

CITY OF ARMADALE

A G E N D A

OF TECHNICAL SERVICES COMMITTEE TO BE HELD IN THE COMMITTEE ROOM, ADMINISTRATION CENTRE, 7 ORCHARD AVENUE, ARMADALE ON MONDAY, 3 OCTOBER 2011, AT 5.30 PM.

Please note start time of 5.30pm

A meal will be served at 6.15pm.

PRESENT:

APOLOGIES:

OBSERVERS:

IN ATTENDANCE:

PUBLIC:

DISCLAIMER

The Disclaimer for protecting Councillors and staff from liability of information and advice given at Committee meetings to be read by the Chairman.

DECLARATION OF MEMBERS' INTERESTS

QUESTION TIME

DEPUTATION

CONFIRMATION OF MINUTES

RESOLVED

Minutes of the Technical Services Committee Meeting held on 5 September 2011, be confirmed.

**MOVED Cr
MOTION CARRIED ()**

ITEMS REFERRED FROM INFORMATION BULLETIN – ISSUE NO. 16

The following items were included for information in the “Technical Services” section:

- **Outstanding Matters & Information Items**
Report on Outstanding Matters – Technical Services Committee T-1
- **Monthly / Quarterly Departmental Reports**
Technical Services Works Programme T-2
- **Minutes of Occasional / Advisory Committees**
Bushcare and Environmental Working Group July 2011..... T-3
Bungendore Park Management Committee July 2011 T-10
- **Miscellaneous**
Forum of Regional Councils – August 2011 T-15

If any of the items listed above requires clarification or a report for a decision of Council, this item to be raised for discussion at this juncture.

I N D E X

TECHNICAL SERVICES COMMITTEE

3 OCTOBER 2011

CIVIL WORKS

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**** OBSERVATION CIRCLE, BEDFORDALE AND GRADE ROAD, KELMSCOTT -
BUDGET VARIATION 2011/12**

WARD NEERIGEN &
RIVER
FILE REF Various
DATE 15 September 2011
REF MCW
RESPONSIBLE EDTS
MANAGER

In Brief:

- Due to essential drainage works due to flooding and property damage at two separate sites, a budget variation is required to provide the funding to complete these works in 2011/12.
- **Recommend**
That Council:
Pursuant to Section 6.8 of the Local Government Act 1995 (as amended), authorise the following expenditure:
New Drainage
Observation Circle \$55,000
22 Grade Road \$20,000
and amend the 2011-2012 Annual Budget as follows:
Expenditure
New Drainage
Observation Circle increase by \$55,000
22 Grade Road increase by \$20,000
Road Re-surface
Little John Road reduce by \$75,000
for the purpose of carrying out remedial drainage works at these two sites.

Tabled Items

Plan No 11-71.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5.1 Provide a safe and efficient movement network including local and arterial roads and associated infrastructure.

Legislation Implications

Assessment of legislation indicates that the following legislation applies.
Section 6.8 Local Government Act 1995 – Expenditure from municipal funds included in annual budget.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies / Local Laws.

Budget/Financial Implications

Total current budget allocation within Road re-surfacing project costs for 2011/12.

Consultation

Nil.

BACKGROUND

Whilst effectively only four months into the 2011/12 Budget, it has been necessary for Technical Services to re-assess its construction program, with particular attention to drainage concerns that have arisen during winter.

Within this report, with detailed description to follow, it is recommended that a budget variation be implemented to undertake drainage improvement works at two separate locations within the City.

COMMENTS

Below is an overview of the two drainage projects, which require funding in order to complete the works.

1. Observation Circle, Bedfordale

The relatively new subdivision known as Camfield Heights (Observation Circle) in Bedfordale, located on the western side of Canns Road was handed over to the City approximately two years ago. Due to the topography of the land, a substantial proportion of the subdivision, which includes the road network and properties themselves, outlet to a trapped low point at the western end of the subdivision. This outlet essentially operates through the use of over 50 underground interconnected storage tanks (large soakwells) to temporarily store the run-off, then to discharge through infiltration. These tanks are approximately one metre below ground, with rock pitching forming a swale above. Attached are photographs illustrating the rock pitched swale, (tanks are below ground and not visible). Whilst it was always anticipated that ongoing maintenance would be necessary to ensure that this system operates effectively, the winter rains this year, combined with building activity and a lack of stabilisation on the surface have created severe erosion. As a result this outlet has not functioned as designed but instead has caused considerable damage to properties within the subdivision itself and properties downstream of this subdivision.

Undertaking constant remedial works to replace rocks, repair scour and erosion on these properties has been both extremely time consuming and costly with estimated maintenance expenditure to date of \$15,000.

Following increasing rain and continued erosion, it has become evident that more substantial remedial works are required. Whilst it was impossible to view the condition of these tanks due to their depth below ground, it was assumed that with the increasing erosion during winter rains that the tanks are filled of silt and gravel and therefore not providing the underground storage as required.

To this end, a drainage contractor was employed to excavate below this rock pitched swale and educt those tanks affected. It was initially envisaged that with the design of the system, maintenance works to this extent would not be necessary for a considerably longer period than two to three years. Due to the extent of rock work, depth and size of the tanks, efforts to educt and re-instate the rockwork have been substantial. Cranes to lift the solid lids, large educting plant and equipment, along with traditional drainage plant were required. The attached photographs illustrate the magnitude of the works. In addition to educting, it was also decided that some modifications be made to the interconnected drainage pipes to ensure that any future blockages would not create the same damage and cost as experienced this winter.

The cost of these works is estimated at \$55,000. Whilst educting drainage pits traditionally are covered as expenditure in the Civil Works maintenance budget, a project

of this magnitude cannot be accommodated in this budget. A budget variation is therefore required. Outlined later in this report are details regarding this budget variation.

2. Grade Road, Kelmscott

During winter a complex drainage issue has surfaced, partially as a result of the bush fires in the hills, but also due to unauthorised private building works undertaken by a resident at the rear of their property.

The property at 22 Grade Road is located towards the downstream end of a large drainage catchment that includes Department of Environment and Conservation (DEC) land, a number of private properties and a section of Canning Mills Road. A map showing both the property and the catchment area is tabled (Drg No 11-71). This property and a number of others are built over the natural watercourse that commences above Canning Mills Road and outlets into the Canning River, south of Grade Road. It would appear based on building licence drawings that these houses were originally designed on stumps to allow the natural water course to flow under the structures.

Following a significant rainfall event at the beginning of winter, this property suffered substantial flooding and subsequent damage to the rear of the house and outside patio area. Following investigations by the City, it was discovered that a previous owner of this property had constructed a raised timber decking area up against the rear fence over the natural watercourse, and in doing so effectively dammed up the flow of water and prevented it from following its natural path. Whilst this caused the damage to this property, a number of other properties on the southern side of Grade Road were also adversely affected by the artificial change to the water flows.

To ensure that its legal obligations are met with regards to a resident constructing a structure over a natural watercourse, the City sought and obtained legal advice.

Unfortunately for the new property owners of 22 Grade Road, the purchase of this property was carried out without any knowledge that the previous owner had undertaken these unauthorised works. A number of remedial drainage options were discussed, including the owner having to fund the installation of a new drainage pipe below the house. The owner has been reluctant to pursue this option. As a result of and based on legal advice, which indicated that the City's responsibility ultimately lies with preventing further damage to the properties downstream, Technical Services considered that the most practical approach was to prevent future run-off crossing Grade Road. This is best achieved by undertaking remedial drainage works within the verge of the property at 22 Grade Road. Whilst this will alleviate future damage to properties on the southern side of Grade Road, the owners of No 22 will remain responsible for arranging their own works internally to prevent further damage to their property. Drawing No 11-70 details the City's proposed works within the verge. The estimated cost of these works is \$20,000.

These drainage works are not currently budgeted for within the 2011/12 drainage construction program. A budget variation to construct this unplanned project is therefore necessary.

DETAILS OF PROPOSAL

Due to the importance and in some cases urgency of the current drainage projects listed in the 2011/12 budget, a modification in the form of budget variation within the drainage program is not advisable. It is recommended however that the most appropriate funding source be the road re-surfacing program, as a particular road section can be placed on hold until 2012/13 as this option is considered the lowest risk option. To this end, the section of Little John Road

between and Lowanna Way and Railway Avenue has been selected, with the least risk of failure within the list of roads in the program. Some minor remedial works such as crack sealing can be undertaken to ensure that it does not deteriorate prior to the 2012/13 financial year, whereby it will be re-instated into the resurfacing program. The current budget allocation for this project is \$87,000 and it is proposed that \$12,000 remain for these minor preparatory works, prior to re-surfacing next year.

RECOMMEND

That Council:

**Pursuant to Section 6.8 of the Local Government Act 1995 (as amended),
authorise the following expenditure:**

New Drainage

Observation Circle, Bedfordale	\$55,000
22 Grade Road, Kelmscott	\$20,000

and amend the 2011-2012 Annual Budget as follows:

Expenditure

New Drainage

Observation Circle, Bedfordale	increase by \$55,000
22 Grade Road, Kelmscott	increase by \$20,000

Road Re-surface

Little John Road	reduce by \$75,000
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for the purpose of carrying out remedial drainage works at these two sites.

**** ABSOLUTE MAJORITY REQUIRED**

**MOVED Cr
MOTION CARRIED (/)**

**OBSERVATION CIRCLE – DRAINAGE REMEDIATION
WORKS – SEPT. 2011**



Photograph showing one of the tanks being educted

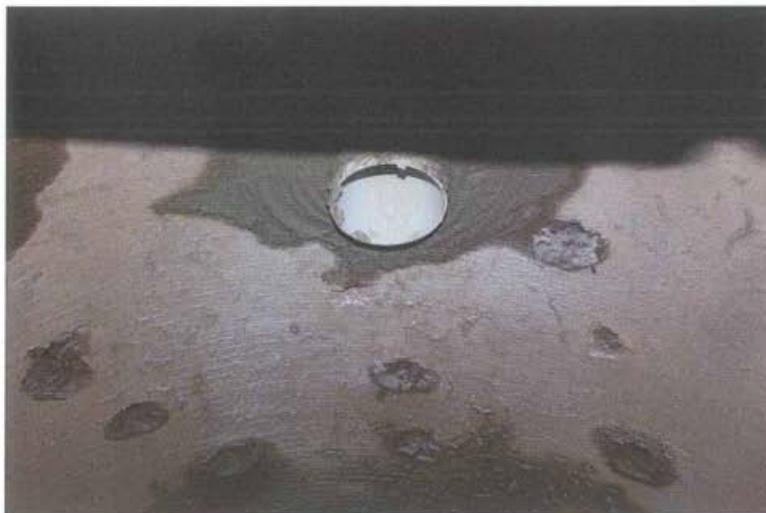


*Photograph showing the amount of gravel / silt that had filled up one of the tanks –
tanks are 2.0 meters deep*

**OBSERVATION CIRCLE – DRAINAGE REMEDIATION
WORKS – SEPT. 2011**



Photograph showing a crane required to lift the concrete lids



Pipes at a higher level within the tanks were installed to prevent future blockages

**OBSERVATION CIRCLE – DRAINAGE REMEDIATION
WORKS – SEPT. 2011**

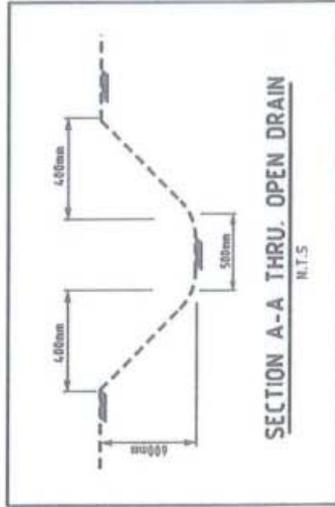
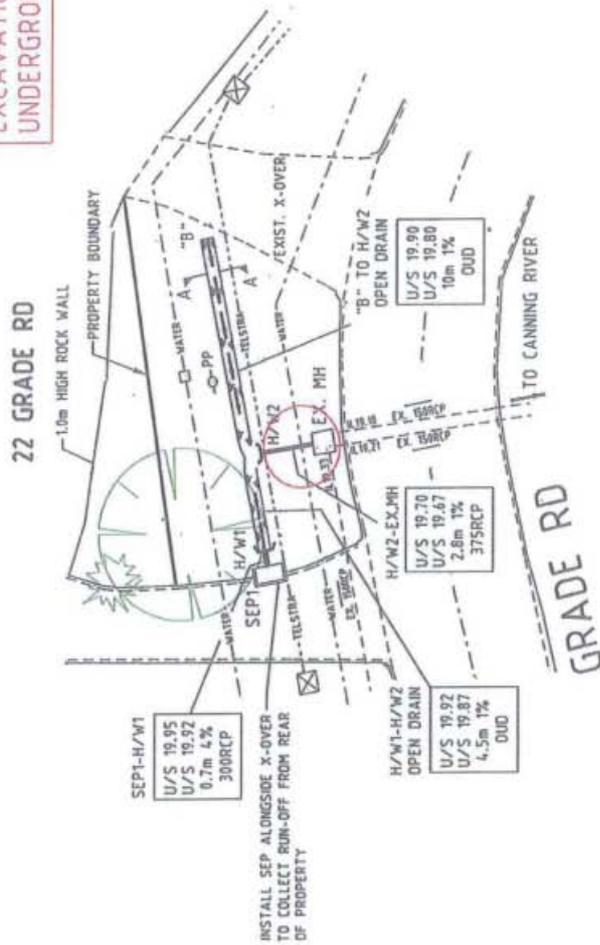


Photograph showing a section of the rock pitched swale (outlet)



Photograph showing a number of the tanks (58 soakwells in total) below the rock formed swale

LOCATE AND DEPTH SERVICES PRIOR TO
 EXCAVATION - PROPOSED DRAINAGE CROSSES
 UNDERGROUND SERVICES



PROJECT NO. 11-70 SHEET NO. 1 OF 1		SCALE: HORIZ. 1" = 100' VERT. 1" = 10'		DATE: 10/03/11 DRAWN BY: JMM CHECKED BY: JMM		CITY OF ARMADALE ORCHARD AVENUE ARMADALE WA, 6100	
22 GRADE RD OPEN DRAIN ON VERGE		PROJECT NO. 11-70		SHEET NO. 1 OF 1		APPROVED BY: [Signature]	

****TENDER NO. 20/11: TENDER FOR THE CONSTRUCTION OF COMMUNICATION TOWER AND ROOM**

WARD HERON
FILE REF TEN/20/11
DATE 3 OCTOBER 11
REF DE
RESPONSIBLE MANAGER MPS

In Brief:

- Tender No. 20/11 was recently called for the construction of communication tower and communications room.
- Four Tenders were received at the closing date.
- The Tender from Future Engineering and Communications Pty Ltd has been evaluated as being the most advantageous to Council.
- **Recommend**
That Council:
 1. Pursuant to Section 3.57 of the Local Government Act 1995 and with regards to Tender 20/11 for the Supply and Installation of Tower (including removal and refitting of existing equipment) and Communications Room accepts the Tender from Future Engineering and Communication Pty Ltd in accordance with their submitted Tender and Tender price of \$224,070 (ex GST) and the City's contract documentation.
 2. Pursuant to Section 6.8 of the Local Government Act 1995 authorise * the following additional expenditure:
Construct a new communication tower and room \$41,170
And amend the 2011//12 Annual Budget as follows:
Revenue
Transfer from the Building and Plant Equipment Reserve increase by \$41,170
Expenditure
Communications tower room increase by \$41,170
to meet the additional cost of constructing a new communication tower and communications room.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.6.1 Provide and maintain council buildings, facilities and public amenities.
 - 2.7.2 Address the infrastructure requirements of the various community plans.

Legislation Implications

Assessment of legislation indicates that the following regulations apply:
Section 3.57 Local Government Act 1995 – Tenders for Providing Goods or Services.

Section 6.8 Local Government Act 1995 – Expenditure from municipal fund not included in annual budget.

Division 2 Local Government (Functions and General) Regulations 1996 – Tenders for Providing Goods and Services.

Section 6(2) of the Planning and Development Act

Council Policy/Local Law Implications

Assessment of Policy/Local Law indicates that the following is applicable:

Policy ADM19- Procurement of Goods and Services.

Budget/Financial Implications

The 2011/12 Annual Budget allocation for the supply and installation of a communications tower and room being the subject of this Tender report is \$182,900.

The Tender recommended for acceptance by Council in this Report has a price \$41,170 more than the budget allocation due to the imperative nature of the works (ie. to ensure continuity of wireless communications to many of the City's out-centres). Accordingly it is proposed that the \$41,170 over-expenditure that will result by accepting this Report recommendation be funded from the Building Plant and Equipment Reserve Account and hence Part (2) of the Report recommendation amends the 2011/12 Annual Budget.

Consultation

- Intra-Directorate
- West Australian Planning Commission
- Westralia Airports Corporation Pty Ltd

BACKGROUND

The City of Armadale currently has a 30m communications tower situated at the City's Depot at Owen Road, Kelmscott that facilitates communications including IT systems from the Administration Building to the following sites:

- Kelmscott Library
- Works Depot
- Seville Grove Library
- Armadale Aquatic Centre
- Armadale Arena
- Dog Pound
- Champion Centre

Services provided by this tower are critical to the provision of information and services to our community.

Recently, problems have been encountered with this existing tower and elements of the systems requiring the tower for operations are in need of upgrading. A number of factors are impacting the services delivered, including:

- a lack of space on the existing tower for additional wireless communication systems between key council sites.
- a difficulty achieving a constant direct line of site between the key sites due, in large part, to tree interference, often from private properties.
- a deterioration of the current tower which is nearing the end of its useful life and will require extensive renewal work within the next 12 months.

By constructing a new 40m high communications tower the Council can overcome these problems and maintain an effective and reliable communication system between all the key sites listed above.

The existing communications room at the current site consists of a small brick structure which is currently at capacity with existing equipment. This has been identified as unsuitable for current and future requirements due to:

- a lack of space for additional communication equipment and access to maintain any equipment within the structure.
- insufficient cooling for modern electrical IT equipment.
- the structure is not weather proof and equipment is prone to failure and damage.

As part of risk management practices, the City also requires an ‘off site’ disaster recovery area suitable to house a number of IT servers and associated equipment. The facility would cater for the requirement to continue access to information and IT services in the event that a disaster impacted the City’s primary data centre located at the Administration Building.

These factors have led to the requirement for a room considerably larger than the existing room and must be suitable for the following:

- a number of modern server equipment racks,
- associated air cooling and management systems,
- a suitable removable floor to allow for safe and efficient cabling,
- the facility to be able to attach external power generation,
- additional security,
- the ability to accept an increased power supply when the power upgrade to the depot site has been completed.

The Tender for the new communication room will achieve all the above requirements.

DETAILS OF PROPOSAL

Tender 20/11, Construction of communication tower and room, was advertised on Saturday 21 May 2011 with a closing date of 14 June 2011. It was broken down into 2 schedules containing the following information:

Schedule 1

- Construction and erection of a new 40m high telecommunication tower and all associated groundwork and footings.
- Remove, relocate and commission existing telecommunication equipment from the existing tower to the new tower.
- Relocation and commissioning of other telecommunication equipment from existing shelter to communication room.
- Demolition and removal of the existing tower and shelter and any making good to site.

Schedule 2

Construction, installation and connection of Communication Room suitable to house existing communication equipment and be developed as a disaster recovery server area by the City of Armadale. Including:

- Connection of existing power supply to this room
- Air Conditioning systems
- Server Room Floor

The proposed work has been approved by Western Australian Planning Commission (WAPC) under section 6(2) of the *Planning and Development Act* and planning permission is not required. It has also been approved by the Perth Airport – Westralian Airports Corporation and does not contravene any height or flight path requirements they have.

The requirement for the power upgrade to the depot site will be carried out under a separate contract to this Tender.

New Contract Information

Essential details of the new contract are as follows:

Table 1: New Contract Information

Contract Type	Fixed Price Contract
Contract Duration	12 Weeks
Commencement Date	1 November 2011
Expiry Date	31 January 2012
Extension Permitted	No
Annual Contract Cost	N/A
Total Contract Cost	\$224,070.00
Rise And Fall Clause Included	N/A

Selection Criteria

The selection criteria and weightings for the evaluation of the Tenders are as follows:

Table 2: Selection Criteria

ITEM No.	DESCRIPTION	WEIGHTING
1.	Relevant Experience	20%
2.	Key personnel skills and experience	20%
3.	Tenderer's Resources	10%
4.	Demonstrated understanding of Tender documents	15%
5.	Tendered Price(s)	35%
	TOTAL	100%

Tenders Received

Four Tenders were received from the following contractors:

- Arrange Building (Rosemark Pty Ltd)
- Future Engineering and Communication PTY Ltd
- So Comm Pty Ltd
- Wave 1 Pty Ltd

TENDER EVALUATION

All Tenders were evaluated on a price and quality basis with a combined score indicating the preferred contractor for each schedule.

Tender Rankings (Price)

The Tender rankings resulting from the application of the price criteria is as follows:

Table 3: Tender Ranking (Price)

Price Element	Schedule 1 - Supply and Installation of Tower (Including removal and refitting of existing equipment)			Schedule 2 - Supply and Installation of Communications Room			Total
	Price	Ranking	Score	Price	Ranking	Score	
Arrange Building (Rosemark Pty Ltd)	\$149,655.00	4	13%	\$134,046.00	3	14%	27%
Future Engineering and Communication Pty Ltd	\$110,121.00	1	18%	\$113,949.00	2	16%	34%
So Comm Pty Ltd	\$140,250.00	3	14%	\$140,250.00	4	13%	27%
Wave 1 Pty Ltd	\$132,011.00	2	15%	\$103,402.20	1	17%	33%

Tender Rankings (Overall)

The Tender rankings resulting from the application of the quality and price criteria combined, is as follows:

Table 4: Tender Rankings (Overall)

Totals	Assessed Elements			
	Quality	Price	Total	Rank
Arrange Building (Rosemark Pty Ltd)	14%	27%	41%	4
Future Engineering and Communication Pty Ltd	34%	34%	68%	1
So Comm Pty Ltd	19%	27%	46%	3
Wave 1 Pty Ltd	35%	32%	67%	2

The tender from Future Engineering and Communications Pty Ltd is ranked first for Schedule 1 - Supply and Installation of Tower and ranked second for Schedule 2 -Supply and Installation of Communications Room however their combined ranking is first for the Supply and Installation the Tower and Communications Room.

Though the Tender can be awarded as two separate contracts it is believed that awarding as one contract has greater benefits as follows:

1. Efficiency and management of one contractor.
2. Offer better integration of cabling and equipment

3. Clarity of warranty/ guarantees for overlapping work.
4. A coordination and integration of various trades (excavation, concreter, steel works, services etc).
5. An efficient programme for work schedule and package.

When the financial implications of the preferred Tenderers are considered the total contract cost would be \$224,070.00. The capital upgrade budget allowance for this work is \$182,900.00 and this has resulted in a shortfall of approximately \$41,170. The project is considered imperative to the future communication ability of Council, as well as to the housing of much needed disaster recovery provisioning.

OPTIONS AVAILABLE

Following the Tender evaluation and identification of a preferred Tender there are four main options available to Council to consider. These are:

1. Decline all Tenders as the current budget allocation is insufficient to carry out this work. This does not fulfil any of the objectives of this Tender and both the tower replacement and communication room will still be required.
2. Delay acceptance of the Tender pending the Mid Year Budget Review in February 2012 so as to allow the required additional funding of \$41,170 to be confirmed, or otherwise.
3. Proceed to accept the Tender from Future Engineering noting that funding of the resulting \$41,170 over expenditure will be considered as part of the Mid Year Budget Review.
4. Proceed to accept the Tender from Future Engineering and fund the shortfall of \$41,170 from the Building Plant and Equipment Reserve Account. (The proposed work is in accordance for which these reserve funds have been established).

CONCLUSION

Option 4 is the preferred option for it serves to mitigate the risk otherwise of wireless communications to the City's out centres potentially being interrupted to an extent that adversely impacts on service levels

It is recommended that for Tender 20/11, Tender for the Construction of Communication Tower and Room accepts the Tender from Future Engineering and Communication Pty Ltd as this Tender is the most advantageous to the Council for this schedule.

RECOMMEND

That Council:

1. Pursuant to Section 3.57 of the Local Government Act 1995 and with regards to Tender 20/11 for the Supply and Installation of Tower (including removal and refitting of existing equipment) and Communications Room accepts the Tender from Future Engineering and Communication Pty Ltd in accordance with their submitted Tender and Tender price of \$224,070 (ex GST) and the City's contract documentation.
2. Pursuant to Section 6.8 of the Local Government Act 1995 authorise * the following additional expenditure:
Construct a new communication tower and room \$41,170

and amend the 2011//12 annual budget as follows:

Revenue

**Transfer from the Building and Plant Equipment Reserve
increase by \$41,170**

Expenditure

**Communications tower room
increase by \$41,170**

**to meet the additional cost of constructing a new communication
tower and communications room.**

**** ABSOLUTE MAJORITY REQUIRED**

**MOVED Cr
MOTION CARRIED (/)**

TENDER NO. 25/11: CLEANING SERVICES

WARD ALL
FILE REF TEN/25/11
DATE 3 October 2011
REF DE
RESPONSIBLE MANAGER MPS

In Brief:

- Tender No. 25/11 was recently called for cleaning services.
- Five Tenders were received at the closing date.
- The Tender from AMC Commercial Cleaning Ltd has been evaluated as being the most advantageous to Council.
- **Recommend**
That with Tender 25/11 – Cleaning Services, Council:
 1. Accepts the Tender from AMC Commercial Cleaning Ltd for the period 1 November 2011 to 31 October 2013, in accordance with their submitted Tender, Council's contract documentation and budget allocation; and
 2. Authorise the Chief Executive Officer to extend the contract for two periods of one year up to 1 November 2015, subject to satisfactory performance by the contractor and price adjustments as specified in the Request for Tender document as per clause 4.2.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.6.1 Provide and maintain Council buildings, facilities and public amenities.
 - 2.7.2 Address the infrastructure requirements of the various community plans.

Legislation Implications

Assessment of legislation indicates that the following regulations apply:
Section 3.57 Local Government Act 1995 – Tenders for Providing Goods or Services.
Division 2 Local Government (Functions and General) Regulations 1996 – Tenders for Providing goods and services.

Council Policy/Local Law Implications

Assessment of Policy/Local Law indicates that the following is applicable:
Policy ADM19- Procurement of Goods and Services.

Budget/Financial Implications

Total current budget allocation within Property Maintenance and Operation costs.

Consultation

Intra-Directorate.

BACKGROUND

As the Property Services Department does not have the necessary resources to clean all of Council's Buildings, listed below are a number of Council's buildings that are currently cleaned by a commercial company:

- Aquatic Centre
- Armadale Arena
- Armadale library
- Champion Centre
- Kelmscott Library
- Technical Services Administration Building

The services offered from these high profile buildings serve the overall community therefore they must be presented and maintained at a high level that reflects the professional image of the City.

In order to maintain the high cleanliness standard that the Council and community expects there is a need to formalise an appropriate cleaning programme that will achieve this aim without causing undue disruption of day to day activities that are carried out in each of these buildings.

Accordingly, Tender TEN/25/11 for Cleaning Services was advertised on Saturday 6 August 2011 and closed on Tuesday 23 August 2011 seeking a suitably qualified contractor/s to supply labour and materials to carry out cleaning for all, part of or one of the facilities.

The successful Tenderer will carry out regular cleaning services including additional ad hoc cleaning services as required. The successful Tenderer's will also have a sound demonstrated knowledge and experience in cleaning local authority owned and managed buildings to a high level.

The period of the contract will be from the 1 November 2011 to 31 October 2013 and will be a fixed price for this period. There will also be an option for two (2) one year extensions should suitable levels of performance be achieved.

Existing Contract Information

Quotations were called on an ad-hoc basis during the 2010/11 financial year to undertake cleaning work though no formal contract has been entered into. As the level of service has increased with the addition of Frye Park and John Dunn Pavilions it is now estimated that the value of this work will exceed the Tender threshold of \$100,000 per year.

DETAILS OF PROPOSAL

The Tender involves the supply of cleaning services, which is to be carried out on various buildings owned or leased by the City of Armadale.

New Contract Information

Essential details of the new contract are as follows:

Table 1: New Contract Information

Contract Type	Fixed Price for regular cleaning and schedule of rates for additional requests
Contract Duration	2 Years
Commencement Date	1 November 2011
Expiry Date	31 October 2013
Extension Permitted	Yes as per RFT Clause 4.2 (two x one year extensions)
Annual Contract Cost	Within Projects
Total Contract Cost	Within Projects
Rise And Fall Clause Included	Fixed for 2 years. Increase in price for any extension as per RFT clause 4.2

Selection Criteria

The selection criteria and weightings for the evaluation of the Tenders are as follows:

Table 2: Selection Criteria

ITEM No.	DESCRIPTION	WEIGHTING
1.	Relevant Experience	20%
2.	Key personnel skills and experience	20%
3.	Tenderer's Resources	10%
4.	Demonstrated understanding of Tender documents	20%
5.	Tendered Price(s)	30%
	TOTAL	100%

Tenders Received

Five Tenders were received in total. The following contractors submitted conforming Tenders:

- AMC Commercial Cleaning Ltd
- Grouped Property Services
- JC Cleaning Services
- OCE Corporate Cleaning
- Tri Star Service Pty Ltd

TENDER EVALUATION

All Tenders were evaluated on a price and quality basis with a combined score indicating the preferred contractor for this work.

Tender Rankings (Price)

The Tender rankings resulting from the application of the price criteria is as follows:

Table 3: Tender Rankings (Price)

% Weighting	25%			5%			Total
	Price Element 1 - Annual Cleaning Cost			Price Element 2 - Hourly Rate, Cleaning Operative (Normal Hours)			
	Price	Ranking	Score	Price	Ranking	Score	
Contractors							
AMC Commercial Cleaning	\$247,820.56	3	18%	\$33.00	4	3%	21%
Grouped Property Services	\$174,075.00	1	25%	\$30.00	3	3%	28%
JC Group Cleaning Services	\$551,320.70	5	8%	\$20.62	1	5%	13%
OCE Corporate Cleaning	\$370,608.00	4	12%	\$35.00	5	3%	15%
Tri Star Service PTY Ltd	\$175,041.00	2	25%	\$26.00	2	4%	29%

Tender Rankings (Overall)

The Tender rankings resulting from the application of the quality and price criteria combined, was as follows:

Table 4: Tender Rankings (Overall)

Totals	Assessed Elements			
	Quality	Price	Total	Rank
AMC Commercial Cleaning	57%	21%	78%	1
Grouped Property Services	40%	28%	68%	3
JC Group Cleaning Services	43%	13%	54%	4
OCE Corporate Cleaning	58%	15%	73%	2
Tri Star Service PTY Ltd	20%	29%	49%	5

Grouped Property Services is an experienced company having many years experience in the industry, the company is based in New South Wales with the area Operations Manager for West Australia based in South Australia. In this regard having the Operations Manager based outside the State for operation and site specific needs could cause some issues at some point and therefore was not considered as a suitable option.

Tri Star Service Pty Ltd has also tendered lower than AMC Commercial Cleaning Ltd however their expertise leans more in cleaning larger supermarkets and trolley collecting. In this regard Tri Star Service Pty Ltd was also not considered as a suitable option.

AMC Commercial Cleaning is currently undertaking the cleaning at various locations throughout the City and the service they have provided is extremely satisfactory.

References were called for AMC Commercial Cleaning Ltd and these have all returned a satisfactory result.

AMC Commercial Cleaning Ltd have an increased level of experience and quality they have evidenced in the qualitative section of the Tender which gives confidence that they would provide a better quality overall service to the City and users of the facilities they clean.

The results of the Tender evaluation, after the application of the selection and compliance criteria, have shown that the Tender from AMC Commercial Cleaning Ltd would be the preferred contractor for Tender 25/11, Cleaning Services.

CONCLUSION

It is recommended that for Tender 25/11, Cleaning Services be awarded to AMC Commercial Cleaning Ltd as this tender has been evaluated as being the most advantageous to Council.

RECOMMEND

That with Tender 25/11 – Cleaning Services, Council:

- 1. Accepts the Tender from AMC Commercial Cleaning Ltd for the period 1 November 2011 to 31 October 2013 , in accordance with their submitted Tender, Council's contract documentation and budget allocation; and**
- 2. Authorise the Chief Executive Officer to extend the contract for two periods of one year up to 1 November 2015, subject to satisfactory performance by the contractor and price adjustments as specified in the Request for Tender document as per clause 4.2.**

**MOVED Cr
MOTION CARRIED (/)**

TENDER NO. 26/11: AIR CONDITIONING PREVENTATIVE AND REACTIVE MAINTENANCE SERVICES

WARD ALL
FILE REF TEN/26/11
DATE 3 October 2011
REF DE
RESPONSIBLE MPS
MANAGER

In Brief:

- Tender No. 26/11 was recently called for Air Conditioning Preventative and Reactive Maintenance Services.
- Six Tenders were received at the closing date.
- The Tender from Burke Air Pty Ltd has been evaluated as being the most advantageous to Council.
- **Recommend**
That with Tender 26/11 – Air Conditioning Preventative and Reactive Maintenance Services, Council:
 3. Accepts the Tender from Burke Air Pty Ltd for the period 1 November 2011 to 31 October 2013 in accordance with their submitted Tender, Council’s contract documentation and budget allocation; and
 4. Authorise the Chief Executive Officer to extend the contract for two periods of one year up to 1 November 2015, subject to satisfactory performance by the contractor and price adjustments as specified in the Request for Tender document as per clause 4.2

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.6.1 Provide and maintain council buildings, facilities and public amenities.
 - 2.7.2 Address the infrastructure requirements of the various community plans.

Legislation Implications

Assessment of legislation indicates that the following regulations apply:
Section 3.57 Local Government Act 1995 – Tenders for Providing Goods or Services.
Division 2 Local Government (Functions and General) Regulations 1996 – Tenders for Providing Goods and Services.

Council Policy/Local Law Implications

Assessment of Policy/Local Law indicates that the following is applicable:
Policy ADM19- Procurement of Goods and Services.

Budget/Financial Implications

Total current budget allocation within Property Maintenance and Operation costs.

Consultation

Intra-Directorate.

BACKGROUND

In order to maintain the number of air conditioning units that are installed in Council's buildings to a high standard there is a need to implement an appropriate air conditioning maintenance programme to ensure that these units are operating at their optimum best.

Accordingly, Tender TEN/26/11 for Air Conditioning Preventative and Reactive Maintenance Services was advertised on Saturday 6 August 2011 and closed on Tuesday 23 August 2011.

As part of the contract the successful Tenderer will carry out a regular inspections and minor maintenance on air conditioning systems for which the City has responsibility. The successful Tenderer will also provide a reactive maintenance system with staff available 24 hours a day, seven days per week, 365 days per year with the ability to provide new installation services as needed.

The period of the contract will be from the 1 November 2011 to 31 October 2013 and will be a fixed price for this period. There will also be an option for two (2) one year extensions should suitable levels of performance be achieved.

Existing Contract Information

There has previously been no contract in this area but as the level of service has increased it is now estimated that the value of this work will exceed the Tender threshold of \$100,000 per year.

DETAILS OF PROPOSAL

The Tender involves the supply of air conditioning preventative and reactive maintenance services which are to be carried out on various buildings owned or leased by the City of Armadale.

New Contract Information

Essential details of the new contract are as follows:

Table 1: New Contract Information

Contract Type	Fixed Price for regular servicing and schedule of rates for reactive maintenance
Contract Duration	2 Years
Commencement Date	1 November 2011
Expiry Date	31 October 2013
Extension Permitted	Yes as per RFT Clause 4.2 (two x one year extensions)
Annual Contract Cost	Within Projects
Total Contract Cost	Within Projects
Rise And Fall Clause Included	Fixed for 2 years. Increase in price for any extension as per RFT clause 4.2

Selection Criteria

The selection criteria and weightings for the evaluation of the Tenders are as follows:

Table 2: Selection Criteria

ITEM No.	DESCRIPTION	WEIGHTING
1.	Relevant Experience	15%
2.	Key personnel skills and experience	20%
3.	Tenderer's Resources	15%
4.	Demonstrated understanding of Tender documents	20%
5.	Tendered Price(s)	30%
	TOTAL	100%

Tenders Received

Six Tenders were received in total. The following contractors submitted conforming Tenders:

- AMS Service and Maintenance Pty Ltd
- Australian HVAC Services
- Burke Air Pty Ltd
- CMS Engineering
- JMG Air Conditioning & Electrical Services
- Kiely Air

TENDER EVALUATION

All Tenders were evaluated on a price and quality basis with a combined score indicating the preferred contractor for this work.

Table 4: Tender Rankings (Overall)

Totals	Assessed Elements			
	Quality	Price	Total	Rank
AMS Service and Maintenance PTY Ltd	36%	21%	57%	4
Australian HVAC Services	27%	30%	57%	5
Burke Air	51%	18%	69%	1
CMS Engineering	25%	10%	35%	6
JMG Air Conditioning & Electrical Services	39%	19%	58%	3
Kiely Air	37%	25%	62%	2

The results of the Tender evaluation, after the application of the selection and compliance criteria, have shown that the tender from Burke Air Pty Ltd would be the preferred contractor for Tender 26/11, Air Conditioning Preventative and Reactive Maintenance Services.

Burke Air Pty Ltd is currently providing a similar service to the City and though they have not submitted the lowest price tender the service they have provided is extremely satisfactory. This is further supported by their response in the qualitative section of the tender that gives confidence that they would provide a better quality overall service to the City and users of the facilities they clean.

References were called for Burke Air Pty Ltd and these have all returned a satisfactory result.

CONCLUSION

It is recommended that for Tender 26/11, Air Conditioning Preventative and Reactive Maintenance Services be awarded to Burke Air Pty Ltd as this tender has been evaluated as being the most advantageous to Council.

RECOMMEND

That with Tender 26/11 – Air Conditioning Preventative and Reactive Maintenance Services, Council:

- 1. Accepts the Tender from Burke Air Pty Ltd, for the period 1 November 2011 to 31 October 2013 in accordance with their submitted Tender, Council's contract documentation and budget allocation; and**
- 2. Authorise the Chief Executive Officer to extend the contract for two periods of one year up to 1 November 2015, subject to satisfactory performance by the contractor and price adjustments as specified in the request for Tender document as per clause 4.2**

**MOVED Cr
MOTION CARRIED (/)**

***INSTALLATION OF TRAFFIC CONTROL DEVICES IN SAN JACINTA ROAD,
SEVILLE GROVE***

WARD PALOMINO
FILE REF RDS/9
DATE 22 September 2011
REF ADC
RESPONSIBLE MANAGER MED

In Brief:

- Main Roads Western Australia (MRWA) nomination and provision of special funding to combat hoon speed behaviour.
- Public submission results to the proposed installation of traffic control devices (speed cushions) in San Jacinta Road from Henderson Drive to Sepal Close Seville Grove.
- **Recommend**
That Council:
 1. Not approve the installation of traffic control devices in San Jacinta Road from Henderson Drive to Sepal Close, Seville Grove, based on the low number of positive returns and advises Main Roads Western Australia accordingly.
 2. Investigate alternative traffic calming devices on the above route.

Tabled Items

Submissions from residents.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5.1 Provide a safe and efficient movement network including local and arterial roads and associated infrastructure.

Legislation Implications

General assessment of relevant legislation (eg Local Government Act) has not revealed any restrictions.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial Implications

Nil.

Consultation

- Residents of San Jacinta Road (proposed speed cushions area).
- MRWA.

BACKGROUND

A new Anti Hoon Speed Hump Program (AHSHP), which targets hoon behaviour on local roads have been launched by Main Roads Western Australia (MRWA). In May 2009 funding allocation commenced in the past financial year with the office of Crime Prevention providing the funding for the first round of installation in 2008/09 and the program to be managed by MRWA, but not maintained.

Due to numerous requests from residents to address speeding, Council nominated to install traffic control devices (speed cushions) in San Jacinta Road from Henderson Drive to Sepal

Close, Seville Grove (*see drawing number 11/75*) and this was subsequently approved by MRWA under the AHSHP program subject to the following conditions:

- Consultation with the community on the proposal and that the majority of the residents favour the installation of several sets of speed cushions;
- The speed cushions are located near streetlights and to be clearly visible, particularly at night;
- The spacing of speed cushions to comply with MRWA standards (regular intervals);
- The Council gives an undertaking that the installed speed cushions will remain in place for a period of not less than three (3) years. Should there be complaints, the Council will address these and will be responsible for the costs associated with modifying the profile or the re-location of the speed cushion, at its cost. Any early removal of cushions will require a full refund to the program;
- The work involving the installation of the speed cushions will be completed and MRWA invoiced for the cost of the project;
- All new or modified regulatory signs, pavement markings and traffic signals must be submitted to MRWA for formal approval prior to commencement of construction; and
- Council will be responsible for any ongoing maintenance, except signs and lines.

DETAILS OF PROPOSAL

In response to a number of San Jacinta Road residents' complaints regarding the increased traffic speed along the above streets, the Technical Services Directorate has carried out the following traffic investigations:

- Provide previous traffic counts showing 1058 vehicles per day.
- The five year crash statistics (year 2006 – 2010) provided by Main Roads indicate 4 intersection crashes along San Jacinta Road, 2 crashes at San Jacinta Road/Hansen Road Intersection, 1 crash at San Jacinta Road/Henderson Drive Intersection and 1 crash at San Jacinta Road and Santara Court Intersection;
- The posted speed limit along this road is 50km/hr (the default speed limit in built up area); and
- This road is classified as Local Distributor Road.

COMMENT

Invitations for comments on the proposed installation of traffic control devices were sent to 44 local residents, directly involved with the speed hump locations near their houses. The Technical Services Directorate received 7 responses, 6 in favour of the installation and 1 objection, which indicates a low number of returns (15.9% only) and therefore does not comply with the first criteria by MRWA- "*that the majority of residents approve the installation*".

CONCLUSION

Although the speed on San Jacinta Road is a concern, the low number of returns (15.9% only) does not merit installation. Technical Services will continue monitoring the local traffic in San Jacinta Road and requesting the police to carry out periodic speed checks and consider the need to install other traffic control devices.

Traffic calming devices are generally very effective, but the public has over years built up a resistance to the traffic calming measures which constitute a vertical alignment change, with the greatest resistance to speed humps in any form. This view is supported by the Technical Services Directorate.

There is a range of alternate traffic calming measures as effective as speed humps, which are more acceptable to local communities, and which do not have the negative factors associated with speed humps. These measures include chicanes, line markings, central islands, and mini roundabouts. It is a common result of the installation of speed humps that traffic is diverted from the logical main thoroughfare on to adjacent less suitable local roads as rat runs, which in turn creates additional requests for traffic calming on streets which previously has carried very low volumes of traffic.

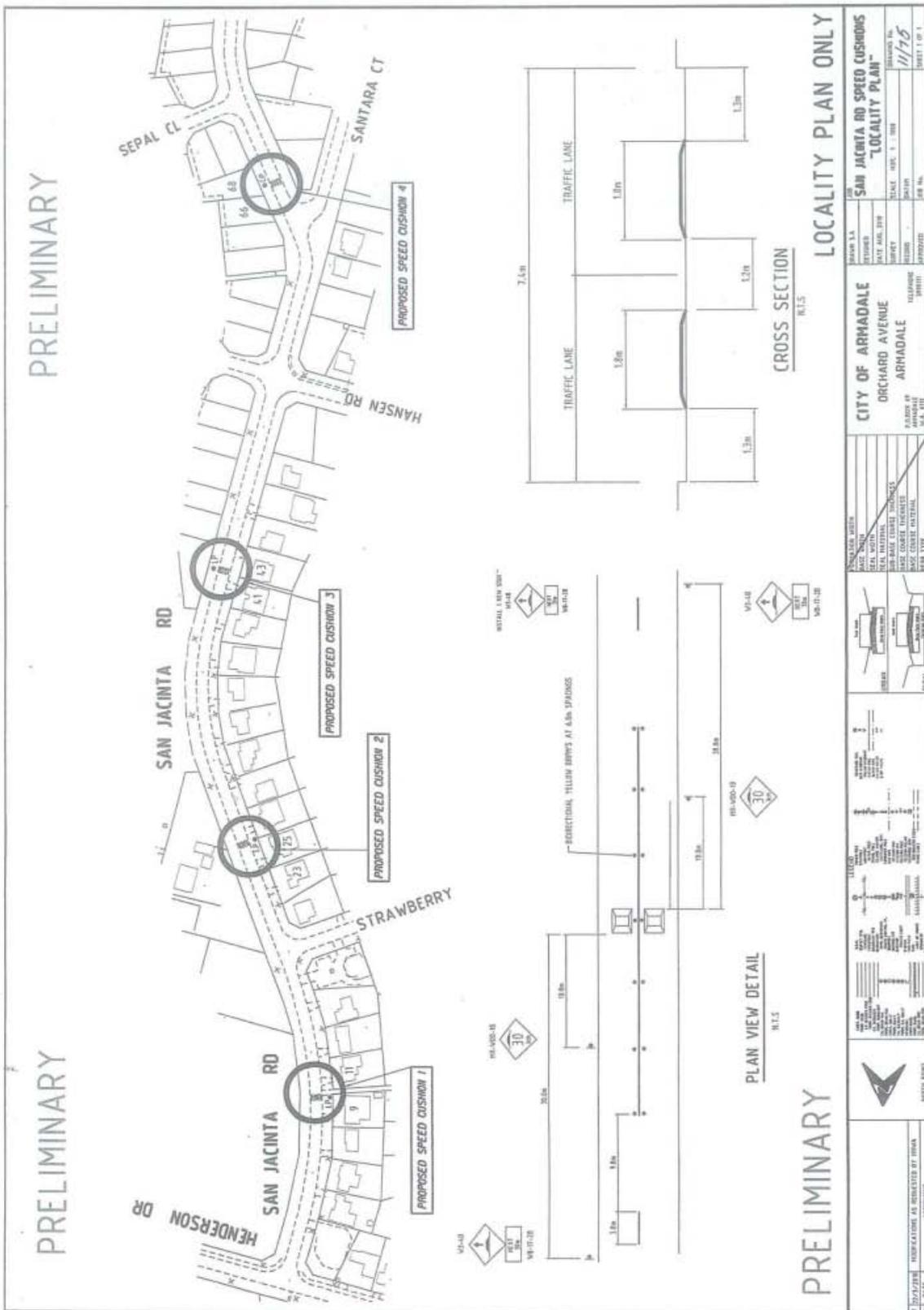
It would therefore be preferable that consideration be given to alternate measures being designed for this route.

RECOMMEND

That Council:

- 1. Not approve the installation of traffic control devices in San Jacinta Road from Henderson Drive to Sepal Close, Seville Grove, based on the low number of positive returns and advises Main Roads Western Australia accordingly.**
- 2. Investigate alternative traffic calming devices on the above route.**

MOVED Cr
MOTION CARRIED (/)



TALUS DRIVE, MOUNT RICHON PETITION FROM RESIDENTS REGARDING TRAFFIC FLOW

WARD NEERIGEN
FILE REF RDT/3
DATE 23 September 2011
REF ME&D
RESPONSIBLE EDTS
MANAGER

In Brief:

- A non-conforming petition signed by 42 residents was tabled by Cr Tizard, at the Council meeting on 12 September 2011.
- **Recommend**
That Council not approve the installation of any traffic calming devices on Talus Drive, Bedfordale and the petitioner be advised of Council's decision.

Tabled Items

Petition.
Aerial photographs.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5.1 Provide a safe and efficient movement network including local and arterial roads and associated infrastructure.

Legislation Implications

General assessment of relevant legislation (eg Local Government Act) has not revealed any restrictions.

Council Policy

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial implications

Nil.

Consultation

Intra Directorate.
Residents Petition.

BACKGROUND

A non-conforming petition signed by 42 residents was tabled by Cr Tizard, at the Council meeting on 22 August 2011, the prayer of which reads as follows:

“Petition from Residents of Talus Drive to address the increasing traffic flow”

Council resolved as follows:

170/8/2011 RECOMMEND

“That the petition be received and be referred to the Technical Services Committee”.

COMMENT

Talus Drive, Mount Richon was until 2005 a split road system (see aerial photographs) with the section between Billing Place and Lot 36/41 not developed and the gazetted road section closed for vehicular traffic.

During the completion of the development in 2004/05 of this missing section, the developer completed the through road connecting Talus Drive to the South West Highway in the south and Bedforddale Hill Road to the north. The newly constructed “missing” section was built in accordance with the City’s specification and a traffic calming device was installed at the northern end of the new road section.

Early traffic counts (May 2006) were only taken approximately 4-5 months after the reconnection of both sections which indicated a very low traffic volume with only 145 vehicles per day (vpd) and only one or two heavy vehicles per week.

Over the past 10 to 12 months, the City has received a limited number of written complaints and has in each instance spoken to the resident and explained the technical requirements for traffic calming, and that in terms of the traffic assessments, the section of road did not warrant traffic calming.

Analysis

Talus Road (see location map) is classified as a local access road and is designed to carry traffic volumes between 300 and 1000 vpd based on the Liveable Neighbourhood Guidelines implemented by the Department for Planning and Infrastructure and accepted as development guide by the City of Armadale.

Traffic counts were conducted during September 2011. These indicate a count of 647 vpd with less than 2% heavy (as of right) vehicles. These figures are well below the maximum recommendation as set by the Department of Planning and Infrastructure (DPI).

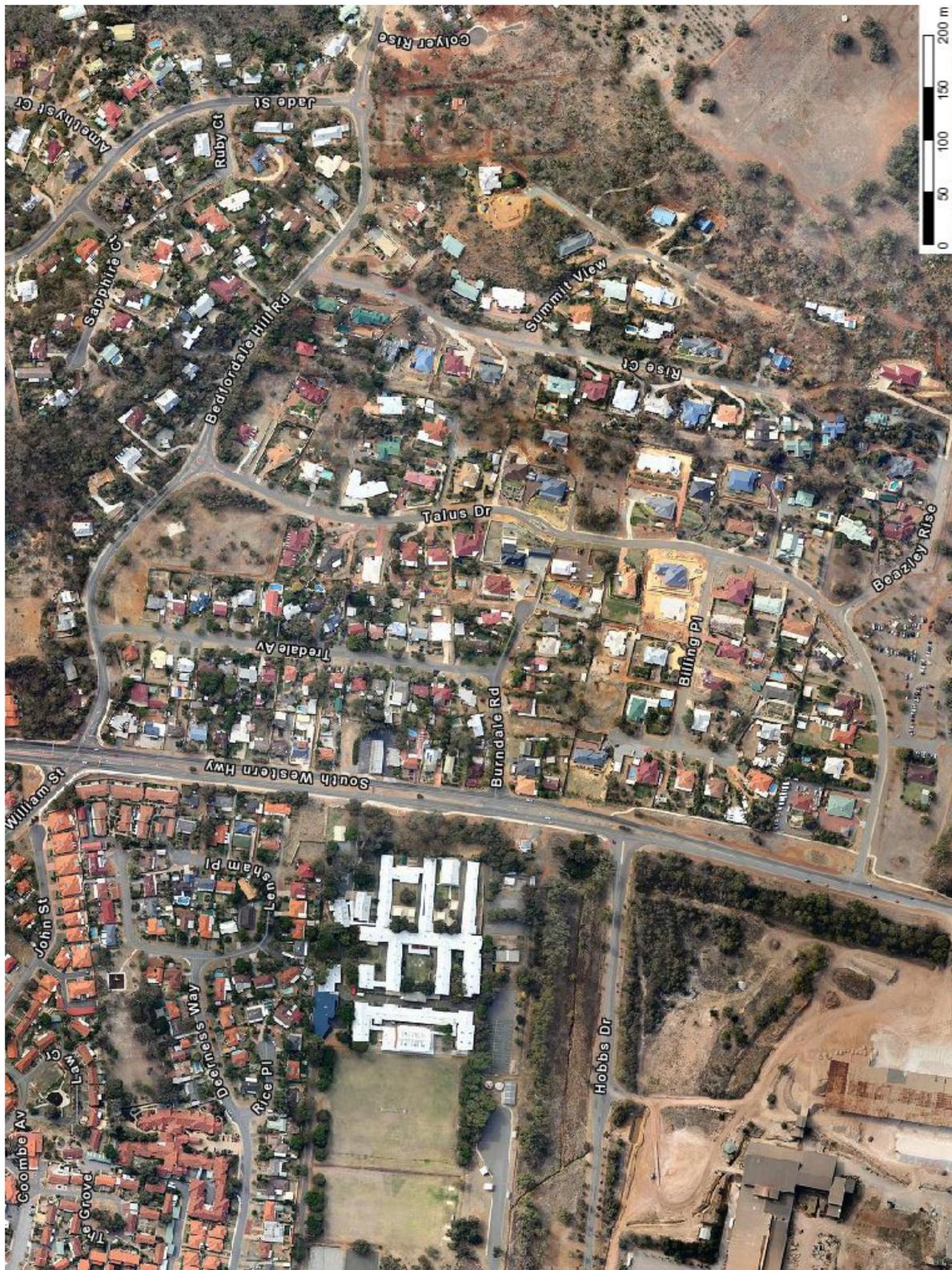
CONCLUSION

The above figures therefore indicate that there is no requirement to install any further devices or carry out any other traffic calming measures on Talus Drive.

RECOMMEND

That Council not approve the installation of any traffic calming devices on Talus Drive, Bedforddale and the petitioner be advised of Council’s decision.

**MOVED Cr
MOTION CARRIED (/)**

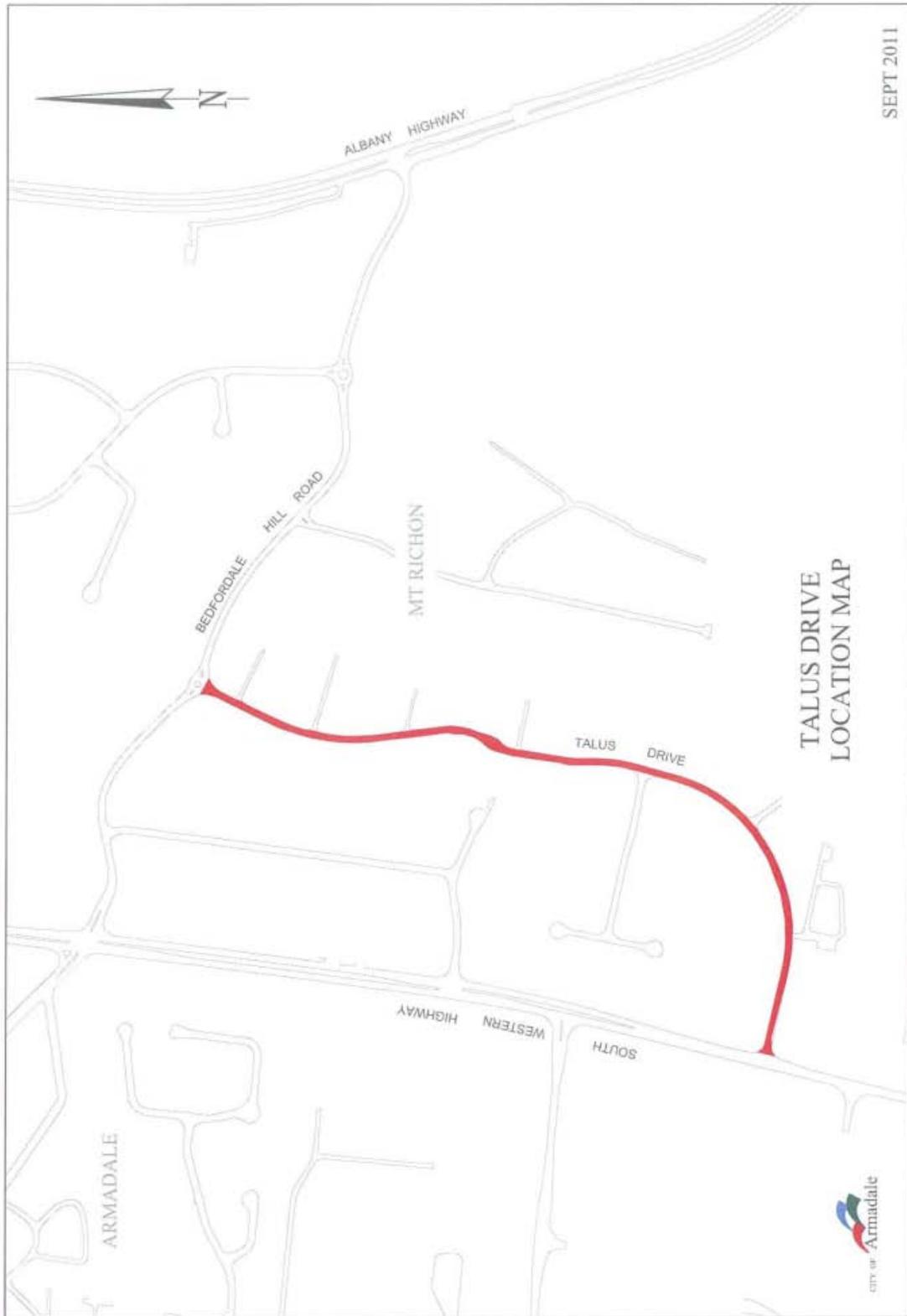


Notes :
Locality Plan Talus Drive Mt Richon



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CLIFTON STREET, KELMSCOTT – TRAFFIC ISSUES

WARD RIVER
FILE REF RDC/27
DATE 22 September 2011
REF ADC
RESPONSIBLE MANAGER MED

In Brief:

- An Anti Hoon Speed Hump Program (AHSHP) which targets hoon behaviour on local roads was launched by MRWA, with funding allocations commenced by the Office of Crime Prevention for the first installation round in 2008/2009. Capital works for this program is funded on a 50/50 basis by MRWA; however ongoing maintenance is the responsibility of the City.
- Due to numerous requests from residents to address speeding, the City agreed to participate in the Program by the consideration of installing traffic control devices (speed cushions) in Clifton Street, from Gilwell Avenue to Brookside Avenue, and in Brookside Avenue, from Clifton Street to Connell Avenue.
- **Recommend**
That Council:
 1. Not proceed with the installation of traffic control devices in Clifton Street, from Gilwell Avenue to Brookside Avenue, and in Brookside Avenue, from Clifton Street to Connell Avenue, Kelmscott, based on the low number of positive returns and advises Main Roads WA accordingly.
 2. Investigate alternative traffic calming devices on the above route.

Tabled Items

Submissions from residents.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5.1 Provide a safe and efficient movement network, including local and arterial roads and associated infrastructure.

Legislation Implications

General assessment of legislation (eg Local Government Act) has not revealed any restrictions.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial Implications

2010/2011 Carry Over LATM Budget \$46,700 - one third funded by the City of Armadale.

Consultation

- Residents of Clifton Street and Brookside Avenue (proposed speed cushions area).
- Main Roads Western Australia (MRWA).

BACKGROUND

An Anti Hoon Speed Hump Program (AHSHP) which targets hoon behaviour on local roads was launched by MRWA, with funding allocations commenced by the Office of Crime Prevention for the first installation round in 2008/2009. Capital works for this program is funded on a 50/50 basis by MRWA; however ongoing maintenance is the responsibility of the City.

Due to numerous requests from residents to address speeding, the City agreed to participate in the Program by the consideration of installing traffic control devices (speed cushions) in Clifton Street, from Gilwell Avenue to Brookside Avenue, and in Brookside Avenue, from Clifton Street to Connell Avenue (see Drawing No 11/74 below). This was subsequently approved by MRWA under the AHSHP Program, subject to the following standard conditions:

- Community consultation on the proposal, determining that the majority of residents were in favour of the installation of several sets of speed cushions;
- The speed cushions to be located near street lights to be clearly visible, particularly at night;
- The spacing of speed cushions to comply with MRWA standards (regular intervals);
- The City provides an undertaking that the installed speed cushions will remain in place for a period of not less than three (3) years. Should complaints be received, the City is to address these accordingly, and any costs associated with modification of profile or location to be at the City's expense. Early removal will require full refund to the Program.
- Works associated with speed cushion installation to be completed by the City, and MRWA invoiced for the cost of the project.
- All new or modified regulatory signs, pavement markings, and traffic signals, must be submitted to MRWA for formal approval prior to commencement of construction; and
- Council will be responsible for any ongoing maintenance, with the exception of signs and lines.

DETAILS OF PROPOSAL

In response to a number of Clifton Street and Brookside Avenue residents' complaints regarding the increased traffic speed along the above streets, the Technical Services Directorate has carried out the following traffic investigations:

- Traffic counts indicating 1,543 vehicles per day;
- The five year crash statistics (years 2006 – 2010) provided by MRWA indicate 3 midblock crashes along Clifton Street and Brookside Avenue, 1 crash at Clifton Street/Brookside Avenue intersection, and 4 crashes at Gilwell Avenue/Clifton Street;
- The posted speed limit along these roads is 50km/hr (the default speed limit in built up area); and
- Both roads are classified as District Distributor B (carrying traffic between 1,000-3,000vpd).

COMMENT

Invitation for comment on the proposed installation of traffic control devices was sent to 55 local residents directly involved with the speed hump locations near their houses. The Technical Services Directorate received 20 responses; 16 in favour of the installation, and

4 objections. This represents a low number of returns (36.36% only) and therefore does not comply with the first MRWA criteria that the majority of residents approve the installation.

Traffic calming devices are generally very effective, but the public has over years built up a resistance to the traffic calming measures which constitute a vertical alignment change, with the greatest resistance to speed humps in any form. This view is supported by the Technical Services Directorate.

There is a range of alternate traffic calming measures as effective as speed humps, which are more acceptable to local communities, and which do not have the negative factors associated with speed humps. These measures include chicanes, line markings, central islands, and mini roundabouts. It is a common result of the installation of speed humps that traffic is diverted from the logical main thoroughfare on to adjacent less suitable local roads as rat runs, which in turn creates additional requests for traffic calming on streets which previously has carried very low volumes of traffic.

It would therefore be preferable that consideration be given to alternate measures being designed for this route.

CONCLUSION

Although the speed and anti social driving on Clifton Street and Brookside Avenue is a concern, the low number of returns (36.36% only) does not merit installation. Technical Services will continue to monitor the local traffic in Clifton Street and Brookside Avenue; whilst requesting the WA Police Service to carry out periodic speed checks, and will consider the need to install other traffic calming devices.

RECOMMEND

That Council:

- 1. Not proceed with the installation of traffic control devices in Clifton Street, from Gilwell Avenue to Brookside Avenue, and in Brookside Avenue, from Clifton Street to Connell Avenue, Kelmscott, based on the low number of positive returns and advises Main Roads WA accordingly.**
- 2. Investigate alternative traffic calming devices on the above route.**

MOVED Cr
MOTION CARRIED (/)

CLIFTON HILLS PRIMARY SCHOOL - TRAFFIC ISSUES

WARD: RIVER
FILE REF: PR16648
DATE 28 September
2011
REF KK
RESPONSIBLE EDTS
MANAGER

In Brief:

- A petition signed by 73 residents was tabled by Cr Butterfield at the Ordinary Council Meeting of 26 September 2011.
- The petition calls for the installation of a “Kiss and Drive” facility at the eastern end of Butler Pass, with the western end of Butler Pass being modified to enable parking.
- Council resolved that the petition be received and be referred to Technical Services Committee.
- **Recommendation:**
That Council:
 1. Support the proposal for the provision of additional facilities on the School frontages for parking and “kiss and ride”.
 2. Refer the submitted petition from the Clifton Hills Primary School Parents and Citizens Association to the Department of Education for their attention.
 3. Recommend to the Department of Education that they implement the proposal from the City for additional facilities for parking and “kiss and ride” on the School frontages, with implementation as soon as possible.
 4. That the Blackburne Reserve continues to be used as an informal parking area until resolution regarding the provision of embayments on the School frontages has been concluded.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5 Safe and efficient movement of goods, services and people.

Legislation Implications

General assessment of relevant legislation (eg Local Government Act) has not revealed any restrictions.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial Implications

Section 6.8 of the Local Government Act 1995 - Nil.

Consultation

- Inter Directorate.
- Department of Education.
- Clifton Hills Primary School Headmaster.

BACKGROUND

A petition signed by 73 residents was tabled by Cr Butterfield, the prayer of which reads as follows:

“We the undersigned members of the Clifton Hills Primary School community request that the City of Armadale install a ‘Kiss and Drive’ at the eastern end of Butler Pass, and that the western end of Butler Pass be modified to enable parking as well as the free flow of traffic in both directions.”

At its Ordinary Meeting of 26 September 2011, Council resolved:

207/9/2011 RECOMMEND

“That the petition be received and be referred to the Technical Services Committee.”

The traffic congestion and parking shortage has been the subject of much discussion and debate over the past years. Law enforcement has resulted in fines being issued against illegal parkers, where vehicles have been parked illegally on verges, on footpaths, and in restricted parking areas.

The City and the Department of Education combined efforts in the past and constructed a parking embayment/”Kiss and Ride” area on Butler Pass to relieve the pressure on parking demand. The City also recently approved the informal use of the Blackburne Reserve, off Blackburne Drive, at the rear access to the School for parking and pick up/drop off of children.

This in turn has led to some complaints from the local residents who would prefer to see the reserve returned to its intended use.

DISCUSSION

Over the past months, Technical Services has been investigating the situation and entered into discussion with the School Management, as well as the Department of Education. The School has also been in contact with the Department on a regular basis to address this situation.

As the responsible body for education and schools, the Department of Education is responsible for the provision of facilities associated with the good running and operation of schools. From discussions with the Headmaster and the Department, the demographics of the School have shifted from children being drawn from the immediate surrounding residential areas, to a greater number of children living at some distance from the School now attending. These children are almost all driven to school and picked up after school by means of a vehicle.

Observations on site clearly demonstrate the shortage of parking and “kiss and ride” facilities. In consultation with the Department of Education, the city’s staff have prepared a plan indicating maximal parking on the road bordering the School. These embayment areas can either be used as a kiss and ride, or for parking. It is suggested that both these roles would be required, alternating between the morning drop off where a quick stop and drop facility is required, and the afternoon collection, where more parking is required for parents waiting to collect their children (refer location map and drawing below).

The City makes provision on an annual basis for financial contributions to projects associated with schools, and normally limits such contribution to one for any one project per school.

The 2011/2012 and the anticipated 2012/2013 allocations have already been provisionally assigned to the new Roleystone Combined School for the parking, kiss and ride, and traffic management facility improvements required. It is therefore anticipated that the City would not be in a position to contribute to this project.

The cost estimate for the improvements at the Clifton Hills School is \$175,000. The City is currently in discussions with the Department regarding the expected timing of their implementation of these improvements. The Department has however not given any undertaking that they will in fact implement the recommended improvements.

CONCLUSION

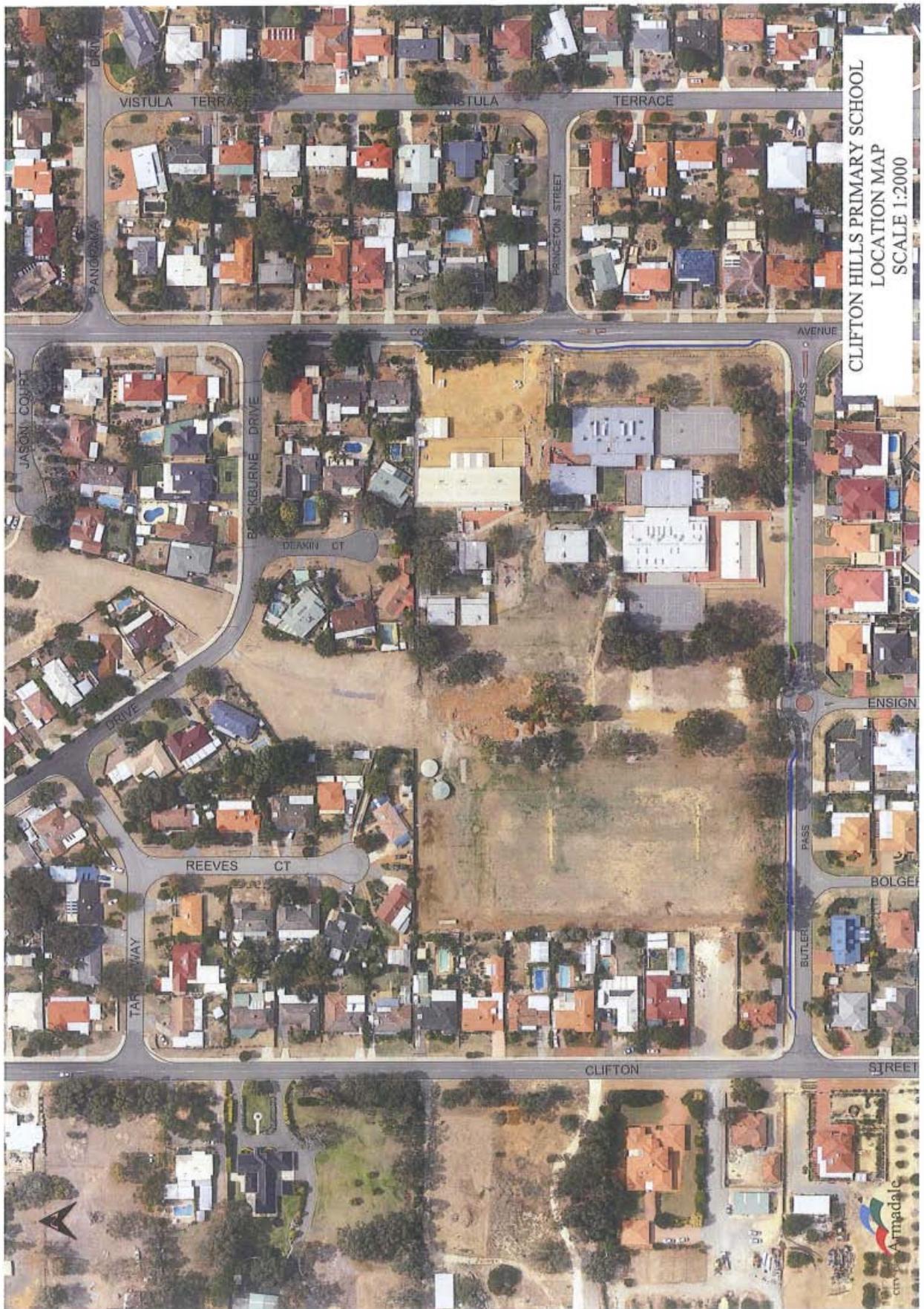
The responsibility for making the required provision of parking and other facilities associated with the operation of the School is that of the Department of Education. The City has been in communication and has assisted in providing a design and cost estimate for their consideration. The Department of Education is to consider the implementation of the proposal and source funding in terms of their final decision.

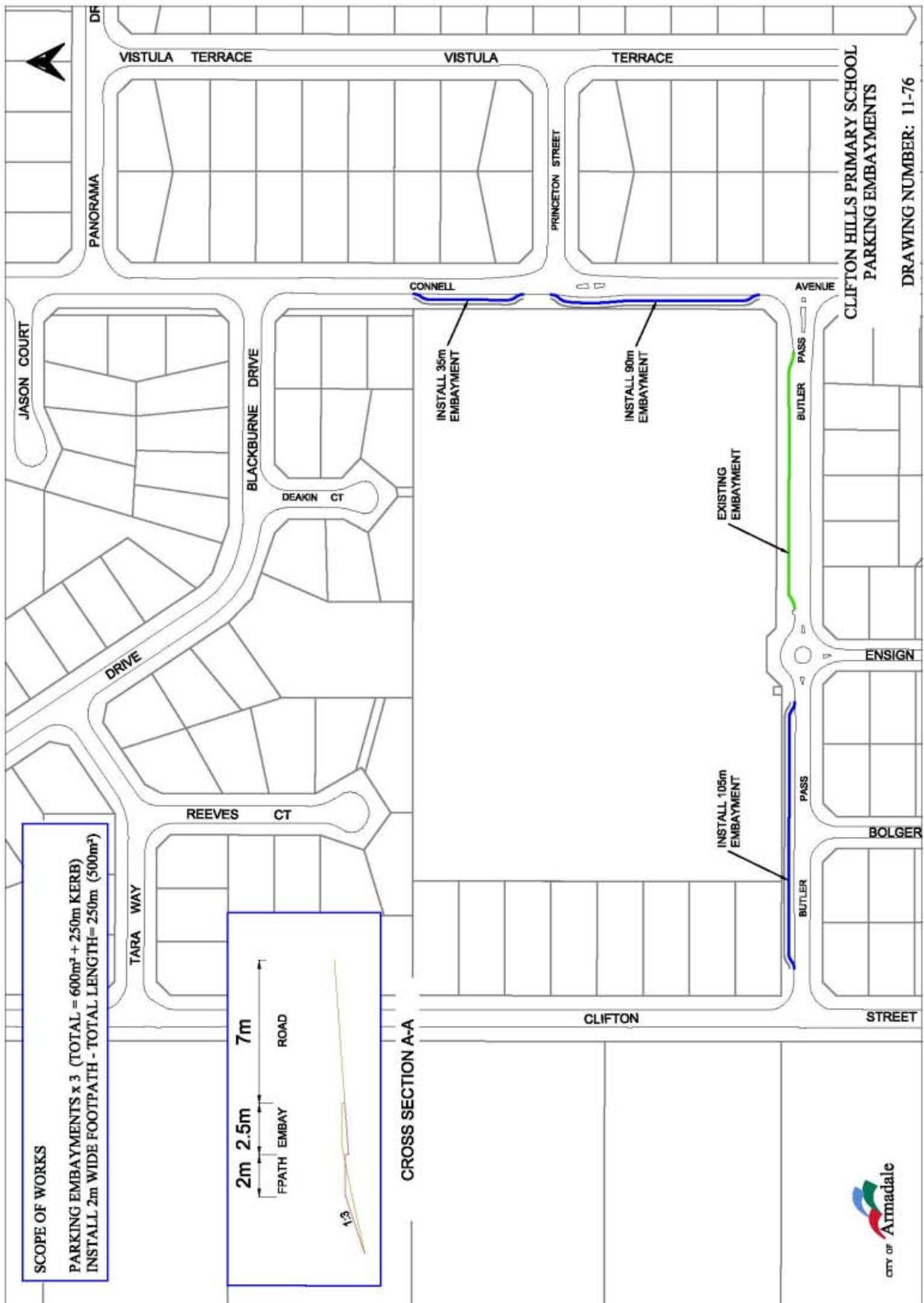
RECOMMEND

That Council:

- 1. Support the proposal for the provision of additional facilities on the School frontages for parking and “kiss and ride”.**
- 2. Refer the submitted petition from the Clifton Hills Primary School Parents and Citizens Association to the Department of Education for their attention.**
- 3. Recommend to the Department of Education that they implement the proposal from the City for additional facilities for parking and “kiss and ride” on the School frontages, with implementation as soon as possible.**
- 4. That the Blackburne Reserve continues to be used as an informal parking area until resolution regarding the provision of embayments on the School frontages has been concluded.**

MOVED Cr
MOTION CARRIED (/)





GILLAM DRIVE, SEVILLE GROVE - TRAFFIC ISSUES

WARD: ALL
FILE REF: RDG/38
DATE 28 September
2011
REF JG
RESPONSIBLE EDTS
MANAGER

In Brief:

- A petition signed by ten residents was tabled by Cr Sargeson at the Ordinary Council Meeting of 22 August 2011.
- The petition called for the closure of Gillam Drive.
- Council resolved that the petition be received and be referred to Technical Services Committee.
- **Recommendation:**
That Council:
 1. Not accede to the request of the residents of Gillam Drive to have the road closed.
 2. Request the Armadale Redevelopment Authority to modify the road infrastructure associated with their proposed developments to be amended as recommended by Technical Services.
 3. Inform the petitioners of Council's action.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.5.1 Provide a safe and efficient movement network, including local and arterial roads and associated infrastructure.

Legislation Implications

General assessment of relevant legislation (eg Local Government Act) has not revealed any restrictions.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial Implications

Nil.

Consultation

Intra Directorate.

BACKGROUND

A petition signed by ten residents was tabled by Cr Sargeson, the prayer of which read as follows:

“We the residents of Gillam Drive, Seville Grove, at the residential end between Champion Drive and Seville Drive, ‘map reference comparisment (sic)’ 372 of 2005 directory of map reference 298 2011 directory, would like to have something substantially done about the increasing amount of traffic using our small residential street, ie road closure of traffic chiaccaines (sic) at each end of the Street.”

Since recent housing residential/industrial developments, and future proposed developments, ie residential, industrial and infrastructure around Seville Drive, Lake Road, Ranford Road (Industrial Development) and so forth, have increased traffic flow in our small residential street 10 fold + in the past 5 years or so. We feel this is necessary as our street is not a main thoroughfare.”

At its Ordinary Meeting of 22 August 2011, Council resolved:

169/8/2011 RECOMMEND

“That the petition be received and be referred to the Technical Services Committee.”

Local residents have on two occasions since 2006 registered their complaints against the growing traffic volumes on this portion of road, and they have through the Member for Canning being informed of measures being taken to manage the growth. The most significant of these measures has been the intersection treatment at the intersection of Gillam and Seville.

DISCUSSION

Gillam Drive, Seville Grove` is part of the City’s fast developing areas, and planning approvals are the responsibility of the Armadale Redevelopment Authority (ARA).

As the City’s north western area is following this trend, developments will at some stage, come close to existing or previously developed townships, and may cause conflict with existing residents based on the additional or expected larger volumes of traffic coming through “their” roads.

The residents of Gillam Drive have submitted a petition requiring redress of the consequences of such development.

COMMENTS

Gillam Drive is a district distributor road, planned for the long term to carry up to 15,000 vehicles per day (vpd). The current traffic volume along the portion of Gillam Drive under discussion is already above 7,000 vpd, and is expected to grow into the future.

The traffic travelling along Seville Drive in a northerly direction, splits into two streams, one into Gillam Drive, and the balance continues along Seville Drive, both travelling towards Champion Drive. The traffic volumes on these two portions of road are 7,000 vpd for Gillam Drive and 7,300 vpd for Seville Drive. The difference between the two routes is that the traffic travelling along Gillam Drive enters at a traffic roundabout at Champion Drive, and the Seville Drive traffic needs to traverse a “T” intersection at Champion Drive.

It is clear that the Gillam Drive route is more attractive to traffic as the roundabout at Champion Drive is an easier means of accessing Champion Drive. It is expected that this route will attract greater volumes of traffic as Champion Drive carries greater volumes of traffic.

Seville Drive traffic, will in general, use the facilities provided at the northern end of the street (shopping centre, service station and medical centre), while the traffic on Gillam Drive will connect to Champion Drive and continue further north (Perth or Kelmscott light industrial precinct),

Analysis

While the situation for residents is a reality, the request to close the road is impractical, as the intersection of Seville and Champion would be unable to manage the traffic volumes with an estimated 14,000 vpd entering Champion Drive from Seville Drive. This would create an unsafe intersection, and a great deal of congestion at this intersection, with an associated increase in crashes.

Gillam Drive is on the portion of the road network identified as strategically significant in the long term. It is already performing this role, and is anticipated to play a more important strategic role into the future. From this point of view, it would be acting against the strategic intent of the road and land use planning of the City to now consider closing this portion of road. Closure is not considered feasible by the Development Services and Technical Services Directorates.

In terms of measures to relieve the egress movements from these properties, the City has assessed the sites, and consider that providing turning facilities on the verges is a practical means of allowing the residents to turn outside their properties without entering the road. They can then enter the road in a forward gear.

The City has discussed the matter with the ARA (as the development facilitator on the adjoining property) and the consulting engineers working for the Developer. Both parties agree that a modification to the planned roundabout at the intersection of Gillam Drive and Seville Drive will discourage to some degree, traffic from entering Gillam Drive off Seville Drive, but will also allow for better long vehicle movements, particularly buses (refer drawing No. 10-5-70/21 below), to continue along Seville Drive.

The Developer will be requested to carry out all modifications to the new and existing road system, as well as construct vehicle returns on the eastern verge next to the crossovers to make it safe for residents to enter the road when leaving the driveway (refer drawing No. COA 11-X200).

CONCLUSION

The closure of Gillam Drive in its role as a district distributor road is not supported by Development Services or Technical Services. Alternate measures can be taken to assure safer access from private properties on to Gillam Drive as a viable alternative to the requested closure.

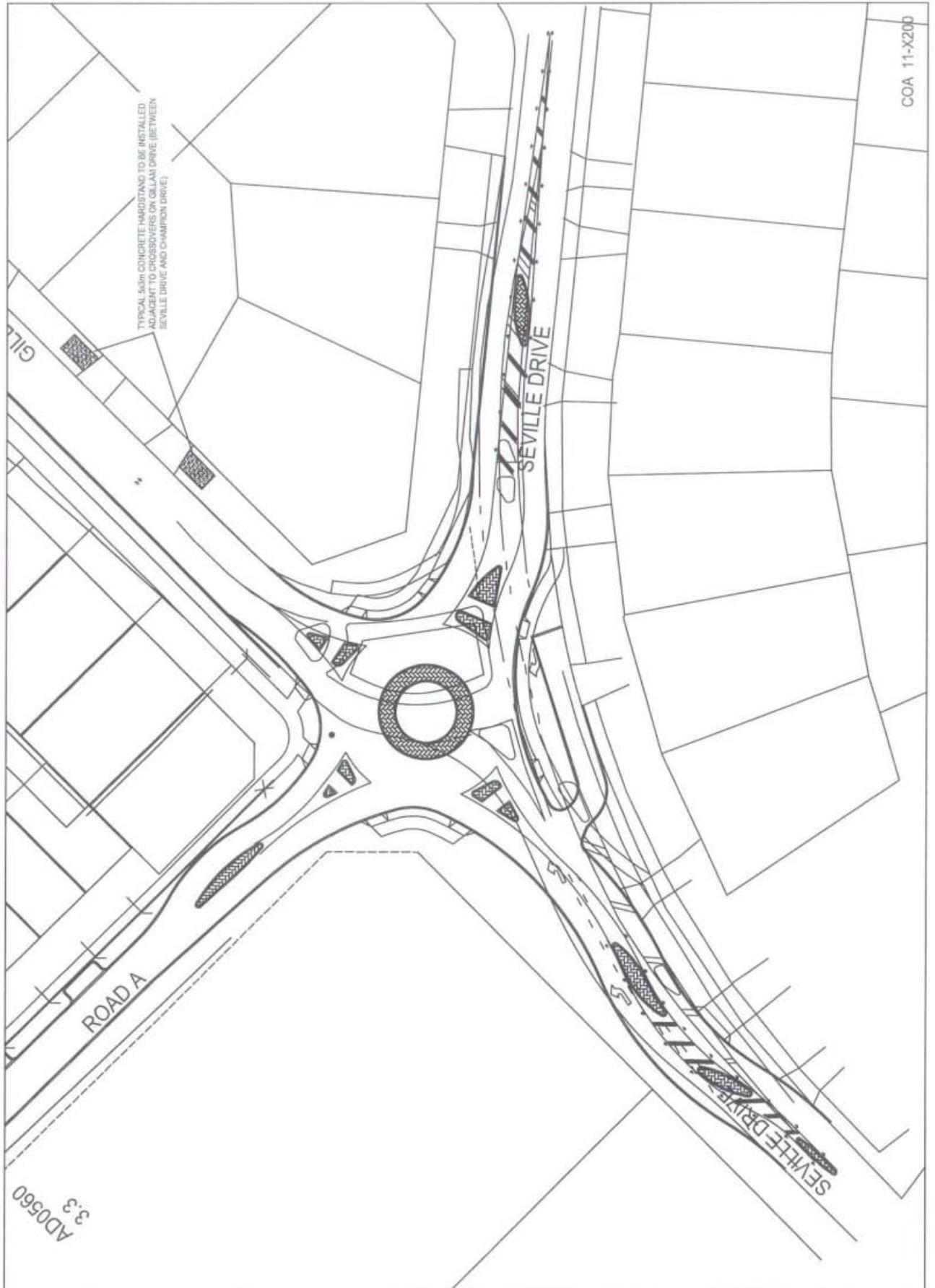
RECOMMEND

That Council:

- 1. Not accede to the request of the residents of Gillam Drive to have the road closed.**
- 2. Request the Armadale Redevelopment Authority to modify the road infrastructure associated with their proposed developments to be amended as recommended by Technical Services.**
- 3. Inform the petitioners of Council's action.**

**MOVED Cr
MOTION CARRIED (/)**





***PROPOSAL TO SEEK PUBLIC COMMENT ON THE DRAFT FORRESTFIELD
COMPLEX BUSHLAND MANAGEMENT PLAN 2011***

WARD: MINNAWARRA
/ HERON
FILE REF: EM/BB/2
DATE 15 August 2011
REF NB
RESPONSIBLE EDTS
MANAGER

In Brief:

- A Draft Forrestfield Complex Bushland Management Plan has been prepared.
- The Draft Plan contains recommendations intended to inform the management of seven bushland reserves in the City of Armadale for a five year period.
- It is proposed to advertise the Draft Plan for a six week public consultation period.
- **Recommendation:**
That Council:
 1. Advertise the Draft Forrestfield Complex Bushland Management Plan for a six week public consultation period.
 2. Subject to (1) above, and barring any adverse public comment arising from the Plan's six week public consultation period, in which case the Plan and comments received will be recommended to Council for further consideration, adopt the Plan as now presented at Attachment A1, with effect from the close of the public consultation period.
 3. Give consideration to allocating additional funds in the 2012/2013 Draft Budget for the revegetation projects contained within the Forrestfield Complex Bushland Management Plan.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

2. Enhanced Natural and Built Environments.
 - 2.8 A natural environment and bushland that is sustained, enhanced and strengthened.

Legislation Implications

Nil.

Council Policy/Local Law Implications

Nil.

Budget/Financial Implications

This report considers the Draft Forrestfield Complex Bushland Management Plan 2011. The implementation of recommendations for bushland management is anticipated to be funded through existing Natural Area Maintenance Budgets and through external grants. The 2011/2012 Budget provision for these works is allocated as follows:

Budget	Items to be Funded	Cost
Environmental Services Department Budget	Weed control, dieback management, capital works.	\$28,876
Parks Natural Area Budget	Implementation of Resolution T6/4/11 - Removal of Path and Revegetation at Kendal Court.	\$20,000
Consideration to the provision of \$30,550 towards the following items in the 2012/2013 Draft Budget:		
	• Rezoning of the Bushland Portions of Creyk Park	\$ 5,000
	• Revegetation Projects within the Forrestfield Complex Reserves	\$16,050
	• Bank Stabilisation Project at Creyk Park	\$ 9,500

Consultation

Interdepartmental.

BACKGROUND

The City of Armadale is managing 44 bushland reserves for their biodiversity values. Within these reserves, over 900 hectares of bushland has good (or better) vegetation condition, or is 'Threatened Ecological Community'. To inform management decisions and protect biodiversity in these natural areas, the City of Armadale prepares bushland management plans and implements a capital works, weed and dieback control program.

Consistent with actions in the Council endorsed Five Year Plan for the Environmental Services Department (State of the Environment Report 2011), bushland management plans are reviewed on an ongoing basis.

The City of Armadale manages eight urban bushland reserves, collectively known as "Forrestfield Complex". This collective term refers to their floristic status of type 20b Vegetation Community, which is endorsed as "Endangered Threatened Ecological Community" by the Minister for Environment and Heritage in Western Australia.

The Draft Plan proposes actions over a five year period for seven of the eight City managed Forrestfield Complex Bushland Reserves, including:

- Bob Blackburn Flora Reserve - Williams Road, Seville Grove;
- Kendal Court Park Bushland - Grovelands Drive, Camillo;
- Creyk Park Bushland Reserve - Kembla Way, Armadale;
- John Dunn Bushland Reserve - Third Avenue, Camillo;
- Eva and Bill Moore Reserve - Durnsford Way, Camillo;
- Camillo Road Reserve - Camillo Road, Kelmscott; and
- Depot Bushland - Owen Road, Kelmscott

The eighth Forrestfield Complex Bushland Reserve managed by the City of Armadale is Fletcher Park in Wungong, which has its own separate Management Plan (endorsed by Council in 2011).

The objectives of the Draft Management Plan are as follows:

- To protect and enhance Forrestfield Complex Bushland areas managed by the City of Armadale, so that their conservation significance as type 20b Threatened Ecological Communities is maintained.

- To enhance community understanding and appreciation of the value of each of the City of Armadale managed Forrestfield Complex Bushland areas.
- To increase community use of the Forrestfield Complex Bushland areas for passive recreation.

It is proposed to advertise the Draft Forrestfield Complex Bushland Management Plan, provided at Attachment A1, for a six week public consultation period.

DISCUSSION

The Draft Forrestfield Complex Bushland Management Plan proposes recommendations to inform the management of seven bushland reserves over a five year period. The Draft Plan is intended to replace the following previously separate, Council endorsed documents (all now due for review):

- Forrestfield Complex Bushland Management Plan 2004;
- Bob Blackburn Flora Reserve Bushland Management Plan 2000;
- Bob Blackburn Flora Reserve Dieback Management Plan 2000;
- Kendal Court Bushland Management Plan 2002;
- Kendal Court Dieback Management Plan 2000;
- Bob Blackburn Flora Reserve Bushland Urban Bushfire Management Plan 2002;
- Kendal Court Bushland Urban Bushfire Management Plan 2002; and
- Creyk Park Bushland Urban Bushfire Management Plan 2002.

Management actions proposed in the Draft Plan are based on a detailed assessment of each individual reserve's biodiversity values, needs for weed control, infrastructure, dieback management, access control, and local passive recreation opportunities. All management actions are anticipated to be funded through existing Natural Area Management Budgets and through seeking external grants.

The Draft Management Plan has been prepared in consultation with, and reviewed and supported by, the City of Armadale Environmental Services, Parks and Reserves, and Ranger Services Departments.

OPTIONS

1. Council could endorse the Draft Forrestfield Complex Bushland Management Plan 2011, subject to no adverse comments being received during a six week public consultation period.
2. Council could decide not to support the Draft Forrestfield Complex Bushland Management Plan 2011, and hence not advertise the Plan for public comment.

CONCLUSION

The Draft Forrestfield Complex Bushland Management Plan 2011 proposes recommendations to guide the management of seven City of Armadale managed bushland areas, which contain a vegetation type collectively known as the "Forrestfield Complex". The review of bushland management plans in order to inform biodiversity management in the City is consistent with the City of Armadale Five Year Work Plan for Environmental Services, known as the "State of the Environment Report 2011".

The Draft Forrestfield Complex Bushland Management Plan 2011 is intended to replace and consolidate a number of Council endorsed plans that are due for review.

The recommendations with the Draft Forrestfield Complex Bushland Management Plan 2011 are based on a detailed assessment of each of the bushland areas' values and management needs in terms of infrastructure, management of threats, and promotion of passive recreation opportunities.

It is recommended that Council adopt the Draft Forrestfield Complex Bushland Management Plan 2011, subject to no adverse comment being received during a six week public consultation period. If adverse comments are received during this period, the comments and the Draft Plan will be recommitted to Council for further consideration.

RECOMMEND

That Council:

- 1. Advertise the Draft Forrestfield Complex Bushland Management Plan for a six week public consultation period.**
- 2. Subject to (1) above, and barring any adverse public comment arising from the Plan's six week public consultation period, in which case the Plan and comments received will be recommended to Council for further consideration, adopt the Plan as now presented at Attachment A1, with effect from the close of the public consultation period.**
- 3. Give consideration to allocating additional funds in the 2012/2013 Draft Budget for the revegetation projects contained within the Forrestfield Complex Bushland Management Plan.**

**MOVED Cr
MOTION CARRIED (/)**

****MEMORIAL PARK**

WARD MINNAWARRA
FILE REF PR25359
DATE 27 September 2011
REF GM/PL
RESPONSIBLE EDTS
MANAGER

In Brief:

- Upgrading and redevelopment of Memorial Park within the Armadale CBD commenced in April 2011.
- Funds are also allocated for roads and street works within the Armadale CBD (\$300,000).
- Current and future works for Memorial Park will require an additional expenditure of \$172,000.
- New artwork proposed requires an additional \$50,000.
- It is proposed to fund this expenditure from the following item included within the 2011/2012 Budget:
New Roads – Armadale CBD \$172,000

Recommend

That Council:

1. Approve the proposed funding for the completion of Memorial Park; and
2. Pursuant to Section 6.8 of the Local Government Act 1995 (as amended), authorise the following total expenditure:

Upgrading and Redevelopment of the
Memorial Park \$475,200
and amend the 2011-2012 Annual Budget as follows:

Increase Expenditure

Upgrading and redevelopment of Memorial Park
Increase by \$172,000
Artwork – Memorial Park \$ 50,000

Decrease Expenditure

New Roads Armadale CBD \$222,000
for the purpose of funding and upgrading and redevelopment of Memorial Park, and the inclusion of artwork in Memorial Park.

Tabled Items

Nil.

Officer Interest Declaration

Nil.

Strategic Implications

- 2.4 Attractive and user friendly streetscapes and open spaces.
- 2.4.1 Implement townscape, streetscape and parkland improvements to enhance the distinctive character of the City.
- 2.4.2 Maintain and improve, where required, the quality, amenity and accessibility of open spaces.

Legislation Implications

Assessment of legislation indicates that the following legislation applies:
Section 6.8 Local Government Act 1995 - Expenditure from municipal funds not included in annual budget.

Council Policy/Local Law Implications

General assessment has not revealed any applicable Policies/Local Laws.

Budget/Financial Implications

Section 6.8 of the Local Government Act 1995.

Consultation

Intra Directorate.

BACKGROUND

Upgrading and redevelopment of Memorial Park within the Armadale CBD, commenced in April 2011, with funding by the City and from the Regional and Local Community Infrastructure Programme (RLCIP). The park design includes pathways, a revitalised area around the memorial, retaining structures, replanted areas including shade trees, shade pavilion, improved park seating and lighting, amphitheatre stairs, and upgraded irrigation.

Council has also allocated amounts on successive budgets for roadworks, streetscape or urban design projects in the CBD, to complement funding of projects by the ARA, such as Commerce Avenue on the Jull Street Mall. This year \$300,000 was allocated for unspecified “roadworks” within the CBD.

The original designs for Memorial Park were expanded with the recent approvals by Council of the inclusion of a toilet, to replace the demolished toilet block in Minnowarra Park, and an artwork celebrating the “Memorial” aspect of the Park.

COMMENT

Funding for Memorial Park was provided in the Technical Services Budget, with \$253,000 carried forward from Budget 2010/11. It had also been intended that additional funding be provided through re-allocation of part of the “New Roads Armadale CBD” Budget in preparation of Budget 2011/12.

This did not occur and in order to complete the scheduled works in upgrading of Memorial Park, it is estimated that \$172,000 needs to be redirected from the “New Roads Armadale CBD” account. In addition, a further \$50,000 will be required to fund the artworks put forward to Council recently (CS87/9/11).

This will leave \$78,000 remaining for incidental road or street works required in the CBD.

A summary of expenditure to date and estimated cost of completion is outlined below:

Works Completed to Date	\$128,880
• Demolition Works	
• Earthworks	
• Pathways - Partial	
• Paving - Partial	
• Refixing of Memorial Plaques	
• Amphitheatre Stairs	
Estimate of Committed Works	\$210,140
• Retaining Structures	
• Pathways, Paving	
• Shade Structure at Memorial	

Estimate of Infrastructure to Complete	\$ 86,180
• Gardens, Trees and Lawns	
• Paving Completion	
• Pathways Completion	
• Retaining and Decorative Walls Completion	

Estimate Cost of Artwork	\$50,000
As reported recently (CS87/9/11)	

The estimated total costs for the completion of Memorial Park project is estimated at \$475,200. This covers all pathways, walls, grassed areas, associated earthworks and the new artwork. The toilet block is funded as a separate item under a separate account.

Expenditure	
Expenditure to Date	\$ 128,880
Committed Expenditure (Orders Placed)	\$ 210,140
Other Infrastructure Still to be Completed	\$ 86,180
Artwork	<u>\$ 50,000</u>
Total	<u>\$ 475,200</u>

Funding	
Memorial Park - Carry Over from 2010/2011	\$ 253,200
New Roads Armadale CBD 2011/2012	<u>\$ 222,000</u>
Total	<u>\$ 475,200</u>

This leaves a balance of \$78,000 remaining in New Roads Armadale CBD 2011/2012.

CONCLUSION

The proposed costs reported will complete this major CBD project, complementing the significant investment in the Armadale CBD in recent years, and linking these developments to the proposed Civic precinct still to be developed on City owned land.

RECOMMEND

That Council:

1. **Approve the proposal funding for the completion of Memorial Park; and**
2. **Pursuant to Section 6.8 of the Local Government Act 1995 (as amended), authorise the following total expenditure:**

Upgrading and redevelopment of the Memorial Park	\$475,200
---------------------------------------------------------	------------------

and amend the 2011-2012 Annual Budget as follows:

<u>Increase Expenditure</u>	
Upgrading and redevelopment of the Memorial Park	
Increase by	\$172,000
Artwork – Memorial Park	\$50,000

Decrease Expenditure

New Roads Armadale CBD

\$222,000

**for the purpose of funding the upgrading and redevelopment of
Memorial Park, and the inclusion of artwork in Memorial Park.**

****ABSOLUTE MAJORITY REQUIRED FOR PART 2 OF THE
RECOMMENDATION**

**MOVED Cr
MOTION CARRIED (/)**

LATE ITEMS

COUNCILLORS' ITEMS

MEETING CLOSED _____PM.

TECHNICAL SERVICES COMMITTEE

SUMMARY OF "A" ATTACHMENTS

3 OCTOBER 2011

Attachment No.	Subject	Page
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DRAFT

**Forrestfield Complex
Bushland Management Plan 2011**

Adopted by Council:



Bob Blackburn Reserve 2004



Executive Summary

The Forrestfield Complex bushland community once covered approximately 11,300 ha of the Swan Coastal Plain. In 2000, there was only 1,020 ha, or 9 % of the original extent of Forrestfield Complex bushland remaining.

A total of eight areas are recognised as Forrestfield Complex community type and managed by the City of Armadale. This management plan is intended to inform the management of seven of these areas (the remaining areas is managed according to its own management plan).

The Forrestfield Complex vegetation community is of conservation significance both regionally, and for the local community. The vegetation type is recognised as Endangered Threatened Ecological Community and protected under State and Federal legislation. Local community surveys undertaken in 2008 revealed that nearby residents valued their urban bushlands for recreational pursuits and for opportunities to appreciate nature.

In recent years, targeted weed control in each of the reserves has resulted in significant decreases in weed proliferation. Rotational dieback control and the installation of infrastructure such as gates and fencing has resulted in regeneration of the bushland and a promotion of these areas for their conservation values.

This plan is intended to inform the management of Bob Blackburn Flora Reserve, Creyk Park Bushland, Kendal Ct, Eva and Bill Moore Reserve, Cammillo Reserve, John Dunn Reserve and the Depot Bushland for a five year period. Funding of the actions proposed in this plan is anticipated to be met through a combination of existing budget allocation to the management of natural areas and through the seeking of external grants.

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1.0 Introduction

This plan, known as the *Forrestfield Complex Bushland Management Plan 2009* is intended to inform the management of seven bushland areas in the City of Armadale. The vegetation of each of these areas is described as Forrestfield Complex vegetation community (see section 1.1 below) and collectively referred to as Forrestfield Complex bushland areas.

This bushland management plan is intended to replace the following bushland management plans that were previously separate documents.

- Forrestfield Complex Bushland Management Plan 2004
- Bob Blackburn Flora Reserve Bushland Management Plan 2000
- Bob Blackburn Flora Reserve Dieback Management Plan 2000
- Kendal Ct Bushland Management Plan 2002
- Kendal Ct Dieback Management Plan 2000

A review of the implementation status of each of these superseded plans appears in Section 13. Any outstanding recommendations of these plans are reconsidered in this document.

This bushland management plan is also intended to replace the following Urban Bushfire Management Plans.

- Bob Blackburn Flora Reserve Bushland Urban Bushfire Management Plan 2002
- Kendal Ct Bushland Urban Bushfire Management Plan 2002
- Creyk Park Bushland Urban Bushfire Management Plan 2002

The objectives of this Management Plan are as follows:

- To protect and enhance Forrestfield Complex bushland areas managed by the City of Armadale so that their conservation significance as type 20b Threatened Ecological Communities is maintained.
- To enhance community understanding and appreciation of the value of each of the City of Armadale managed Forrestfield Complex bushland areas.
- To increase community use of the Forrestfield Complex bushland areas for passive recreation.

This Management Plan is intended to be reviewed after five years.

1.1 Forrestfield complex values

Prior to European settlement, the Forrestfield Complex bushland covered approximately 11,300 ha of the Swan Coastal Plain. In 2000, there was only 1,020 ha, or 9 % of the original extent of Forrestfield Complex bushland remaining. The Western Australian Government's Bush Forever aims at a 10 % retention target, which is based on internationally agreed standards (Government of Western Australia 2000a).

However, Bush Forever only identifies 573 ha or 5 % of the original extent of the Forrestfield Complex for protection. The Forrestfield Complex vegetation type is therefore categorised as "Poorly Reserved", and it occurs nowhere else in the world (Government of Western Australia 2000a).

Vegetation mapping carried out in 1992 identified most sites with Forrestfield Complex vegetation within the City of Armadale as floristic community vegetation type 20b, which is endorsed as an 'endangered' Threatened Ecological Community by the Minister for Environment and Heritage in Western Australia. The 1992 vegetation mapping found many of the flora recorded in the Forrestfield Complex bushland were confined to the Scarp and the eastern side of the Swan Coastal Plain (Keighery and Trudgen, 1992).

The Forrestfield Complex comprises jarrah-marri-sheoak *Eucalyptus marginata-Corymbia calophylla-Allocasuarina fraseriana* on sandy soils with common species including *Banksia attenuata*, *Banksia grandis*, *Stirlingia latifolia*, *Mesomelaena tetragona* and *Nuytsia floribunda* (Hedde et al., 1980).

In 2004 the Department of Environment and Conservation (formally the Department of Conservation and Land Management) undertook an assessment of the Forrestfield complex bushland reserves including Bob Blackburn Flora Reserve, Creyk Park Bushland, Kendal Ct, Eva and Bill Moore Reserve, Cammillo Reserve, John Dunn Reserve and the Depot Bushland and confirmed their inferred status of type 20b.

About 36.5 ha of Forrestfield Complex bushland occurs in 11 locations within the City of Armadale. Eight of these, totalling approximately 12 ha, are owned or vested in the City of Armadale. Table 1.1 lists the City managed sites in decreasing size of remnant bushland showing the approximate area of bushland and its current management plan status.

Table 1.1: Remnant bushland of the Forrestfield Complex owned or vested in the City of Armadale.

Location name	Land description	Approx area of bushland	Management Plan status
Bob Blackburn Flora Reserve	Lot 28 Williams Rd, Part of Lot 32 Champion Dr, and part of Reserve 39798 for "Passive Recreation and Conservation" & Part of Lot 32 Champion Drive (i.e. freehold). Zoned Parks and Recreation (Local) under City of Armadale Town Planning Scheme 4. A portion of the reserve is included within Bush Forever Site 62.	5.9 ha	Covered by this plan.
Fletcher Park Bushland	Reserve 14217 for "Reserve for Recreation". This is part of Bush Forever Site 264.	3 ha	Management Plan adopted by Council June 2011.
Creyk Park Bushland	Part of Lot 141 (freehold) and Reserve 39208 for "Passive Recreation and Conservation". Zoned Parks and Recreation (Local) under City of Armadale Town Planning Scheme 4.	1.2 ha	Covered by this plan.
Kendal Court Bushland	Reserve 39579 for "Passive Recreation and conservation". Zoned Parks and Recreation (Local) under City of Armadale Town Planning Scheme 4.	1.15 ha	Covered by this plan.
Eva & Bill Moore Reserve Heathland	Reserve 34326 for "Passive Recreation and conservation". Zoned Parks and Recreation (Local) under City of Armadale Town Planning Scheme 4.	3,732 m ²	Covered by this plan.

Location name	Land description	Approx area of bushland	Management Plan status
Cammillo Reserve	Reserve 44606 for “Passive recreation and conservation”. Zoned Parks and Recreation (Local) under City of Armadale Town Planning Scheme 4.	1,653 m ²	Covered by this plan.
John Dunn Bushland	Reserve 9820 for “Public Cemetery”. Zoned Parks and Recreation (Local) under City of Armadale Town planning Scheme 4.	1,586 m ²	Covered by this plan.
Depot Bushland	Lot 91 Owen Rd (freehold). Zoned General Industry under Town Planning Scheme 4.	810 m ²	Covered by this plan.

The other three areas of remnant Forrestfield Complex vegetation in the City of Armadale include the following.

- Lambert Lane Bushland (Reserve 42044 - Bush Forever site 264) which is 3.6 ha vested in the Conservation Commission and managed by the Department of Environment and Conservation;
- Connell Avenue Bushland, (Lot 290 Connell Avenue - Bush Forever site 61) which has 19.9ha of bushland owned by the West Australian Planning Commission; and:
- Kelmscott Secondary College & Agricultural College (Reserve 29710 School Site) which contains about 1ha of Forrestfield Complex vegetation.

1.2 Reserve locations, tenure and zoning

As detailed in Table 1.1, part of Bob Blackburn Flora Reserve, Kendal Ct Bushland Reserve, Eva and Bill Moore Heathland, Cammillo Rd Reserve and Kendal Ct Bushland Reserve are zoned as Local Parks and Recreation under Town Planning Scheme 4 and vested in the City under the *Land Administration Act* for the purposes of ‘passive recreation and conservation’.

John Dunn Bushland Reserve is zoned for Local Parks and Recreation and vested in the City of Armadale for the purpose of ‘public cemetery’. Records indicate the burial of ten people in the vicinity of this bushland parcel. As a result, no changes to the reserve purpose under the *Land Administration Act 1997* are proposed in this plan.

On 5 April 2004, Council resolved (96/3/04) to adopt the Forrestfield Complex Bushland Management Plan and the recommendation within to seek the excision of the bushland portion of Creyk Park for inclusion into adjacent bushland Reserve 39208. However, in order to progress this excision, the City is required to subdivide the bushland portion from Lot 141, creating 2 lots, for inclusion of the bushland portion into Reserve 39208 for the purpose of ‘recreation and conservation’. The costs associated with the survey and subdivision are likely to be in the order of \$5,000.

2.0 Existing Environment

2.1 Bushland condition

Vegetation condition has been mapped in each reserve by the City of Armadale as early as 2000 and most recently in 2008. On all accounts, vegetation condition mapping has been undertaken in accordance with the Kaesehagen Vegetation Condition Scale as described in the Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region (West Australian Local Government Association, 2004).

Bushland condition mapping is detailed in the appropriate appendices (see Figures 5.1, 6.1, 7.1, 8.1, 9.1 and 10.1) for each bushland area and informs management in the following ways.

- The rating of bushland condition is used as the key indicator of the overall bushland management success.
- Managing bushland in ‘good’ or better condition from threats that may further degrade the bushland is considered priority.
- Bushland management boundaries are defined for each reserve. Due to the influence of edge effects, areas in lower than ‘good condition’ are still managed for bushland values where they fall within this boundary.

The following photographs are of the good condition bushland in Creyk Park north (image on left) and south (image on right) in June 2009.



2.2 Significant flora

As described in Section 1.1, the assemblage of species in each bushland area is an endangered Threatened Ecological Community. In addition, a number of significant flora species have been identified in Kendal Ct Bushland Reserve and Bob Blackburn Flora Reserve, as described below.

Flora within Kendal Ct Bushland Reserve of particular interest includes the following (Keighery and Trudgen, 1992);

- *Tetratheca hirsuta* (Swan Coastal Plain form) because of its rarity;
- *Babingtoniacamphorosmae* and *Acacia drewiana* because they are confined to the Darling Scarp and the eastern side of the Swan Coastal Plain; and:
- *Dasyogon obliquifolius* because it is confined to the eastern side of the Swan Coastal Plain.

The following 2 photos illustrate the vegetation at Kendal Ct Bushland Reserve.



Spring 2005

Jan 2008

The bushland of Bob Blackburn Flora Reserve is open woodland of Jarrah *Eucalyptus marginata* with a middle storey of Woody Pear *Xylomelum occidentale* and *Banksia* spp. and a diverse shrub layer. Three vegetation types have been described in the reserve (City of Armadale, 2000) and are summarised below.

- Jarrah-Marri woodlands - mixed community of *Banksia grandis*, *Banksia menziesii*, *Xanthorroea* sp, *Persoonia saccata* and the understorey of *Grevillea* sp, *Dryandra* sp, *Acacia* sp, *Hakea* sp, and *Macrozamia* sp.
- Herbland- including *Hibbertia*, several orchid species, *Stylidium*, mosses, and lichens.
- Sheoak woodlands including *Allocasuarina* sp, *Corymbia calophylla* and *Nuytsia floribunda* as upper story, understorey of *Drosera*, *Dryandra*, *Grevillea* sp, *Hovea*, *Hibbertia* and *Conospermum* sp.

Significant species of flora include priority three species smokebush *Conospermum stoechadis* (Ecoscape, 2002a). *Lambertia multiflora* var. *darlingensis* was previously listed as a Priority 3 species but has since been removed from the listing (Government of Western Australia, 2000).

The expected diversity of plant species in Forrestfield Complex Bushland areas is approximately 59 species in a ten by ten metre area (Government of Western Australia, 2000b). Below is a compiled species list for the Forrestfield Complex reserves (note: this is not an extensive list of species occurring in the reserve).

<i>Acacia drewiana</i>	<i>Conostylis aurea</i>	<i>Hibbertia acerosa</i>	<i>Mesomeleana pseudostygia</i>
<i>Acacia iteaphylla</i>	<i>Conostylis setigera</i>	<i>Hibbertia aurea</i>	<i>Mesomolaena tetragona</i>
<i>Acacia lissocarpa</i>	<i>Corymbia calophylla</i>	<i>Hibbertia hypercoides</i>	<i>Namencia capitatum</i>
<i>Acacia pulchella</i>	<i>Corymbia hematoxylon</i>	<i>Isopogon dubius</i>	<i>Nuytsia floribunda</i>
<i>Acacia sessilis</i>	<i>Dasypogon bromelifolius</i>	<i>Johnsonia pubescens</i>	<i>Patersonia occidentale</i>
<i>Allocasuarina humilis</i>	<i>Dasypogon obliquifolius</i>	<i>Kenedia prostrata</i>	<i>Persoonia saccata</i>
<i>Amphipogon turbinatus</i>	<i>Daviesia triflora</i>	<i>Kunzea recurva</i>	<i>Persoonia elliptica</i>
<i>Anigozanthos humilis</i>	<i>Eremaea pauciflora</i>	<i>Lambertia multiflora</i> var.	<i>Petrophile linearis</i>
<i>Anigozanthos manglesii</i>	<i>Eucalyptus lehmannii</i>	<i>darlingensis</i>	<i>Petrophile macrostachya</i>
<i>Austrostipa</i> sp.	<i>Eucalyptus marginata</i>	<i>Lechenaultia floribunda</i>	<i>Scaevola paludosa</i>
<i>Baeckea camphorosmae</i>	<i>Gompholobium</i>	<i>Lepidosperma squamatum</i>	<i>Sphaerolobium macranthum</i>
<i>Banksia attenuata</i>	<i>polymorphum</i>	<i>Leucopogon</i>	<i>Stirlingia latifolia</i>
<i>Banksia grandis</i>	<i>Gompholobium tomentosum</i>	<i>conostenphioides</i>	<i>Stylidium piliferum</i>
<i>Banksia illicifolia</i>	<i>Haemodorum laxum</i>	<i>Loxocarya fasciculata</i>	<i>Tetraria octandra</i>
<i>Banksia menziesii</i>	<i>Haemodorum laxum</i>	<i>Lyginia barbatal</i>	<i>Tetratheca hirsuta</i>
<i>Burchardia umbellata</i>	<i>Haemodorum spicatum</i>	<i>Lysinema ciliatum</i>	<i>Xanthorrhoea preissii</i>
<i>Caladenia flava</i>	<i>Hakea ruscifolia</i>	<i>Macrozamia riedlei</i>	<i>Xylomelum occidentale</i>
<i>Chamaescilla corymbosa</i>	<i>Hakea stenocarpa</i>	<i>Melaleuca incana</i> spp.	
<i>Conospermum stoechadis</i>	<i>Hakea undulata</i>	<i>incana</i>	
<i>Conostephium pendukum</i>	<i>Hardenbergia comptoniana</i>	<i>Melaleuca thymoides</i>	

The following photograph is of the vegetation of Bob Blackburn Flora Reserve in 2006.



An assessment of the flora at all the bushland areas covered by this management plan was undertaken by the Department of Environment and Conservation in 2005 confirming it as type 20b Threatened Ecological Community.

2.3 Significant fauna

Formal surveys have been undertaken in Forrestfield Complex bushland areas for avian fauna. Whilst not formally surveyed, management records for each of the reserves indicates the presence of reptiles such as bobtail lizards (Kendal Ct Bushland Reserve, Bob Blackburn Flora Reserve and Creyk Park Bushland). Feral fauna are also known to occur in some of the bushland areas (See Section 3.7). Long since isolated by urban areas, it is unlikely that native mammal species remain in each of the Forrestfield Complex bushland areas. However, the occurrence of Quenda in Bob Blackburn Flora Reserve is referenced by the Government of Western Australia in the Bush Forever document (2000).

Bird surveys have been undertaken in Bob Blackburn Flora Reserve, Creyk Park Bushland and Kendal Ct Bushland Reserve. The results of these surveys are not reproduced in this management plan (See Gole, C.A. 2004 and Gole, C.A 2006) however a summary of the findings is provided below.

Avian fauna at Bob Blackburn Flora Reserve was surveyed monthly between October 2003 and September 2004. Ten of the 30 bird species recorded during the survey period were identified as significant under Bush Forever (Government of Western Australia, 2000). Significant species include the White-naped, New Holland and White-cheeked Honeyeaters, Little Wattlebird, Dusky Woodswallow, Collared Sparrowhawk, and the Yellow-rumped and Western Thornbills (Gole, 2004). The Red-tailed Black Cockatoo is also found in the reserve, a species listed as Endangered under the *Environmental Biodiversity and Conservation Act 1999*.

The avian fauna of Creyk Park Bushland Reserve was surveyed monthly between February 2005 and January 2006. Thirty three bird species were recorded. However, it was noted that the diversity of these species excluded small insectivorous species such as fairy-wrens and thornbills that are dependent on larger more connected vegetation communities on the Swan Coastal Plain. Seven species of those recorded are considered to have conservation significance (Government of Western Australia, 2000). Twenty White-tailed Black Cockatoos were also recorded at the reserve. Whilst it is unknown if the individuals were the Carnaby's or Baudins's Cockatoo, these species are listed as Endangered and Vulnerable (respectively) under the *Environmental Protection and Biodiversity Conservation Act 1999*. Surveyors noted that a large number of tree hollows have been taken over by feral honeybees. The native Galah was also recorded as breeding in the reserve (Gole, 2006).

Kendal Ct Bushland Reserve was monitored for avian fauna monthly between February 2005 and January 2006. Seven mobile bird species of conservation significance were recorded in the reserve including six Red-tailed Black Cockatoos and 12 White-tailed Black Cockatoos. Two raptors were also recorded in the reserve, the Little Eagle and Peregrine Falcon (Gole, 2006).

Recommendation: Undertake fauna research at Forrestfield Complex bushland areas as opportunities arise.

2.4 Fungi

There are many times more fungi than plants in Australia, but perhaps only 5-10 % of Australian fungi have been named and another 10 % are known but not named (Bougher, 1999). Micorrhizal fungi form an association with plants, providing nutrients to the plants in exchange for sugars from plant photosynthesis, leading to more healthy and vigorous plants. They also form a food source for many native animals.

Fungi also play a role in breaking down fallen timber, leaves and animal dung so that nutrients can be recycled for plant growth and binding soils. It is likely that many species of fungi occur in the Forrestfield Complex bushland areas however, no survey of fungi has been undertaken to date.

Recommendation: Participate in surveys of fungi at Forrestfield Complex bushland areas as opportunities arise.

2.5 Community use

In 2006 and 2007, the City of Armadale along with 4 other Local Governments, participated in the Local Nature Spot Program, a Pilot Project being coordinated by the West Australian Local Government Association (WALGA).

The Local Nature Spot (LNS) project aimed to increase community involvement and support for the management of local natural areas and to change human behaviours that threaten urban bushland (City of Armadale, unpublished report 2007). A community survey was undertaken as part of the project. This provided information about local community opinion of the values of each reserve and subsequent use of the areas. Whilst the final report is unpublished, the outcomes of this project for both Kendal Ct Bushland Reserve and Bob Blackburn Flora Reserve are detailed below.

2.5.1 Community use of Bob Blackburn Flora Reserve

Sixty nine people responded to the community survey regarding Bob Blackburn Flora Reserve. Eighty six percent of these respondents indicated that they believe the reserve is important for wildlife, with 67 % indicating they felt the reserve is attractive.

According to the community survey the reserve is most frequently used for walking and for exercising pets. Approximately twenty percent of respondents indicated they use the reserve for nature appreciation activities and for sitting and relaxing. In addition to these uses, it is likely that the reserve is used as a thoroughfare as a result of the proximity of the Armadale Aquatic Centre.

Seventy nine percent of respondents indicated their satisfaction with the reserve. Drivers of this satisfaction were closely related to the bushland and it's proximity to residential areas.

"I love to walk through the paths and feel as if I am in a completely peaceful bushland even though it doesn't look that big. It's like a sanctuary from concrete suburbia and I love hearing the birdlife and seeing the lizards" (respondent to community survey 2008).

Drivers of dissatisfaction include antisocial behaviour and vandalism and rubbish.

“It could be managed a bit better in cutting down long grass' weeds etc. and rubbish collected” (respondent to community survey 2008).

2.5.2 Community use of Kendal Ct Bushland Reserve

Sixty people responded to LNS community survey regarding Kendal Ct Bushland Reserve, with 85% of these respondents recognising the value of conserving the reserve's vegetation. Over half of these respondents indicated that they use the reserve daily or weekly.

The most common activity undertaken in the reserve was walking (79%) and exercising pets (36%). In addition to these uses, it is likely that the reserve is used as a thoroughfare as a result of the proximity of the Grovelands Primary School. Twenty five percent of respondents indicated they use the reserve for nature watching activities.

A number of drivers of satisfaction and dissatisfaction in the reserve were also identified in the 2008 community survey. Over half of respondents were satisfied with Kendal Ct Bushland Reserve and one of the main drivers of satisfaction was the wildflowers.

The biggest driver of dissatisfaction was the untidy look of the reserve (64% of people described it as 'untidy'), rubbish and vandalism, and antisocial behaviour and the dumping of garden waste and other rubbish.

“It is always full of rubbish and the area is always being set alight” (respondent to community survey 2008).

Recommendation: Promote the value of Kendal Ct Bushland Reserve and Bob Blackburn Flora Reserve for its wildflowers to local residents, as opportunities arise.

Recommendation: Repair vandalism and remove rubbish in Forrestfield complex bushland areas as soon as possible after it is reported.

Recommendation: Ensure infrastructure within the Forrestfield Complex bushland areas is placed in visible locations in order to minimise instances of vandalism.

3.0 Management Issues

3.1 Weeds

Weeds are plant species occurring outside of their natural range. They have the ability to displace native plants and can disrupt ecosystem function by smothering vegetation and by altering habitat and fire regimes. Weeds can establish in bushland areas through wind, water and bird dispersal, from neighbouring properties, inappropriate dumping of garden refuse and through fire management activities.

The management of emerging weeds following soil disturbing activities is recommended. As weeds thrive in disturbed soils, activities such as prescribed burning, fire break maintenance and the control of unplanned fires can result in increased weed problems.

The control of weeds across all City of Armadale reserves should be undertaken using best practice weed management approaches. All weed management activities should consider potential off-target damage and safety. Weed management activities should be monitored using an adaptive management framework.

Weed control that involves herbicide spraying should only be undertaken at Bob Blackburn Flora Reserve after notifying the childcare facility adjacent. This arrangement has previously allowed the facility to ensure the children are inside at times at which chemical is being utilised.

Weed control undertaken by community groups requires the permission of the City of Armadale consistent with procedures detailed in the City of Armadale Friends Group Manual. Contractors engaged to undertake chemical weed control in the Park should only be engaged directly by the City of Armadale.

Recommendation: Undertake weed management actions consistent with best practice principles and monitor results using an adaptive management framework.

Recommendation: Ensure that soil disturbing activities such as firebreak maintenance, prescribed burning or control of wildfire is followed up with appropriate weed management.

3.1.1 BOB BLACKBURN FLORA RESERVE

The extent of weed proliferation varies across Bob Blackburn Flora Reserve. Some areas are relatively weed free and other areas (mostly around edges) are primarily overrun by weeds with the loss of many native species. The best condition areas of the reserve are the central sections. The weediest section of the reserve occurs on the corner of Williams Rd and Champion Drive. This area is a priority for weed control.

The Bob Blackburn Flora Reserve Management Plan 2000 identified 17 weed species occurring in the reserve. Recent mapping in 2008 has identified eleven species of weed.

The reduction in the diversity of weeds within the reserve over this eight year period is likely a result of effective weed management by the former Friends of Bob Blackburn Flora Reserve and the City of Armadale.

Records show the effective control of *Freesia sp.*, *Solanum nigrum* (Black Nightshade), *Acacia baileyana* (Cootamundra Wattle), *Leptospermum laevigatum* (Victorian Tea Tree) and *Raphanus raphanistrum* (Wild Radish) in the reserve. These species were not recorded in recent weed mapping however remain a priority for control if found re-occurring in the reserve in the future.

Since mapping of the reserve was undertaken in 2000 the weeds *Briza maxima* (Blow Fly Grass), *Conyza sp.*, *Fumaria capreolata*, *Plantago lanceolata*, and *Hypochaeris glabra* (Flat Weed) have been recorded for the first time.

Grasses are the most extensive and invasive weed in Bob Blackburn Reserve, namely *Ehrharta calycina* (Perennial Veldt Grass), *Eragrostis curvula* (African Love Grass) and *Briza maxima* (Blow Fly Grass). It is recommended that these weeds are a priority for control annually due to their invasive nature and their contribution to fuel loading and fire risk.

Previously the City has controlled perennial veldt grass and African love grass in June of each year using grass selective herbicide. Whilst significant perennial veldt grass reduction has occurred using this approach, African love grass control has been less effective. It is recommended that future perennial veldt grass and blow fly grass control be undertaken annually using selective herbicide in June and that African love grass control be undertaken annually in November.

Other weeds occurring in Bob Blackburn Flora Reserve that are recommended for control include:

- *Acacia longifolia* (Sallow Wattle)
- *Briza maxima* (Blow Fly Grass)
- *Conyza sp.*
- *Fumaria capreolata* (Fumitory)
- *Gazania linearis*
- *Hypochaeris glabra* (Flat Weed)
- *Oxalis glabra* (Finger Leaf Wattle) and *Oxalis pes-caprae* (Sourgrass)
- *Plantago lanceolata* (Ribwort)
- *Lupinus cosentinii* (Lupins)

Fumaria, *Oxalis* sp., and Lupins can all be controlled in the winter months with chemical such as 'metsulfuron'. *Plantago lanceolata*, *Hypochaeris glabra*, *Gazania linearis* and *Conyza* sp. can also be controlled with herbicide such as 'glyphosate' in the winter/ spring months.

A number of weeds have been observed in the reserve that were not recorded during the undertaking of weed mapping. Populations of *Ricinus communis* (Castor Oil Plant) and *Chamaecytisus palmensis* (Tree Lucerne) are regenerating in the area near the corner of Champion Drive and Williams Rd. These species have been heavily targeted previously in the reserve with the aim of eradication. New populations of *Acacia saligna* (Golden Wreath Wattle) appear to be spreading adjacent the compensation basin on Williams Rd and are a priority for removal.

A full copy of the 2008 Bob Blackburn Flora Reserve weed mapping is provided in Appendix 5.

Recommendation: Annual treatment *Ehrharta calycina* and *Briza maxima* with grass selective herbicide in June of each year within the bushland management area of Bob Blackburn Flora Reserve.

Recommendation: Annual treatment of *Eragrostis curvula* with grass selective herbicide in November of each year within the bushland management area of Bob Blackburn Flora Reserve.

Recommendation: Cut, fell and paint *Acacia longifolia*, *Leptospermum laevigatum*, *Chamaecytisus palmensis*, *Grevillia* sp. (non indigenous) and *Acacia saligna* to eradicate from Bob Blackburn Flora Reserve bushland management area.

Recommendation: Annual treatment of *Fumaria*, *Oxalis* sp., *Lupinus* and *Ricinus communis* with herbicide such as 'metsulfuron' and annual treatment of *Plantago lanceolata*, *Hypochaeris glabra*, *Gazania linearis* and *Conyza* sp. with herbicide such as 'glyphosate' in the winter/ spring months.

Recommendation: Provide notice to the child care facility adjacent to Bob Blackburn Flora Reserve prior to the undertaking of herbicide spraying.

Recommendation: Remapping of bushland weeds in Bob Blackburn Reserve in 2011 and 2014.

3.1.2 KENDAL CT BUSHLAND RESERVE

Large areas of Kendal Court Bushland Reserve are relatively weed free, however patches that have been subject to the threats of too-frequent fire and dieback are showing signs of degradation and are becoming dominated by grass weeds. The City has previously undertaken significant weed control works in Kendal Ct Bushland Reserve to control grass weeds, *Freesia* sp. and eastern states wattles. Exotic grasses pose an ongoing risk to the reserve due to their invasive nature and contribution to fuel loading and fire hazard. It is recommended that eastern states wattles be removed as priority when found re-emerging in the reserve and *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) spraying continue to be undertaken in the reserve on an annual basis using grass selective herbicide.

Broadleaf winter herbs such as *Lupinus cosentinii* (Lupins) and *Oxalis* sp. are increasing in density in areas where past *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) control has been successful, but native vegetation has not yet re-established. The treatment of these broadleaf herbs in winter months with herbicide is recommended.

A full copy of the 2008 Kendal Ct Bushland Reserve weed mapping is detailed in Appendix 6.

The following images provide a visual comparison of decreased weed occurrence in Kendal Ct Bushland Reserve from 1999 to 2009. Both images are taken from Grovelands Drive. The image on the left, taken in 1999 illustrates the high density of exotic grasses. The image on the right, taken in 1999, shows vegetation re-establishing close to the verge. No exotic grasses are evident.



Recommendation: Cut and fell eastern states woody weeds such as *Acacia podalyriifolia*, as they re-emerge in the management area of Kendal Ct Bushland Reserve.

Recommendation: Annual treatment of *Ehrharta calycina* with grass selective herbicide in June of each year within the bushland management area of Kendal Ct Bushland Reserve.

Recommendation: Annual treatment of *Eragrostis curvula* with grass selective herbicide in November of each year within the bushland management area of Kendal Ct Bushland Reserve.

Recommendation: Annual treatment of winter herbs such as *Fumaria capreolata*, *Lupinus cosentinii*, *Romulea rosea* and *Oxalis pes-caprae* with herbicide such as ‘metsulfuron’ within the bushland management area of Kendal Ct Bushland Reserve.

Recommendation: Annual spring treatment of *Hypochaeris glabra*, *Chasmanthe floribunda*, *Gazania linearis*, *Paspalum dilatatum*, *Gladiolus sp.*, and *Dimorphotheca ecklonis* with herbicide such as ‘glyphosate’ within the bushland management area of Kendal Ct Bushland Reserve.

Recommendation: Remapping of bushland weeds in Kendal Ct Bushland Reserve in 2011 and 2014.

3.1.3 CREYK PARK BUSHLAND RESERVE

Creyk Park Bushland Reserve occurs in two distinct parcels both with good condition bushland areas surrounded by a weedy exterior (see Figure 7.1). A large number of eastern states tea trees occur from the edge of the bushland towards oval. Whilst many have been removed in the past, the mass removal of these species from the sloped areas needs to be undertaken in a staged approach coupled with the reinstatement of more appropriate local species in order to provide alternative bird life habitat and to stabilise soil on the banks.

A full copy of weeds mapped in Creyk Park Bushland Reserve in 2008 is provided in Appendix 7.

Since June 2006, *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) has been annually controlled in the reserve with grass selective herbicide. These grasses pose

an ongoing risk to the reserve due to their invasive nature and contribution to fuel loading and fire hazard. It is recommended that *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) spraying continue to be undertaken in the reserve and where possible, blow fly grass also be controlled.

In 2006 a large stand of *Arundo donax* (Giant Reed) was controlled using a cut and paint method. Follow up treatment in subsequent years has now completely eradicated the weed from the bushland.

Freesia sp. has also been annually controlled with the herbicide metsulfuron since in July 2006. *Freesia* sp. is still occurring within good condition bushland and should be a priority for control with a view to eradicate the weed from the reserve.

The continued removal of emergent woody weeds (primarily *Acacia podalyriifolia* (Queensland Silver Wattle) and *Chamaecytisus palmensis* (Tagasaste)) from bushland areas should be undertaken as a priority, secondarily removing these species from the reserve edges whilst reinstating with locally native species.

Bushland weed mapping undertaken in 2009 found a number of new species of weed in the reserve including *Conyza* sp., *Dimorphotheca ecklonis* (Cape marguerite), *Lupinus cosentinii* (Lupins), *Oxalis* sp., and *Lathyrus tingitanus* (Tangier pea). are in highest density on the bushlands eastern perimeter where *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) control has been effective but native vegetation has not yet re-established. It is recommended that *Lathyrus tingitanus*, *Lupinus cosentinii* and *Oxalis* sp. should be controlled in winter annually as a priority due to the invasive nature of these species.

Recommendation: Annual treatment of Ehrharta calycina with grass selective herbicide in June of each year within the bushland management area of Creyk Park Bushland Reserve.

Recommendation: Annual treatment of Eragrostis curvula with grass selective herbicide in November of each year within the bushland management area of Creyk Park Bushland Reserve.

Recommendation: Eradication of Freesia from Creyk Park Bushland Reserve through targeted annual treatment with herbicide in August.

Recommendation: Annual winter herbicide treatment of Lathyrus tingitanus, Lupinus cosentinii, Oxalis pes-caprae and Oxalis glabra in the bushland management area of Creyk Park Bushland Reserve.

Recommendation: Fell, paint and remove scattered emergent woody weeds such as Acacia podalyriifolia, Chamaecytisus palmensis and Leptospermum laevigatum from bushland management area of Creyk Park Bushland Reserve.

Recommendation: Undertake as a secondary weed management priority control of Conyza sp. and Dimorphotheca ecklonis in Creyk Park Bushland Reserve.

Recommendation: Develop a staged program for the removal of eastern states species from the banks of the oval and edge of the bushland of Creyk Park. The program should include measures for stabilisation of banks and the provision of alternative habitat for birds.

Recommendation: Remapping of bushland weeds in Creyk Park Bushland Reserve in 2011 and 2014.

3.1.4 JOHN DUNN BUSHLAND RESERVE

Grass weeds are the most prolific weed occurring within John Dunn Bushland Reserve. *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) occur at up to 40% density. These weeds have been annually treated with grass selective herbicide since June 2006. It is recommended that the control of these grasses continues throughout the entire management area as illustrated in Figure 8.1.

Leptospermum laevigatum (Victorian Tea Tree) was also removed from the reserve in 2006. Due to the small size of the reserve and the invasive nature of this species it is recommended that it be totally eradicated as a priority.

Since 2008 mapping (see Figure 8.2) new weeds have been recorded in the reserve. These are likely to have been opportunists, establishing following the previous control of grass weeds in the reserve. Due to the small nature of populations of *Solanum nigrum* (Black Nightshade), *Conyza sp.*, *Oxalis pes-caprae* (Sourgrass), *Hypochaeris glabra* (Flatweed) and *Gladiolus angustus*, these should also form a priority for eradication from the reserve.

The following photographs provide a visual comparison of the relative weed free central portion of the reserve (image one and two taken July 2009) and the weedy exterior (third image taken Jan 2008).



Recommendation: Annual treatment of Ehrharta calycina with grass selective herbicide in June of each year within the bushland management area of John Dunn Bushland Reserve.

Recommendation: Annual treatment of *Eragrostis curvula* with grass selective herbicide in November of each year within the bushland management area of John Dunn Bushland Reserve.

Recommendation: Fell and remove re-emergent *Leptospermum laevigatum* from the bushland management area of John Dunn Bushland Reserve.

Recommendation: Annual treatment of winter herbs such as *Oxalis pes-caprae* with herbicide such as 'metsulfuron' within the bushland management area of John Dunn Bushland Reserve.

Recommendation: Annual treatment of *Hypochaeris glabra*, *Gladiolus sp.*, *Conyza sp.*, *Solanum nigrum* and *Hypochaeris glabra* with herbicide such as 'glyphosate' in the spring within the bushland management area of John Dunn Bushland Reserve.

Recommendation: Remapping of bushland weeds in John Dunn Bushland Reserve in 2011 and 2014.

3.1.5 DEPOT BUSHLAND

Grass weeds such as *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) range in density throughout the depot bushland up to approximately 20% to 30% coverage. This area has been annually treated with herbicide since August 2006. This density is considerable lower than previously recorded for the bushland in 2005 when *Ehrharta calycina* (Perennial Veldt Grass) and *Eragrostis curvula* (African Love Grass) densities were recorded at 70% to 80% density along the western boundary.

Cynodon dactylon (Couch Grass) also occurs in a large patch down the western boundary of the bushland and is a priority for control. *Cynodon dactylon* (Couch Grass) was treated with the herbicide in August 2006 but efforts have failed to eradicate the weed. There is also a large patch of weeds on the eastern boundary containing a mix of *Hypochaeris glabra* (Flatweed) and *Fumaria* species. It is recommended that perennial veldt grass and couch be treated in July annually with grass selective herbicide. It is recommended that annual herbs such as *Fumaria sp.*, *Hypochaeris glabra*, *Trifolium sp.*, *Oxalis sp.* and *Vicia sativa* (Common Vetch) also be treated with herbicide in winter annually.

Since mapped in 2006, a number of new weeds have appeared in the Depot bushland including [*Euphorbia terracina*](#) (Geraldton Carnation Weed), *Solanum nigrum* (Black Nightshade) and *Watsonia sp.*. These are all invasive species that should be controlled with herbicide as an immediate priority.

Due to the ability of eastern states wattles to seed prolifically and quickly spread, *Acacia longifolia* (Sallow Wattle) should also be removed from the bushland as a priority.

The image below illustrates the good condition bushland within the Depot Bushland in spring 2008.



Recommendation: Annual treatment of *Ehrharta calycina* and *Cynodon dactylon* in July of each year with grass selective herbicide within the management area of the Depot bushland.

Recommendation: Annual treatment of *Eragrostis curvula* with grass selective herbicide in November of each year within the management area of the Depot bushland.

Recommendation: Annual herbicide treatment of winter herbs such as *Fumaria* sp., *Trifolium* sp., *Oxalis* sp., *Vicia sativa* and *Hypochaeris glabra* within the management area of the Depot bushland.

Recommendation: Re-treat *Watsonia* sp., *Solanum nigrum* and [Euphorbia terracina](#) in July 2011. Annual treatment and inspection of these weeds should be carried out in subsequent years to ensure the successful eradication of these species within the management area of the Depot bushland.

Recommendation: Fell and paint re-emergent *Acacia longifolia* occurring within the management area of the Depot bushland.

Recommendation: Remapping of bushland weeds in the Depot Bushland in 2011 and 2014.

3.1.6 EVA AND BILL MOORE HEATHLAND

A small central portion of Eva and Bill Moore Heathland contains good condition bushland. Other areas have been heavily impacted by fire and dieback and are now dominated by grass weeds such as *Ehrharta calycina* (Perennial Veldt Grass), *Eragrostis curvula* (African Love Grass) and *Briza* species. In 2006 these weedy grasses were sprayed with grass selective herbicide. Recruitment of natives following the grass weed control has not been monitored and follow-up weed control inconsistent.

The control of grass weeds in the reserve is a priority due to the species invasive nature and contribution to fuel loading fire hazard. Due to the extent of weed proliferation and the impact of dieback on the *Banksia* canopy, it is recommended that grass weed control efforts are coupled with a re-vegetation program using seed sourced from the same vegetation type.

Weed proliferation is low in the good condition portion of the bushland with the occasional *Gladiolus* sp. weed. It is recommended that this species be targeted for removal.

The following photograph illustrates the good condition heathland within Eva and Bill Moore Reserve with an exterior of grassy weeds (image taken January 2008).



Recommendation: Undertake annual control of *Ehrharta calycina* and *Briza* sp. in June in the bushland management area of Eva and Bill Moore Heathland.

Recommendation: Undertake control of *Eragrostis curvula* in November annually with grass selective herbicide in the bushland management area of Eva and Bill Moore Heathland.

Recommendation: Implement a revegetation program using locally native species within the bushland management area of Eva and Bill Moore Heathland.

Recommendation: Eradicate *Gladiolus* sp. from within the Eva and Bill Moore reserve management area through the implementation of a herbicide treatment program in August annually.

Recommendation: Remapping of bushland weeds in Eva and Bill Moore Heathland 2011 and 2014.

3.1.7 CAMMILLO RD BUSHLAND RESERVE

Cammillo Rd Bushland Reserve contains a central portion of fair to good condition bushland surrounded by grasses such as African love grass and perennial veldt grass. The weeds *Chasmanthe floribunda* (African Cornflag) and *Watsonia* sp. are also scattered throughout the good condition bushland.

Grass and bulbous weeds pose the greatest threat to the reserve due to their invasive nature and ability to spread and dominate. The annual control of grass weeds such as *Eragrostis curvula* (African Love Grass) and *Ehrharta calycina* (Perennial Veldt Grass) is a priority. Previous weed control efforts in the bushland have been sporadic and hence the control of invasive grasses unsuccessful.

Intensive weed control efforts may need to be coupled with a revegetation program to re-establish enough vegetation to cover bare ground and further suppress weeds.

The following images provide a visual comparison of the good condition bushland in Cammillo Rd Bushland reserve (image on left taken 2005) and the degraded edge of the reserve (image on right taken 2005).



Recommendation: Undertake control of *Eragrostis curvula* in November annually with grass selective herbicide in the management area of Cammillo Rd Bushland Reserve

Recommendation: Undertake annual control of *Ehrharta calycina* in June in the management area of Cammillo Rd Bushland Reserve.

Recommendation: Undertake the control of *Watsonia* and *Chasmanthe floribunda* upon flowering using herbicide such as glyphosate in Cammillo Rd Bushland reserve. Repeat annually to eradicate from the bushland management area.

Recommendation: Remapping of bushland weeds in Cammillo Rod Bushland Reserve in 2011 and 2014.

3.2 Dieback

Phytophthora dieback is the name used to describe the plant disease caused by the water mould *Phytophthora cinnamomi*.

The water mould *Phytophthora cinnamomi* (hereafter referred to as dieback) is known to occur across the Swan Coastal Plain and occurs in the Forrestfield Complex bushland reserves. Maps of the extent of dieback in the reserves are detailed in Figures 5.5, 6.4, 7.5, 8.4, 9.4, 10.4 and 11.4. Bob Blackburn Flora Reserve, Kendal Ct Bushland Reserve and Creyk Park Bushland are all mapped for dieback. However, John Dunn Reserve and Eva and Bill Moore Heathland have not been formally mapped but are suspected to be dieback infected based on informal interpretation.

Dieback spreads through the movement of *Phytophthora cinnamomi* spores in soil. Spores of dieback also spread via root to root contact of susceptible species (research suggests approximately 1 metre per year). Any activities that result in the movement of soil can potentially move dieback.

The potential impacts of dieback on the values of Forrestfield complex bushland areas include the following:

- death of up to 40% of the species diversity through direct susceptibility of these species to dieback;
- death of species not directly susceptible to dieback but susceptible to changes in biophysical conditions resulting from death of susceptible species;

- changed habitat availability due to changes in vegetation structure and diversity leading to loss of fauna and fungi diversity;
- changed trophic relationships due to changes in vegetation structure and diversity leading to loss of fauna diversity;
- loss of heritage values;
- loss of visual and landscape values; and:
- water table elevation due to the loss of vegetation resulting from deleterious effect to water sensitive species.

Other dieback species in WA that may have the potential to impact the reserves include *P. citricola*, *P. cryptogea*, *P. nicotianae*, and others. The Australian Honey Fungus (*Armillaria* sp.) is responsible for “white rot” root disease is highly destructive and survives on dead plant material.

Areas of highest susceptibility to dieback infection include:

- areas adjacent to already infected areas;
- areas close to vectoring influences (such as run-off of *Phytophthora cinnamomi* spores from upslope areas or proximity to tracks where soil may be moved on shoes or vehicles);
- areas where access is not controlled.

Two management responses to the threat of dieback are proposed. The primary management objective is to reduce further spread of the disease. Due to the relatively small size of the Forrestfield Complex bushland areas and high level of visitor use, the most appropriate means of ensuring the disease is not further spread is through the appropriate control of access both by visitors and by management personnel. Visitor access control in each of the reserves is detailed in subsequent sections.

It is also recommended not to use mulch in areas of the reserve that are dieback free. This includes the use of mulch on the verge adjacent to dieback free areas.

To minimise the risk of further dieback spread during the undertaking of management activities, all City staff and contractors should comply with City of Armadale Policy ENG9 – Managing Phytophthora Dieback. All seed and plant stock introduced to the reserve should be sourced from accredited nurseries consistent with this policy.

The second management objective is to treat areas of vegetation where the risk of spread is highest using the chemical phosphite. Phosphite treatment is undertaken to reduce the impact of dieback in areas of susceptibility. It is generally undertaken in dieback free vegetation which is subject to vectors of spread.

The Forrestfield Complex bushland areas have been subject to a phosphite treatment program since 2004 and are next due for treatment in 2011 as is detailed in Table 3.2.1 below.

Bob Blackburn Flora Reserve has its own separate Dieback Management Plan (Dieback Working Group, 2000) in addition to those dieback related recommendations found in the Bob Blackburn Flora Reserve Management Plan 2000. Recommendations of this plan are proposed to complement both of these previous documents.

Table 3.2.1: Phosphite treatment program in Forrestfield Complex bushland areas.

Reserve Name	Year last mapped for Dieback	Year last treated for dieback	Next treatment required
Bob Blackburn Flora Reserve	1998	2004 & 2008	2011
Creyk Park Bushland Reserve	1999	2004 & 2008	2011
Depot bushland	Interpreted infected	2006 & 2009	2012
Eva and Bill Moore Reserve Heathland	Interpreted infected	2004 & 2008	2011
John Dunn Bushland	Interpreted infected	2004 & 2008	2011
Kendal Court Flora Reserve	1999	2004 & 2008	2011
Cammillo Rd Bushland Reserve	1999	2004 & 2009	2012

The following images illustrate 2 dieback infections in Forrestfield Complex Bushland areas. The image on the left is of dieback related *Banksia sp.* death in Eva and Bill Moore Heathland in January 2008. Areas that are becoming dominated by grass weeds are evident in the foreground.

The image on the right illustrates native species decline in a new dieback infection first mapped in Creyk Park Bushland Reserve in 2008. This dieback front was not evident in 2004 and has progressed to this extent in only 5 years (image June 2009).



Recommendation: All management activities should be undertaken in accordance with City of Armadale Policy ENG9 – Managing Phytophthora dieback.

Recommendation: Ongoing implementation of the phosphite treatment program as detailed in Table 3.2.1.

Recommendation: The use of mulch within Bushland Management Areas that are dieback free or unknown in status is not permitted (including verges within 5 metres of bushland).

Further recommendations relating to both dieback and access control are detailed in Section 3.4.

3.3 Fire management

There are no formal and comprehensive fire history records for any of the Forrestfield Complex bushland areas. However, some information regarding fires in each of the reserves is detailed below. Fuel loading is assessed using a method of calculating litter loading as is detailed in the Conservation and Land Management Forest Fire Behaviour Tables for Western Australia (Sneeuwjagt and Peet, 1985).

Fire plays an important role in bushland management. Fire can both promote and threaten biodiversity especially when combined with other threatening factors such as weeds or dieback.

No fire regime, history of fire interval, season, intensity or patchiness is optimal for all species. Studies suggest that the minimal interval between fires should be double the juvenile period of the slowest maturing species to allow sufficient replenishment of seed banks (Gill and Nichols 1989).

For Swan Coastal Plain urban bushland areas, it is recommended that for optimal biodiversity conservation, fire should not occur more regularly than at least 12 to 15 years (Ecoscape, 2002a). This recommendation however is based on ecological principles, and does not consider safety factors that are of primary significance. It is recommended that fire management be undertaken primarily for the protection of life and property, and secondarily for conservation of biodiversity.

Arson is common across each of the Forrestfield Complex bushland areas. As a result, patches of urban bushland are often burnt far more frequently than the recommended 12 year minimum frequency.

Within the Metropolitan Regional Fire District, the Fire and Emergency Services Authority is responsible for fire fighting response. The protection of life and property is the first objective for the Forrestfield Complex bushland areas, and over-rides other objectives. The risk to neighbouring properties from wildfire spread from the Forrestfield Complex bushland areas must be minimised to acceptable levels, and vice-versa.

3.3.1 BOB BLACKBURN FLORA RESERVE

Bob Blackburn Flora Reserve was almost entirely burnt in the summer of 1992 and 1993. Two hot fires burnt the bushland in succession, killing many of the older trees. Two smaller fires occurred in 1999 and in January 2002 (Ecoscape 2002a). In 2004, bushland in the corner of Champion Drive and Williams Rd was burnt. In October 2010, a small patch of 1,885 square metres was also burnt near the day care centre. In January 2011, an unexpected fire occurred near the entry to the reserve off Champion Drive. The image below was taken 4 months after the 2005 fire.



A fuel loading assessment was undertaken in the bushland in 2007. Two transects were taken. The results showed one transect with 6.48 tonnes per hectare and another with 3.446 tonnes per hectare. It was noted that there is the need to upgrade a 3 metre break around a gas main location near Williams Rd.

A proposed mosaic pattern is illustrated on Figure 5.5. This pattern should remain dynamic and be adaptive in instances of arson or unfavourable weather conditions. The mosaic identifies 6 areas of bushland with fire access tracks in between. These areas are numbered in rough order for the proposed sequence of control burning. It is recommended that no more than one mosaic cell be burnt every three years to ensure that there is both diversity of habitat and adequate resources for follow up weed control. Irrespective of this proposed mosaic plan, the reserve should be inspected regularly as part of the City of Armadale Fire Maintenance Program to ensure safety measures of fuel reduction are adequate.

It is recommended that when deemed necessary, control burning within the reserve should be undertaken in autumn. Control burning should be followed by intensive weed control.

3.3.2 KENDAL CT RESERVE

Kendal Ct Bushland Reserve was entirely burnt in 1999. Half the reserve was again burnt in January 2005 however the exact location of the fire is unknown. It is likely that these arson events resulted in hot fires. These uncontrolled hot fires are often more damaging to the vegetation and diversity in the bushland. In 2002 a fuel assessment was undertaken in Kendal Ct Reserve. Litter weights were found to be 3.45 tonnes per hectare, well below the FESA recommended fuel weight of 8.0 tonnes per hectare for effective fire control with direct attack on the ground. The fuel assessment also noted the occurrence of many grassy weed species. Whilst the fuel loading is likely to have increased since 2002, significant achievements in weed control have also reduced the amount of fuel within the reserve (see Section 3.1.2).

A proposed mosaic pattern for future control burning is detailed on Figure 6.4. This pattern should remain dynamic and be adaptive in instances of arson or unfavourable weather conditions. Irrespective of this proposed moziac plan, the reserve should be inspected regularly as part of the City of Armadale Fire Maintenance Program to ensure safety measures of fuel reduction are adequate.

3.3.3 CREYK PARK BUSHLAND

A fire occurred in Creyk Park bushland in 2003 in the corner of the reserve closest to Lindley Ave and Kembla St. A fire history of the larger portion of the bushland reserve is unknown.

A fuel assessment of the bushland was undertaken in 2007. Two transects were taken in different portions of the reserve. Results showed one transect with 8.13 tonnes per hectare and the other with 11.36 tonnes per hectare. As the reserve is of significant size, it is recommended that any control burning be undertaken in a mosaic pattern.

A proposed mosaic pattern for control burning is illustrated in Figure 7.5. The mosaic boundaries follow tracks. This pattern should remain dynamic and be adaptive in instances of arson or unfavourable weather conditions. Irrespective of this moziac plan, the reserve should be inspected regularly as part of the City of Armadale Fire Maintenance Program to ensure safety measures of fuel reduction are adequate.

Whilst these tracks are not wide enough to support fire management vehicles, they are within 30 metres from areas that would support vehicles and will allow for the use of hoses. Control burning, if required, within the reserve should be undertaken in autumn months followed by intensive weed control.

3.3.4 JOHN DUNN BUSHLAND, DEPOT BUSHLAND, CAMMILLO BUSHLAND RESERVE AND EVA AND BILL MOORE HEATHLAND

There are no fire records for John Dunn bushland, the Depot bushland or Cammillo Rd Bushland Reserve. The last fire event is unknown, but estimated to be greater than ten years ago. Eva and Bill Moore Heathland was almost entirely burnt in 2003.

Due to the small size of these reserve and easy access for surrounding roads, firebreaks within the reserves' boundaries are not considered necessary. However, 3 metre firebreaks are required where the depot bushland neighbours an adjacent property and where Cammillo Rd Bushland Reserve abuts adjacent houses (See Figures 8.4, 9.4 and 10.4). A fuel level assessment was undertaken in Cammillo Rd Bushland Reserve in 2008 recording litter of 9.36 tonnes per hectare.

It is recommended that these reserves be inspected regularly as part of the City of Armadale Fire Maintenance Program to ensure safety measures of fuel reduction are adequate.

Fire management objectives and recommended management approaches for the Forrestfield Complex bushland areas summarised in Table 3.3.1.

Table 3.3.1: Fire management objectives and management approaches for Forrestfield Complex bushland areas.

Fire management objective	Management recommendation	Notes
Protect life and property.	Fire access tracks (as illustrated in Figures 5.5, 6.4, 7.5, 8.4, 9.4, 10.4 and 11.4) should be maintained to a condition that provides access for fire fighting units to directly attack a fire.	Fire access tracks should be annually inspected by the City of Armadale prior to summer. Any overhanging branches should be trimmed and removed.
	Firebreaks that require upgrading should be upgraded by the City of Armadale or contractors employed by the City of Armadale directly. Works are to be consistent with the biodiversity conservation priorities identified in this management plan.	Consistent with City of Armadale Policy ENG9 – Managing Phytophthora Dieback.
	Where possible, existing roadways and tracks should be used as primary access routes to firebreaks as illustrated in Figures 5.5, 6.4, 7.5, 8.4, 9.4, 10.4 and 11.4. No new firebreaks should be established unless deemed necessary in an emergency or considered essential to achieve the protection of life and property.	No new firebreak installation unless deemed necessary in an emergency situation or considered essential to achieve the protection of life and property. Firebreaks for each of the Forrestfield Complex Bushland areas are illustrated on maps in Figures 5.5, 6.4, 7.5, 8.4, 9.4, 10.4 and 11.4.
	Reduce fuel loadings through the implementation of cool burns in a mosaic pattern.	Implementation of fuel reduction activities as an outcome of regular inspection of reserves consistent with the City of Armadale Fire Maintenance Program.
Reduce the incidence of unplanned fire.	Grass weed control should be undertaken annually to minimise fuel accumulation.	See Section 3.1.
	Unplanned fire events should be followed up with weed control efforts.	See Section 3.1.
	All firebreak maintenance shall comply with City of Armadale Dieback Policy and Management Practice ENG9 - Managing Phytophthora Dieback.	Consistent with City of Armadale Policy ENG9 – Managing Phytophthora Dieback.

Fire management objective	Management recommendation	Notes
	The importance of appropriate Phytophthora Dieback hygiene should be reflected on FESA fire response plans for each Forrestfield Complex bushland area.	Liaise with FESA to seek inclusion of dieback information on fire response plans.
Maintain existing diversity, composition of vegetation and wildlife habitats.	Seek to maintain a mosaic pattern of burn areas across the reserve where deemed safe and appropriate upon regular inspection.	See fire management objective to ‘reduce incidence of unplanned fires’
	Incidences of unplanned fires should be recorded on the City of Armadale central file system for each respective reserve. Records should show a map of the area burnt and any further information regarding the fire event.	Establish procedure so that incidents of unplanned fire in Forrestfield Complex bushland areas are reported to environmental staff.

3.4 Infrastructure and access

3.4.1 BOB BLACKBURN FLORA RESERVE

Infrastructure within Bob Blackburn Flora Reserve is illustrated on Figure 5.5.

Providing formal recreational tracks and paths in Bob Blackburn Flora Reserve is important to minimise the spread of dieback and trampling of plants by visitors. The provision of formal tracks also provides access for fire management.

There are four limestone access tracks in Bob Blackburn Flora Reserve. These tracks provide for recreation and fire access. In 2010, two tracks, including the tracks referred to as the northern track and southern track were upgraded with limestone. The southern track was extended from the ovals edge to the car park (to provide a clear management boundary). One of the central tracks is bound either side by post and rail type fencing which may restrict vehicle access along its entire length. However, its removal is not proposed given that fire management hoses would reach the entire length of the track and therefore vehicle access is not considered essential.

A number of unofficial tracks occur through the reserve and should be allowed to naturally revegetate.

Bob Blackburn Flora Reserve is surrounded by bollards along Champion Drive, Williams Rd and along the swimming pool car park. These restrict vehicle entry to the reserve. If these bollards are damaged through fire or vandalism, they should be replaced as a priority to minimise vehicle access to the reserve. If incidences of uncontrolled access occur from the car park area, the installation of conservation pine rail fencing and swing gates should be considered.

There are a number of different signs in the reserve. One large wooden sign identifying the name of the reserve is located on the corner of Williams Rd and Champion Drive. This sign is in good condition, well positioned and should be retained. Two smaller wooden “Flora Reserve” signs are in good condition on Williams Rd and should be retained to provide recognition of the reserve as a flora reserve.

There are 3 ‘Local Nature Spot’ signs in good condition in the reserve that are well positioned and provide important numbers for local residents to report management issues to the City. Old by-law style signs are scattered throughout the reserve and whilst being old, are in good condition. These

signs should be retained in the reserve however once they become too old and damaged they should be removed and not replaced as the 'Local Nature Spot' signs are considered adequate.

Two A-frame style display boards are positioned in the reserve. These display boards were installed with the intent of promoting the reserve to the local community. However, both are covered in graffiti beyond repair. Inside display panels should be replaced with large metal panels rather than display boards. Metal panel signs should be more resilient to graffiti damage. Positive messages about the reserve values, threats and rules should be considered.

One dieback sign occurs adjacent to the gas main. The sign is damaged and should be removed. The provision of dieback related messages should occur on the A-frame style signs.

Recommendation: Local Nature Spot signs should be retained in Bob Blackburn Reserve and replaced if damaged. By law signs should be removed when too damaged to remain in-situ. The damaged dieback sign should be entirely removed. A Frame style display boards should be upgraded with interpretive signs providing positive messages about the reserve, its values, threats and rules.

One Bob Blackburn Flora Reserve timber routed sign identifies the western remnant of Bob Blackburn Flora Reserve. The sign is in good condition and is recommended to be retained. This portion of bushland adjacent to the Champion Centre requires access control adjacent the car park. The installation of conservation pine rail fencing is recommended following the car park upgrade.

Recommendation: Installation of conservation pine rail fencing to control access along the road and car park of the western portion of Bob Blackburn Flora Reserve.

A second portion of bushland occurs outside of the Champion Centre (on Champion Drive) which is known as 'Bob Blackburn West'. This portion of bushland is managed as part of the wider Bob Blackburn Reserve. Currently there is a proposal to install an indigenous interpretation facility within this bushland area including an outdoor education zone and a walking trail. Revegetation with locally indigenous species is proposed to complement the project (which will involve some clearing). The project is being coordinated by the City of Armadale Champion Centre.

3.4.2 KENDAL CT BUSHLAND RESERVE

Kendal Ct Bushland Reserve has street frontage on Grovelands Drive and Kendal Court. Grovelands Drive is fenced with post and rail fencing.

Token fencing occurs through the reserve to minimise access to dieback free and rehabilitation areas. Areas where access has been minimised through the use of token fencing are showing clear signs of regeneration.

Two sealed paths run throughout the reserve linking Kendal Ct and Becket Ct to Grovelands Drive. In addition, sandy firebreaks occur along the northern perimeter of the reserve and one sand track runs in an east west direction. Tracks are both for recreational and fire access and the locations are illustrated in Figure 6.4. At Council meeting (T6/4/11) it was recommended "that Council reconsider in the 2011-2012 draft budget funds to provide for the revegetation of a section of the Kendal Court Flora Reserve with species appropriate to that reserve." This is discussed further in Section 3.5.2.

One sealed track runs through the centre of the dieback infected area. It is recommended that this track remain open.

Recommendation: Reseal limestone tracks in Kendal Ct Bushland Reserve.

Farm style fences are installed in the reserve to prevent recreational access to dieback free bushland. These are complemented with two 'Track closed' signs. It is recommended that these signs remain in the reserve.

Three signs occur on the Grovelands Drive street frontage of the Reserve. One timber sign identifies the reserve name, another metal sign provides information about the presence of dieback in the reserve and the third sign identifies the reserve as a local nature spot and provides emergency telephone numbers. All signs are covered in graffiti but are in good condition and are recommended to be retained in the reserve.

It is recommended that infrastructure other than what is required for access control (such as fences) be minimised in the reserve due to the high level of vandalism incidences.

3.4.3 CREYK PARK BUSHLAND RESERVE

Creyk Park Bushland Reserve contains two distinct bushland parcels, linked by a 3 metre limestone fire access track. Access to the bushland in fire instances would be from the adjacent oval and from the surrounding roads. Informal tracks dissect both bushland portions as illustrated in Figure 7.5 and are partially sealed in limestone for dieback management purposes. A fence constructed in 2009 surrounds the entire reserve preventing entry by unauthorised vehicles.

Three signs are located within the reserve. Two indicate that a track is closed. It is recommended that these signs remain in-situ until the track is significantly revegetated. The third sign indicates the Council by-laws applicable to the reserve.

Additional infrastructure is not recommended for Creyk Park bushland reserve, other than if required for erosion control measures on the steeply sloping banks.

3.4.4 JOHN DUNN BUSHLAND RESERVE

John Dunn Bushland Reserve is bordered with bollards as a turf/ bushland management boundary. A timber routed sign identifying the bushland as "John Dunn Bushland Reserve" is recommended.

Recommendation: Install a timber routed sign identifying the bushland portion of John Dunn Bushland Reserve.***3.4.5 DEPOT BUSHLAND***

No infrastructure is in place in the depot bushland. Parking areas are demarcated with rocks and curbing to act as a management boundary.

3.4.6 EVA AND BILL MOORE HEATHLAND

Eva and Bill Moore Heathland is surrounded by farm style fencing. This fencing acts as a management boundary between the turf and the bushland. The fencing is in good condition. One 'bushpig' sign appears on the reserve. It is damaged and its removal and replacement with a 'local Nature Spot sign' is recommended.

Recommendation: Remove 'Bushpigs' sign at Eva and Bill Moore Heathland and replace with a 'Local Nature Spot' sign.***3.4.7 CAMMILLO RD BUSHLAND RESERVE***

Cammillo Rd Bushland Reserve is fenced with farm style fencing. Two access gates provide for fire access around the perimeter of the reserve. A large timber routed sign in good condition identifies the reserve. There are also two Council By-laws signs in good condition on both Cammillo Rd and Railway Ave. No further infrastructure is recommended.

3.5 Revegetation

Threats such as dieback, weeds, inappropriate fire regimes and vegetation trampling has reduced the density of native plants across Forrestfield Complex bushland areas. Whilst native vegetation regeneration is likely once these threats are managed, the speed at which areas of bare ground can re-establish with locally native species is slow, threatening adjacent areas with edge effects. Some of the bushland areas require assistance to regenerate through planting or seeding of the area with locally native species.

Due to the endangered and unique vegetation type, the use of only local provenance seed and plants is recommended for Forrestfield Complex bushland areas. The size of a number of the reserves is adequate to allow for local seed collecting to occur and for this stock to be used to revegetate others.

Recommendation: All revegetation undertaken in the Forrestfield Complex bushland areas should be undertaken using local provenance species.

3.5.1 BOB BLACKBURN FLORA RESERVE

Until 2003, the former Friends of Bob Blackburn Reserve undertook works to revegetate degraded areas of the reserve.

In 2007, the City of Armadale undertook a project to control grass and castor oil weeds in the dieback infected area close to the corner of Williams Rd and Champion Drive. In winter 2007 this area was planted with approximately 1,000 plants. In 2008 efforts to control weeds were again implemented and the area planted with a further 300 plants that were grown from local seed. Whilst control of castor oil and grass weeds is proving effective, the area is heavily dominated by annual weeds such as flea bane. These species are likely to have established as opportunists following previous weed control efforts.

Whilst reasons are unknown, three possibilities for the lack of success of revegetation in the reserve include the lack of adequate rainfall for the plants to establish, the presence of dieback or the lack of adequate nutrients in the soil. Given the unmanaged and messy look of this corner of the reserve and the lack of success in revegetation, it is recommended that the dieback infected area that is currently dominated by weeds be spread with a thick mulch layer annually, with the aim to suppress weeds and increase the aesthetics of the reserve. Following 2 to 3 years of mulch application and successful weed control, revegetation should again be considered in the area.

Three locations where in fill planting could be utilised to reduce the incursion of weeds into good condition bushland are identified in the Figure 5.3. A total area of 4,500m² is recommended to be considered for revegetation in the future with plants grown from locally collected seed. The revegetation of the areas with a mix of species but dominated by *Acacia pulchella* is recommended. *Acacia pulchella* is a soil nitrogen fixing species that forms a thick and prickly shrub layer. It is anticipated that this will allow other native species in the seed bank to germinate once the soil is stabilised.

Recommendation: Spread mulch for weed suppression and soil improvement purposes in the dieback infected area of Bob Blackburn Flora Reserve (adjacent to Williams Rd and Champion Drive round-about).

Recommendation: In conjunction with weed control, undertake revegetation projects using locally native species at Bob Blackburn Flora Reserve.

3.5.2 KENDAL CT BUSHLAND RESERVE

Approximately 300 plants that were grown from seed collected in Kendal Ct Reserve were planted into the reserve in winter 2008. Whilst no formal monitoring has been undertaken, visual inspection suggests moderate successes in plant survival.

Areas adjacent to paths used to be dominated by grass weeds. Following successful weed control these areas are now bare soil and could benefit from in-fill planting with locally native species. A total of 1000 m² is proposed to be revegetated using plants grown from locally collected seed.

Recommendation: In conjunction with weed control, undertake revegetation projects using brushing and local provenance species at Kendal Ct Reserve.

Resolution T6/4/11 discussed the closure of the Public Access Way (PAW) linking Grovelands Drive to Becket Court through Kendal Court Reserve. It is recommended, following resolution of the issue with the Department of Planning to close the PAW, that the concrete and limestone paths linking Becket Court and Grovelands Drive in an east-west direction be removed, and revegetation of these areas be budgeted for in the draft 2011/12 budget.

Recommendation: On completion of the closure of the PAW between Kendal Court and Becket Court, that the two east-west running paths linking to the PAW be removed and revegetation of the areas be undertaken.

3.5.3 CREYK PARK BUSHLAND RESERVE

Approximately 300 plants that were grown from seed collected in Creyk Park Bushland Reserve were planted into the reserve in winter 2008. Whilst no formal monitoring has been undertaken, visual inspection suggests moderate successes in plant survival.

Areas of bushland in Creyk Park are still heavily dominated by weeds. Following the successful control of these weeds revegetation should be considered. Most of these areas are adjacent to the fence and track along Lillian Avenue equating to approximately 1,000 square metres.

Recommendation: In conjunction with weed control, undertake revegetation projects using brushing and local provenance species at Creyk Park Bushland Reserve.

3.5.3 JOHN DUNN BUSHLAND RESERVE

John Dunn Bushland Reserve contains fair to good condition bush in the central portions surrounded by bushland in poorer condition (see Figure 8.1). The poor condition area is both low in diversity of native species and dominated by weeds. Coupled with weed control efforts as recommended in Section 3.1.4, revegetation of the poor condition bushland perimeter is recommended. Approximately 1,000 square metres is proposed for revegetation.

Recommendation: In conjunction with weed control, undertake revegetation projects using locally native species at John Dunn Bushland Reserve.

3.5.4 DEPOT BUSHLAND

The depot bushland contains fair to good condition bushland in the central portion of the reserve surrounded by poor and degraded condition areas (see Figure 9.1). The poor condition is both low in diversity of native species and dominated by weeds. Coupled with weed control efforts as recommended in Section 3.1.5, revegetation of the poor condition bushland perimeter is recommended. Approximately 300 square metres is proposed for revegetation.

Recommendation: In conjunction with weed control, undertake revegetation projects using local provenance species in the Depot Bushland Reserve.

3.5.5 EVA AND BILL MOORE HEATHLAND

Eva and Bill Moore Heathland is heavily dominated by grass weeds. Due to the small size of the good condition bushland and the large area dominated by weeds, it is recommended that weed control efforts be coupled with revegetating using locally native species. The species selection for revegetation should be complementary to the area. However, given the extent of the weeds surrounding the good condition portion of bushland, it is recommended that the species initially selected for revegetation should be fast establishing shrubs. Coupled with weed control this revegetation should provide adequate soil coverage to minimise further weed growth. The area proposed to be revegetated is approximately 2,000 square metres.

Recommendation: In conjunction with weed control, undertake revegetation projects using local provenance species at Eva and Bill Moore Heathland.

3.5.6 CAMMILLO RD BUSHLAND RESERVE

Cammillo Rd Bushland Reserve contains approximately 1,000 square metres of bushland in fair to good condition. Assessment of this bushland portion in 2009 by Department of Environment and Conservation botanists identified 57 species. This indicates that whilst the bushland is under threat from weeds, it is still rich in diversity. The poor condition perimeter of the reserve is dominated by grassy weeds, recommended for control in this plan (see Section 3.1.7). The coupling of the control of these weeds with the revegetation of the reserve with fast establishing shrubs is recommended in order to suppress further weed spread and stabilise the soil for the recruitment of native plants. The area proposed to be revegetated equates to approximately 900 square metres.

Recommendation: In conjunction with weed control, undertake revegetation of Cammillo Rd Bushland Reserve using locally native species.

3.6 Community involvement

The Local Nature Spot Program (2008) undertook to engage community interest in Kendal Ct Reserve and Bob Blackburn Flora Reserve with goal to increase community awareness of the activities threatening the reserve and too possibly create Friends Groups.

Outcomes of the Local Nature Spot community survey suggested that less than 20 % of residents surveyed were interested in undertaking on-ground activities in Kendal Ct Bushland Reserve such as planned walks, weeding days or other group activities. At Bob Blackburn Flora reserve, more than a third indicated an interest in the on-ground activities relating to caring for the reserve.

Activities such as bird watching events and clean up days were organised to encourage community interest. The response for Bob Blackburn Flora reserve was promising, with a number of people participating in events undertaken at the reserve. However, there was little to no community interest in Kendal Ct Bushland Reserve.

The use of the Forrestfield Complex bushland areas for dog walking is permitted with the exception of Bob Blackburn Reserve and John Dunn Reserve, which are designated dog free reserves. Therefore the provision of dog excrement disposal facilities are not recommended for these reserves. Dog excrement disposal facilities are in-situ at Creyk Park Reserve.

Recommendation: Seek community involvement in bushland related activities in Bob Blackburn Flora Reserve with the aim to establish a Friends Group for the reserve.

A number of brochures about the values of each of the Forrestfield Complex bushland areas have been published including:

- Kendal Ct Flora Reserve – A Local Nature Spot;

- Grovelands Primary School (promoting school involvement in Kendal Ct Bushland Reserve);
- Dieback in Kendal Ct Reserve;
- Dieback in Creyk Park Bushland;
- Bob Blackburn Flora Reserve Information Sheet; and
- Bob Blackburn Flora Reserve – A Local Nature Spot.

It is recommended that the Kendal Ct Bushland Reserve and Bob Blackburn Flora Reserve Local Nature Spot brochures remain in print and distributed to Council libraries. However, the other publications are now outdated and are not recommended to remain in-print.

Recommendation: Retain Local Nature Spot brochures for Bob Blackburn Flora Reserve and Kendal Ct Bushland Reserve in print.

3.7 Feral animals

Due to the isolated nature of each of the Forrestfield Complex bushland areas, native fauna is likely to be restricted to reptiles, birds and invertebrates. Ground dwelling mammals are no longer likely to occur in these areas.

A number of feral animal species are known to occur in the reserves including feral cats and feral bees. It is possible that rabbits also occur in the larger Bob Blackburn Flora Reserve and Creyk Park Bushland Reserve. Whilst it is reasonable to assume that the occurrence of feral and pet cats in each of the reserves has an impact on native birds, the site specific impact and occurrence of these species is unknown.

In 2007 a PHD study of the impacts of cats on native mammal species was completed, in areas surrounding Armadale (Lilith, 2007). The study showed that the implementation of cat legislation must have a ‘whole of ecosystem’ approach, identifying threats such as plant disease and loss of habitat as greater threats than cats. The impact of cats specifically on native birds in the Forrestfield Complex bushland areas is unknown.

Options for the control of feral cats, foxes and rabbits are restricted in the metropolitan region due to the close proximity to houses and occurrence of pets. Given the complexities in controlling feral cats, foxes or rabbits in the reserve, the unknown site specific impact, and the lack of small ground dwelling mammals remaining in the reserves, it is not recommended that cat, fox or rabbit control be considered across the Forrestfield Complex bushland areas.

Feral bee colonisation of tree hollows is evident in some reserves, especially Creyk Park bushland. As is detailed in Section 2.3 these tree hollows form important habitat for a number of bird species including some considered rare and endangered. It is recommended that feral bee hives in Forrestfield Complex bushland areas are controlled when reported.

Recommend: Undertake control of feral bees in Forrestfield Complex bushland areas as hives are discovered or reported.

4.0 Summary and Funding

It is anticipated that all recommendations made in this plan can be undertaken within current environmental and parks budget allocations. Grant opportunities will be sought annually to provide funding for actions listed in this plan that state ‘where opportunities arise...’.

Table 4.1 provides a summary of the recommendations made throughout this management plan and approximately start dates. Where limited funding is available for required capital works, the following order of Reserve priority shall apply:

1. Bob Blackburn Flora Reserve
2. John Dunn Bushland Reserve
3. Kendal Ct Bushland Reserve
4. Creyk Park Bushland Reserve
5. Depot Bushland
6. Cammillo Bushland Reserve
7. Eva and Bill Moore Healthland

This order of reserve priority is based on a value/ threat evaluation the City undertook in 2008 in order to inform weed control and capital works programs.

Table 4.1 Recommendations of the Forrestfield Complex Bushland Management Plan 2011

Recommendation	Start date	Estimated cost	Funding
Excise bushland area of Creyk Park into a Reserve for "Conservation and Recreation"	2012	Survey and subdivision cost estimated to be \$5,000	Anticipated to be funded through budget allocation 2012/13.
Undertake fauna research at Forrestfield Complex bushland areas as opportunities arise.	As opportunities arise.	Cost dependant on extent of study.	Seek grant funding or support through existing programs.
Participate in surveys of fungi at Forrestfield Complex bushland areas as opportunities arise.	As opportunities arise.	Cost dependant on extent of study.	Seek grant funding or support through existing programs.
Promote the value of Kendal Ct Bushland Reserve and Bob Blackburn Flora Reserve for its wildflowers to local residents, as opportunities arise.	As opportunities arise.	Cost dependant on specific proposals.	Seek grant funding or support through existing programs.
Repair vandalism and remove rubbish in Forrestfield Complex bushland areas as soon as possible.	Ongoing.	Cost depended on extent of damage. Anticipated to be met by existing budget.	From existing Technical Services budget.
Ensure infrastructure within the Forrestfield Complex bushland areas is placed in visible locations in order to minimise instances of vandalism.	Ongoing.	See specific recommendations for capital improvements.	See specific recommendations for capital improvements.
Undertake weed management actions consistent with best practice principles and monitor results using an adaptive management framework.	Ongoing	See specific recommendations for weed control.	See specific recommendations for weed control.
Ensure that soil disturbing activities such as firebreak maintenance, prescribed burning or control of wildfire is followed up with appropriate weed management.	Ongoing	Cost variable – depended on extent of fire management undertaken.	Anticipated to be met through annual fire maintenance budget.
Annual treatment <i>Ehrharta calycina</i> and <i>Briza maxima</i> with grass selective herbicide in June within the bushland management area of Bob Blackburn Flora Reserve.	Annually beginning June 2011	Approximately \$1,200 annually	Anticipated to be funded annually through the Environmental Services Budget.

Recommendation	Start date	Estimated cost	Funding
Annual treatment of <i>Eragrostis curvula</i> with grass selective herbicide in November of each year within the bushland management area of Bob Blackburn Flora Reserve.	Annually beginning November 2011.	Approximately \$1,400 annually	Anticipated to be funded annually through the Environmental Services Budget.
Cut, fell and paint <i>Acacia longifolia</i> , <i>Leptospermum laevigatum</i> , <i>Chamaecytisus palmensis</i> , <i>Grevillia sp.</i> (non indigenous) and <i>Acacia saligna</i> to eradicate from Bob Blackburn Flora Reserve bushland management area.	2011	Approximately \$500 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Fumaria</i> , <i>Oxalis sp.</i> , <i>Lupinus</i> and <i>Ricinus communis</i> with herbicide such as ‘metsulfuron’ and annual treatment of <i>Plantago lanceolata</i> , <i>Hypochaeris glabra</i> , <i>Gazania linearis</i> and <i>Conyza sp.</i> with herbicide such as ‘glyphosate’ in the winter/ spring months within the Bob Blackburn Flora Reserve management area.	Annually beginning July 2011	Approximately \$1,500 annually	Anticipated to be funded annually through the Environmental Services Budget.
Cut and fell re-emergent eastern states woody weeds such as <i>Acacia podalyriifolia</i> in the management area of Kendal Ct Bushland Reserve.	2011	Approximately \$200 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Ehrharta calycina</i> with grass selective herbicide in June of each year within the bushland management area of Kendal Ct Bushland Reserve.	Annually beginning June 2011	Approximately \$300 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Eragrostis curvula</i> with grass selective herbicide in November of each year within the bushland management area of Kendal Ct Bushland Reserve.	Annually beginning November 2011	Approximately \$400 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of winter herbs such as <i>Fumaria capreolata</i> , <i>Lupinus cosentinii</i> , <i>Romulea rosea</i> and <i>Oxalis pes-caprae</i> with herbicide such as ‘metsulfuron’ within the bushland management area of Kendal Ct Bushland Reserve.	Annually beginning June 2011	Approximately \$400 annually	Anticipated to be funded annually through the Environmental Services Budget.

Recommendation	Start date	Estimated cost	Funding
Annual treatment of <i>Hypochaeris glabra</i> , <i>Chasmanthe floribunda</i> , <i>Gazania linearis</i> , <i>Paspalum dilatatum</i> <i>Gladiolus sp.</i> , and <i>Dimorphotheca ecklonis</i> with herbicide such as 'glyphosate' in the spring within the bushland management area of Kendal Ct Bushland Reserve.	Annually beginning June 2011	Approximately \$500 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Ehrharta calycina</i> with grass selective herbicide in June of each year within the bushland management area of Creyk Park Bushland Reserve.	Annually beginning June 2011	Approximately \$700 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Eragrostis curvula</i> with grass selective herbicide in November of each year within the bushland management area of Creyk Park Bushland Reserve.	Annually beginning November 2011	Approximately \$800 annually	Anticipated to be funded annually through the Environmental Services Budget.
Eradication of <i>Freesia</i> from Creyk Park Bushland Reserve through targeted annual treatment with herbicide in August.	Annually beginning July 2011	Approximately \$350 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual winter herbicide treatment of <i>Lathyrus tingitanus</i> , <i>Lupinus cosentinii</i> , <i>Oxalis pes-caprae</i> and <i>Oxalis glabra</i> in the management area of Creyk Park Bushland Reserve.	Annually beginning June 2011	Approximately \$450 annually	Anticipated to be funded annually through the Environmental Services Budget.
Fell, paint and remove emergent woody weeds such as <i>Acacia podalyriifolia</i> , <i>Chamaecytisus palmensis</i> and <i>Leptospermum laevigatum</i> from bushland management area of Creyk Park Bushland Reserve.	2011	Approximately \$200	Anticipated to be funded annually through the Environmental Services Budget.
Undertake as a secondary weed management priority control of <i>Conyza sp.</i> and <i>Dimorphotheca ecklonis</i> in Creyk Park Bushland Reserve.	As funding permits		Can be undertaken if annual funding for weed control is underspent.

Recommendation	Start date	Estimated cost	Funding
Develop a staged program for the removal of eastern states species from the banks of the oval and edge of the bushland of Creyk Park. The program should include measures for stabilisation of banks and the provision of alternative habitat for birds.	2012/13	Removal of eastern states species = \$2,500 Reinstatement of vegetation with native species = \$5,000. Stabilisation of banks = \$2,000.	Anticipated to be funded through budget allocation 2012/13.
Annual treatment of <i>Ehrharta calycina</i> with grass selective herbicide in June of each year within the bushland management area of John Dunn Bushland Reserve.	Annually beginning June 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Eragrostis curvula</i> with grass selective herbicide in November of each year within the bushland management area of John Dunn Bushland Reserve.	Annually beginning November 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Fell and remove re-emergent <i>Leptospermum laevigatum</i> from the bushland management area of John Dunn Bushland Reserve.	2011	Approximately \$100 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of winter herbs such as <i>Oxalis pes-caprae</i> with herbicide such as 'metsulfuron' within the bushland management area of John Dunn Bushland Reserve.	Annually beginning June 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Hypochaeris glabra</i> , <i>Gladiolus sp.</i> , <i>Conyza sp.</i> and <i>Solanum nigrum</i> with herbicide such as 'glyphosate' in the spring within the bushland management area of John Dunn Bushland Reserve.	Annually beginning August 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual treatment of <i>Ehrharta calycina</i> and <i>Cynodon dactylon</i> in July of each year with grass selective herbicide within the bushland management area of the Depot bushland.	Annually beginning July 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.

Recommendation	Start date	Estimated cost	Funding
Annual treatment of <i>Eragrostis curvula</i> with grass selective herbicide in November of each year within the management area of the Depot bushland.	Annually beginning November 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Annual herbicide treatment of winter herbs such as <i>Fumaria sp.</i> , <i>Trifolium sp.</i> , <i>Oxalis sp.</i> , <i>Vicia sativa</i> and <i>Hypochaeris glabra</i> within the management area of the Depot bushland.	Annually beginning July 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Re-treat <i>Watsonia sp.</i> , <i>Solanum nigrum</i> and <i>Euphorbia terracina</i> in July 2011. Annual treatment and inspection of these weeds should be carried out in subsequent years to ensure the successful eradication of these species within the management area of the Depot bushland.	July 2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Fell and paint re-emergent <i>Acacia longifolia</i> occurring within the management area of the Depot bushland.	2011	Approximately \$150 annually	Anticipated to be funded annually through the Environmental Services Budget.
Undertake control of <i>Ehrharta calycina</i> and <i>Briza sp.</i> in June annually in the management area of Eva and Bill Moore Heathland.	Annually beginning June 2011	Approximately \$200 annually	Anticipated to be funded annually through the Environmental Services Budget.
Undertake control of <i>Eragrostis curvula</i> in November annually with grass selective herbicide in the bushland management area of Eva and Bill Moore Heathland.	Annually beginning January 2012	Approximately \$250 annually	Anticipated to be funded annually through the Environmental Services Budget.
Implement a re-vegetation program using locally native species within the bushland management area of Eva and Bill Moore Heathland.	See revegetation recommendation.	See revegetation recommendation.	See revegetation recommendation.

Recommendation	Start date	Estimated cost	Funding
Eradicate <i>Gladiolus sp.</i> from within the Eva and Bill Moore Heathland management area through the implementation of a herbicide treatment program in August annually.	August 2011	Approximately \$200 annually	Anticipated to be funded annually through the Environmental Services Budget.
Undertake annual control of <i>Eragrostis curvula</i> in November with grass selective herbicide in the bushland management area of Cammillo Rd Bushland Reserve.	Annually beginning November 2011	Approximately \$400 annually	Anticipated to be funded annually through the Environmental Services Budget.
Undertake control of <i>Ehrharta calycina</i> in June in the management area of Cammillo Rd Bushland Reserve annually.	Annually beginning June 2011	Approximately \$300 annually	Anticipated to be funded annually through the Environmental Services Budget.
Undertake the control of <i>Watsonia sp.</i> and <i>Chasmanthe floribunda</i> upon flowering using herbicide such as glyphosate in Cammillo Rd Bushland Reserve. Repeat annually to eradicate from the bushland management area.	Annually beginning September 2009	Approximately \$200	Anticipated to be funded annually through the Environmental Services Budget.
All management activities should be undertaken in accordance with City of Armadale Policy ENG9 – Managing <i>Phytophthora dieback</i> .	Ongoing	No budget requirement	No budget requirement
Recommendation: Ongoing implementation of the phosphite treatment program as detailed in Table 3.2.1.	Treatment of, Bob Blackburn 2011, Creyk Park 2011, Eva and Bill Moore 2011, John Dunn 2011, and Kendal Ct 2011 Cammillo Rd Bushland 2012 and Depot bushland 2012.	Bob Blackburn \$2,682 Creyk Park = \$2,650 Eva and Bill Moore = \$980 John Dunn = \$880. Kendal Ct = \$1,686 Depot = \$1,000 Cammillo Rd bushland = \$1,200	Dieback treatment costs anticipated to be met through existing environmental budgets.

Recommendation	Start date	Estimated cost	Funding
The use of mulch within Bushland Management Areas that are dieback free or unknown in status is not permitted (including verges within 5 metres of bushland).	Ongoing	No budget requirement.	No budget requirement.
No new firebreaks shall be installed unless deemed necessary in an emergency situation or if deemed necessary for the protection of life and property.		No budget requirement.	No budget requirement.
Liaise with FESA to seek inclusion of dieback information on fire response plans.		No budget requirement.	No budget requirement.
Implement fire management actions detailed in Table 3.3.1 including regular consideration of fire safety as part of the City of Armadale Fire Maintenance Program.	2011	To be met within existing Technical Services fire management budget.	To be met within existing Technical Services fire management budget.
Establish procedure so that Environmental staff are informed of unplanned fire events in Forrestfield Complex bushland areas.		No budget requirement.	No budget requirement.
Annually inspect fire access tracks by prior to summer. Any overhanging branches should be trimmed and removed.	Ongoing	Undertaken by City of Armadale staff	No budget requirement.
Local Nature Spot signs should be retained in Bob Blackburn Reserve and replaced if damaged. By law signs should be removed when too damaged to remain in-situ. The damaged dieback sign should be entirely removed. A Frame style display boards should be upgraded with interpretive signs providing positive messages about the reserve, its values, threats and rules.	As funding permits.	Estimated cost of upgrading A frame sign = 3 signs at \$500 each = \$1,500	To be included on Natural Area Management Capital Works schedule and funded within existing budget.
Installation of conservation pine rail fencing to control access along the car park and road at Bob Blackburn Flora reserve following the upgrade of the car park adjacent to the Champion centre.	As funding permits and following the Champion Centre car park upgrade.	Estimated cost \$1,500	To be included on Natural Area Management Capital Works schedule and funded within existing budget.

Recommendation	Start date	Estimated cost	Funding
Reseal limestone track in Kendal Ct Bushland Reserve.	As funding permits.	\$1,000	To be included on Natural Area Management Capital Works schedule and funded within existing budget.
Install a timber routed sign identifying the bushland portion of John Dunn Bushland Reserve.	As funding permits.	\$500	To be included on Natural Area Management Capital Works schedule and funded within existing budget.
All revegetation works undertaken in the Forrestfield Complex bushland areas should be undertaken using local provenance species.		No budget requirement.	No budget requirement.
Spread mulch for weed suppression and soil improvement purposes in the dieback infected area of Bob Blackburn Flora Reserve (adjacent to Williams Rd and Champion Drive round-about).	2011 but likely to require multiple treatments.	Mulch to be supplied from street tree pruning program. Estimated cost of spreading, Ecojobs for one day = \$300.	To be included on Natural Area Management Capital Works schedule and funded within existing budget.
In conjunction with weed control, undertake revegetation projects using local provenance species in Bob Blackburn Flora Reserve.	2012/13	Area 4,500 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$6,750	Anticipated to be funded through budget allocation 2012/13.
In conjunction with weed control, undertake revegetation projects using local provenance species at Kendal Ct Reserve.	2012/13	Area 1000 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$1,500	Anticipated to be funded through budget allocation 2012/13.
Providing the resolution to the closure of the PAW between Kendal Court and Becket Court, that the two east-west running paths linking to the PAW be removed and revegetation of the areas be undertaken.	2011/12	Estimated cost of removal of path, soil preparation, seed collection, propagation and revegetation = \$20,000	Anticipated to be funded through the existing Parks Natural Area budget.
In conjunction with weed control, undertake revegetation projects using local provenance species at Creyk Park Bushland Reserve.	2012/13	Area 1000 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$1,500	Anticipated to be funded through budget allocation 2012/13..

Recommendation	Start date	Estimated cost	Funding
In conjunction with weed control, undertake revegetation projects using local provenance species at John Dunn Bushland Reserve.	2012/13	Area 1000 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$1,500	Anticipated to be funded through budget allocation 2012/13..
In conjunction with weed control, undertake revegetation projects using local provenance species in the Depot Bushland Reserve.	2012/13	Area 300 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$450	Anticipated to be funded through budget allocation 2012/13..
In conjunction with weed control, undertake revegetation projects using local provenance species at Eva and Bill Moore Heathland.	2012/13	Area 2,000 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$3,000	Anticipated to be funded through budget allocation 2012/13..
In conjunction with weed control, undertake revegetation of Cammillo Rd Bushland Reserve using local provenance species.	2012/13	Area 900 m ² .@ 1 plant per m ² at a cost of \$1.50 per plant = \$1,350	Anticipated to be funded through budget allocation 2012/13..
Seek community involvement in bushland related activities in Bob Blackburn Flora Reserve with the aim to establish a Friends Group for the reserve.	Ongoing	No budget requirement.	No budget requirement.
Retain Local Nature Spot brochures for Bob Blackburn Flora Reserve and Kendal Ct Bushland Reserve in print.	Ongoing	Printed internally – no budget allocation.	No budget requirement.
Implement a feral bee control program at Creyk Park bushland and other Forrestfield Complex bushland areas where hives are found.	2011/2012	\$2,500	Anticipated to be funded annually through existing Environmental Services budget.

5.0 Bob Blackburn Flora Reserve Appendix

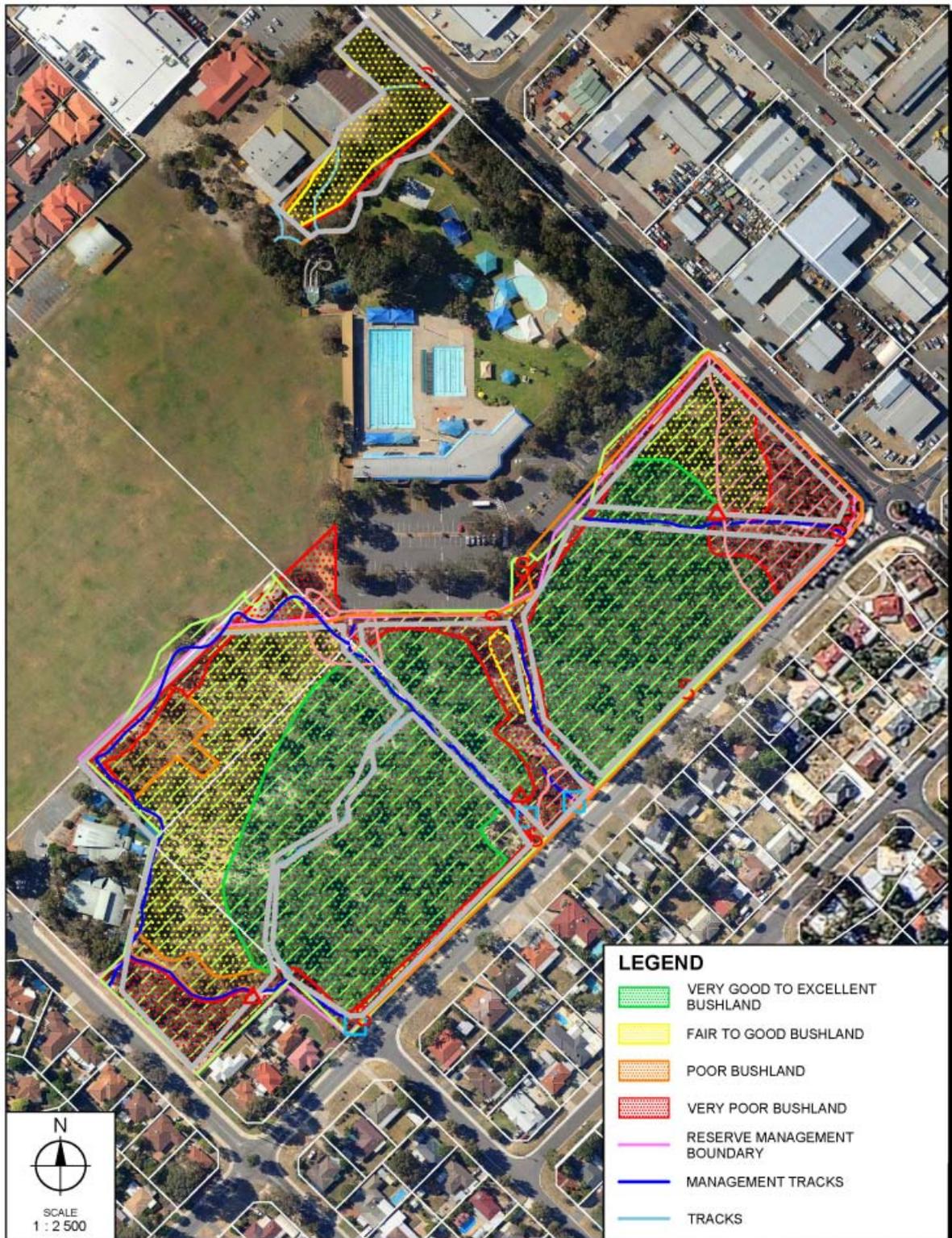


FIGURE 5.1 - BOB BLACKBURN FLORA RESERVE
VEGETATION CONDITION 2008



FIGURE 5.2 - BOB BLACKBURN FLORA RESERVE
WEED MAPPING 2008



FIGURE 5.3 - BOB BLACKBURN FLORA RESERVE
PROPOSED REVEGETATION AREAS

Figure 5.4: Weeds mapped at Bob Blackburn Flora Reserve. ID references for each weed correspond to the map in Figure 5.2

Weed		Extent				
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	ID
<i>Conyza sp.</i>		5	0	0		1017
<i>Fumaria capreolata</i>		0	0	2		1018
<i>Fumaria capreolata</i>		0	0	1		1019
		4	0	1		1020
<i>Plantago lanceolata</i>		2	0	1		1021
		3	0	2		1022
<i>Oxalis glabra</i>		0	0	6		1023
<i>Fumaria capreolata</i>	<i>Oxalis glabra</i>	40	0	4		1024
	<i>Oxalis pes-caprae</i>	5	0	1		1026
	<i>Oxalis pes-caprae</i>	10	0	2		1027
<i>Ehrharta longifolia</i>		20	0	5		1028
	<i>Oxalis pes-caprae</i>	1	0	0		1029
	<i>Oxalis pes-caprae</i>	5	0	2		1030
	<i>Oxalis pes-caprae</i>	4	0	0		1031
	<i>Oxalis pes-caprae</i>	1	0	0		1032
<i>Ehrharta longiflora</i>		5	0	1		1033
<i>Fumaria capreolata</i>		3	0	1		1034
<i>Fumaria capreolata</i>		5	0	2		1035
<i>Ehrharta longiflora</i>	<i>Hypochaeris glabra</i>	10	0	3		1036
<i>Fumaria capreolata</i>	<i>Oxalis pes-caprae</i>	20	0	7		1037
	<i>Oxalis pes-caprae</i>	3	0	0		1038
	<i>Oxalis pes-caprae</i> , <i>Hypochaeris glabra</i>	10	0	2		1039
	<i>Oxalis pes-caprae</i> , <i>Hypochaeris glabra</i>	0	0	1		1040
<i>Briza maxima</i>		0	0	4		1041
<i>Ehrharta calycina</i>		10	0	0		1042
<i>Conyza sp.</i>	<i>Hypochaeris glabra</i>	10	0	4		1043
<i>Briza maxima</i>		10	0	2		1044
	<i>Oxalis pes-caprae</i>	5	0	1		1045
<i>Briza maxima</i>		0	0	1		1046
	<i>Oxalis pes-caprae</i>	0	0	2		1047
	<i>Oxalis pes-caprae</i>	0	0	0		1048
<i>Briza maxima</i>		0	0	2		1049
<i>Ehrharta calycina</i>		3	0	1		1050
<i>Briza maxima</i>		0	0	3		1051
<i>Ehrharta longiflora</i>		4	0	1		1052
	<i>Lupinus cosentinii</i>	1	0	0		1053
<i>Conyza sp.</i>		4	0	0		1054
	<i>Oxalis pes-caprae</i>	0	0	1		1055
	<i>Lupinus cosentinii</i>	2	0	0		1056
	<i>Lupinus cosentinii</i>	3	0	0		1057
	<i>Oxalis pes-caprae</i>	0	0	4		1058
<i>Ehrharta longiflora</i>		2	0	0		1059
	<i>Lupinus cosentinii</i>	1	0	0		1060
	<i>Oxalis pes-caprae</i> , <i>Hypochaeris glabra</i>	0	0	4		1061

Weed		Extent				
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	ID
<i>Conyza sp.</i>		0	0	2		1062
<i>Ehrharta calycina</i>		1	0	1		1064
<i>Ehrharta calycina</i>		2	0	0		1065
		0	0	0		1066
<i>Conyza sp.</i>		3	0	0		1067
<i>Briza maxima</i>		0	0	1		1068
<i>Briza maxima</i>		5	0	2		1069
<i>Ehrharta calycina</i>		1	0	0		1070
<i>Conyza sp.</i>		2	0	0		1071
<i>Briza maxima</i>		5	0	0		1072
<i>Ehrharta calycina</i>		1	0	0		1073
<i>Briza maxima</i>		0	0	3		1074
	<i>Hypochaeris glabra</i>	6	0	1		1075
<i>Conyza sp.</i>	<i>Hypochaeris glabra</i>	1	0	0		1076
	<i>Hypochaeris glabra</i>	0	0	6		1077
<i>Ehrharta longiflora</i>		0	0	5		1078
	<i>Oxalis pes-caprae</i>	0	0	4		1079
<i>Ehrharta calycina</i>		5	0	1		1080
	<i>Oxalis pes-caprae</i>	0	0	1		1081
<i>Gazania linearis</i>		1	0	0		1081
	<i>Oxalis pes-caprae</i>	0	0	4		1082
<i>Eragrostis curvula</i>		1	0	0		1083
<i>Gazania linearis</i>		1	0	0		1084
<i>Eragrostis curvula</i>		1	0	0		1085
	<i>Oxalis pes-caprae</i>	0	0	1		1086
	<i>Oxalis pes-caprae</i>	0	0	3		1087
<i>Ehrharta longiflora</i>		10	0	2		1088
	<i>Oxalis pes-caprae</i>	0	0	3		1089
<i>Eragrostis curvula</i>		5	0	2		1090
<i>Ehrharta calycina</i>		0	0	2		1091
	<i>Oxalis glabra</i>	0	0	1		1092
<i>Hypochaeris glabra</i>		6	0	0		1093
	<i>Oxalis pes-caprae</i>	0	0	6		1094
<i>Hypochaeris glabra</i>		12	0	2		1095
	<i>Oxalis pes-caprae</i>	0	0	1		1096
<i>Hypochaeris glabra</i>		4	0	0		1097
		0	0	0		1098
<i>Eragrostis curvula</i>		0	0	2		1099
<i>Ehrharta calycina</i>		0	0	0		1100
	<i>Oxalis pes-caprae</i>	0	0	1		1101
<i>Ehrharta calycina</i>		2	0	0		1102
<i>Ehrharta calycina</i>		2	0	0		1103
<i>Hypochaeris glabra</i>		3	0	1		1104
<i>Ehrharta calycina</i>		4	0	4		1105
	<i>Oxalis pes-caprae</i>	0	0	1		1106
	<i>Lupinus cosentinii</i>	1	0	0		1107
<i>Briza maxima</i>		0	0	1		1108
<i>Ehrharta calycina</i>		1	0	0		1109
	<i>Lupinus cosentinii</i>	1	0	0		1110
	<i>Lupinus cosentinii</i>	1	0	0		1111

Weed		Extent				
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	ID
<i>Ehrharta calycina</i>		1	0	1		1112
<i>Ehrharta calycina</i>		5	0	1		1113
	<i>Oxalis pes-caprae</i>	0	0	2		1114
<i>Hypochaeris glabra</i>		20	0	2		1115
<i>Ehrharta calycina</i>		1	0	0		1116
<i>Ehrharta calycina</i>		1	0	0		1117
	<i>Hypochaeris glabra</i>	10	0	2		1118
	<i>Hypochaeris glabra</i>	3	0	1		1119
	<i>Hypochaeris glabra</i>	1	0	0		1120
	<i>Hypochaeris glabra</i>	0	0	5		1121
	<i>Hypochaeris glabra</i>	2	0	1		1122
	<i>Hypochaeris glabra</i>	0	0	2		1123
	<i>Hypochaeris glabra</i>	0	0	1		1124
<i>Eragrostis curvula</i>		2	0	1		1125
<i>Ehrharta calycina</i>		1	0	0		1126
<i>Briza maxima</i>		0	0	10		1127
<i>Eragrostis curvula</i>		2	0	2		1128
	<i>Hypochaeris glabra</i>	1	0	0		1129
<i>Eragrostis curvula</i>		1	0	0		1130
	<i>Hypochaeris glabra</i>	0	0	1		1131
	<i>Hypochaeris glabra</i>	0	0	2		1132
	<i>Hypochaeris glabra</i>	0	0	0	40-50%	1133
<i>Ehrharta calycina</i>		0	0	0		1134
<i>Eragrostis curvula</i>		0	0	0	20-30%	1135
	<i>Hypochaeris glabra</i>	0	0	0	10-20%	1136
<i>Ehrharta calycina</i>		0	0	0	10-20%	1137
	<i>Oxalis pes-caprae</i>	0	0	0		1138
	<i>Oxalis pes-caprae</i>	0	0	0	70-80%	1139
	<i>Oxalis pes-caprae</i>	0	0	0	30-40%	1140
<i>Fumaria capreolata</i>		0	0	0	10-20%	1141
	<i>Oxalis pes-caprae</i>	0	0	0	10-20%	1142
<i>Ehrharta longiflora</i>		0	0	0	30-40%	1143
	<i>Oxalis pes-caprae</i>	0	0	0	20-30%	1144
<i>Ehrharta calycina</i>		0	0	0	10-20%	1145
<i>Ehrharta calycina</i>	<i>Hypochaeris glabra</i>	0	0	0	70-80%	1146
<i>Ehrharta calycina</i>		0	0	0	50-60%	1147
<i>Ehrharta calycina</i>		0	0	0	70-80%	1148
<i>Ehrharta calycina</i>		0	0	0	0-10%	1149
<i>Ehrharta calycina</i>		0	0	0	0-10%	1150



FIGURE 5.5 - BOB BLACKBURN FLORA RESERVE
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

6.0

Kendal

Ct

Bushland

Reserve

Appendix

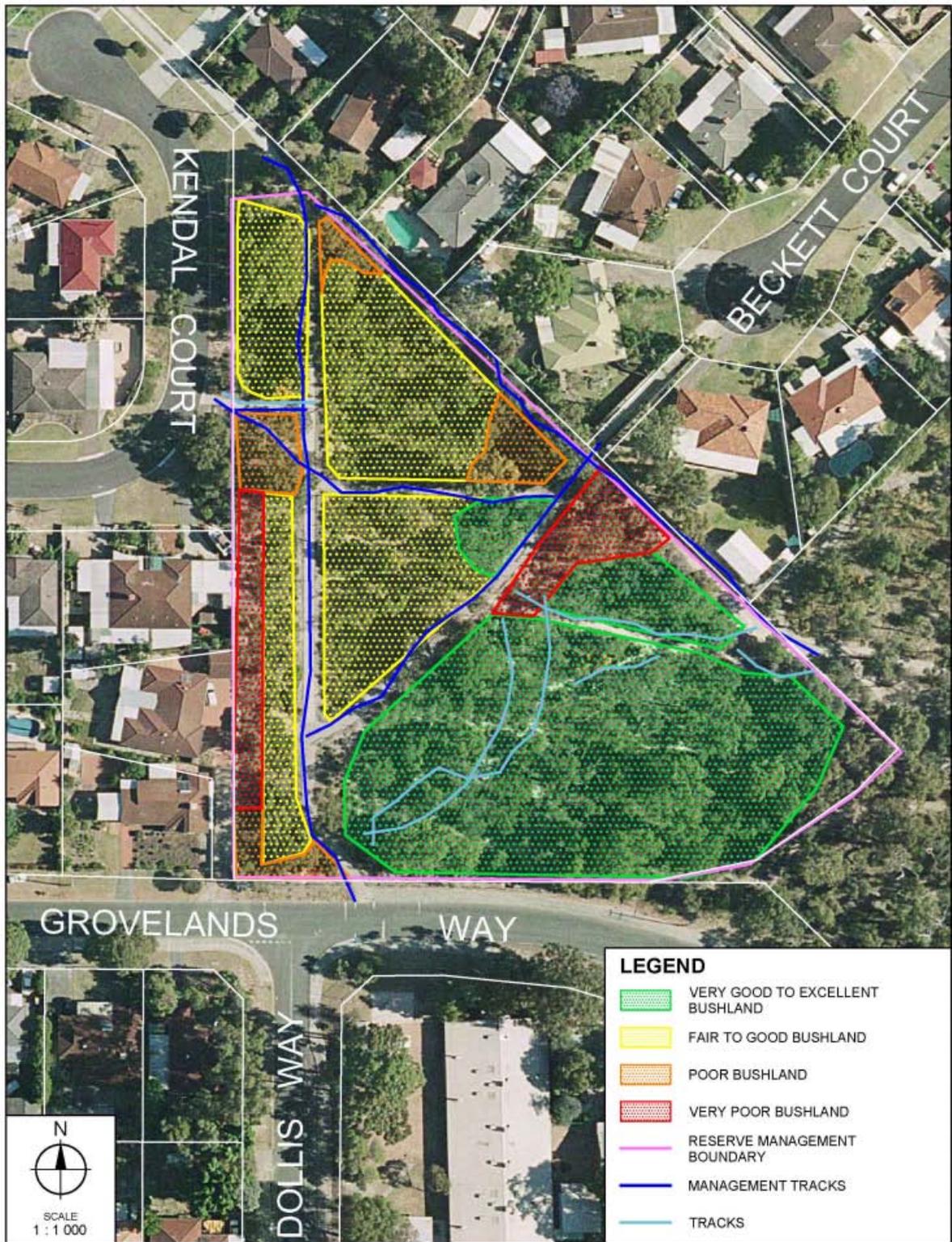


FIGURE 6.1 - KENDAL COURT BUSHLAND
VEGETATION CONDITION 2008

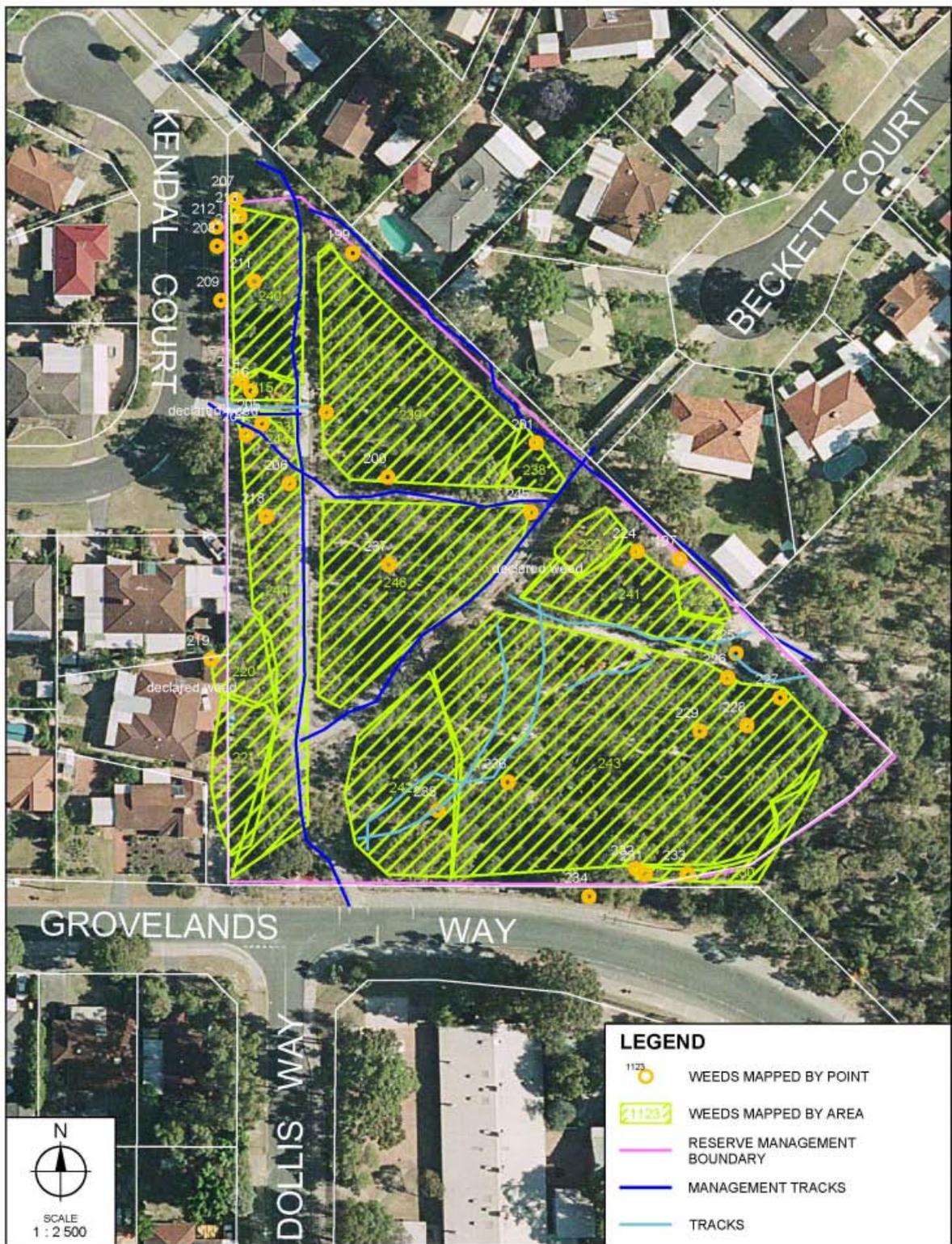


FIGURE 6.2 - KENDAL COURT BUSHLAND
WEED MAPPING 2008

Figure 6.3: Weeds mapped at Kendal Ct Bushland Reserve. ID references correspond to Figure 6.2.

Weed				Extent				Management	
Dominant Species 1	Weed	Weed Species 2	Weed Species 3	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
<i>Acacia podalyriifolia</i>				1	1	0		Medium	197
<i>Acacia podalyriifolia</i>				2	1	1		Low	199
	<i>Gladiolus sp.</i>			11	0	2		Medium	200
<i>Dimorphotheca ecklonis</i>				0	0	2		Low	201
<i>Euphorbia terriana</i>	<i>Gladiolus sp.</i>	<i>Hypochaeris sp</i>		0	0	0	20-30%	High	202
<i>Euphorbia terriana</i>	<i>Gladiolus sp.</i>	<i>Hypochaeris sp</i>		0	0	0	20-30%	High	203
<i>Chasmanthe floribunda</i>				25	0	3		Low	204
<i>Euphorbia terriana</i>				100	0	5		High - DP	205
	<i>Gazania linearis</i>			1	0	0.5		Low	206
<i>Acacia podalyriifolia</i>				5	1	3		Low	207
	<i>Gazania linearis</i>			1	0	2		Low	208
	<i>Gazania linearis</i>			25	0	4		Low	209
<i>Acacia podalyriifolia</i>				1	1	0		Low	210
<i>Acacia podalyriifolia</i>				4	1	2		Low	211
<i>Eragrostis curvula</i>				5	0	2		Medium	212
	<i>Lupinus cosentinii</i>			40	0	4		Medium	213
	<i>Gazania linearis</i>			1	0	1		Low	214
<i>Euphorbia terriana</i>	<i>Oxalis sp</i>			0	0	0	50-60%	High - DP	215
	<i>Lupinus cosentinii</i>			5	0	2		Low	216
<i>Euphorbia terriana</i>				1	0	0		High - DP	217
	<i>Gazania linearis</i>			3	0	1		Low	218
<i>Dimorphotheca ecklonis</i>				0	0	3		Low	219
<i>Euphorbia terriana</i>				0	0	0	90-100%	High - DP	220
<i>Fumaria capreolata</i>	<i>Lupinus cosentinii</i>			0	0	0	90-100%	Low	221
<i>Euphorbia terriana</i>	<i>Oxalis sp</i>			0	0	0	80-90%	High - DP	222
<i>Hypochaeris glabra</i>	<i>Oxalis pes-caprae</i>			0	0	0	70-80%	Medium	223
	<i>Oxalis pes-caprae</i>	<i>Hypochaeris sp</i>		0	0	2		Medium	224
<i>Eragrostis curvula</i>				10	0	3		High	225
<i>Ehrharta calycina</i>				4	0	2		High	226
<i>Ehrharta calycina</i>				1	0	1		High	227
	<i>Gladiolus sp.</i>			2	0	1		High	228
		<i>Ursinia anthemoides</i>		15	0	1		Medium	229
	<i>Romulea rosea</i>	<i>Ursinia anthemoides</i>		0	0	0	0-10%	Medium	230
	<i>Oxalis pes-</i>			0	0	1		Medium	231

Weed				Extent				Management	
Dominant Species 1	Weed	Weed Species 2	Weed Species 3	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
		<i>caprae</i>							
<i>Eragrostis curvula</i>		<i>Gazania linearis</i>	<i>Paspalum dilatatum</i>	2	0	2		High	232
<i>Eragrostis curvula</i>				2	0	1		High	233
		<i>Oxalis pes-caprae</i>		0	0	1		Medium	234
		<i>Gladiolus sp.</i>	<i>Paspalum dilatatum</i>	8	0	2		Medium	235
		<i>Gladiolus sp.</i>		10	0	2		Medium	236
<i>Conyza sp</i>		<i>Oxalis sp</i>	<i>Hypochaeris sp</i>	0	0	0	60-70%	Low	238
<i>Ehrharta calycina</i>		<i>Gladiolus sp.</i>	<i>Ursinia anthemoides</i>	0	0	0	0-10%	High	239
<i>Ehrharta calycina, mixed grasses</i>		<i>Gladiolus sp.</i>		0	0	0	0-10%	High	240
<i>Mixed grasses</i>		<i>Lupinus cosentinii</i>	<i>Ursinia anthemoides</i>	0	0	0	10-20%	Medium	241
<i>Ehrharta calycina</i>		<i>Gladiolus sp.</i>	<i>Eragrostis curvula</i>	0	0	0	20-30%	High	242
<i>Ehrharta calycina</i>		<i>Gladiolus sp.</i>	<i>Romulea rosea</i>	0	0	0	0-10%	High	243
<i>Mixed grasses - veld, love guildford, briza</i>		<i>Gladiolus sp.</i>	<i>Ursinia anthemoides, Hypochaeris sp</i>	0	0	0	30-40%	Medium	244
<i>Ehrharta calycina</i>		<i>Oxalis sp</i>	<i>Paspalum dilatatum</i>	0	0	4		Medium	245
<i>Ehrharta calycina, Eragrostis curvula</i>		<i>Gladiolus sp.</i>	<i>Ursinia anthemoides</i>	0	0	0	10-20%	High	246

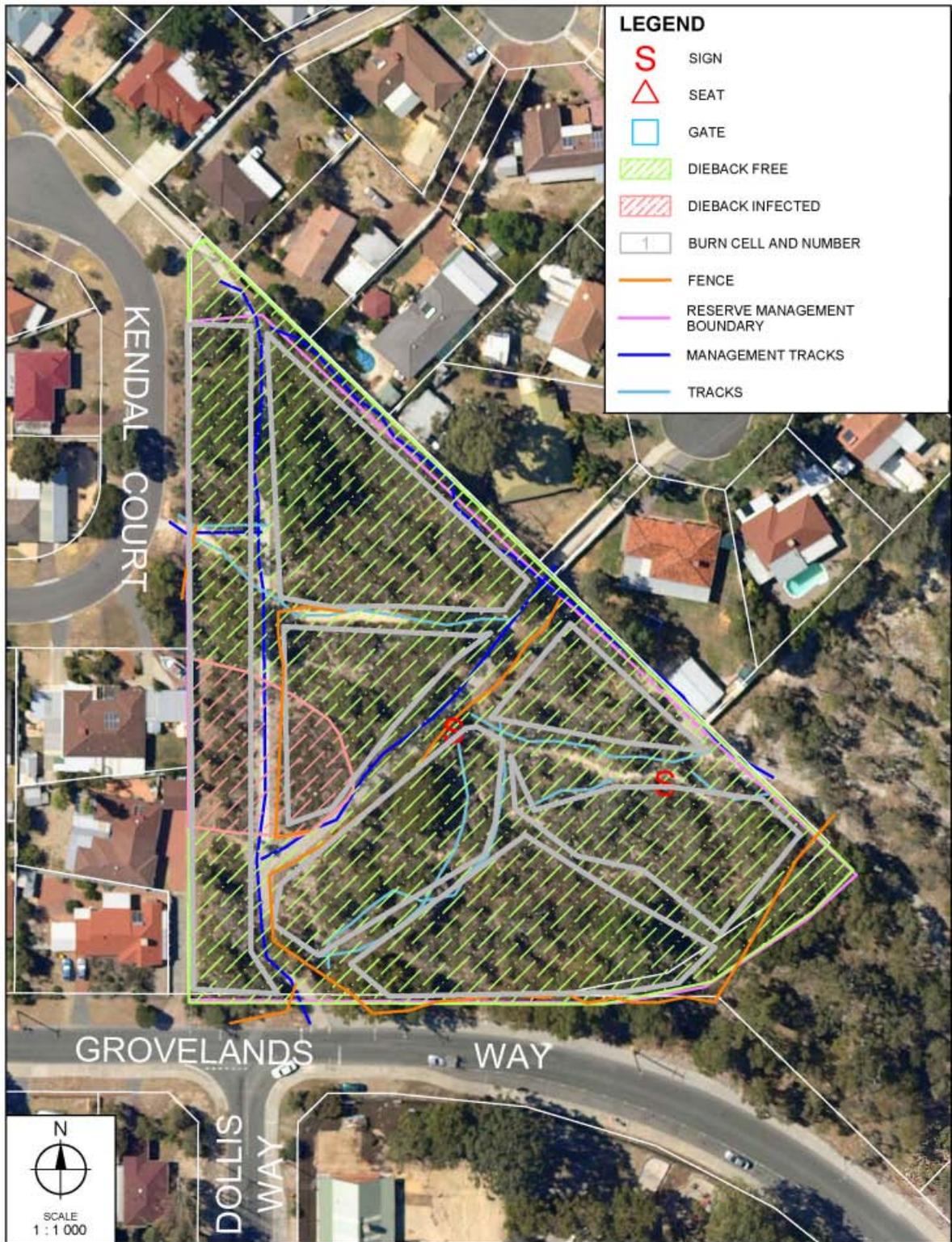


FIGURE 6.4 - KENDAL COURT BUSHLAND RESERVE
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

7.0 Creyk Park Bushland Reserve Appendix

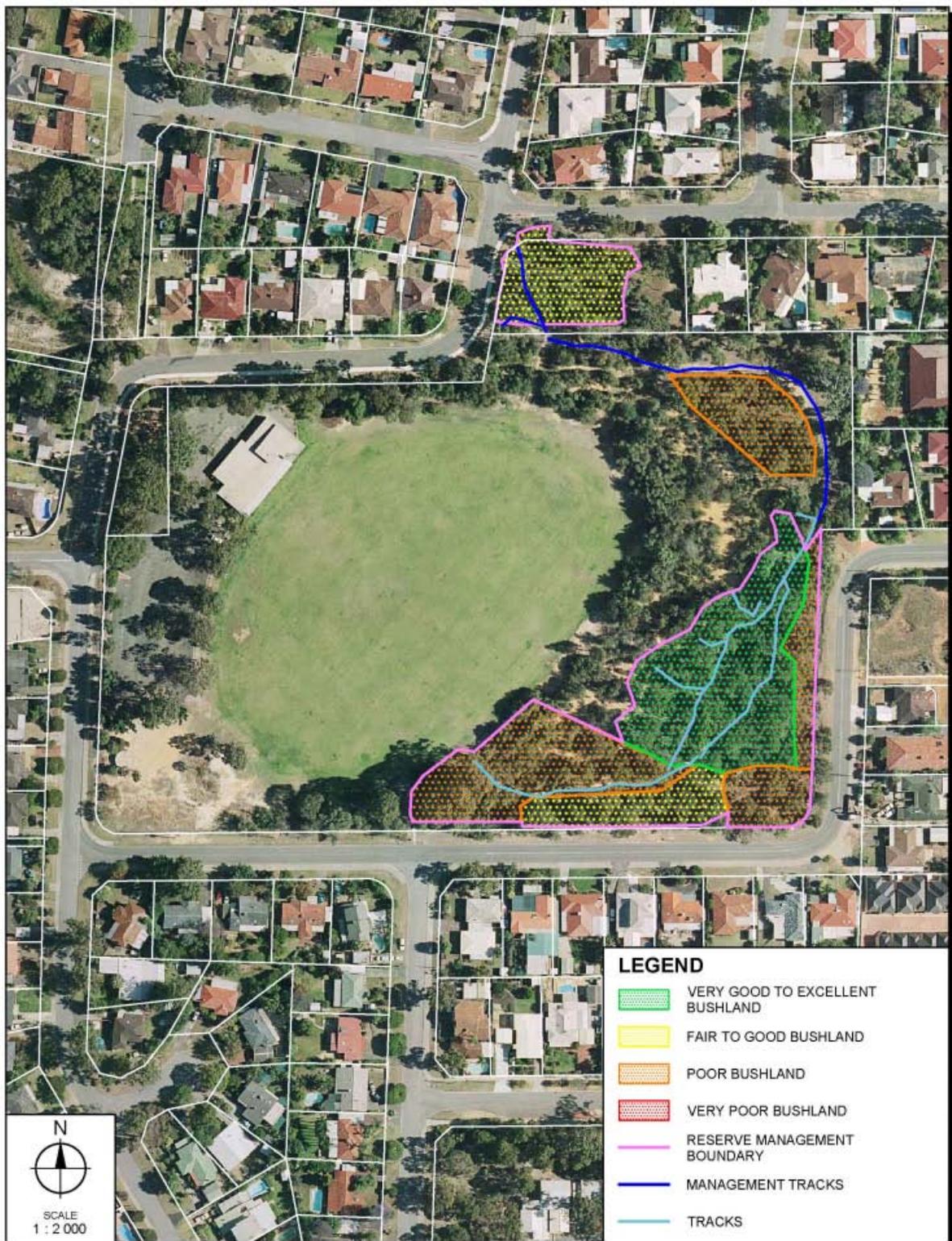


FIGURE 7.1 - CREYK PARK BUSHLAND
VEGETATION CONDITION 2008



FIGURE 7.2 - CREYK PARK BUSHLAND (NORTH)
WEED MAPPING 2008

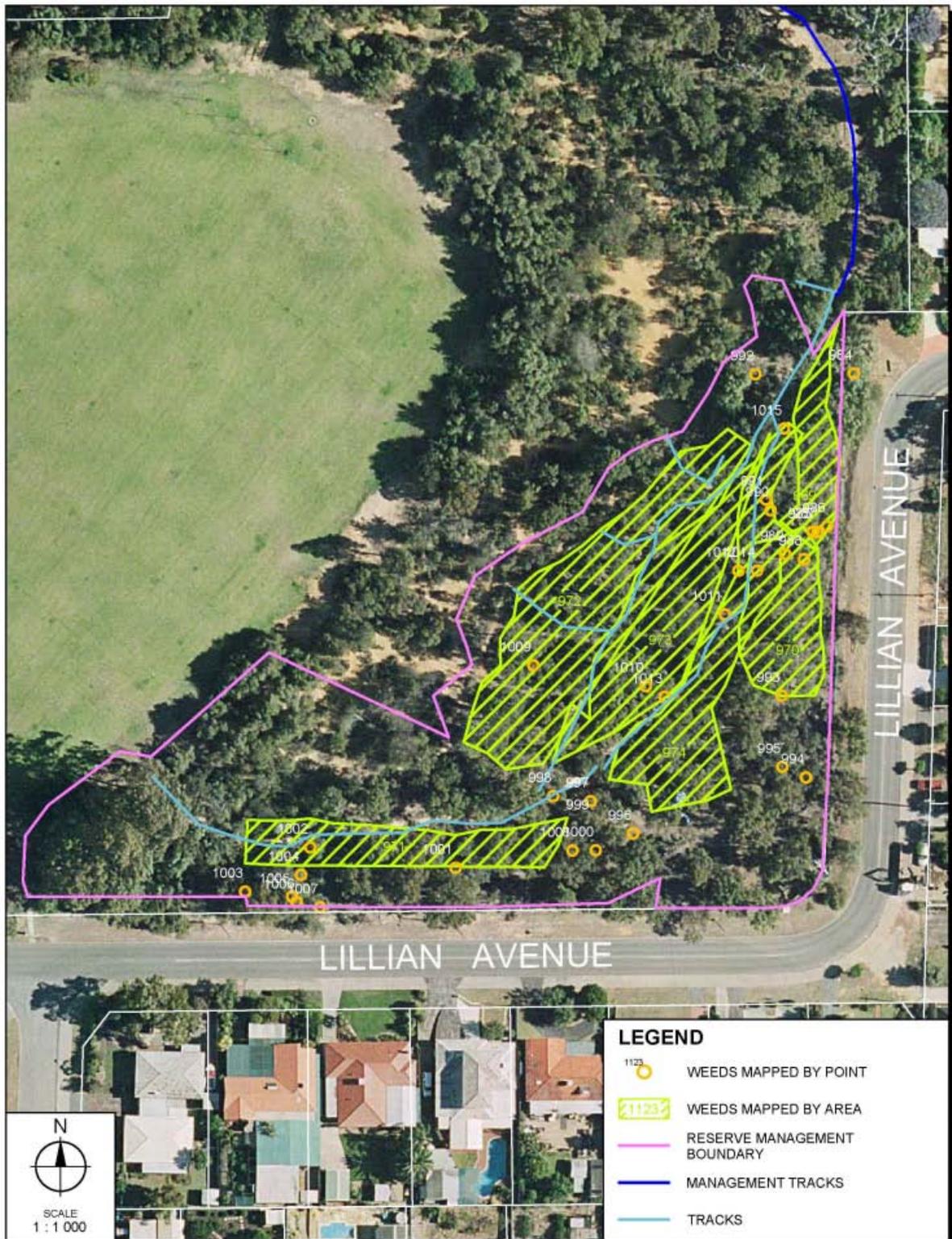


FIGURE 7.3 - CREYK PARK BUSHLAND (SOUTH)
WEED MAPPING 2008

Figure 7.4: Table of weeds mapped in 2008 at Creyk Park Bushland

Weed		Extent				Management	
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
<i>Eragrostis curvula</i>	<i>Oxalis glabra</i>	0	0	0	10-20%	High	966
<i>Ehrharta calycina</i>	<i>Oxalis pes-caprae</i>	0	0	0	90-100%	Low	967
<i>Ehrharta calycina</i>	<i>Oxalis pes-caprae</i> & <i>glabra</i>	0	0	0	20-30%	High	968
<i>Eragrostis curvula</i>	<i>Oxalis pes-caprae</i> & <i>glabra</i>	0	0	0	80-90%	Low	969
<i>Ehrharta calycina</i>	<i>Eragrostis curvula</i>	0	0	0	20-30%	High	970
<i>Ehrharta calycina</i>	<i>Eragrostis curvula</i>	0	0	0	10-20%	High	971
<i>Ehrharta calycina</i>	<i>Eragrostis curvula</i>	0	0	0	0-10%	High	972
<i>Ehrharta calycina</i>		0	0	0	0-20%	High	973
<i>Ehrharta calycina</i>	<i>Eragrostis curvula</i>	0	0	0	20-30%	High	974
	<i>Leptospermum laevigatum</i>	2	1	0	Medium	Medium	975
<i>Eragrostis curvula</i>		10	0	0	High	High	976
<i>Acacia podalyriifolia</i>		10	0.5	20	High	High	977
	<i>Oxalis pes-caprae</i>	0	0	20			978
<i>Chamaecytisus palmensis</i>		30	1	10	High	High	979
<i>Chamaecytisus palmensis</i>		20	1.5	15			980
<i>Haemaecytisus palmensis</i>		1	0.5	0		Medium	981
	<i>Lupinus cosentinii</i>	1	0.25	0		Medium	982
<i>Ehrharta calycina</i>		0	0	5		High	983
	<i>Leptospermum laevigatum</i>	5	20	10		Low	984
<i>Freesia hybrid</i>		4	0	1		Medium	985
	<i>Leptospermum laevigatum</i>	1	0.25	0		Low	986
	<i>Leptospermum laevigatum</i>	1	0.5	0		Low	987
<i>Freesia hybrid</i>		40	0	10		Medium	988
	<i>Leptospermum laevigatum</i>	2	1	3		Medium	989
	<i>Leptospermum laevigatum</i>	3	0.5	0		Medium	990
	<i>Leptospermum laevigatum</i>	2	1	1		Medium	991
<i>Acacia podalyriifolia</i>		1	0.5	0		Low	992
<i>Freesia hybrid</i>		100	0	20		Medium	993
	<i>Leptospermum laevigatum</i>	1	0.5	0		Low	994
<i>Acacia podalyriifolia</i>		1	1	0		Medium	995
<i>sp 2 feather grass</i>		0	0	2		Low	996
	<i>Oxalis pes-caprae</i>	0	0	4		Medium	997
	<i>Oxalis pes-caprae</i>	0	0	2		Medium	998
<i>Dimorphotheca ecklonis</i>		10	0	2		Low	999
	<i>Lathyrus tingitanus</i>	0	0	20		High	1000

Weed		Extent				Management	
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
	<i>Oxalis pes-caprae</i>	0	0	2		Medium	1001
<i>Freesia hybrid</i>		5	0	4		Medium	1002
	<i>Leptospermum laevigatum</i>	10	0	10		Low	1003
<i>Briza maxima</i>		1	0	0		Low	1004
	<i>Oxalis pes-caprae</i>	0	0	5		Medium	1005
	<i>Leptospermum laevigatum</i>	5	0.5	3		High	1006
	<i>Leptospermum laevigatum</i>	1	5	0		High	1007
<i>Conyza</i>		15	0	5		Low	1008
	<i>Leptospermum laevigatum</i>	1	2	0		Medium	1009
<i>Freesia hybrid</i>		10	0	1		Medium	1010
	<i>Oxalis glabra</i>	0	0	5		Medium	1011
<i>Freesia hybrid</i>		0	0	2		Medium	1012
<i>Freesia hybrid</i>		1	0	0		High	1013
	<i>Oxalis glabra</i>	0	0	4		Medium	1014
	<i>Leptospermum laevigatum</i>	1	0.5	0		High	1015

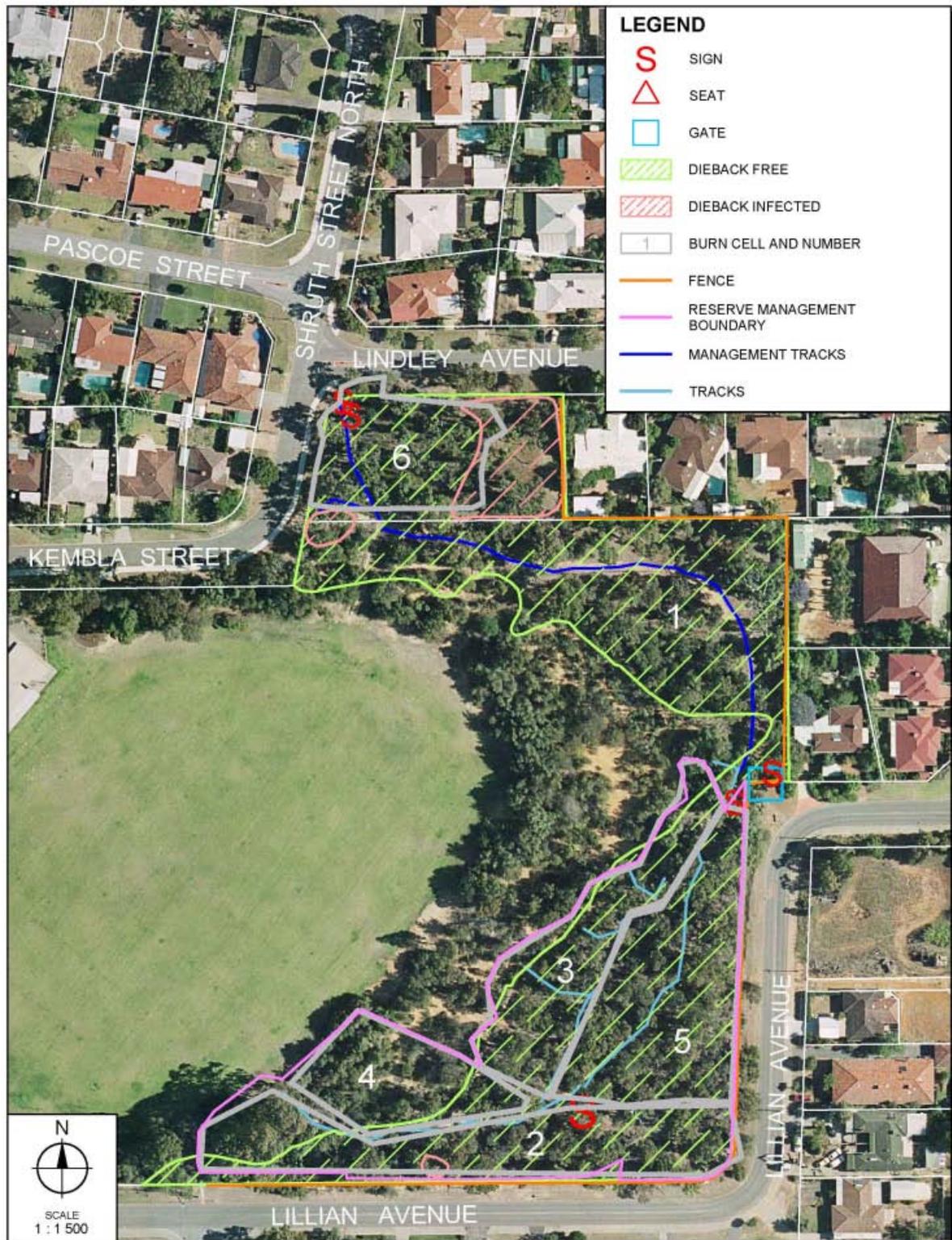


FIGURE 7.5 - CREYK PARK BUSHLAND RESERVE
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

8.0 John Dunn Bushland Reserve Appendix



FIGURE 8.1 - JOHN DUNN BUSHLAND RESERVE
VEGETATION CONDITION 2008



FIGURE 8.2 - JOHN DUNN BUSHLAND RESERVE
WEED MAPPING 2008

Figure 8.3: Weed mapping of John Dunn Reserve in 2008

Weed		Extent				Management	
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
<i>Ehrharta calycina</i>		0	0	0	10-20%	High	1152
<i>Ehrharta calycina</i> , <i>Eragrostis curvula</i>		0	0	0	10-20%	High	1153
<i>Ehrharta calycina</i>		0	0	0	30-40%	High	1154
<i>Gladiolus angustus</i>		3	0	1			1155
<i>Gladiolus angustus</i>		2	0	4			1156
<i>Conyza sp.</i>	<i>Gladiolus angustus</i>	6	0	0			1157
<i>Leptospermum laevigatum</i>		6	5	10			1158
<i>Gladiolus angustus</i>		5	0	4			1159
<i>Conyza sp.</i>	<i>Oxalis pes-caprae</i> , <i>Hypochaeris glabra</i>	0	0	2			1160
<i>Sodium nigrum</i>		0	0	10			1161
<i>Leptospermum laevigatum</i>		4	3	3			1163



FIGURE 8.4 - JOHN DUNN BUSHLAND RESERVE
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

9.0 Depot Bushland Appendix



FIGURE 9.1 - DEPOT BUSHLAND
VEGETATION CONDITION 2008



FIGURE 9.2 - DEPOT BUSHLAND
WEED MAPPING 2008

Figure 9.3: Table of weed mapping in the depot bushland in 2008.

Weed		Extent				Management	
Dominant Weed Species 1	Weed Species 2	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
<i>Watsonia meriana</i>		6	0	2		High	462
<i>Euphorbia sp.</i>		20	0	5		High	463
<i>Fumaria capreolata</i>		0	0	2		Low	464
<i>Euphorbia terriana</i>		4	0	1		High	465
<i>Fumaria capreolata</i>	<i>Oxalis pes-caprae</i>	0	0	2		Medium	466
<i>Trifolium campestre</i>		15	0	1		High	467
<i>Oxalis pes-caprae</i>		0	0	3		Medium	468
<i>Oxalis pes-caprae</i>		5	0	4		Medium	469
<i>Conyza sp</i>		2	0	1		Medium	470
<i>Oxalis pes-caprae</i>		0	0	5		Medium	471
<i>Fumaria capreolata</i>		0	0	4		Medium	472
<i>Ehrharta calycina</i>		1	0	1		High	473
<i>Fumaria capreolata</i>		0	0	5		Medium	474
<i>Fumaria capreolata</i>		0	0	8		Low	475
<i>Solanum nigrum</i>		0	0	2		High	476
<i>Solanum nigrum</i>		1	0	1		High	477
<i>Solanum nigrum</i>		1	0	1		High	478
<i>Watsonia meriana</i>		6	0	2		High	479
<i>Ehrharta calycina, Eragrostis curvula</i>		10	0	4		High	480
<i>Acacia longifolia</i>		1	2	0		Medium	481
<i>Eragrostis curvula</i>		4	0	3		High	482
<i>Vicia sativa</i>		0	0	1		Low	483
<i>Fumaria capreolata</i>	<i>Hypochaeris glabra</i>	0	0	0	20-30%	Medium	504
<i>Cynodon dactylon</i>	<i>Ehrharta calycina</i>	0	0	0	10-20%	High	505



FIGURE 9.4 - DEPOT BUSHLAND
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

10.0 Eva and Bill Moore Heathland Appendix



FIGURE 10.1 - EVA AND BILL MOORE HEATHLAND
VEGETATION CONDITION 2008



FIGURE 10.2 - EVA AND BILL MOORE HEATHLAND
WEED MAPPING 2008

Figure 10.3: Weeds mapped in Eva and Bill Moore Heathland Reserve in 2008.

Weed				Extent				Management	
Dominant Species 1	Weed	Weed Species 2	Weed species 3	No Stems	Stem Diameter (cm)	Square metres	Density (%)	Priority for Control	ID
<i>Gladiolus sp.</i>				4	0	1.5		Medium	185
<i>Gladiolus sp.</i>				2	0	1		Medium	186
<i>Gladiolus sp.</i>				4	0	2		Medium	187
<i>Gladiolus sp.</i>				10	0	2		Medium	188
<i>Gladiolus sp.</i>				1	0	1		Medium	189
<i>Gladiolus sp.</i>				4	0	2		Medium	190
<i>Leptospermum laevigatum</i>				1	10	0		Low	191
<i>Leptospermum laevigatum</i>				30	0	5		-	192
<i>Ehrharta calycina</i> , <i>Eragrostis curvula</i>	<i>Oxalis pes-caprae</i>	<i>Lupinus cosentinii</i> , <i>Gladiolus sp</i> <i>scattered</i>		0	0	0	80-90%	Low	193
<i>Ehrharta calycina</i>	<i>Briza maxima</i>	<i>Ursinia anthemoides</i>		0	0	0	30-40%	Medium	194
<i>Ehrharta calycina</i>	<i>Briza maxima</i>	<i>Ursinia anthemoides</i>		0	0	0	20-30%	Medium	195



FIGURE 10.4 - EVA AND BILL MOORE HEATHLAND
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

11.0 Cammillo Rd Bushland Reserve Appendix

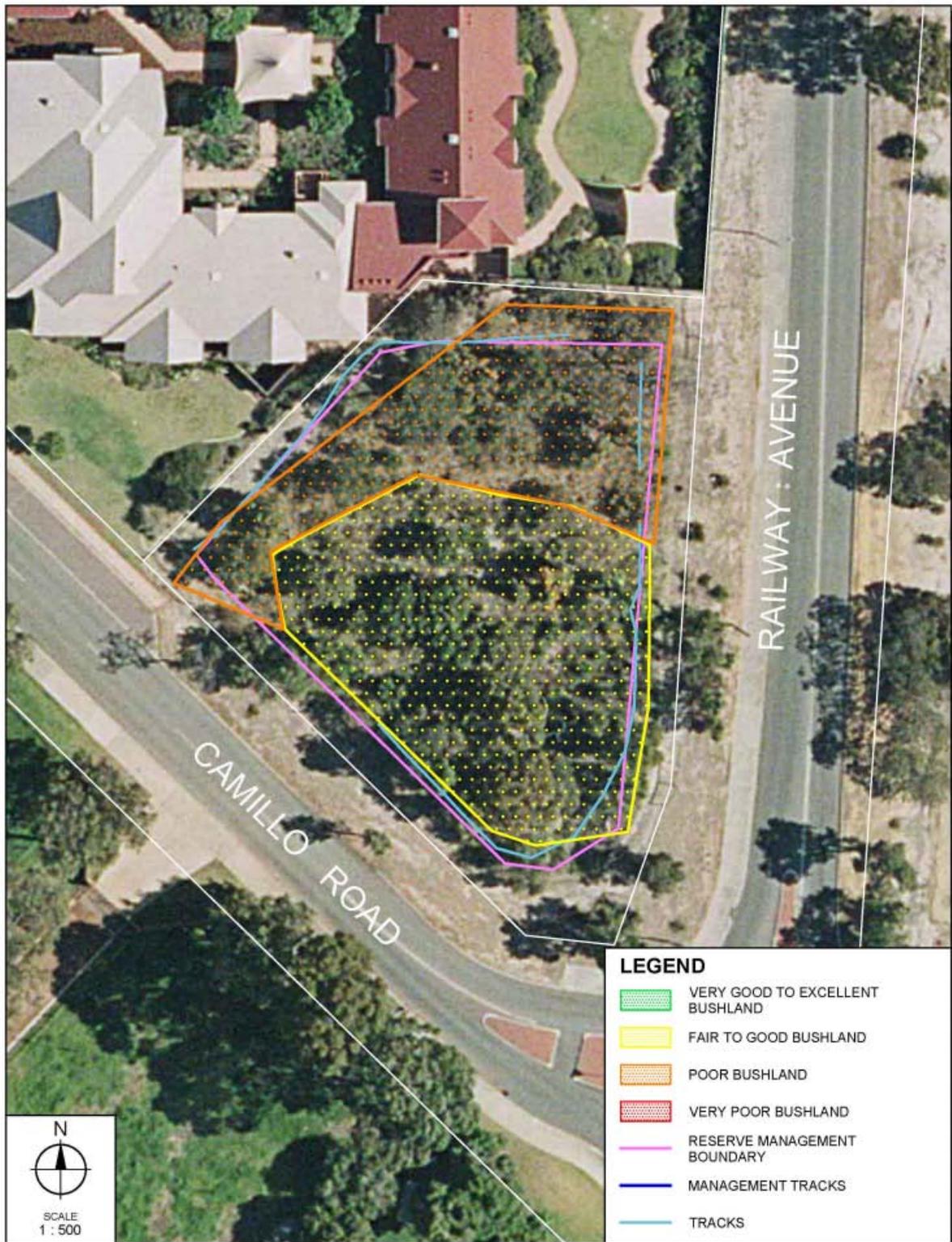


FIGURE 11.1 CAMILLO ROAD BUSHLAND
VEGETATION CONDITION 2008

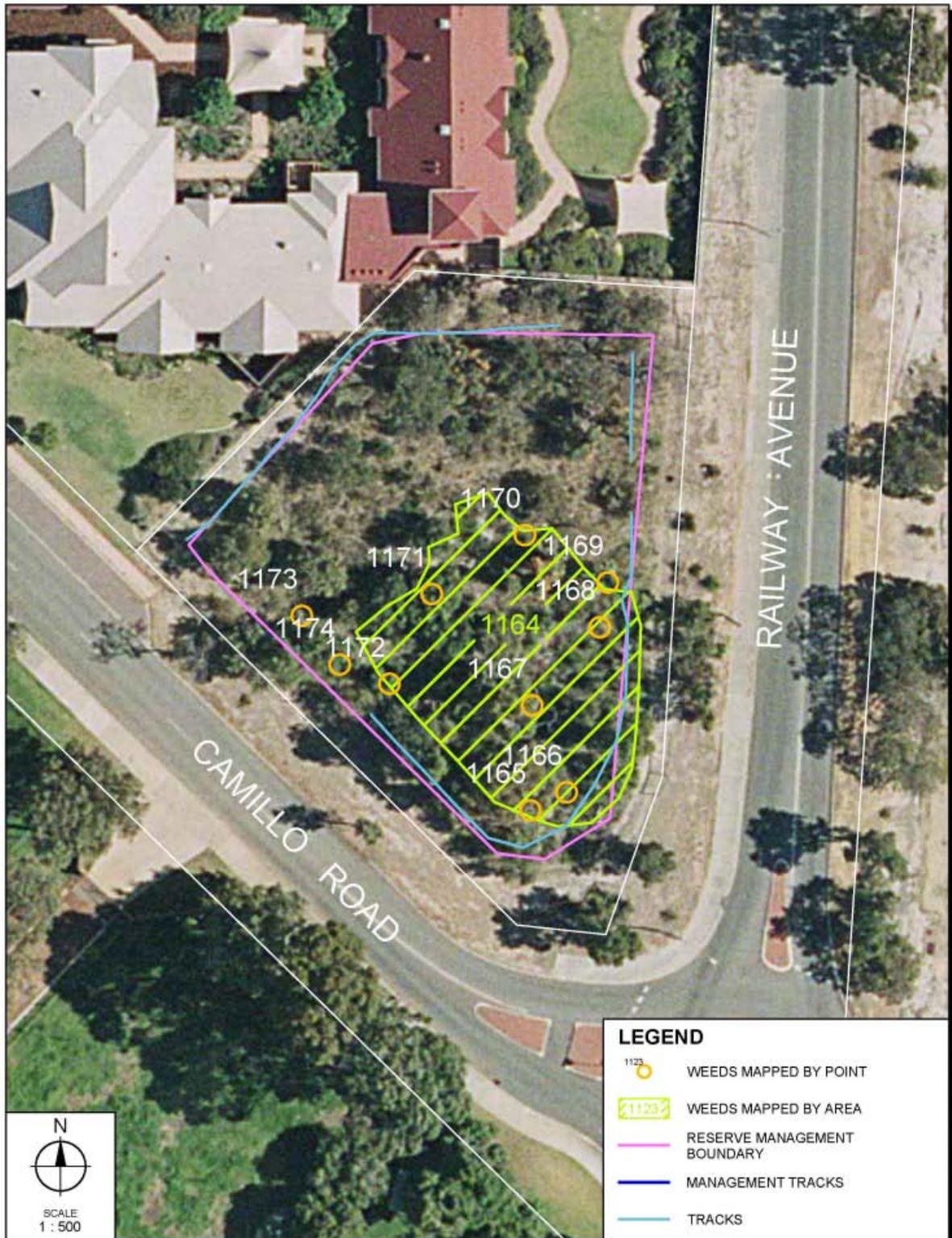


FIGURE 11.2 CAMMILLO ROAD BUSHLAND
WEED MAPPING 2008

Figure 11.3: Weed occurrence at Cammillo Bushland Reserve 2008.

Weed	Extent				Management
	No Stems	Stem Diameter (cm)	Square metres	Density (%)	ID
<i>Eragrostis curvula & mixed grasses</i>	0	0	0	20-30%	1164
<i>Watsonia meriana</i>	10	0	5		1165
<i>Watsonia meriana</i>	25	0	10		1166
<i>Watsonia meriana</i>	40	0	30		1167
<i>Watsonia meriana</i>	20	0	6		1168
<i>Watsonia meriana</i>	40	0	15		1169
<i>Watsonia meriana</i>	30	0	10		1170
<i>Watsonia meriana</i>	10	0	5		1171
<i>Oxalis pes-caprae</i>	0	0	3		1172
<i>Gladiolus sp.</i>	20	0	5		1173
<i>Oxalis pes-caprae</i>	0	0	1		1174

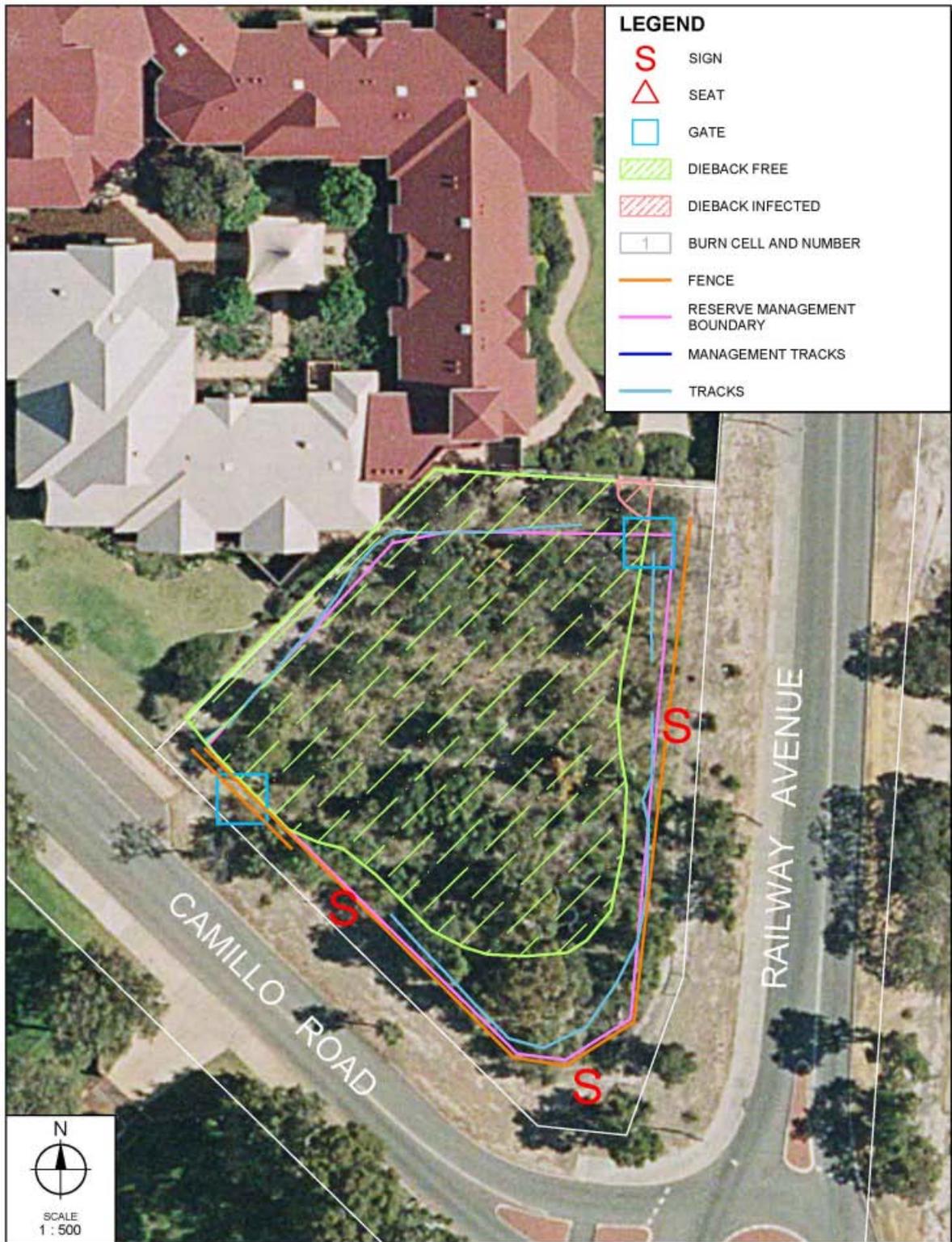


FIGURE 11.4 - CAMMILLO ROAD BUSHLAND
DIEBACK, INFRASTRUCTURE AND FIRE MANAGEMENT

13.0 Former management plan review

The following table provides a review of the implementation status of the former management plans covering the Forrestfield Complex bushland areas.

Plan	Recommendation	Implementation status
Kendal Ct Bushland Management Plan 2002	Weed control should follow best practice, focussing on the priority species identified in Table 4.1.	Ongoing - weed control undertaken 2003 to 2010.
Kendal Ct Bushland Management Plan 2002	Revegetate tracks that are to be closed and adjacent to the permanent paths with material sourced from the Bushland or which meets local provenance guidelines	Complete - revegetation undertaken with local provenance seed 2007.
Kendal Ct Bushland Management Plan 2002	Record the successes and failures in revegetation to build up expertise in revegetation.	Incomplete. Success of revegetation effort not monitored.
Kendal Ct Bushland Management Plan 2002	Implement a program of phosphite treatment in accordance with the priorities identified in Figure 4.2.	Complete - dieback treatment undertaken in 2004 and 2008.
Kendal Ct Bushland Management Plan 2002	Monitor dieback and plant resistance to dieback in 2005 to evaluate the need to re-treat the bushland with phosphite.	Complete - dieback mapping undertaken 2004 and 2008.
Kendal Ct Bushland Management Plan 2002	Implement dieback hygiene practices for all construction works and rehabilitation activities in the Bushland. Construction works should occur in summer only, minimise the movement of soil, ensure machinery is washed down before entering the site and ensure all material sourced for construction works is certified dieback free. Rehabilitation activities should ensure plants are certified dieback free and that tools and footwear are cleaned and sterilised with methylated spirits prior to starting works on-site.	Complete - management activities undertaken consistent with ENG9 policy.
Kendal Ct Bushland Management Plan 2002	There should be no controlled burning of Kendal Court Reserve for the term of this Management Plan.	Complete - no prescribed burning was undertaken.
Kendal Ct Bushland Management Plan 2002	Prepare and implement a Fire Management Plan in accordance with the Fire and Emergency Services Authority guidelines.	Complete.
Kendal Ct Bushland Management Plan 2002	Encourage research into the fauna and fungi on Kendal Court Reserve.	Complete - Kendal Ct studied by Birds Australia in 2006. Perth Biodiversity Project Bushland Assessment undertaken in 2005.

Plan	Recommendation	Implementation status
Kendal Ct Bushland Management Plan 2002	Implement the pathway system and fencing identified in Figure 4.3 and monitor the success and impacts of the pathway system in terms of protecting Bushland vegetation.	Complete - pathway system sealed with concrete and fencing installed to guide the use of path systems.
Kendal Ct Bushland Management Plan 2002	Use fencing and bollards to prevent vehicular access to the reserve.	Complete - vehicle entry opportunities minimised.
Kendal Ct Bushland Management Plan 2002	Ensure BMX users are catered for in the Kuhl Park Concept Plan.	Facilities provided at John Dunn Reserve.
Kendal Ct Bushland Management Plan 2002	Design, create, build, install and maintain a sign about the importance of the Bushland and signs that provide information about individual flora, fauna or fungi.	Completed but heavily vandalised and subsequently removed.
Kendal Ct Bushland Management Plan 2002	Develop educational resources in consultation with Grovelands Primary School.	Complete. Brochure completed in 2004. School re-engaged in 2007 as part of the Local Nature Spot Project.
Kendal Ct Bushland Management Plan 2002	Support establishment a Friends of Kendal Court Reserve group and seek to ensure the group has close links or is part of Grovelands Primary School.	Multiple attempts to engage community undertaken unsuccessfully.
Kendal Ct Bushland Management Plan 2002	Re-name Kendal Court Reserve with the benefit of community involvement.	Incomplete.
Kendal Ct Bushland Management Plan 2002	Kendal Court Reserve should re-vested in the City of Armadale for the purpose of Conservation and Passive Recreation.	Complete.
Kendal Ct Bushland Management Plan 2002	Review progress in implementing the Management Plan annually and review the Management Plan in 2005.	In-progress.
Bob Blackburn Bushland Management Plan 2000	Continue Council's current grass control measures and compliment with action by the Friends of Bob Blackburn Flora Reserve.	Ongoing - weed control undertaken 2003 to 2010.
Bob Blackburn Bushland Management Plan 2000	Weed control should follow best practice, which is currently detailed in Scheltema & Harris (1995).	Weed control undertaken according to best practice (Brooks 2002 & Brown).

Plan	Recommendation	Implementation status
Bob Blackburn Bushland Management Plan 2000	Remove alien trees from around the perimeter of the Bushland and replant with local plant species.	Ongoing. Large number of exotic trees removed.
Bob Blackburn Bushland Management Plan 2000	Install physical barriers (e.g. root guard fencing below ornamental kerb barriers) as shown on Figure 3.1 to prevent grass invasion and encroachment of mowing operations into bushland.	Complete.
Bob Blackburn Bushland Management Plan 2000	Monitor dieback and plant resistance to dieback in 2003 to evaluate the need to re-treat the bushland with phosphite.	Dieback treated in 2004 and 2008.
Bob Blackburn Bushland Management Plan 2000	Dieback hygiene practices should be implemented for all construction works on the Bushland. In particular, construction works should occur in summer only, minimise the movement of soil, ensure machinery is washed down before entering the site and ensure all material sourced for construction works is certified dieback free.	Complete - management activities undertaken consistent with ENG9 policy.
Bob Blackburn Bushland Management Plan 2000	Revegetate areas identified in Figure 3.2 with material sourced from the Bushland or which meets local provenance guidelines.	Complete. Revegetation undertaken in 2006 & 2007. Plant survival not monitored but considered less than 10%.
Bob Blackburn Bushland Management Plan 2000	Record the successes and failures in revegetation to build up expertise in revegetation.	Incomplete. Not formally monitored.
Bob Blackburn Bushland Management Plan 2000	There should be no controlled burning of Bob Blackburn Flora Reserve for the term of this Management Plan.	Complete - no control burning undertaken.
Bob Blackburn Bushland Management Plan 2000	Implement the pathway system identified in Figure 3.1 according to the priorities in Table 3.2, with all pathways having post and rail fencing.	Pathway construction with limestone complete. Pathways do not all have post and rail fencing.
Bob Blackburn Bushland Management Plan 2000	Monitor the success and impacts of the pathway system in terms of protecting Bushland vegetation	Not formally monitored but reduced bushland trampling noted by staff.

Plan	Recommendation	Implementation status
Bob Blackburn Bushland Management Plan 2000	Provide seating along pathways within the Bushland at the locations shown in Figure 3.1.	Complete.
Bob Blackburn Bushland Management Plan 2000	Design, build, install and maintain a sign about the importance of the Bushland and signs that provide information about individual flora.	Complete
Bob Blackburn Bushland Management Plan 2000	Develop educational resources in consultation with local educational establishments.	Complete. Local Nature Spot project undertaken in 2007.
Bob Blackburn Bushland Management Plan 2000	Continue to encourage volunteers through activities such as guided walks and display boards at public locations.	Ongoing. Local Nature Spot project undertaken in 2007.
Bob Blackburn Bushland Management Plan 2000	Support funding applications for volunteers to attend courses on leadership, bush rehabilitation, direct seeding and other related workshops.	Ongoing through BEAC grants.
Bob Blackburn Bushland Management Plan 2000	The bushland portion of Bob Blackburn Reserve should be consolidated into a C Class Reserve for the purpose of Conservation and Passive Recreation, be vested in the City of Armadale.	Complete.
Bob Blackburn Bushland Management Plan 2000	Review progress in implementing the Management Plan annually and review the Management Plan in 2004.	In progress.
Forrestfield Complex Bushland Management Plan	Bob Blackburn West - install post and rail fencing along car park boundary.	Bollards installed.
Forrestfield Complex Bushland Management Plan	Bob Blackburn West - Install mulch path between PCYC and oval.	Incomplete.
Forrestfield Complex Bushland Management Plan	Bob Blackburn West - Install mulch path from Keira St to Car Park.	Incomplete.
Forrestfield Complex Bushland Management Plan	Bob Blackburn West - Install rural fence between bushland and oval.	Incomplete.
Forrestfield Complex Bushland Management Plan	Bob Blackburn West - Install rural fence along Champion Drive.	Post and rail fencing installed.

Plan	Recommendation	Implementation status
Forrestfield Complex Bushland Management Plan	Install A2 information sign along Champion Drive.	Timber routed signs identify areas as a Flora Reserve.
Forrestfield Complex Bushland Management Plan	Cammillo Reserve - Install sign at round about.	Complete.
Forrestfield Complex Bushland Management Plan	Creyk Park - Install mulch path near southern boundary and along old firebreak.	Limestone paths funding through grants and installed.
Forrestfield Complex Bushland Management Plan	Creyk Park - Install A2 sign at entrances.	Bushpig signs and Dieback signs installed and removed following graffiti.
Forrestfield Complex Bushland Management Plan.	Creyk Park - Install barrier curb across reserve as mowing boundary.	Complete.
Forrestfield Complex Bushland Management Plan	Depot Bushland - Install bollards along rear of bushland.	Incomplete. Large rocks placed to prevent vehicle incursion
Forrestfield Complex Bushland Management Plan	Depot bushland -Install information sign on Owen Rd.	Incomplete.
Forrestfield Complex Bushland Management Plan	Eva and Bill Moore Heathland - Install deep kerb around bushland.	Complete. Post and rail fencing installed as alterative.
Forrestfield Complex Bushland Management Plan	Eva and Bill Moore Heathland - install mulch path where track cuts through reserve.	Incomplete
Forrestfield Complex Bushland Management Plan	Eva and Bill Moore Heathland - Install information sign.	Complete.
Forrestfield Complex Bushland Management Plan	John Dunn Bushland - Install rural fence around bushland.	Compete.
Forrestfield Complex Bushland Management Plan	John Dunn Bushland - Install information sign.	Incomplete.
Forrestfield Complex Bushland Management Plan	Change reserve purposes - See table 1.2 of main document.	Partially complete.

Plan	Recommendation	Implementation status
Kendal Ct Urban Bushfire Management Plan 2002	Establish and maintain low fuel zones/ firebreaks around the boundary of the reserve. Works include firebreak clearing, removal of dead grasses, mowing of perimeter, hand slashing of weeds and targeted weed spraying.	Ongoing. Since 2004, grassy weeds have been treated with herbicide each June. Verges are mowed periodically.
Kendal Ct Urban Bushfire Management Plan 2002	Instigate a "Fire Watch" programme for Kendal Ct Bushland.	Incomplete
Bob Blackburn Flora Reserve Urban Bushland Fire Management Plan 2002	Upgrade the central walk trail to a fire access trail: Supply and install 2 vehicle gates. Construct limestone paths and trim and remove overhanging branches.	Gates and limestone track works complete. Trimming of overhanging branches is ongoing.
Bob Blackburn Flora Reserve Urban Bushland Fire Management Plan 2002	Reduce grassy weed fuel load: Mow weeds, hand slash, targeted weed spraying and removal of dead grass.	Ongoing. Since 2004, grassy weeds have been treated with herbicide each June. Verges are mowed periodically.
Bob Blackburn Flora Reserve Urban Bushland Fire Management Plan 2002	Reduce fuel load in centre of bushland through the manual removal of litter and ongoing monitoring of fuel load by CoA staff.	Incomplete.
Creyk Park Urban Bushland Fire Management Plan 2002	Reduce grassy weed fuel load: Mow weeds, hand slash, targeted weed spraying and removal of dead grass.	Ongoing. Since 2004, grassy weeds have been treated with herbicide each June. Verges are mowed periodically.
Creyk Park Urban Bushland Fire Management Plan 2002	Modify existing path and gate for vehicle access: supply and install 2 vehicle gates, place mulch either side of footpath, trim and remove overhanging branches.	Incomplete
Creyk Park Urban Bushland Fire Management Plan 2002	Install curbing around dieback infected area to deter access.	Incomplete.

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