DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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Mine Manager
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Dear Richard,

Dieback Management Section - Draft Working Arrangements — Boddington Bauxite - Worsley Alumina

As discussed at a previous meeting please find attached the first draft of the proposed working arrangements on Dieback Management. The document is provided on a "without prejudice" basis.

As agreed at our meeting I offer this document for consideration and for discussion at a suitable planning meeting where we can link the BBM staff and my previously offered sections of the working arrangements to this document, and compile the initial composite draft for further discussion.

If you wish to discuss any issue raised in this draft please contact me at Kelmscott. I will be on leave from the 7 July, returning to work on the 21 July.

Yours sincerely,

R Smith
for Regional Manager
3 July, 1997

Needs a contents pg

BODDINGTON GOLD MINE

DEFINITION OF A DIEBACK-FREE MINING SYSTEM

A Secured mining envelope is defined as a mine for which there is:

a) Accurate knowledge of disease location

b) Well defined access and control of movement of vehicles both into and within the area eg. agreed Access Plan

c) A haul road network which is constructed and maintained Dieback-Free

d) A high level of hygiene existing. All vehicles must have access to well maintained and effective cleandown facilities

e) Well developed drainage controls to prevent spread and intensification of the disease. Where necessary this includes the use of blasted or ripped drainage slots, developed before clearing and / or stripping operations.

This system is currently in operation at the BGM and allows for fewer seasonal constraints on operations except for the significant change of developing dieback areas under summer conditions. Operators are asked to work to the following simple principles.

i) Always clean machines thoroughly before entering mine
ii) Always obey forest signs and cleandown requirements
iii) Always know the dieback status and the signs in the area they are operating in
iv) Never allow any equipment to move from dieback to dieback-free without cleandown
v) Always report any violations (accidental or otherwise) of dieback control procedures to the foreman
vi) Always ask the foreman, if in doubt

COMMON FOREST TAPES, PAINTS AND COLOURS

- **CLEARING BOUNDARIES** - Marked with yellow tape. After approval has been granted by Government to clear the area they are painted over with white paint.
- **DIEBACK LINE** - Initially marked with day-glo orange flagging tape with knot facing dieback.

  Blazed permanently with 3 blazes, painted yellow. Middle blaze faces dieback.
- **ACTUAL DIEBACK LINE** - Blue blazing, marks actual position of dieback
- **UNINTERPRETABLE** - Initially marked with white flagging tape with knot facing uninterpretable forest.

  Blazed permanently with 3 blazes painted white. Middle blaze faces uninterpretable.
- **SUSPECT** - Initially marked with red flagging tape with knot facing suspect forest.

  Blazed permanently with 3 blazes painted red. Middle blaze faces suspect.
- **ABUTTING CATEGORIES** - When two categories abut eg. dieback/uninterpretable.

  Initially marked with both tapes, knots facing appropriate direction

  Permanently, D/back always have 3 yellow blazes, and fourth blaze represents the other category.

  Dieback overrides suspect which overrides uninterpretable.
- **COUPE BOUNDARY, ROAD RESERVE, SPECIAL CARE ZONE** - White painted crosses
- **SUB-COUPE OR RIDGE LINES** - Red flagging tape
- **FELLERS BLOCK BOUNDARY** - Orange flagging tape
- **TREE MARKED FOR RETENTION** - White painted band around tree
- **TREE MISSED BY FALLER** - Yellow flagging tape tied around a tree
- **DANGER SIGN** - White and red striped tape tied around a tree or bush

OPERATING CONDITIONS WITHIN A DIEBACK FREE MINING SYSTEM

Conditions under which various operations will be allowed to proceed are outlined in the prescriptions, but are based on the following:

Surface operations.

Extensive, Low-Intensity operations (natural soil surface)

During extensive operations (eg exploration drilling, survey, security patrol) the area put at risk may be large. The aim is to prevent the transfer of potentially infected soil, with a very high degree of certainty. All non-dieback areas are therefore treated under dry or moist, no soil movement conditions (see CALM Timber Harvesting in Western Australia March 1993 Edition)

Intermediate Intensity Operations (natural soil surface)

During intermediate operations (eg grade control drilling), activities occur at the soil surface but have limited disturbance on the site.

Provided no soil is transferred, between drill holes for example, no dieback spread can occur. Hygiene is therefore achieved by operating under dry conditions, or very strict cleandown between holes or both. No soil should be transferred because:

i) no vehicle movement occurs in saturated soil conditions
ii) vehicles are rubber tyred
iii) vehicles operate over caprock or leaf litter
iv) vehicles stay off muddy tracks
v) drill augers are cleaned between holes

Intensive Operations (movement or exposure of topsoil)

During intensive operations (eg clearing, soil stripping, rehabilitation) the movement of soil or material within or between dieback categories is the objective. Furthermore, research has indicated that cleared forest soils retain moisture at the caprock level of supporting the fungus even when the surface is dry.

It is therefore important to prevent runoff from the area to be cleared, stripped or rehabilitated during operations as there is potential to move a known or unknown infection. In an area which is predominantly Dieback-Free eg secured site it is important that the movement of any infected soil is minimised, this is best done by applying dry soil operations to dieback areas being developed. This will reduce *P. cinnamomi* survival and spore production.

Subsurface Operations

Subsurface operations may occur all year round subject to adequate control of drainage of pit and haul roads.

Dieback areas should be mined under hot conditions in a secured site wherever possible. This is to minimise the opportunity for the disease to contaminate the Dieback-Free system.

DIEBACK CONTROL PRESCRIPTION FOR EXPLORATION AND GRADE CONTROL DRILLING AND SURVEY IN A DIEBACK-FREE MINING SYSTEM (SECURED SITE)

1.0 PLANNING FOR DRILLING OPERATIONS

1.1 Ten Year Drilling Plan

Each July BGM will submit a Ten Year Drilling Plan (1.25,000 scale) to the Dwellingup District and Swan Regional offices of the Department of Conservation and Land Management.

This plan shows the broad direction of both exploration and grade control drilling over each of the ensuing Ten years. This will assist in the coordination of drilling and associated operations with other forest activities, particularly logging and prescribed burning, dieback photography and interpretation. Without such a plan there may be:

* Destruction of dieback symptoms and the creation of false symptoms resulting in greater difficulty in disease interpretation. Without such a plan there may be:

* Exposure of the soil (by burning) causing hygiene difficulties under moist soil conditions.

* Disturbance of pegs which have been accurately surveyed.

In addition, this plan permits commencement of CALM hygiene planning well in advance of the operations.

1.2 Annual Drilling Plans

By the first week of July each year BGM will submit proposals for the next 12 months' drilling operations to the District CALM office. These should include:

(i) Broadscale plans showing areas and type of drilling at 1:25,000 scale.

(ii) A programme indicating BGM's priority for operations.

(iii) A plan with dieback status and Forest Priority overlay for the proposed drilling areas. These will be used to develop a hygiene strategy. Where dieback information is incomplete areas will be drilled under dry soil conditions only.

All exploration drilling in State Forest and Timber reserves including DRA will be subject to a Hygiene Evaluation, for approval by CALM. The Hygiene Evaluation is presented to the District for approval by the Regional Manager.

Operations in Dieback-Free forest will be scheduled for dry or moist soil, no soil movement conditions.

Operations in Dieback forest will be allowed at any time of the year.

The programme for drilling operations will be determined by amalgamating BGM's capacity with the hygiene strategy as determined by CALM and BGM.

1.3 Changes to Plans

Changes in Forest Priority and additions to drilling operations are possible by agreement with CALM District Office provided adequate notice for dieback demarcation is given.

2.0 SCHEDULE OF OPERATIONS

2.1 Dieback Interpretation and Demarcation

This is BGM responsibility under CALM direction. Demarcation occurs just in advance of all field operations to ensure that hygiene conditions are consistently applied to those operations. The onus will be on BGM to identify operational areas to CALM with reasonable accuracy on 5 year drill plans.

2.2 Dieback Location Maps

Maps at 1:25000 scale and hygiene conditions (including access) should be forwarded by BGM minesite environmental scientist to the mine geologist for areas of operation in the ensuing season.

2.3 Dieback Hygiene Requirements

Prior to drilling two copies of the Annual drill plan will be sent to CALM. The drill plan will be overlaid with a Priority coverage and a dieback demarcation coverage.

2.4 Notification

Survey crew and drill rig locations are to be available at all time from the minesite security office.

3.0 HYGIENE OPERATIONS

3.1 Objective

To prevent the spread of dieback disease into Dieback-Free forest.

3.2 Dieback Categories

Areas of forest in which field operations are to take place will be categorised as Dieback, Dieback-Free or Uncertain based on the hygiene map.

In the forest these categories will be separated by Dieback Management Lines of yellow, red or white painted blazes on trees and will be demarcated by CALM officers dependant on the disease category. Old management lines will be painted over by CALM. Lines will be checked on an annual basis by CALM officers upon receipt of the 5 year and annual drill plans.

3.2.1 Access

Field Operations will be confined separately to each disease category. Transfer from one disease category to another requires specific hygiene conditions.

3.2.2 Standards

Vehicle and plant cleanliness is the basis for controlling dieback spread in the field operation. Cleandown will be carried out at all hygiene boundaries and will be achieved by:

Under moist soil conditions:

* Washdown with fungicide-treated water from a high pressure / low volume pump.

Under dry soil conditions:

* Blowdown with high pressure compressed air.

* Brushing down.

Prior to departure from base depot all vehicles must be in a clean condition, and must follow an agreed access route to a field cleandown location.

3.3 Operating Conditions

Operations are permitted in Dieback forest under all soil conditions.

Operations are permitted in Uncertain and Dieback-Free forest only under no soil movement conditions. Soil moisture conditions will vary from site to site. Where drills are operating on heavy litter layers, no soil movement conditions may occur after quite considerable rainfall. CALM Officers are to liaise with BGM Environmental Scientists and Drill coordinator to maximise opportunity to continue operations.

Conventional support vehicles (eg light vehicles, trucks, trailers) are to remain outside the Dieback-Free boundary or on nominated hard surfaced roads when wet soil conditions exist.

3.3.2 Field Hygiene Practice

Uncertain and Dieback-Free Forest

(i) Every vehicle is to be inspected by the operator prior to entry into the area to ensure that no soil has been picked up in transit. A cleandown is required at the dieback boundary or nominated cleandown point, if the vehicle is not clean. (Nominated cleandown points should always be located as low in the land profile as possible.)

(ii) After drilling each hole and prior to departure for the next hole, the drill rig must be inspected by the operator for cleanliness. If the rig is not clean of soil, cleandown is required. Control inspections may be carried out by CALM officers.

(iii) Where practicable, routine daily cleandown is to be carried out and operations should endeavour to start at the highest topographical point after a cleandown to prevent potential upslope infection during drilling.

(iv) Prior to leaving Uncertain or Dieback forest, vehicles are to be free of soil.

Dieback Forest

* Cleandown between holes is not necessary.

* Do not cross moist low-lying flats or creeks.

4.0 TRAINING

Vehicle operators must be trained in hygiene principles, techniques of inspection for vehicle cleanliness and vehicle cleandown. All training will be subject to an annual update and current prescription review.

5.0 RUBBISH

No refuse is to be left behind after any field operation.

6.0 FOREST DISTURBANCE

All field operations must minimise damage and disturbance to forest vegetation.

ACCESS PRESCRIPTION FOR DIEBACK CONTROL IN A DIEBACK-FREE MINING SYSTEM (SECURED SITE)

This prescription specifies the agreed procedure for access to State Forest and Timber Reserves which have been interpreted for the presence of the dieback fungus *Phytophthora cinnamomi*.

1.1 Scope

The prescription has been designed to control general access to State Forest, prior to, during and after mining operations. It refers specifically to normal forest access tracks. Haul road locations will be reviewed and agreed under the Five Year Mining Plan and Annual Clearing notice.

1.2 Control of Access

The control of access will enable all forest operations including mining to meet the dieback objectives, specifically during survey, exploration drilling, ore development work, haul road construction, blasting operations and forest environmental monitoring.

Access controls specified in other prescriptions must be adhered to, in addition to the controls specified in this prescription.

2.0 ACCESS SEQUENCE

2.1 Pre-Mining Access

2.1.1 Ten year mine plans are reviewed by BGM and CALM to identify all forest tracks using aerial photography and/or field checking where necessary. Where necessary consider declaration of areas as DRA (quarantining).

2.1.2 Some tracks not required by CALM, or BGM will be ripped up or blocked.

2.1.3 A Survey and Drilling Access plan covering the 5 year drill plan will be produced by BGM and approved by the District CALM office.

2.1.4 Tracks identified on the Survey and Drilling Access plan will be upgraded where necessary to improve dieback control. The need for upgrading will be by agreement between CALM District office and BGM. The standard of upgrading will also be decided by agreement, consistent with section 3.4 below.

2.1.5 Each access track based on dieback status will be designated as either all weather access or limited access ('no soil movement conditions only'). Roads which do not come up to all-weather standard may be closed by CALM District office. Roads may be upgraded by BGM or CALM to all-weather standard.

2.1.6 Alterations to the Survey and Drilling Access plan will be by agreement between the District CALM office and BGM as the need arises.

2.1.7 Tracks which could lead significant public traffic to unsafe areas will be closed by gates. These gates will be marked on the Access plan and adequately sign-posted.

Alternative access will be via detours agreed between BGM and the District CALM office.

2.1.8 Forest tracks required for operations preceding haul road construction will be identified on a Mining Access plan, this will identify construction of additional tracks if required and closure of existing forest tracks by the haul road development. These plans will be developed as part of the Dieback Management Plan.

2.1.9 Haul road alignments will be indicated on the Five Year Plan and approved on the annual clearing notice.

2.2 Post Mining Access

2.2.1 CALM and the Water Corporation will identify long term management requirements to BGM five and ten years prior to mining, with particular regard to public access and minesite fire protection. Long term access will be selected with regard for the dieback status of the area and the need for protection of State Forest.

2.2.2 Long term access will be incorporated into the local land use management plan prepared for the region by CALM.

3.0 DIEBACK CONTROL STRATEGIES

3.1 General

The basic strategy governing dieback control during forest access to and from the minesite will be forest hygiene. During clearing development soil stripping and haul road construction the strategies may be hygiene and containment.

3.2 Access Designation

3.2.1 Forest tracks will be designated as 'all-weather access', suitable for use by vehicles all year round, or as 'limited access' tracks, which are suitable for access under dry, no soil movement conditions only. The designation will be based on best dieback information, area placed at risk from an infection or possible infection. Tracks may be upgraded to all-weather access to limit hygiene controls that will be necessary.

3.2.2 Hygiene Practice

Tracks nominated as 'limited access' may be used under no soil movement conditions where by clean vehicles has occurred. Limited access tracks

should be regarded as dieback "suspect" because of the possibility of the track having *Phytophthora citricola* present on it that is not readily mapped from vegetation. All vehicles leaving the track to enter Dieback-Free forest must be inspected and if necessary cleaned down.

3.3 Standards

3.3.1 Vehicle cleanliness will be the basis for controlling dieback spread along forest tracks.

This can be achieved by:

Under moist soil conditions:

- Washdown and Dieback-Free water from a high pressure/low volume pump,

Under dry soil conditions:

- Blowdown with compressed air, and
- Brushing down.

3.3.2 Every vehicle accessing forest tracks in Dieback-Free State Forest should be inspected by the operator prior to entry to ensure that soil has not been picked up in transit. Cleandown at a nominated point is required if the vehicle is not clean. (Nominated cleandown points should always be located as low in the landscape as possible with drainage to an approved point).

3.4 Track Upgrading

3.4.1 Forest tracks which require upgrading should be agreed between BGM and the District CALM office.

3.4.2 Dieback-Free gravel should be made available to BGM for use in dieback-free areas. Dieback gravel can only be used for access tracks in infected areas. Agreement should be reached between the District CALM office and BGM on who is responsible for upgrading each track.

3.4.3 Except in Dieback, earthmoving work will only occur when the soil is dry. Suitable soil conditions will be determined by the Minesite Environmental Scientist with agreement from CALM District office.

3.4.4 Upgraded all-weather roads will be constructed to shed water and dry quickly.

3.4.5 Drainage from all-weather tracks is to be consistent with not introducing disease to Dieback-Free forest.

3.4.6 Road upgrading equipment must be clean before entering Dieback-Free or Uncertain forest and when leaving Dieback and Uncertain areas.

3.4.7 Road drainage shall be shed into an approved sump or suitably vegetated area so as to remove silt while avoiding unnecessary ponding.

3.4.8 Grading of tracks should not be done in a way that pushes dirt long distances into forest, or deeper or wider than prescribed.

3.4.9 Soil should not be graded from uncertain or Dieback into Dieback-Free or Uncertain forest.

3.5 Supervision

Track usage by BGM staff and cleanliness of BGM vehicles will be supervised by BGM Environmental Site Coordinator with periodic checks by CALM personnel. In order to ensure effective dieback control, CALM and staff from other

organisations will also be required to comply with the provisions of the Access plan, in liaison with the Environmental Site Coordinator.

3.6 Haul Road Construction (General comments)

3.6.1 Soil moisture conditions for construction of haul roads above Dieback-Free or Uncertain forest will be agreed with the District CALM office based on the extent and dieback vulnerability of downslope forest.

3.6.2 Haul roads and roadside drains above all forest will be constructed from Dieback-Free gravel.

3.6.3 Haul roads will be compacted to control the movement of dieback fungus into or out of the road base.

3.6.4 Haul roads with adjacent Dieback and Uncertain forest will have suitable containment structures to prevent the spread of dieback disease from the forest onto the haul road.

3.6.5 All roadside drains adjacent to Dieback-Free and existing dieback infection in low hazard forest will be compacted to stop the potential spread of dieback fungus travelling through the drain to the native forest to prevent the introduction or intensification in downslope forest.

DIEBACK CONTROL PRESCRIPTION FOR SALVAGE LOGGING, MINOR FOREST PRODUCE REMOVAL, CLEARING AND BURNING OF STATE FOREST or TIMBER RESERVES PRIOR TO GOLD MINE DEVELOPMENT

1.0 SEQUENCE OF EVENTS

1.1 Ten year mining plans for Swan Region revised annually by BGM and available to CALM Executive Director September-October.

1.2 Inspection and consideration by District staff, and approval from CALM Executive Director.

1.3 EMLG notify plans for presentation to Minister. Plans are submitted to the Minister for approval about December.

1.4 BGM submits clearing notices in March. It is the objective to provide two year advance proposals to facilitate planning and implementation of appropriate dieback management measures. A minimum of six months notice is required.

1.5 Areas subject of the clearing notice are marked in the field by BGM.

1.6 Areas of non ore or marginal ore within the proposed clearing boundaries will be identified by BGM at the time of submission of the clearing plan.

At that time, areas for which there is no predetermined mining operational requirement (access, overburden storage, etc.) and which will not be cleared, will also be identified. Those areas of non ore or marginal ore within the clearing boundary, for which there is an operational need for clearing, will be discussed between the CALM District Manager and an BGM representative. Where appropriate this clearing may be approved by the Executive Director.

1.7 The clearing plan is assessed by CALM who recommends to Executive Director.

1.8 Executive Director approves the clearing plan about June.

1.9 Field marking of agreed proposals are checked and adjusted by BGM according to approvals.

1.10 In July BGM submits to Dwellingup District and the CALM SFRBU (State Forest Resources Business Unit) based at Harvey a clearing schedule for next twelve months.

1.11 BGM check area for dieback and demarcate categories in the field. A hygiene map is given to CALM for approval. This information should already pre-exist for the areas covered in the clearing notice.

1.12 Detailed plans are produced by BGM incorporating dieback management for Forest Protection, soil movement, access and rehabilitation. These plans specify the need for downslope drainage protection if required, the season of operation and hygiene requirements.

1.13 Hygiene boundaries are maintained by BGM after clearing.

1.14 SFRBU arrange salvage of sawlogs and minor forest produce.

2.0 DIEBACK CONTROL STRATEGIES

2.1 General

Any prescription for dieback control in mining will meet the requirement of the CALM Department's Policy statement 3 (Revised).

The dieback control implemented will be relevant to the information acquired by dieback mapping

2.2 The basic strategies governing dieback control during clearing and burning will be by containment and hygiene. Control of disease introduction to surrounding forest will be by:

* dieback mapping and categorisation
* access designation and control
* drainage control where appropriate
* appropriate equipment cleanliness

Disease intensification will be controlled by:-

draining roads and cleared areas to designated points using the network approved in the Forest Protection Plan.

2.2.1 Disease control between dieback categories will be by hygiene and control of access and drainage.

3.0 DIEBACK DEMARCATION

3.0.1 BGM will assign all forest to various dieback categories. Each of the categories will be indicated in the field and on 1:10,000 scale plans given to CALM for approval. For operational purposes the forest will be designated as Dieback, Dieback-Free or Uncertain. Uncertain forest areas are also designated and regarded as Dieback-Free for entry of vehicles but Dieback for exit.

3.0.2 The clearing notice will show the dieback status of the areas to be mined.

3.1 Access Control

3.1.1 Access will be in accordance with the Access plan prepared by BGM and approved by the District CALM office.

3.1.2 Dieback control on access tracks will be according to the standard requirements outlined in the Access prescription.

3.1.3 Field operations will be confined to a single disease category. Transfer from one to another requires specific hygiene measures, as set out in 5.0 below.

3.2 Soil Conditions and Cleandown

3.2.1 All equipment will be clean on entry to the secured site.

3.2.2 All equipment must be clean on leaving Dieback or Uncertain areas except when travelling through Dieback to another Dieback area.

3.2.3 Soil moisture operating condition for each area will be established using an evaluation matrix. (see Fig. 2).

4.0 PLANNING

4.1 General Planning

4.1.1 An Access Plan will be prepared by BGM as part of the Dieback Management Plan for approval by CALM District Office.

4.1.2 Dieback boundaries will be marked in the field by District CALM offices.

4.1.3 Dieback management requirements will be evaluated for each dieback category individually. Forest priorities will be established for each pit and shown as part of the clearing schedule for approval by CALM District Office.

4.1.4 Scheduling should be in line with the hygiene prescription set for other stages of the mining operation eg. soil stripping and rehabilitation.

4.1.5 Clearing will be planned so that each type of dieback category is treated separately.

5.0 FIELD OPERATIONS

5.1 General

5.1.1 All light vehicles, including CALM and other organisations vehicles must be cleaned down before leaving or entering limited access roads and other designated areas. All vehicles including CALM and other organisations vehicles will comply with the designated access plan for dieback control.

5.1.2 Hygiene boundaries are to be maintained under the direction of the Clearing Supervisor.

5.1.3 Unwanted tracks will be blocked and access will be via routes designated on the Access plan.

5.1.4 Touchup clean-down points where required will be located at hygiene boundaries as designated on the approved Access Plan.

5.1.5 All equipment operators must be trained in hygiene principles and the techniques of vehicle inspection and clean-down. BGM will be responsible for training their own staff and contractors. CALM will train BGM staff when required.

5.1.6 Equipment is to be cleaned in accordance with approved guidelines as outlined in the dieback Hygiene manual.

5.1.7 Service vehicles will comply with the same provisions applying to other mobile equipment when accessing clearing areas.

5.1.8 Drainage control to prevent runoff to the surrounding forest is to be established with any discharge to approved points eg. already degraded dieback infected area.

5.2 Dieback-Free Areas

5.2.1 All vehicles must be clean on entry to the secured site. If vehicles are accessing the site by an agreed access track then the vehicle must be cleaned at an approved clean-down facility before entry to the secured site. All vehicles must be clean on entry to Dieback-Free areas.

5.3 Dieback Areas

5.3.1 Prior to leaving Dieback areas, vehicles are to be free of soil. If they are not they are to be cleaned down at designated approved clean-down point.

5.4 Uncertain Areas

5.4.1 Uncertain areas will be handled separately. In a secured site cleandown will be required entering Uncertain areas except when the vehicle has come directly from an adjacent Dieback-Free area.

5.5 Clearing Boundary Definition

5.5.1 Boundaries of proposed clearing areas are to be marked in the field by BGM using yellow plastic tape attached to trees or stumps.

5.5.2 Following formal approval and release of areas for clearing, BGM will overmark the initial clearing boundary demarcation plastic tape with white paint.

5.5.3 BGM will present drainage proposals as part of the one year clearing schedule updated at six monthly intervals.

5.6 Forest Produce Removal

5.6.1 Salvage of merchantable timber in State Forest is performed by contractors under the direction of CALM.

5.6.2 A similar level of hygiene will apply to timber removal operations as will be applied to clearing operations, provided the coupe boundary conforms with the clearing boundary. In a secured site this may allow forest produce removal under moist soil conditions provided hygiene demarcation, clearing boundary and access conditions allow.

5.6.3 CALM is responsible for ensuring that timber removal operator's equipment is cleaned down when required.

5.6.4 CALM is responsible for clear definition of dieback and coupe boundaries during the forest produce removal phase.

5.7 Clearing Methods

5.7.1 A Dwellingup District based Forest Officer will inspect each clearing area prior to the commencement of clearing operations to ensure that merchantable timber has been removed.

5.7.2 Any non-merchantable timber remaining within the clearing area is pushed by bull-dozer, heaped and burnt by BGM. CALM will direct BGM concerning fire protection requirements.

5.7.3 During bull-dozing operations, cleared areas are raked to remove large surface rocks and tree roots. Depending on the quantity of rocks present

the raked material may be heaped and burnt or separately removed by loader and truck using approved access. Material moved from a Dieback-Free area should normally be returned to a like area. If material is to be moved from a Dieback or Uncertain area it must go to a Dieback area.

5.7.4 The hygiene boundary is to remain clearly marked by BGM, during clearing operations.

5.7.5 All clearing machinery entering State Forest, must be clean and this will be enforced by BGM.

5.7.6 Any machine which is to clear Dieback-Free forest must be clean upon entry. Low-loaders are to use nominated access and to be clean on entry to Dieback-Free roads and forest. Where clean-down is required at the entry point it must be at an approved clean-down point. Operators will be required to inspect their vehicles prior to and after clean down.

5.7.7 Where an approved mining area contains more than one dieback category, the categories are to be cleared separately with appropriate cleandown between categories.

5.8 Burning Debris

5.8.1 The burning operations must comply with the provisions of the Bushfires Act 1954 and are subject to any permit conditions.

5.8.2 In State Forest or Timber Reserves CALM is responsible for prescribing the conditions. CALM retains the power of veto over burning, particularly during the Restricted Burning period in State Forest or private property within close proximity to State Forest or Timber Reserves. On BGM private property the same burning conditions apply as on any other private property. The local CALM office (Dwellingup) must be advised on the day of any burn during the restricted period.

5.8.3 All burning is banned during the prohibited period as prescribed by the Bushfires Act 1954, normally November 1 until February 21. CALM will attempt to arrange if appropriate the necessary extensions under permit where burning cannot be completed during the prescribed period.

It must be noted that burning approval in the prohibited season will only be granted by Bushfires Board if it is satisfied that precautions against escapes are adequate. This requires wide burnt buffers bounded by safe tracks. Preparation in the summer prior to burning may be necessary for track maintenance following by buffer burning in spring or autumn. Time for adequate preparation is essential.

5.8.4 Heaps are to be located so that surrounding forest is not damaged when the heaps are burnt ie a minimum of 20 metres from any clearing boundary.

5.8.5 Hygiene during pushing up of burning heaps is to be as outlined above for the clearing operations.

DIEBACK CONTROL PRESCRIPTION FOR TOPSOIL AND OVERBURDEN HANDLING

1.0 INTRODUCTION

1.1 General

1.1.1 This prescription specifies the agreed procedures for the removal, or stripping, of topsoil and overburden prior to gold mining operations and their return afterwards. These operations are collectively termed 'soil handling'.

1.1.2 Areas will normally be designated either Dieback, Uncertain or Dieback-Free and the soil handled separately.

1.1.3 It is desirable to minimise the number of dieback categories wherever possible. It is expected that Uncertain forest will generally occur infrequently. Where large areas do occur, separate planning and handling arrangements will be required. This is because mixing Uncertain soil with Dieback soil would contaminate the Uncertain if it had in fact been free of dieback. Similarly, mixing Uncertain soil with Dieback-Free soil could result in contamination if the Uncertain soil was infected. Where small areas (<1ha) only occur they will be rationalised to dieback and replaced low in the landscape.

1.2 Definitions

1.2.1 "Topsoil" is here defined as the uppermost part of the soil profile containing the highest concentrations of organic matter, nutrients and plant propagules.

1.2.2 'Overburden' is the friable material under the topsoil and above the cemented caprock. It is generally sandy with varying amounts of organic

matter and gravel. Distinct pockets containing gravel only are extracted separately for haul road construction. Gravel extraction is also covered by this prescription. Overburden generally ranges from 0 to 40cm thick. It is almost invariably stockpiled for some time.

2.0 PLANNING

2.1 Planning sequence

2.1.1 An Access Plan will be prepared by BGM as part of the Dieback Management Plan for approval by Dwellingup District office.

2.1.2 Dieback categories will have been established prior to clearing and these will be maintained during topsoil and overburden handling.

2.1.3 Dieback management requirements will be evaluated for each pit individually and shown on the Dieback Management Plan.

2.1.4 Scheduling should be in line with the Forest Priorities set for other stages of the mining operations, eg. clearing and rehabilitation.

2.1.5 Stripping and return will be planned so that each dieback category is treated separately.

2.1.6 A Soil Movement Plan will show the approved locations for stockpiles and for inter-pit transfer and location of dieback and dieback-free soils in rehabilitation. This transfer will be closely monitored by BGM staff and CALM as required.

2.1.7 As a rule all Dieback soil will be placed low in the landscape and Dieback-Free soil high in the landscape.

3.0 DIEBACK CONTROL STRATEGIES

3.1 General

3.1.1 The basic strategies governing dieback control during topsoil and overburden stripping will be by containment and hygiene. Control of disease introduction to surrounding forest will be by:

* dieback mapping and categorisation
* access designation and control
* drainage control
* appropriate equipment cleanliness

Disease intensification will be controlled by:

* draining roads and stripped areas to designated points identified on a Drainage Plan.

3.1.2 Disease control between different dieback categories will be by hygiene, limiting access drainage control and by permitting direct soil transfers between areas of similar disease status.

3.2 Access Control

3.2.1 Access will be in accordance with the Access Plan prepared by BGM and approved by the District CALM office.

3.2.2 Dieback control on access tracks will be according to the standard requirements outlined in the Access prescription.

3.2.3 Operations will be confined to a single disease category.

3.3 Soil Conditions and Cleandown

3.3.1 All equipment must be clean on entry to the site. (ie. before entry to Dieback-Free area). Equipment may enter Uncertain areas without clean down from the secured area, but will need to clean down before entering Uncertain areas from Dieback, or other Uncertain areas.

3.3.2 Operations will be directed towards Dieback areas under dry soil conditions and Dieback-Free areas will have drainage control as determined by the drainage control process agreed by CALM/BGM, to allow operations to proceed under moist soil conditions in Dieback-Free.

4.0 SOIL STRIPPING

4.1 Sequence

4.1.1 Topsoil and overburden stripping usually occur on a number of areas, hence difference disease categories, over the same period. Stripping follows the sequence below.

4.1.2 Within a secured site, detailed plans covering drainage, access, soil movement and rehabilitation are developed by BGM and approved by the District CALM office.

4.1.3 Earthmoving equipment is cleaned down thoroughly before entry to the site, transfer and when transferring from a job handling Dieback-infected or Uncertain soil to a job handling Dieback-Free or Uncertain soil. Regardless of the status of previously handled soil, all equipment is also thoroughly cleaned down at every service.

4.1.4 Areas are stripped separately according to dieback category.

4.1.5 Topsoil to 15cm depth is removed and directly re-spread or stockpiled in a like area as shown on a Rehabilitation Operations Plan.

4.1.6 Overburden is removed and stockpiled on-site in an area of the same dieback category.

4.1.7 Gravel, where present, may be removed separately for construction purposes.

4.2 Field Operations For Dieback Control in Stripping in a Secured Site

4.2.1 All vehicles, including CALM, must be cleaned down before leaving or entering limited access roads and other designated areas. All vehicles including CALM, will comply with the designated access plan for dieback control.

4.2.2 Unwanted tracks are to be blocked and designated access over stripped areas to haul roads is to be approved by the Minesite Environmental Scientist.

4.2.3 Clean-down points are to be established at dieback boundaries in locations as designated on the approved Access Plan.

4.2.4 Any topsoil and all overburden stockpile locations will be marked by BGM in accordance with the Rehabilitation Operations Plan. Criteria for stockpile site selection will be as follows:

* site to have the same dieback category as the soil to be stockpiled,
* topsoil is to be stockpiled for the minimum possible time in the smallest practicable stockpiles,
* area used is to be kept to a minimum.

4.2.5 Equipment to be cleaned in accordance with Section 4.2.3 above as well as the following:

* equipment is to operate in a single dieback category,

* a minimum amount of water is to be used on haul roads to avoid soil pick-up, while still allowing for dust suppression.

4.2.6 Service vehicles will comply with the same provisions applying to other mobile equipment when accessing cleared areas.

4.2.7 Drainage control sufficient to prevent runoff to the surrounding forest is to be established. This may be achieved by:

* establishing a bund or channel at the lower clearing edge,
* or excavating a gravel pocket to produce an infiltration sump.
* where necessary on steep, erodible sites or above healthy high dieback hazard forest stripping a band along the lower edge of the area and blasting immediately, before the remainder of the area upslope is stripped.
* directing drainage to sites approved on a Forest Protection Plan. The approved drainage method will be used to establish where drainage will be required (Document 2 page 2).

4.3 Dieback-Free Topsoil

4.3.1 Wherever possible Dieback-Free topsoil is to be returned directly to a designated Dieback-Free area for rehabilitation. The timing and route of transfer are to be as per the Topsoil movement plan.

4.3.2 Alternatively, Dieback-Free topsoil is to be stockpiled for the shortest possible time in the smallest practicable stockpile within the same area.

4.4 Dieback and Uncertain Topsoil

4.4.1 Dieback topsoil to be stockpiled for the shortest possible time in the smallest practicable stockpile within the same area.

4.4.2 Where sufficient quantity is present Uncertain topsoil will be handled and stockpiled separately but treated in the same way as Dieback topsoil.

4.5 Overburden and Gravel

Overburden is to be stockpiled on an area designated in the Soil Movement Plan. The minimum area is to be used. Dieback-Free gravel is to be conserved and utilised on Dieback-Free sites as required. Other gravel may be used as appropriate or stockpiled as per overburden.

5.0 SOIL RETURN SEQUENCE

5.1 Sequence

Topsoil and overburden return may be carried out in a number of areas over the same time period. Soil return follows the sequence below.

5.1.1 New dieback boundaries are marked with pegs in the field.

5.1.2 Earthmoving equipment is cleaned down thoroughly before entry to the mine. Equipment must be cleaned down leaving Dieback or Uncertain areas before entering the haul road so that soil does not fall onto the haul road during transport. Regardless of the status of previously handled soil, all equipment is also thoroughly cleaned down at every service.

5.1.3 Soil is returned according to the new dieback categories. All areas will be classed as Dieback, Dieback-Free or Uncertain.

5.1.4 Overburden is usually returned from stockpiles to an area of the same dieback category.

5.1.5 Topsoil is returned either directly or from stockpiles to an area of the same dieback category.

5.2 Field Operations for Dieback Control During Soil Return in a Secured Site

5.2.1 The general provisions listed under Section 7 above will also apply to soil return after mining.

5.2.2 New dieback boundaries are to be re-established following landscaping.

5.2.3 Designated access will be as per the Access Plan. Inter-pit transfer of topsoil must also comply with the Topsoil Movement Plan.

5.2.4 Equipment is to be cleaned as follows:

* equipment to be clean before entering the mine,
* equipment to operate in a single disease category,
* minimal water to be used on haul roads to avoid soil pick-up on tyres.
* equipment must be cleaned down on exit from dieback affected areas or Uncertain areas.

5.2.5 Equipment servicing provisions to be as per Section 4.2.6 above.

5.3 Overburden

Overburden is to be returned from stockpiles to the same disease category as it was stripped.

5.4 Dieback-Free Topsoil

Dieback-Free topsoil to be returned to a designated Dieback-Free area, via designated access, as per the Rehabilitation Operations Plan.

5.5 Dieback and Uncertain Topsoil

Dieback and Uncertain topsoil is to be returned from stockpiles to appropriate new Dieback areas within the same pit.

DIEBACK CONTROL PRESCRIPTION FOR DRILLING AND BLASTING

1.0 INTRODUCTION

1.1 General

Following topsoil and overburden removal, drilling and blasting are carried out. These operations occur below natural ground level. After blasting, future drainage is confined naturally within the pit boundaries and directed downwards into the soil profile.

Drilling here refers to blasthole drilling on cleared areas. It should not be confused with exploration or grade control drilling.

1.2 Access and dieback Boundaries

1.2.1 Dieback boundaries are maintained and observed throughout the drill and blast operation.

2.0 DIEBACK CONTROL STRATEGIES

2.1 General

2.1.1 The basic strategies governing dieback control during drilling and blasting will be by containment and hygiene.

* dieback mapping

* access designation and control
* drainage control (to be wholly within pit or into Dieback)
* appropriate equipment cleanliness

Disease intensification will be controlled by draining roads and stripped areas to designated points.

2.1.2 After blasting a pit comprising several dieback areas can become one area. For hygiene between the pit and all other areas the classification of this new area is dieback unless it is comprised of only Dieback-Free areas, in which case it must be treated as Dieback-Free.

2.2 Access Control/Hygiene

2.2.1 Access to and from the pit will be on haul roads or access tracks as designated in the site access map and prescribed in the Access Prescription.

2.2.2 All vehicles leaving Dieback or Uncertain areas during drilling and blasting must be clean unless entering a Dieback site.

2.2.3 All drilling equipment leaving an area during drilling and blasting must be clean on leaving Dieback or Uncertain.

2.3 Drainage Control

2.3.1 Prior to blasting of the lower edge of the pit drainage must be consistent with the approved Forest Protection Plan.

2.3.2 Once the lower edge of the pit is ripped or blasted any drainage reaching that lower edge must infiltrate below the caprock.

DIEBACK CONTROL PRESCRIPTION FOR EXTRACTION OF GOLD

1.0 INTRODUCTION

1.1 This prescription specifies the agreed framework for the extraction of gold ore from State Forest.

2.0 DIEBACK CONTROL STRATEGIES

2.1 General Controls

2.1.1 The main strategy for controlling dieback during ore extraction is planned drainage so that water is controlled within the haul road and pit system and discharged at designated points so as not to infect new areas of forest or intensify existing dieback.

2.1.2 Hygiene within the haul road/pit system is limited during ore extraction because only minimal amounts of soil containing organic matter are involved in this operation and the environment is intrinsically hostile for the fungus. Dieback areas need to be known by planners and loader operators, to ensure dieback material is not inadvertently carried throughout the secured system or used in road building.

2.2 Specific Controls

The following specific methods are used:

2.2.1 Water will not be allowed to flow freely into surrounding forest but will be drained to designated discharge points or to places where it will infiltrate below the caprock layer. Rapid discharge of water is desirable provided the Water Corporation water quality objectives can be met. However, the current state of technology does not allow for widespread discharge in active water catchment areas.

2.2.2 Access between the haul road/pit system and the surrounding forest will be controlled according to the Access Prescription.

2.2.3 Transfer and survival of dieback within the haul road/pit system is to be minimised by:

* preventing the introduction of diseased soil onto the haul road/pit system.

* wherever possible dieback areas should be mined under hot conditions to reduce the opportunity for the disease to survive.

* limiting road watering so that surface water does not accumulate.

* using water free of inoculum for dust suppression.

* manipulating the site prior to rehabilitation to kill off or disfavour any fungal infections which may have been introduced, eg. by inducing deep drainage or by 'sun baking'.

3.0 PLANNING

3.1 Haul Roads and Access Planning

3.1.1 Haul routes from pits will be presented on the Annual Clearing notice and agreed by CALM. Specific access around the site is defined as part of the Access Plan prepared by BGM and approved by Dwellingup District Office.

3.1.2 Haul roads are to be within pits wherever possible. Where haul roads are outside pits they are to be placed just above the dieback line.

3.1.3 Drainage is planned to infiltrate water below caprock layer.

3.2 Mine Planning

3.2.1 Dieback management requirements will be evaluated by the site Environmental Site Coordinator and endorsed by CALM.

4.0 FIELD OPERATIONS FOR ORE EXTRACTION

4.1 Supervision

BGM staff will be responsible for the implementation of this prescription. CALM District Office will be responsible for periodic checking and general supervision.

4.2 Access

Access is to be confined to routes approved by CALM via the Five Year Plan and the Access Plan.

4.3 Equipment Design and Cleandown

All light vehicles, (including CALM, Water Corporation, Service etc.) must be cleaned down before leaving or entering limited access roads and other designated areas. All light vehicles will comply with the designated access plan for dieback control.

4.4 Pit Drainage

4.4.1 In pits with deep gold, runoff will be collected and infiltrated into the pit floor below the level of the caprock. Where this is not possible, in-pit drainage will be according to the drainage plan approved by CALM District and the Water Corporation.

4.4.2 Water will be discharged to a sump or filter as low in the profile as possible, provided all Water Corporation guidelines can be met.

4.4.3 Areas of infiltration will be located where conditions downslope are not conducive to transfer of infiltrated water to surface soils in forest which is vulnerable to dieback (ie. Dieback-Free or where the existing dieback impact is low).

4.5 Haul Road Watering and Drainage

4.5.1 All haul roads requiring watering will be internally drained to designated points approved by the Water Corporation.

4.5.2 Pit drainage will be collected within the pit for infiltration in-situ or discharge to a point approved by the District CALM office and the Water Corporation.

4.5.3 In-pit haul roads will also be formed up with drainage to a designated point.

4.5.4 All water used for construction and dust suppression will be free of inoculum to a standard to be agreed between CALM and BGM.

4.5.5 Avoid overwatering the haul roads as excessive watering results in large amounts of mud adhering to vehicles.

4.6 Field Controls

A downslope barrier will be established where a pit is above Dieback-Free or existing low dieback impact forest. Pit drainage water will be diverted away from areas above these forest types or infiltrated below the caprock layer consistent with 4.4.3.

PRESCRIPTION FOR DIEBACK CONTROL DURING LANDSCAPING

1.0 INTRODUCTION

Landscaping involves the battering down of vertical pit faces and the construction of contour banks and sumps. All operations occur within the pit, below natural surface, on clay subsoil.

This prescription for dieback control in landscaping is to be applied in conjunction with the rehabilitation prescription.

2.0 SEQUENCE OF LANDSCAPING OPERATIONS

2.1 Because it is a subsurface operation on the clay mine floor, landscaping can occur under any weather conditions provided the approved rehabilitation design can be achieved.

2.2 Earthworks are carried out according to the rehabilitation plan as follows:

2.2.1 Vertical faces are re-shaped to achieve acceptable grades.

2.2.2 Sumps are constructed in clay floor material.

2.2.3 Contour banks and drains are constructed as required.

2.2.4 Heavy equipment leaves the pit via the haul road system.

2.2.5 Service and supervisory vehicles access the pit, via the haul road system, to service the heavy equipment.

3.0 DIEBACK CONTROL STRATEGIES

3.1 Containment

3.1.1 All run-off is contained within the pit, approved drainage routes and the haul road drainage system.

3.1.2 Water is ponded below caprock level away from adjacent forest.

3.2 Hygiene

3.2.1 Equipment must not drive into the adjacent forest.

3.2.2 To avoid pushing infected material into the pit, earth is pushed up to the vertical faces from within the pit where the pit abuts infected forest. Elsewhere the faces may be pushed down.

3.3 Access

3.3.1 Dieback boundaries may be required. Dieback-Free areas may need to be protected from Dieback areas above or adjacent to the area.

3.3.2 Any equipment leaving the pit via the forest is subject to the provisions of the Access Prescription.

3.3.3 Equipment must be cleaned down on entry to the secured site, or if leaving a Dieback or Uncertain area.

DIEBACK CONTROL PRESCRIPTION FOR RIPPING

1.0 INTRODUCTION

Ripping occurs on the new surface after soil has been returned to the pit. Dieback control strategies appropriate to surface operations are therefore required. (Soil return is covered in the Topsoil and Overburden Handling prescription.) A high degree of runoff control will be provided by the pit drainage structures.

Ripping is carried out to break up subsoil compaction to permit tree root penetration, assist infiltration, assist surface water detention and key the surface soils into the clay subsoil.

Ripping is carried out with a winged tine to promote vertical heave and lateral cracking under all subsoil moisture conditions.

This prescription for dieback control during ripping is to be applied in conjunction with the rehabilitation prescription.

2.0 DIEBACK CONTROL STRATEGIES

2.1 Before topsoil return new dieback boundaries are pegged on contour.

2.2 Dozers are cleaned down:

(i) at entry to the mine,

(ii) before exit from Dieback or Uncertain areas unless entering a Dieback area.

2.3 Winged tine ripping can occur provided soil is not transferred to adjacent Dieback-Free forest or Uncertain area or from Uncertain area to Dieback-free area.

Dieback, Uncertain and Dieback-Free areas are ripped separately with clean down as in 2.2 above.

REHABILITATION DIEBACK CONTROL PRESCRIPTION FOR EROSION CONTROL, SEEDING, PLANTING AND FERTILISATION

1.0 INTRODUCTION

All the above activities involve the use of similar equipment. The operations all occur on the new soil surface, with drainage control provided by the pit structure.

Erosion control works are defined here as those works which occur after topsoil return. Construction of sump and contour banks are covered under the Landscaping prescription.

Erosion control works involve the use of equipment such as CAT 910, Bobcat, or D6 to construct waterways. Jute mesh, seed and bitumen and applied by hand. Fertiliser is broadcast by helicopter.

Hand planting and fertilising require transportation of tree seedlings and fertiliser by light vehicles. Planting and spot fertilising are done by staff on foot.

This prescription for dieback control is to be applied in conjunction with the rehabilitation prescription.

2.0 REHABILITATION OPERATIONS SEQUENCE

2.1 Erosion control structures are built prior to the onset of autumn rains. These may comprise waterways, sumps, overflows and filters. Waterways may cross from Dieback-Free to Dieback areas. Sump overflows and filters will be low in the landscape, often in Dieback.

2.2 Handseeding generally occurs prior to the autumn rain. Fertilizer is spread in early spring.

2.3 Planting of tree seedlings and spot fertilisation are carried out by hand, following significant openring rains. This operation is supported by light vehicles transporting supplies.

3.0 DIEBACK CONTROL STRATEGIES

3.1 Erosion Control Structures

3.1.1 Erosion control structures should be built under dry conditions. Equipment should be clean before entry to Dieback-Free or Uncertain areas.

3.1.2 Where it is necessary to construct a waterway from a Dieback-Free to a Dieback area, it should be constructed under dry soil conditions. Equipment should work from Dieback-Free to Dieback.

3.1.3 Equipment should be cleaned down before leaving a Dieback or Uncertain area unless entering an adjacent Dieback area.

3.2 Broadcast Seeding and Fertilising

3.2.1 Broadcasting under dry soil conditions will minimise dieback spread. Where tractor-mounted equipment is used it should be clean before entry to Dieback-Free or Uncertain areas and cleaned down before transfer from Dieback or Uncertain to Dieback-Free or Uncertain.

3.2.2 Where aircraft are used no opportunity for dieback spread should exist.

3.3 Hand Planting and Fertilisation

3.3.1 Due to the need to operate under wet conditions, these operations require particular attention to dieback control.

3.3.2 Vehicles not carrying plants and fertiliser should be confined to defined access tracks. All vehicles should be clean before entering Dieback-Free and uncertain areas and cleaned down before leaving Dieback and Uncertain areas unless entering on adjacent Dieback area.

3.3.3 The opportunity for dieback spread by planters working on foot will be limited. Planters should be aware of dieback hygiene requirements and avoid deliberate transfer of excessive amounts of mud or soil between dieback categories.

3.3.4 Access tracks should be located as low in the profile as possible with all drainage water directed into the pit or into resistant vegetation.

3.3.5 Hand tools should be clean before transfer from Dieback or Uncertain areas to Dieback-Free areas.

3.3.6 The use of Dieback-Free nursery stock will prevent dieback introduction from this source.