Department of Parks and Wildlife

CORPORATE POLICY STATEMENT NO. 3

MANAGEMENT OF *PHYTOPHTHORA* DISEASE

August 2015

1. OBJECTIVE

To provide direction and guidance for managing the risk of introducing or spreading *Phytophthora* disease on *Conservation and Land Management Act 1984* land (CALM Act land) managed by the Department of Parks and Wildlife (the department).

2. SCOPE

This policy applies to activities occurring on CALM Act land, in the south-west of Western Australia (WA) within the 'vulnerable zone', which have potential to introduce and/or spread *Phytophthora* disease.

The focus of this policy is on *Phytophthora cinnamomi* as it currently remains the major disease threat to the State's unique native flora, ecosystem health and a range of associated values and benefits. However, there are a number of *Phytophthora* species currently known to occur in south-west Western Australia, some which are thought to be indigenous and others introduced. All these currently recorded *Phytophthora* species are soil-borne and are potentially plant pathogens, hence this policy provides a basis for the management of all currently known *Phytophthora* species occurring in south-west Western Australia.

This policy is the responsibility of all departmental staff engaged in planning, implementing, supervising, monitoring or reviewing disturbance activities on CALM Act land, including staff employed in specialist branches and divisions, and applies to contractors and other parties undertaking works on CALM Act land in the vulnerable zone.

3. CONTEXT

There are a number of known vectors associated with the spread of *Phytophthora.* These include various human caused disturbance activities, both planned and unplanned, vehicle use and the activity of native and introduced fauna. Some of these vectors are more amenable to management intervention than others. Management measures may differ for different areas, circumstances and *Phytophthora* species, depending upon the potential impacts and feasibility of controlling introduction and spread. Given resource limitations, the department will prioritise its management efforts.

Further background information is given in Appendix 1. Appendix 2 provides definitions of key terms.

4. LEGISLATION

The department is responsible for the administration and implementation of the *Wildlife Conservation Act 1950* and the *Conservation and Land Management Act 1984*, which together provide the primary legal basis for the conservation of biodiversity in Western Australia. Also relevant are the Forest Management Regulations 1993 and the *Conservation and Land Management Regulations 2002*.

The department has certain statutory obligations under the *Biosecurity and Agriculture Management Act 2007* concerning biosecurity matters generally, and through part VII of the CALM Act, for the management of forest diseases (which includes *Phytophthora*).

In addition, the department seeks to cooperate with the Commonwealth Government in implementation of the national threat abatement plan for *Phytophthora cinnamomi*[1].

5. POLICY

Consistent with broader departmental objectives and priorities, and within the resources available to it, the department will:

5.1 determine i) 'infested' areas; ii) uninfested, 'unprotectable' areas; iii) uninfested, 'protectable' areas; and iv) Identified Protectable Areas (IPAs), which are a sub-set of iii);

5.2 minimise the *Phytophthora* disease risk for planned disturbance and other known human activities, particularly in IPAs on CALM Act land;

5.3 protect, maintain or restore key environmental and other assets/values, in 'infested' and uninfested 'unprotectable' areas on CALM Act land;

5.4 integrate and coordinate control activities and develop partnerships with other landholders and key stakeholders where there are management benefits;

5.5 revise approaches to continuously improve compliance with *Phytophthora* disease management requirements on CALM Act land;

5.6 monitor and review its *Phytophthora* disease management effectiveness; and

5.7 contribute to raising community and stakeholder awareness of the threat posed by *Phytophthora* disease, and appropriate risk management strategies.

6. STANDARDS

The department maintains a range of subsidiary documents which cover related operational procedures, including:

- Guidelines for Management of *Phytophthora cinnamomi* and disease caused by it – Vol. 1.
- Manual for detecting and mapping *Phytophthora* dieback disease (Procedures for CALM Act land).

[1] Department of the Environment (2014) "Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*".

7. POLICY IMPLEMENTATION STRATEGIES

The department will endeavour to:

7.1 Identify protectable areas and/or high priority biodiversity assets at risk

- develop, review and apply protocols, informed by operational and research knowledge, for determining IPAs, and key environmental and other assets/values in 'infested' and uninfested 'unprotectable' areas.
- maintain surveillance and mapping/recording systems for monitoring *Phytophthora* disease status.
- develop, review and apply a range of mechanisms for the protection of IPAs in the vulnerable zone.

7.2 *Phytophthora* disease risk management

- maintain and review protocols, informed by operational and research knowledge, to guide land managers in managing uninfested 'protectable' areas and in prioritising the allocation of available resources.
- review and apply a *Phytophthora* disease risk assessment process for planned disturbance activities, consistent with Policy 56 (Risk Management), and as required, prepare and implement Hygiene Management Plans.
- as appropriate, contribute to the development and review of non-departmental guidelines for growing of seedlings and other activities, to minimise the risk of introduction and spread of *Phytophthora* disease.
- where feasible, implement measures to protect, maintain or restore key environmental and other assets/values, located within 'infested' and uninfested 'unprotectable' areas, including for example;
  - recovery or re-introduction of populations of threatened flora that are susceptible to *Phytophthora* disease,
  - *ex situ* conservation of species and genetic resources that are susceptible to *Phytophthora* disease,
  - application of repeated treatments of phosphite to maintain populations of threatened flora or ecological communities that are susceptible to *Phytophthora* disease, and
  - identification and protection of individuals and populations of native flora that show resistance to *Phytophthora* disease.

7.3 Training and registration

- develop, review and facilitate delivery of awareness-raising and training in *Phytophthora* disease mapping and management (in conjunction with others as appropriate) to departmental staff and others as required.
- develop, review and facilitate a process for registering personnel in *Phytophthora* disease mapping and management.
- require personnel responsible for *Phytophthora* disease mapping and management, on CALM Act land, to be trained and registered to carry out such tasks.
- maintain a cadre of registered *Phytophthora* disease interpreters.

7.4 Accountability

- monitor Hygiene Management Plan preparation and implementation to identify issues which require follow-up action.
- review and implement appropriate responses to non-conformance that are proportionate to the risk posed and which are consistent with an overall department approach to compliance issues.

7.5 Expertise and research

- maintain capability for plant disease detection and diagnosis.
- review and implement priority research programs that inform *Phytophthora* disease detection and management, and maintain links with other relevant research organisations.

7.6 Consultation

- liaise with other agencies, landholders and key stakeholders, including Aboriginal groups, to develop, integrate and coordinate management procedures and activities to minimise *Phytophthora* disease risk.
- cooperate with other relevant agencies to ensure requirements for notification of *Phytophthora* diseases are met, and as appropriate, participate in containment efforts.
- liaise with relevant agencies and stakeholders to facilitate knowledge transfer, awareness raising and capacity building, for managing *Phytophthora* disease risk.

7.7 Improving performance

- in conjunction with relevant agencies and key stakeholders, review the effectiveness and applicability of *Phytophthora* disease management strategies.

8. CUSTODIAN

The Director Forest and Ecosystem Management is accountable for the recording, storage, review and dissemination of this policy statement.

Responsibility for *Phytophthora* dieback awareness-raising, training and the preparation of manuals and guidance notes rests with the Director Forest and Ecosystem Management, with assistance from Corporate Services Division.

Responsibility for the implementation of this policy across the department's regional operations rests with the Director Regional and Fire Management Services.

The Director Forest and Ecosystem Management may establish groups involving representatives from relevant departmental divisions and others as required, to coordinate related activities, including implementation and review of this policy and related guidelines.

9. PUBLICATION

This policy will be made available on the department's website and intranet.

10. KEY WORDS

Phytophthora, dieback, disease, disease management, protectable areas, hygiene, identified protectable areas, risk management, unprotectable, uninfested, infested.

11. REVIEW

This policy will be reviewed no later than 31 January 2019.

12. DIRECTOR GENERAL APPROVAL

Approved by

Jim Sharp
DIRECTOR GENERAL

Effective date: 20 August 2015

POLICY BACKGROUND

1. INTRODUCTION

At least 32 distinct species of *Phytophthora* occur at various places in native plant communities of Western Australia, and about another 10 species have been found only in agriculture and horticulture. Whilst the potential importance and the level of threat posed to biodiversity and other values by many of them still requires further investigation, *P. cinnamomi* currently represents the greatest ongoing threat to biodiversity conservation of the *Phytophthora* species known to be present. This policy therefore concentrates on *P. cinnamomi*, although the threat posed by other *Phytophthora* species is considered through the risk assessment process.

2. THE PATHOGEN *PHYTOPHTHORA CINNAMOMI* AND DISEASE CAUSED BY IT IN NATIVE VEGETATION

The introduced soil-borne water mould *P. cinnamomi* is known for its capacity to invade and destroy the function of the root systems of a wide range of Western Australia's native plants. This slow moving epidemic of root disease in native vegetation in Australia is known as "*Phytophthora* dieback". Its impact varies across the landscape, but almost always it results in the permanent loss from infested sites of one or more susceptible species. At worst, mass collapse of ecosystems occurs along with significant disruption to important ecological processes. Consequently, a range of environmental and socio-economic values and benefits can be affected.

It has been estimated through glasshouse trials and field observations that about half of the State's threatened flora species are susceptible to *P. cinnamomi*. In some cases the only known wild populations of susceptible threatened flora and locations of some threatened ecological communities have been invaded by *P. cinnamomi*. Approximately 40 per cent of the entire flora of the South West Botanical Province is susceptible.

In Western Australia, *P. cinnamomi* will continue its autonomous spread from all its established disease fronts through root to root growth amongst host plants, spread of oospores in soil, and through the dispersal of zoospores in free flowing water (unless impermeable barriers are introduced).

Assisted movement of infested soil or infected root material by native animals, feral animals, and people (including their vehicles and machinery) are major contributors to disease spread. Of these, activities of people are the most amenable to some form of management control.

The most important means of limiting the impact of *P. cinnamomi* is through direct management action to reduce the incidence of human (and related vehicle) transport into uninfested areas. This can be achieved by limiting the construction of new infrastructure within uninfested areas, closing and rehabilitating unnecessary infrastructure within uninfested areas, through the application of rigorous hygiene regimes that minimise the risk of disease introduction and spread, and by ensuring that only people who have a valid reason are able to enter uninfested areas. Effective management action depends upon the prior analysis of the likely presence or absence of *P. cinnamomi* and accurate demarcation of disease boundaries.

While this policy relates primarily to *P. cinnamomi* and planned disturbance operations on CALM Act public lands, such as construction of roads and other infrastructure, mining, timber harvesting and fire management, many of these lands are also subject

to ongoing access by the wider public. This includes persons engaged in Aboriginal customary and cultural activities, scientific study, tourism, sightseeing, and accessing various sites for recreation activities such as fishing, surfing and camping, driving off-road vehicles, cycling and bushwalking. Each of these forms of access has inherent risks of introduction and/or movement of *Phytophthora* dieback. Furthermore, as *Phytophthora* can be transported in both surface and sub-surface water, via root to root contact and by the movement of infested soil by native and introduced animals, activities near to CALM Act land can pose risks of introduction onto these areas and other lands with high biodiversity value. On CALM Act land, disease risk areas were introduced soon after the confirmation in the mid-1900s of the link between *P. cinnamomi* and deaths of patches of forest, in an effort to control access and limit the spread of dieback disease.

Detailed scientific studies over the past 20 years, primarily in Western Australia, have demonstrated that control of *P. cinnamomi* and the disease it causes is possible for some small areas through repeat application of the chemical phosphite. Careful application of phosphite can sometimes be used to increase the resistance of some susceptible flora and threatened ecological communities, and to slow the spread of the pathogen by limiting host to host transfer.

Eradication trials of *P. cinnamomi* have been undertaken in infestations in Western Australia and Tasmania. These trials involved the destruction of virtually all flora in the infested areas, but have demonstrated that eradication from small spot infestations is possible, although costly. This also demonstrates the importance of prompt and adequate testing of suspected *Phytophthora* infestations, and early intervention to control them. The department and other organisations are pursuing further eradication trials, and exploring options for sterilisation of infested basic raw materials (e.g. gravel). Restoration of areas that have suffered serious environmental damage through the introduction of *P. cinnamomi* is currently restricted to very small areas, given the significant resources required and limitations in technology.

In the case of threatened flora that is susceptible to and threatened by *Phytophthora,* conservation actions can include: translocations, collection and *ex situ* storage of germplasm for the purpose of maintaining gene pools and subsequent reintroductions, investigations into field establishment methods for the species collected, and the development of seed orchards to ensure sufficient seed is available for translocations into *Phytophthora*-free areas.

APPENDIX 2

GLOSSARY

"Registered" means: a person officially recognised by the department or department-endorsed registered training organisation or other entity, as being able to undertake specified tasks to an acceptable standard.

"Hygiene" means: the set of practices to be followed to maintain native vegetation health in terms of protection from human and vehicle vectored spread of soil-borne *Phytophthora* species.

"Identified Protectable Area" means: a 'Protectable area' identified by the department as a focus for *Phytophthora* disease management. IPAs may be assigned priority for management by the Department.

"Infested area" means: an area that a registered person has determined has plant disease symptoms that indicate the presence of a *Phytophthora* species*,* and has had this interpretation supported by sampling and positive testing[2].

"*Phytophthora *disease" means: for the purposes of this policy, principally *P. cinnamomi*, although the policy provides a basis for the management of all currently known *Phytophthora* species occurring in south-west Western Australia.

"Protectable area" means: an area defined by the department, including areas of high conservation and/or socio-economic value (e.g. a small uninfested area which contains a known population of a susceptible species of threatened flora) within the vulnerable zone, that is:

- situated in zones receiving greater than 600 mm per annum average rainfall, or is water gaining (e.g. granite outcrops, impeded drainage or engineering works which aggregate rainfall) and occurring below 600 mm per annum average rainfall; and,
- determined to be free of *Phytophthora* disease by a registered Disease Interpreter; and,
- positioned in the landscape and of sufficient size (e.g. greater than 4 hectares with axis greater than 100 metres) such that a registered Disease Interpreter judges that *Phytophthora* disease will not autonomously infest it, in the short term (a period of up to several decades); and,
- where human vectors are controllable (e.g. not an open road or private property).

"Risk" means: the effect of uncertainty on objectives.

"Risk management" means: the application of measures to avoid, minimise, monitor or control unacceptable risks.

"Susceptible" means: potentially influenced or harmed by *P. cinnamomi,* and potentially, other *Phytophthora* species.

"Threat" means: an indication that serious or irreversible environmental damage may occur (e.g. a process is defined as a threatening process if it threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community, or other priority values/assets).

[2] Note a recently infested site may not yet have any plants displaying outwardly-visible disease symptoms.

"Uninfested" means: an area that a registered Disease Interpreter has determined may be free of plant disease symptoms that indicate the presence of the pathogen *Phytophthora cinnamomi.*

"Vulnerable zone" means: that part of the South West Land Division and the areas adjoining it to the north-west and the south-east in which susceptible native plants occur in conjunction with the environmental factors required for *Phytophthora* pathogens to establish and persist. Historically, the vulnerable zone was largely confined to areas that received mean annual rainfall (historic) greater than 400mm.