadale Gosnells Landcare Group (AGLG) with the help of community groups and schools. Rehabilitation works within Fletcher Park to date are as follows:

- 2005 – AGLG planted 3000 upland plants and 1500 riparian plants along a portion of the seasonal stream;
- 2007 – The City of Armadale and AGLG planted a total of 1000 upland plants and 3000 riparian plants near the north eastern boundary of the Park. This was through a World Wildlife Fund for Nature Threatened Species Network Grant;
- 2008 – The City of Armadale and Brookdale Adventist School planted a total of 2000 plants in the north east of the Park; and
- 2009– Tranen Revegetation Systems contracted by the City of Armadale planted a total of 2500 plants in the north east of the Park as part of an offset requirement.

All plants were grown by local nurseries from seed sourced from within the Park. Previous rehabilitation works are illustrated in Figure 3.

Bushland Track Closures

The City of Armadale and WRPC have identified a number of tracks within the bushland which are no longer required for horse use and are to be rehabilitated. The agreed tracks to be closed and rehabilitated are shown in Figure 9. Tracks should be organised into 4 areas and each area allocated a year to be closed and rehabilitated. Signs will need to be established in a strategic location within each area to alert park users to the track closures.

Track rehabilitation procedures involve those stipulated in the rehabilitation strategy. The planting density for the bushland tracks is provided in Table 10. Some tracks closed for rehabilitation will abut horse and emergency service tracks and will include planting with seedlings and installation of tree guards as necessary. Token bollards, brushing with woody debris or logs may be placed at strategic locations to provide definition between bushland rehabilitation areas and track boundaries and to assist regeneration, not to obstruct tracks remaining open.

Rehabilitation Strategy

Prioritisation

The restoration of the vegetation should aim to maintain the resilience of good condition areas while restoring degraded areas of the site. The restoration plan should follow three basic principals of bush regeneration known as the Bradley method[1]. This method involves selective weeding around native species to decrease competition, increase the size and number of native plants and gradually improve the condition of the bushland. The underlying principles of this method are:

1. Work from areas in good condition to areas in poor condition. Start regeneration work in areas with least disturbance to increase its resilience and then gradually work into areas with more weeds;

2. Minimise disturbance while working. This is important so that regeneration work does not create conditions suitable for weed invasion. Minimise disturbance to soils and trampling of plants; and

3. Let the rate of natural regeneration determine rate of weed removal. This can be important as over-weeding will leave large bare areas that can be reinvaded by more or different weeds.

Assisted natural regeneration following the Bradley method should be guided by the Vegetation Condition map (Figure 2) undertaken in bushland in Good to Degraded condition or better. Priorities should be reassessed after bushfire events, given that it can influence the relative competitiveness of weeds and native plants in the short term.

The following table outlines the total area recommended for revegetation, the planting density and the total number of plants. Commercial Costs of revegetation works can be seen in Appendix G.

Table 10: Planting density for revegetation works within Fletcher Park.

Area Description	Area (ha)	Planting Density (plants/m2)	Total Plants	Comments
Horse tracks	0.14	3.25	4,550	3 sedges / m2 and 1 tree per 4 m2
Non-horse track revegetation zones	5.49	0.33	18,117	1 plant per 3 m2
Remainder for weed control only	4.6	0	0	10.3 ha less revegetation area
Total	**10.23**		**22,667**	

[1] The Bradley method urges a naturalistic approach by encouraging the native vegetation to self-reestablish. The Bradleys used their method to successfully clear weeds from a 16 hectare woodland reserve near Ashton Park. The process demonstrated that subsequent maintenance was needed only once or twice a year, mainly in vulnerable spots such as creek banks, roadsides, and clearings, to be maintained weed-free.

Community Involvement

Community and Friends Groups such as the Armadale Gosnells Landcare Group (AGLG) and the Wallangarra Riding and Pony Club should be invited to be involved when rehabilitation works are being scheduled.

Monitoring

Bushland Condition mapping should form the basis for monitoring the success of revegetation. In addition to this photographs should be taken from reference points each year to form a record of site's condition that can be understood by a non-specialist.

Plant Material

The plant species selected for revegetation have been identified as those most suitable to the area, both on a local and site specific scale. Plant species used in all revegetation works should be of local provenance.

Species for revegetation have been identified through the species list provided by the City of Armadale, Bush Forever Volume 2 (Government of Western Australia, 2000b) and during the site visit by ENV in April 2010. These species have been selected to represent vegetation communities that are present within the Very Good areas and those that would have been present within the rehabilitation areas prior to degradation.

Dieback susceptible species should be avoided as they are unlikely to thrive in the conditions on site.

Table 11: Revegetation Species

Species	Type	Upland Zone	Riparian Zone
Acacia drewiana	Shrub	✓	
Acacia teretifolia	Shrub	✓	
Amphipogon turbinatus	Grass	✓	
Baeckea camphorosmae	Shrub	✓	
Borya sp.	Herb	✓	
Burchardia multiflora	Herb	✓	✓
Chorizema dicksonii	Shrub		✓
Conostylis caricina	Herb	✓	

Species	Type	Upland Zone	Riparian Zone
Conostylis setigera	Herb	✓	
Corymbia calophylla	Tree	✓	
Drosera sp.	Herb		✓
Eucalyptus lane-poolei	Tree	✓	
Eucalyptus rudis	Tree		✓
Eucalyptus wandoo	Tree		✓
Grevillea wilsonii	Shrub	✓	
Haemodorum laxum	Herb	✓	
Haemodorum paniculatum	Herb	✓	
Hakea auriculata	Shrub	✓	
Hakea incrassata	Shrub	✓	✓
Hakea ruscifolia	Shrub	✓	
Hibbertia aurea	Shrub	✓	
Kingia australis	Shrub	✓	
Laxmannia squarrosa	Herb	✓	
Lechenaultia biloba	Herb	✓	
Lomandra spartea	Herb	✓	
Loxocarya fasciculata	Sedge	✓	✓
Mesomelaena stygia	Sedge	✓	✓
Mesomelaena tetragona	Sedge	✓	✓
Nemcia capitatum	Shrub	✓	
Nuytsia floribunda	Tree	✓	
Petrophile striata	Shrub	✓	

Species	Type	Upland Zone	Riparian Zone
Stylidium brunonianum	Herb	✓	✓
Stylidium repens	Herb	✓	✓
Templetonia biloba	Shrub	✓	
Thysanotus triandrus	Sedge	✓	

Seed Collection

The proposed seed mix for the areas to be rehabilitated is based on the list above. All seed will be sourced from Fletcher Park to ensure endemic species and populations are used. The commercial quote obtained for the revegetation of the site suggested 4 person days of seed collecting between October and March to obtain the required amount of seed. The long collecting season accounts for the optimum collecting times for different species.

After the seeds are collected they will need to be processed, which includes cleaning and sorting, and then being stored in a climate controlled pest free seed bank until they are required. Prior to propagation the seeds will be pre-treated to increase the success of germination and made into batches according to vegetation community and landscape position.

Seed collection times and costs have been provided in Appendix G.

Seedlings and Tube Stock

To maximise the survival rates the seedlings must be disease free, sun hardened, have well developed roots and not be root bound, and be planted at the correct depth in late autumn – early winter (Bradley, 2002). It is preferable for planting to occur as early after the break of season as practicable, when the soil is thoroughly moist and the follow up rain expected. The longer plants have to establish and adequate root system in the ground before the first summer the higher success rate can be expected.

Seedlings which have grown beyond post-emergent stage (around four to nine months, depending on species growth rates) in square plastic pots (e.g. 75 x 75 x 100 mm or similar) are considered most suitable for planting. Mature stock, although less suitable, do provide an obvious statement to the general public that a regeneration programme is underway and are useful in some places. Native seedlings should include a range of groundcovers, herbaceous perennials, shrubs and trees with a view to achieving the floristic and structural composition of the original vegetation community (see above species list).

Seedlings should be well watered before planting. No fertilisers should be used at the time of planting. Seedlings should not be staked for support. Free standing plants become more durable and strong. Care should be taken that plants are not evenly spaced or planted in rows. Seedlings should be randomly clumped or spaced to achieve a natural effect.

Tree guards are likely to be required in Fletcher Park due to rabbit predation on new seedlings. Tree-guards have become less regarded in recent times however, due to their expense and increased labour requirements. Other options should also be examined such as rabbit-proof fencing around the study site and/or Pindone baiting (however as stated in section 6.3 this is not recommended without further data on population dynamics).

Site Preparation

Weeding

Adequate ground preparation is important for good plant establishment. The weed management strategy in Section 6.2 should be followed.

Dieback Infected Areas

The entire site is to be considered as Dieback infested. The revegetation species list (Table 12) has been adapted to exclude those species susceptible to dieback as they are unlikely to thrive in the conditions of the site.

Wetland Areas

Wetland areas have a high priority for revegetation, particularly after weed removal to help prevent recolonisation. Plant species suitable for revegetating wetland areas are listed under riparian in Table 11.

Recommendations

41. Continue to concentrate intensive rehabilitation efforts in the High Priority Areas Shown in Figure 8;

42. Collect native seeds from Fletcher Park for revegetation activities;

43. Invite local community groups and schools to be involved in revegetation activities; and

44. Revegetation should be undertaken using the guiding principles outlined in this management plan.

8 IMPLEMENTATION PLAN AND COSTS

8.1 RECOMMENDATIONS

There are 38 recommendations in this plan. These are collated in the summary at the beginning of this document. Timeframe, responsibility and priority associated with each recommendation have been included to guide implementation of the recommendations. Recommendations are associated with specific actions.

8.2 TIMEFRAME

The timeframe for this Management Plan is 5 years. It is intended that all recommendations will be implemented during this timeframe. Some recommendations relate to ongoing projects (such as weed control) and therefore completion dates are not appropriate, but the priority assigned to each recommendation can be used for guidance in their implementation.

8.3 SUMMARY OF MANAGEMENT RECOMMENDATIONS

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
1	The City of Armadale will seek to change the purpose of the Reserve 14217 to include conservation whilst permitting ongoing use of the reserve for passive recreation and horse riding.	High	2011	2012	CoA - Environment	Staff Resources
2	Resident pony clubs will abide by the recommendations in this management plan, which will also form part of any management arrangements entered into between the City of Armadale and the clubs.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
3	As opportunities arise participate in flora, fauna and fungi surveys within Fletcher Park	Low	Ongoing	Ongoing	CoA	Cost yet to be determined

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
4	Ensure that all vehicles leaving the Park are free of soil and vegetation	Low	2011	Ongoing	CoA, Resident pony clubs	N/A
5	Seek a modification to the DEC's *Geomorphic Wetlands Swan Coastal Plain* dataset to remove the wetland mapping from the areas within Fletcher Park that support upland vegetation types yet are mapped as wetlands.	Low	2012	2014	CoA - Environment	Staff Resources
6	Continue the horse impact study until 2015 to further enable the identification of any changes in vegetation associated with horse use that may occur over long periods of time.	High	2011	Ongoing	CoA - Environment	Staff Resources
7	As opportunities arise undertake a Spring survey following summer fire to determine the extent of Diuris purdiei throughout Fletcher Park.	Moderate	As required	N/A	CoA - Environment	Cost yet to be determined
8	Resident pony club appointed Environmental Officer to ensure DRF locations are kept free of horse movements. This can be carried out through educating new and existing members about the sensitive nature of parts of the bushland and by keeping tracks away from the plant.	High	2011	Ongoing	Resident Pony Clubs	N/A
9	CoA informs DEC of recent survey findings regarding TEC type 3a within Fletcher Park.	Moderate	2011	2011	CoA - Environment	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
10	Undertake vegetation condition mapping in 2014.	Moderate	2014	2014	CoA - Environment	Staff Resources
11	Undertake ongoing prioritised weed control over a period of five years using the strategies outlined in this management plan.	High	2011	2016	CoA – Environment and Parks	$25,000
12	Undertake monitoring to determine the effectiveness of weed control.	Moderate	2012	Ongoing	CoA - Environment	Staff Resources
13	Promote habitat for native fauna through rehabilitation efforts	Moderate	2011	Ongoing	CoA - Environment	N/A
14	Maintain fencing around the reserve to reduce opportunities for unauthorised vehicle access.	High	2011	Ongoing	CoA – Environment and Parks	$5,000/annum
15	As opportunities arise participate in introduced fauna monitoring within Fletcher Park.	Low	2011	Ongoing	CoA - Environment	N/A
16	Undertake feral honey bee control within the Park.	Moderate	2012	2013	CoA - Environment	$2,000
17	Implement in accordance with the procedures of the City of Armadale's Dieback Policy, ENG 9 Managing Phytophthora Dieback and this management plan.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
18	Designate a brush down area to be designated for horses to remove traces of infested soil before	Moderate	2011	Ongoing	Resident pony clubs	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	leaving the Park.					
19	Emergency vehicle access tracks should be maintained as described in this management plan. No new access tracks should be created unless deemed necessary for safety purposes.	High	2011	Ongoing	CoA - Parks	N/A
20	Undertake fuel reduction activities by keeping grassed areas mowed and by annually controlling grassy weeds in bushland areas.	High	2011	Ongoing	CoA - Parks	$20,000/annum
21	Undertake a fuel load assessment of the bushland areas within Fletcher Park consistent with the City of Armadale fire maintenance program.	Moderate	2011	Ongoing	CoA - Rangers	Staff Resources
22	Undertake cool mosaic control burns if deemed necessary for safety.	High	2011	Ongoing	CoA - Rangers	$1,500/annum
23	A log of all environmental related tasks undertaken by the resident pony clubs and the City of Armadale will be kept. This log will be provided to the City on a bi-annual basis for inclusion into the City's record system.	High	2011	2016	CoA - Environment, Resident pony clubs	N/A
24	Resident pony clubs management committee to appoint one of their members to be responsible for liaising with the City on environmental management of the Park. The resident pony clubs management committee is to	High	2011	Ongoing	Resident pony clubs	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	be cognisant of, and ensure all activities are consistent with, this management plan.					
25	When each Environmental Officer is appointed the resident pony clubs management committee will inform the City of Armadale of the name of the Environmental Officer and provide the city with their contact information.	High	2011	Ongoing	Resident pony clubs	N/A
26	No further tracks within the bushland areas are created.	High	2011	2016	CoA, Resident pony clubs	N/A
27	Tracks shown in Figure 9 to be closed and rehabilitated.	Moderate	2011	2016	CoA - Environment,	$21,630.70
28	Investigate the need to install a substrate, such as river sand, to the tracks to remain open within the bushland.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
29	Remove unnecessary jumps within the tracks to be closed and rehabilitated.	High	2011	2011	WRPC	N/A
30	Resident pony clubs to provide statistics on horse usage to the City of Armadale annually.	High	2011	Ongoing	Resident Pony Clubs	N/A
31	Investigate options for relocating the cross country course within the environmentally sensitive areas to the area between Mitchell St and Moore St, including revegetating degraded areas.	High	2011	2012	CoA	N/A
32	The resident pony club provide a key to their locks to the City	High	Ongoing	Ongoing	Resident pony	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	of Armadale property department.				clubs	
33	Maintenance of existing tracks within the bushland portion of the reserve shall only be undertaken in accordance with this management plan and in compliance with the relevant legislation.	High	Ongoing	Ongoing	CoA, Resident Pony Clubs	N/A
34	The City of Armadale discusses opportunities with the Public Transport Authority (PTA) to discourage access off the firebreaks on PTA lands to the west of Fletcher Park.	Moderate	2011	2016	CoA – Parks and Environment	Staff Resources
35	Any upgrades to facilities are assessed on the basis that no damage to native vegetation will occur.	High	2011	2016	CoA - Environment	N/A
36	Facilities will not undergo upgrades at the expense of conservation values of Fletcher Park.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
37	No facilities will be installed, upgraded or removed within the bushland sections of the reserve without approval by the City of Armadale Environmental Officer and Manager Parks.	High	2011	Ongoing	CoA – Parks and Environment, Resident pony clubs	N/A
38	Apply for a water extraction licence from the Department of Water for the bore within the Park.	High	2011	2012	CoA – Parks	Staff Resources
39	Adhere to the water allocation licence, if approved by the	High	2011	Ongoing	CoA - Parks	N/A

	Recommendation	Priority	Start Year	End Year	Responsibility*	~ Cost / 5 years (exc. gst)
	Department of Water.					
40	Place interpretive signage at the Park's main entrance and/or inside the park. Interpretive signs should include information on dieback and rehabilitation work.	High	2015	2016	CoA - Environment	2 signs @ $2,000 each = $4,000
41	Continue to concentrate intensive rehabilitation efforts in the High Priority Areas Shown in Figure 8	Moderate	2011	2016	CoA – Parks and Environment	Seedling propagation = $44,895.60* Seedling planting = $19,953.60* * commercial costs
42	Collect native seeds from Fletcher Park for revegetation activities.	High	2011	2012	CoA - Environment	$4,635
43	Invite local community groups and schools to be involved in revegetation activities where possible.	Low	2011	2016	CoA – Environment	N/A
44	Revegetation should be undertaken using the guiding principles outlined in this management plan.	High	2011	Ongoing	CoA - Environment	N/A

* - CoA = City of Armadale

Resident Pony Clubs = Any pony clubs using Fletcher Park under a lease or management arrangement with the City of Armadale.

8.4 COST ESTIMATES FOR WEED CONTROL AND REVEGETATION

Approximate costs for weed control and maintaining very good bushland and improving good to degraded condition bushland within Fletcher Park over a 5 year period have been provided in Appendix G. This indicative estimate is based on the full commercial costs of maintaining and restoring all areas of bushland to very good condition within five years. It is understood that the City of Armadale may wish to undertake many of the tasks involved in both weed control revegetation and monitoring due to budget limitations and to allow community participation.

The following table is a breakdown of the costs involved for weed control and revegetation works within Fletcher Park. Again costs are based on an external party undertaking all works. It is understood the City will wish to undertake many of the tasks such as all labour intensive weed control listed in Appendix E.

Table 12: Breakdown of Costs Involved for Weed Control and Revegetation

Year	Task	Cost
2010	Seed Collection	$4,635.00
	Pre-Planting Weed Control Spring	$10,094.00
2011	Pre-Planting Weed Control Autumn	$10,094.00
	Seedling Propagation and Planting	$74,926.00
	Herbicide Control Spring	$10,094.00
	Tree Guard Supply and Installation	$35,419.80
	Infill Tree Guards Supply and Install – 15%	$5,312.97
	Monitoring	$1,360.00
2012	Herbicide Application Autumn and Spring	$20,188.00
	Infill Planting Supply and Install – 30%	$22,447.80
	Infill Tree Guards Supply and Install – 30%	$10,625.94
	Monitoring	$1,360.00
2013	Herbicide Application Autumn and Spring	$20,188.00
	Infill Planting – 15%	$8,606.60
	Monitoring	$1,360

Year	Task	Cost
2014	Herbicide Application Autumn and Spring	$20,188.00
	Monitoring	$1,360
2015	Herbicide Application Autumn	$10,094.00
	Monitoring	$1,360
2011-2015	Tree Guard Maintenance and Removal	$13,515.45

8.5 COMMUNITY CONSULTATION

At Council's meeting on 13 September 2010, the Fletcher Park Bushland Management Plan was supported for release for a 6 week public consultation period (resolution T63/09/10). Public comment period on the draft Fletcher Park Bushland Management Plan closed on 11 November 2010. A total of 11 submissions were received. All submissions have been listed and responses are provided below.

Notice of the public comment period on the draft management plan was advertised in the Comment News and the Armadale Examiner for one week inviting submissions. The draft management plan was also distributed to landowners within a 300 m radius of the park, relevant State Government departments, the three City libraries and the Wallangarra Riding and Pony Club. The draft management plan was available to the public via the City of Armadale's website.

Of the eleven submissions received, six were received from landowners within the 300 m of the boundary of Fletcher Park; one submission was received from the Department of Environment and Conservation and one submission was received from the Wallangarra Riding and Pony Club (Inc). A submission was received from the Water Corporation indicating that they are assessing the implications on the management plan on the current and future use of water infrastructure in the vicinity. Both the Department of Planning and Main Roads Western Australia submitted letters stating they have no objections to the proposed management plan.

All submissions were summarised and a number of changes as a result of the submissions were made to the draft plan. The final Fletcher Park Bushland Management Plan (this plan) was then presented to Council for endorsement. At Council's 27 June 2011 meeting the following was endorsed (T23/6/11):

That Council:

1) ***endorse Fletcher Park Bushland Management Plan as amended;***
2) ***be provided with a preliminary report on the revegetation of degraded areas within twelve months.***

The Council minutes from 27 June 2011, including the summary of submissions is provided at Appendix I.

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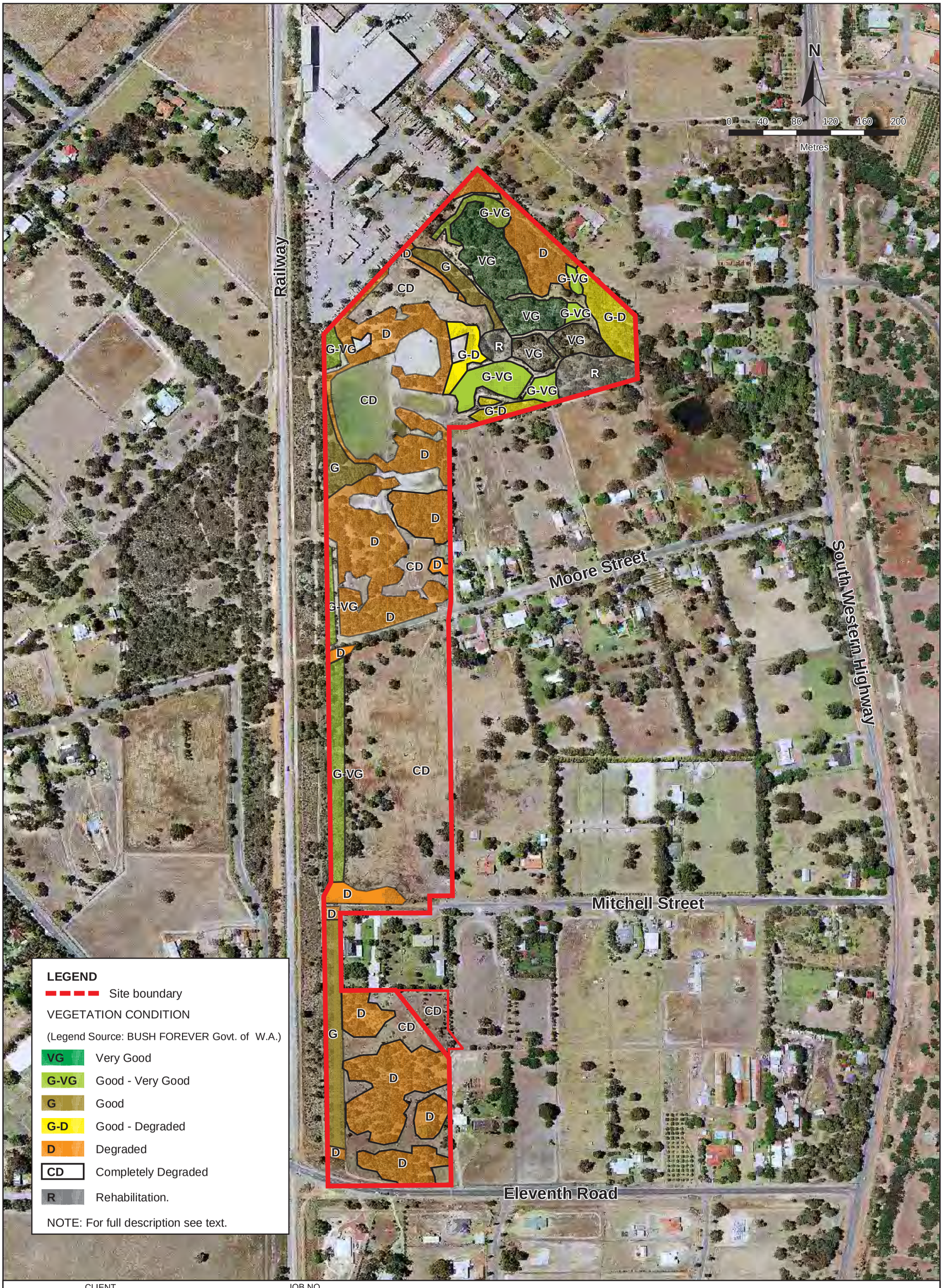
FIGURES

CLIENT: City of Armadale
JOB NO.: 10.040
AUTHOR: G.Scott
DRAWN: S. Rho
DATE: 24-05-2010
SCALE: 1:10,000@ A4
PROJECTION: GDA 94 MGA 50

Location Plan

Fletcher Park Bushland Management Plan

FIGURE 1



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City of Armadale		10.040
AUTHOR	DRAWN	DATE
G. Scott	S. Rho	19-05-2010
SCALE	PROJECTION	
1:4000 @ A3	GDA49 MGA50	

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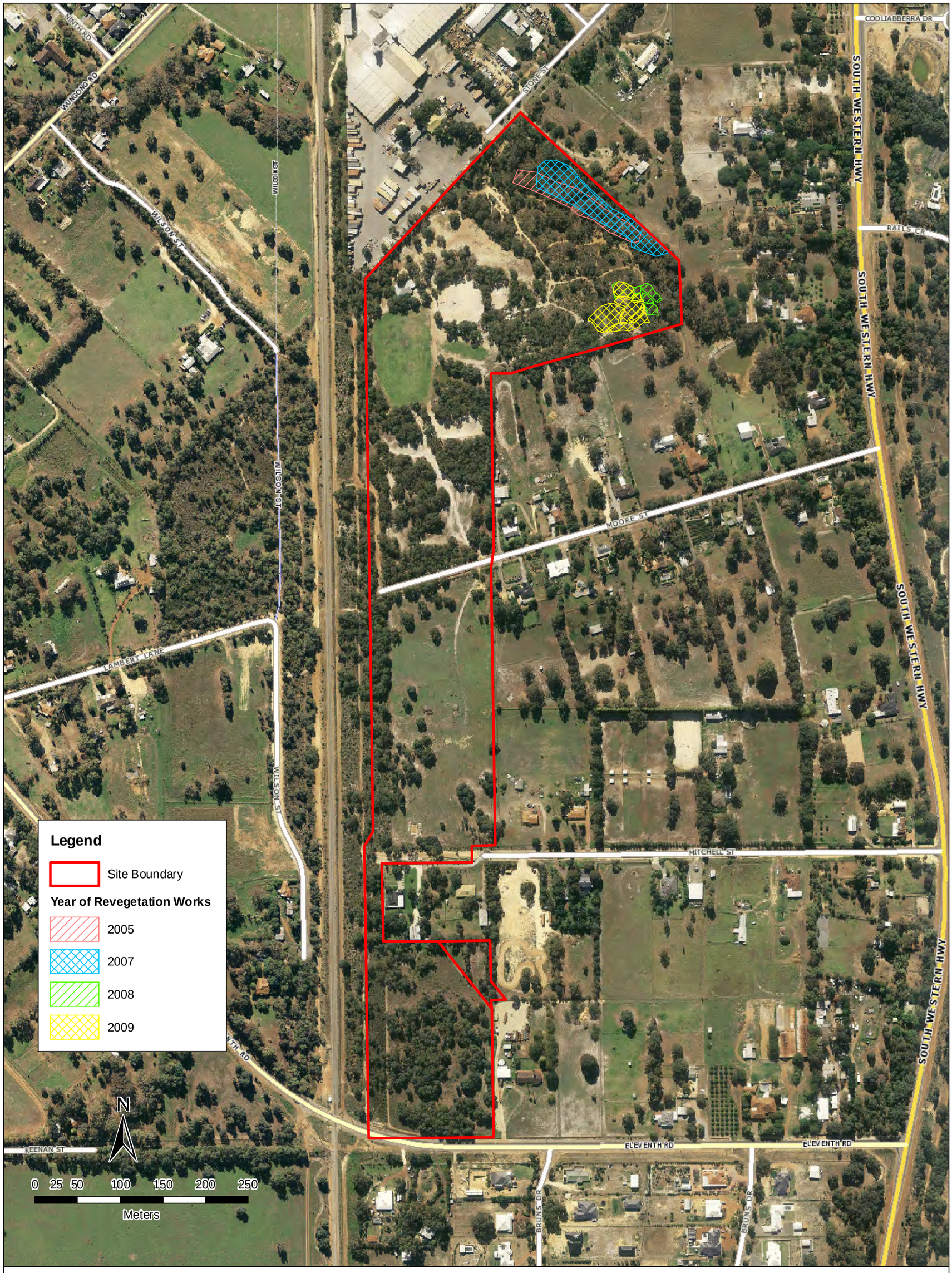
Vegetation Condition

Fletcher Park Bushland Management Plan

FIGURE 2



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City of Armadale		10.040	
AUTHOR:	DRAWN	DATE	
G.Scott	S. Rho	24-05-2010	
SCALE	PROJECTION		
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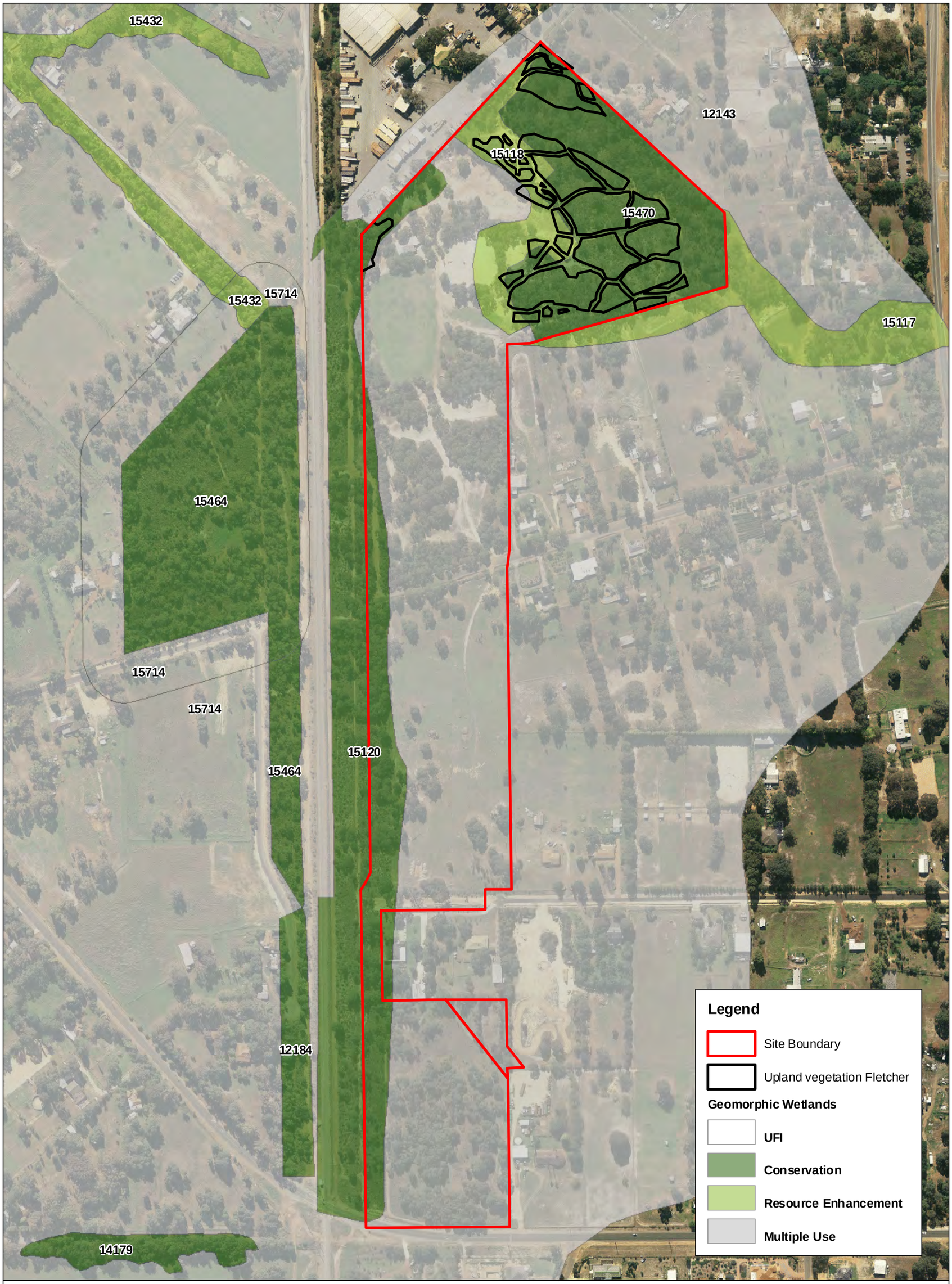
Previous Revegetation Works

Fletcher Park Bushland Management Plan

FIGURE 3



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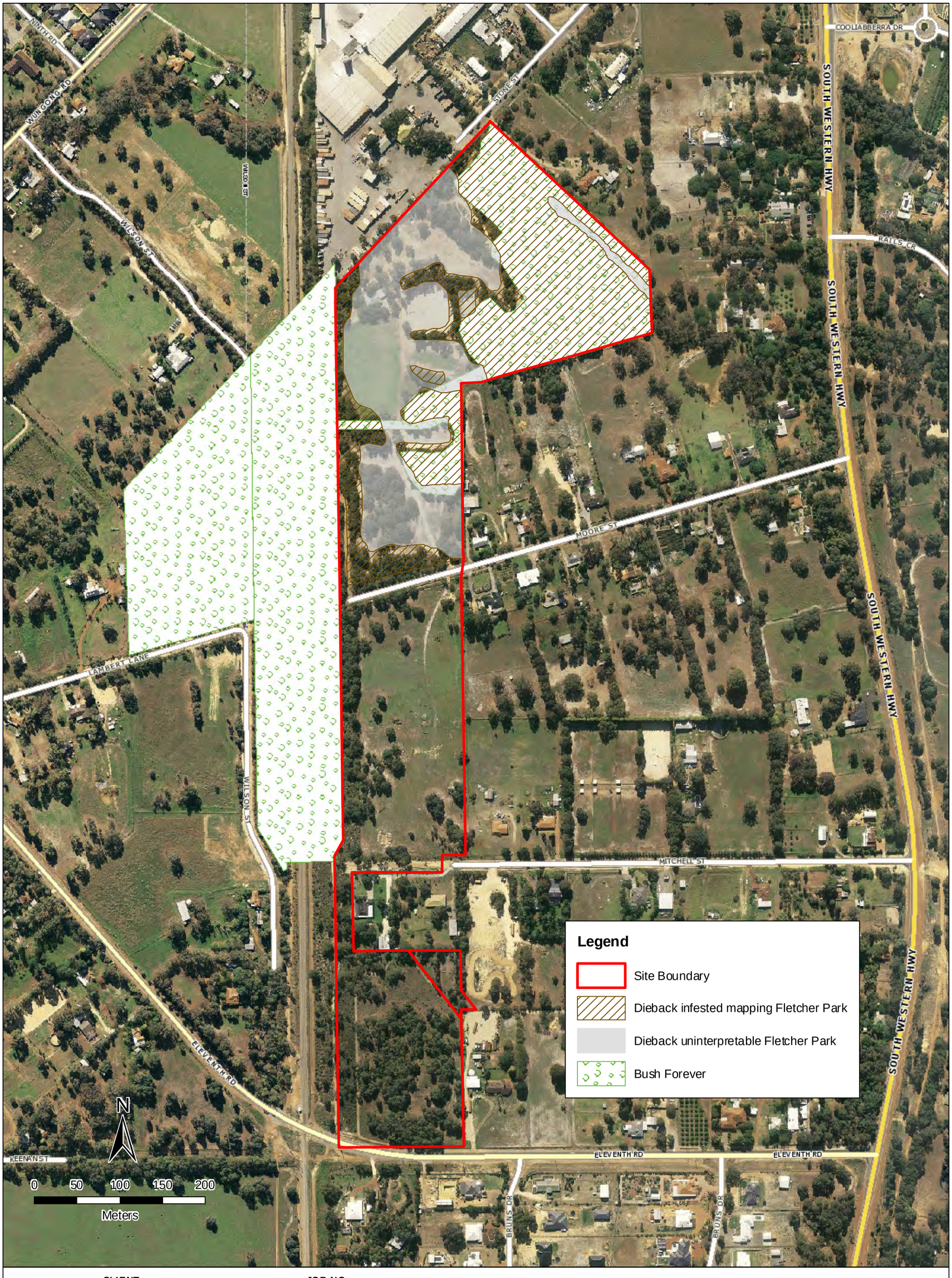
JOB NO.: 10.040
AUTHOR: G.Scott
DRAWN: S. Rho
DATE: 19-05-2010
SCALE: 1:3,500 @ A3
PROJECTION: GDA 94 MGA 50

Geomorphic Wetlands

Fletcher Park Bushland Management Plan

FIGURE 4



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City of Armadale		10.040	
AUTHOR:	DRAWN	DATE	
G.Scott	S. Rho	24-05-2010	
SCALE	PROJECTION		
1:4,000 @ A3	GDA 94 MGA 50		

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Bush Forever Areas

Fletcher Park Bushland Management Plan

FIGURE 5

STOKE ST

MOORE ST

Legend

Site Boundary

Refer to Figure 6c for Weed Mapping Legend

N

0 25 50 75 100

Meters

CLIENT	JOB NO.
City of Armadale	10.040
AUTHOR:	DRAWN
G.Scott	S. Rho
SCALE	PROJECTION
1:1,700 @ A3	GDA 94 MGA 50

DATE: 24-05-2010

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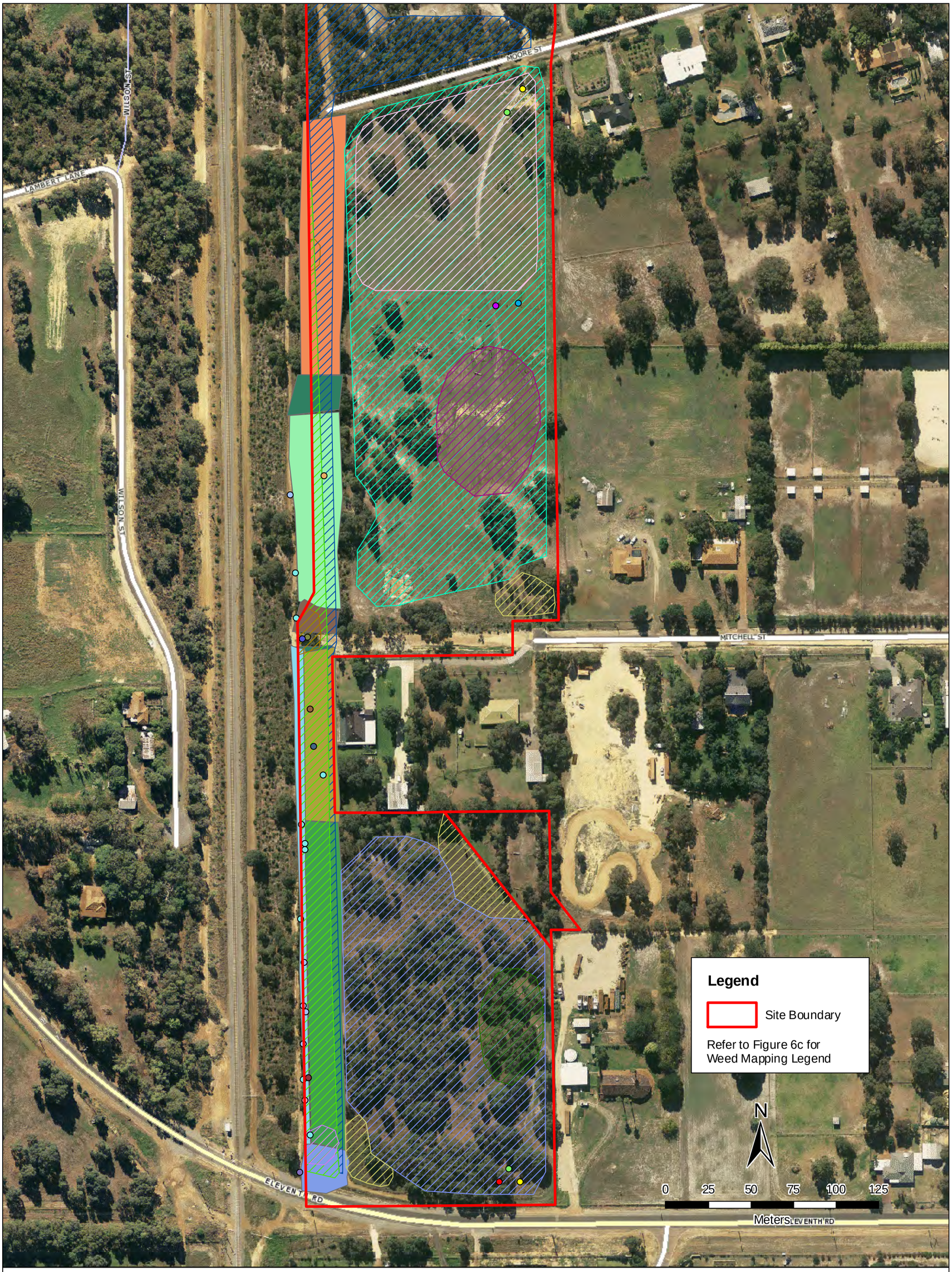
Weed Mapping Density 2008 and 2010

Fletcher Park Bushland Management Plan

FIGURE **6a**



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City of Armadale			10.040
AUTHOR:	DRAWN		DATE
G.Scott	S. Rho		24-05-2010
SCALE	PROJECTION		
1:2,000 @ A3	GDA 94 MGA 50		

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Weed Mapping Density 2008 and 2010

Fletcher Park Bushland Management Plan

FIGURE **6b**

Legend

Fletcher park weed mapping 2008 point locations

- *Patersons curse*
- *Solanum nigrum*
- *Ursinia anthemoides*
- *Watsonia meriana*
- *Homeria flaccida*
- *Lathyrus tingitanus*
- *Oxalis glabra & pes carpa*
- *Oxalis glabra*
- *Oxalis pes-carpa*
- *Oxalis sp*
- *Arctotheca calendula, Plantago lanceolata, patersons curse?*
- *Babiana stricta*
- *Ehrharta calycina*
- *Eragrostis curvula, Ursinia anthemoides*
- *Fressia hybrid*
- *Fressia hybrid?, Ursinia anthemoides*
- *clover, Oxalis pes-carpa,*

Fletcher park weed mapping 2008

- *Watsonia meriana*
- *Arctotheca calendula, Oxalis sp, Mixed grasses - Ehrharta longiflora, Eragrostis curvula, Briza maxima*
- *Briza maxima, Ehrharta longiflora, Hypochaeris glabra, Trifolium sp.*
- *Briza maxima, Eragrostis curvula,*
- *Briza maxima, Eragrostis curvula, Ehrharta calycina, Romulea rosea*
- *Briza maxima, Fressia hybrid,*
- *Ehrharta calycina*
- *Ehrharta calycina, Ehrharta calycina,*
- *Ehrharta calycina, Eragrostis curvula,*
- *Ehrharta calycina, Eragrostis curvula, Watsonia meriana*
- *Ehrharta calycina, Eragrostis curvula, Briza maxima*
- *Ehrharta calycina, Oxalis sp, Briza maxima*
- *Ehrharta calycina, Oxalis sp, hypochaeris glabra, Trifolium sp*
- *Ehrharta calycina, ehrharta longiflora, eragrostis curvula, Arcotheca calendula, Tribolium sp.*
- *Eragrostis curvula - 10-20%, , Watsonia meriana*
- *Eragrostis curvula*
- *Eragrostis curvula, ehrharta calycina, Arcotheca calendula, Watsonia meriana*
- *Mixed grasses, love, veld, guildford, briza, , Ursinia anthemoides*
- *mixed grasses, Hypochaeris glabra, Trifolium sp., Ursinia*

Fletcher park weed mapping 2010 point locations

- *Citrullus lanatus*
- *Dittrichia graveeolens*
- *Echium plantagineum*
- *Gomphocarpus fruticosus*
- *Phytolacca octandra*
- *Solanum nigrum*

Fletcher park weed mapping 2010

- *Arctotheca calendula*
- *Arctotheca calendula, Avena barbata*
- *Arctotheca calendula, Cynodon dactylon, Gladiolus caryophyllaceus, Oxalis pes-caprae*
- *Arctotheca calendula, Cynodon dactylon, Hypochaeris glabra, Oxalis pes-caprae*
- *Arctotheca calendula, Hypochaeris glabra, Avena barbata*
- *Arctotheca calendula, Melinis repens*
- *Arctotheca calendula, Oxalis pes-caprae*
- *Avena barbata*
- *Dittrichia graveolens*
- *Eragrostis curvula*
- *Eragrostis curvula, Pennisetum clandestinum*
- *Gladiolus caryophyllaceus*
- *Hypochaeris glabra*
- *Melinis repens*
- *Oxalis pes-caprae, Avena barbata*
- *Pennisetum clandestinum*
- *Rumex sp*

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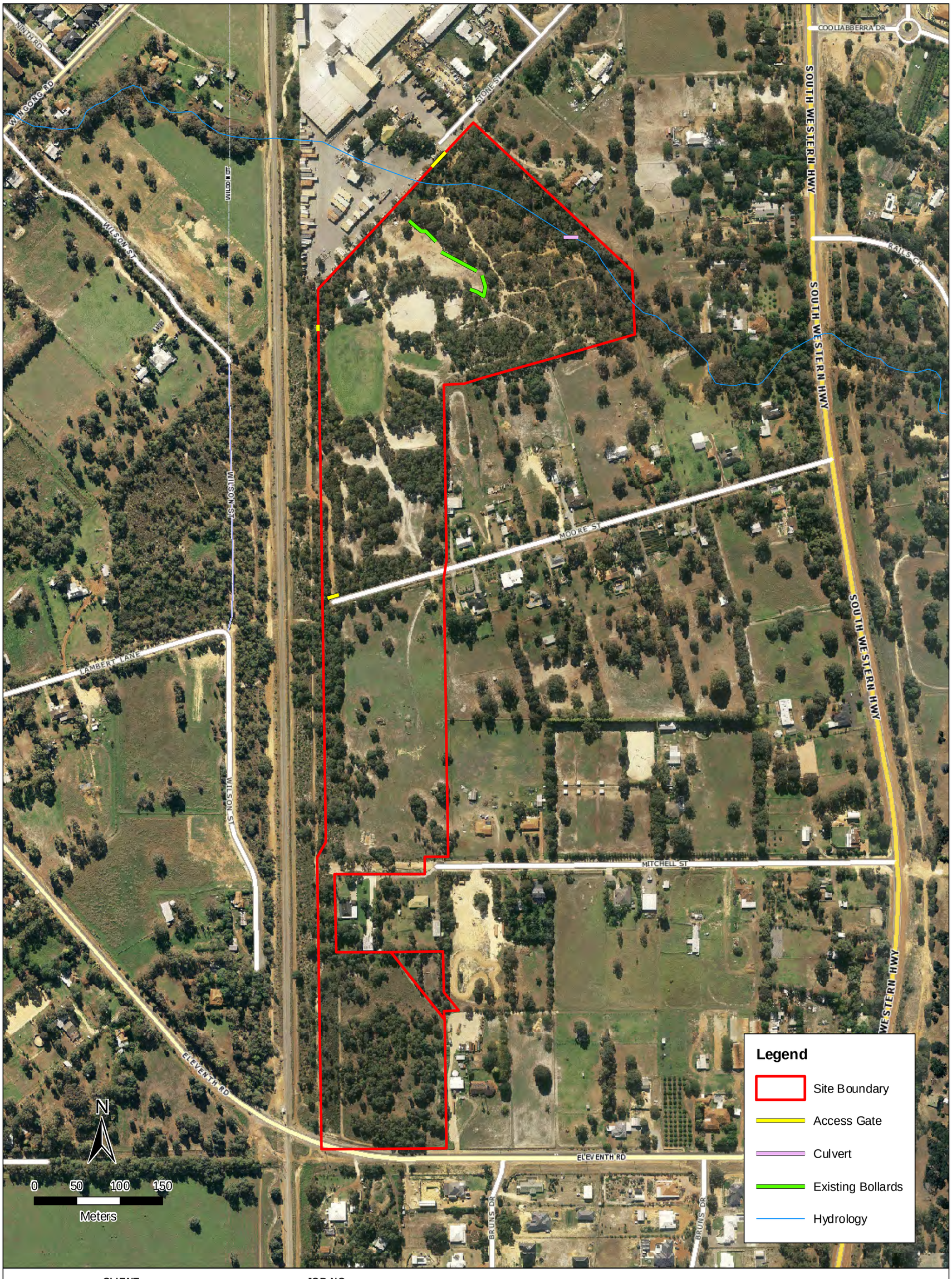
CLIENT		**JOB NO.**
City of Armadale		10.040
AUTHOR:	**DRAWN**	**DATE**
G.Scott	S. Rho	24-05-2010
SCALE	**PROJECTION**	
N/A	N/A	

Weed Mapping Legend

Fletcher Park Bushland Management Plan

FIGURE 6c



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City of Armadale		10.040	
AUTHOR:	DRAWN	DATE	
G.Scott	S. Rho	24-05-2010	
SCALE	PROJECTION		
1:4,000 @ A3	GDA 94 MGA 50		

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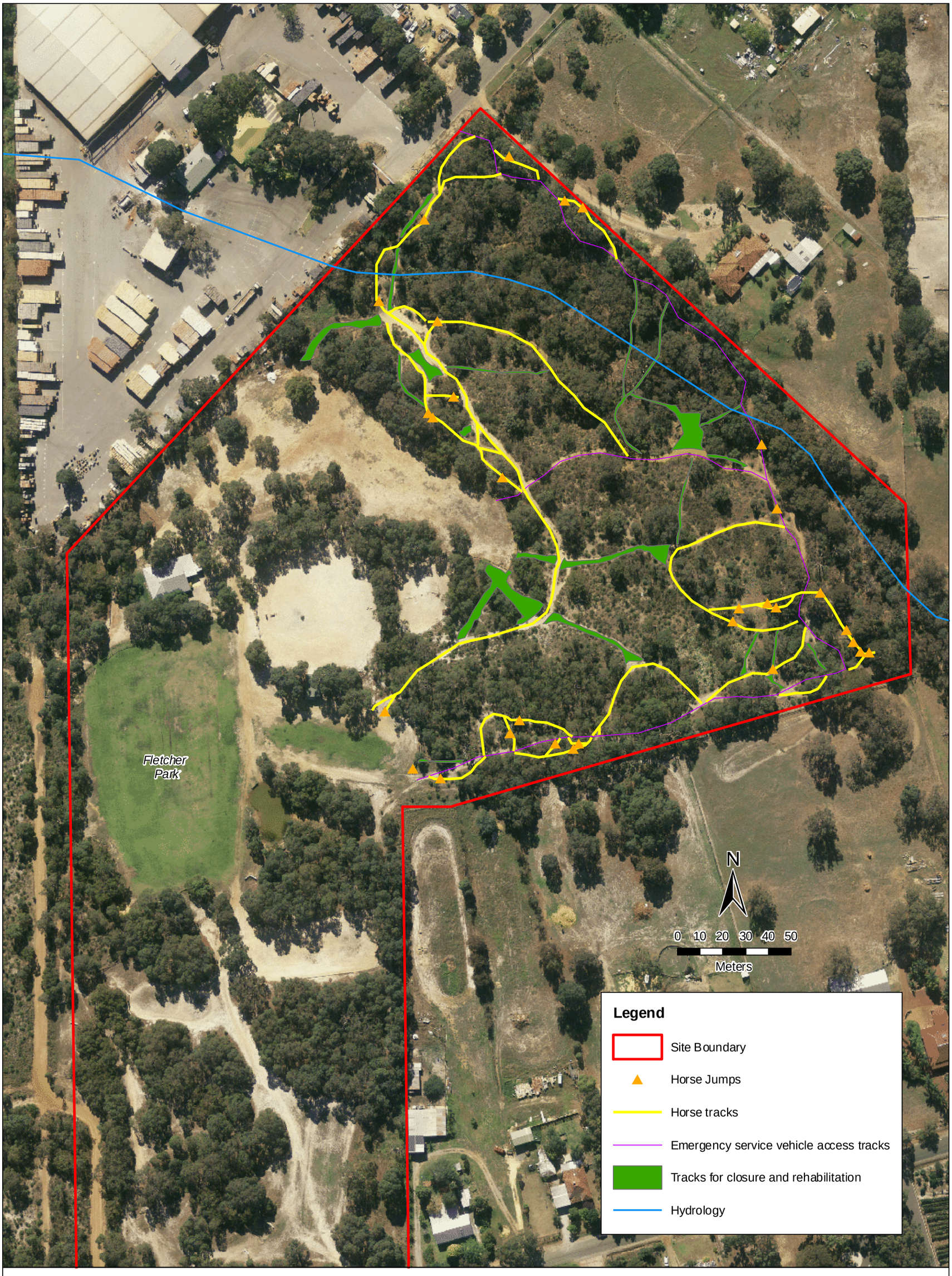
Fletcher Park Infrastructure

Fletcher Park Bushland Management Plan

FIGURE 7



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CLIENT	JOB NO.
City of Armadale	10.040
AUTHOR:	DRAWN / DATE
G.Scott	S. Rho / 24-05-2010
SCALE	PROJECTION
1:1,500 @ A3	GDA 94 MGA 50

Horse Tracks and Jumps with Recommended Track Closures within Bushland

Fletcher Park Bushland Management Plan

FIGURE 8

STONE ST

MOORE ST

Legend

- Site Boundary
- Recommended Revegetation
- Tracks for closure and rehabilitation

N

0 25 50 75 100

Meters

CLIENT		JOB NO.	
City of Armadale		10.040	
AUTHOR:	DRAWN	DATE	
G.Scott	S. Rho	24-05-2010	
SCALE	PROJECTION		
1:1,700 @ A3	GDA 94 MGA 50		

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Recommended Revegetation Areas and Tracks to be Closed and Rehabilitated

Fletcher Park Bushland Management Plan

FIGURE **9a**

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CLIENT	JOB NO.
City of Armadale	10.040

AUTHOR:	DRAWN	DATE
G.Scott	S. Rho	24-05-2010

SCALE	PROJECTION
1:2,000 @ A3	GDA 94 MGA 50

Recommended Revegetation Areas and Tracks to be Closed and Rehabilitated

Fletcher Park Bushland Management Plan

FIGURE **9b**

APPENDIX A

FLETCHER PARK BUSHLAND MANAGEMENT PLAN 2002 IMPLEMENTATION TABLE

APPENDIX A

Fletcher Park Bushland Management Plan 2002 Implementation Plan

Recommendation	Who	Implementation status
1. Prepare an annual weed control plan by November 30th of each year for the following year that as a minimum focuses on the good condition bushland (Map 2.1), weeds of which there are few of, or weeds new to the reserve. The plan will include an updated weed map, and identify costs and responsibilities for weed management.	CoA in consultation with WRPC	Complete - Weed map and management plan 2002 – 03 implemented.
2. Prepare and then distribute to all members annually with their membership notices and to attendees at events, a brochure that includes: a. a description of the location of and importance of the good condition bushland; b. how event organisers should ensure events and event participants do not damage the vegetation; and c. other management measures that apply to members and events deemed appropriate by the WRPC to prevent damage to the bushland; to the satisfaction of the City of Armadale. The brochure may include any other information deemed appropriate by the WRPC, and must be published by February 2003.	WRPC	Complete - Brochure prepared (see attached).
3. Prepare a fire management plan consistent with the guidelines for Fire Management Planning for Urban Bushland that identifies the responsibilities of the City of Armadale and the Wallangarra Riding & Pony Club (Inc) by December 2002.	CoA in consultation with WRPC	Completed - Fire management plan prepared in 2002.
4. Encourage Wallangarra Riding & Pony Club (Inc) club members, individuals, Friends Groups and other organisations to undertake conservation works in Fletcher Park bushland such as weed removal, stream revegetation and replanting with local provenance plants that are not susceptible to Phytophthora dieback.	WRPC, CoA	WRPC, Friends groups (such as the Wildflower Society – Armadale Branch) and schools have previously been engaged to undertake seed collection works and planting works in the bushland area. WRPC have previously undertaken hand removal of weeds in line with weed plan. AGLG have undertaken revegetation works along the stream and foreshore with the Armadale Education Support Centre and Southern River College.

Recommendation	Who	Implementation status
5. There will be no soil disturbance or soil movement from the good condition bushland depicted in Map 2.1 or from 25 m either side of the stream, other than that required for revegetation works or that occurs because of horse hooves along existing tracks.	WRPC, CoA	Incomplete - Jumps that cross the stream would have resulted in soil movement and erosion, as well as jumps installed within the bushland.
6. With the exception of selective trimming to maintain existing tracks, there will be no clearing of local vegetation or plants in the good condition bushland or the vegetation link between the good condition bushland and the railway (Map 3.1).	WRPC, CoA	Complete
7. The Committee of the Wallangarra Riding & Pony Club (Inc) will appoint one of their members to have primary responsibility for Environmental Management of the bushland, environmental aspects of the lease highlighted in the management plan (see Section 3.2 Lease requirements above), protection of important and Declared Rare Flora, and liaison with the City of Armadale on environmental matters. The Committee will advise the City of Armadale following each Annual General Meeting of the name and contact details of the responsible person.	WRPC	Still current.
8. A monitoring program will be developed that includes vegetation and erosion to monitoring to evaluate the impacts of horse activity in the good condition bushland.	CoA in consultation with state agencies and WRPC	In 2007 the City began involvement in the trial to determine the impact of horse use on the bushland – this will be ongoing based on the recommendations of the statistician results. Erosion monitoring has not been undertaken.
9. Upgrade tracks where erosion has been identified using limestone of suitable grade for horses by February 2004.	CoA in consultation with WRPC	This was not undertaken due to the Club requesting that limestone is not used as it is not an approparite surface for horses during cross country events.
10. The City of Armadale will seek to change the purpose of Reserve 14217 to include conservation whilst permitting ongoing use of the reserve for passive recreation and horse riding.	CoA	Incomplete.
11. Audit and review this Management Plan in 2006.	CoA & WRPC	Complete.

WORKING TOGETHER TO SAVE FLETCHER PARK

The values of the bushland are destroyed by frequent grazing, trampling, weed invasion and fires.

Please help our pony club and the City of Armadale look after the bush by:

- Contributing to Bushcare days at Fletcher Park
- Not letting your horse or pony graze the native plants - bring your own feed
- Keeping to the tracks when riding and walking through Fletcher Park
- Placing your horse and ponies manure in the manure bin provided (see map)
- Taking unused horse and pony food home (or place scraps in the manure bin)
- Placing your rubbish in the bins provided - or take it home

ABOUT WRPC

- WRPC has been a resident of Fletcher Park since the late 1970's
- Fletcher Park has provided a fantastic learning venue for both pony clubbers and adult riders
- WRPC is an established part of WA's equestrian community
- WRPC takes its responsibility for maintaining Fletcher Park very seriously and hopes that as you enjoy the venue - you will also help preserve the rare and threatened communities that exist here for future generations

This brochure was prepared in partnership with:

CITY OF Armadale

PERTH BIODIVERSITY PROJECT

Councils Caring for their Natural Communities

WALLANGARRA R&P CLUB

Want to know more?

Please contact:

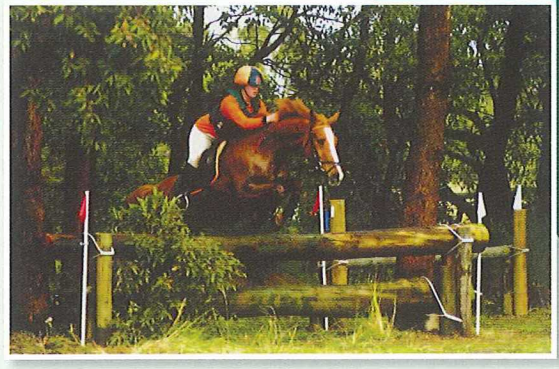
City of Armadale's Environmental Officer

on 9399 0111 or

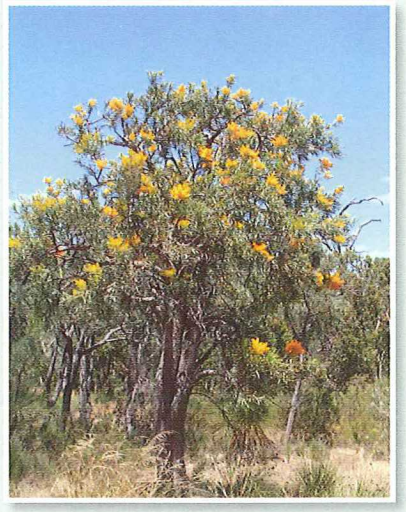
Wallangarra Riding & Pony Club

on 9399 1094

Fletcher Park



Home of the Wallangarra Riding & Pony Club



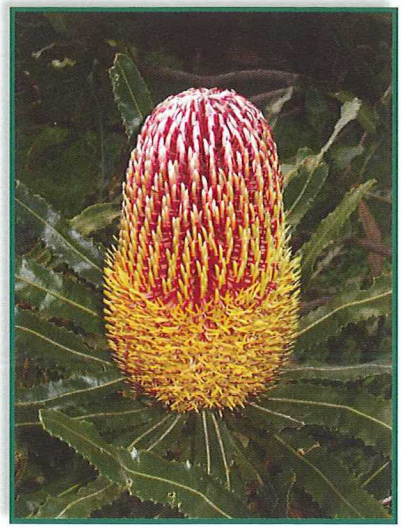
Rules of Entry

HOW IMPORTANT IS THE BUSH AT FLETCHER PARK?

The 5 hectares of vegetation at Fletcher Park is an important Conservation area.

The bushland contains vegetation communities and plant species that are threatened with extinction.

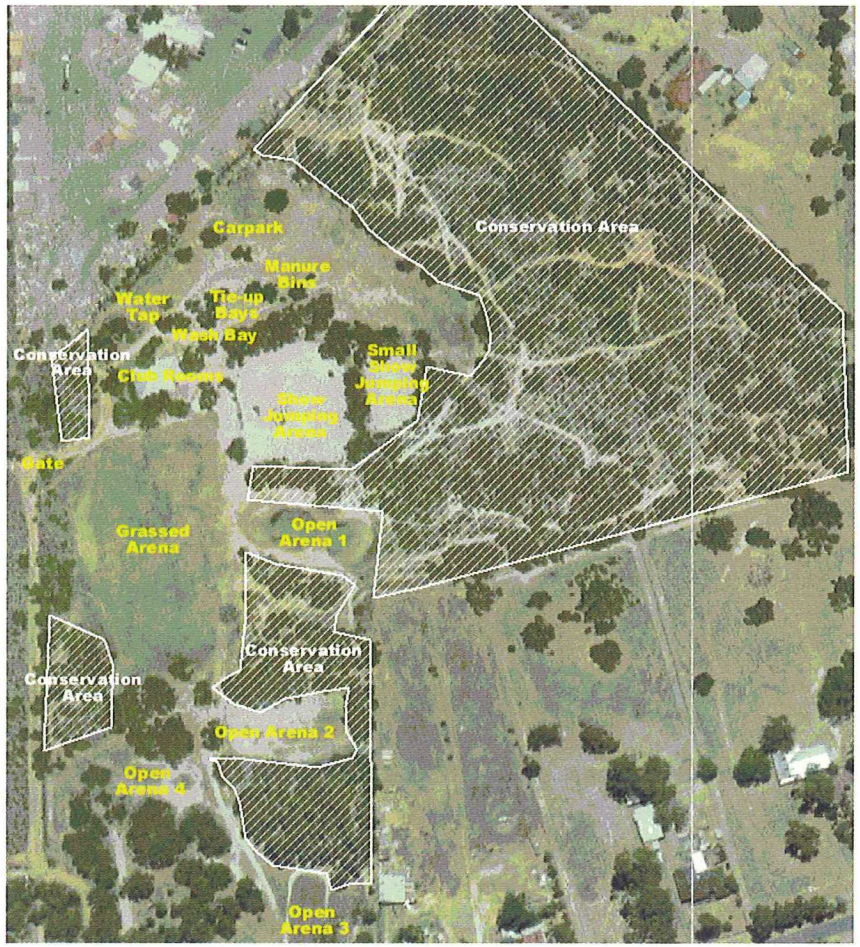
The bushland is also protected by law. It is the responsibility of the Wallangarra Riding & Pony Club to utilise the Reserve in a manner that protects these Conservation Values.

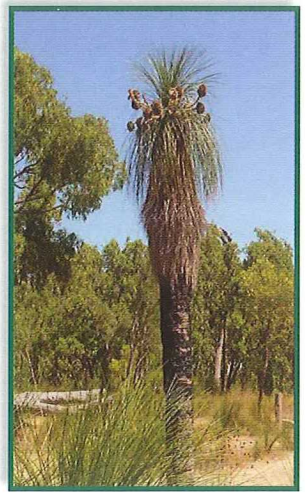


HAVE YOU SEEN?

Looking very similar to the familiar grasstree, drumsticks are not closely related at all. Many of these plants are very old, growing at a rate of about $1\frac{1}{2}$ cm a year. A drumstick standing at 3 metres high would be about 200 years old.

In the past the trunks of drumsticks were used to make floors for barns, stables and sheds. They had a high resistance to termites. All native plants are now protected but unlike the grasstree, drumsticks cannot be transplanted.





YOUR GUIDE TO FLETCHER PARK

APPENDIX B

DRF AND TEC INFORMATION

(NOT AVALIABLE IN PUBLIC DOCUMENT)

APPENDIX C

BUSH FOREVER CONDITION SCALE

APPENDIX C

Bush Forever Condition Scale

Condition scale used in BUSH FOREVER VOL 2 (Government of WA 2000, from Keighery BJ (1994)	Condition scale used to derive Keighery BJ (1994) and Connell (1995) after Trudgen (1991)	Condition scale used in PEP MAPPING after Connell (1995)
Pristine (1) Pristine or nearly so, no obvious signs of disturbance	**Excellent (E)** Pristine or nearly so, no obvious signs of damage caused by the activities of European man.	No equivalent unit.
Excellent (2) Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.	**Very Good (VG)** Some relatively slight signs of damage caused by the activities of European man. For example, some signs of damage to tree trunks caused by repeated fires and the presence of some relatively non-aggressive weeds such as *Ursinia anthemoides* or *Briza* species, or occasional vehicle tracks.	**Very Good (VG)** Evidence of localised low level damage to otherwise healthy bush. Seedling recruitment and generally healthy population size (age/stage) structure apparent. Weed and grazing damage is confined (<20% of area). Some modification to vegetation structure due to changes in fire regimes may be apparent. Evidence of logging or firewood collection may be found. High likelihood that vegetation structure and species richness can be maintained.
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 (G)** More obvious signs of damage caused by the activities of European man, including some obvious impact on the vegetation structure such as caused by low levels of grazing or by selective logging. Weeds as above, possibly plus some more aggressive ones.	**Good (g)** Evidence of localised high level damage to otherwise low level damaged bush. Recruitment is localised and the populations of some species may be senescent. Weed and grazing damage is apparent in 20-50% of the area. Modification to vegetation structure due to changes in fire regimes may be apparent. Localised gall and parasitic plant damage may be apparent. Evidence of logging or firewood collection. Moderate likelihood that vegetation structure and species richness can be maintained.
Good (4) Vegetation structure significantly altered by very obvious signs of multiple disturbance. 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.	**Poor (P)** Still retains basic vegetation structure or ability to regenerate to it after very obvious impacts of activities of European man such as grazing or partial clearing (chaining) or very frequent fires. Weeds as above, probably plus some more aggressive ones such as *Ehrharta* species.	**Poor (p)** Widespread high level damage. Recruitment is disrupted and most woody species appear senescent. Weed and grazing damage may be apparent throughout >50% of the area. Modification to vegetation structure due to changes in fire regimes may be apparent. Locally some vertical strata are absent. Gall and mistletoe damage apparent. Evidence of logging or firewood collection. Low likelihood that vegetation structure and species richness can be maintained or re-established.
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.	**Very Poor (VP)** Severely impacted by grazing, fire, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species including aggressive species.	**Very Poor (p)** Widespread high level damage. Recruitment is disrupted and most species appear senescent. Weed and grazing damage apparent throughout the area. Modification to vegetation structure due to changes in fire regimes apparent. Widespread loss of vertical strata. Gall and mistletoe damage apparent. Evidence of logging or firewood collection. Little to no likelihood that vegetation structure and species richness can be re-established.
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.	**Completely Degraded (D)** Area that are completely or almost completely without native species in the structure of their vegetation, i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.	Not used – does not apply to bushland.

APPENDIX D

FLORA SPECIES LIST

Appendix D
Species List

Species	Common name	Status*
Acacia drewiana		
Acacia iteaphylla	Flinders Range Wattle	Introduced
Acacia lasiocarpa		
Acacia pulchella	Prickly Moses	
Acacia teretifolia		
Agrostocrinum scabrum	Blue Grass Lily	
Aira sp		Introduced
Allocasuarina humilis	Dwarf Sheoak	
Allocasuarina microstachya		
Anagallis arvensis	Scarlet pimpernel	Introduced
Andersonia lehmanniana		
Anigozanthos manglesii	Mangles Kangaroo Paw	
Arctotheca calendula	Cape Weed	Introduced
Astroloma pallidum	Kick Bush	
Austrodanthonia acerosa		
Austrostipa sp.		
Avena barbata	Bearded Oat	Introduced
Avena fatua	Wild Oat	Introduced
Baeckea camphorosmae	Camphor myrtle	
Beaufortia macrostemon		
Borya sp.		
Bossiaea eriocarpa	Common Brown Pea	
Brachypodium distachyon		
Briza maxima	Blowfly Grass	Introduced
Briza minor		Introduced
Burchardia congesta		
Burchardia multiflora	Dwarf Burchardia	
Burchardia umbellata	Milkmaids	
Caesia micrantha		
Caladenia marginata		
Calectasia cyanea	Blue Tinsel Lily	Declared Rare
Calectasia grandiflora		
Calothamnus quadrifidus	One-sided Bottle Brush	
Calytrix aurea		
Cassytha sp.	Dodder	
Centrolepis aristata		
Centrolepis drummondiana		
Centrolepis aristata		
Chamaecytisus palmensis	Tagasaste	Introduced

Species	Common name	Status*
Chamaescilla corymbosa		
Chasmanthe floribunda	Afrian Cornflag	Introduced
Chorizema dicksonii	Yellow-eyed Flame Pea	
Citrullus lanatus	Pie Melon	Introduced
Conostylis aculeata		
Conostylis caricina		
Conostylis setigera	Bristly Cottonhead	
Conyza bonariensis	Flaxleaf Fleabane	Introduced
Corymbia calophylla	Marri	
Cristonia biloba		
Cyathochaeta avenacea		
Cynodon dactylon	Couch	Introduced
Cyperus eragrostis	Umbrella Sedge	Introduced
Cyperus tenellus		
Dampiera sp.		
Daviesia decurrens	Prickly Bitter-pea	
Desmocladus fasciculata		
Desmocladus flexuosus		
Digitaria sanguinalis	Crab Grass	Introduced
Diuris purdiei	Purdie's Donkey-orchid	Declared Rare
Disa bracteata	African Weed-orchid	Introduced
Dittrichia graveolens	Stinkwort	Introduced
Drosera erythrorhiza	Red Ink Sundew	
Drosera menziesii ssp. menziesii		
Drosera spilos		
Dryandra armata	Prickly dryandra	
Dryandra armata var armata		
Dryandra lindleyana		
Dryandra nivea	Honey Pot Dryandra	
Dryandra sessilis		
Echinochloa crus-galli	Barnyard Grass	Introduced
Echium plantagineum	Paterson's Curse	Introduced
Ehrharta calycina	Veldt grass	Introduced
Ehrharta longiflora	Annual Veldt Grass	Introduced
Eragrostis curvula	African lovegrass	Introduced
Eremophila pauciflora		
Eucalyptus balanites	Cadda Road Mallee	Declared Rare
Eucalyptus lane-poolei	Salmon White Gum	
Eucalyptus marginata	Jarrah	
Eucalyptus rudis	Flooded Gum	
Eucalyptus wandoo	Wandoo	

Species	Common name	Status*
Filago gallica	Narrow-leaved Cudweed	Introduced
Freesia hybrid	Freesia	Introduced
Gastrolobium capitatum		
Gladiolus caryophyllaceus	Wild Gladiolus	Introduced
Gomphocarpus fruticosus	Cotton Bush	Introduced
Goodenia coerulea		
Goodenia micrantha		
Grevillea bipinnatifida	Fuchsia grevillea	
Grevillea wilsonii		
Haemodorum laxum		
Haemodorum paniculatum		
Haemodorum spicatum	Mardja	
Hakea ceratophylla	Horn Leafed Hakea	
Hakea incrassata	Marble Hakea	
Hakea lissocarpha	Honey Bush	
Hakea ruscifolia	Candle Hakea	
Hakea spathulata		
Hakea stenocarpa	Narrow-fruited Hakea	
Hakea trifurcata	Two-leaf Hakea	
Hakea undulata	Wavy-leafed Hakea	
Hemigenia sp		
Hibbertia aurea	Golden Guinea Flower	
Hibbertia hypericoides	Yellow Buttercups	
Homeria flaccida	One Leaf Cape Tulip	Introduced
Hovea trisperma	Common Hovea	
Hyalosperma demissum		
Hypocalymma angustifolium	White Myrtle	
Hypocalymma robustum		
Hypochaeris glabra	Flat Weed	Introduced
Hypolaena sp.		Introduced
Isopogon asper		
Isotoma hypocrateriformis	Woodbridge Poison	
Johnsonia sp.		
Kingia australis	Kingia	
Lathyrus tingitanus	Perennial Sweet Pea	Introduced
Laxmannia squarrosa		
Lechenaultia biloba	Blue Leschenaultia	
Lepidosperma leptostachyum	Slender Sword Sedge	
Lepidosperma pubisquameum		
Leucopogon sp.		
Levenhookia pusilla		

Species	Common name	Status*
Lolium rigidum	Annual Ryegrass	
Lomandra preissii		
Lomandra purpurea	Purple Mat Rush	
Lomandra spartea		
Lotus angustissimus	Narrowleaf Trefoil	Introduced
Loxocarya fasciculata		
Lyperanthus serratus	Rattle-beaked Orchid	
Melinis repens	Natal Grass	Introduced
Mesomelaena tetragona	Semaphore Sedge	
Mesomelaena stygia		
Nemcia capitata	Bacon and Eggs	
Neurachne alopecuroidea	Foxtail Mulga Grass	
Nuytsia floribunda	Western Australian Christmas Tree	
Orthrosanthus laxus	Morning Iris	
Oxalis pes-caprae	Soursob	Introduced
Oxalis glabra	Finger Leaf Oxalis	Introduced
Oxalis purpurea	Four O'clock	Introduced
Parentucellia latifolia		
Paspalum dilatatum	Paspalum	Introduced
Patersonia occidentalis	Purple Flag	
Patersonia pygmaea		
Pennisetum clandestinum	Kikuyu	Introduced
Petrophile striata		
Philotheca spicata	Pepper and Salt	
Pimelea imbricata		
Pimelea suaveolens	Scented Banjine	
Phytolacca octandra	Ink Weed	Introduced
Plantago lanceolata	Ribwort Plantain	Introduced
Pronaya fraseri		
Ricinus communis	Castor Oil Plant	Introduced
Romulea rosea	Guildford Grass	Introduced
Rumex sp.	Dock	Introduced
Schinus terebinthifolius	Brazilian Pepper Tree	Introduced
Schoenus nanus	Tiny Bog Rush	
Siloxerus multiflorus		
Solanum nigrum	Blackberry Night Shade	Introduced
Sonchus oleraceus	Common Sowthistle	Introduced
Sowerbaea laxiflora	Purple Tassels	
Sphaerolobium medium		
Stirlingia latifolia	Blueboy	
Stylidium affine	Queen Trigger Plant	

Species	Common name	Status*
Stylidium brunonianum	Pink Fountain Trigger Plant	
Stylidium bulbiferum	Circus Trigger Plant	
Stylidium repens	Matted Trigger Plant	
Stypandra glauca	Blind Grass	
Synaphea petiolaris		
Tetraria octandra		
Thelymitra macrophylla	Large-leafed Thelymitra	
Tolpis barbata	European Umbrella Milkwort	Introduced
Tricoryne elatior	Yellow Autumn Lily	
Trifolium angustifolium var. angustifolium		Introduced
Trifolium arvensis	Hares foot Clover	Introduced
Trifolium campestre	Low Hop Clover	Introduced
Tripterococcus brunonis	Winged Stackhousia	
Trymalium sp.		
Ursinia anthemoides	Ursinia	Introduced
Verticordia densiflora	Compacted Feather Flower	
Verticordia pennigera		
Vulpia bromoides	Squirrel-tail fescue	
Vulpia sp		
Wahlenbergia capensis		
Watsonia meriana	Watsonia	Introduced
Xanthorrhoea preissii	Grass Tree	
Xanthosia huegelii		

Species list compiled using Bush Forever Volume 2 (Government of Western Australia 2000b) and resources from the City of Armadale.

APPENDIX E

WEED CONTROL PLAN

APPENDIX E I

INTRODUCED SPECIES LOCATED WITHIN FLETCHER PARK

Arctotheca calendula
(Source: WAH 2010)

Briza maxima
(Source: WAH 2010)

Citrullus lanatus

Chamaecytisus palmensis

Conyza bonariensis
(Source: WAH 2010)

Cynodon dactylon
(Source: WAH 2010)

Digitaria sanguinalis
(Source: WAH 2010)

Dittrichia graveolens

Echium plantagineum

Eragrostis curvula

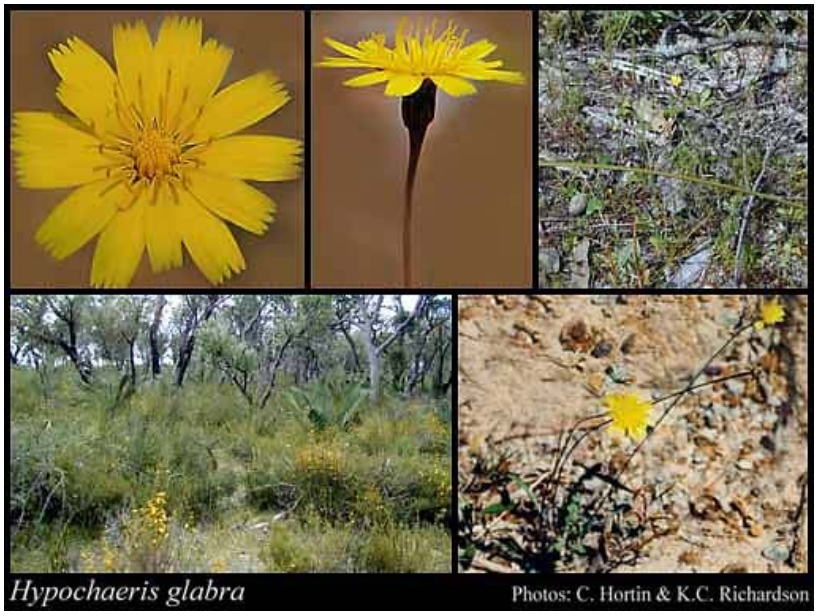
Ehrharta calycina
(Source: WAH 2010)

Ehrharta longiflora
(Source: WAH 2010)

Gladiolus caryophyllaceus

Gomphocarpus fruticosus

Hypochaeris glabra
(Source: WAH 2010)



Paspalum dilatatum
(Source: WAH 2010)

Phytolacca octandra

Oxalis pes-caprae
(Source: WAH 2010)

Ricinus communis

Rumex sp.

Schinus terebinthifolius
(Source: WAH 2010)

Solanum nigrum

Western Australian Herbarium [WAH] (2010). *Florabase - Information on the Western Australian Flora*. Department of Environment and Conservation, Perth, Western Australia. Online: http://florabase.dec.wa.gov.au/. [June 2010].

Appendix E III Weed Control Fletcher Park

Suggested Methods of Management and Control for Weed Species located within Fletcher Park, Wungong

Taxon	Common Name	Flowering	Fire response	Suggested methods of management and control
**Ehrharta calycina*	Veldt Grass	Spring (2 flushes)	Resprouts, enhances seed production and germination	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.
**Eragrostis curvula*	African Lovegrass	Opportunistic	Resprouts	Cut out small plants; spray with 1% glyphosate; utilise unplanned fires and spray regrowth at 5-10 cm. Always requires follow up treatment.
**Arctotheca calendula*	Cape Weed	August - November		Colonises bare soil and disturbed sites. Lontrel® 6mL/ 10L (300mL/ha) in early growth stages. Glyphosate 0.2% will control at all growth stages.
**Avena barbata*	Bearded Oat	Spring		Spray at 3-5 leaf stage with Fusilade® 10mL/ 10L (500mL/ha) + wetting agent; repeat over following 2 years. Aim to prevent seed production.
**Briza maxima*	Blowfly Grass	Spring		Prevent seed set – hand pull or spray at 3-5 leaf stage with Fusilade® 10mL/ 10L (500mL/ha) + wetting agent; repeat for 2-3 years.
**Cynodon dactylon*	Couch	Summer	Resprouts	Small infestations may be dug out, ensuring removal of all rhizomes and stolons, however it is difficult to eradicate without herbicides. Solarisation; shade out; spray Fusilade® 5mL/ L + wetting agent in late spring summer and then in autumn or glyphosate 1% follow-up always required. Particularly effective after fire.
**Cyperus eragrostis*	Umbrella Sedge	June - July		Try 1% glyphosate + Pulse®.
**Ehrharta longiflora*	Annual Veldt Grass	Winter - Spring	N/A	Hand pull; spray with Fusilade® 20mL/10L +wetting agent before flowering stem emerges; or 10mL/ 10L (500mL/ha) at 3-5 leaf stage – secondary seedling flush

Taxon	Common Name	Flowering	Fire response	Suggested methods of management and control
				often occurs – repeat if necessary.
**Gladiolus caryophyllaceus*	Wild Gladiolus	August - November		Wipe individual leaves glyphosate 10%, spray dense infestations in degraded area 1% glyphosate just on flowering at corm exhaustion.
**Gomphocarpus fruticosus*	Cotton Bush	N/A		Hand pull small plants, ensuring removal of as much root material as possible. Hand removing plants with mature fruits can lead to realease and rapid spread of wind dispered seed. foliar spray with 1.5% glyphosate or try cut and paint – 50% glyphosate (Sept – Dec).
**Hypochaeris glabra*	Smooth Cat's Ear Flat Weed	January – December	N/A	Rosettes wiped with glyphosate 30% provides effective control. Dense infestations – 25mL wetting agent + 10mL Lontrel® in 10L of water.
**Pennisetum clandestinum*	Kikuyu Grass	Summer	Resprouts	Difficult to manually control as all rhizomes must be removed. spray with 1% glyphosate or Fusilade® 10mL/ L + wetting agent, 2-3 sprays over single growing season.
**Solanum nigrum*	Black Berry Night Shade	April, June, July, August and October		Weeds of disturbed sites. Shade reduces seed production. Hand weed small infestations.
**Paspalum dilatatum*	Paspalum	Summer		Cut out small populations and isolated plants, ensure rhizome removal. Remove seed heads for safe disposal. At early head stage spray with glyphosate 10 ml/L. For established actively growing adult plants spray with Fusilade® Forte 16 ml /L + wetting agent. Older stands can also be controlled with 1% glyphosate, preferably pre- or early flowering. Alternatively, cut near ground level and immediately wipe with 10% glyphosate. A repeat application may be required for well established plants. Follow-up control of seedlings with 2 ml/L Fusilade® Forte + wetting agent. Use hygiene practices - clean machinery and footwear after working in infested areas. Mowing and slashing will remove flowering heads but will not control established plants and can spread seed. Strategic use of fire may be useful in suppressing this species. Following any fire event is an optimal time to undertake control.

Taxon	Common Name	Flowering	Fire response	Suggested methods of management and control
**Chamaecytisus palmensis*	Tagasaste	April - October		Hand pull seedlings where possible. For mature plants apply 250 ml Access® in 15 L of diesel to basal 50 cm of trunk (basal bark). Foliar spray with 0.5 g/10 L metsulfuron methyl + Pulse®
**Dittrichia graveolens*	Stinkwort	January - November		Hand remove isolated plants before flowering. Not killed by glyphosate. Spot spray 2mL Garlon® in 10L of water + 25mL.
**Melinis repens*	-	Summer		Prevent seed set. Cut out small populations. Spray 13 ml/L (3.3-6.6 L/ha) Fusilade® Forte + wetting agent. In less sensitive areas spot spray glyphosate at 1-2% solution + surfactant prior to flowering and seed set. Following fire is an optimum time to undertake control of populations.
**Oxalis pes-caprae*	Soursob	June - October		Spot spray metsulfuron methyl 0.2g/15L + Pulse®, or 1% glyphosate. Apply at bulb exhaustion, generally just on flowering. Physical removal can result in spread of bulbils.
**Phytolacca octandra*	Ink Weed	January – March September - December		Dig out isolated plants – cut root at least 5cm below ground. Spray with 1% glyphosate + Pulse®.
**Acacia iteaphylla*	Flinders Range Wattle	March - September		Hand pull seedlings, fell mature plants.
**Citrullus lanatus*	Pie Melon	January - December		
**Conyza bonariensis*	Flaxleaf Fleabane	December - February		Does not compete well under high plant density or cover. Requires disturbance to establish and persist. Establish desirable vegetation.
**Ricinus communis*	Castor Oil Plant	January - March		Hand pull seedlings and small plants, ensuring roots are removed. Cut and paint using 50% glyphosate or apply 250 ml Access® in 15 L of diesel to base 50 cm of trunk. Foliar spray seedlings and small plants using 1% glyphosate.
**Digitaria sanguinalis*	Crab Grass	Summer		Small infestations and individual plants can be hand removed by releasing the roots with a knife or trowel, ensure sprawling stems are also removed. Spray 1% glyphosate in spring
**Echinochloa crus-galli*	Barnyard Grass	Summer		Prevent seed set; intolerant of dense shade; spray Verdict 520® 5mL/10L (250mL/ha) + wetting agent at 3-5

Taxon	Common Name	Flowering	Fire response	Suggested methods of management and control
				leaf stage up to first tillering
**Echium plantagineum*	Patersons Curse	September - January		Slashing or mowing can cause out of season flowering and seed production. Spot spray in late autumn when most seed has germinated for the year with 0.5g/10L chlorsulfuron + wetting agent-this will help prevent further germination. Glyphosate will control existing plants.
**Schinus terebinthifolius*	Brazilian Pepper	February - March		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.
**Trifolium angustifolium* var. *angustifolium*	Narrow Leaf Clover	September - December		Hand remove isolated plants before flowering. Spot spraying Lontrel® 10mL/10L + wetting agent in early winter before flowering provides effective control.
**Rumex sp*	Dock	*R.brownii:* April – May *R.conglomeratus:* Oct-Feb *R.crispus:* July-Dec		Spray with 1% glyphosate in early bud stage, cultivation of older plants will spread root fragments
**Moraea flaccida*	One Leaf Cape Tulip	September - December		Spot spray metsulfuron methyl 0.1g/10L or chlorsulfuron 0.2g/10L + Pulse® or 2.5-5 g/ha + Pulse® or 2,2 DPA 55 g/10 L + Pulse®. Apply just on flowering at corm exhaustion.
**Freesia hybrid*	Freesia	July - October		Spot spray metsulfuron methyl 0.2g/15L + Pulse® (2.5-5 g/ha). Apply just on flowering at corm exhaustion.
**Chasmanthe floribunda*	African Cornflag	July - October		Spot spray 1% glyphosate + Pulse® before flowering.
**Avena fatua*	Wild Oat	Spring		Spray at 3-5 leaf stage with Fulisade® 10mL/ 10L (500mL/ha) + wetting agent; repeat over following 2 years. Prevent seed production and seedbank inputs each year. In small infestations hand removal may be feasible.
**Ursinia anthemoides*	Ursinia	July - Decemeber		N/A
**Watsonia meriana*	Watsonia	September - December		Wipe individual leaves with glyphosate 10% or spray dense infestations 2,2-DPA 10g/L + wetting agent or in degraded area 1% glyphosate. Apply just as flower spikes emerge at corm exhaustion.
**Oxalis glabra*	-	May - August		Spot spray metsulfuron methyl 0.2g/15L + Pulse®, or 1%

Taxon	Common Name	Flowering	Fire response	Suggested methods of management and control
				glyphosate. Apply at bulb exhaustion, generally just on flowering. Exercise care if manually removing as physical removal can result in spread of bulbils.
**Lathyrus tingitanus*	Tangier Pea	Feb/July/Oct - November		
**Oxalis purpurea*	Four O'Clock	May - September		Spot spray metsulfuron methyl 0.2g/15L + 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.
**Plantago lanceolata*	Ribwort Plantain	November - March		Spray in early stages of growth with 1% glyphosate

All Management and Control methods taken from *Bushland Weeds – A practical guide to their management. With case studies from the Swan Coastal Plain and beyond* and Florabase http://florabase.calm.wa.gov.au accessed 14/06/2010

Optimum Time and Suggested Implementation Delegate for Species Led Weed Control at Fletcher Park.

Taxon	Delegate	Optimum Treatment											
		January	February	March	April	May	June	July	August	September	October	November	December
**Ehrharta calycina*	City of Armadale and WRPC, AGLG	■	■				■	■	■			■	■
**Eragrostis curvula*	Contractor	■	■	■	■	■						■	■
**Arctotheca calendula*	CoA, WRPC	■	■	■	■	■	■	■					
**Avena barbata*	Contractor							■	■	■	■		
**Briza maxima*	Contractor							■	■				
**Cynodon dactylon*	Small infestation – WRPC, CoA. Large infestations - Contractor	■	■									■	■
**Cyperus eragrostis*	WRPC, CoA, AGLG	■	■	■	■	■				■	■	■	■
**Ehrharta longiflora*	CoA								■	■	■		
**Gladiolus caryophyllaceus*	CoA, WRPC							■	■	■			
**Gomphocarpus fruticosus*	CoA, WRPC, AGLA									■	■	■	■
**Hypochaeris glabra*	CoA	■											■
**Pennisetum clandestinum*	CoA	■										■	■
**Solanum nigrum*	CoA, WRPC	■	■	■		■				■		■	■
**Paspalum dilatatum*	Spot locations CoA, WRPC	■	■	■								■	■
**Chamaecytisus palmensis*	Contractor			■	■	■	■	■	■	■			

Taxon	Delegate	Optimum Treatment											
		January	February	March	April	May	June	July	August	September	October	November	December
**Dittrichia graveolens*	CoA, WRPC												
**Melinis repens*	CoA, WRPC												
**Oxalis pes-caprae*	CoA												
**Phytolacca octandra*	CoA, WRPC												
**Acacia iteaphylla*	WRPC												
**Citrullus lanatus*	WRPC												
**Conyza bonariensis*	CoA												
**Ricinus communis*	WRPC												
**Digitaria sanguinalis*	Contractor												
**Echinochloa crus-galli*	Contractor												
**Echium plantagineum*	CoA												
**Schinus terebinthifolius*	WRPC, AGLG												
**Trifolium angustifolium* var. *angustifolium*	CoA, WRPC, AGLG												
**Rumex sp*	WRPC												
**Moraea flaccida*	CoA												

Taxon	Delegate	Optimum Treatment											
		January	February	March	April	May	June	July	August	September	October	November	December
**Freesia hybrid*	CoA												
**Chasmanthe floribunda*	CoA												
**Avena fatua*	Contractor												
**Ursinia anthemoides*	WRPC, AGLG												
**Watsonia meriana*	Contractor												
**Oxalis glabra*	CoA												
**Lathyrus tingitanus*	CoA, WRPC, AGLG												
**Oxalis purpurea*	CoA												
**Plantago lanceolata*	Contractor												

Hand Pull Weeds, Wipe leaves and /or rosettes with herbicide, Cut and Fell paint cut with herbicides or Diesel
Spot Spray
Spray with Herbicide (Blanket Spraying)

2008 Weed Mapping Raw Data

Name 1	Name 2	Name 3	Number of stems	Stem diameter	Sq metres	Density	Priority	Date	ID	Area	Description
		Ursinia anthemoides	0	0	4	0-10%	Medium	20080409	545	Fletcher Park2	
Ehrharta calycina			0	0	10		High	20080409	546	Fletcher Park2	
		Watsonia meriana	20	0	10		Medium	20080409	547	Fletcher Park2	on track
		Watsonia meriana	25	0	4		High	20080409	548	Fletcher Park2	
Arctotheca calendula	Plantago lanceolata	patersons curse?	0	0	0		-	20080409	549	Fletcher Park2	pat c high
clover	Oxalis pes-carpa		0	0	3		Low	20080409	550	Fletcher Park2	
Fressia hybrid?		Ursinia anthemoides	0	0	10		High	20080409	551	Fletcher Park2	disturbed area
	Oxalis sp		0	0	4		High	20080409	552	Fletcher Park2	disturbed area
		Watsonia meriana	40	0	15		High	20080409	553	Fletcher Park2	
		Watsonia meriana	6	0	5		High	20080409	554	Fletcher Park2	on edge of track
		Watsonia meriana	3	0	2		High	20080409	555	Fletcher Park2	on egde track
		Watsonia meriana	10	0	2		High	20080409	556	Fletcher Park2	
		Watsonia meriana	7	0	2		High	20080409	557	Fletcher Park2	on edge of track
Ehrharta calycina			3	0	2		High	20080409	558	Fletcher Park2	inside edge of bush
Ehrharta calycina			10	0	4		High	20080409	559	Fletcher Park2	
Ehrharta calycina			0	0	2		High	20080409	560	Fletcher Park2	
Ehrharta calycina			0	0	1		High	20080409	561	Fletcher Park2	in amongst natives
		Watsonia meriana	7	0	1		High	20080409	562	Fletcher Park2	
Babiana stricta			1	0	0		High	20080409	563	Fletcher Park	
	Oxalis glabra		0	0	2		Low	20080409	564	Fletcher Park	
		Watsonia meriana	25	0	15		High	20080409	565	Fletcher Park	has been previously treated
	Oxalis pes-carpa		3	0	3		Low	20080409	566	Fletcher Park	
Babiana stricta			30	0	20		Medium	20080409	567	Fletcher Park	treated 2008?
		Watsonia meriana	2	0	1		High	20080409	568	Fletcher Park	
Fressia hybrid			30	0	20		High	20080409	569	Fletcher Park	
Fressia hybrid			20	0	10		High	20080409	570	Fletcher Park	
Fressia hybrid			40	0	4		High	20080409	571	Fletcher Park	treated 2008
		Solanum nigrum	8	0	20		High	20080409	572	Fletcher Park	
		Solanum nigrum	3	0	3		High	20080409	573	Fletcher Park	
		Watsonia meriana	60	0	10		Medium	20080409	574	Fletcher Park	
Fressia hybrid			10	0	1		High	20080409	575	Fletcher Park	treated 2008
Fressia hybrid			1	0	0		High	20080409	576	Fletcher Park	
	Oxalis pes-carpa		0	0	2		Medium	20080409	577	Fletcher Park	
	Oxalis pes-carpa		0	0	3		Low	20080409	578	Fletcher Park	
Ehrharta calycina			1	0	1		Medium	20080409	579	Fletcher Park	
Fressia hybrid			10	0	1		High	20080409	580	Fletcher Park	
Fressia hybrid			20	0	4		High	20080409	581	Fletcher Park	
Fressia hybrid			30	0	4		Medium	20080409	582	Fletcher Park	
		Patersons curse	0	0	6		High	20080409	583	Fletcher Park	
	Oxalis glabra		0	0	10		Low	20080409	584	Fletcher Park	property boundary
		Watsonia meriana	100	0	20		High	20080409	585	Fletcher Park2	
	Oxalis glabra		0	0	6		Medium	20080409	586	Fletcher Park2	edge of track
	Homeria flaccida		25	0	10		High	20080409	587	Fletcher Park2	on edge of track
Ehrharta calycina			0	0	0	10-20%	High	20080409	589	Fletcher Park2	
		Patersons curse	0	0	5		-	20080409	590	Fletcher Park2	monitor
Eragrostis curvula - 10-20%		Watsonia meriana	0	0	0	40-50%	Medium	20080908	591	Fletcher Park2	
		Watsonia meriana	0	0	0	10-20%	High	20080908	592	Fletcher Park2	
Briza maxima	Eragrostis curvula		0	0	0	0-10%	High	20080908	593	Fletcher Park2	
Ehrharta calycina	Ehrharta calycina		0	0	0	10-20%	Low	20080908	594	Fletcher Park2	
		Watsonia meriana	0	0	0	20-30%	High	20080908	595	Fletcher Park2	
Ehrharta calycina, ehrharta longiflora, era	Arcotheca calendula	Tribolium sp.	0	0	0	40-50%	Low	20080908	596	Fletcher Park2	
Eragrostis curvula, ehrharta calycina	Arcotheca calendula	Watsonia meriana	0	0	0	60-70%	High	20080908	597	Fletcher Park2	on edge
Ehrharta calycina	Eragrostis curvula		0	0	0	30-40%	High	20080908	598	Fletcher Park2	
Ehrharta calycina, Eragrostis curvula		Watsonia meriana	0	0	0	0-10%	High	20080908	599	Fletcher Park2	grasses 10% on edge
	Oxalis sp		0	0	2		Medium	20081006	855	Fletcher Park	
Fressia hybrid			10	0	3		High	20081006	856	Fletcher Park	
		Watsonia meriana	15	0	2		Low	20081006	857	Fletcher Park	
Fressia hybrid			25	0	4		Medium	20081006	858	Fletcher Park	
		Watsonia meriana	1	0	0		High	20081006	859	Fletcher Park	
		Watsonia meriana	15	0	6		Medium	20081006	861	Fletcher Park	
	Oxalis sp		0	0	4		High	20081006	862	Fletcher Park	
Fressia hybrid			10	0	5		High	20081006	863	Fletcher Park	
	Oxalis glabra		0	0	6		Medium	20081006	864	Fletcher Park	
		Watsonia meriana	15	0	10		Medium	20081006	865	Fletcher Park	
	Oxalis sp		0	0	2		Medium	20081006	866	Fletcher Park	
	Oxalis glabra		0	0	15		Medium	20081006	867	Fletcher Park	along track
	Oxalis glabra & pes carpa		0	0	10		Medium	20081006	868	Fletcher Park	
		Watsonia meriana	30	0	10		High	20081006	869	Fletcher Park	
	Lathyrus tingitanus		3	0	4		Low	20081006	871	Fletcher Park	
	Lathyrus tingitanus		15	0	10		Low	20081006	872	Fletcher Park	
	Lathyrus tingitanus		2	0	6		Low	20081006	873	Fletcher Park	
Eragrostis curvula		Ursinia anthemoides	0	0	4		High	20081006	874	Fletcher Park	
	Oxalis pes-carpa		0	0	25		Low	20081006	875	Fletcher Park	
	Oxalis pes-carpa		0	0	5		Low	20081006	876	Fletcher Park	
	Oxalis pes-carpa		0	0	10		Medium	20081006	877	Fletcher Park	along edge
Ehrharta calycina, Eragrostis curvula		Watsonia meriana	0	0	0	30-40%	Medium	20081007	878	Fletcher Park	
Ehrharta calycina	Oxalis sp	Briza maxima	0	0	0	10-20%	Medium	20081007	879	Fletcher Park	
Ehrharta calycina	Oxalis sp, hypochaeris glabra	Trifolium sp	0	0	0	20-30%	Low	20081007	880	Fletcher Park	
Eragrostis curvula			0	0	0	30-40%	Low	20081007	881	Fletcher Park	
Arctotheca calendula	Oxalis sp	Mixed grasses - Ehrharta longiflora, Eragrostis curvula, Briza maxima	0	0	0	20-30%	Low	20081007	882	Fletcher Park	
Briza maxima	Eragrostis curvula, Ehrharta calycina	Romulea rosea	0	0	0	0-10%	High	20081007	883	Fletcher Park	mainly on edge of tracks
Briza maxima, Ehrharta longiflora	Hypochaeris glabra	Trifolium sp.	0	0	0	20-30%	Medium	20081007	884	Fletcher Park	
Briza maxima	Fressia hybrid		0	0	0	30-40%	Medium	20081007	885	Fletcher Park	briza 10-20%
Mixed grasses, love, veld, guildford, briza		Ursinia anthemoides	0	0	0	0-10%	High	20081007	886	Fletcher Park	
mixed grasses	Hypochaeris glabra	Trifolium sp., Ursinia	0	0	0	0-10%	-	20081007	887	Attunga	
Ehrharta calycina	Eragrostis curvula	Briza maxima	0	0	0	0-10%	High	20081007	888	Fletcher Park	Arcotheca & Ursinia on tracks

APPENDIX C II
Introduced Species Point Mapping

Point:	**W01**		
Location:	50	406700mE	6439600mN
Photo number:	3935		
Weeds present:		**Percentage Cover**	
**Briza maxima*		1%	
**Eragrostis curvula*		5%	
**Avena barbata*		<1%	
**Schinus terebinthifolius*		<1%	
**Chamaecytisus palmensis*		<1%	
**Gomphocarpus fruticosus*		<1%	
**Cynodon dactylon*		30%	
**Oxalis pes-caprae*		<1%	
**Trifolium angustifolium var. angustifolium*		<1%	
**Pennisetum clandestinum*		8%	
**Arctotheca calendula*		5%	

Point:	**W02**		
Location:	50	406800 mE	6439600 mN
Photo number:	3940		
Weeds present:		**Percentage Cover**	
**Briza maxima*		<1%	
**Gladiolus caryophyllaceus*		<1%	

Point:	**W03**		
Location:	50	406900 mE	6439500 mN
Photo number:	3946		
Weeds present:		**Percentage Cover**	
**Briza maxima*		15%	
**Avena barbata*		2%	

Point:	**W04**		
Location:	50	406800 mE	6439500 mN
Photo number:	3949		
Weeds present:		**Percentage Cover**	
**Briza maxima*		10%	

Point:	**W05**		
Location:	50	406700 mE	6439500 mN
Photo number:	3955		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Avena barbata*		<1%	
**Hypochaeris glabra*		<1%	
**Cynodon dactylon*		2%	

Point:	**W06**		
Location:	50	406600 mE	6439500 mN
Photo number:	3956		
Weeds present:		**Percentage Cover**	
**Briza maxima*		10%	
**Avena barbata*		15%	
**Hypochaeris glabra*		<1%	
**Oxalis pes-caprae*		5%	
**Pennisetum clandestinum*		10%	

Point:	**W07**		
Location:	50	406600 mE	6439300 mN
Photo number:	3984		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		<1%	

Point:	**W08**		
Location:	50	406600 mE	6439400 mN
Photo number:	3983		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		80%	
**Pennisetum clandestinum*		2%	

Point:	**W09**		
Location:	50	406800 mE	6439400 mN
Photo number:	3952		
Weeds present:		**Percentage Cover**	
**Briza maxima*		10%	
**Trifolium angustifolium var. angustifolium*		<1%	
**Avena barbata*		<1%	
**Eragrostis curvula*		<1%	

Point:	**W10**		
Location:	50	406900 mE	6439400 mN
Photo number:	3954		
Weeds present:		**Percentage Cover**	
**Briza maxima*		10%	
**Oxalis pes-caprae*		5%	
**Hypochaeris glabra*		<1%	
**Cynodon dactylon*		2%	
**Arctotheca calendula*		<1%	

Point:	**W11**		
Location:	50	406600 mE	6439200 mN
Photo number:	-		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		20%	

Point:	**W12**		
Location:	50	406700 mE	6439300 mN
Photo number:	3997		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		40%	
**Avena barbata*		5%	

Point:	**W13**		
Location:	50	406700 mE	6439200 mN
Photo number:			
Weeds present:		**Percentage Cover**	
**Rumex* sp.		<1%	
**Dittrichia graveolens*		3 plants	

Point:	**W14**		
Location:	50	406500 mE	6439100 mN
Photo number:	3997		
Weeds present:		**Percentage Cover**	
**Briza maxima*		10%	
**Eragrostis curvula*		5%	
**Gladiolus caryophyllaceus*		3%	

Point:	**W15**		
Location:	50	406700 mE	6439100 mN
Photo number:	4011		
Weeds present:		**Percentage Cover**	
**Rumex* sp.		80%	
**Eragrostis curvula*		2%	
**Arctotheca calendula*		5%	
**Solanum nigrum*	4014	2 plants	
**Avena barbata*		<1%	
**Hypochaeris glabra*		<1%	
**Melinis repens*		<1%	
**Pennisetum clandestinum*		8%	

Point:	**W16**		
Location:	50	406500 mE	6439000 mN
Photo number:	4024		
Weeds present:		**Percentage Cover**	
**Briza maxima*		5%	
**Eragrostis curvula*		10%	
**Gladiolus caryophyllaceus*		6%	
**Trifolium angustifolium var. angustifolium*		+	
**Melinis repens*		5%	
**Avena barbata*		1%	
**Ehrharta calycina*		+	

Point:	**W17**		
Location:	50	406500 mE	6438900 mN
Photo number:	4026		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		10%	
**Gladiolus caryophyllaceus*		2%	
**Ehrharta calycina*		+	
**Trifolium angustifolium var. angustifolium*			

Point:	**W18**		
Location:	50	406500 mE	6438800 mN
Photo number:	4027		
Weeds present:		**Percentage Cover**	
**Briza maxima*		1%	
**Eragrostis curvula*		15%	
**Gladiolus caryophyllaceus*		1%	
**Melinis repens*		+	
**Ehrharta calycina*		+	
**Trifolium angustifolium var. angustifolium*			

Point:	**W19**		
Location:	50	406500 mE	6438700 mN
Photo number:	4028		
Weeds present:		**Percentage Cover**	
**Briza maxima*		1%	
**Eragrostis curvula*		5%	
**Gladiolus caryophyllaceus*		+	
**Ehrharta calycina*		+	
**Trifolium angustifolium var. angustifolium*			

Point:	**W20**		
Location:	50	406500 mE	6438600 mN
Photo number:	4029		
Weeds present:		**Percentage Cover**	
**Briza maxima*		2%	
**Eragrostis curvula*		5%	
**Ehrharta calycina*		+	
**Trifolium angustifolium var. angustifolium*			

Point:	**W21**		
Location:	50	406700 mE	6438500 mN
Photo number:	4030		
Weeds present:		**Percentage Cover**	
**Briza maxima*		5%	
**Eragrostis curvula*		40%	
**Gladiolus caryophyllaceus*		2%	
**Melinis repens*		+	
**Arctotheca calendula*		+	
**Ehrharta calycina*		+	
**Trifolium angustifolium var. angustifolium*			

Point:	**W22**		
Location:	50	406700 mE	6438700 mN
Photo number:	-		
Weeds present:		**Percentage Cover**	
**Briza maxima*		5%	
**Eragrostis curvula*		3%	
**Gladiolus caryophyllaceus*		+	
**Ehrharta calycina*		+	
**Solanum nigrum*		5 plants	
**Gomphocarpus fruticosus*		3 plants	
**Phytolacca octandra*		+	
**Pennisetum clandestinum*		+	

Point:	**W23**		
Location:	50	406700 mE	6438600 mN
Photo number:	4034		
Weeds present:		**Percentage Cover**	
**Eragrostis curvula*		10%	
**Pennisetum clandestinum*		80%	
**Hypochaeris glabra*		+	

Point:	**W24**		
Location:	50	406700 mE	6438500 mN
Photo number:	4036		
Weeds present:		**Percentage Cover**	
**Eragrostis curvula*		40%	
**Pennisetum clandestinum*		2%	
**Hypochaeris glabra*		+	
**Poaceae*		80%	

Point	In drain 10 m from W1	
Location:	50	
Photo number:	-	
Weeds present:		**Percentage Cover:**
**Ricinus communis*		
**Solanum nigrum*		8 plants
**Conyza bonariensis*		
**Echinochloa crus-galli*		
**Cyperus eragrostis*		
**Paspalum dilatatum*		
**Digitaria sanguinalis*		
**Arctotheca calendula*		

Point	Between W2 to W3	
Location:	50	
Photo number:	3941	
Weeds present:		**Percentage Cover:**
**Briza maxima*		25%
**Gomphocarpus fruticosus*		+
**Oxalis pes-caprae*		+
**Cynodon dactylon*		5%
**Avena barbata*		2%
**Gladiolus caryophyllaceus*		1%

Locations of weeds

Species name	Status	Location		Number of individuals
**Gomphocarpus fruticosus* (Cotton Bush)	Declared	406721	6439212	30 plants
		406700	6439600	5 plants
		406728	6439123	1 plant
		406722	6439090	7 plants in 5m
		406715	6439077	10 in 5 m
		406700	6438700	3 plants
		406721	6439089	
		406827	6439576	
**Solanum nigrum* (Black Berry Night Shade)		406714	6439034	5 plants
		406500	6438700	5 plants in 5 m
		406720	6439600	8 plants
		406700	6439100	5 plants in 5 m
		406700	6438500	5 plants
**Echium plantagineum* (Patersons Curse)	Declared	406714	6439034	~ 20 plants
		406713	6438995	
**Citrullus lanatus* (Pie Melon)		406714	6439034	~ 3 plants
**Dittrichia graveolens*		406700	6439200	5 plants
		406713	6438995	10 plants
**Acacia iteaphylla*	Declared	406649	6439100	1 plant
**Schinus terebinthifolius*		406700	6439600	2 Plants
**Chamaecytisus palmensis*		406700	6439600	10 plants
**Phytolacca octandra*		406700	6438700	1 plant
**Cyperus eragrostis*		406700	6439600	5 plants
**Ricinus communis*		406700	6439600	3 plants
**Conyza bonariensis*		406700	6439600	>10 plants
**Digitaria sanguinalis*		406700	6439600	>10 plants
**Echinochloa crus-galli*		406700	6439600	>10 plants
**Paspalum dilatatum*		406700	6439600	>10 plants
**Schinus terebinthifolius*		406700	6439600	1 plant
**Trifolium angustifolium var. angustifolium*		406700	6439600	>20 plants

APPENDIX F

FAUNA SPECIES LIST

Appendix F

Avifauna Species List

Avifauna Species	Common Name	Significant Species (Bush Forever)
Acanthiza apicalis	Inland Thornbill	B
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	B
Acanthiza inornata	Western Thornbill	B
Acanthorhynchus supercilosus	Western Spinebill	
Accipiter fasciatus fasciatus	Brown Goshawk	C
Anas superciliosa	Pacific Black Duck	
Anthochaera carunculata	Red Wattlebird	
Cacatua roseicapilla *	Galah	
Calyptorhynchus banksii naso	Red-tailed Black Cockatoo	A, C
Calyptorhynchus baudinii or *Calyptorhynchus latirostris*	White-tailed Black Cockatoo species. Either Baudin's Cockatoo or Carnaby's Cockatoo	A, C
Chenonetta jubata	Australian Wood Duck	
Coracina novaehollandiae	Black-faced Cuckoo-shrike	
Corvus coronoides perplexus	Australian Raven	
Cracticus tibican doralis	Australian Magpie	
Dacelo novaeguineae *	Laughing Kookaburra	
Dicaeum hirundinaceum hirundinaceum	Mistletoebird	
Gerygone fusca fusca	Western Gerygone	
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	
Grallina cyanolauca	Magpie Lark	C
Hamirostra isura	Square-tailed Kite	
Lichenostomus virescens	Singing Honeyeater	

Lichmera indistincta indistincta	Brown Honeyeater	
Malurus splendens splendens	Splendid Fariy-wren	B
Melithreptus chloropsis	Western White-naped Honeyeater	C
Pachycephala pectoralis fuliginosa	Golden Whistler	B
Pachycephala rufiventris	Rufous Whistler	
Pardalotus punctatus	Spotted Pardalote	
Pardalotus striatus westraliensis	Striated Pardalote	
Petroica multicolor campbelli	Scarlet Robin	B
Phaps chalcoptera	Common Bronzewing	B
Phylidonyris novaehollandiae	New Holland Honeyeater	C
Platycerus spurius	Red-capped Parrot	
Platycerus zonarius	Australian Ringneck	
Rhipidura fuliginosa preissi	Grey Fantail	
Rhipidura leucophrys leucoprys	Willie Wagtail	
Sericornis frontalis balstoni	White-browed Scrubwren	B
Smicrornis brevirostris	Weebill	B
Streptopelia senegalensis senegalensis *	Laughing Turtle-dove	
Tadorna tadornoides	Australian Shelduck	
Todiramphus sanctus sanctus	Sacred Kingfisher	
Trichoglossus haematodus *	Rainbow Lorikeet	
Tyto alba	Barn Owl	
Zosterops lateralis	Silvereye	

Category A: Bird species listed under the *Wildlife Conservation Act 1950* and *Environmental Protection and Biodiversity Conservation Act.*.
Category B: Bird species that are habitat specialists with a reduced distribution on the Swan Coastal Plain.
Category C: Bird species that are wide-ranging with reduced populations on the Swan Coastal Plain.
*: Introduced species.
Adapted from Gole (2006).

APPENDIX G

COMMERCIAL QUOTE WEED CONTROL AND REVEGETATION WORKS

tranen revegetation systems

ENV Australia
Fletcher Park

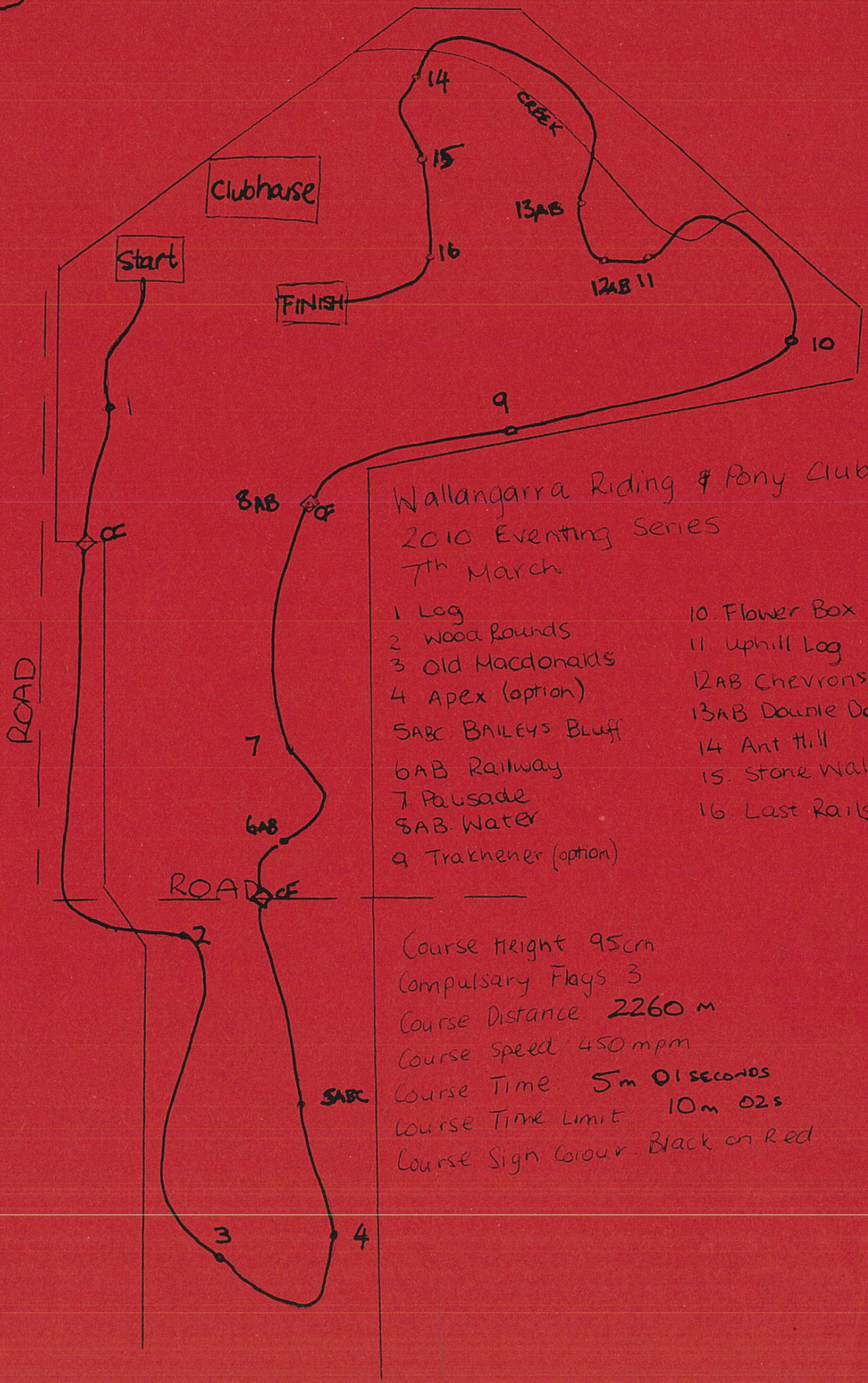
Area Description	Area (ha)	Planting Density (plants/m2)	Total Plants		Comments
Horse tracks	0.21	3.25	6,825		3 sedges / m2 and 1 tree per 4 m2
Non-horse track revegetation zones	5.49	0.33	18,117		1 plant per 3 m2
Remainder for weed control only	4.6	0	0		10.3 ha less revegetation area
Total	**10.3**		**24,942**		

Item	Description	Quantity	Unit	Rate	Total	
1.0	**Seed Collection**					
1.1	Provenance seed collection	4	days	$650.00	$2,600.00	
1.2	Seed processing	16	hours	$85.00	$1,360.00	
1.3	Annual seed bank management	1	ea	$675.00	$675.00	
	Sub-Total				**$4,635.00**	
2.0	**Pre-planting Weed Control**					
2.1	Herbicide application spring 2010	10.3	ha	$980.00	$10,094.00	
2.2	Herbicide application autumn 2011	10.3	ea	$980.00	$10,094.00	
2.3	**Sub-Total**				**$20,188.00**	
	Seedling Propagation and Planting 2011					
3.0	Seed bank withdrawals (allowance)	20	ea	$5.00	$100.00	
3.1	Seedling propagation	24,942	ea	$1.80	$44,895.60	
3.2	Seedling planting	24,942	ea	$0.80	$19,953.60	
3.3	Fertiliser tablet supply and install	24,942	ea	$0.40	$9,976.80	
3.4	Tree guard supply	18,642	ea	$0.70	$13,049.40	
3.5	Tree guard installation	18,642	ea	$1.20	$22,370.40	Non-horse track revegetation zone, and trees on horse tracks
3.6	**Sub-Total**				**$110,345.80**	
	Post Installation Management 4 Years (Provisional)					
4.0	Monitoring (spring, autumn annually)	8	ea	$680.00	$5,440.00	
4.1	Infill planting supply and install 2012 - 30%	7,483	ea	$3.00	$22,447.80	
4.2	Infill tree guards supply and install 2012 - 30%	5,593	ea	$1.90	$10,625.94	
4.3	Infill planting 2013 - 15%	3,742	ea	$2.30	$8,606.60	
4.4	Infill tree guards supply and install 2011 - 15%	2,796	ea	$1.90	$5,312.97	
4.5	Herbicide application spring 2011	10.3	ha	$980.00	$10,094.00	
4.6	Herbicide application autumn 2012	10.3	ha	$980.00	$10,094.00	
4.7	Herbicide application spring 2012	10.3	ha	$980.00	$10,094.00	
4.9	Herbicide application autumn 2013	10.3	ha	$980.00	$10,094.00	
4.10	Herbicide application spring 2013	10.3	ha	$980.00	$10,094.00	
4.11	Herbicide application autumn 2014	10.3	ha	$980.00	$10,094.00	
4.12	Herbicide application spring 2014	10.3	ha	$980.00	$10,094.00	
4.13	Herbicide application autumn 2015	10.3	ha	$980.00	$10,094.00	
4.14	Tree guard maintenance and removal	27,031	ea	$0.50	$13,515.45	
5.0	**Sub-Total**				**$146,700.76**	
	Project Management and Administration	**2.5%**			**$7,046.74**	
	TOTAL (ex-GST)				**$288,916.30**	
	GST				**$28,891.63**	
	TOTAL (inc-GST)				**$317,807.93**	

APPENDIX H

WRPC 2010 EVENTING SERIES MAPS

B

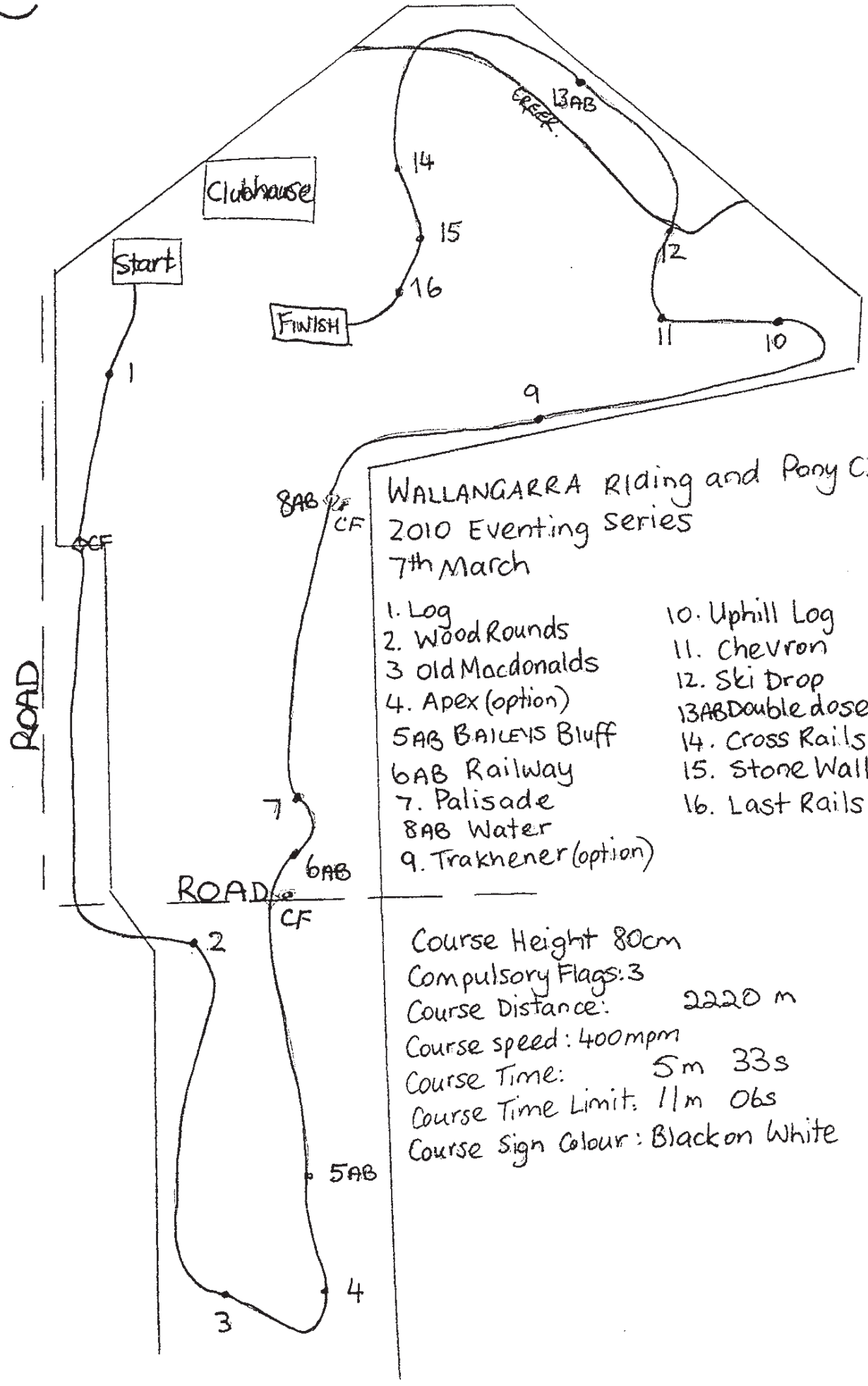


Wallangarra Riding & Pony Club
2010 Eventing Series
7th March

1 Log
2 Wood Rounds
3 Old Macdonalds
4 Apex (option)
5ABC Bailey's Bluff
6AB Railway
7 Palisade
8AB Water
9 Trakhener (option)
10 Flower Box
11 Uphill Log
12AB Chevrons
13AB Double Dose
14 Ant Hill
15 Stone Wall
16 Last Rails

Course Height 95cm
Compulsary Flags 3
Course Distance 2260 m
Course Speed 450 mpm
Course Time 5m 01 seconds
Course Time Limit 10m 02s
Course Sign Colour Black on Red

C

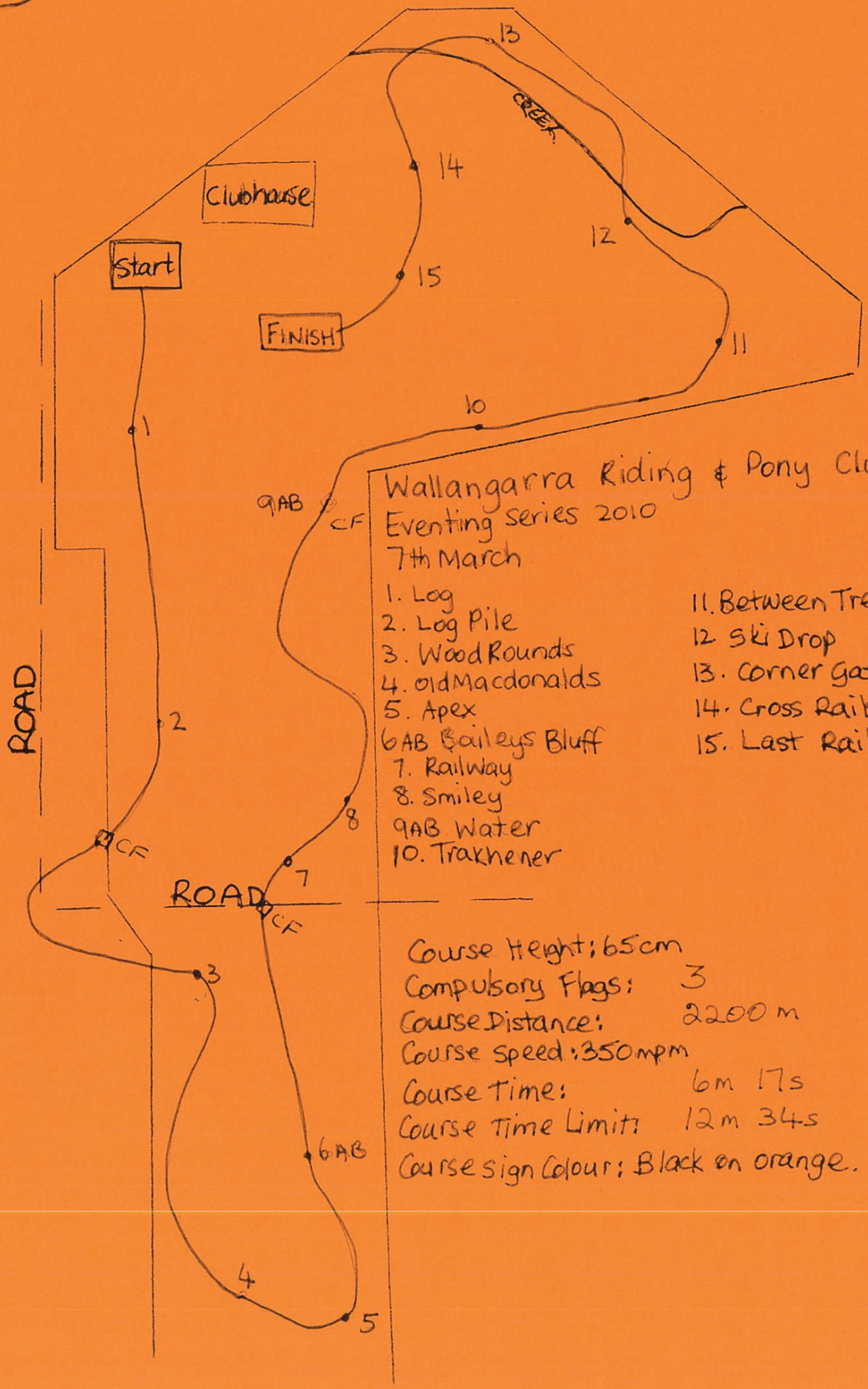


WALLANGARRA Riding and Pony Club
2010 Eventing Series
7th March

1. Log
2. Wood Rounds
3 old Macdonalds
4. Apex (option)
5AB Baileys Bluff
6AB Railway
7. Palisade
8AB Water
9. Traknener (option)
10. Uphill Log
11. Chevron
12. Ski Drop
13AB Double dose
14. Cross Rails
15. Stone Wall
16. Last Rails

Course Height 80cm
Compulsory Flags: 3
Course Distance: 2220 m
Course speed: 400mpm
Course Time: 5m 33s
Course Time Limit: 11m 06s
Course Sign Colour: Black on White

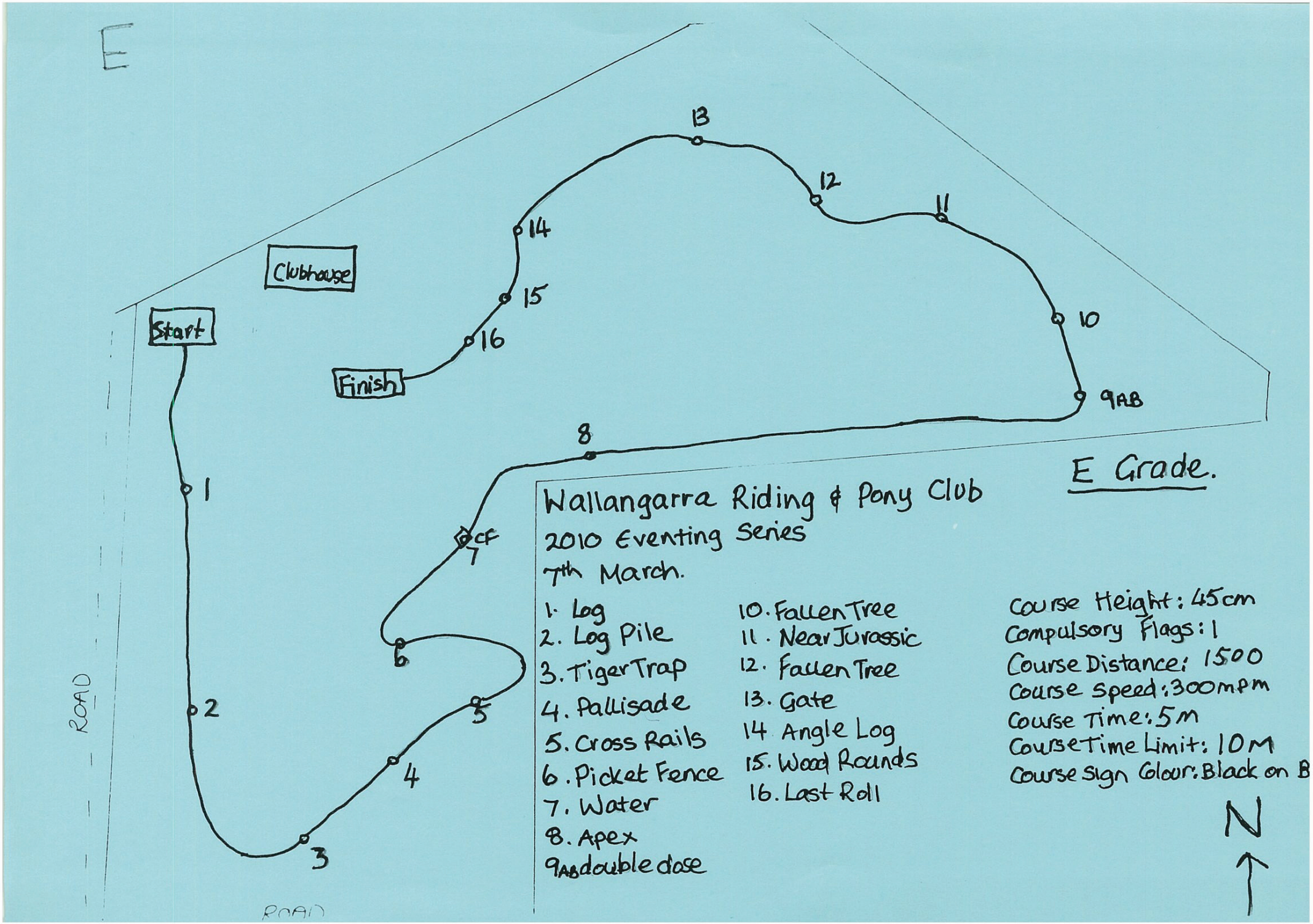
D



Wallangarra Riding & Pony Club
Eventing series 2010
7th March

1. Log
2. Log Pile
3. Wood Rounds
4. old Macdonalds
5. Apex
6AB Baileys Bluff
7. Railway
8. Smiley
9AB Water
10. Trakhener
11. Between Trees
12. Ski Drop
13. Corner Gate
14. Cross Rails
15. Last Rails

Course Height; 65cm
Compulsory Flags: 3
Course Distance: 2200 m
Course speed: 350mpm
Course Time: 6m 17s
Course Time Limit: 12m 34s
Course sign Colour: Black on orange.



Wallangarra Riding & Pony Club

2010 Eventing Series

7th March.

E Grade.

1. Log
2. Log Pile
3. Tiger Trap
4. Pallisade
5. Cross Rails
6. Picket Fence
7. Water
8. Apex
9AB double close
10. Fallen Tree
11. Near Jurassic
12. Fallen Tree
13. Gate
14. Angle Log
15. Wood Rounds
16. Last Roll

Course Height: 45cm
Compulsory Flags: 1
Course Distance: 1500
Course Speed: 300mpm
Course Time: 5m
Course Time Limit: 10M
Course Sign Colour: Black on B

N

APPENDIX I

COMMUNITY CONSULTATION

SUMMARY OF SUBMISSIONS

FLETCHER PARK BUSHLAND MANAGEMENT PLAN

WARD	NERRIGEN
DATE	9 June 2011
REF	PH
RESPONSIBLE MANAGER	CES

In Brief:

- The draft Fletcher Park Bushland Management Plan has been through a 6 week public consultation period following Council recommendation T63/09/10.
- Eleven submissions were received. Changes to the document have been made, where appropriate, in response to matters raised in submissions.
- **Recommend:**
  That Council:
  (i) endorse the Fletcher Park Bushland Management Plan as amended;
  (ii) be provided with a preliminary report on the revegetation of degraded areas within twelve months.

Tabled Items
Nil.

Officer Interest Declaration
Nil.

Strategic Implications
Enhanced Natural and Built Environments
2.8 - A natural environment and bushland that is sustained, enhanced and strengthened.
2.8.1 Develop an appropriate policy and long term works program to protect and enhance our bushland and natural environs under the City's control.
2.8.2 Provide natural area maintenance and management programs.

Legislation Implications
Nil.

Council Policy / Local Law Implications
Nil.

Budget / Financial Implications
The proposed actions as outlined in the Draft Fletcher Park Bushland Management Plan will be addressed over 5 years. The majority of actions come at no additional cost to the City as they are within the scope of current staff roles. A number of actions can be achieved through Parks budget allocations for nature reserves, subject to Council approving an increase to this budget for 2011/12. The items dependent on this are indicated in the following implementation table.

At Council's 23 March 2009 meeting (D26/3/09), $76,500 was approved for improvement works in Fletcher Park through the Public Open Space funding within Precinct D. As a regionally significant environmental asset, external grant funding can be sought to supplement this allocation for any additional environmental projects within the Park. A number of items relating to bushland management activities rely on this funding to be achieved. Recommendations 3, 7 and 15 refer to undertaking opportunistic environmental surveys and this would be on the basis of external funding being sourced.

Recommendation 18 discusses the need for a brush down area for horses prior to leaving the Park. However the cost feasibility of this should be considered in relation to any facilities upgrades that will occur from the relocation of the Kelmscott Pony Club and if this can be achieved within the budget available to do this.

The remaining recommendations are associated with bushland management or maintenance to Park's facilities. It is anticipated that capital works costs associated with items such as fencing will be met through Parks Department's maintenance budgets, subject to an increase in the allocation for this in 2011/12.

Recommendation	Priority	Year	Estimated Cost	Funding source
Five year weed control plan.	High	2010 - 2015	*$25,000	$20,000 natural area maintenance budget, contribution of $5,000 POS funding
Maintain fencing around the reserve to reduce opportunities for unauthorised vehicle access.	High	Ongoing	*$5,000/annum	Expected to be met through Parks maintenance budget
Feral honey bee control.	Moderate	2011/12	*$2,000	Expected to be met through natural area maintenance budget or grant funding
Fuel reduction activities (mowing grass).	High	Ongoing	*$20,000/annum	Expected to be met through natural area management programme budget
Close and rehabilitate tracks.	Moderate	2011-2015	$21,631	POS funding and planting using community groups
Interpretive signage.	High	2015	$4,000	Expected to be met through grant funding
Rehabilitation of bushland areas (based on commercial costs of seed propagation and planting)	Moderate	2011 - 2015	$64,849	$44,895 POS funding, planting undertaken by community groups ($19,954)
Native seed collection for revegetation.	High	2010/11	$4,635	POS funding
Mosaic fuel reduction burns as necessary	High	Ongoing	*$1,500/annum	Expected to be met through natural area management programme budget

** Total $33,500 included in submission for Natural Areas Management budget allocation (Parks) in the 2011/12 Technical Services Budget Submission.*

Consultation

The draft management plan was prepared by ENV Australia on behalf of the City and was released for a 6 week public consultation period as resolved by Council at its meeting on 13 September 2010 (T63/09/10). The document was provided to residents within 300m of the Park, relevant government departments, advertised on the City's website and within the Comment and Examiner community papers. The proposed summary of submissions were prepared by the consultants and provided to the Manager Parks and Environmental Coordinator for consideration.

BACKGROUND

Fletcher Park (Reserve no. 14217) is a 19 ha reserve vested in the City of Armadale as a "Reserve for Recreation". 5 ha of the Park is regionally significant bushland mapped as a Threatened Ecological Community under State and Federal legislation and managed for it's conservation values.

The City of Armadale and Wallangarra Riding and Pony Club Fletcher Park Bushland Management Plan was adopted by Council in 2002. In March 2010 ENV Australia were contracted to undertake a review of the 2002 document and to prepare this management plan.

The draft Fletcher Park Bushland Management Plan ('the management plan') was put to Council at its 13 September 2010 meeting and it was resolved (T63/09/10):
That Council provide in principle support for the Fletcher Park Bushland Management Plan and advertise the Plan for a 6 week public consultation period.

The management plan has been advertised for a 6 week public consultation period. This consultation involved:

- Advertisements in the Comment News and Weekend Examiner;
- Distribution of copies of the draft management plan to relevant State Government agencies;
- Distribution of copies of the draft management plan to the Wallangarra Riding and Pony Club;
- Letters to landholders within 300m of the Fletcher Park boundary; and
- Notification of the public comment period on the City's website.

The summary of submissions received and the resulting responses are detailed in the following section. It is recommended that the Fletcher Park Bushland Management Plan be endorsed. A full copy of the proposed Fletcher Park Management Plan as amended in response to public submissions is provided under separate cover.

PUBLIC SUBMISSIONS AND ANALYSIS
Eleven submissions were received during the 6 week public consultation period as shown in ***Attachment 'A-1' to this agenda***. This includes the summary of submissions and recommended responses. Six of the submissions were from local residents, one was received from the Wallangarra Riding and Pony Club, and the remainder were received from State Government agencies. The key issues raised in the submissions are discussed below.

Government Departments
Four submissions were received from relevant State Government Departments. The submissions received from the Department of Planning and Main Roads Department indicated support for the management plan recommendations and indicated no objection to the management plan. The submission by the Department of Environment and Conservation also supported the document and provided minor editorial comments which were amended in the document. The submission received from the Water Corporation indicated that they are assessing the implications of the management plan on the current and future use of water infrastructure in the vicinity. No further correspondence to date has been received from the Water Corporation. Information on the Water Corporation infrastructure in the vicinity was added to Section 2.2 Surrounding Land Use.

Equestrian Facilities Needs Assessment
The Equestrian Clubs Facilities Needs Assessment and Feasibility Study was initiated as a direct result of the need for the City to relocate the Kelmscott Pony Club and Kelmscott Adult Riding Club from their current location at Pries Park, and the requirement to determine how the needs of this group will be met elsewhere. During workshops held between the City and the affected pony clubs, it was determined that due to the scheduling issues which would arise if there were to be five clubs using Palomino Park that the relocation of Kelmscott Pony Club to Fletcher Park be investigated.

Negotiations between the City, the Wallangarra Riding and Pony Club (WRPC) and the Kelmscott Pony Club (KPC) are ongoing for the arrangements of the relocation of the KPC to Fletcher Park. Discussions have indicated that due to the complexity of lease arrangements the two pony clubs will be put under separate management arrangements. Any clubs using the reserve must abide by the stipulations of this management plan, and it will form part of any management arrangement. Discussions have been progressing on responsibilities for matters such as maintenance and grounds upkeep. Matters relating to bushland management have been reflected in this management plan. It is anticipated that if multiple clubs are utilising the reserve then a 'management committee' will be formed to over see the management arrangements and grounds maintenance.

A number of the submissions related to the arrangements with the clubs and the changes to the management of the reserve as a result of the relocation of the KPC. These have been reflected in the update of the management plan.

Closure of tracks
The main bushland portion of the Park is of regional and national significance with the vegetation being protected as a Threatened Ecological Community under State and Federal environmental legislation. The bushland portion is highly fragmented and currently contains 2.39km of tracks and 41 equestrian jumps.

During the public consultation period officers held discussions with the WRPC to come to an agreement on the tracks suitable for closure and rehabilitation, and those which the WRPC do not utilise during their events. To protect the environmental values of the Park, the management plan recommends that approximately 704 m and 0.14 ha of tracks are closed and rehabilitated. This would still allow cross country events to be held through the bushland area, while improving the environmental asset. The management plan figures relating to this have been updated to reflect the agreed track closures.

Park management for conservation values
Three submissions raised concern over the current use of the reserve and the impact of this on the conservation values of the bushland area. No changes to the management plan have been made as a result of these submissions. It should be noted that Fletcher Park is managed for it's conservation values and the management plan already contains recommendations designed to be sensitive to the environmental values of the Park and to manage the current and future usage within these parameters.

One of these submissions stated that the current lease over the Park should not be renewed and that horses should not be allowed to use the Park. All efforts are made to ensure the conservation values of the Park are protected while still allowing for equestrian use. Over the term of the lease the equestrian uses have been managed with conservation in mind. As a response to concerns that the biodiversity values may be affected by the presence of horses, the City of Armadale has been undertaking a botanical survey since 2005 to measure the impact of horses on the

vegetation health. The City will continue monitoring to enable the identification of changes to the vegetation that might be occurring over longer time periods.

Concern was also expressed over the potential increase in use of the reserve by the relocation of the KPC and the negative effect this would have on the management and maintenance of the bushland. While the management plan has been amended to detail the possible management arrangements with the clubs utilising the reserve, the justification of this relocation is not within the scope of this management plan. This concern will be taken into consideration when the management arrangements between the City and the clubs are entered into. Details within the management arrangements will also be consistent with the recommendations of the management plan.

DETAILS OF PROPOSAL

The management plan has been written for implementation over the next five years to provide opportunities to improve the environmental attributes of the Park. It is intended that a review of the progress of management plan implementation will occur annually and helps assess the progress and priorities of the plan.

The following table is the implementation plan including a summary of the proposed management actions, timeframes for implementation and resource estimates, reflecting any changes by officers as a result of the public submissions.

The opportunity arose during discussions on management arrangements to provide for more stringent controls surrounding the use of the bushland areas by the pony clubs. Consequently, three new recommendations have been added to the management plan:

- Resident pony clubs will abide by the recommendations in this management plan, which will also form part of any management arrangements entered into between the City of Armadale and the clubs. (Recommendation 2);
- Remove unnecessary jumps within the tracks to be closed and rehabilitated. (Recommendation 29); and:
- Resident pony clubs to provide statistics on horse usage to the City of Armadale annually. (Recommendation 30).

Any other adjustments to the recommendations reflect the fact that a management arrangement rather than a lease will be deployed, resulting in a change in emphasis on responsibilities in some cases. Amendments to the plan were required to reflect the relocation of KPC to the Fletcher Park grounds. A number of the recommendations in the management plan were specific to the WRPC and the lease they held with the City. These recommendations were altered to indicate that there may be more than one club using the grounds and to reflect the potential management arrangements as a result of the relocation. Hence, the use of the term 'Resident Pony Clubs' as opposed to 'WRPC'. In addition, some responsibilities (e.g for fuel reduction activities/mowing) now fall to the City of Armadale due to a change from a lease to a management arrangement. However, no recommendations have been deleted since the release for public consultation.

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
1	The City of Armadale will seek to change the purpose of the Reserve 14217 to include	High	2011	2012	CoA - Environment	Staff Resources

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
	conservation whilst permitting ongoing use of the reserve for passive recreation and horse riding.					
2	Resident pony clubs will abide by the recommendations in this management plan, which will also form part of any management arrangements entered into between the City of Armadale and the clubs.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
3	As opportunities arise participate in flora, fauna and fungi surveys within Fletcher Park	Low	Ongoing	Ongoing	CoA	Cost yet to be determined
4	Ensure that all vehicles leaving the Park are free of soil and vegetation	Low	2011	Ongoing	CoA, Resident pony clubs	N/A
5	Seek a modification to the DEC's Geomorphic Wetlands Swan Coastal Plain dataset to remove the wetland mapping from the areas within Fletcher Park that support upland vegetation types yet are mapped as wetlands.	Low	2012	2014	CoA - Environment	Staff Resources
6	Continue the horse impact study until 2015 to further enable the identification of any changes in vegetation associated with horse use that may occur over long periods of time.	High	2011	Ongoing	CoA - Environment	Staff Resources
7	As opportunities arise undertake a Spring survey following summer fire to determine the extent of Diuris purdiei throughout Fletcher Park.	Moderate	As required	N/A	CoA - Environment	Cost yet to be determined
8	Resident pony club appointed Environmental Officer to ensure DRF locations are kept free of horse movements. This can be carried out through educating	High	2011	Ongoing	Resident Pony Clubs	N/A

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
	new and existing members about the sensitive nature of parts of the bushland and by keeping tracks away from the plant.					
9	CoA informs DEC of recent survey findings regarding TEC type 3a within Fletcher Park.	Moderate	2011	2011	CoA - Environment	N/A
10	Undertake vegetation condition mapping in 2014.	Moderate	2014	2014	CoA - Environment	Staff Resources
11	Undertake ongoing prioritised weed control over a period of five years using the strategies outlined in this management plan.	High	2011	2016	CoA – Environment and Parks	$25,000
12	Undertake monitoring to determine the effectiveness of weed control.	Moderate	2012	Ongoing	CoA - Environment	Staff Resources
13	Promote habitat for native fauna through rehabilitation efforts.	Moderate	2011	Ongoing	CoA - Environment	N/A
14	Maintain fencing around the reserve to reduce opportunities for unauthorised vehicle access.	High	2011	Ongoing	CoA – Environment and Parks	$5,000 / annum
15	As opportunities arise participate in introduced fauna monitoring within Fletcher Park.	Low	2011	Ongoing	CoA - Environment	N/A
16.	Undertake feral honey bee control within the Park.	Moderate	2012	2013	CoA - Environment	$2,000
17	Implement in accordance with the procedures of the City of Armadale's Dieback Policy, ENG 9 Managing Phytophthora Dieback and this management plan.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
18	Designate a brush down area to be designated for horses to remove traces of infested soil before leaving the Park.	Moderate	2011	Ongoing	Resident pony clubs	N/A

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
19	Emergency vehicle access tracks should be maintained as described in this management plan. No new access tracks should be created unless deemed necessary for safety purposes.	High	2011	Ongoing	CoA - Parks	N/A
20	Undertake fuel reduction activities by keeping grassed areas mowed and annually controlling grassy weeds in bushland areas.	High	2011	Ongoing	CoA - Parks	$20,000/annum
21	Undertake fuel load assessment s of the bushland areas within Fletcher Park consistent with the City of Armadale fire maintenance program.	Moderate	2011	Ongoing	CoA - Rangers	Staff Resources
22	Undertake cool mosaic control burns if deemed necessary for safety.	High	2011	Ongoing	CoA - Rangers	$1,500/annum
23	A log of all environmental related tasks undertaken by the resident pony clubs and the City of Armadale will be kept. This log will be provided to the City on a bi-annual basis for inclusion into the City's record system.	High	2011	2016	CoA - Environment, Resident pony clubs	N/A
24	Resident pony clubs management committee to appoint one of their members to be responsible for liaising with the City on environmental management of the Park. The resident pony clubs management committee is to be cognisant of, and ensure all activities are consistent with, this management plan.	High	2011	Ongoing	Resident pony clubs	N/A
25	When each Environmental Officer is appointed the resident pony clubs management committee will inform the City of Armadale of the name of the Environmental	High	2011	Ongoing	Resident pony clubs	N/A

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
	Officer and provide the city with their contact information.					
26	No further tracks within the bushland areas are created.	High	2011	2016	CoA, Resident pony clubs	N/A
27	Tracks shown in Figure 9 to be closed and rehabilitated.	Moderate	2011	2016	CoA - Environment,	$21,630.70
28	Investigate the need to install a substrate, such as river sand, to the tracks to remain open within the bushland.	High	Ongoing	Ongoing	CoA, Resident pony clubs	N/A
29	Remove unnecessary jumps within the tracks to be closed and rehabilitated.	High	2011	2011	WRPC	N/A
30	Resident pony clubs to provide statistics on horse usage to the City of Armadale annually.	High	2011	Ongoing	Resident Pony Clubs	N/A
31	The resident pony club provide a key to their locks to the City of Armadale property department.	High	Ongoing	Ongoing	Resident pony clubs	N/A
32	Maintenance of existing tracks within the bushland portion of the reserve shall only be undertaken in accordance with this management plan and in compliance with the relevant legislation.	High	Ongoing	Ongoing	CoA, Resident Pony Clubs	N/A
33	The City of Armadale discusses opportunities with the Public Transport Authority (PTA) to discourage access off the firebreaks on PTA lands to the west of Fletcher Park.	Moderate	2011	2016	CoA – Parks and Environment	Staff Resources
34	Any upgrades to facilities are assessed on the basis that no damage to native vegetation will occur.	High	2011	2016	CoA - Environment	N/A

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
35	Facilities will not undergo upgrades at the expense of conservation values of Fletcher Park.	High	2011	Ongoing	CoA, Resident pony clubs	N/A
36	No facilities will be installed, upgraded or removed within the bushland sections of the reserve without approval by the City of Armadale Environmental Officer and Manager Parks.	High	2011	Ongoing	CoA – Parks and Environment, Resident pony clubs	N/A
37	Apply for a water extraction licence from the Department of Water for the bore within the Park.	High	2011	2012	CoA – Parks	Staff Resources
38	Adhere to the water allocation licence, if approved by the Department of Water.	High	2011	Ongoing	CoA - Parks	N/A
39	Place interpretive signage at the Park's main entrance and/or inside the park. Interpretive signs should include information on dieback and rehabilitation work.	High	2015	2016	CoA - Environment	2 signs @ $2,000 each = $4,000
40	Continue to concentrate intensive rehabilitation efforts in the High Priority Areas Shown in Figure 8.	Moderate	2011	2016	CoA – Parks and Environment	Seedling propagation = $44,895.60* Seedling planting = $19,953.60* * commercial costs
41	Collect native seeds from Fletcher Park for revegetation activities.	High	2011	2012	CoA - Environment	$4,635
42	Invite local community groups and schools to be involved in revegetation activities.	Low	2011	2016	CoA – Environment	N/A
43	Revegetation should be undertaken using the guiding principles outlined in this	High	2011	Ongoing	CoA - Environment	N/A

Recommendation		Priority	Start Year	End Year	Responsibility	~ Cost / 5 years (exc. gst)
	management plan.					
44	*(i) endorse Fletcher Park Management Plan as amended;* *(ii) be provided with a preliminary report on the revegetation of degraded areas within twelve months.*					

OPTIONS

1. Council endorse the Fletcher Park Bushland Management Plan.
2. Council decide not to endorse the Fletcher Park Bushland Management Plan.

CONCLUSION

The Fletcher Park Bushland Management Plan provides detailed management recommendations for the reserve. The recommendations proposed in the plan are based on fulfilling the principal management objectives to:

- Ensure the long-term conservation of the remnant bushland;
- Consolidate the environmental attributes and management issues;
- Develop clear and practical management actions and timings based on priorities; and
- Develop measurable assessment criteria for the implementation of the plan.

Accordingly Option 1 is recommended.

Officers advised that an additional recommendation No. 44 had been added to the Report, reading as follows:-

> *"Investigate options for relocating the cross country course within the Fletcher Park Reserve, including revegetating degraded areas to enable the cross country course to be moved from the environmentally sensitive areas."*

Committee agreed that a preliminary report on progress on this investigation be provided to the Technical Services Committee within twelve months.

T23/6/11 RECOMMEND

That Council:

(i) endorse Fletcher Park Bushland Management Plan as amended;

(ii) be provided with a preliminary report on the revegetation of degraded areas within twelve months.

MOVED Cr Wielinga
MOTION CARRIED (7/0)

APPENDIX I

Community Consultation Summary of Submissions

Section	Comment	Response	Submission
1.3 Legislative Framework	On page 9 there should be a reference to the two DRF also being listed as threatened flora (endangered) under the EPBC Act. The phrase 'without an appropriate licence' should be replaced with 'without appropriate Ministerial authorisation' to indicate that written authority of the Minister in the form of a permit is required to take DRF.	Page 10 under the EPBC Act section now states "Fletcher Park contains a two DRF species (*Eucalyptus balanites and Diuris purdiei*) and a TEC (*Corymbia calophylla – Kingia australis woodland*) protected under the EPBC Act." Page 10 under the *Wildlife Conservation Act* now reads "The WC Act makes it an offence to 'take' threatened species without appropriate Ministerial Authorisation."	6
2.1 Tenure	As part of Bush Forever Site 264 "Lambert Lane Bushland", Fletcher Park's reservation for recreation is acceptable where the flora's value has been lost. However, this good bushland within the scope of this plan should be given conservation status and managed properly with that in mind.	The bushland portions of Fletcher Park are managed by the City for their conservation significance using the guiding principles of this management plan. Currently Fletcher Park is zoned as 'Parks and Recreation'. Amendment to the reserve zoning is addressed in Recommendation 1 which states *"The City of Armadale will seek to change the purpose of the Reserve 14217 to include conservation whilst permitting ongoing use of the reserve for passive recreation and horse riding*."	3
	Would like to see the park made into open space where people can walk their dogs or perhaps ride a horse.	Recommendation 1 identifies the current zoning of the Park and the need to seek to change the purpose of the zoning to 'Conservation and Recreation'. The current lease over the Park provides the WRPC with exclusive use over the land leased. Under terms of management arrangement this will change and the issue of public usage of the equestrian facilities will be required to be addressed. This is not within the scope of the management plan.	2
2.2 Surrounding	The landowner adjacent to the southern portion of the Park near Eleventh Road has been cleaning up rubbish and maintaining fire	As the vested managers of the Park, the City undertakes the management of activities such as weed	2

Section	Comment	Response	Submission
Land Use	break along boundary fence for 8 years.	control, fire management and rubbish removal. These aspects are addressed within this management plan.	
	The Water Corporation owns Reserve 380179 which has been set aside as a future infrastructure corridor. The Wungong Transfer Main also traverses the southern edge of Fletcher Park. The main is currently contained within an easement in favour of the Water Corporation.	Details on the Water Corporation infrastructure have been added to Section 2.2 of the plan.	11
3.2 Flora and Vegetation	Concerns relating to the cost and viability of recommendation number 2. The logistics of achieving this recommendation would appear to be significant. The ability to administer this recommendation effectively is highly unlikely for the following reasons: • expense and viability of 'wash down' facilities in arid environment; • Gravel road entry; • Gravel/sand car park provided for vehicles and horse floats; and • Possible gridding at entry gate may provide some level of reduction in soil trafficking;	Recommendation 2 relates to the introduction and spread of weed seed into, within and out of the Park. It is intended that anyone using the Park will adhere to the recommendation in order to minimise the spread and introduction of weed seed. There is no cost to the City associated with this recommendation and it is not intended that the City will police the recommendation but that visitors to the site will adhere to good management practises. Recommendation 40, which discusses the installation of interpretative signage, will also help to address this point.	
	The taxonomy for *Calectasia* has been updated, and *Calectasia cyanea*, the DRF, is restricted to the south coast. The species at this site would not be DRF and is probably either *Calectasia grandiflora* or *Calectasia narragara*. Reference to *Calectasia cyanea* should be should be deleted.	Reference to *Calectasia cyanea* has been removed (Table 1 page 17).	6
	The area designated Degraded (Figure 2) on the creekline along the N.E boundary seems to be overstated, within this area one section has badly deteriorated where a number of trees, mainly *E. wandoo* have died. The understorey is badly infested with wild oats and Kikuyu, among other weeds. Suggest the rest of the area be placed in the G-D category at least.	The mapping is correct - the vegetation condition mapping was undertaken by ENV Australia during the preparation of the management plan. The mapping will be updated in three years at the same time as when the weeds are remapped.	
3.3 Fauna	It should be noted that the Quenda is listed as a Priority 5 (conservation dependant) species by the DEC.	The information regarding the conservation status of the Quenda has been updated, Page 20 now states "The Quenda (Southern Brown Bandicoot) is listed as	6

Section	Comment	Response	Submission
		occurring within the Bush Forever Site 264 (Government of Western Australia, 2000b), which encompasses Fletcher Park and is anticipated that it would occur in Fletcher Park bushland. The Quenda is listed as a Priority 5 species under the WC Act.".	
3.6 Reserve Usage	Keeping horses in the Park overnight does not help with the management of the Park.	Horses are not kept within the Park overnight. No portion of the Park is leased for the use of stock. If it is deemed that this issue may arise in the future, it will be incorporated within the management arrangements for usage of the Park.	2
	Horses should be kept out of the park as riders do not stick to tracks and the horses cause erosion and spread weeds. The lease over the Park should not be renewed.	The bushland areas of the Park are managed for their conservation significance. This management plan sets out to address and mitigate these threats to the bushland values. Any management arrangement entered into will help guide the use of the Park and facilities and any clubs using the reserve will abide by the stipulations of this plan.	5
	The park is currently at maximum capacity. Pressure on the park will increase if there is extra use of the grounds and if Kelmscott Pony Club is included in the lease. The Council sees Fletcher Park as the future location of all equestrian activities in the Armadale area. The proposal includes the relocation of the Kelmscott Pony Club to the park. There is some concern that extra use of the grounds may put further pressure on proper management and maintenance of the bushland, to the detriment of its health and integrity.	Sections 3.6 and 4.2 discuss the reserve usage and provides information on the equestrian clubs facilities needs assessment currently being undertaken. Due to outcomes of workshops between the City and all pony clubs within the City, negotiations are underway between the City and clubs regarding the relocation of the Kelmscott clubs. It is anticipated that the Kelmscott Pony Club will be relocated to Fletcher Park and that both clubs will be put under separate management arrangements for the use of the reserve. It is anticipated that any clubs using the Park will abide by the stipulations of the management plan and it will form part of any management arrangement entered into between the City and the clubs. It is intended that the development of the management arrangements and this management plan will help guide the use,	4, 7

Section	Comment	Response	Submission
		minimising the impact to bushland areas of the Park.	
	Suggestion of the possibility of further enhancement/ development to the tracks so they can be used by pedestrians for 'hosted walks' in the future. This may create a multi-purpose use for the tracks and encourage greater community awareness of the unique features of the park.	The tracks within the bushland are currently at a standard where access by pedestrians, horses and management vehicles can be achieved on the designated tracks. The sections of the Park currently leased by the WRPC, provides exclusive use of these areas is to the WRPC. The issue of public usage will be required to be considered under the terms of the new management arrangements for the use of the equestrian facilities. However this is not within the scope of the management plan.	8
4 Other Studies	The continuing threat to the flora from horse traffic through the site has to be monitored regularly and changes made if the vegetation continues to decline. New or better hygiene methods may have to be encouraged and, if no other option can be found, the closure of the bushland area to horses should be considered and an alternative area used where native flora isn't threatened.	Section 4 provides details of the study the City is currently undertaking in the Park in relation to monitoring the impact of horses on the bushland vegetation. This study has been ongoing since 2006 and Recommendation 4 aims to continue this monitoring to identify changes to the vegetation over a prolonged period. The City also undertakes weed mapping and the management plan recommends extending this monitoring to include the rehabilitation work proposed to be undertaken in the Park. This will be used to apply adaptive management measures to bushland management.	3, 8
	The City needs to recognise and acknowledge comments by Astron Environmental Services regarding vegetation patterns experiencing no significant change, suggesting exclusion of horses and the public from one track has not resulted in changes to the vegetation. This is in contrast to the comment that "Disturbance within the site is relatively high due to clearing history and equestrian use (almost 80%)". More than 30 years has been spent improving the grounds. In some areas that were originally cleared for equestrian use, the bushland has encroached significantly over this time. Additional clarification and documented evidence is requested if this is the case.	The outcomes of the horse use study are discussed in Section 4.1. Recommendation 6 states the City will continue the horse use monitoring as recommended by Astron Environmental Services to enable the identification of changes in vegetation that may occur over long periods of time. The comment refers to the degraded vegetation condition of the extensive cleared areas of the Park and the fragmented nature of the bushland as shown in Figure 2.	8

Section	Comment	Response	Submission
5.2 Threatened Ecological Communities	The reference to Jill Pryde should be of Species and Communities Branch, not Threatened Species Branch	The reference has been amended to read Species and Communities Branch (Section 5.2, page 29).	6
5.4 Weeds	Invasion of bushland by weeds growing in bordering cleared properties should be added as a key process to the spread of weeds. The spread of weeds is most likely the result of natural processes such as wind, which is beyond the control of human management. Do not believe that the spread of weeds by trampling by horses and people is a key process as they are kept to the designated tracks. The surface of the vehicle parking area can be changed to gravel to ensure that weed management is minimal. Vehicles rarely access other areas of the park.	The key process which states "Constant source of seeds and material from high density ongoing weed presence" accounts for the spread of weeds from adjacent properties. Weed seed can be spread from the bottom of shoes and hooves during movement over tracks. Weeds growing on and at the edge of tracks have the potential to spread within other bushland areas. As weeds can grow within gravel this is not an appropriate weed management tool for use in the Park.	8
6.4 Dieback	Asking members and parents to clean their boots is unrealistic. It would be more appropriate if designated tracks are improved and upgraded, minimising soil movement. Weather management of tracks to ensure areas of natural erosion are maintained so that further track degradation does not occur. Interpretive signage, such as "Do's and Don'ts", would be appropriate.	Normal dieback management practise involves reducing the risk of spread of soil from all vectors including shoes. As dieback mapping has indicated that the reserve is entirely dieback infested then this management practise is more to safeguard the spread of the disease out of the Park and into other properties. Visitors to the Park will not be forced to clean their boots however people utilising the reserve should adhere to good dieback management practise. Section 6.8 and Recommendation 40 discuss interpretive signage relating to dieback and rehabilitation works.	8

Section	Comment	Response	Submission
	Clarification of the term 'infested soil' and a detailed explanation of how people are to be trained to identify such soil is required.	Dieback is discussed in Sections 3.5 and 6.4. Dieback infested refers to areas where the water mould *Phytohpthora cinnamomii* has been identified as being present. Identifying the presence of dieback is a highly technical skill and the City relies on trained contractors to undertake the assessment, Figure 5 indicates the areas of Fletcher Park that are known to be dieback infested. A paragraph clarifying what Dieback is has been added to Section 3.5.	8
6.5 Fire Management	Three metre fire break could be constructed along western boundary Lot 53 Mitchell St, Wungong without any environmental damage.	Section 6.5 details fire management within the Park including recommendations for maintenance of appropriate fire access tracks and adequate management of the fire risk.	1
	The pony club acknowledges their responsibility of maintaining firebreaks however it is the City's responsibility to establish the firebreaks. The pony club currently undertakes fuel reduction activities however, if the City changes the tenancy structure from a Lease to a Management Agreement, then this responsibility should revert to the City.	The current weed control program the City currently undertakes within the bushland portion of the reserve also contributes to fire management within the Park. Negotiations between the City and pony clubs into the management arrangements and responsibilities are currently being undertaken. These management arrangements will stipulate issues such as fire management.	8
6.6 Wallangarra Riding and Pony Club	The recommendation of a WRPC appointed environmental officer who will ensure DRF locations are kept free of horse movements through educating new and existing members about the sensitive nature of parts of the bushland and keeping tracks away from the plants is already included in the existing management plan and is adhered to.	This management plan and all recommendations associated with it is a review of the 2000 Management Plan and will replace the old management plan. This has been addressed in the management plan.	8
	The Pony club has one official rally per month. Tasks undertaken by members on site would generally occur at a rally. Therefore the recommendation of providing a log of all environmental tasks to	Recommendation 23 has been amended to make reference to a "bi-annual" log of activities.	8

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	the City on a monthly basis for inclusion into the City's record system is unlikely. It would be more appropriate for the pony club to provide a report either every quarter or every six months.		
	All suggested track closures and targeted rehabilitation works should be communicated to the club prior to closure to ensure a collaborative and constructive approach to the management of these areas and the safety of members is provided.	On site meetings have been held between City officers and WRPC members to discuss which tracks will remain open and which ones are to be closed. Figure 9 has been updated in line with what was agreed by both parties at the meetings.	8
	The cost associated with Recommendation 23 is written as N/A. The club is in liaison with the City to submit a DSR grant for the upgrade of the cross country course within the Park. Recent meetings have occurred to clarify which tracks require maintenance to facilitate the upgrade. The management plan needs to recognise this work and the changes proposed. It is suggested that the cost be amended to $35,000 to reflect the DSR Grant.	The recommendation states that no new tracks will be created in the bushland. It does not refer to the management of existing tracks or the closure of tracks. The grant to upgrade the cross country tracks will not create any new tracks within the bushland and as such no cost is associated with this recommendation and no budget is required to be specified. Section 3.6 has been upgraded to mention the grant application for the upgrade to the cross country facilities.	8
6.7 Access Control and Fencing	A lock system has been in use between the City and the club for many years that appears to work efficiently. If the City is considering changing the current system this needs to be identified and communicated to the club for consideration and comment.	The intention of the plan is not to change the lock system, however if another pony club will be relocated to the grounds then they will also be required to have adequate access to the grounds. This will be further investigated during the discussions surrounding the management arrangements of the grounds, however, this is not within the scope of this management plan.	8
	Existing fencing along Moore St and along residential boundaries is in need of repair. The cost of fencing is expensive and would have to be included in the club's budget as an ongoing project. However, this would depend on the club maintaining a Lease relationship with the City. Should the City decide to change the tenancy arrangement, then the responsibility of fencing would be the responsibility of the City.	Recommendation 33 includes an upgrade to fencing along Moore St. Negotiations between the City and pony clubs into the management arrangements and responsibilities are currently being undertaken. These management arrangements will stipulate issues such as maintenance of grounds and infrastructure.	8
6.8 Current infrastructur	Sign at Mitchell St prohibiting entry has been misplaced	The sign was erected by the Public Transport Authority in order to stop illegal access to the Railway Reserve at	5

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e and future requirements		the end of Mitchell Street. This was undertaken in consultation with the City.	
Figures	The Fletcher Park Boundary is incorrect on all figures.	All figures have been amended to display the correct cadastral boundary of Fletcher Park.	4
Appendix D Flora Species List	The Flora Species List is not complete, additions to the species list is recommended. A formal comprehensive botanical survey of the bushland is essential.	Recommended changes to the flora species list have been made. Due to the cost of undertaking a comprehensive flora survey this suggestion has not been included. Information received from the DEC flora monitoring plot within the bushland area has been added to the species list. A recommendation has been included which states "As opportunities arise participate in flora and fungi surveys within Fletcher Park." (page 20).	3, 7
	The current list with its high content of exotic weeds gives the wrong impression of the sites real botanical value. Additions to be made to the introduced flora species list include: • *Eucalyptus sp* – located in creek bed near where it exists under Stone St. Possibly Eucalyptus camaldulensis. • *Tagasaste* (tree Lucerne) – located along the North East boundary near creekline. • *Chamelaucium uncinatum* – one plant only present for at least the last 20 years. Mature, no obvious seedlings. • *Disa bracteata* (South African Orchid) – Scattered through the bushland. • *Wahlenbergia capensis* shouldn't be shown as an introduced plant	Noted. The management plan recommends monitoring of the success of weed control. At this time, and during the annual review of the weed control program, these additional weeds will be surveyed and added to the weed management program if deemed necessary. Recommendation 3 also states "As opportunities arise participate in flora, fauna and fungi surveys within Fletcher Park." Wahlenbergia capensis (Cape bluebell) is native to the Cape Province, South Africa (Hussey et al., 1997). This species has been placed in the correct species list.	7
Appendix E Weed Control Plan	Within the photographs of Fletcher Park Weeds, Gladiolus caryophyllaceus plants are a Watsonia species. Rumex sp. is an immature Echium plantagineum (Patterson's curse).	The plants shown in the photograph labelled *Gladiolus caryophyllaceus* and *Rumex sp.* are correct. Samples were collected during the field survey and identified by a certified taxonomist.	7