

City of South Perth

# Davilak Reserve Dieback Management Plan

August 2013



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## Executive Summary

Dieback is a term that has commonly been used to describe the disease caused by the introduced plant pathogen *Phytophthora cinnamomi*. A dieback assessment of Davilak Reserve was undertaken by Glevan Consulting in 2006; 7% of the Reserve was identified as being uninfested. The majority of the site had evidence of the pathogen with mortality observed in susceptible species including *Banksia ilicifolia*, *B. attenuata* and *Allocasuarina fraseriana*. Natural Area Consulting (NAC) was contracted by the City of South Perth to prepare a document that will assist with dieback management at Davilak Reserve. The objectives of the plan are to:

- protect the uninfested areas of the Reserve
- protect other natural areas in the City of South Perth and the Perth metropolitan region
- manage the infested area to maintain biodiversity.

Potential consequences resulting from the presence of dieback at Davilak Reserve include the:

- local extinction of trees and wildflowers
- loss of habitat for native fauna
- diminished recreation and aesthetic values of reserves
- cost of treatment
- cost of removing dead trees for public safety
- cost of rehabilitating areas damaged by the pathogen.

It is recommended that the following strategies are implemented by the City of South Perth to achieve the objectives of the plan:

### Limestone Path

- Widen the narrow limestone path to maintain vehicle access and to reduce the number of visitors walking through infested areas.
- Re-establish the limestone path at the entrances to the bushland areas.
- Extend the limestone path to allow vehicle access from the gate located at the north-east boundary of the site.

### Fencing

- Install fencing around the perimeter of the bushland and the limestone path to restrict unauthorised access.

### Phosphite Application

- Undertake foliar phosphite treatment every three years.
- Inject susceptible trees with phosphite every five years.

### Hygiene

- Ensure no soil is moved into or out of the Reserve.
- Where possible, undertake works in dry conditions.
- Develop and implement hygiene protocols for City of South Perth Staff and contractors.

### **Signage**

- Update existing signs to include dieback messages relating to hygiene and access.
- Install signs at all entrances to the bushland.

### **Follow-up Dieback Assessment**

- Undertake follow-up dieback monitoring two years after the completion of works.

### **Revegetation**

- Undertake infill planting in dieback affected areas with plants resistant to the pathogen.

It should be recognised that despite the majority of the site being infested with dieback, the Reserve still has good conservation values providing habitat to flora and fauna not otherwise found in urban areas. With sound management practices the conservation and recreational values provided by Davitlak Reserve can be maintained and enhanced.

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## 1.0 Introduction

Davilak Reserve is located approximately 6.29 km south of the Perth Central Business District in the suburb of Como (Figure 2). The site is a relatively small pocket of remnant bushland located within the City of South Perth occupying an approximate area of 2.7 ha. It is bounded by Manning Road to the south, Davilak Crescent to the north and east, and Ley Street to the west. The Reserve is made up of cleared areas, grassed parkland, remnant vegetation and a native seed orchard. Natural Area Consulting (NAC) was contracted by the City of South Perth to prepare a document that will assist with management of *Phytophthora cinnamomi* (dieback) at Davilak Reserve. This plan will describe the:

- management objectives for the site
- current site characteristics
- methodology and outcomes of the site assessment process
- management recommendations for dieback management.

A dieback assessment was undertaken by Glevan Consulting in 2006 with only 7% of the site identified as being uninfested. It should be recognised that the Reserve still has good conservation values providing habitat to flora and fauna such as areas such as the endangered (*EPBC Act 1999*) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (Figure 1).



**Figure 1:** Evidence of Carnaby's Cockatoo (*Calyptorhynchus latirostris*) foraging was observed at Davilak Reserve

### 1.1 Management Objective

The objectives of the Davilak Dieback Management Plan are to:

- protect the uninfested areas of the Reserve
- protect other natural areas in the City of South Perth and the Perth metropolitan area
- manage the infested area to maintain biodiversity.

### 1.2 Background

Dieback is a plant disease caused by the pathogen *Phytophthora cinnamomi* which was formally identified in Western Australia in the 1960s. It is classified as an Oomycete or water mould and is reliant on moist



conditions to survive. The pathogen feeds on root tissue causing lesions that reduce the ability of the plant to transport water and nutrients. There are over 50 species of *Phytophthora* but the most detrimental to Western Australia's flora is *P. cinnamomi* with over 40% of native species being susceptible (Dieback Working Group, 2008). The pathogen greatly decreases the biodiversity of infested areas, reducing the ability of bushland areas to provide habitat for native fauna. Dieback infection has a number of consequences for Local Government including the:

- local extinction of trees and wildflowers
- diminished recreation and aesthetic values of reserves
- cost of treatment
- cost of removing dead trees for public safety
- cost of rehabilitating areas damaged by the pathogen.

*P. cinnamomi* produces spores which are dispersed down-slope through water or soil movement; the pathogen spreads slowly up-slope because it is restricted to movement by root-to-root contact. (Dieback Working Group, 2000). A variety of human activities spread dieback, with significant vectors including:

- vehicles
- footwear
- earthworks
- revegetation works (Dieback Working Group, 2000).

The South-West of Western Australia is known as a biodiversity 'hotspot' with a rich diversity and high numbers of threatened and priority flora species. Over 50% of the states threatened and priority species are susceptible to dieback; as such, it is important to control its spread to minimise impacts. Management of *P. cinnamomi* can be achieved through appropriate hygiene, eliminating activities that spread the pathogen and the application of phosphite to boost the immune systems of susceptible plants (Dieback Working Group, 2008).

### **1.3 Scope**

NACs scope of works associated with development of the Davilak Dieback Management Plan included the following:

- a desktop review of relevant databases, procedures and literature
- a site assessment to 'ground truth' information from the desktop review
- assessment of key threatening processes relating to public access of the land
- provide management recommendations to minimise damage from the pathogen and limit its dispersal.

The plan will include recommendations relating to:

- the protection of uninfested areas
- managing areas that have been interpreted as having dieback present
- public access
- hygiene practices for the City of South Perth employees and contractors
- the use of signage to provide public education
- phosphite stem injection and foliar applications
- revegetation guidelines.



Figure 2: Site location and boundaries, Davilak Reserve

## **2.0 Methodology**

### **2.1 Desktop Assessment Methodology**

A review was undertaken by NAC personnel of relevant databases and other literature including:

- SLIPs NRM portal
- WA Atlas
- Perth Groundwater Atlas
- documents produced by the Dieback Working Group.

### **2.2 Site Assessment Methodology**

A site assessment was undertaken by NAC personnel in July 2013. The Reserve was systematically walked with observations made of the various site characteristics including:

- access
- hydrology
- vulnerable vegetation
- signage
- fencing
- surrounding land use.

### **2.3 Limitations**

Despite assessments being carried out by experienced personnel, there are a number of potential limitations associated with desktop and site assessment activities, including:

- databases may carry information that is not current
- site conditions at the time of the assessment may represent seasonal fluctuations
- the information within the dieback assessment (Glevan Consulting, 2006) may not reflect current site conditions.

## 3.0 Description of Physical Environment

### 3.1 Regional Context

According to Interim Biogeographical Regionalisation of Australia (IBRA) descriptions, Perth is located within the Swan Coastal Plain region. The Swan Coastal Plain comprises two major divisions, namely Swan Coastal Plain 1 – Dandaragan Plateau and Swan Coastal Plain 2 – Perth Coastal Plain. Davilak Reserve is located within the Perth subregion, which is broadly characterised as including areas of Jarrah and *Banksia* woodlands on sandy soils in a series of sand dunes, along with wetland areas, often within the interdunal swales (Mitchell, Williams and Desmond, 2002).

### 3.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters.

According to the Bureau of Meteorology (site number 009021, Perth Airport Observatory) (2013), the:

- average rainfall is 773.2 mm pa, with the majority falling between May and August
- average maximum temperature ranges from 17.9 °C in winter to 31.9 °C in summer, with the highest recorded maximum being 46.7 °C
- average minimum temperatures range from 8.0 °C in winter to 17.5 °C in summer, with the lowest recorded minimum being -1.3 °C
- predominant wind directions include morning easterlies and westerly sea breezes during summer months when the risk of fire is greatest, with an average wind speed of 23.8 km/h and gusts of more than 100 km/h, particularly during storm events.

### 3.3 Geology and Topography

Davilak Reserve is located on the Swan Coastal Plain, which is a long coastal strip that extends from Dunsborough in the south to Gingin in the north. It is characterised by a series of low sand dunes which run parallel with the coast that are made up of marine sediments laid down during various geological times. The Reserve has a relatively flat topography with site elevations ranging from 7 m to 11 m AHD (Department of Water, 2013). The highest point of the site is located at the north-east corner of the Reserve with the land gently sloping to the west and south.

The Natural Resource Management Shared Land Information Portal (SLIP NRM) (Department of Agriculture and Food, 2013) indicates that one soil type occurs at Davilak Reserve, namely the Spearwood S7 phase (211Sp\_S7). This soil type is part of the Spearwood Dune system, a formation characterised by sand with a high iron and aluminium oxide content. The database describes the soil as:

- pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace of feldspar, moderately sorted, of residual origin.

### 3.4 Hydrology

No natural drainage lines occur within the site boundary, with depth to groundwater at Davilak Reserve ranging from 7 – 9.5 m AHD (Department of Water, 2013). Groundwater would be expected to flow south-west towards the Swan River.

## 4.0 Current Site Characteristics

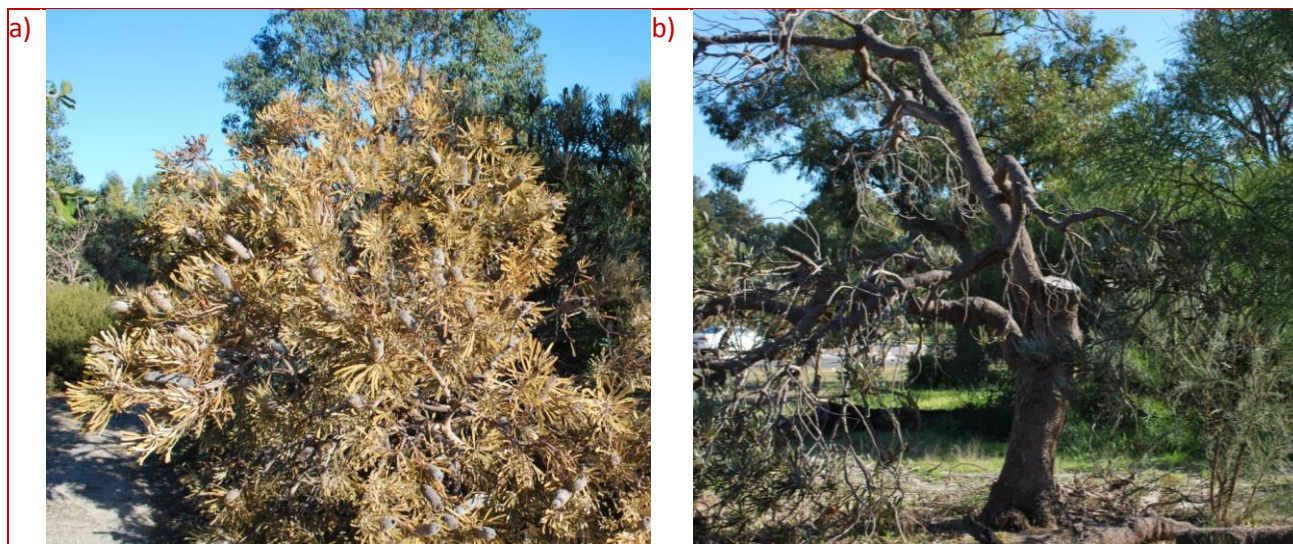
Davilak Reserve has a long history of disturbance with the area first being developed in the early 1960s (Landgate, 2013). It is important to review the site characteristics to provide an indication of the most appropriate management actions to limit the impact of *Phytophthora cinnamomi*.

### 4.1 Dieback Mapping and Flora Composition

A dieback assessment was undertaken in 2006 with only a 7% of the Reserve identified as uninfested (Glevan Consulting, 2006) (Figure 4). The majority of the site had evidence of dieback with mortality observed in susceptible species including *Banksia ilicifolia*, *B. attenuata* and *Allocasuarina fraseriana* (Figure 3a). A comparison of flora data collected by Natural Area Management & Services in 2004 and current site conditions suggests the loss of several dieback sensitive plants from the Reserve including *Hibbertia huegelii* and *H. Hypericoides*. As the dieback assessment was undertaken in 2006, the disease may have moved into previously unaffected areas. Some evidence of tree decline was apparent in areas previously surveyed as being dieback free (Figure 3b); however, this health decline could be attributed to a number of other factors such as:

- insect damage
- water stress
- damage from naturally occurring pathogens.

Davilak bushland has a reduced floristic diversity from what would be expected in a healthy *Banksia* woodland community. The understorey is particularly sparse with high densities of introduced species such as Mediterranean Turnip (*Brassica tournefortii*) and Annual Veldt Grass (*Ehrharta longifolia*).



**Figure 3:** Mortality of dieback susceptible species was observed throughout the site (a: *Banksia attenuata* in dieback infested area, b: *Banksia menziesii* decline in area previously mapped as dieback free)



**Figure 4:** Dieback free area identified by Glevan Consulting (2006), Davilak Reserve

## 4.2 Surrounding Land Use

Davilak Reserve is located within a residential area and is bordered by a telephone exchange in the south-west corner of the site and the cleared area of what was the Manning Telstra Training Centre. The Reserve is utilised by residents walking their dogs and as an exercise area. The amount of foot traffic increases the risk of the infection being spread to uninfested areas of the Reserve and other natural areas in the City of South Perth.

## 4.3 Signage

Davilak Reserve has two types of sign, one to inform the public about management of the site (Figure 5a) and another to provide information about Dieback (Figure 5b). Signs are beginning to age and may need to be updated to ensure that they remain legible and relevant.

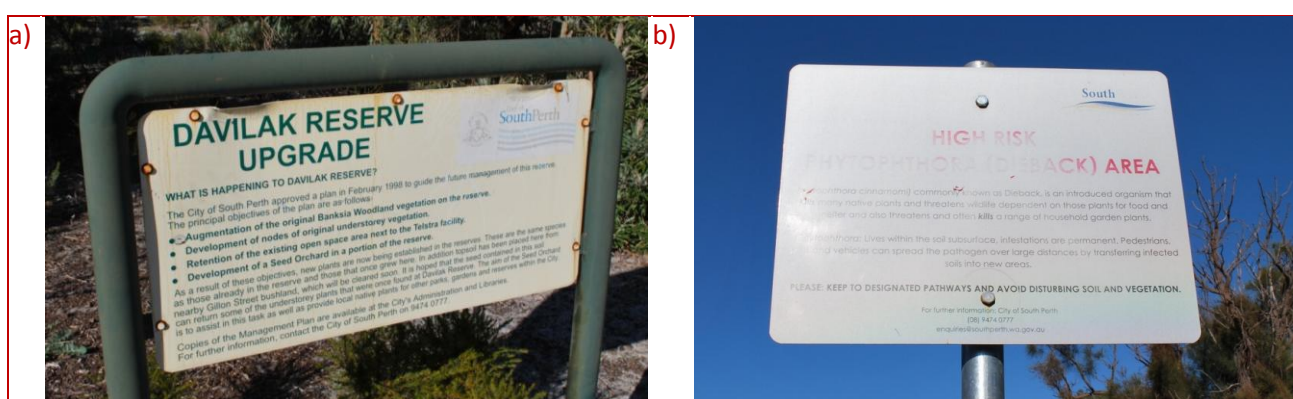


Figure 5: Examples of signs at Davilak Reserve (a: Sign informing visitors about the management of the Reserve, b: Dieback signage, text was faded making it difficult to read)

## 4.4 Site Access

Davilak Reserve is a small remnant bushland surrounded by a grassed park-scape, with the perimeter of the bushland marked with widely spaced bollards. Fencing around the remnant vegetation is not sufficient to keep pedestrians and dog walkers out of the areas where dieback is present. (Figure 6). Bollards also run around the perimeter of the grassed area, these are closer together preventing vehicles from entering the parkland (Figure 6).



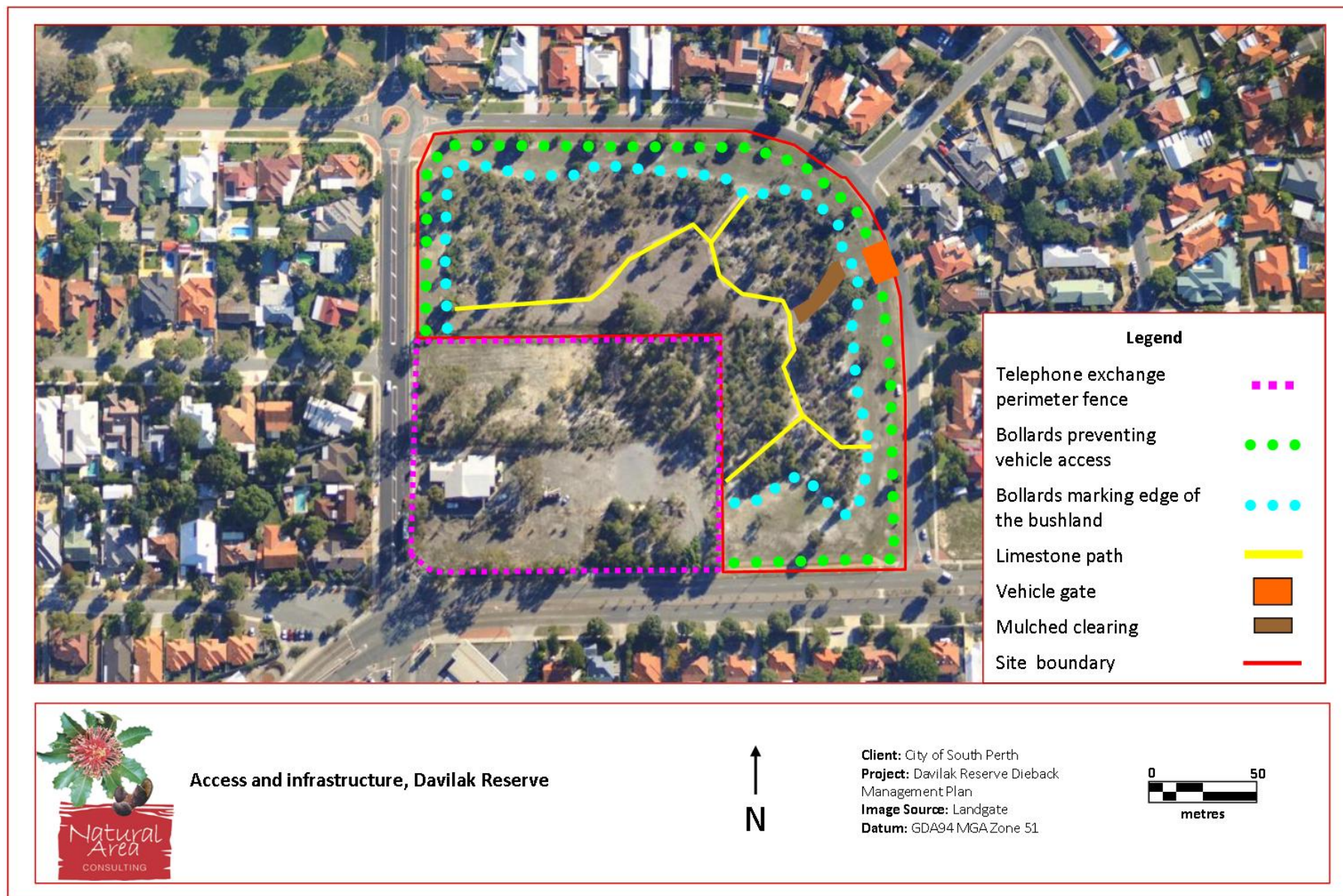
Figure 6: Bollards at Davilak Reserve

A limestone path is located at the centre of the bushland and can be accessed from four entrances. In several places the path is very narrow requiring visitors to walk through sand, increasing the risk of dispersing contaminated soil (Figure 7). The majority of the limestone path is showing signs of erosion and is too narrow to be utilised by maintenance vehicles without the risk of transporting dieback infested soils. A vehicle gate is located at the northern boundary of the site, with access to the limestone path possible through a mulched clearing (Figure 8). A cyclone fence extends around the perimeter of the telephone exchange preventing pedestrians accessing the Reserve from the south-west.



**Figure 7:** Sandy track at southern entrance to the bushland





**Figure 8:** Access and infrastructure, Davilak Reserve

## 5.0 Management Strategies

The movement of contaminated soils poses the greatest risk of spreading the pathogen; as such, the Reserve will need to be managed to reduce the risk of introducing dieback into uninfested areas. The primary goals for dieback management at Davilak Reserve are to:

- undertake works to minimise the impact on biodiversity within infested areas
- minimise the risk of the pathogen spreading to the uninfested area of Davilak Reserve
- reduce the risk of the pathogen being transported to other sites.

Works involving the movement of soil such as path construction should only be undertaken in dry soil conditions to minimise the risk of dieback being dispersed by machinery.

### 5.1 Limestone Path

The limestone path is relatively narrow with soil intrusion at several points requiring pedestrians to walk over sand (Figure 9). This increases the risk of visitors and domestic animals transporting dieback into the uninfested area or other conservation reserves. It is recommended that the limestone path is widened and that the access points are formalised so pedestrians do not have to walk through sand to access the path. Limestone makes an ideal material for path construction as its high pH suppresses dieback movement through the soil.



**Figure 9:** Narrow limestone path requiring visitors to walk through sand

A gate is located on Davilak Crescent allowing vehicle access to the Reserve; a wide mulched clearing with high densities of weeds connects the grassed area with the limestone path (Figure 8). It is recommended that the mulched area is replaced with limestone to allow vehicles access to the bushland while minimising the risks associated with movement of infested soil (Figure 10).

#### 5.1.1 Path Recommendations

- Widen the limestone path to maintain vehicle access and reduce the number of visitors walking through infested areas
- Re-establish the limestone path at the entrances to the bushland areas.
- Extend the limestone path to allow vehicle access from the gate.



Figure 10: Proposed limestone path works, Davilak Reserve

## 5.2 Fencing

The fencing around Davilak Reserve is inadequate to prevent people and animals entering the bushland. This increases the risk of infested soil being transported into the dieback free part of the Reserve and other conservation areas. It is recommended that a fence is installed around the perimeter of the bushland and the limestone path. The fence should be to a specification determined by the City of South Perth; treated pine bollards and ringlock fencing would provide an effective barrier and maintain the visual amenity of the site (Figure 11). Fencing should be installed following the proposed path maintenance works to maintain access for machinery.



**Figure 11:** Ringlock fencing with treated pine posts

### 5.2.1 Fencing Recommendations

- Install fencing around the perimeter of the bushland and the limestone track.
- Machinery should arrive and leave the site free of soil.
- Machinery should be cleaned when moving between infested and uninfested areas.

## 5.3 Phosphite Treatment

Phosphite is bio-degradable fungicide that improves the natural defence of susceptible species against *Phytophthora cinnamomi* infection; it is not toxic to plants or animals. Phosphite must enter the vascular system of plants to be effective, which is achieved through stem injection or foliar spray. Stem injection provides up to five years of protection and is effective where the height of the tree reduces the practicality of foliar spray.

Foliar treatment is suitable for plants that are too small or numerous for stem injection; this treatment lasts for up to three years (Dieback Working Group, 2000). The most effective method of delivery is from a mobile spray unit similar to those shown in Figure 12; it would be expected that a foliar phosphite treatment and

stem injections would take a two person crew one day to complete at Davilak Reserve. Detailed Phosphite application methodology is provided in Appendix 1.



**Figure 12:** Vehicle mounted spray units are an effective means of applying foliar phosphite

It is recommended that both treatments are utilised at Davilak Reserve; the best time apply phosphite is when trees are actively taking up moisture from the soil. This is usually greatest on sunny days in spring and early summer; phosphite should not be applied when the temperature exceeds 30 °C as it may cause leaf burn and stress to the tree.

It is recommended that the foliar spray is carried out across the entire Reserve, while phosphite stem injection would be suitable for the following species:

- *Allocasuarina fraseriana*
- *Banksia attenuata*
- *Banksia ilicifolia*
- *Banksia menziesii*
- *Eucalyptus marginata*
- *Eucalyptus todtiana*.

### 5.3.1 Phosphite Treatment Recommendations

- Undertake foliar phosphite spray of entire Reserve every three years.
- Inject susceptible trees with phosphite every five years.
- Treatment should be undertaken in spring or early summer and not in conditions above 30 °C.

## 5.4 Hygiene Protocols

Hygiene practices are an important means of preventing the movement of the pathogen into the uninfested area of Davilak Reserve and other conservation reserves. The highest risk activities at the site are works undertaken by City of South Perth or private contractors. It is recommended that the City develop and implement a hygiene policy and associated procedures for staff and contractors carrying out works in bushland areas such as Davilak Reserve. The following practices should be incorporated into the policy (Dieback working Group, 2008):

- ensure any revegetation tubestock are sourced from a NIASA accredited nursery (Nursery Industry accreditation)
- machinery, vehicles, equipment and footwear to arrive at the site free of mud and soil
- soil should be removed from vehicles using a brush, spade, bar or compressed air rather than water
- cleaning of equipment should not be undertaken within reserves
- if an area is known to contain dieback, do not move from infested to uninfested areas unless the vehicle, machinery, equipment and footwear are cleaned and free of soil and mud
- where possible undertake works in dry soil conditions
- disinfect footwear and equipment with undiluted methylated spirits or Phytoclean® (Appendix 2) when entering bushland areas
- ensure all staff are trained in hygiene practices while undertaking works in the City of South Perth bushland reserves.

#### **5.4.1 Hygiene Recommendations**

- Develop and implement hygiene protocols for City of South Perth Staff and contractors.
- Ensure no soil is moved into or out of the Reserve.

### **5.5 Signage**

The signage at Davilak Reserve is showing evidence of age and it is recommended that existing signs are replaced and updated. The information provided should be clear and concise to inform visitors about the importance of staying on paths and not disturbing soil or vegetation. Signs are to be in accordance with the City of South Perth policies, guidelines and procedures.

#### **5.5.1 Signage Recommendations**

- Update existing signs to include dieback messages relating to hygiene and access.
- Install signs at all entrances to the bushland.

### **5.6 Follow-up Dieback Assessment**

It is recommended that follow-up dieback monitoring should occur two years after the completion of works to identify if the area identified as uninfested on the western boundary is still dieback free.

#### **5.6.1 Dieback Assessment Recommendations**

- Further dieback monitoring should occur two years after the completion of works.

### **5.7 Revegetation**

Davilak Reserve has a low diversity and density of native plant species, allowing weeds to proliferate. It is recommended that dieback infested areas are revegetated with species that are resistant to the pathogen to reduce weed densities (Dieback Working Group) (Table 1).

**Table 1:** Dieback resistant species suitable for revegetation

Species	Form
<i>Acacia pulchella</i>	Shrub
<i>Acacia saligna</i>	Shrub
<i>Allocasuarina humilis</i>	Shrub
<i>Anigozanthos manglesii</i>	Herb
<i>Austrostipa compressa</i>	Grass
<i>Burchardia congesta</i>	Herb
<i>Calothamnus quadrifidus</i>	Shrub
<i>Calytrix flavescens</i>	Shrub
<i>Conostylis aculeata</i>	Herb
<i>Corymbia calophylla</i>	Tree
<i>Dampiera linearis</i>	Herb
<i>Hakea lissocarpha</i>	Shrub
<i>Hardenbergia comptoniana</i>	Climber
<i>Hovea trisperma</i>	Herb
<i>Kennedia prostrata</i> (Figure 13)	Ground Cover
<i>Lepidosperma scabrum</i>	Herb
<i>Nuytsia floribunda</i>	Tree
<i>Ptilotus manglesii</i>	Herb
<i>Tricoryne elatior</i>	Herb

Revegetation works have the potential to spread *Phytophthora cinnamomi* through soil attached to planting equipment, vehicles and footwear. It is recommended that planting occur on a dry winter day to reduce the risk of dispersing the pathogen. All equipment should be clean on entry and washed and disinfected with methylated spirits or Phytoclean® after planting works have been completed.



**Figure 13:** *Kennedia prostrata* is a dieback resistant ground cover which may be useful to reduce weed densities

### 5.7.1 Revegetation Recommendations

- Undertake infill planting in dieback affected areas with plants resistant to the pathogen.
- Ensure all equipment is thoroughly cleaned and disinfected with methylated spirits following works.

## 6.0 Conclusion

Davilak Reserve has a long history of disturbance with the majority of the site infested with *Phytophthora cinnamomi* and only 7% of the Reserve being identified as dieback free. It should be recognised that the Reserve still has conservation values as it provides habitat to flora not found in the surrounding urban areas. It is important to manage the site in a manner that promotes biodiversity and protects uninfested areas from the pathogen. Accordingly, the main objectives for the Davilak Reserve Phytophthora Dieback Management Plan are to:

- protect the uninfested areas of the Reserve
- protect natural areas in the City of South Perth and the Perth metropolitan region
- manage the infested area to maintain biodiversity.

In order to achieve these objectives, strategies have been designed to manage the infection at Davilak Reserve and to protect other natural areas. Recommendations outlined in the Davilak Phytophthora Dieback Management Plan include:

- improvements to the limestone path to reduce soil movement
- the installation of fencing around the bushland
- phosphite treatments utilising foliar spray and stem injection applications
- implementing a stringent hygiene program for all City of South Perth staff and contractors
- updating existing signage to educate visitors of the dieback risk at the Reserve
- undertake further dieback assessments at the Reserve two years after the completion of management works
- undertake revegetation utilising dieback resistant species.



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## Appendix 1: Phosphite Application Methodology

Source: (Dieback Working Group, 2000)

### Injecting Trees

#### Equipment

- Injecting phosphite can be done using large syringes or with specially made stem injection equipment. If you are injecting more than 1 or 2 trees, a tree injector is recommended. It will save you time and effort, and will be more effective.
- Cordless drill with 7/32" or 5.5 mm drill bit.
- Chisel (only needed to remove bark if injecting Jarrah).
- Phosphite (Fosject 200 or an equivalent chemical).

#### Safety

- Phosphite has a toxicity similar to table salt. It will sting eyes and cuts, but causes no permanent damage. However, people with sensitive skin may find that it can irritate the skin.
- Follow the safety instructions on the side of the pack, and wear long pants and shirt, PVC gloves and safety glasses or sunglasses.

#### Timing

The best time to inject a tree is when water is moving within the tree. Water movement is usually greatest in spring and summer, but injection will also be successful in autumn. Injecting in the morning can be more successful than in the afternoon.

#### Preparation

Dilute 1 part Fosject 200 with 2 parts water.

#### Procedure

1. Drill a hole into the tree. Injection needs to be in the sapwood, so do not drill any deeper than 3 - 4 cm. Drill the hole at a height so injecting will be comfortable (waist height). The hole should be drilled at a slight downward angle.
2. Drill a hole every 20 cm around the tree trunk (this is approximately one hand width). Multi stemmed trees need holes in all stems.
3. Follow the instructions that will come with the tree injector regarding its set up and use.
4. Insert the nozzle of the syringe or injector into the drilled hole and twist slightly to get a good seal. Slowly push/pump the solution into the tree. Make sure the solution is taken up by the tree and does not flow out of the hole. A total of 20 ml of the solution should be injected into each hole. Repeat in 3 to 5 year's time.

## Spraying Plants

### Equipment

- Backpack or vehicle mounted spray unit (ensure it is clean and has not recently contained herbicides etc).
- Synertrrol oil / Spray Aid or other approved surfactant.
- Phosphite (Fosject 200 or an equivalent chemical).

### Safety

- Phosphite has a toxicity similar to table salt. It will sting eyes and cuts, but causes no permanent damage. However, people with sensitive skin may find it irritates the skin.
- Follow the safety instructions on the side of the pack, and wear long pants and shirt, PVC gloves and safety glasses or sunglasses.
- Take care when using sharp implements such as drills and chisels.

### Timing

Spraying is most effective in spring, summer and autumn. Spraying should occur when rain free days are forecast at least 2 days ahead.

### Preparation

Mix 250ml of Fosject with 100 ml of Synertrrol oil. Shake well. Before the Synertrrol oil and Fosject begin to separate, place in the backpack and add 10 litres of water. Ten litres is a comfortable weight to carry. Use the solution immediately and mix frequently.

### Procedure

- Soak the plants until all leaf surfaces are wet. All understorey plants, including grass trees, should be sprayed, ten litres of solution should last about 15 - 20 minutes.
- Repeat in 2 - 3 years.

## Appendix 2: Phytoclean® Label

<p><b>GENERAL INSTRUCTIONS :</b> Phytoclean should not be stored as a diluted solution. Phytoclean should not be mixed with other chemicals.</p> <p><b>PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND THE ENVIRONMENT.</b>                  DO NOT contaminate streams, rivers or waterways with Phytoclean or used containers.</p> <p><b>DISPOSAL:</b> Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemical on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose. Clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.</p> <p><b>STORAGE:</b> Store in closed, original container in a cool, well ventilated area, below 30°C. Do not store for prolonged periods in direct sunlight. Phytoclean should be used within 12 months of purchase.</p> <p><b>SAFETY DIRECTIONS:</b> Will damage eyes. Will irritate the skin. Repeated exposure may cause allergic disorders. Avoid contact with eyes and skin. When opening the container and preparing spray or dilution, wear cotton overalls buttoned to the neck and wrist, a washable hat, elbow length PVC gloves, goggles and impervious footwear. When using the prepared spray or dilution, wear elbow length PVC gloves, goggles and impervious footwear. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Wash hands after use. After each days use, wash gloves and goggles and contaminated clothing.</p> <p><b>FIRST AID:</b> If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia <b>131126</b>; New Zealand <b>0800 764 766</b>. If swallowed, do NOT induce vomiting. Give a glass of water.</p> <p><b>MATERIAL SAFETY DATA SHEET:</b> A Material Safety Data Sheet is available on request from <a href="http://www.phytoclean.com.au">www.phytoclean.com.au</a>.</p>	<p><b>CAUTION</b>                  KEEP OUT OF REACH OF CHILDREN                  READ SAFETY DIRECTIONS BEFORE OPENING OR USING</p> <p><b>PHYTOCLEAN™</b>                  Sanitiser</p> <p><b>ACTIVE CONSTITUENT: 100g/L BENZALKONIUM CHLORIDE</b></p> <p>PHYTOCLEAN® IS A DISINFECTANT CLEANER, SPECIALLY DESIGNED FOR THE CONTROL OF <i>Phytophthora cinnamomi</i> IN HORTICULTURAL, PLANTATION, EARTH MOVING AND QUARRYING INDUSTRIES. PHYTOCLEAN IS AN EFFECTIVE GENERAL PURPOSE MICROBIOCIDE AND ALGICIDE.</p> <table border="0"> <tr> <td style="text-align: right;"><b>Contents :</b></td> <td style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> </table> </td> <td style="text-align: left;"><b>APVMA Approval No.</b></td> </tr> <tr> <td style="text-align: right;">5L</td> <td></td> <td style="text-align: left;">64562/5L/1109</td> </tr> <tr> <td style="text-align: right;">20L</td> <td></td> <td style="text-align: left;">64562/20L/1109</td> </tr> <tr> <td style="text-align: right;">200L</td> <td></td> <td style="text-align: left;">64562/200L/1109</td> </tr> </table> <p><b>PHYTOCLEAN P/L</b>                  P.O Box 708                  BERWICK, VICTORIA 3806                  FAX: 03 97058365                  Emergency Contact Number: 0417477137  <a href="http://www.phytoclean.com.au">www.phytoclean.com.au</a> ABN 84 135 445 966</p> <p>Batch No :                  Batch Date :</p>	<b>Contents :</b>	<table border="1" style="border-collapse: collapse;"> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td></tr> </table>				<b>APVMA Approval No.</b>	5L		64562/5L/1109	20L		64562/20L/1109	200L		64562/200L/1109	<p><b>DIRECTIONS FOR USE:</b></p> <table border="1"> <thead> <tr> <th>SITUATION</th> <th>RATE</th> </tr> </thead> <tbody> <tr> <td>Footbaths or Vehicle Wash</td> <td>1L/10L of water</td> </tr> <tr> <td>Washdown</td> <td>2L/100L of water</td> </tr> <tr> <td>Hard surface and tools</td> <td>200ml/10L of water</td> </tr> </tbody> </table> <p><b>CRITICAL COMMENTS</b></p> <p><b>Footbaths:</b> To reduce the spread of <i>Phytophthora cinnamomi</i> and other pathogens from infected soil adhering to footwear or vehicle tyres, it is recommended that the Phytoclean solution should be topped up when required to maintain an adequate level. Footwear should be as free of soil as possible. Footbaths or Vehicle Wheel washes should be cleaned and replenished at least weekly if being used regularly.</p> <p><b>Washdown:</b> For high pressure or automatic washdown of machinery and equipment, particular attention must be paid to the underneath and out of the way areas of machines to remove all soil matter. Allow solution to remain in surface contact for at least 30 seconds before rinsing with fresh water. Where possible, use Phytoclean in conjunction with hot water.</p> <p><b>Hard surface and tools:</b> Phytoclean can be used for spraying and wiping of benches, shelves, walls, floors etc, also for dipping and scrubbing of hand tools, make sure to remove all soil. Allow solution to remain in contact with the surface for at least 30 seconds before hosing or wiping off.</p> <p><b>NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.</b></p> <p><b>CONDITIONS OF SALE:</b> The use of this product is beyond the control of the manufacturer, therefore the purchaser assumes responsibility for results from its use and shall not hold the manufacturer liable for any loss or injury whatsoever, however occurring.  <b>This product is covered by Australian Patent</b></p>	SITUATION	RATE	Footbaths or Vehicle Wash	1L/10L of water	Washdown	2L/100L of water	Hard surface and tools	200ml/10L of water
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