City of Nedlands

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Point Resolution Management Plan 2013—2018

Final Adopted 25 March 2014

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SUMMARY

This section of the City of Nedlands Natural Areas Management Plan 2013 - 2018 is dedicated specifically to the management of the bushland at Point Resolution. Detailed information that relates to all natural areas within the City such as mapping methodology, rehabilitation, environmental weed control, climate change, geomorphology and soils, planning information, interpretation, priority flora and fauna, fire management, community involvement, access and feral animal management has been detailed on pages 1 – 76 of the Natural Areas Management Plan 2013 - 2018.

The Point Resolution Management Plan 2013 – 2018 has drawn heavily from the following documents:

- The Point Resolution Reserve Management Plan (Ecoscape, 1991),
- The Nedlands Foreshore Bushland Reserves Management Plan 2003–2009 (Ecoscape, 2003),
- Weed Mapping Point Resolution and Birdwood Parade (Ecoscape, 2007); and
- Natural Area Initial Assessment - Point Resolution (Orsini, 2008);

A five year Management Plan has been developed that provides management actions and strategies for the conservation and restoration of Point Resolution. A summary of key actions for Point Resolution are listed below.

Table 1: Summary of Point Resolution Management Actions 2013 – 2018

ACTIONS	
BUSHLAND BOUNDARIES	
1.	Manage Point Resolution on the basis three zones.
2.	Focus management on Zones 2 and 3 as a priority.
REHABILITATION	
3.	Continue to work closely with the Swan River Trust to rehabilitate degraded sites.
4.	Use the Swan River Trusts Best Management Practises as a guide for restoration when undertaking rehabilitation of degraded foreshore and embankment areas.
5.	Focus rehabilitation on *Good* to *Very Good* bushland condition areas as a priority.
6.	Use Jute matting or geofabric on steep embankment and foreshore areas.
7.	Undertake annual maintenance of past Swan River Trust funded rehabilitation sites.
8.	Undertake annual maintenance of the bushland edges adjacent to parkland areas and Zones 2 and 3.
9.	Maintain and monitor plants found in low abundance in Zone 2 and only revegetate this Zone with similar species.
10.	Maintain current views when rehabilitating the bushland edges and parkland areas.
11.	Consider delineating parkland areas with low garden curbing if parts of the parkland area are revegetated.
12.	Do not revegetate the parkland area on the western side of the carpark.
13.	Retain 3 Olive trees that have heritage value within Point Resolution.
REVEGETATION	
14.	Work with local nurseries to grow species found in low abundance.
15.	Use only plant species for rehabilitation if they would have naturally occurred on site such as those found on the Mount Eliza Escarpment at Kings Park.
16.	Consider specific conditions (such as the need to restrict access and slope stability) in developing plant lists for rehabilitation sites.

WEED CONTROL	
17.	Continue to control the following weeds as a high priority: Geraldton Carnation Weed, Bridal Creeper, Perennial Veldt Grass, One-leaf Cape Tulip, African Cornflag, Black Flag, Freesia, *Raphanus raphanistrum*, *Lupinus* sp and *Pelargonium capitatum.*
18.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
19.	Monitor, control and document the distribution of new invasive weeds as they arise.
20.	Remove juvenile Olive seedlings as they emerge.
21.	Undertake ongoing maintenance of weeds in restoration sites.
22.	Control priority weeds in accordance with management notes detailed in Appendix 4.
MONITORING	
23.	Monitor, control and document the distribution of new invasive weeds as they arise.
24.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
25.	Undertake annual monitoring and control of *Acacia longifolia*, Coast Teatree, African Boxthorn, Brazilian Pepper, Geraldton Wax, *Lantana camera*, Giant Reed, Sweet Pea and Olive trees to ensure they do not spread or reestablish.
FIRE MANAGEMENT	
26.	Undertake annual management of Sweet Pea and Perennial Veldt Grass to reduce fuel loads.
NATIVE ANIMALS	
27.	Undertake ongoing surveying of native fauna if resources allow.
28.	Minimise fires that may destroy tree hollows.
29.	Retain hollows for refuges in large old and dead trees.
30.	Control feral European Bees as they can displace native animals.
31.	Protect nests of Rainbow Bee-eaters if they are encountered.
32.	Continue the fox control program.
33.	Contribute to regional programs being undertaken for feral bird control by DPAW.
COMMUNITY INVOLVEMENT	
34.	Continue to support community events in the Reserve such as Clean Up Australia Day.

BACKGROUND

Study Site

Point Resolution is located on the northern shores of the Swan River at the junction of Victoria Avenue and Jutland Parade, in Dalkeith. The entire Reserve includes bushland and parkland areas which cover an area of 9Ha. The focus of this Management Plan is on the management of the bushland area which covers 4 hectares (Ha). The bushland at Point Resolution is bordered by the Swan River to the south and west, residential houses to the north and southeast and parkland to the east. It is located within the City of Nedlands approximately 9 km west south west of the Perth CBD, as shown in Figure 1.

Figure 1: Point Resolution Reserve

Point Resolution is vested in the City of Nedlands as A Class Reserve 17391 for "Parks and Recreation". The City of Nedlands has the power to lease on Reserve 17391. Point Resolution falls within the Swan River Trust's Development Control area (DCA) as shown in Figure 2. The Swan River Trust (SRT) acts as an advisory body on any proposals that occur within the DCA.

Figure 2: Swan River Trust Development Control Area Point Resolution

The SRT, the City of Nedlands and the Friends of Point Resolution have cooperatively managed Point Resolution since the late 1990's. In recent years Point Resolution has received significant funding through the SRT's Riverbank Funding Program for restoration along the western and southern foreshore and embankment areas.

The Swan and Canning River Foreshore Assessment Management Strategy (2008) identifies the riverbank and shorelines of Point Resolution as Priority 2 and Priority 3 areas for management and a Priority 2 area for vegetation management. Management strategies recommended for these areas include renourishment where appropriate, foreshore stabilisation including bioengineering to protect infrastructure or recreational amenity; and improve linkage between regionally significant and good quality vegetation areas through planning and action.

Disturbance Factors

Point Resolution is ecologically significant despite its long history of disturbance through activities such as quarrying. Some *Very Good* patches of bushland exist that are characterised by herbaceous species not found elsewhere in the Reserve and there are also some dense patches of Coastal Sword Sedge in places. The northern portion of the Reserve contains some degraded patches which have dense infestations of Perennial Veldt Grass and other bulbous weeds that dominate the understorey. The river foreshore encounters ongoing disturbance through erosion as a result of tide movements and storm surges.

Implementation of Previous Management Plans

Previous management plans developed for Point Resolution include the Point Resolution Reserve Management Plan (Ecoscape, 1991) and the Nedlands Foreshore Bushland Reserves Management

Plan 2003 – 2009 (Ecoscape, 2003) which also included the management of Birdwood Parade Bushland.

Following the development of the 1991 and 2003 Management Plans the bushland has been actively managed by the City of Nedlands, the Friends of Point Resolution and the SRT. The 2003 - 2009 Management Plan consolidated information regarding activities undertaken since the development of the 1991 Management Plan along with reviewing and updating the information detailed in the 1991 Plan.

In total, fifty three recommendations were developed in the 2003 - 2009 Management Plan of which forty five were implemented, two were partially implemented and seven were not implemented. The seven recommendations that were not implemented included five in relation to Cultural Heritage, Interpretation and Education of which will be addressed in future through the Whadjuk Trails Project; one recommendation in relation to the installation of garden beds on the parkland area which was not supported by the local community and which represents a significant cost to implement; and one recommendation in relation to the monitoring of indigenous species found in low abundance which should aim to be implemented in the 2013 – 2018 Management Plan. The two partially implemented recommendations were in relation to the maintenance of pathways to a satisfactory standard which are in the process of being implemented however are restricted somewhat by available funding. A summary of the implementation of the 2003 – 2009 recommendations are shown in Appendix 5.

Management Challenges and Success

There is an ongoing challenge in regards to undertaking weed control in part of Zone 1 (refer to the Management Zone Map in the map section on page 33). Herbicide use is not possible in part of this Zone and therefore some weeds that can normally be controlled using herbicides without causing disturbance to the bushland cannot be controlled.

This means that Zone 1 holds the lowest priority for management and some priority weeds such as Freesias, Black Flag and Perennial Veldt Grass have not reduced their density or distribution in Zone 1 in recent years. Weeds in this Zone are targeted on a case by case basis making sure that hand removal does not cause further disturbance to the bushland and that it is not excessively costly to undertake.

Over the years significant reduction in the density and/or distribution of the following environmental weeds has occurred:

- Sydney Wattle (Acacia longifolia),
- African Cornflag (*Chasmanthe floribunda),*
- Geraldton Carnation Weed (*Euphorbia terracina*),
- Marguerite Daisy (*Argyranthemum frutescens*),
- Sweet Pea (*Lathyrus sp*),
- Lupinus sp (Lupins),
- Perennial Veldt Grass (*Ehrharta calycina*),
- African Boxthorn (*Lycium ferocissimum*),
- Brazilian Pepper Trees (*Schinus terebinthifolius),*
- Coast Teatree (*Leptospermum laevigatum*); and
- Bridal Creeper *(Asparagus asparagoides*).

Large dense infestations of Bridal Creeper previously existed in Zones 2 and 3 with some smaller infestations in Zone 1. These populations have been significantly reduced over the years and the release of the Rust (a biological control) has been successful in stabilising its spread. The current distribution is less than 5% cover in most areas with some populations completely removed from sections where it was previously recorded.

Woody weeds primarily including Brazilian Pepper Trees, African Boxthorn and Sydney Wattles have largely been removed from the Reserve. Occasionally some isolated plants reseed or re-sprout from previously removed infestations and these require ongoing monitoring and control. The mapping of Brazilian Pepper trees in 2003 and again in 2012 shows a massive reduction in its density and distribution and African Boxthorn and Sydney Wattle having been completely removed from the Reserve.

Perennial Veldt Grass appears to have increased its distribution from the mapping undertaken in 2003 and again in 2012 primarily in Zone 2. It is likely that this mapping is not entirely accurate as an active control program has been continued and from visual assessments it appears to have reduced its density. This could possibly be attributed to different mapping methodology undertaken. In 2012 Perennial Veldt Grass and Annual Veldt Grass where mapped together as one species as they could not be differentiated at the time of surveying and this may account for the higher distribution encountered in 2012. The density of Perennial Veldt Grass does however appear to have been reduced in Zone 2 and 3 as the coverage in 2003 was less than 50% and in 2012 it was down to less than 5% in Zones 2 and 3. In Zone 1 both the density and distribution appears to have increased and this is most likely accurate as no control has occurred in this Zone.

Prior to the development of the 2003 Management Plan there was not a definite boundary between the bushland and parkland areas. In some areas there were many informal access points and tracks between the bushland and parkland. These areas have been successfully restored through revegetation and now there is a distinctive parkland/bushland boundary at Point Resolution Reserve. These areas require ongoing revegetation as native plants die to reinforce the boundary over time.

Significant restoration work has been undertaken in Zones 2 and 3 along foreshore and embankment areas. These areas were restored through joint funded projects between the City, the Friends of Point Resolution and the Swan River Trust between 2009 and 2012. Foreshore and embankment areas have been stabilised with brush walling, woody debris, rock rip rap, palisades; and revegetation. The restoration work in Zone 3 has been very successful. In Zone 2 the restoration work has also been largely successful except in two locations that were subject to intense storm surge events in 2012 not long after the area was stabilised. The foreshore in Zone 2 suffers greater tide surges due to the large area of open water adjacent to the prevailing wind. Currently some extra treatments are being implemented in this area. These treatments are being implemented with consideration to planning for extreme storm surge events so that the foreshore and embankment are more likely to withstand extreme events of which are going to be more likely in coming years due to climate change impacts.

BIOLOGICAL ENVIRONMENT

Landscape Elements

The bushland at Point Resolution occupies an elongated embankment with varying degrees of steepness extending down to the Swan River Foreshore from the parkland areas along Victoria Avenue and Jutland Parade. The highest point of the bushland is 17 Australian Height Datum (AHD), the elevated position of Point Resolution offers expansive views of the Swan River and adjacent shorelines. The south eastern embankment is characterised by a steep cliff face with limestone rock formations at various locations, the north western foreshore contains a gently undulating embankment area that extends down to a sandy beach on the Swan River and the south western corner is characterised by limestone rock cliff faces directly adjacent to the beach foreshore.

Soils and Geomorphology

Point Resolution is located on the Spearwood Dune System, composed of Tamala Limestone and pale yellow sand. The limestone is exposed as cliffs along the shoreline and occasionally as isolated towers. Soils over the limestone are generally thin and sandy however, loamy material has accumulated in a depression behind the point itself. There are recent alluvial deposits of white, shelly sand in sheltered bays on the Claremont side of the point.

Like many natural areas within the City, the underlying limestone is sometimes reflected in the presence of limestone indicator species such as Tuart (*Eucalyptus gomphocephala*) and Parrot Bush (*Banksia sessilis*).

Vegetation

Vegetation Complex Heddle et al (1980)

On a regional scale Point Resolution is mapped as occurring on the Karrakatta – Central and South Vegetation Complex. This complex is also represented in Kings Park and consists predominantly of an Open Forest of Tuart-Jarrah-Marri. In the deeper sands Tuart is replaced by Jarrah, while Marri (Corymbia calophylla) is more dominant around moister sites.

Floristic Community Type Gibson (1994)

Floristic Community Types (FCTs) classify vegetation into groups of plant species that tend to co-occur in small to medium areas. Point Resolution forms part of Super Group 4 - Uplands Centred on Spearwood and Quindalup Dunes. It was not sampled or inferred as containing a specific FCT through Bush Forever which is likely a result of it being considered highly degraded in the Bush Forever Site description.

System 6 Report and Bush Forever Vegetation Descriptions

The System 6 Report (DCE, 1983) listed the dominant shrub at Point Resolution Reserve as Parrot Bush (*Banksia sessilis*), with *Jacksonia furcellata, Scaevola nitida* and *Grevillea crithmifolia* also listed. The native sedge *Scirpus nodosus* and the native grass Marine Couch (*Sporobolus virginicus*) were found to occur along the shoreline while a grove of Peppermints was also recorded at the northern end of the Reserve. Exotic species listed included Fig, Brazilian Pepper Tree, European Olive; and Veldt, Couch and Buffalo Grass.

Bush Forever (Government of Western Australia, 2000) listed the dominant species to be Tuart, Peppermint (*Agonis flexuosa*) and *Banksia* species, with an Open Heath of Parrot Bush (*Banksia sessilis*) and Sedgelands of *Juncus kraussii* and Club Rush (*Ficinia nodosa*). Scattered native plants were also identified, including Tall Open Woodland of Tuart, Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) with an understorey of Grass trees (*Xanthorrhoea preissii*) and Zamia Palms (*Macrozamia riedlei*).

Only small remnants of the former rush communities along the shoreline persist and these remaining remnants are constantly being eroded by storm surges.

1991 Management Plan – Plant Community types identified

The 1991 Management Plan prepared by Ecoscape identified two community types:

- Peppermint-Banksia - Zone 1; and
- *Banksia sessilis* community – Zones 2 and 3.

The Peppermint-Banksia community was described as containing a mixture of Peppermint, Banksia, Rottnest Island Pines and Sheoaks; with Tuarts as the dominant Eucalypt; and the understorey consisting of Zamia Palms, Balga Trees, *Acacia cyclops*, *Banksia* trees and a mixture of shrubs, herbs and ground covers.

The *Banksia sessilis* community was described as containing a more heath like structure with *Banksia sessilis* as the most dominant plant species along with *Acacia cyclops, Jacksonia furcellata, Guichenotia ledifolia, Allocasuarina humilis* and a diverse range of shrubs, herbs and grasses.

Structural Plant Communities - Natural Area Initial Assessments 2008

More recently through the Natural Area Initial Assessments undertaken in 2008 two structural plant communities were identified as occurring across the bushland. These included:

- Peppermin*t (Agonis flexuosa)/Sheoak (Allocasuarina fraseriana)* woodland; and
- Tuart (*Eucalyptus gomphocephala)/Sheoak (Allocasuarina fraseriana)* woodland.

This information is detailed on the Local Biodiversity Projects Natural Area Assessments database for Point Resolution.

The Peppermin*t (Agonis flexuosa)/Sheoak (Allocasuarina fraseriana)* woodland is dominated by Peppermint trees with some interspersed Sheoak trees. Other native species noted as occurring in this community were *Acacia cyclops* and *rostellifera*, *Jacksonia furcellata*, *Spyridium globulosum*, *Grevillea crithmifolia, Guichenotia ledifolia, Macrozamia riedlei, Hakea prostrata, Acanthocarpus preissii, Rhagodia baccata and Banksia menziesii*.

The Tuart (*Eucalyptus gomphocephala*)/Sheoak (*Allocasuarina fraseriana*) woodland is dominated by trees of *Eucalyptus gomphocephala, Allocasuarina fraseriana*; shrubs of *Grevillea crithmifolia* and patches of *the sedge Lepidosperma gladiatum*. Other common native species included a diverse range of shrubs, herbs.

Changes in the structure of the community types described over the years at Point Resolution could be attributed to ecological succession which can be influenced by the environment, biotic interactions, and dispersal. This may be reflected in the dominance of pioneer plant species such as *Banksia sessilis* and *Jacksonia* species at certain locations likely a result of disturbance factors. Also many years of restoration work has been undertaken at Point Resolution which may also lead to changes in the structure of the plant community onsite as many Tuarts have been planted in the southern section over the years.

Bush Forever Site 315 and Corridor Value

Point Resolution forms important ecological linkages with nearby river foreshore areas such as Birdwood Parade, Bishop Road and Waratah Place. It is identified as part of Greenway 24 in "A Strategic Plan for Perth's Greenways" by Tingay and Associates and it forms part of the regional river foreshore greenway identified in the Western Suburbs Greening Plan (2002) stretching approximately 15 km from Kings Park to Fremantle.

Point Resolution was identified as Site M59 in the Department of Conservation and Environment's Conservation Reserves for Western Australia – System 6 (DCE, 1983). In this report the DCE stated that Point Resolution Foreshore (Site M59):

> '*…contributes to open space of regional significance extending along the Swan River, because of its conservation and recreation value. Important management considerations for the area include: encouraging the growth and regeneration of local indigenous flora; and minimising disturbance from fire and trampling of vegetation*'.

Four recommendations made for Point Resolution in this report included:

1. Recommendations on planning and management of Regional Parks be applied to the site,
2. The purpose of Reserve A1624 be amended to Parkland and Recreation,
3. The portion of Reserve A1668 to the west of Victoria Avenue be excised and added to Reserve A1624; and
4. The Nedlands City Council prepares a management plan for the area.

Point Resolution is registered as Bush Forever Site Number 221. The Bush Forever Site Implementation Recommendation for Point Resolution is:

> '*The existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body*'.

The Bush Forever Site description also noted the following:

- Significant bird species Category 1 (1), Category 2 (3), Category 3 (2) and Category 4 (1);
- Directory of important Wetlands (Swan – Canning Estuaries); and
- Naturally vegetated area on the Swan Estuary which has particular conservation value providing habitat for fauna and linkage between larger more intact areas of bushland.

Bushland Condition

The methodology followed for bushland condition assessments undertaken in 2012/13 is detailed on pages 27 - 30 of the Natural Areas Management Plan 2013 - 2018. Bushland condition is useful in tracking large changes overtime and should continue to be measured each time this Management Plan is reviewed. This allows changes to be regularly monitored and recorded.

Historical Bushland Condition Assessment Data

The Bush Forever Site Description (2000) used the Keighery Vegetation Scale and assessed the bushland condition as >20% *Very Good* <80% *Degraded*, with areas of severe localised disturbance.

Over the years bushland condition has been mapped using different methods and scales. Bushland condition was not mapped in the 1991 Management Plan. It was mapped in the 2003 Management Plan where it assessed the bushland condition across the entire Reserve using the Kaesehagen Scale. These maps were digitised but they did not use 20 x 20m polygons and condition ratings were allocated strictly on the basis of local native species present.

The bushland condition mapping undertaken in 2003 using the Kaesehagen Scale assessed approximately half the bushland as *Poor* condition and half as *Poor – Very Poor* condition along with two rehabilitation sites. The very poor condition bushland was primarily in the northern section where the Peppermint Woodland community is present.

The bushland condition mapping undertaken in 2008 using the Keighery Scale through the Natural Area Initial Assessments assessed approximately half the bushland as *Degraded*, a quarter as *Completely Degraded* and the remainder as *Good* to *Very Good*. This survey was undertaken in spring 2008 and like the 2003 mapping the condition ratings were allocated on the basis of local native species present. These maps were not digitised and did not use 20 x 20m polygons.

2012/13 Bushland Condition Assessment

The mapping in 2012/13 was undertaken in spring by adapting the Keighery Scale and divided the bushland into 20 x 20m polygons. The use of 20 x 20m polygons allows a systematic, measurable and repeatable means for collecting data overtime. Where each 20 x 20m polygon represents an individual unit with a GPS coordinate. When bushland condition is undertaken in future this method will allow a quantitative assessment to be undertaken to compare changes overtime.

In 2012/13 the Keighery Scale was adapted to assess the impact of disturbance on vegetation structure. Each 20 x 20m polygon was provided a rating from *Very Good, Good, Degraded* to *Completely Degraded.* The main disturbance factors that influenced the condition rating included fire, environmental weeds, selective removal of species (from plant pathogens, frequent fires, grazing and logging for example) and clearing. The existence on non-indigenous plants was not rated as a disturbance unless they were considered invasive to the area.

In 2012/13 the bushland was assessed as approximately 10% *Very Good*, 70% *Good* and 20% *Degraded*

Table 2: Extent of Bushland Condition by class (2012/13)

Very Good	Good	Degraded	Completely Degraded	Total Area
0.4Ha	2.8Ha	0.8Ha	0	4Ha

The areas assessed as *Very Good* condition included parts of Zone 2 and 3. In order to attain the *Very Good* condition rating the area could be impacted by some disturbance such as frequents fires, clearing and aggressive weeds (in low abundance). However they needed to maintain a good vegetation structure and/or cover.

The *Good* condition rated areas consisted of a broad band of differing levels of *Good* condition bushland (some of these were more on the *Degraded* side of *Good* condition and others were more on the *Very Good* condition side of *Good* condition bushland). In the *Good* condition bushland areas some introduced native plants may also have formed part of the vegetation structure (such as *Eucalyptus utilis*) and this did not lead to a *Degraded* rating as they still retained vegetation structure, provided habitat and were non-invasive.

The areas in Zone 1 rated as *Good* condition had a high density of aggressive weeds however they still maintained upper and middle storey native vegetation. Whilst some areas rated as *Good* condition bushland in Zone 3 had significantly less dense aggressive weeds and maintained a shrub and upper storey structure they also were rated *Good* condition as they did not contain an understorey layer. The areas rated as *Degraded* were located in Zone 1. These areas had a combination of the following disturbances that lead to their *Degraded* rating:

- Extensive fire break/tracks,
- High density invasive weeds; and
- Lack of native vegetation cover.

Bushland condition is unlikely to show large improvements in the next five years from the ratings provided in 2012/13 unless some intensive restoration work is undertaken in the degraded areas of Zone 1.

Flora

There are 135 flora species recorded at Point Resolution, of these 81 are identified as native species and 54 as introduced weed species. This includes *Jacksonia sericea* which is listed as priority 4 by the Department of Parks and Wildlife (DPAW). The flora list (Appendix 1) for Point Resolution has been based on a number of surveys undertaken over the years. These include:

- A. Gardiner between 1953 and 1973,
- Ecoscape 1991,
- Ecoscape 2003,
- Ian Fordyce 2013; and
- Ongoing observations by the City of Nedlands.

The suite of species originally present at Point Resolution cannot be directly observed due to the long history of degradation at the site such as quarrying. In the 2003 Management Plan it was noted that there appeared to have been a continuing decline in the number of native species recorded at Point Resolution.

This was observed in the number of species recorded between 1953 and 1973 by A. Gardiner and in 1991 by Ecoscape of which were not recorded in the 2003 survey by Ecoscape. The 2003 Management Plan noted that *Guichenotia ledifolia* was listed in 1991 as a common species of the Parrot Bush (*Banksia sessilis*) community but it was no longer common in 2003 despite being present in reasonable numbers in the Peppermint (*Agonis flexuosa*) community. This was still evident in 2013.

In the 2003 Management Plan Ecoscape stated that some cohorts of short-lived species may have senesced but left viable seed which awaits a suitable germination trigger such as fire, while long-lived species that reproduce vegetatively may be lost from the system.

In 2013 some of the steep and densely vegetated areas in Zone 2 were not surveyed. Therefore it is quite possible some previously recorded species may still exist at Point Resolution that were not recorded in 2013. The 81 native flora species recorded at Point Resolution was calculated by only removing those species that were not recorded in 2003 and 2013 from the total number of plants previously recorded. If they were not recorded in 2013 they were not removed from the flora list as the entire bushland was not surveyed in 2013.

Species previously recorded at Point Resolution that were not observed in 2003 and 2013 include:

- *Caladenia longicauda,*
- *Calectasia narragara,*
- *Diuris longifolia,*
- *Banksia dallanneyi,*
- *Hovea trisperma,*
- *Isotropis cuneifolia,*
- *Philotheca spicata,*
- *Sowerbaea laxiflora;* and
- *Stirlingia latifolia.*

Since 2003, the following native plants have been found of which have not been previously recorded and were not planted at Point Resolution:

- *Caladenia latifolia* (Pink Fairy Orchids),
- *Crassula colorata* (Dense Stonecrop),
- *Senecio pinnatifolius*,
- *Trachymene pilosa*,
- *Acacia lasiocarpa* (Dune Moses) – possibly planted?
- *Austrostipa flavescens;* and
- Cowslip Orchid *(Caladenia flava*).

Since 2003 the following species were reintroduced through revegetation of the foreshore and embankments areas in Zone 3:

- *Anigozanthos manglesii,*
- *Hypocalymma angustifolium,*
- *Melaleuca systena,*
- *Melaleuca huegelii,*
- *Enchylaena tomentosa,*
- *Baumea juncea (*planted in Zone 2 along the foreshore*),*
- *Casuarina obesa,*
- *Pimelea rosea,*
- *Scaevola crassifolia,*
- *Casuarina obesa; and*
- *Melaleuca cuticularis.*

Prior to reintroducing these species an audit was made against those that were naturally found on the Mount Eliza escarpment (excluding the foreshore species) to ensure only native plants that would have most likely occurred on the site were reintroduced.

Plant Pathogens

A survey of plant pathogens undertaken across the City's natural areas in 2011 isolated the following plant pathogens from 9 trees in the parkland area at Point Resolution (4 Tuarts, 4 Jarrah's and 1 Eucalypt sp):

- *Phytophthora aff. arenaria* (2 Jarrah's),
- *Phytophthora multivora* (2 Jarrah's); and
- *Armillaria luteobubalina* (1 Tuarts).

The majority of Tuarts displayed symptoms of branch girdling as a result of stem-boring insects. This attack severely affects the form of the tree and structural stability. The identification and management of plant pathogens and other causes of tree decline has been detailed in the Natural Areas Management Plan 2013 - 2018. In summary strict hygiene protocols are required (of which many are already being implemented) such as ensuring no soil or plant material is transferred between natural areas or restoration sites by brushing excess soil off clothing, machinery and equipment; and sterilising with 70% solutions of methylated spirits.

Trees can also be treated by implementing systemic treatments that can last for up to three years, so they are not as susceptible to death as a result of plant pathogens. The City implemented some systemic treatments in 2011. The Friends of Point Resolution also kindly contributed funding towards the implementation of systemic treatments of 15 Jarrah and Tuart trees in 2012. These trees are being monitored and follow up treatments may be required in the future.

Refer to pages 41 - 44 of the Natural Areas Management Plan 2013 - 2018 for management strategies and hygiene protocols.

Weeds

Of the 54 weeds recorded in Point Resolution (listed in Appendix 1) the distribution of 11 of these and woody weeds were mapped in 2012/13. They are shown in the map section on page 33.

Some of the weeds listed in Appendix 1 include those that were intentionally planted. Non-local Australian plants that have been introduced to Point Resolution include: *Banksia baxteri, Callistemon species, Chamelaucium uncinatum, Eucalyptus caesia, Eucalyptus camaldulensis, Eucalyptus citriodora, Eucalyptus lehmannii, Eucalyptus leucoxolyn var rosea, Eucalyptus maculata, Eucalyptus platypus, Eucalyptus sepulcralis, Grevillea banksii, Grevillea leucopteris, Westringia species* (Powell, cited in Ecoscape 2003).

Non-indigenous plants provide habitat and should only be removed if they are outcompeting native vegetation. There are also some trees that have been intentionally planted and provide historical value of the early European settlement of Nedlands. These include three 100 year Olive trees that should be retained for their heritage value.

Weed mapping

Over the years weeds have been mapped using different methods and cover classes therefore it is difficult to make a quantitative assessment to date. The 2003 Management Plan was digitised and assessed some weeds across the bushland however 20 x 20m polygons were not used to score cover classes. The mapping in 2012/13 was undertaken in spring using 20 x 20m polygons and DPAW cover classes detailed in their weed mapping Standard Operating Procedure 22.1. These include:

- Individual plants (mapped as GPS points),
- Less than 5%,
- 6-75%; and
- 76-100%.

This method allows a systematic, measurable and repeatable means for collecting weed cover and density overtime. Where each 20 x 20m polygon represents an individual unit with a GPS coordinate. When weed mapping is undertaken in future this method will allow a quantitative assessment to be undertaken to compare changes overtime.

Target Species for Weed Mapping 2012/13

In 2012/13 the following weeds were mapped Marguerite Daisy *(Argyranthemum frutescens*), Bridal Creeper *(Asparagus asparagoides*), Giant Reed (*Arundo donax*), African Cornflag *(Chasmanthe floribunda*), Perennial Veldt Grass *(Ehrharta calycina),* Geraldton Carnation Weed *(Euphorbia terracina),* Black Flag *(Ferraria crispa),* Freesia *(Freesia alba x leichtlinii*), Rose Pelargonium *(Pelargonium capitatum*), Sweet Pea (*Lathyrus sp*); and Woody Weeds.

Limitations of weed mapping

Only the above listed priority weeds could be mapped due to the time and the cost involved with the mapping. Unfortunately there are always going to be some limitations encountered with weed mapping. These include:

Timing of mapping

Mapping should always be undertaken in spring when weeds are active. There are six natural areas that require mapping and they all cannot all be mapped simultaneously. This means that some weeds that may have germinated may not be flowering at the time of survey, may be covered over by taller weeds and therefore not visible when the surveying is undertaken or have been removed through weeding activities. Also some weeds do not flower every year and therefore may be difficult to identify at the time of mapping.

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

Fungi
No Fungi Forays have been held at Point Resolution and prior to the development of this Management Plan no previous inventories were compiled. Only 4 fungi have been noted as occurring at Point Resolution (Appendix 2). These have been opportunistically noted by City staff. It is therefore likely that there are a significantly higher number of fungi on site than has been recorded to date. The fungi list for Point Resolution should be continually updated as new species are recorded.

Native Fauna
A total of 57 birds, 2 mammals and 8 reptiles have been recorded at Point Resolution.

Birds
Of the 57 bird species identified in Appendix 3 six species are listed under the Environmental Biodiversity Conservation Act 1999 (EPBC Act) the Carnaby's Cockatoo *(Calyptorhynchus latirostris)* which is listed as *Endangered;* and the Rainbow Bee-eater *(Merops ornatus)*, Grey Plover (*Pluvialis squatorola*), Common Sandpiper (*Actitis hypoleucos*), Common Greenshank (*Tringa nebalaria*); and Caspian Tern (*Hydropogne caspia*) which are listed as *Migratory* and *Marine* species.

Mammals
Two mammals have been recorded at Point Resolution and were detailed in the 1991 Management Plan. These include Brushtail Possums (*Trichosurus vulpecula*) and the White Stripped Mastiff Bat (*Tadarida australis)*. Whilst Goulds Wattle Bats (*Chalinolobus gouldii)* have not been recorded in the Reserve it is likely that they are present at Point Resolution as they are common throughout Australia and are found in three other natural areas within the City.

Herpetofauna (Reptiles & Amphibians)
A total of 8 herpetofauna species have been confirmed at Point Resolution. These include: The Marbled Gecko (*Christinus marmoratus*), the Sands Gould's Monitor (*Varanus gouldii*), the Fence Skink (*Cyptoblepharus buchananii*), the West Coast Ctenotus (*Ctenotus fallens),* the Two-toed Mulch Skink (*Hemiergis quadrilineata)*, the Western Bobtail (*Tiliqua rugosa*); and two other skinks that were referred to as the Burrowing Skink and the Grey skink in the 2003 Management Plan however no scientific names were provided for these so it is difficult to determine what species they are.

The 8 species listed above would only form part of the herpetofaunal species at Point Resolution and further informal surveys should be undertaken to update the current species list.

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

Introduced Fauna

Please refer to pages 65 – 69 in the Natural Areas Management Plan 2013- 2018 for details of feral animal control strategies.

Mammals

Point Resolution has the following confirmed introduced mammals: rabbits (*Oryctolagus cuniculus)* and foxes *(Vulpes vulpes*). Other possible (however unconfirmed) introduced fauna include the Cat (*Felis catus*), the House Mouse (*Mus musculus*) and the Black Rat (*Rattus rattus)*.

Invertebrates

One introduced invertebrate of concern at Point Resolution includes the European Honey Bee *(Apis mellifera).*

Introduced Birds

There are six known introduced birds within Point Resolution these include the Rock Dove (*Columba livia*), Spotted Dove (*Streptopelia chinensis*), Laughing Dove (*Streptopelia senegalensis*), Rainbow Lorikeet (*Trichoglossus haematodus*), Laughing Kookaburra (*Dacelo novaeguineae*) and Long-billed Corella (*Cacatua tenuirostris*).

PLAN FOR MANAGEMENT

Please refer to pages 31 - 40 of the Natural Areas Management Plan 2013 – 2018 for general management principles and weed control strategies that relate to all natural areas.

Management Zones

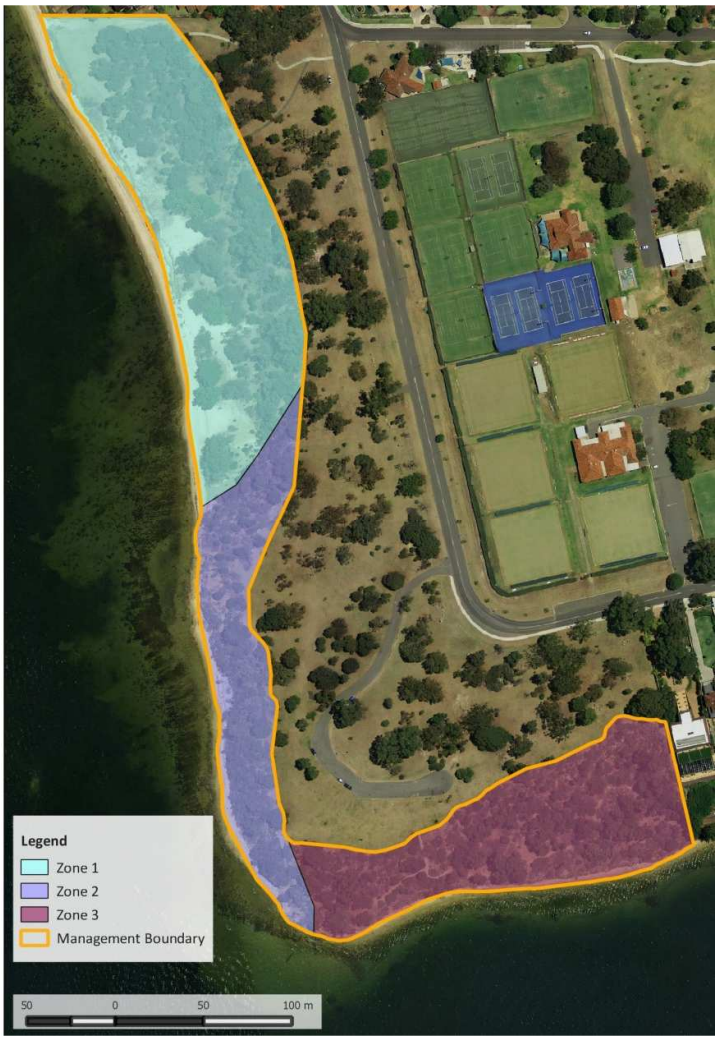
External Boundaries

For management purposes it is important to distinguish between parkland and bushland zones. At Point Resolution, the boundaries between bushland and parkland areas are mostly well defined by shrubs and trees that form a hedge between the bushland and parkland areas.

Internal Boundaries

In the 1991 and 2003 – 2009 Management Plan the bushland was divided into 3 Zones. These 3 Zones form the basis of general management and are intended to facilitate the establishment of guidelines for managing areas of similar terrain and degradation. Specific sites are targeted areas for rehabilitation within Zones. They demarcate the extent of areas where specific works should occur. Zones 2 and 3 are considered the highest priority areas for management. Zone 1 is not rated as highly for management due to it being generally degraded and lack of available resources to rehabilitate this Zone.

Figure 3: Management Zones at Point Resolution.



Management Actions 2013 – 2018

ACTIONS	
1.	Manage Point Resolution on the basis three zones.
2.	Focus management on Zones 2 and 3 as a priority.

Rehabilitation

The improvement of bushland condition at Point Resolution will be achieved by assisting natural regeneration in *Good* to *Very Good* bushland condition areas and through reconstruction at selected *Degraded* sites.

Sites

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

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

Past Rehabilitation Sites

The following Swan River Trust funded rehabilitation sites should have ongoing annual maintenance undertaken:

- South-eastern foreshore and embankment stabilised between 2009 – 2011; and
- South-western foreshore and embankment stabilised in 2012/13.

The above listed Sites will need to have ongoing annual infill planting undertaken, weed control and maintenance of stabilisation works such as jute, geofabric; and brush walling maintenance; and rock rip rap and woody debris realignments. This will ensure the stabilisation work will endure storm surge events and erosion overtime. When undertaking rehabilitation at these sites the Swan River Trusts Best Management Practises should be used to guide rehabilitation work.

The following past rehabilitation sites also require ongoing annual maintenance:

- Bushland edge along the boundary of the parkland area,
- Zone 3 including the Embankment adjacent to 68 Jutland Parade; and
- Zone 2 (excluding the *Very Good* bushland condition areas).

The bushland edge along the boundary of the parkland area requires ongoing revegetation as plants die and at areas that are becoming eroded. This will reinforce the boundary between the parkland and bushland areas. In the past, significant revegetation of the bushland edge has been undertaken in order to develop a hedge to clearly delineate the bushland boundary. This has achieved a significant reduction of informal access into the bushland. Plant species such as *Grevillea crithmifolia* and *Calothamnus quadrifidus* are very good at maintaining the boundary between parkland and bushland areas.

Zones 2 and 3 have been previously rehabilitated (except the *Very Good* bushland condition area in Zone 2). The *Very Good* condition bushland in Zone 2 has many native herbs, sedges and shrubs that are found in low abundance at Point Resolution and form a distinct community of plants not found elsewhere in the Reserve. Many of these species cannot be propagated and any weed control carried out in this area needs to be undertaken very carefully so that these herbs, sedges and shrubs are not damaged. This area should also only be revegetated with similar species to maintain the community of plants found in this area.

Potential Reconstruction Sites

The following sites are potential reconstruction sites and should only be restored if significant funding is available and after resources have focused on the maintenance of *Good* to *Very Good* bushland condition areas:

- Northern beach foreshore and embankment (Zone 1); and
- Parkland areas to expand the bushland edge.

The Northern Beach Foreshore and Embankment is highly degraded. The remaining sedge community is being eroded through storm surges and the bushland area and embankment lacks natural understorey vegetation. Currently the City does not have the required resources to undertake rehabilitation of this area. This is because available funding is needed to undertake ongoing restoration of previously rehabilitated sites and to manage the restoration of the remainder of the bushland areas. The City should continue to work with the Swan River Trust to rehabilitate degraded foreshore sites such as these and try to source external funding if it becomes available.

Through the City's Greenway Corridors Policy some of the parkland area has been earmarked to be revegetated. This will increase the bushland buffer and greenway corridor value of Point Resolution and reduce water consumption by reducing the area of reticulated parkland area.

There are no immediate plans for these works to commence however when and if they do proceed, the following points should be considered:

- Delineating these areas by low garden curbing,
- Maintaining the visual amenity of the area by not reducing current views of the Swan River from the parkland area; and
- Not increasing the bushland buffer in the grass area on the Swan River side of the car park as this is a high use area by park users.

Management Actions 2013 – 2018

	ACTIONS
1.	Continue to work closely with the Swan River Trust to rehabilitate degraded sites.
2.	Use the Swan River Trusts Best Management Practises as a guide for restoration when undertaking rehabilitation of degraded foreshore and embankment areas.
3.	Focus rehabilitation on *Good* to *Very Good* bushland condition areas as a priority.
4.	Use Jute matting or geofabric on steep embankment and foreshore areas.
5.	Undertake annual maintenance of past Swan River Trust funded rehabilitation sites.
6.	Undertake annual maintenance of the bushland edge adjacent to parkland areas and zones 2 and 3.
7.	Maintain and monitor the plants found in low abundance Zone 2 and only revegetate this area with similar species.
8.	Maintain current views when rehabilitating the bushland edges and parkland areas.
9.	Consider delineating parkland areas with low garden curbing if parts of the parkland area are revegetated.
10.	Do not revegetate the parkland area on the western side of the car park.

Revegetation

Species Selection

Ideally species used for revegetation in reconstruction sites would consist of the entire collection of plants that naturally occur at Point Resolution. This is not always possible as not all species can be propagated and there are also situations where certain species provide specific management functions such as *Acacia pulchella* and *Banksia sessilis* which help to restrict access as they have spiny leaves.

The suite of native species that would have once occurred at Point Resolution can be inferred from the Mount Eliza Escarpment in Kings Park which occupies a similar position in the landscape and is less than 3 km away. When developing species lists they should be cross referenced to those that have been found on the Mount Eliza Escarpment.

Species of Significance or Low Abundance

There are a number of species of significance or found in very low numbers within Point Resolution, special consideration should be given to ensure their survival onsite. They should be mapped, monitored and if possible propagated for revegetation at reconstruction sites. Eleven species have been identified at Point Resolution which fit into this category include:

- *Acacia stenoptera,*
- *Microtis sp,*
- *Thysanotus sp,*
- *Burchardia umbellata,*
- *Conostephium pendulum,*
- *Conostephium preissii,*
- *Daviesia divaricata,*
- *Lepidosperma sp,*
- *Leucopogon parviflorus,*
- Caladenia latifolia,
- *Caladenia flava,*
- *Scaevola anchusifolia; and*
- *Tetraria octandra.*

It should be noted that a number of these species would have always been in low numbers on the scarp at Point Resolution. They would have been more typical of the area now occupied by the grassed parkland on the plateau of the site, and existed on the escarpment as outlying individuals of more substantial plateau populations.

Management Actions 2013 – 2018

ACTIONS	
1.	Work with local nurseries to grow species found in low abundance.
2.	Use only plant species for rehabilitation if they would have naturally occurred on site such as those found on the Mt Eliza Escarpment at Kings Park.
3.	Consider specific conditions (such as the need to restrict access and slope stability) in developing plant lists for rehabilitation sites.

Environmental Weed Control

A total of 28 priority weeds have been listed for management at Point Resolution (Table 3). Each priority weed has been provided management notes and the Invasive Plant Prioritisation Process rating (DEC, 2008). Priority weeds will be managed according to management notes provided on DPAW's Florabase website at http://florabase.dec.wa.gov.au and are detailed in Appendix 4. Priority weeds have been selected from:

- The Swan Region Assessment 2008 (Invasive Plant Prioritisation Process (DEC)),
- 30 highest priority weeds for the Swan Region 2008,
- State and federal weed lists; and
- Their ability to be controlled without causing disturbance.

Table 3: Priority Weeds for Control – Point Resolution (Ratings taken from DEC Invasive Plant Prioritisation Process 2008 (Swan Region)).

SPECIES NAME		COMMON NAME	NOTES	RATING
1.	*Avena fatua*	Wild Oat	Ongoing control required in conjunction with grass spraying program.	Very High
2.	*Agave americana*	Century Plant	Requires ongoing monitoring for re-infestation.	Medium
3.	*Argyranthemum frutescens*	Marguerite Daisy	Ongoing control required.	FAR (Further Assessment Required)
4.	*Arundo donax*	Giant Reed	Requires ongoing monitoring and control.	Unrated
5.	*Asparagus asparagoides*	Bridal Creeper	Ongoing biological control required, removal of berries and/or hand removal of small populations.	Very High
6.	*Brachychiton populneus*	Kurrajong	Requires ongoing monitoring and control.	High
7.	*Brassica barrelieri subsp. oxyrrhina*	Smooth Stem Turnip	Ongoing hand weeding required.	Medium
8.	*Carpobrotus edulis*	Hottentot Fig	Monitor for re-infestation. Control only to take place when in flower so that it is not confused with native Pigface.	Medium/High
9.	*Chamelaucium uncinatum*	Geraldton Wax	Ongoing removal of juvenile seedlings.	Medium
10.	*Chasmanthe floribunda*	African Cornflag	Ongoing monitoring and control.	Medium
11.	*Cynodon dactylon*	Couch	Focus control in restoration sites.	Very High
12.	*Ehrharta calycina*	Perennial Veldt Grass	Ongoing control required.	Very High
13.	*Ehrharta longiflora*	Annual Veldt Grass	Ongoing control required in conjunction with grass spraying program.	FAR
14.	*Euphorbia terracina*	Geraldton Carnation Weed	Ongoing hand weeding required.	Very High
15.	*Ferraria crispa*	Black Flag	Ongoing control required.	Very High
16.	*'Freesia alba x leichtlinii*	Freesia	Ongoing control required.	Very High
17.	*Fumaria capreolata*	Climbing Fumitory	Hand weeding required if resources allow.	Medium/High
18.	*Lagurus ovatus*	Hare's Tail Grass	Ongoing control required.	High
19.	*Leptospermum laevigatum*	Coast Teatree	Requires ongoing monitoring and control.	Very High
20.	*Lupinus angustifolius*	Narrowleaf Lupin	Ongoing hand weeding required.	Unrated
21.	*Lupinus cosentinii*	Sandplain Lupin	Ongoing hand weeding required.	Unrated
22.	*Moraea flaccida*	One-leaf Cape Tulip	Ongoing control required.	Very High
23.	*Olea europaea*	Olive	Ongoing control of seedlings and resprouting plants. Retain 3 Heritage Trees.	High
24.	*Pelargonium capitatum*	Rose Pelargonium	Ongoing control required. Only remove large infestations where native vegetation has established.	Medium/High
25.	*Pennisetum clandestinum*	Kikuyu Grass	Focus control in restoration sites.	High
26.	*Raphanus raphanistrum*	Wild Radish	Ongoing hand weeding required.	FAR
27.	*Schinus terebinthifolius*	Brazilian Pepper	Requires ongoing monitoring for re-infestation/ resprouting.	Very High
28.	*Trachyandra divaricata*	Dune Onion Weed	Only control when native vegetation has established.	FAR

Table 4: Alert Weeds for Point Resolution.

Species name	Common name	Notes
Acacia longifolia	Sydney Golden Wattle	Previously removed from Point Resolution
Lycium ferocissimum	African Boxthorn	Previously removed from Point Resolution
Lantana camara	Common Lantana	Previously removed from Point Resolution

Strategy

Priority weeds should be controlled in Zones 2 and 3 as a precedence and in accordance with management notes in Appendix 4. In part of Zone 1 herbicide use is not possible. Weeds in this Zone should therefore be targeted on a case by case basis making sure that hand removal does not cause further disturbance to the bushland and that it is not excessively costly to undertake.

Of the priority weeds listed in Table 3 the following weeds are considered the highest priority for management:

- Geraldton Carnation Weed,
- Bridal Creeper,
- African Cornflag,
- Perennial Veldt Grass,
- Black Flag,
- One-leaf Cape Tulip,
- *Raphanus raphanistrum*,
- *Lupinus* sp,
- Freesia,
- Woody Weeds; and
- Rose Pelargonium.

Sweet Pea

Whilst not normally considered a major environmental weed the garden escapee Sweet Pea previously established at the south eastern end of Point Resolution Reserve. It is short lived and scrambles over plants during spring causing a fire hazard when it dies off in summer. Ongoing removal has been undertaken over recent years. It should continue to be monitored and hand weeded as required to reduce fuel loading in the Reserve.

Steep Embankment Adjacent to 68 Jutland Parade

The steep embankment area in the south eastern part of the Reserve contains some priority weeds. This embankment is largely inaccessible and dangerous for contractors or staff to access. Unfortunately priority weeds cannot therefore be controlled in this area.

Geraldton Wax

Geraldton Wax has previously been removed from Point Resolution. A few mature specimens exist in Zone 1 adjacent to a degraded area which provide habitat for birds. The mature specimens should remain however this area should be monitored for the germination of seedlings of which should be removed as required.

Olive Trees

Olives are a high priority weed species. In the 2003 – 2009 Management Plan the retention of three 100 year old Olive trees was recommended due to their heritage value. The retention of these trees causes an ongoing management issue as a result of the germination of many seedlings each year. Regardless of this, these three Olive trees should be retained with ongoing monitoring and removal of seedlings as required. The location of the three 100 year old Olive trees are shown in Figure 5.

Figure 4: Three 100 Year Old Olive Trees

Maintenance Areas

Numerous weeds are present in restoration sites including Swan River Trust funded sites and the area behind the park reserve sign in Zone 3. These areas have weeds such as *Conyza bonariensis (*Tall Fleabane), *Lactuca serriola (*Prickly Lettuce), *Oxalis glabra* and *pes-caprae (*Sour Sob), *Raphanus raphanistrum* (Wild radish), *Lupinus* sp and *Solanum nigrum* (Blackberry nightshade). These areas require ongoing maintenance of weeds so that they do not threaten nearby bushland areas.

Indigenous Species Which Should Not Be Mistaken For Weeds

Care should be taken to ensure native species are not confused with weeds. Indigenous species with potential for confusion include:

- The native grass Marine Couch (*Sporobolus virginicus*),
- *Conostylis candicans*,
- *Lomandra* sp,
- *Scaevola anchusifolia,*
- *Schoenus grandiflorus;* and
- *Ptilotus polystachyus*.

Monitoring

Of the 54 weeds identified as occurring within Point Resolution, the distributions and densities of 11 weeds were mapped along with woody weeds. These should continue to be mapped every five years as part of management plan reviews.

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

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

- *Acacia longifolia*,
- Coast Teatree,
- African Boxthorn,
- Brazilian Pepper Tree,
- Geraldton Wax,
- Giant Reed,
- *Lantana camara*,
- Sweet Pea; and
- Olive trees.

Management Actions 2013 - 2018

ACTIONS	
WEED CONTROL	
1.	Continue to control the following weeds as a high priority: Geraldton Carnation Weed, Bridal Creeper, Perennial Veldt Grass, One-leaf Cape Tulip, African Cornflag, Black Flag, Freesia, *Raphanus raphanistrum*, *Lupinus* sp and *Pelargonium capitatum*.
2.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.
3.	Monitor, control and document the distribution of new invasive weeds as they arise.
4.	Remove juvenile Olive seedlings as they emerge.
5.	Undertake ongoing maintenance of weeds in restoration sites.
6.	Control priority weeds in accordance with management notes detailed in Appendix 4.
7.	Retain 3 Olive trees that have heritage value within Point Resolution.
MONITORING	
8.	Monitor, control and document the distribution of new invasive weeds as they arise.
9.	Annually monitor weeds with the potential to expand rapidly and map changes in their distribution if required.

10.	Undertake annual monitoring and control of *Acacia longifolia*, Coast Teatree, African Boxthorn, Brazilian Pepper, Geraldton Wax, *Lantana camera*, Giant Reed, Sweet Pea and Olive trees to ensure they do not spread or reestablish.

FIRE MANAGEMENT

Fire management actions for all natural areas have been detailed on pages 45 - 50 of the Natural Areas Management Plan 2013 – 2018 and the fire history map shown in the map section on page 33 of this Management Plan. The City recently undertook bushfire risk assessments in all of City's natural areas using Australian Standard AS 3959 (*Buildings in Bush Fire Prone Areas*) and ISO AS/NZ 31000-2009 (Risk Management - Principles and Guidelines). As a result of these assessments the following actions are to be implemented for Point Resolution these are detailed in the table below:

Location	Action
Fire Access Way adjacent to 68 Jutland Parade	Overhanging vegetation to be trimmed to create a 3m wide (horizontal) fuel zone, with 5m vertical clearance.
Within 30m of eastern boundary	The crowns of tall tuart trees and those leaning towards the boundary to be trimmed back to a height of 5m above ground surface and retrimmed when the foliage reaches 10m. Only specialist contractors to undertake this work.
Within 50m of eastern boundary	Any standing dead trees or shrubs within 50m of the house to be trimmed off at the base.

In addition to the above listed actions fire bans should be maintained at all times at Point Resolution and reduction of fuel loads through Sweet Pea and grass weed control along with annual maintenance of fire access ways are also ongoing fire hazard reduction strategies that need to be implemented for Point Resolution.

Management Actions 2013 - 2018

	ACTIONS
1.	Undertake annual management of Sweet Pea and Perennial Veldt Grass to reduce fuel loads.

ACCESS

The objectives for access have been detailed for all natural areas on pages 51 – 54 of the Natural Areas Management Plan 2013 - 2018. The fences and path network at Point Resolution are considered appropriate and rehabilitation has been completed on most informal tracks over recent years. Due to the steepness of the site the path network within the bushland area does not allow for disability access. The path network and fire access is shown in the map section on page 33. Based on current funding the path network is due to be upgraded in accordance with the City's Natural Area Path Network Policy and Corporate Business Plan in 2015/16.

CULTURAL HERITAGE, INTERPRETATION & EDUCATION

Cultural Heritage, Interpretation and Education have been detailed for all natural areas on pages 55 - 62 of the Natural Areas Management Plan 2013 - 2018.

Walking trails linking all bushlands in the Western Suburbs (including Point Resolution) are in the process of being developed for the Whadjuk Trails Project. This project is a collaboration between Lotterywest, natural area friends groups across the Western Suburbs, WESROC Councils, the Botanic Gardens and Parks Authority (BGPA) and the Cities of Stirling and Fremantle. A website displaying

information about the trails including Point Resolution is in the process of being developed where people can download a map and App of sections of the trail network. Interpretive signage will also be installed through the Reserve detailing the cultural and environmental significance of Point Resolution this will be developed in conjunction with the Friends of Point Resolution.

NATIVE ANIMALS

Background

There are 67 confirmed native animal species in Point Resolution (57 birds, 2 mammals and 8 reptiles). Ongoing surveying of native fauna within Point Resolution should be undertaken if resources are available.

At present all these species are managed indirectly through improving bushland condition and control of feral animals which have the potential to predate, compete with or displace native animals. This is discussed under the section on feral animal management on pages 65 – 69 of the Natural Areas Management Plan 2013 – 2018.

Strategy for Protection of Native Animals

White Striped Mastiff Bat (*Tadarida australis)*

White Striped Mastiff Bats roost in singular or in small groups in tree hollows and are common and widespread across parts of southern Australia.

Brushtail Possum

Brushtail Possums are among the most adaptable of the native mammals they live in a variety of habitats often favouring open forest and woodland areas with older trees that provide hollows.

Birds

Of the 57 bird species identified in Appendix 3 six species are listed under the EPBC Act the Carnaby's Cockatoo *(Calyptorhynchus latirostris)* which is listed as *Endangered; and* the Rainbow Bee-eater *(Merops ornatus)*, Grey Plover (*Pluvialis squatorola*), Common Sandpiper (*Actitis hypoleucos*), Common Greenshank (*Tringa nebalaria*); and Caspian Tern (*Hydropogne caspia*) which are listed as *Migratory* and *Marine* species.

Large flocks of Carnaby's Cockatoos are regularly seen feeding on *Banksia sessilis* thickets in the bushland. Carnaby's Cockatoos have a roost site at 104 Adelma Rd Dalkeith (GCC36). There are a further two unconfirmed roost sites being researched by the Threatened Cockatoo Recovery Project in close proximity to Point Resolution these include Sunset Hospital Site Dalkeith (DEC37); and Birdwood Parade (DEC37).

Ospreys are regularly seen hunting in the river adjacent to Point Resolution and also perching on large tree branches to consume their prey in the Reserve. Other migratory birds are often seen feeding in the water and shoreline areas.

The sandy embankment areas are used for nesting by Rainbow Bee-eaters who migrate annually in summer and nest in Perth's sandy soils. They have also been seen nesting and foraging at Point Resolution. If nests are encountered in the bushland or parkland area they should be protected so that any restoration work undertaken or mowing activities do not disturb their nests. Feral fox control should also be implemented as they can predate on their nests.

Feral birds

Feral birds compete with native birds for foraging material and nesting hollows. Some also carry diseases which have the potential to infect native bird populations such as Rainbow Lorikeets that

carry Beak and Feather Disease. DPAW have been undertaking a five year regional feral bird control program focussing on Rainbow Lorikeets and Long Billed Corellas. They are currently seeking funding from Local Governments to continue this program.

The protection of the native animals at Point Resolution can be achieved through:

- Minimising fires that may destroy tree hollows,
- Retaining hollows for refuges in large old and dead trees,
- Controlling feral European Bees as they can displace native animals,
- Protecting nests of Rainbow Bee-eaters if they are encountered,
- Continuation of the fox control program; and
- Contributing to regional program being undertaken by DPAW for feral bird control.

Management Actions 2013 - 2018

ACTIONS	
1.	Undertake ongoing surveying of native fauna if resources allow.
2.	Minimise fires that may destroy tree hollows.
3.	Retain hollows for refuges in large old and dead trees.
4.	Control feral European Bees as they can displace native animals.
5.	Protect nests of Rainbow Bee-eaters if they are encountered.
6.	Continue the fox control program.
7.	Contribute to regional programs being undertaken for feral bird control by DPAW.

COMMUNITY INVOLVEMENT

The objectives and strategies for community involvement for all the City's community friends groups are detailed on pages 63 - 64 of the Natural Areas Management Plan 2013 - 2018. In summary the activities of bushland community groups should continue to be supported by the City through the Community Friends Group Policy and assistance should be provided to help friends groups remain sustainable through advertising and the volunteer referral centre.

The Friends of Point Resolution formed in 1999 to protect the bushland from proposals to install facilities to increase the use of the Reserve. The mission statement of the Friends of Point Resolution is:

> *"To promote conservation of Point Resolution and other areas of natural bushland and reserves in the peninsula."*

The development proposals for the Reserve did not proceed and from 1999 the Friends of Point Resolution and the City of Nedlands have co-managed restoration and conservation efforts within Point Resolution. This relationship has helped the City source significant funding through grant programs for the restoration of the Reserve.

The Friends of Point Resolution assist the City with the development of management actions for the Reserve and assistance with grant funding. The Friends of Point Resolution have worked with the City to undertake numerous Clean Up Australia Day events at Point Resolution. The City aims to continue supporting community events at Point Resolution such as Clean Up Australia Day in the future.

Should a member of the public wish to contact the Friends of Point Resolution Reserve please contact the City on 9273 3500.

Management Actions 2013 2018

ACTIONS	
1.	Continue to support community events in the Reserve such as Clean Up Australia Day.

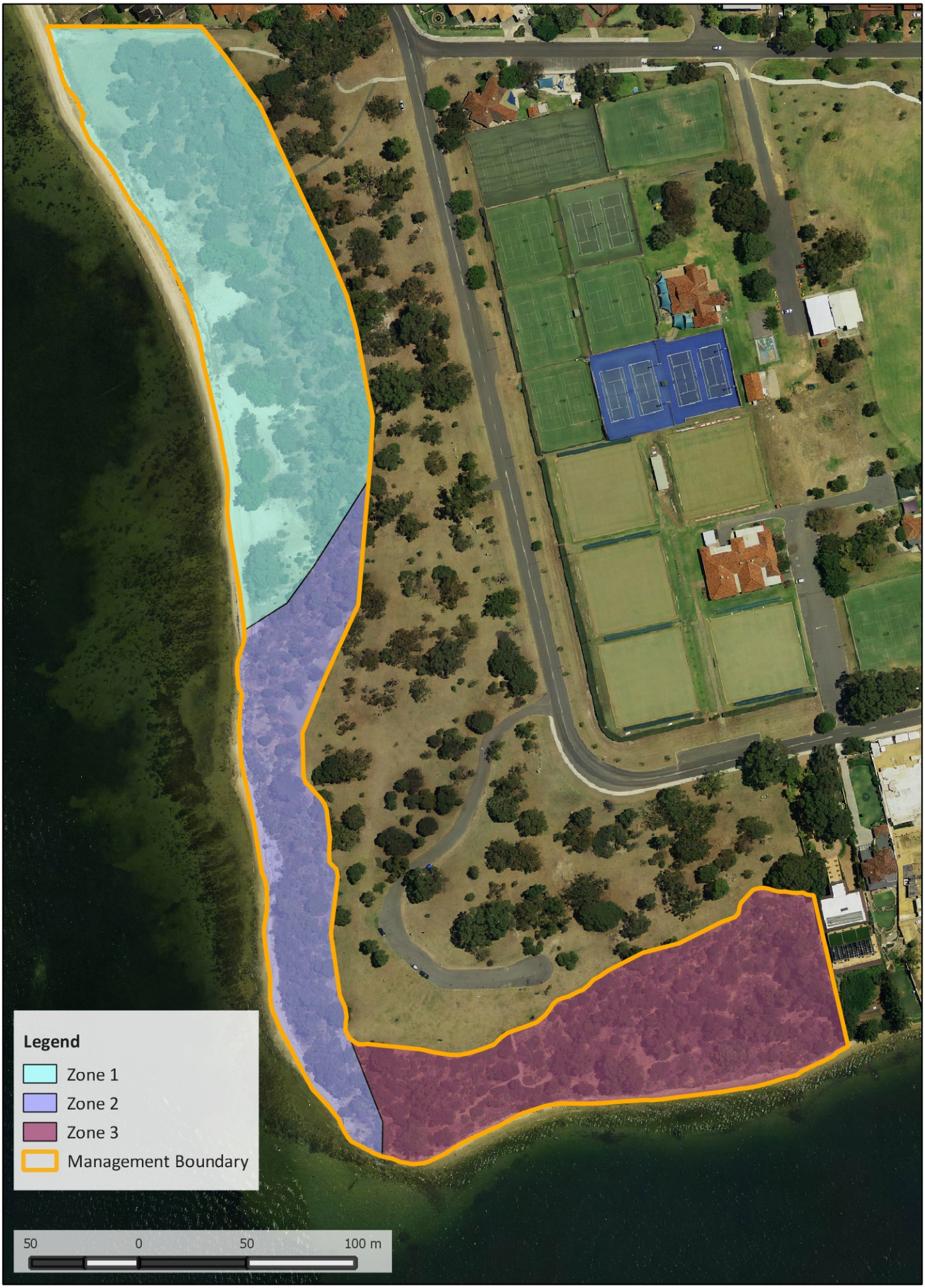
MAPS

City of Nedlands

Map 1: Vegetation Communities

City of Nedlands

Map 2: Bushland Condition



City of Nedlands

Map 3: Management Zones

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City of Nedlands

Map 4: *Argyranthemum frutescens* - Marguerite Daisy

Map 5: *Arundo donax* - Giant Reed

City of Nedlands

City of Nedlands

Map 6: *Asparagus asparagoides* - Bridal Creeper

Map 7: *Chasmanthe floribunda* - African Cornflag

City of Nedlands

Map 8: Ehrharta calycina - Perennial Veldt Grass

City of Nedlands

Map 9: *Euphorbia terracina* - Geraldton Carnation Weed

City of Nedlands

Map 10: *Ferraria crispa* - Black Flag

City of Nedlands

Map 11: *Freesia alba x leichtlinii* - Freesia

City of Nedlands

City of Nedlands

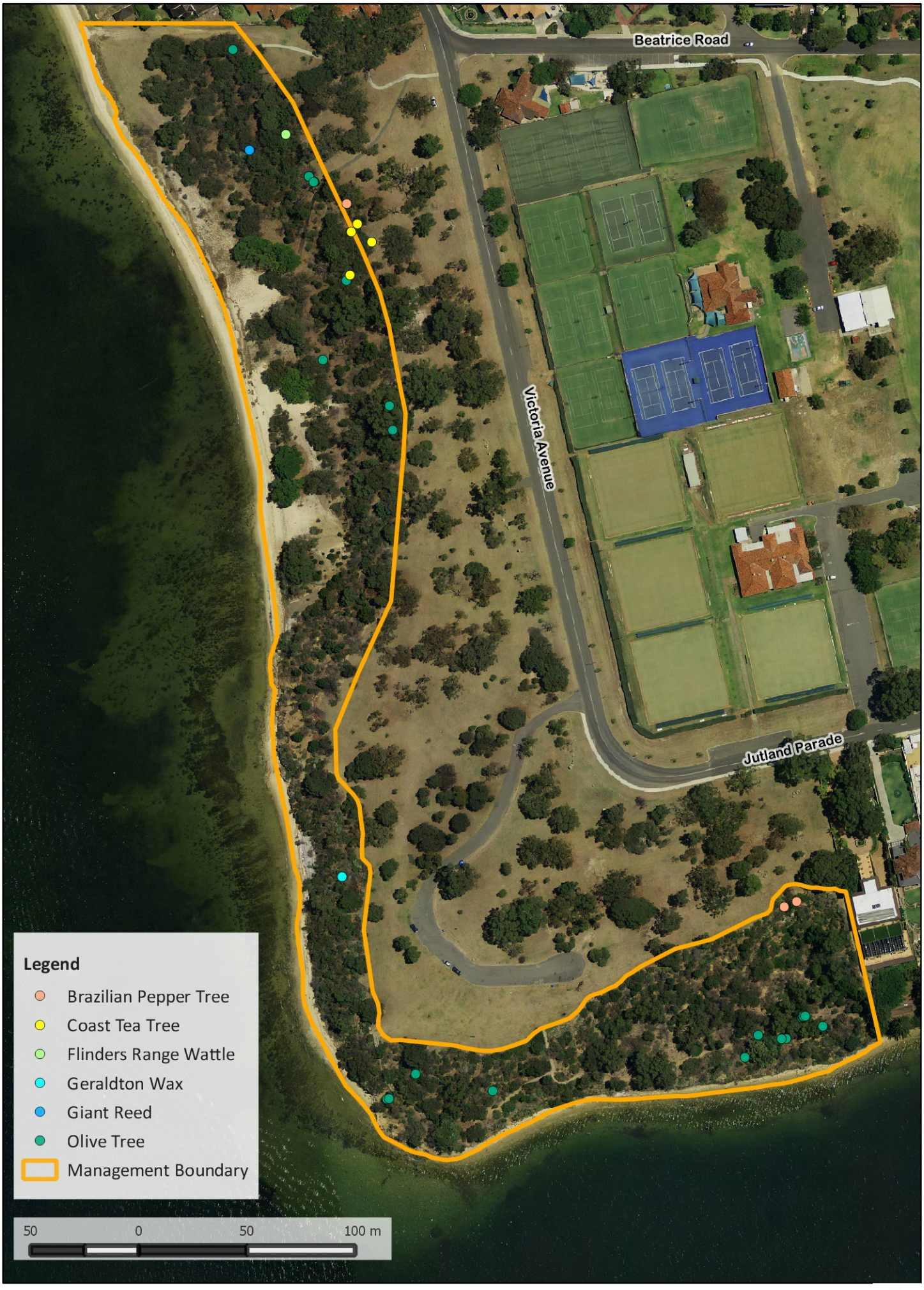
Map 12: *Lathyrus sp* - Sweet Pea

City of Nedlands

Map 13: *Pelargonium capitatum* - Rose Pelargonium

City of Nedlands

Map 14: *Trachyandra divaricata* - Dune Onion Weed



Map 15: Woody Weeds

City of Nedlands

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City of Nedlands

Map 16: Fire History

City of Nedlands

Map 17: Fire Access and Pathways

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Appendix 1 **Flora Inventory**

Native Plant Inventory

SPECIES	COMMON NAME	COMMENTS
Acacia cyclops	Coastal Wattle	
Acacia lasiocarpa	Dune Moses	
Acacia pulchella	Prickly Moses	
Acacia saligna	Golden Wreath Wattle	
Acacia stenoptera	Narrow Winged Wattle	Not recorded in 2013
Acacia xanthina	White-stemmed Wattle	
Acanthocarpus preissii	Prickle Lily	
Agonis flexuosa	Peppermint	
Alexgeorgea nitens		
Allocasuarina fraseriana	Sheoak	
Allocasuarina humilis	Dwarf Sheoak	
Anigozanthos humilis	Catspaw	
Anigozanthos manglesii		Replanted
Austrostipa flavescens		
Banksia attenuata	Slender Banksia	
Banksia dallanneyi	Couch Honeypot	AG. Not recorded in 2003 or 2013
Banksia menziesii	Firewood Banksia	
Banksia sessilis	Parrot Bush	
Baumea juncea		Introduced into the foreshore at Zone 2 and 3
Burchardia umbellata	Milkmaids	Not recorded in 2013
Caladenia flava	Cowslip Orchid	
Caladenia latifolia	Pink Fairy Orchid	
Caladenia longicauda	Common White Spider Orchid	AG. Not recorded in 2003 or 2013
Calectasia narragara		AG. Not recorded in 2003 or 2013
Callitris preissii	Rottnest Island Pine	
Calothamnus quadrifidus	One Sided Bottle Brush	
Casuarina obesa		Introduced into the foreshore at Zone 2 and 3
Conostylis candicans	Grey Cottonhead	
Conostephium pendulum	Pearl Flower	Not recorded in 2013
Conostephium preissii		Not recorded in 2013
Corymbia calophylla	Marri	
Crassula colorata	Dense Stonecrop	
Daviesia decurrens	Prickly Bitter-pea	Not recorded in 2003 or 2013
Daviesia divaricata	Marno	
Daviesia triflora		Not recorded in 2003 or 2013
Desmocladus flexuosus		
Dianella divaricata		
Diuris longifolia	Common Donkey Orchid	AG. Not recorded in 2003 or 2013
Drosera macrantha	Bridal Rainbow	Not recorded in 2013

SPECIES	COMMON NAME	COMMENTS
Enchylaena tomentosum	Barrier Saltbush	
Eremophila glabra	Tar Bush	
Eucalyptus gomphocephala	Tuart	
Eucalyptus marginata	Jarrah	
Eucalyptus rudis	Flooded Gum	
Ficinia nodosa	Knotted Club Rush	
Gastrolobium capitatum	Bacon And Eggs	AG. Not recorded in 2003
Gompholobium tomentosum	Hairy Yellow Pea	
Grevillea crithmifolia		
Grevillea vestita		
Guichenotia ledifolia		
Hakea prostrata	Harsh Hakea	
Hardenbergia comptoniana	Native Wisteria	
Hemiandra pungens	Snakebush	
Hibbertia hypericoides	Yellow Buttercups	
Hovea trisperma	Common Hovea	AG. Not recorded in 2003 or 2013
Hypocalymma angustifolium	White Myrtle	Reintroduced into Zone 3
Hypocalymma robustum	Swan River Myrtle	AG. Recorded in 2013
Isotropis cuneifolia	Granny Bonnets	AG. Not recorded in 2003 or 2013
Jacksonia furcellata	Grey Stinkwood	AG. Recorded in 2013
Jacksonia sericea	Waldjumi	
Jacksonia sternbergiana	Stinkwood	
Juncus kraussii		
Kennedia prostrata	Scarlet Runner	
Lepidosperma? costale		Not recorded in 2013
Lepidosperma gladiatum	Coast Sword-sedge	
Leucopogon parviflorus	Coast Beard-heath	Not recorded in 2013
Lomandra caespitosa	Tufted Mat Rush	
Lomandra hermaphrodita		Not recorded in 2013
Macrozamia preissii	Zamia	
Melaleuca cuticularis	Saltwater Paperbark	Reintroduced into Zone 3
Melaleuca huegelii	Chenille Honeymyrtle	Reintroduced into Zone 3
Melaleuca lanceolata	Rottnest Teatree	
Melaleuca systena		
Mesomelaena pseudostygia	Semaphore Sedge	
Microtis sp	Mignonette Orchid	
Myoporum insulare	Blueberry Tree	
Olearia axillaris	Coastal Daisybush	
Petrophile linearis	Pixie Mops	Not recorded in 2003 or 2013
Petrophile macrostachya	Slender Myoporum	
Philotheca spicata	Pepper and Salt	AG. Not recorded in 2003 or 2013
Ptilotus polystachyus	Prince Of Wales Feathers	Not recorded in 2003 or 2013
Pimelea rosea	Rose Banjine	Replanted into Zone 3?
Rhagodia baccata	Berry Saltbush	
Scaevola anchusifolia	Silky Scaevola	
Scaevola crassifolia	Thick-leaved Fan-flower	Replanted into Zone 3?
Scaevola nitida		
Senecio pinnatifolius	Senecio	
Schoenoplectus validus	Lake Club-rush	Not recorded in 2013

SPECIES	COMMON NAME	COMMENTS
Schoenus grandiflorus	Large Flowered Bog Rush	Not recorded in 2003 or 2013
Sporobolus virginicus	Marine Couch	
Sowerbaea laxiflora	Purple Tassels	AG. Not recorded in 2003 or 2013
Spyridium globulosum	Basket Bush	
Stirlingia latifolia	Blueboy	AG. Not recorded in 2003 or 2013
Thysanotus arenarius		*Thysanotus* sp recorded in 2013
Trachymene pilosa	Native Parsnip	
Tricoryne elatior	Yellow Autumn Lily	Not recorded in 2013
Xanthorrhoea preissii	Grass Tree	

AG – observed by A. Gardiner

Weed Inventory

SPECIES	COMMON NAME
Agave Americana	Century Plant
Aira caryophyllea	Silvery Hairgrass
Araucaria heterophylla	Norfolk Island Pine
Argyranthemum frutescens	Marguerite Daisy
Arundo donax	Giant Reed
Asparagus asparagoides	Bridal Creeper
Avena fatua	Wild Oat
Brachychiton populneus	Kurrajong
Brassica barrelieri subsp. oxyrrhina	Smooth Stem Turnip
Briza maxima	Blowfly Grass
Briza minor	Shivery Grass
Carpobrotus edulis	Hottentot Fig
Chamelaucium uncinatum	Geraldton Wax
Chasmanthe floribunda	African Cornflag
Conyza bonariensis	Flaxleaf Fleabane
Cynodon dactylon	Couch
Cyperus sp	
Ehrharta calycina	Perennial Veldt Grass
Ehrharta longiflora	Annual Veldt Grass
Erythrina sykesii	Coral Tree
Eucalyptus caesia	Caesia
Euphorbia terracina	Geraldton Carnation Weed
Ferraria crispa	Black Flag
Freesia alba x leichtlinii	Freesia
Ficus macrophylla	Moreton Bay Fig
Foeniculum vulgare	Fennel
Fumaria capreolata	Whiteflower Fumitory
Lactuca saligna	Wild Lettuce
Lagurus ovatus	Hares Tail Grass
Lantana camara	Common Lantana
Lathyrus sp	Sweet Pea
Leonotis leonurus	Lion's Ear
Leptospermum laevigatum	Coast Teatree
Limonium sp	
Lupinus cosentinii	Sandplain Lupin
Lupinus mutabilis	
Lycium ferocissimum	African Boxthorn
Moraea flaccida	One-leaf Cape Tulip
Olea europaea	Olive Tree
Oxalis pes-caprae	Soursob
Papaver rhoeas	Field Poppy
Pelargonium capitatum	Rose Pelargonium
Phoenix dactylifera	Date Palm
Pinus pinaster	Pinaster Pine
Raphanus raphanistrum	Wild Radish

SPECIES	COMMON NAME
Ricinus communis	Castor Oil Plant
Romulea rosea	Guildford Grass
Schinus terebinthifolius	Brazilian Pepper
Solanum nigrum	Black Nightshade
Sonchus asper	Rough Sowthistle
Stenotaphrum secundatum	Buffalo Grass
Tetragonia decumbens	Sea Spinach
Trachyandra divaricata	Dune Onion Weed
Vinca major	Blue Periwinkle

Appendix 2 Fungi Inventory

Scientific Name	Common Name
Crepidotus sp	
Laetiporus portentosus	White Punk
Pycnoporus coccineus	Scarlet Bracket Fungus
Scleroderma sp.	Earthball

Appendix 3 Fauna Inventory

Bird Inventory Updated from 2003 Management Plan

Common Name	Scientific Name	Migratory Species	Recorded by David Free 2011	Listed in the 2003 Management Plan
Black Swan	*Cygnus atratus*		x	
Grey Teal	*Anas gracilis*			x
Pacific Black Duck	*Anas superciliosa*		x	x
Hoary-headed Grebe	*Poliocephalus poliocephalus*		x	
*Rock Dove (Feral Pigeon)	*Columba livia*		x	x
* Laughing Dove	*Streptopelia senegalensis*			x
* Spotted Dove	*Stretopelia chinesis*			x
Tawny Frogmouth	*Podargus strigoides*			x
Australasian Darter	*Anhinga novaehollandiae*		x	
Little Pied Cormorant	*Microcarbo melanoleucos*			x
Great Cormorant	*Phalacrocorax carbo*			x
Little Black Cormorant	*Phalacrocorax sulcirostris*			x
Pied Cormorant	*Phalacrocorax varius*			x
Australian Pelican	*Pelecanus conspicullatus*		x	x
Eastern Great Egret	Ardea alba		x	
White Faced-heron	*Egretta novaehollandiae*		x	x
Australian White Ibis	*Threskiornis moluccus*		x	
Eastern Osprey	*Pandion haliaetus*		x	
Black-shouldered Kite	*Elanus axillaris*			x
Collared Sparrowhawk	Accipiter cirrocephalus		x	
Nankeen Kestral	*Falco cenchroides*			x
Australian Hobby	Falco longipennis		x	
Australian Pied Oystercatcher	Haematopus longirostris		x	
Black-winged Stilt	*Himantopus himantopas*			x
Grey Plover	*Pluvialis squatorola*	x		x
Black-fronted Plover	*Charadius melanops*			x
Common Sandpiper	*Actitis hypoleucos*	x		x
Common Greenshank?	*Tringa nebalaria*	x	x	x
Marsh Sandpiper	Tringa stagnatilis		x	
Fairy Tern	Sternula nereis		x	
Caspian Tern	*Hydropogne caspia*	x	x	x
Crested Tern	*Thalasseus bergii*		x	x
Silver Gull	*Chroicocephalus novaehollandiae*		x	x
Carnaby's Cockatoo	*Calyptorhynchus latirostris*			x
Galah	*Eolophus roseicapilla*		x	x
*[1] Long-billed Corella	*Cacatua tenuirostris*			

Common Name	Scientific Name	Migratory Species	Recorded by David Free 2011	Listed in the 2003 Management Plan
Little Corella	Cacatua sanguinea		x	
* Rainbow Lorikeet	*Trichoglossus haematodus*			x
Australian Ringneck	*Barnardius zonarius*		x	x
* Laughing Kookaburra	*Dacelo novaegaineae*			x
Sacred Kingfisher	Todiramphus sanctus		x	
Rainbow Bee-eater	*Merops ornatus*	x		x
Variegated Fairy-wren	*Malarus lambertii*		x	x
Western Gerygone	*Gerygone fusca*		x	x
Striated Pardalote	*Pardalotus striatus*		x	x
Singing Honeyeater	*Lichenostomus virescens*		x	x
Western Wattlebird	*Anthochaera lunulata*		x	
Red Wattlebird	*Anthochacra caranculata*		x	x
Brown Honeyeater	*Lichmera indistincta*		x	x
New Holland Honeyeater	*Phylidonyris novaehollandiae*		x	
White Cheeked Honeyeater	*Phylidonyris nigra*		x	x
Varied Sitella	*Daphoenositta chrysoptera*			x
Black-faced Cuckoo Strike	*Coracina novaehollandiae*			x
Grey Butcherbird	Cracticus torquatus		x	
Australian Magpie	*Cracticus tibicen*		x	x
Willie Wagtail	Rhipidura leucophrys		x	
Australian Raven	*Corvus coronoides*		x	x
Magpie-lark	Grallina cyanoleuca		x	
Red-capped Robin	*Petrica goodenovii*			x
Silvereye	*Zosterops lateralis*		x	x
Welcome Swallow	*Hirundo neoxena*	x	x	x
Tree Martin	*Cecropis nigricans*	x	x	x
Australasian Pipit	*Anthus novaeseelandiae*		x	

* Feral birds [1] Recorded by Vicki Shannon

Mammals and Reptile Inventory

Mammals		**Introduced**
Brushtail Possum	*Trichosurus vulpecula*	
Fox	*Vulpes vulpes*	*
White Stripped Mastiff Bat	*Tadarida australis*	
Rabbit	*Oryctolagus cuniculus*	*
Reptiles		
Marbled Gecko	*Christinus marmoratus*	
Sands Gould's Monitor	*Varanus gouldii*	
Fence Skink	*Cyptoblepharus buchananii*	
West Coast Ctenotus	*Ctenotus fallens*	
Two-toed Mulch Skink	*Hemiergis quadrilineata*	
Western Bobtail	*Tiliqua rugosa*	
Burrowing Skink	?	
Grey skink	?	

Appendix 4 **Priority Weed Management Notes** (Summarised from Florabase)

Species Name		Common Name	Management Strategy	Timing (optimal)
1.	*Avena fatua*	Wild Oat	Spray at 3-5 leaf stage with Fusilade Forte at 16 ml/10 L and wetting agent. Repeat treatment over following 2 years. Prevent seed production and seedbank inputs each year. For small infestations hand removal may be feasible.	Aug - Nov
2.	*Agave americana*	Century Plant	Dig out and/or hand remove small infestations. Stem inject into base of leaves 1 part Tordon/5 parts diesel.	Nov - Jan
3.	*Argyranthemum frutescens*	Marguerite Daisy	Manually remove populations.	June - Oct
4.	*Arundo donax*	Giant Reed	Root and rhizome mass needs to be killed Small infestations can be physically controlled ensuring all rhizomes are removed. For larger infestations, use aquatic approved herbicides.	Feb - March
5.	*Asparagus asparagoides*	Bridal Creeper	Dig out juvenile seedlings in degraded areas. Spray 0.2 g metsulfuron methyl + Pulse in 15 L water (or 2.5 - 5g /ha + Pulse). Best results achieved when flowering. Biological control agents available such as the Leafhopper and the rust.	July - Aug
6.	*Brachychiton populneus*	Kurrajong	Hand pull seedlings. For mature plants try stem injection with 50-100% glyphosate or apply 250 ml Access in 15 L of diesel to basal 50 cm of trunk (basal bark) or cut and paint with 50% glyphosate.	Sept - April
7.	*Brassica barrelieri subsp. oxyrrhina*	Smooth Stem Turnip	Manually remove populations.	June - Oct
8	*Carpobrotus edulis*	Hottentot Fig	Manual methods appear to be the most effective means of control. Roll up large mats removing all roots and stem fragments and remove from site. Follow up with removal of any germinating plants. Only remove when flowering.	Sept - Nov
9.	*Chamelaucium uncinatum*	Geraldton Wax	Cut to base and paint with 50% glyphosate. Control seedlings following fire.	All Year
10.	*Chasmanthe floribunda*	African Cornflag	Dig out isolated plants.	June - Sept
11.	*Cynodon dactylon*	Couch	Spray Fusilade Forte at 8 ml/L + wetting agent when plants are small and beginning new growth, or 1% glyphosate (at degraded sites) in late spring/summer and autumn when rhizomes are actively growing.	Nov– Feb
12.	*Ehrharta calycina*	Perennial Veldt Grass	For small infestations, cut out plants ensuring crown removal. Do not slash. Alternatively spray with Fusilade Forte 13 ml/L or 3.3-6.6 L/ha + wetting agent on actively growing and unstressed plants. Use higher rate in dense undergrowth or on older less vigorous plants. Follow-up in subsequent years. Use unplanned fires to spray regrowth and seedlings within 4-6 weeks of germination.	June – Sep (herbicide) and Nov – Feb (manual)
13.	*Ehrharta longiflora*	Annual Veldt Grass	Hand remove small infestations. Alternatively spray with Fusilade Forte 30 ml/10 L or 1.6 L/ha (based on 500 L water/ha) + wetting agent before flowering stem emerges, or at 3-5 leaf stage.	Aug - Oct
14.	*Euphorbia terracina*	Geraldton Carnation Weed	Manually remove populations. Undertake control after any fire event.	June – Nov

Species Name		Common Name	Management Strategy	Timing (optimal)
15.	*Ferraria crispa*	Black Flag	Hand remove very small populations in degraded sites. Sift soil to find all corms. Spray 2,2 DPA 10 g/L + Pulse when flowering. In degraded sites try glyphosate 1% + metsulfuron methyl 0.2 g/15 L + Pulse. Takes a number of years to control populations.	Aug - Sept
16.	*'Freesia alba x leichtlinii*	Freesia	Spot spray metsulfuron methyl 0.2 g/15 L + Pulse or 2.5-5 g/ha + Pulse. Apply just on flowering at corm exhaustion.	July – Aug
17.	*Fumaria capreolata*	Climbing Fumitory	Hand remove seedlings in good bushland areas.	July – Aug
18.	Leptospermum laevigatum	Coast Teatree	Hand pull seedlings. Fell mature plants. Resprouting has been recorded in some areas. Where resprouting has been observed, apply 250 ml Access in 15 L of diesel to bottom 50 cm of trunk (basal bark).	July - Oct
19.	*Lagurus ovatus*	Hare's Tail Grass	Prevent seed set. Hand removal small isolated infestations. In selective situations spray with 16 ml/10 L (800 ml/ha) Fusilade Forte + spray oil any time before flowering. A lower rate of 13 ml/10 L Fusilade Forte can be used in winter at the 2-8 leaf stage before stem elongation.	June - Aug
20.	*Lupinus angustifolius*	Narrowleaf Lupin	Manually remove populations.	June - Oct
21.	*Lupinus cosentinii*	Sandplain Lupin	Manually remove populations.	June - Oct
22.	Moraea flaccida	One-leaf Cape Tulip	Spot spray metsulfuron methyl 0.2 g/15 L or chlorsulfuron 0.2 g/15 L + Pulse or 2.5-5 g/ha + Pulse or 2,2 DPA 55 g/10 L + Pulse. Apply just on flowering at corm exhaustion.	July - Aug
23.	*Olea europaea*	Olive	Hand pull or dig out seedlings and small plants ensuring removal of all roots. For mature plants cut to base and paint 50% glyphosate or apply 250 ml Access in 15 L of diesel to base 50 cm of trunk (basal bark). Monitor sites for seedling recruitment.	March – May and Oct - Dec
24.	*Pelargonium capitatum*	Rose Pelargonium	Only control when native vegetation has established. Hand pull isolated plants taking care to remove the entire stem as it can reshoot from below ground level. Spot spray metsulfuron methyl 5 g/ha + Pulse. Easily controlled after fire.	June - Oct
25.	*Pennisetum clandestinum*	Kikuyu Grass	Difficult to manually control as all rhizomes must be removed. Spray with 1% glyphosate or Fusilade Forte at 16mL/L + wetting agent. 2-3 sprays over a single growing season are often required. Use unplanned fire events to effectively control regrowth.	Nov - Jan
26.	*Raphanus raphanistrum*	Wild Radish	Manually remove populations.	June - Oct
27.	*Schinus terebinthifolius*	Brazilian Pepper	Hand pull seedlings ensuring removal of all root material. Stem inject older plants using 50% glyphosate or basal bark with 250 ml Access in 15 L of diesel to bottom 50 cm of trunk during summer. Avoid root disturbance until trees are confirmed dead.	Dec - March
28.	Trachyandra divaricata	Dune Onion Weed	Only control when native vegetation has established. Manually remove isolated or small infestations prior to flowering. Wipe with 50% glyphosate solution before flowering. For dense infestations in degraded areas spot spray 0.4 g chlorosulfuron plus 25 ml wetting agent in 10 L of water when plants actively growing.	June - August

Appendix 5 Implementation of the 2003 – 2009 Management Plan.

	RECOMMENDATIONS	Implemented Yes/No/ Partially
BUSHLAND BOUNDARIES		
1.	Clearly delineate boundaries between parkland and bushland and heritage precincts.	Yes
2.	Continue to manage the bushland at Point Resolution on the basis of 3 sectors, given that these reflect distinct vegetation communities and topography.	Yes
3.	Establish informal garden beds of indigenous plants at least 1 m wide, and preferably several metres wide, between parkland and bushland.	Yes
4.	Install a low limestone wall between the garden beds of indigenous plants and parkland. Establish distinct bushland/parkland boundaries for Zones 1 and 2 at Point Resolution as a priority.	No
5.	Concentrate rehabilitation efforts at identified rehabilitation sites.	Yes
REHABILITATION		
6.	Establish distinct bushland/parkland boundaries for Zones 2 and 3 at Point Resolution as a priority.	Yes
7.	Prioritise rehabilitation within and adjacent to areas of bushland in better condition including zones 2 and 3.	Yes
8.	Rehabilitate Zones 1 and 2 at Point Resolution as a priority.	Yes
REVEGETATION		
9.	Develop Rehabilitation Plans for all sites to be intensively managed. These should include as a minimum the boundary of works, a planting list and native plants present that require protection.	Yes
10.	Use only plant species for rehabilitation if they would have naturally occurred at the sites, with consideration given to species present onsite, species present on the Mt Eliza Escarpment at Kings Park and expert advice.	Yes
11.	Continue to compile a comprehensive list of species present for both sites.	Yes
12.	Use only forms of plants that would have naturally occurred onsite.	Yes
13.	Consider specific conditions (such as the need to restrict access and slope stability) in developing plant lists for rehabilitation sites.	Yes
14.	Use Jutemat® or equivalent on slopes exceeding 25º, particularly where native vegetation is sparse and soils either loose or shallow.	Yes
15.	Document all rehabilitation undertaken including weed control and tree planting.	Yes
16.	Annually remove Tree Guards from seedlings that have not survived.	Yes
17.	Establish a monitoring program for indigenous species, with the location and abundance of species in very low abundance recorded.	No
18.	Consider visual amenity in Site Rehabilitation Plans.	Yes
WEED CONTROL		
19.	Use an integrated approach to weed control including herbicides, manual removal, modifying microclimates (in terms of shade, moisture etc) and biological controls (such as Bridal Creeper Leafhopper and Rust).	Yes
20.	Establish a monitoring program for weed distributions.	Yes
21.	Eradicate Geraldton Wax, Victorian Tea Tree Black Flag and African	Yes

	Boxthorn as a priority at Point Resolution.	
22.	Control Freesias in Zones 1 and 2 at Point Resolution (i.e. contain it to Zone 3).	Yes
23.	Control Veldt Grass, Bridal Creeper, Japanese Pepper and Giant Reed as a priority at Point Resolution.	Yes
24.	Retain 3 individual relatively non-invasive Olive Trees with historic value within Point Resolution bushland.	Yes
25.	Use an integrated approach to weed control including herbicides, manual removal, modifying microclimates (in terms of shade, moisture etc) and biological controls (such as Bridal Creeper Leafhopper and Rust).	Yes
DISEASE CONTROL		
26.	Establish hygiene protocols for Council operations within bushland reserves	Yes
27.	Minimise operations involving movement of soil, such as firebreak and track construction and maintenance, to a minimum, and carry out these operations under strict dieback hygiene practices.	Yes
28.	Ensure that any soil or plant material used for bushland restoration should be certified as Phytophthora-free.	Yes
29.	Ensure that nurseries commissioned to grow plants for revegetation works are accredited dieback-free nurseries.	Yes
FIRE MANAGEMENT		
30.	Ban all open fires at all times should be instigated within the study area.	Yes
31.	Reduce fuel loads through control of weeds such as Veld Grass and Sweet Pea.	Yes
32	Suppress and contain any wildfires within the study area as quickly as possible.	Yes
33.	Document fire history with the extent of fires mapped, and dates and causes recorded.	Yes
34.	Develop a Fire Control Working Plan (FCWP) for the Municipality.	Yes
35.	Supply copies of the FCWP to local Fire Brigades so that they are aware of the biological assets that require protection, and access and infrastructure in the vicinity.	Yes
36.	Control access into burnt areas as soon as possible after the fire.	Yes
ACCESS		
37.	Undertaken a geotechnical survey to determine whether any cliff faces are unstable and subsequently determine whether access should be restricted near any cliff faces.	Yes
38.	Regularly prune along all paths to be retained.	Yes
39.	Develop standards for bushland paths.	Yes
40.	Maintain all bushland paths to satisfactory standard.	Partially
41.	Maintain major paths within Point Resolution.	Yes
42.	Upgrade two major tracks from the parkland down the slopes at the southern end of Point Resolution.	Yes
43.	Construct a formal path onto the western beach at the southern end of Point Resolution.	Yes
44.	Maintain 3 access points onto the southern beach at Point Resolution and rehabilitate additional tracks.	Yes
45.	Rehabilitate informal tracks on western cliffs of Point Resolution.	Yes
46.	Preference is given to access restrictions that not dominate the site such as providing obvious paths maintained to a high standard, garden beds	Partially

	planted at high density and strategically placed prickly plants and kerbing or low limestone walls.	
COMMUNITY INVOLVEMENT		
47.	Develop a programme of activities that could involve the community in bushland rehabilitation activities.	Yes
48.	Develop, in conjunction with interpretation of historical aspects of the reserves, interpretative signage explaining rehabilitation programmes being undertaken.	No
CULTURAL HERITAGE, INTERPRETATION & EDUCATION		
49.	Undertake surveys to determine the location of the old convict houses, jetty, and hand-powered cranes at Point Resolution.	No
50.	Develop an interpretative trail relating the bushland condition and cliff faces to the quarrying undertaken at Point Resolution.	No
51.	Install interpretative signage of three 100 year old Olive Trees at Point Resolution.	No
52.	Consult with Aborigines to investigate potential for cultural interpretation.	No
FERAL ANIMALS		
53.	Continue to control of feral animals.	Yes