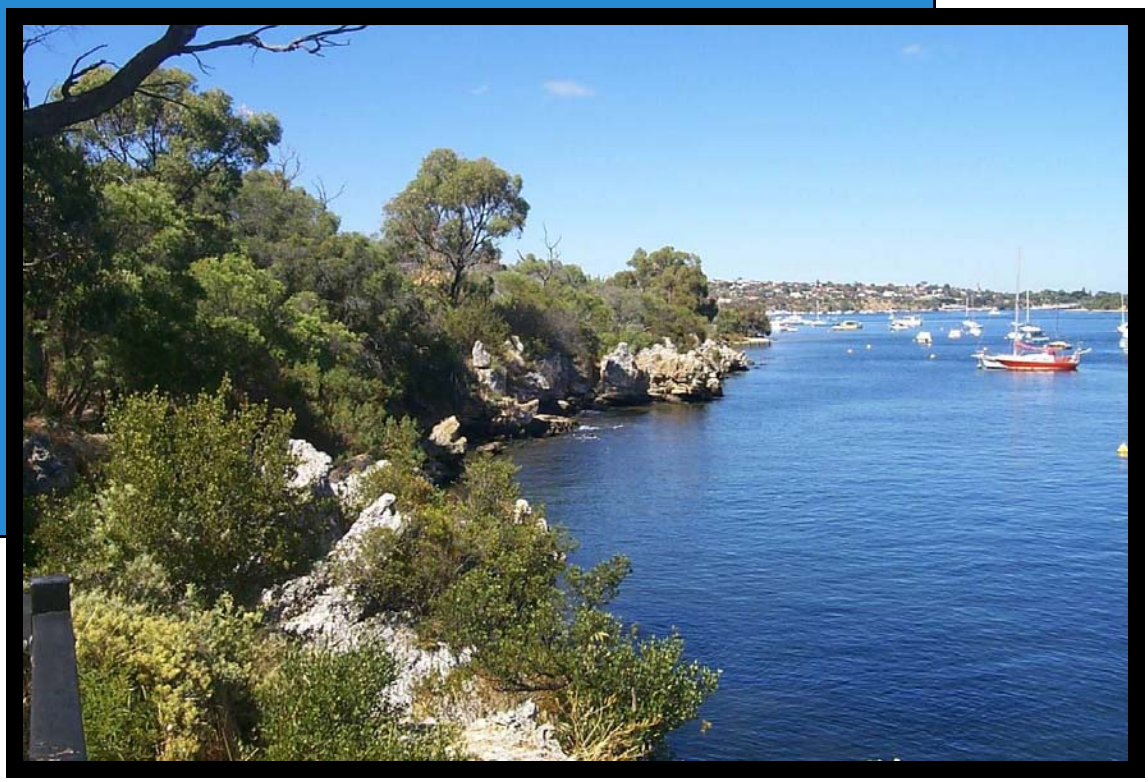

Blackwall Reach and Point Walter Bushland Management Plan

July 2004

City of Melville

EXECUTIVE SUMMARY

This management plan is an update of management plans previously compiled for both reserves (Smith and Smith, 1986; Greening WA Point Walter Group, 1994). Both reserves were remapped to determine current bushland condition, weed infestation, erosion and infrastructure locations. From this remapping the previous recommendations have been updated. Aboriginal heritage issues have also been discussed in this document, having not been discussed in the previous documents, but now considered an important issue in the management of both reserves.

Blackwall Reach Reserve was found to be suffering from increased weed infestation, primarily soursob (*Oxalis* spp.) and various other bulb species such as black flag (*Ferraria crispa*), African cornflag (*Chasmanthe floribunda*), *Lachenalia reflexa*. All of these are aggressive weed species capable of displacing native vegetation. Recommendations are given on the control of this species. Uncontrolled access in areas of the reserve along the shoreline and along the cliff area has resulted in a proliferation of tracks and resultant erosion problems.
Point Walter Bushland was found to have become generally more degraded since the previous survey, possibly due to frequent fires encouraging the proliferation of soursob (*Oxalis* spp.), black flag (*Ferraria crispa*) and lupins (*Lupinus cosentinii*).

Recommendations have been made to manage access and control weeds within both reserves.

KEY RECOMMENDATIONS

1. An ongoing, effective weed control program to be implemented in both Reserves, using a combination of hand removal and chemical control techniques. Contractors should have knowledge of appropriate weed control measures in bushland areas.

2. Immediate removal of small infestations of bridal creeper (*Asparagus asparagoides*) and African cornflag (*Chasmante floribunda*) at Blackwall Reach Reserve.

3. Construction of a boardwalk on the cliff area of Blackwall Reach Reserve where there are currently uncontrolled access and erosion problems.

4. Upgrading of fencing in both Reserves, and ongoing maintenance of fences.

5. Construction of steps with erosion measures undertaken in areas outlined in this Management Plan.

6. The closing off of inappropriate paths in Blackwall Reach Reserve and upgrading of informal bush tracks in Point Walter Bushland.

7. Establishment of nutrient-stripping and seed trap basins planted with sedges and rushes to catch runoff from drains going into Blackwall Reach Reserve responsible for the introduction of weeds and nutrients into the bushland.

8. Rehabilitation of bushland areas with native species after weed control (including the area in front of the Carroll Drive carpark). Rehabilitation to be undertaken with species native to the area. All planting of plants to be grown from local provenance seed.

9. Appropriate signage to be erected in both Reserves. This includes educational signage about the flora and fauna values of the area, signage indicating rehabilitation areas and maps of local walk tracks and foreshore access at the main entrances of the Reserves.

10. Aboriginal heritage issues to be taken into account in any further management actions. One action may be to give consideration to renaming '*Blackwall Reach Reserve*' '*Jenalup Reserve*' in recognition of the significance of the area to Aboriginal people, after adequate consultation with Aboriginal custodians of the area and the general community.

CONTENTS

PART I GENERAL INTRODUCTION

STUDY AREA

Blackwall Reach Reserve, and Point Walter Bushland both comprise parts of Point Walter Reserve (Reserve A4813) gazetted for recreation. It is approximately 20 hectares in size. The remaining 52.7 hectares of Reserve A4813 consists of the Point Walter Golf Course, the Department for Sport and Recreation Camp and the Point Walter Foreshore. The reserve is vested in the City of Melville. It is reserved for Parks and Recreation under the Metropolitan Regional scheme.

For the purpose of this Plan, the reserves are named 'Blackwall Reach Reserve' and 'Point Walter Bushland', however, they have no gazetted names since they are included collectively in Point Walter Reserve.

Blackwall Reach Reserve is bound by Honour Avenue along its eastern boundary, excluding the practice golf fairway, and the Swan River along its western boundary. Houses and the end of Blackwall Reach Parade and its foreshore abut the southern boundary, and the northern boundary joins Point Walter. Point Walter Bushland is bound by Point Walter Recreation and Conference Centre to the north, Honour Avenue on its northern boundary. The junction of Carroll Drive and Honour Avenue form its eastern boundary, and the kiosk and grassed areas of Point Walter form the western boundary.

HISTORY

ABORIGINAL HERITAGE

To the local Aborigines the Blackwall Reach/Point Walter area is known as *Jenalup* or *Dyundalup*. The most sacred part of the area is the cliffs along Blackwall Reach. In aboriginal culture it was traditionally a place for women and children (N. Nannup, pers. comm.). Before white settlement the Beeliar family group (clan) occupied the area. The Beeliar clan is part of the Whadjuk, being one of the 14 language groups, which occupy the Nyungar region in the South-West of WA.

One of the many dreaming trails which run along the Swan River passed through the area now known as Point Walter and Blackwall Reach. The Swan River is highly significant to the Nyungar people, as, in the dreaming, the river was made by the Waugal rainbow serpent. The dreaming trail on the southern side of the river is the Yorga (women's) trail and the men's trail is found on the northern side. The sand bar, which stretches out from the point, is the connection between these two trails (C. Pitulej, pers. comm.).

In the summer months the large variety of plants and animals in the area provided the Aborigines with an abundance of food and other resources such as string made from the native wisteria (*Hardenbergia comptoniana*) and gum from the marri (*Corymbia calophylla* - formerly *Eucalyptus calophylla*).

Currently, tours are run weekly by the Aboriginal Natural Heritage Unit of the Department of Conservation and Captain Cook Tours, where people can learn about the dreaming stories relevant to the area and the use of native plants for bush food.

EUROPEAN HERITAGE

Blackwall Reach Reserve has been Crown land since the late 1800's. Commander L. S. Dawson R. N. Admiralty Surveyor named the area Blackwall Reach in 1896 – probably after Blackwall Reach on the Thames River near Greenwich.

In the early 1900's, the Melville Road Board (now Melville City Council) received complaints regarding the "neglected and unimproved state" of Point Walter. From 1907 to 1912, negotiations ensued with the Minister

for Lands for the Melville Road Board to take control of the reserve.

The Melville Road Board soon decided that land communication with Point Walter was essential since river steamers did not provide an adequate service and the road to Point Walter was "little better than a bush track" (Uren 1975). In 1915 a tram service was established to Point Walter. It was not a successful operation. The service rarely showed a profit except in the summer months (Uren 1975). The tram service did bring Point Walter to life, however. It became a popular picnic spot and restaurants and a dance floor were established.

Old residents recall the tram still running in the early 1950's. It was probably closed down soon after this time. Concrete foundations at the northern end of the reserve are all that remains of a tram stop.

The caves at Blackwall Reach Reserve have been the subject of a number of accounts in newspapers from as early as 1894. Transcripts of these articles are contained in Smith and Smith (1986).

PHYSICAL ENVIRONMENT

GEOLOGY

Both Reserves are situated on the western edge of the Spearwood Dune System. The Swan Coastal Plain consists of a series of coastal dunes, running roughly parallel to the coastline. The Spearwood Dune System is bound to the east by the Bassendean Dune System and to the west by the Quindalup Dune System. Each system has a distinctive geology, vegetation, topography, drainage pattern and soil characteristics (Seddon 1982).

In the Spearwood Dune System, leaching has occurred causing the carbonate to precipitate below to form hard compact limestone. At Blackwall Reach this limestone is exposed at the surface.

One of the most prominent features of the Blackwall Reach Reserve is the limestone cliffs that rise eight metres out of the Swan River. The cliffs have been formed by the eroding processes of the river, which flows from the wide expanse of Mosman Bay into the narrow gap of Blackwall Reach (Gentilli and Serventy 1949). Rainfall has caused the limestone to be deeply attacked physically and chemically producing frequently sharp points and ledges (Gentilli and Serventy 1949).

The soil in the reserve is predominantly brown sand. There is deep yellow sand in the vicinity of the practice fairway. Originally there was probably yellow sand overlying all the brown sand present, but it was blown off to the east over a long period (W. McArthur, pers. comm.).

CAVES

Caves exist in the reserve, with entrances out of the cliffs. They have been formed by an underground stream, which flows through the limestone, gradually eroding away the rock. The caves at Blackwall Reach are the only ones formed by this process in the metropolitan area.

The caves at Blackwall Reach are long (some are longer than 200 metres), low and narrow, averaging about 1 metre in height and width (Rick & Williamson, 1973). In some areas they are probably only 3 to 4 metres below the surface. The surface inside the caves varies from walls and ceilings of jagged rocks to a smooth streambed overlain by mud. Stalactites have formed from seepage of rainwater through the soil above.

BIOLOGICAL ENVIRONMENT

VEGETATION

The vegetation of both reserves is considered regionally significant, as it is one of a very limited number of bushland areas on the Swan Estuary. The Perth's Bushplan Project (Government of Western Australia,

1998), which arose from the System 6 report (DCE, 1983), and has now been renamed Bush Forever (Government of Western Australia, 2000a), is concerned with the identification and protection of regionally significant bushland. Blackwall Reach Reserve and Point Walter Bushland are listed as Bush Forever Site 331 (Government of Western Australia, 2000b). The vegetation present is Floristic Community Type 24, Northern Spearwood Shrublands and Woodlands (Gibson *et al.*, 1994).

BLACKWALL REACH RESERVE

The vegetation was divided into 5 zones in the original management plan (Greening WA Point Walter Group- 1994). As a flora survey was not undertaken as part of the management plan update, these vegetation zones have been used. The vegetation condition was updated (Appendix IV, Figure 1), and this has been taken into consideration when updating descriptions of the vegetation zones.

River Foreshore

The river foreshore contains sedges and rushes such as *Juncus maritimus* and *Lepidosperma gladiatum* (coastal sword sedge). These areas are currently in a good-to-degraded condition. On the banks are tall specimens of *Casuarina obesa* (swamp sheoak), *Agonis flexuosa* (peppermint trees), and *Hardenbergia comptoniana* (native wisteria) and *Acacia cyclops* (red-eyed wattle).

Limestone Cliffs

Scattered throughout and along the eight metre high cliffs is a variety of vegetation adapted to living on limestone and with salt spray. These include *Olearia axillaris* (coast daisy bush), *Rhagodia baccata* (berry salt bush), *Alyxia buxiflora* and *Clematis microphylla* (old man's beard). Due to aggressive weed invasion most of this area is in good-to-degraded condition.

Limestone Heath

The limestone heath vegetation grows on a mixture of limestone outcrops and shallow soil. The heath vegetation includes the richest and most diverse of the vegetation zone in the reserve. Much of the heath vegetation is in good to high condition due to limited weed invasion.

The upperstorey vegetation consists mainly of *Acacia cyclops* (red-eyed wattle), *Dryandra sessilis* (parrot bush) and *Agonis flexuosa*. The understorey consists of such species as *Scaevola holosericea*, *Hakea prostrata* (harsh hakea), *Grevillia thelemanniana*, *Hibbertia racemosa*, *Melaleuca systena* (formerly *M. acerosa*) and *Templetonia retusa* (cockies tongue).

Two areas of heath are particularly species rich with limited invasion by weeds. One area is on a rocky outcrop on the southern edge of the reserve and the other runs along the cliffs in line with the practice golf fairway.

Much of the remaining heath vegetation has been subject to disturbance, mainly trampling around the cliffs. This has resulted in erosion and some invasion of exotics.

Shrubland

In areas dominated by shrubs, the shrub layer is occupied by *Dryandra sessilis* (parrot bush) and *Agonis flexuosa* (peppermint tree) with occasional *Eucalyptus gomphocephala* (tuart), *Banksia attenuata* (slender banksia), *Banksia menziesii* (firewood banksia) and *Banksia grandis* (bull banksia).

The understorey consists chiefly of *Xanthorrhoea preissii* (blackboy), *Macrozamia riedlei* (zamia), *Ptilotus polystachyus* (mulla mulla), *Jacksonia sternbergiana* (stinkwood), *J. furcellata* and *Hakea prostrata* (harsh hakea). Different conditions of this vegetation type exist in the reserve, while some areas are quite degraded; there are several areas that are considered to be in very good condition.

Woodland

The woodland areas vary across the reserve in dominant tree species present and condition. There are generally two main areas of dominance, consisting of tuart (*Eucalyptus gomphocephala*), jarrah (*Eucalyptus marginata*) and marri trees (*Corymbia calophylla).*

The tuart woodlands occur in a variety of locations throughout the reserve. The main areas of tuart are at the southern and northern ends of the reserve. The species is also found around the cliffs and some limestone outcrops, together with peppermint trees. The areas of tuart to the north and south of the reserve are in a degraded condition. There are some magnificent old tuarts in the reserve. However, frequent fires and infestation with the bud weevil (*Haplonys fibialis*) have taken their toll, and many existing trees are in poor health.

The other woodland areas in the reserve are mainly dominated by jarrah and marri with occasional tuart. Aerial photographs taken over the last 30 years show a gradual decline in the tree cover in the woodland area. Some of the areas have only the upper storey of banksias (*Banksia attenuata*, *B. menziesii*, *B. grandis*) and peppermint trees remaining. The decline of the trees is attributable to a high fire frequency, which leaves them vulnerable to insect and disease attack, causes their deterioration and death and is responsible for seedling deaths. There is evidence also of selective felling of trees.

Despite a heavy weed infestation throughout the woodlands, in some areas there are seedlings mainly of jarrah and marri present and a scattered native understorey vegetation. This includes *Macrozamia riedlei* (zamia), *Xanthorrhoea preissii* (blackboy), *Jacksonia sternbergiana* (stinkwood), *J. furcellata*, *Stirlingia latifolia* (blueboy), *Hakea prostrata* (harsh hakea), *Ptilotus polystachyus*, and *Acacia pulchella* (prickly moses) and *Petrophile linearis* (Pixie mops). Some areas are still in good condition.

There have been a number of trees planted in the reserve over the years. These include pines (*Pinus pinaster*) and cotton palms (*Washingtonia filigera*).

POINT WALTER BUSHLAND

The Point Walter Bushland consists of three main habitats, which explains the large diversity of flora. They are:

- The limestone ridge outcropping in several points on the lower slope,
- deep yellow sand above the ridge, which supports a population of acorn banksia (*Banksia prionotes*) and tree smokebush (*Conospermum triplinervium*), both of which are rare, if not absent elsewhere south of the river in the Perth region,
- mixed jarrah/marri woodland higher in the profile. In less disturbed areas there are several orchid species including a rare group of albino fairy orchids *Caladenia latifolia* and several populations of the red spider orchid *Caladenia areicola*.

Point Walter Bushland is very important from a botanical history point of view and has a vital heritage value. Early botanists first collected Couch Honeypot *Dryandra lindleyana* (formerly *D. nivea*) and cottonheads *Conostylis candicans* here and possibly also a tall *Dryandra*, which is a form of Parrot Bush *D. sessilis* and is unnamed at present (*D. aff. sessilis*).

A “Priority One” species, *Cryptandra glabrata*, was collected at Point Walter in 1839 in “sandy woods”. It has not been seen since and is possibly extinct here.

FAUNA

The fauna of Blackwall Reach Reserve was surveyed in 1986 (Smith and Smith, 1986) and that of Point Walter Bushland in 1994 (Greening WA Point Walter Group, 1994). Both lists appear in Appendix II. No further fauna survey work has been undertaken in either Reserve since that time. A new fauna survey should be undertaken along both sections of Blackwall reach and Point Walter to determine any changes in populations of species in the area.

Both reserves are a critical part of bush corridor that extends along the southern side of the Swan River. During bushland mapping, many old and fallen trees that are an important fauna habitat were observed within both reserves. Galahs and Port Lincoln parrots use hollows for nesting and Carnaby's cockatoos feed on parrot bush and other suitable species. Nests of feral European honeybees (*Apis mellifera*) were also observed in Blackwall Reach Reserve in tuart hollows preventing native birds access to these hollows.

COMMUNITY INVOLVEMENT

The community along the foreshore have been active in undertaking many activities to help manage the area over the last 20 years.

The Greening WA Point Walter Group was founded seventeen years ago to manage Point Walter Bushland and was started by Barbara Kernot. The group produced the previous management plan -The Draft Management Plan for Point Walter Bushland- 1994. (Brian Moyle- pers comm.).

This group worked for a number of years in the bushland and achieved some outstanding successes in the area, including the reduction of large infestations of lupins in the area, and some significant revegetation activities in the limestone heathland area. Members also surveyed the flora and learnt much about the ecology of the area. In 1988 the Point Walter project won the Community Section John Tonkin Greening WA Award.

The group had normally planned about six to nine months ahead and recognised that some longer-term aims were needed. It worked with The City of Melville and its staff on an informal basis but felt there was a real need to improve communication between each other and work within an agreed set of objectives. It was for these reasons the original management plan was compiled in 1994. City of Melville now maintains a number of photographs and documents outlining the successes of this group, which ahs been forwarded to the new Bicton Environmental Action Group.

Unfortunately the group disbanded over the course of the years, however group rubbish collection mornings and individual planting and weeding efforts have helped maintain community support and enthusiasm in the area. (B Moyle, peers comm.)

In November 2003, community interest in starting a new group resulted in a successful community meeting in the area to discuss issues affecting the environment and the river from Bicton to Point Walter.

The meeting has resulted in the formation of a new community group and consideration for community projects generated. The groups has formed with the support of the City of Melville and aims to undertake restoration of the area, help with weed control, and also work to prevent further erosion etc in the area. The development of this management plan and a program of activities for the community group will help to focus action and sustain enthusiasm. A successful grant of $6000.00 from Swan Alcoa Landcare Project (SALP) has been provided for 2004 to begin a restoration program with replanting and weed control. This new group is known as the Bicton Environmental Action group.

PART II MANAGEMENT STRATEGY

BLACKWALL REACH RESERVE

NATIVE VEGETATION

The scope of this management plan update did not include resurveying the vegetation present. It appeared the vegetation associations described by Smith and Smith (1986) are still present, however the presence of individual species within these associations has not been determined. It is suggested that a comprehensive flora survey be undertaken to determine whether the species listed in 1986 (Appendix 1, Table 1) are still present, as the increased presence of aggressive weeds may have caused some of these species to become locally extinct. This would assist further in determining priority areas within the reserve.

Strategy

To maintain and enhance native vegetation and flora values of Blackwall Reach Reserve.

Recommendation

- Carry out an adequate flora survey, in order to update previous-established species lists, and to verify whether local extinction of species has occurred since the last management plan in 1986.

WEEDS

Since the previous Management Plan, bulbous weeds have become dominant in the understorey of most of the Reserve. Soursob (*Oxalis* spp.), Soldier Boys (*Lachenalia reflexa)* and black flag (*Ferraria crispa*) are the dominant aggressive bulbous weeds (Appendix VI, Figure 4). It appears that other different types of bulb species are present, however surveying during the flowering season of these species would be required for accurate identification of these species. For this reason the weed species list cannot be considered complete. Common names given are from Hussey *et al*. (1997).

In terms of management, it is important to control small weed populations and high priority, highly invasive weeds first. Areas of good condition should also have weed control undertaken as a priority (Safstrom, 1998), with weed control undertaken in a manner that allows for natural regeneration.

A small, but significant infestation of bridal creeper (*Asparagus asparagoides*) was discovered along the cliff tops (Appendix VI, Figure 4). This should be considered a very high priority for removal. If it is allowed to establish it has the ability to smother the remaining native vegetation and is extremely hard to control once established. At the moment the infestation is still small enough to be removed by hand.

Similarly, relatively small infestations of *Pelargonium capitatum* and African cornflag (*Chasmanthe floribunda*) are present (Appendix VI, Figure 4), which can be controlled with a combination of hand pulling and spot spraying, and ongoing removal of any future infestations.

Areas immediately beside every track are now considered degraded (Appendix IV, Figure 1). Some species of the weeds present in these areas could be considered non-aggressive such as Guildford grass (*Romulea rosea*), *Ursinia anthemoides* and blowfly grass (*Briza minor*).

Annual veldt grass (*Erharta longiflora*) is also a problem in most areas of the Reserve (Appendix VI, Figure 5). Perennial veldt grass is also a problem in some of the woodland areas. Fountain grass (*Pennisetum*

setaceum) is present in southern areas of the Reserve within the heath vegetation, and has most likely entered the reserve as a garden escapee. While blanket spraying may be required to control the annual veldt grass, the populations of perennial veldt grass and fountain grass could be considered small enough for spot spraying treatment.

Objective

To control aggressive weed species in Blackwall Reach Reserve.

Recommendations

- Implement an ongoing, effective weed control program, using a weed control contractor with knowledge of appropriate weed control measures in bushland areas.
- immediate hand removal of bridal creeper (*Asparagus asparagoides*), *Pelargonium capitatum* and African cornflag (*Chasmanthe floribunda*) populations.
- take measures to control access to cliff area to minimise the risk of spreading bridal creeper.
- establish seed traps at the end of the two major drains in the Reserve, as these drains appear to be the major source of African cornflag invasion.
- appropriate weed control, such as spot spraying and hand pulling, in areas of good-to-very good condition as a priority, and to eradicate small populations of highly invasive weeds, including lupins *(Lupinus cosentinii)*.

REHABILITATION/ PLANTING

Some areas of bushland considered to be significant but degraded, such as the stand of salt sheoak *Casuarina obesa* along the northern shoreline, are suitable for restoration (Appendix IV, Figure 1). In this area there is the capacity, with appropriate weed control, to rehabilitate the ground layer of sedges, a few areas of which remain. It would be ideal if the natural vegetation band of *Lepidosperma gladiatum* and *Juncus maritimus* could be restored along the foreshore. Once restored these areas would have the ability to minimise further weed invasion in these areas, prevent further erosion and provide fauna habitat.

As fire is not to be used as part of ongoing management, supplementary plantings of native species that require fire for regeneration is required. This would include species such as *Acacia cyclops*, *A. saligna* and *A. rostellifera*.

It appears previous replanting efforts have not been undertaken with ongoing weed control. This had resulted in seedlings now being smothered and having to compete for light and nutrients.

Objective

To ensure appropriate, successful rehabilitation/planting is undertaken within Blackwall Reach Reserve.

Recommendations

-Design a strategy for weed control and planting in Blackwall Reach Reserve for a 5-year period.
-Ongoing weed control to be implemented as part of any rehabilitation or planting effort.
-rehabilitation or planting to be only undertaken where natural regeneration is not taking place and the bushland is in degraded condition.
-Collect provenance seed stock from this reserve as part of ongoing restoration for the area.
- local provenance seed to be used for plantings or direct seeding in the bushland. If the origin of the material is in doubt, it should not be used.

ACCESS

The most prominent established tracks through Blackwall Reach Reserve are the dual-use pathway, the original tram track pathway, a track that connects the two tracks with the practice golf fairway and two tracks that lead to the cliffs from the car park at the southern end (Appendix V, Figure 3).

There is a number of uncontrolled access areas throughout the whole of the reserve, where tracks have been formed by people taking shortcuts through the bushland, from either one track to another track, or from the dual use path to the cliff and foreshore area. These tracks are mainly concentrated to the foreshore and cliffs, west of the dual-use pathway. Other tracks have been formed between the two main north-south tracks where there are no fences to prevent people from taking a shortcut between the two tracks.

High usage tracks are mainly those that access the foreshore and cliff areas and due to the sloping topography, erosion is present on almost all these tracks. These tracks often lead to the edge of the cliffs and where erosion is present, the ground is often uneven and slippery.

Some established tracks are considered unnecessary and could be closed and rehabilitated to help consolidate some good areas of bushland. Established tracks that should be closed off include:

- The track that connects the practice golf fairway with the original tram track,
- The northern end of the track parallel with the dual-use track, especially in areas where there are only a few metres between both tracks. In these areas there is no need for two tracks, and the current situation only encourages people to cut between the two tracks, especially in areas where there is a seat on the dual use path.

Objective

Minimise the use of non-established access points (informal tracks) throughout the bushland.
Stop further spread of erosion along tracks and increase safety along cliff area.

Recommendations

- close, fence off and rehabilitate uncontrolled bush tracks. The northern bushland at the end of the foreshore, the recreational foreshore area at the northern end off the cliffs and the bushland fringing the cliffs on the west side of the dual-use track are high priority areas.
- erect a fence on either side of the dual use path, and ensure adequate fence maintenance.
- close off and rehabilitate some established pathways to stop further degradation of the bushland.
- establish signage to explain why areas are fenced off for rehabilitation; this is essential for public education and to help create ownership of the bushland.
- regularly maintain track surfaces to prevent erosion, with crushed limestone for instance.

EROSION/ DRAINAGE

Unrestricted movement of water in several areas of the reserves has, and continues to cause erosion problems. (Appendix V, Figure 3). The unrestricted movement of water is eroding the soil in areas of the bushland that have been degraded through uncontrolled access. Serious erosion is also present immediately adjacent to steps that have been made leading to the foreshore reserve. This is due to uncontrolled access from bikes causing gullies immediately adjacent to the steps. This erosion has partly been controlled by the installation of geofabric in 2001- 2002, however more is required. Rainfall in the future will worsen the erosion and cause safety problems. The sloping track leading from the car park to boardwalk 1 (Appendix V, Figure 3) is also experiencing erosion. The installation of more geofabric will help to reduce this even further. It is suggested that passive solutions, such as creating diversion drains, at appropriate places along

the dual use path will also help minimise future erosion problems.

Alterations to the two major drains would also help minimise erosion. A retention basin could be built adjacent to the drain next to the practice fairway to retain water during large rainfall events. The basin should be planted with nutrient stripping plants, which would assist in reducing the excess nutrients entering the reserve and minimise the drain being a source of weed introduction. It would also provide ideal frog habitat.

Objective

To repair eroded areas and minimise further erosion.

Recommendations

- fence off and rehabilitate established bush tracks.
- install diversion drains along the highly used established tracks that are experiencing erosion, ensuring minimum impact on surrounding bushland.
- fence off and rehabilitate both sides of the existing steps which lead from the dual-use park to the recreational foreshore to prevent further erosion, and extend the steps to the foreshore area.
- install a retention basin adjacent to the drain next to the practice fairway, with appropriate planting of nutrient stripping plants.

INFRASTRUCTURE

The reserve has three boardwalks along the limestone cliffs, where erosion had previously been identified as a problem. These boardwalks appear to have reduced the erosion in these areas, and controlled access to some extent. One other area has been identified for which the construction of another boardwalk is highly desirable (Appendix V, Figure 3), because of uncontrolled access and erosion problems.

Seating is positioned along the dual-use track, the southern foreshore and at the entrance points where signage is located (Appendix V, Figure 3). Wire fencing on bollards is located along the western edge of the dual-use track, along the eastern edge of the track parallel to the dual use path, and along both sides of the original tram track. Fencing and bollards are found along the eastern side of the reserve. Areas appropriate for additional fencing have been identified (see Access).

In terms of signage, there are two shelters with educational material erected at both ends of Blackwall Reach Reserve. Other signage is located within the reserve, however most of the signage has a run down appearance and needs updating. There is some evidence of previous signage being destroyed by vandals. All signage present had been subject to vandalism and occasional graffiti. There is only one ‘No Diving’ sign throughout Blackwall Reach Reserve.

The sloping ground near and under the current signage at the entrance to the reserves is a hazard area in winter, it is suggested the area be upgraded to make them less slippery.

Objective

To protect the bushland whilst enhancing the public’s enjoyment of the reserve

Recommendations

- install another boardwalk in the area recommended in Appendix V.
- locate rubbish and recycling bins on the recreational foreshore reserve.
- maintain steps leading to foreshore reserves where erosion is occurring
- place additional fencing along tracks and around areas being rehabilitated, and maintain all fences.

Objective

To offer the public safe and educational signage

Recommendations

- Create and erect signage that provides education and promotes interaction with the surrounding environment, eg, explaining why we need to rehabilitate the bush.
- Maintain all signage.
- level off ground and possibly concrete the area under current signage with shelters.

POINT WALTER BUSHLAND

WEEDS

For the purpose of this Management Plan, management recommendations of the vegetation will be in relation to the Management Areas described in Greening WA Point Walter Group (1994). Many of the original descriptions for these management areas still apply, however they have been updated where necessary. The previous recommendations for these areas are listed in Appendix VII. Many of the original recommendations made are still applicable as they are yet to be implemented. Overall recommendations for the entire area taking into account recent bushland condition (Appendix IV, Figure 2) and weed mapping (Appendix VI, Figures 6 & 7) have been made.

Management Areas

When the Point Walter Group first started, the group realised it would not be able to cover the whole area. Work started for high priority actions at the time eg. pulling lupins. The management areas then evolved with the different projects undertaken. The areas are shown on a map in Greening WA Point Walter Group (1994). These areas are located in **Appendix- Figure 4A-** Point Walter Map of Sections for management and vegetation condition.

Area One

This area had been degraded in the past by aggressive grasses encroaching on the bushland from the eastern edge. It was burned in 1984 and again in 1992. It was the worst affected area for lupins and the open area below the carpark in Carroll Drive is badly affected by couch grass. It is still badly degraded.
Immediately in front of the carpark in what should be the "show piece" of the reserve at present is a weed infested slope used by people to dump rubbish and garden refuse. Hours of work have been expended on this site, weeding, planting and nurturing small shrubs and herbaceous plants native to the bushland.
During that time destruction has occurred by the spreading of sand containing weed seeds, fire, the digging of a trench for electric cables (Spring 1993) and mowing inside the log barrier. The carpark affords good views of the river and small to medium shrubs only are recommended for replanting.

Area Two

This area was a fairly undisturbed area in 1994 containing a diverse and rich flora, especially small shrubs and herbaceous species. The acorn banksia (*Banksia prionotes*) and tree smokebush (*Conospermum triplinervium*) are more prevalent in this area than well below the brick path in area 3. After the fires in January 1992 many smokebush plants were killed. They resprouted only to die from lack of water. This area is now considered to be in a good-to-degraded condition, probably due to frequent fires since the last management plan was produced (B. Moyle pers. comm.).

Area Three

At the top of the slope, below the brick path, the vegetation is generally good except for the weeds alongside the path. On the lower slope there are outcrops of limestone and some parts are degraded. Attempts to replant this area with species such as *Templetonia retusa* were not successful. This area is now rated as good-to-degraded, with large populations of soursob (*Oxalis* spp.) and black flag (*Ferraria crispa*) present.

Area Four

This part of the bushland has been severely degraded. The lower slope had been revegetated successfully by the Greening WA Point Walter Group. This area is now being smothered by aggressive weeds.

Area Five

This area has been revegetated with mixed success. Olive trees have become weeds infesting the lower edge. This area is now rated as good-to-degraded.

Area Six

This area contains the least disturbed and probably most species-rich habitat. It is an important area linking to Areas 4 and 5. As this is the best piece of bushland in the Point Walter Bushland the Group had been concentrating in this area in accordance with the 'Bradley Method' (Bradley 1988). This is particularly warranted in view of the limited numbers of active members who are involved in any weeding program. *Pelargonium* has been eliminated and hand weeding has very significantly improved the status of the bush.

Overall objective

To control aggressive weed species in Point Walter Bushland.

Overall Recommendations

- Implement an ongoing, effective weed control program, using a weed control contractor with knowledge of appropriate weed control measures in bushland areas.

- Undertake hand weeding in areas of very good condition using the 'Bradley Method'.

- Hand pull small populations of *Pelargonium capitatum* and lupins (*Lupinus cosentinii*) before they become a management problem.

Overall objective

To protect and enhance remaining native vegetation at Point Walter Bushland.

Overall Recommendations

- minimise the risk of fire in the reserve to reduce the rapid rate of degradation of the reserve.

- rehabilitate the area in front of the Carroll Drive carpark with appropriate species.
- erect appropriate fencing and bollards to deter garden refuse dumping.
- erect appropriate signage to inform the public of the rehabilitation program and erect a 'No Dumping Rubbish or Garden Refuse' sign.

REHABILITATION/PLANTING

Some areas of bushland within Point Walter Bushland are considered to be degraded and in need of rehabilitation (Appendix IV, Figure 2). Once restored, these areas should have minimal further weed invasion and erosion and provide for fauna habitat.

One of the key areas for rehabilitation is in front of the Carroll Drive carpark. This was a previous recommendation that hasn't been implemented, but should be considered a high priority. At the moment, this area is covered with various aggressive weed species, is subject to rubbish and garden refuse dumping and has a generally run-down appearance. Weed invasion in this area has also led to the degradation of bushland in adjacent areas.

It appears previous replanting efforts have not been undertaken with ongoing weed control. This had resulted in seedlings now being smothered and having to compete for light and nutrients.

Objective

To ensure appropriate, successful rehabilitation/planting is undertaken within Blackwall Reach Reserve.

Recommendations

- Undertake an urgent program to rehabilitate the area immediately in front of the carpark. An improved appearance, it is hoped, would deter rubbish dumpers. To avoid further soil disturbance, the laying of a weed mat is suggested. This should be done in early autumn; replanting can be done into the mat.
- undertake rehabilitation and planting only where natural regeneration is not taking place and the bushland is in degraded condition.
- implement ongoing weed control as part of any rehabilitation or planting effort.
- use only local provenance seed for planting or direct seeding in the bushland. If the origin of the seed material is in doubt, it should not be used.

ACCESS

The dual use pathway is the main track which runs through Point Walter Bushland, with two smaller established pathways leading from the dual use pathway to the car park on Carroll Avenue and to Honour Avenue. The two smaller pathways are in a degraded condition and require upgrading.

There are many bush tracks throughout the reserve, especially on the downward slope towards Honour Avenue. These tracks are potential erosion problem areas. It is suggested one consolidated track is constructed from the main track down to Honour Avenue.

Objective

Minimise the use of non-established access points (tracks) throughout the bushland
Stop further spread of erosion along tracks

Recommendations

- fence both sides of the dual use pathway to limit human impact in the surrounding bushland.
- close and fence off the uncontrolled access track on the downward slope to the toilets on Honour Avenue or construct adequate steps, to promote natural rehabilitation of the area and halt the onset of erosion.

EROSION/DRAINAGE

Point Walter Bushland is prone to future erosion because of the sloping topography of the area. Some areas have become denuded of vegetation due to uncontrolled access. Many tracks are used as short cuts between the toilets on Honour Avenue and the car park on Carroll Avenue. No drain outlets appear to arrive directly into the Reserve.

Objective

To halt the onset of erosion on bush tracks.

Recommendation

- rehabilitate and replant area to stabilise the soil and reduce erosion, especially between the main tracks and the toilets on Honour Avenue.

INFRASTRUCTURE

The seat located on section 2 along path was located in memory of Barbara Kernot (Brian Moyle Pers comm.) needs repairing and upgrading.

Another sign is located adjacent to the Carroll Avenue carpark and advises against dumping of rubbish and lighting of fires that appears to be ineffective. A bollard is missing allowing vehicles to dump rubbish directly into the Reserve.

Fencing is located along the southern and western boundaries of the bushland. This fencing delineates the bushland from the recreational areas of Point Walter Bushland and appears to be well maintained. Bollards are located along Carroll Avenue.

Objective

Repair and maintain existing infrastructure.

Recommendations

-Repair historical seat form section 2.
-Repair existing signage as required.
-Ensure the area has signage, which ties in to theme for area.

GENERAL

FAUNA

Various bird species use both reserves. A study is currently being undertaken by Birds Australia, the results of which will contribute to this management plan, for future management.

It is important to provide suitable habitat for fauna. The frequent fires would also have an adverse affect on fauna such as small reptiles and frogs. The large trees remaining in the reserves will currently provide habitat for a large number of insects, birds and reptiles. Protection of these remnant trees, including the Tuart will help to maintain protection for local fauna in the area. Long term revegetation of more tree species and also

shrub habitat will also ensure fauna are present in the area.

Objective

To ensure suitable habitat for fauna present in both reserves. Recreate habitat when possible.

Recommendations

-Undertake a fauna survey of Blackwall Reach and Point Walter reserve to update information for fauna management.
-Include the Birds Australia bird survey in the management of this reserve.
- Maintain and enhance both Reserves in such a way that it provides food, shelter and suitable habitat for native fauna.
- Protect and revegetate with more large trees and also shrub habitat for fauna to utilise.
- Avoid removing dead trees and wood unless absolutely necessary for safety reasons.

PEST FAUNA

With the proximity to houses and the urbanisation of this area of the river, both Blackwall Reach and Point Walter are inundated with various pest fauna species. Species of concern for management of the area are rabbits, foxes, dogs and cats.

Rabbits in the area eat seedlings planted and also undermine tree roots and rocks where they develop burrows. Rabbit control is limited to undertaking surveys of burrows and or protection of revegetation through tree guards. Poisoning, where possible, is an option, however consideration for community use and safety is always of paramount importance. This issue could be investigated if a rabbit survey reveals the problem to be extensive and that without removal , successful management of the area is detrimentally affected.

Fox dens are present in the area, and the City of Melville recently undertook the removal of 3 foxes by tracking and cage trapping and offsite disposal. The area is inundated with warrens and unless vigilance is maintained, foxes will return to the area from locations nearby. A cross council survey and control program should help to make sure foxes are limited in the area.

Dogs are not allowed within Blackwall Reach and Point Walter reserve, the entire area is listed as a conservation and recreation reserve. Dogs in bushland cause problems with introducing weeds and nutrients into the area through their faeces and this can also be unsightly for visitors in the area. Dogs off leads do occasionally roam into the area- these should be discouraged through ranger vigilance, and also more community education on the importance of protection of native flora and fauna without possible negative impacts of dogs.

It is clear that cats, which can wander from nearby residences, as well as being feral, would exist in this area, because of the proximity to houses and urbanisation. Cats hunt local fauna such as lizards, frogs and birds. The City of Melville currently has no control over cats in the area, however education with nearby residences to try and deter owners from allowing their cats to wander may help reduce their impact on the bushland. Provision of decent habitat for native species to hide may help to also reduce cat killing in the area. Elimination of fox dens from the area will likely lead to an increase in feral cats in the area. The removal of these animals thus needs to be a planned approach with follow-up surveys to determine current numbers and possible impacts on the area.

Strategy

To regularly survey impact of feral animals on Blackwall Reach and Point Walter and try to minimise negative impacts of the animals on bushland management.

Recommendations

-Regularly undertake a feral fauna survey of Blackwall Reach and Point Walter reserve to update information for fauna management.
-control foxes through survey and removal on a regular basis.
-Control dogs and cats in the reserve by enforcement and eduction of the community
- minimise the impact of rabbits in Blackwall Reach and Point Walter by using tree guards when revegetating.

FIRE

Fire suppression is the current policy in all urban bushland areas, including Kings Park and Bold Park, but has not been able to prevent fire. Frequent fires have changed to composition and structure of the bushland in both reserves. The dense layer of exotic species promoted by fire restricts the successful recruitment of the larger shrub and tree species. Fires also kill small seedlings, preventing recruitment of new plants.

To avoid a change in the structure of the bushland, native shrub and tree species should be included in future replanting programs.

Strategy

To continue a fire exclusion policy within both reserves such that conservation values are retained and enhanced.

Recommendations

- prevent wildfires through regular surveillance of the area to control the deliberate setting of fires, especially at high-risk times, such as summer.
- reduce intensity of the wildfire through prior adequate weed control measures.
- place adequate signage within both reserves, to educate the public of the affects of frequent fire on bushland.

PUBLIC AWARENESS/SIGNAGE

It is important for public awareness to be improved to lead to a greater appreciation of the value of the Reserves. This awareness would hopefully decrease the amount of rubbish dumping and fires in the future, as the public understands the effect of this behaviour on the bushland.

Tours within the Reserves are run weekly by the Aboriginal Natural Heritage Unit of the Department of Conservation and Captain Cook Tours (soon to be run by a local aboriginal group). It is an important opportunity for both local people and tourists to learn more about the aboriginal culture of the area. It is desirable that future management involves liaising with the group leading the tours as they have a thorough, long-term knowledge of the area.

Strategy

To improve public awareness of both Reserves.

Recommendations

- improve signage to educate the public on the values of the Reserves.
- Continue to support the newly formed Friends group.
- gather information on Aboriginal land usages and heritage sites and liaise with the group running the weekly tours of the Reserves in future management decisions.
- develop public education of Aboriginal history in the area.

MONITORING

Monitoring is required to assess the success of the management plan and implement changes if necessary. There are two types of monitoring that can be undertaken:

- Regular, ongoing monitoring of the activities implemented under the management plan for adherence and effectiveness
- An overall review of the entire management plan at the completion of implementation for effectiveness of the implemented measures.

Regular ongoing monitoring is to be undertaken after such tasks as upgrading of fencing, to monitor whether it is successful in controlling access, and also for the maintenance of fences.
Regular monitoring is required to determine the success of weed control and determine the success of rehabilitation.

Objective

To monitor the implementation of the management plan to record progress and assess success.

Recommendations

- determine the effectiveness of weed control and rehabilitation activities, through weed mapping once a year, preferably using the resources of a 'Friends' group, to encourage awareness of weed problems and effectiveness of different control methods.
- determine the effectiveness of erosion control efforts and target any further erosion problems as they are discovered.

MANAGEMENT STRATEGIES FOR IMPLEMENTATION
Blackwall Reach and Point Walter Bushland

STRATEGY	TIME	RESPONSIBLE PARTY	CAPITAL OR MAINTENANCE BUDGET	COST
Continue to support the newly formed Friends group.	Ongoing	COM	In house	In house
Avoid removing dead trees and wood unless absolutely necessary for safety reasons	Ongoing	COM	Maintenance	To be determined
Control dogs and cats in the reserve by enforcement and eduction of the community	Ongoing	COM	Maintenance	$2000.00 signage etc
Minimise the impact of rabbits in Blackwall Reach and Point Walter by using tree guards when revegetating	Ongoing	COM	Maintenance	$1200.00 tree guards
Prevent wildfires through regular surveillance of the area to control the deliberate setting of fires, especially at high risk times, such as summer	Ongoing	COM and Friends to keep an eye	Maintenance and general visitation	No cost
Improve signage to educate the public on the values of the Reserves	Ongoing	COM	Maintenance	As above
Gather information on Aboriginal land usages and heritage sites and liaise with the group running the weekly tours of the Reserves in future management decisions	Ongoing	COM	Maintenance	IN house costs
Develop public education of Aboriginal history in the area	Ongoing	COM	Capital	To be determined
Design a strategy for weed control and planting in Blackwall Reach Reserve for a 5-year period.	This plan	COM in house	Maintenance	In house
Carry out an adequate flora survey, in order to update previous-established species lists, and to verify whether local extinction of species has occurred since the last management plan in 1986.	Year 1	COM to coordinate a consultant	Capital	$1500.00
Immediate hand removal of bridal creeper (*Asparagus asparagoides*), *Pelargonium capitatum* and African cornflag (*Chasmanthe floribunda*) populations.	Year 1	COM to organise CVA or staff to undertake	Maintenance	$550.00
Locate rubbish and recycling bins on the recreational foreshore reserve.	Year 1	COM to organise	Maintenance	$800.00
Create and erect signage that provides education and promotes interaction with the surrounding environment, eg, explaining why we need to rehabilitate the bush	Year 1	COM	Capital	$5000.00

Repair historical seat form section 2. Repair existing signage as required.	Year 1-2	COM	Capital	$250.00
Level off ground and possibly concrete the area under current signage with shelters	Year 1	COM	Capital	$4000.00
Include the Birds Australia bird survey in the management of this reserve	Year 1	COM to organise with Birds Australia	Capital or grant $	Free at this stage
Regularly maintain track surfaces to prevent erosion, with crushed limestone for instance.	Year 1, 3 and 5	COM to coordinate	Maintenance	$5000.00
Control foxes through survey and removal on a regular basis	Year 1, 3 and 5	COM and consultant	Capital	$2000.00
Regularly undertake a feral fauna survey of Blackwall Reach and Point Walter reserve to update information for fauna management	Year 1.3 and 5	COM and consultant	Capital?	$1000.00
Establish seed traps at the end of the two major drains in the Reserve, as these drains appear to be the major source of African cornflag invasion.	Year 1-2	COM	Capital	$1000.00
Take measures to control access to cliff area to minimise the risk of spreading bridal creeper.	Year 1-2	COM- erosion control and fencing?	Maintenance	$2000.00
Establish signage to explain why areas are fenced off for rehabilitation; this is essential for public education and to help create ownership of the bushland.	Year 1-2	COM to coordinate	Maintenance	$6000.00
Rehabilitate the area in front of the Carroll Drive carpark with appropriate species	Year 1-2	COM and Friends	Maintenance	$800.00 plants guards etc
Erect appropriate signage to inform the public of the rehabilitation program and erect a ‘No Dumping Rubbish or Garden Refuse’ sign	Year 1-2	COM	Maintenance	
Undertake an urgent program to rehabilitate the area immediately in front of the carpark. An improved appearance, it is hoped, would deter rubbish dumpers. To avoid further soil disturbance, the laying of a weed mat is suggested. This should be done in early autumn; replanting can be done into the mat	Year 1-2	COM and Friends	Maintenance	$800.00 jute mat etc

Close, fence off and rehabilitate uncontrolled bush tracks. The northern bushland at the end of the foreshore, the recreational foreshore area at the northern end off the cliffs and the bushland fringing the cliffs on the west side of the dual-use track are high priority areas.	Year 1-2	COM to coordinate with help from Community group	Maintenance	$6000.00 yearly
Close off and rehabilitate some established pathways to stop further degradation of the bushland.	Year 2	COM to coordinate	Maintenance	$5000.00
Maintain steps leading to foreshore reserves where erosion is occurring	Year 2	COM to review	Maintenance	$2000.00
Undertake a fauna survey of Blackwall Reach and Point Walter reserve to update information for fauna management	Year 2	COM to organise consultant	Capital	$2000.00
Erect a fence on either side of the dual use path, and ensure adequate fence maintenance	Year 2-3	COM to coordinate	Capital	$12000.00
Install diversion drains along the highly used established tracks that are experiencing erosion, ensuring minimum impact on surrounding bushland	Year 2-3	COM to coordinate, CVA team?	Maintenance	$5500.00
Install another boardwalk in the area recommended in Appendix V	Year 2-3	COM to review	Capital/grant money	$15000.00
Place adequate signage within both reserves, to educate the public of the affects of frequent fire on bushland	Year 2-3	COM	Maintenance	$3500.00
Fence off and rehabilitate established bush tracks	Year 2-4	COM to coordinate	Maintenance	$10000.00
Install a retention basin adjacent to the drain next to the practice fairway, with appropriate planting of nutrient stripping plants	Year 3	COM to coordinate	Capital	$8000.00
Close and fence off the uncontrolled access track on the downward slope to the toilets on Honour Avenue or construct adequate steps, to promote natural rehabilitation of the area and halt the onset of erosion	Year 3-4	COM	Maintenance	$8000.00
Appropriate weed control, such as spot spraying and hand pulling, in areas of good-to-very good condition as a priority, and to eradicate small populations of highly invasive weeds, including lupins *(Lupinus cosentinii).*	Yearly	COM to coordinate or contractor to oversee	Maintenance	$4500.00 (2 weeks CVA intensive)
Implement an ongoing, effective weed control program, using a weed control contractor with knowledge of appropriate weed control measures in bushland areas	Yearly	COM to coordinate or contractor to oversee	Maintenance	$3500.00

Rehabilitation or planting to be only undertaken where natural regeneration is not taking place and the bushland is in degraded condition.	Yearly	COM	Maintenance	In house-bushland is not naturally regenerating
Local provenance seed to be used for plantings or direct seeding in the bushland. If the origin of the material is in doubt, it should not be used.	Yearly	COM to organise seed collection	Maintenance	To be determined yearly
Collect provenance seed stock from this reserve as part of ongoing restoration for the area.	Yearly	COM to coordinate	Maintenance	To be determined yearly
Undertake hand weeding in areas of very good condition using the 'Bradley Method'	Yearly	COM staff and Friends group	Maintenance	$500.00 tools etc
Hand pull small populations of *Pelargonium capitatum* and lupins (*Lupinus cosentinii*) before they become a management problem	Yearly	COM staff and or contractor	Maintenance	$500.00 tools etc
Rehabilitate and replant area to stabilise the soil and reduce erosion, especially between the main tracks and the toilets on Honour Avenue	Yearly	COM and Friends	Maintenance	$1000.00
Protect and revegetate with more large trees and also shrub habitat for fauna to utilise.	Yearly	COM and Friends	Maintenance	Ongoing
Reduce intensity of the wildfire through prior adequate weed control measures	Yearly	COM	Maintenance	As above (weeds)
Determine the effectiveness of weed control and rehabilitation activities, through weed mapping once a year, preferably using the resources of a 'Friends' group, to encourage awareness of weed problems and effectiveness of different control methods	Yearly	COM to organise, train, help form volunteers	Maintenance or grant money	$2500.00 training
Determine the effectiveness of erosion control efforts and target any further erosion problems as they are discovered	Yearly	COM	Maintenance	In house costs

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