DRAFT

DIEBACK DISEASE

POLICY AND MANAGEMENT

FOR SHIRES

January 1991

CONTENTS

1. SUMMARY

The responsibilities of the Shire of _____ include the protection and management of vegetation on road and other reserves vested in the Shire. The Shire is conscious of the impact of its operations on adjacent land managers and land owners.

The Shire recognises that dieback disease is a significant threat to the conservation values of land managed by and within the Shire.

The Shire has now developed a comprehensive package to manage the dieback disease problem. This package addresses:

- Shire Policies and Strategies
- Dieback Disease Management Strategies & Tactics

The content of this package will be applied to all operations that the Shire is responsible for or has an interest in and will be made freely available to other interested parties.

Shire President.

2. DIEBACK DISEASE

In Western Australian Dieback Disease is caused by root rotting fungi belonging to the genus Phytophthora. These fungi are not native to WA and are thought to have been introduced to WA in the early 1900's. The fungi can attack and kill many of our native plants. Some plant communities are affected to such a serious extent that local extinctions of plants and the animals that depend on them may have occurred.

Dieback Disease is now widespread throughout the south west and is affecting parts of the forest, heathland and woodland communities. At present there is no practical cure and every attempt must be made to confine its spread until such time as a cure is available.

New infections are primarily caused by human activities which move infected soil, root material or water.

Roadworks is one of the most efficient means of spreading the disease. Many other activities such as firebreak construction and maintenance, earthmoving, dirty vehicles and machinery, fencing, drilling, off-road vehicles and the installation and maintenance of services such as power, gas, telephone and water are all likely vectors for spreading the disease.

To reduce the risk of spreading Dieback Disease the community must ensure that all operations likely to spread the disease are closely scrutinised and appropriate hygiene practices are planned and implemented.

3. POLICIES AND STRATEGIES

POLICY:

(1) The Shire recognises that dieback disease is a threat to conservation values of native vegetation on lands managed by the Shire and vegetation on adjacent lands.

(2) The Shire will develop and implement a dieback disease management programme for each and all of its operations, to minimise the risk of introducing or spreading dieback disease.

STRATEGY:

The Shire will prepare a comprehensive dieback disease management procedure including:

* This policy and strategy statement.
* Formal procedures assigning responsibility to Shire staff for planning, implementation and control.
* A manual of dieback disease hygiene procedures.
* Staff training programmes.
* Assessment of the Shires performance.

POLICY (3):

(3) The Shire will identify priority areas for the application of the resources available to manage dieback disease.

STRATEGY:

A system of assigning priorities will be developed. The highest priority will be given to areas:

* Having high conservation values, such as adjacent to National Park and Nature Reserves, containing rare plants, and containing valuable remnant vegetation.
* Where there is expected to be a serious impact if dieback disease is introduced (high hazard areas).
* Where the planned operation is associated with a high risk of introducing or spreading the dieback disease.
* Where dieback disease can be controlled by realistic procedures.
* Where there are no other activities which would render action by the Shire ineffective.

POLICY 4:

(4) The Shire will establish liaison with other agencies using land managed by or within the Shire to ensure that the programme is extended to all activities.

STRATEGY:

Dieback disease management by the Shire is greatly effected by adjoining land uses and the use of land managed by the Shire as service corridors by other agencies. It will be necessary for all agencies to follow the procedures adopted by the Shire if the dieback disease control measures carried out by the Shire are to remain effective.

The Shire will identify liaison with all relevant agencies to ensure the integrity of the Shires management objectives.

POLICY 5:

(5) The Shire will educate and train its personnel in dieback disease management.

STRATEGY:

To ensure a consistent implementation of Shire objectives for dieback disease management will require all Shire staff to be aware of Shire policy and procedures.

To achieve this awareness the Shire will:

* Identify the training needs of its personnel.
* Develop training objectives.
* Develop a training curriculum to satisfy these objectives.
* Implement appropriate training where necessary and certify trainees as competent.
* Monitor personnel performance against training objectives.

Before any operation is allowed to proceed on Shire managed land the Shire will ensure that all personnel involved in the operation have an adequate understanding of dieback disease and the conditions and procedures the Shire requires to be implemented.

POLICY 6:

(6) The Shire will review its procedures and performance regularly; will incorporate new information as it becomes available, and will adapt its procedures accordingly.

STRATEGY:

* The Shire will review its procedures annually.

  This review will consider advances in disease management made by other organisations such as the Dept of Conservation and Land Management and the Main Roads Department.

  It will also incorporate suggestions from Shire staff involved in dieback disease management on how procedures could be improved and the success or failure of current practices.

* The Shire will implement a long term monitoring programme to assess whether the procedures are achieving the degree of control required.

4. DIEBACK DISEASE MANAGEMENT STRATEGIES

4.1 Introduction

This section illustrates the logical process involved in determining whether dieback disease is an issue associated with any particular operation. It also deals with practical strategies and tactics that can be used to achieve dieback disease control.

When determining a hygiene strategy for any operation the planner should never depend on only one tactic. Several integrated and mutually supportive tactics should be built into the operation to ensure successful hygiene.

4.2 Is Dieback Disease An Issue?

The following factors should be considered when planning an operation to determine the relative importance of dieback disease and its management.

(a) What kind of operation is planned? Do any parts of the operation involve the possible transfer of infected soil, plant material or water.

(b) Are there areas of susceptible vegetation that could be placed at risk by the operation?

(c) Are the land use values on site or adjacent to the operation likely to be effected by dieback disease? Conservation values or production values such as water quality, wildflower growing, avacado production etc are examples of vulnerable land uses.

(d) Is dieback already present?

(e) Is dieback disease so widespread that any attempts at control within the project are likely to be futile? If the answer is yes, then no further consideration within the project is required. Preventing the spread to other sites will need to be considered.

(f) If dieback disease is not present, or present but not widespread, what is the risk of introducing or spreading dieback disease?

(g) What resources are currently available to implement disease management? If resources are limiting and the potential for disease impact is high it may be appropriate to defer the operation until sufficient resources are available.

(h) Is the state of knowledge about dieback disease on the site such that the project should be deferred until more information is available?

(i) Is there some other factor present on the site or on adjacent land which precludes any effective management soley by the Shire?

4.3 Recognition and Mapping of Dieback Disease Symptoms

Identification and mapping of dieback disease can be very difficult. It should be carried out by a specialist with suitable training and experience, particularly if it is to be used as the basis for a detailed disease management strategy involving considerable resources.

Adequate mapping is a pre-requisite for implementing detailed dieback disease control procedures. However, an indication of the extent of dieback disease is often sufficient for deciding whether dieback disease is an issue at a particular site.

* The presence of dieback disease can be deduced from the death of susceptible plants.
* A sound knowledge of susceptible plants and their reliability as indicators in each locality is required.
* The time taken for a new infection to be expressed as visible symptoms is variable depending on local site and climatic factors. This time lag can vary from less than 6 months in the Jarrah forest to several years on more hostile sites. This can mean that dieback disease is present, but cannot be visibly detected.
* Many other agents can be responsible for plant death eg: insects, salt, old age, frost, mechanical damage, fire, herbicides etc. Care must be taken to discount these other agents.
* A single dead susceptible plant (eg: a dead Banksia) could be dieback. It is best to assume it is dieback if two or more dead plants are seen, or dead plants of two or more different species are present, or there is evidence of a progression of deaths over time or soil disturbance nearby from a vehicle which could have introduced the infection.
* Presence of dieback disease can sometimes be determined by laboratory testing of samples of soil or root material from dying or recently dead plants.
* Dieback disease is difficult to detect in areas which have been recently burnt due to foliage being consumed by the fire, destroying visible symptoms of the disease. Other areas are uninterpretable because there are too few indicator species present.
* Spring and Autumn or periods after heavy summer rain are the best time to map dieback disease symptoms. Soil moisture and temperature at these times favours the activity of the fungus.
* If dieback disease is evident in a water course then it must be assumed the water course is infected and dieback disease WILL be present downstream from the infection. Therefore it is important to identify the furthest upstream infection in the water course.
* If dieback disease occurs on a ridge or upper slope, then areas downslope will become infected in time.
* Dieback disease is most likely to occur in moisture gaining sites such as gullies, creeks, drains and culverts.

The interpretation and integration of all these factors is what makes it difficult to routinely identify and map dieback with a high degree of accuracy.

The end result classifies areas as:

- dieback infected;
- dieback free, or
- uninterpretable, which means it is not possible to say whether dieback is present or not.
- area at risk from natural spread downslope from disease.

4.4 Assessing The Risk Of Introduction and Spread of Dieback Disease

One of the fundamental questions which must be addressed in determining any hygiene strategy is:
"What is the risk of this operation introducing or spreading dieback disease?"

This question can be approached by considering three factors:

i) Is the type of operation likely to move infected material around (soil, roots, water). For example are tracked or rubber tyred machines to be used; is earthmoving likely; will the operation be in muddy or sticky soils?

ii) Are soil conditions such that soil is likely to stick to machinery and be moved around (moist).

iii) Are soil conditions such that the fungus will survive if delivered to a new site (moist).

THE RISK OF INTRODUCING OR SPREADING DIEBACK DUE TO THE NATURE OF THE PROPOSED OPERATION.

Highest Risk	Lowest Risk
Operation over large area	Operation over small area
Complex operation	Simple operation
Much machinery	Little machinery
Much movement of soils	Little movement of soils
Untrained personnel	Well trained personnel
Inexperienced personnel	Experienced personnel

THE RISK OF INTRODUCING OR SPREADING DIEBACK DUE TO THE NATURE OF THE SITE.

Highest Risk	Lowest Risk
Wet conditions	Dry conditions
Sticky soils	Non-sticking soils
Low lying site	Elevated site
Dieback known nearby	Dieback not known nearby

4.5 Assessing the Dieback Disease Hazard

Dieback disease hazard is a term which describes the final impact of the disease on a site if the diseae were introduced. The final impact of dieback disease on a site depends on:

* The susceptibility and abundance of plant species present.
* The fertility, chemical and physical properties of the soils.
* The lateral and vertical drainage characteristics of the site.
* Topography, and
* Climate.

These factors must be considered by a person skilled and experienced in the determination of hazard ratings. The hazard rating is a prediction of the consequences of introducing dieback disease to a site. It allows the project manager to assess cost/benefit, risk/consequence relationships. This information helps to determine the importance or priority for apply hygiene techniques to an operation and determining the amount of effort and resources that should be allocated to hygiene management.

4.6 Setting Priorities for Applying Dieback Disease Hygiene Controls

Disease management requires the expenditure of resources which could be used elsewhere. To obtain the maximum benefit from resources expended requires the allocation of priorities.

To establish priorities for dieback disease management the following criteria should be applied:

i) **Land Use:**
What are the land use values on and surrounding the site of the operation? For example: conservation, water production, wildflower plantation, aesthetic.
What is their value and current condition?

ii) **Hazard:**
What is the likely consequences of disease in terms of the designated land use values?

iii) **Risk:**
What is the risk of introducing or spreading the disease by:
- carrying out the operation;
- any subsequent maintenance operations
- any activity not directly under the control of the Shire eg: public access, other utilities or adjacent land management practices.

There are no formulated answers after considering these criteria. For example, it may be preferable to protect a large area with only moderate values of risk rather than a small area of high value if the cost and chance of success are much more favourable in the first case. Any area which is almost certain to be infected by activities on adjacent land would not represent good value for the expenditure of valuable and limited resources. Similarly, an area with a high conservation value but already badly infected with dieback disease could be regarded as in urgent need of dieback disease management because of the conservation values or as having a low priority because the existing infections pre-empt any effective management.

A final criterion is the regional disease context. If dieback disease is rare within the region then there is a strong case for adopting dieback control measures regardless of other factors.

In the final analysis a valued judgement will have to be made. The best judgement will always be one that is based on reliable, accurate information and clear logic.

The following summary is recommended:

Priority 1: HIGHEST PRIORITY

All sites within, upslope of or upstream of existing or proposed National Parks, Nature Reserves and other reserves with conservation as a purpose, any site having Declared Rare Flora at risk, and any site of great local significance. The only reason such sites should be removed from this category is where the application of dieback control is pre-empted by existing infections or other adjacent activities. Cost or difficulty would not normally be reasons to exclude sites from this category.

Priority 2: HIGH PRIORITY

All sites having vegetation in good condition and at least partly susceptible to damage by dieback, and any site having important remnant vegetation at least partly susceptible to damage from dieback, even where it is not in good condition. Again, these sites are subject to the condition that dieback control is realistic and has not been pre-empted. Cost or difficulty may not be reasons to exclude sites from this category.

Priority 3: MODERATE PRIORITY

Sites with vegetation of moderate value and at least partly susceptible, and sites where dieback control may be difficult or expensive.

Priority 4: LOW PRIORITY

Sites with vegetation of low value or poorly susceptible, and where dieback control is judged to be too difficult or too expensive with present methods.

Priority 5: LOWEST PRIORITY

Sites with no native vegetation or vegetation not affected by dieback, and sites where dieback control is impossible or has been effectively pre-empted by other actions on or adjacent to the site.

5. DIEBACK DISEASE MANAGEMENT TACTICS

Dieback disease management should be considered in the planning phase of every operation. The incorporation of very simple tactics in the planning phase is usually easier, cheaper and a more reliable means of involving disease management than implementing haphazard tactics at the operational phase.

The following points should be considered in planning hygiene tactics:

- Consider changing from grading or ploughing for vegetation control and firebreaks to mowing, slashing or herbiciding where dieback is a problem. Methods which do not disturb the soil are always preferable.

- Consider the type of machinery used in maintenance works. Vehicles which do not readily pick up soil are preferred. Vehicles such as front end loaders with large rubber tyres could be used in preference to tracked vehicles. Vehicles which can be cleaned readily will be an advantage. Tracked vehicles are the most difficult to clean.

- Where possible, operations should be carried under dry soil conditions. This is particularly important for high risk operations such as drain cleaning and batter grading. Consider using contract machinery to increase the amount of work carried out within the most favourable season.

- Develop a network of known dieback free material sources which can be used for unexpected repair works. If the sources are known to be dieback free they can be used by trained personnel without prior approval or supervision. This method removes the need for many dieback controls in repair work. Special effort should be made to ensure these resources remain dieback free.

- Consider upgrading drains so that they require less maintenance and are less likely to flood. Maintenance of wet drains is a high risk activity, and sites prone to flooding are particularly favourable to the establishment of dieback infections.

- Only work dieback free borrow pits and quarries from the downslope edge up so that any dieback introduced does noes infect the whole resources.

- Sterilise water used in operations such as fire control or road binding with an appropriate fungicide or utilise sources free of dieback disease.

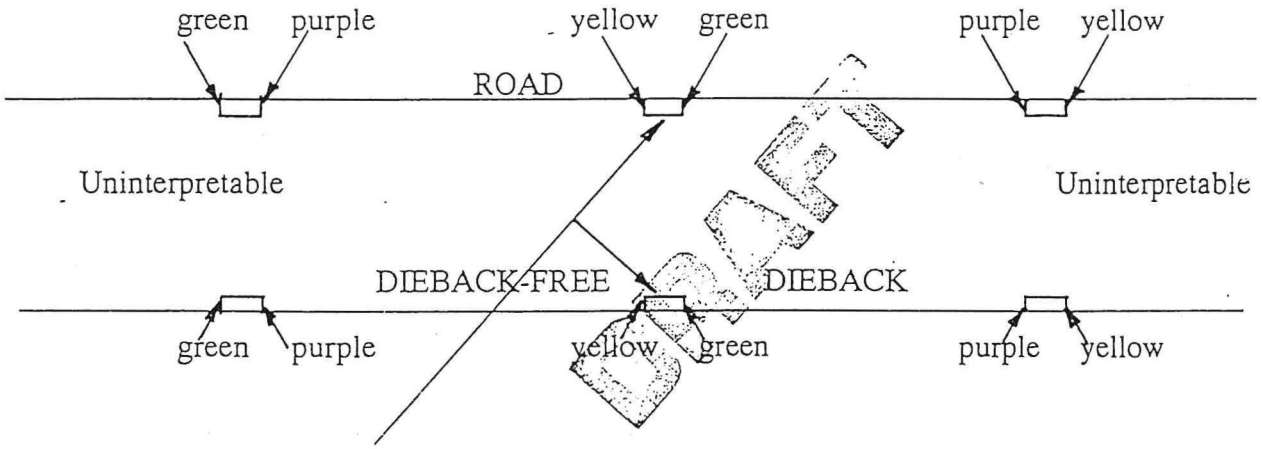
- Minimise the area put at risk of infection by an operation by segmenting the operation into discrete, small areas separated by a cleandown or hygiene barrier and minimising the area of susceptible vegetation downslope of the operation.

The following pages are illustrated examples of appropriate hygiene tactics which can be applied to common operations.

5.1 Ground Demarcation of Hygiene Categories

(1) In interpretable areas (unburnt for 4-5 years and with sufficient indicator species). Boundaries between dieback, dieback-free and uninterpretable, areas will be marked on the ground (pegs, survey tape, paint etc) before any operation involving use of machinery. Where earthmoving operations are involved boundaries will be pegged.

(2) Pegs will indicate to machine operators where dieback, dieback-free and uninterpretable patches start and finish.



(3) Pegs will be 1 metre in length (0.7m above ground), 75mm in width.
Side visible when entering dieback painted yellow.
Side visible when entering dieback-free painted green.
Side visible when entering uninterpretable painted purple.

(4) Pegs to be located 5 to 20 metres uphill from visible symptoms or into dieback-free in the case of uninterpretable.

(5) Where there are no evident symptoms, creeks or shallow flats are to be pegged if dieback occurs upstream from the crossing. Pegs to be located 5 to 20 metres each side of water course, or edge of flat, depending on slope.

5.2 Cleaning Down

NOTE: Use brush or compressed air rather than washing, if soil is dry and can be removed by this method.

AT HEADQUARTERS:

DO	use designated ramps or pads to washdown vehicles. Keep the ramp or pad clean of mud.	DON'T	forget to remove mud & soil from cleats and underside of protection plates on track vehicles.
DO	ensure run-off flows into a sump where it can be treated with fungicide.	DON'T	drive vehicle through washdown effluent.
DO	use high pressure spray to remove caked-on mud and soil. Use spade or bar to assist removal.		

IN THE FIELD:

DO	washdown at designated washdown point or on bridges, rocky crossings or hard well drained surfaces, within dieback areas. Keep the wash-down point clean of mud.	DON'T	washdown in dieback-free areas.
DO	treat washing down water in tankers with fungicide (Sodium hypochlorite, 2 lts per 3000 lt tank).	DON'T	fail to clean any machine capable of carrying dieback disease from infected to uninfected areas.
DO	renew NaOCI dosage every 24 hours.	DON'T	drive vehicles through washdown effluent.
DO	use a brush, bar or spade to help remove compacted soil where necessary.	DON'T	use excessive quantities of Sodium hypochlorite as it is corrosive.
DO	washdown before moving to the next job.	DON'T	use treated water for drinking.

5.3 Road and Firebreak Selection

DO	assess existing road and firebreak systems for adequacy using relevant criteria (strategic effectiveness, block size, ease of hygienic maintenance, erosion, other).	DON'T	duplicate existing access.
DO	determine known and suspect dieback along the intended route, using dieback plans, air photos and field check on foot, where possible.	DON'T	use vehicles, bulldozers, tractors in initial selection of roads.
DO	avoid crossing dieback to dieback-free boundaries.		
DO	demarcate by pegging dieback/dieback-free boundaries.		
DO	select roads low in the landscape.		

5.4 Road and Firebreak Construction

DO	programme earthmoving work for months when soil is dry. (Usually December-March)	DON'T	commence road or firebreak construction unless correct selection procedure has been followed.
DO	segregate machine work, in interpretable areas, so that machines do not travel from dieback to dieback-free areas, as pegged, without cleaning down BEFORE leaving dieback.	DON'T	assume machinery is clean. Always inspect before allowing entry, or commencement of work.
DO	segregate machine work, in uninterpretable areas, so that machines do not cross sub-catchment boundaries, or move uphill from gullies, without cleaning down BEFORE crossing such boundaries. (See Appendix I for details)	DON'T	construct turn-off drains which result in ponding.
DO	construct roads and firebreaks to shed water and dry quickly.	DON'T	forget to write dieback specifications into contracts.
DO	construct deep table drains to carry run-off swiftly and directly into nearest natural water course.	DON'T	remove infected soil and plant material resulting from clearing from site.
DO	use slashed or mown firebreaks in heath country if possible.		
DO	use dieback-free materials on dieback-free or uninterpretable areas.		
DO	manage topsoil resources so that they are identified, separated and replaced in appropriate positions.		

5.5 Road and Firebreak Maintenance

DO	design a works programme for regular maintenance of roads and firebreaks.	DON'T	grade deeper or wider than prescribed.
DO	peg roads before maintenance commences in interpretable areas. Check previous pegging	DON'T	grade or move soil from dieback into dieback-free areas as pegged in interpretable areas, or across sub-catchment boundaries or uphill from gullies in uninterpretable areas.
DO	segregate machine work, in uninterpretable areas, so that machines do not cross sub-catchment boundaries, or move uphill from gullies, without cleaning down BEFORE crossing such boundaries.		
DO	as much maintenance as possible in dry weather.		
DO	clean out table drains when soil is dry.		
DO	clean machinery before leaving dieback affected areas.		
DO	ensure dieback specifications are written into maintenance contracts and are strictly adhered to.		
DO	include general specification on grading method and operation of the machine (angle of blade etc) to avoid carrying infected earth long distances into dieback-free areas.		
DO	include specification applicable to the individual job.		
DO	provide tender vehicle with yard broom & small tank, pump and fungicide.		
DO	use dieback-free materials on dieback-free or uninterpretable sites.		

5.6 Shoulder and Batter Grading

DO	clean down the machine before it is shifted to a new area.	DON'T	assume a machine is clean on arrival - always inspect it and clean it if necessary.
DO	clean down machinery every time an infection or uninterpretable area is exited.	DON'T	grade from infected areas into uninterpretable areas without cleaning down. The uninterpretable area may be uninfected.
DO	clean down machinery before leaving a micro catchment in an area where disease location is not known.	DON'T	grade from uninterpretable areas into dieback-free areas without cleaning down. The uninterpretable area may be infected.
DO	work from ridge to valley in areas where disease distribution is not known as disease is more likely to occur in lower parts of the landscape.	DON'T	grade up out of swamps, water courses, or sites prone to flooding without cleaning down the machine unless their dieback-free status is confidently known.
		DON'T	increase the surface area graded by going beyond the areas previously graded.

5.7 Gravelling

DO	programme work for months when soil is dry. (Usually December-March)	DON'T	use infected gravel on roads and firebreaks except where specified in diseased areas.
DO	select gravel pits at least 100m away and upslope from nearest visible dieback disease symptoms, unless job is entirely in dieback.	DON'T	allow water to pond in gravel pit.
DO	wash incoming plant before commencement of gravelling.	DON'T	leave dieback-free pits open. Secure them against infection and ensure their future disease free status.
DO	plan haul routes from pit to job to avoid crossing dieback areas, unless job is entirely in dieback.	DON'T	allow run-off to enter a dieback-free pit.
DO	remove vegetation and stumps from gravel pit before carting commences.	DON'T	allow any contaminated vehicle to enter a dieback-free pit, either during or after the operation.
DO	arrange for sampling & testing of gravel prior to work beginning where there is any doubt whether the disease is present.		
DO	ensure dieback hygiene specifications are included in contracts and are strictly adhered to.		
DO	use gravel 'in situ' whenever possible.		
DO	use gravel from uninterpretable areas for uninterpretable forest, provided it is used 'in situ' (within the same micro catchment).		
DO	Lay gravel from the pit out so that trucks run on a mattress of clean gravel.		

NOTE: The above rules should be applied to other materials such as shale and sand.

5.8 Drain Construction and Cleaning

The same rules apply as used in grading with the addition of:

DO	construct and maintain drains & culverts in summer when soils are dry.	DON'T	allow drains to pond water.
DO	work from ridge to valley.		
DO	clean down between drains or culverts.		

5.9 Emergency Road Repair

Emergency works are dangerous because the urgency often leads to poor planning.

Where materials must be used the following points should be considered:

DO	ensure machinery is clean before leaving headquarters.	DON'T	move machinery between sites without cleaning down.
DO	use materials of appropriate disease status ie; - dieback material to a dieback site; - dieback-free material to a dieback-free or uninterpretable site; - uninterpretable material only to uninterpretable sites in the same micro catchment or diseased sites.	DON'T	allow untrained personnel to be involved in unsupervised emergency repair work.
DO	establish and maintain in a dieback-free status stockpiles of material at strategic locations.		

5.10 Fire Management

DO	observe other sections of this manual for hygiene use & operation of machines.	DON'T	travel through boggy creeks.
DO	select burn boundaries on well formed hard surfaced roads.	DON'T	move machinery from diseased to dieback-free areas without cleaning.
DO	travel vehicles only on hard surfaced roads.	DON'T	grade roads unless absolutely necessary.
DO	consider alternatives to grading (ie; sweeping, slashing, handraking).	DON'T	use bulldozers if fire can be suppressed with hand tools.
DO	divide sectors of fire in accordance with hygiene categories.	DON'T	mop-up with water from creeks or water points unless Sodium hypochlorite is added.
DO	ensure all water used for mopping up is disinfected.		
DO	encourage the use of herbicides or slashing to provide breaks.		
DO	ensure plant and vehicles are clean before entry to dieback-free areas.		
DO	nominate clean down points for incoming and outgoing plant and vehicles.		

APPENDIX I

HYGIENE PRESCRIPTION FOR FIREBREAK CONSTRUCTION AND MAINTENANCE IN UNINTERPRETABLE AREAS

1. All works should be carried out under dry soil conditions.

2. All machines to be clean prior to work commencing and cleaned down as required.

3. Firebreaks should be adequately drained to ensure there is minimum ponding of water on road surface.

4. Works should be separated so that soil is not carried across ridge lines or upslope from gullies.

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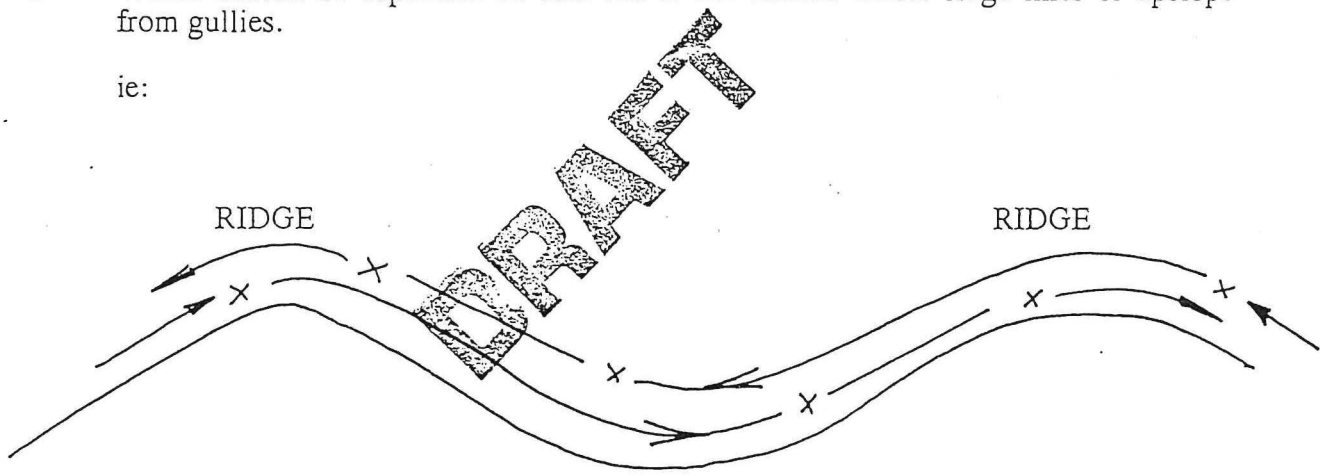

5. If gravelling is required, only dieback-free gravel should be used unless it is obtained from same mini-catchment upslope of the area to be gravelled. Pits should be sampled prior to use.

KNOWN DIEBACK RISK AREA

SCALE 1:2 000 000

50 0 50 100

Kilometres

1. SHARK BAY
2. NORTHAMPTON
3. CHAPMAN VALLEY
4. MULLEWA
5. GREENOUGH
6. MINGENEW
7. MORAWA
8. IRWIN
9. THREE SPRINGS
10. PERENJORI
11. CARNAMAH
12. COOROW
13. DALWALLINU
14. DANDARAGAN
15. MOORA
16. WONGAN-BALLIDU
17. VICTORIA PLAINS
18. GINGIN
19. GOOMALLING
20. CHITTERING
21. TOODYAY
22. WANNEROO
23. SWAN
24. NORTHAM
25. CUNDERDIN
26. MUNDARING
27. YORK
28. QUAIRADING
29. KALAMUNDA
30. ARMADALE
31. BEVERLEY
32. ROCKINGHAM
33. SERPENTINE-JARRAHDALE
34. BROOKTON
35. CORRIGIN
36. WANDERING
37. PINGELLY
38. MANDURAH
39. MURRAY
40. BODDINGTON
41. CUBALLING
42. WICKEPIN
43. WAROONA
44. HARVEY
45. WILLIAMS
46. NARROGIN
47. COLLIE
48. WEST ARTHUP
49. WAGIN
50. DUMBLEYUNG
51. DARDANUP
52. WOODANILLING
53. LAKE GRACE
54. DUNDAS
55. CAPEL
56. BUSSELTON
57. AUGUSTA-MARGARET RIVER
58. DONNYBROOK-BALINGUP
59. NANNUP
60. BRIDGETOWN-GREENBUSHES
61. BOYUP BROOK
62. KOJONUP
63. KATANNING
64. KENT
65. BROOMEHILL
66. MANJIMUP
67. TAMBELLUP
68. CRANBROOK
69. PLANTAGENET
70. DENMARK
71. GNOWANGERUP
72. ALBANY
73. JERRAMUNGUP
74. RAVENSTHORPE
75. ESPERANCE

PHYTOPHTHORA CINNAMOMI

PHYTOPHTHORA CITRICOLA

GERALDTON

PERTH

BUNBURY

ALBANY

NORSEMAN

ESPERANCE

DIEBACK MANAGEMENT POLICY

AGENDA 2

15 October 1996

Armadale Council

Function Room

9.00 am - 12.00 pm

1. **Welcome.**

2. **Business arising from previous minutes.**

   a) **Money? Grant application.**

   b) **Information collected on reserves within each municipality**

3. **Working through the CALM draft document highlighting costs to agencies.**

4. **Close**

Dieback Management Policy

Minutes

Meeting 1; 17 September 1996

Present:

John Nicholson	East Metropolitan Regional Council
Ian Colquhoun	Roleystone Dieback Group
Len Husking	Fire Awareness Ranger City of Armadale
Wayne Van Lieven	Parks and Reserves City of Gosnells
Nicole Siemon	Catchment Coordinator Water and Rivers Commission
Paul Lanternier	Manager, Parks and Facilities City of Armadale
Andrew Del Marco	Environmental Officer Shire of Serpentine-Jarrahdale
Grant MacKinnon	Parks and Reserves Shire of Swan

Apologies:

Joanne Smith	Parks and Reserves City of Canning

Why have a policy

Ian Colquhoun outlined the reasons for calling the meeting and provided an overview of the problems of dieback control.

Roleystone Dieback Group has been pushing for the Armadale Council to develop a dieback policy. However, because dieback is a regional issue it is important that all Councils recognise their need to contribute to managing this problem.

Objectives

Natural bushland (conservation)
Horticultural aspects
Construction - high risk operations
Dewatering
Nursery stock - accreditation procedures but only six nurseries are accredited.
Transport of materials - gravel, sand for landfill etc

Background

Ian Colquhoun outlined the background, habits and nature of the fungus *Phytophthora cinnamomi.* It is believed to have been introduced by settlers. The dieback of trees was first noted in Karragullen in 1922. It took until the mid 1960's to identify the pathogen *P cinnamomi.*

About one third of Jarrah forest species are affected by *P cinnamomi.*

Scientists working on the problem have been through a number of phases since 1965, from nothing can be done to now knowing a range of simple but effective techniques to reduce the fungal spread.

This disease has a major impact on ecology. Ian provided some information pamphlets to the committee.

How does the disease work

Spores encyst on roots, make filaments which break into root. These filaments move through the plant into water vessels (xylem), block water supply and kill the plant.

Human activities which can change conditions to favour the fungus include:

- Movement of soil
- Changes in water movement - increasing water input into previously free draining soils is likely to increase fungus, eg. Roleystone High School. The site was free draining but the construction of the buildings resulted in stormwater runoff into forest. Now most plants on the site are dead. Children also contribute to the spread.

Scientists are now aware of plant species which are indicative of good drainage - but adding water changes the balance in favour of the fungus.

Activities which could hinder the effectiveness of Councils assisting in dieback management

Discussion ensued about a range of work practices which are likely to contribute to the spread of dieback which are difficult to change.

* ***Fire fighting***

Dieback is not foremost in people's minds in emergency situations
Tank - retardants used in mopping up - could add a sterilent to reduce the risk of dieback spread (CALM can advise on this).

City of Armadale

Wildfire management - vehicles and units coming from other areas could introduce *P cinnamomi*
Wash down facilities aren't available in Armadale
Where does the water come from?

90% water from hydrants for bush fires and the remainder from waterholes
Fire break construction by contractors/Council across the top of ridges. Firebreaks manually created 3-5 years in summer.
Lots of contractors employed by Council. An incentive system could be employed by the Council to ensure they hire contractors who follow dieback safe practices - if Council has a clear policy.

Shire of Serpentine/Jarrahdale

Likely to draft water
Fire break construction by contractors/Council across the top of ridges.

Gosnells

Strategic fire breaks to reduce the need to construct individual fire breaks
During the fire containment stages of the fire fighting process there is a low risk of spreading dieback, the danger is in mopping up.
Gosnells have strategy to purchase dieback free soils for road construction.
The Council only uses one contractor.

**Alternative fire break construction to reduce sediment movement includes using chemicals, mowers or rotary hoes.*

Other points raised

- Identify risk, causes and how it's spread
- Safe work conditions for dieback
- Train employees
- Fire management
- Location of wash down facilities was discussed
- Recreation and bushland - difficult to manage with dual-use reserves.
- * ***Ownership of land DOLA, MFP, Council*** **-** also makes it difficult to manage
- Fire break construction / erosion from development sites
- **Homewest** - causing difficulties with the contractor used to install firebreaks - the organisation is not interested in changing their firebreak construction system.
- *P. cinnamomi* **in mulch.** Mulch is a moist habitat - after the tree dies other fungi take over but takes time. Composting kills it - mulch could be a problem which needs to be looked at.

Action: Ian Colquhoun to investigate what is known about the effect of mulching on *P. cinnamomi*. If little is known than Ian will look at initiating a university project.

Resources

Potential resources - both information and training opportunities were raised in discussion. Contacting all agencies with the ability to influence the spread and management of dieback is essential to identify potential information resources.

CALM, Main Roads and Telstra may have significant amounts of information which may be of use. CALM has a training package, speaking kit and video which could be used.

The Roadside Conservation Committee has considerable expertise in dieback management and also has an interpretation kit which could be useful.

Action: Ian Colquhoun to investigate local, state and federal government agencies policies and practices with respect to dieback control.

Dept. of Land Administration and Ministry for Planning has significant tracts of land in the Swan-Coastal Plain and Scarp regions. They are an important player in the dieback management policy.

Action: Invite Kevin Uhe (MFP) and Douglas MacArthur (DOLA) to next meeting on 15 October 1996.

The need to educate private landholders is essential to achieving improved dieback management. Roleystone Dieback Group has published a pamphlet and is currently distributing it through Roleystone. It may be possible to expand the distribution.

How does local government system work?

A discussion to identify the process we need to follow as a group to get the Councils to adopt an amended policy followed. The importance of ensuring that differences between the Councils is recognised in the policy was emphasised.

- **Swan - (GM)** Remnant roadside vegetation and dieback policy
  Parks section put forward to engineers on side and rangers (firebreaks)
  Chemical firebreaks
  Recognise need for a policy on dieback
- **Gosnells** Raise issue at standing committee: get endorsement
  This developing policy is commented on by staff, individuals and councils

- **Serpentine/Jarrahdale**
  Smaller
  Individuals within Council get things moving and seek endorsement by committee - build into activities
  Depot people to do most of the road construction / build into budget.

Ian Colquhoun informed the meeting about how ALCOA integrates dieback management techniques into work instructions - build dieback control into projects.

The Draft Policy Document

There was general agreement that the draft document is a good starting point but needs modification to fit each of the local government authorities processes.

ACTION: Each officer from the LGAs and State agencies to read the document and put forward comments covering the following areas:

- **Inconvenience to incorporating dieback control into standard agency procedures**
- **Cost of implementation**
- **Funding sources**
- **Scheduling sources of water for fire control.**

The process

- The importance of community education and involvement in dieback management is paramount to improving controlling the spread of the disease. Roleystone Dieback Group will put up a display at the Karragullen Field Day and Kelmscott Show.
- Need to establish an inventory; conservation values, dieback, rare flora, contour maps and access tracks into reserves (link with Bush Fires Board survey of reserves).

ACTION: All LGA officers present to bring details of their reserves to the next meeting. The information required includes: Reserve No
Size
Conservation value
Dieback status
Access
Relevant reference information

ACTION: Wayne van Lieven to approach CALM to look at costs - particularly resources for mapping.

- Employ a dieback interpreter/groundtruther (funding will be the problem - CALM may be able to assist) to develop maps showing dieback distribution.

ACTION: Nicole Siemon and Ian Colquhoun to look at grants for mapping dieback.

ACTION: Ian Colquhoun to determine charges by consultant dieback interpreters.

ACTION: Ian Colquhoun to advise CALM Environmental Protection Section (Roger Armstrong - Bunbury) of this group and invite him to attend.

- A checklist of disturbances/activities which can increase the spread of dieback need to be documented for Council staff use eg. fire break construction, fire protection, erosion generally and water management.

ACTION: All officers to document points of concern in the draft to enable development of an issues checklist for LGAs.

Next Meeting **9.00am - 12.00 am**
15 October 1996
City of Armadale Function Room