



DIEBACK MANAGEMENT GUIDELINES

MYARA NORTH

GEOTECHNICAL INVESTIGATION

This overview applies to the operation of machinery within the proposed Myara North Mining Envelope

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DATE: 28/04/2023

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1.0 Scope

Alcoa proposes to move its Huntly mining operations from the Myara region to Myara North. A geotechnical investigation has been commissioned to verify ground conditions for the construction of mining haul roads and supporting infrastructure.

This document outlines how the geotechnical field work will be conducted to minimise the spread of dieback within the Myara North region. It has been prepared in accordance with the following:

- Alcoa/DEC Working Arrangements Bauxite Mining Operations 2011-2015 (AUACDS-2056-547); and
- Alcoa Vegetation Management Plan (AUACDS-2053-5517) and associated dieback management procedures.

This document should be read in conjunction with Myara North Geotechnical Investigation Environmental Management Plan (HUN-M-000095-000).

2.0 Abbreviations

Glossary

Assessment area	The portion of the Project Area where Phytophthora occurrence assessment is possible, or will be possible after recovery of vegetation
Biomass	The total quantity or weight (density) of organisms in a given area
Buffer	The area between the edge of visible disease symptoms and demarcation
Clean On Entry	A requirement at a defined, signposted point, where entering machinery and vehicles are to be free of soil, plant and other material, to minimise the risk of spreading weeds, pests and diseases
Demarcation	The physical installation and representation of boundaries between hygiene categories after interpretation
Phytophthora Dieback	The disease of plants caused by infection by the soil-borne organisms of the genus <i>Phytophthora</i> , of which <i>P. cinnamomi</i> is the most widespread and destructive.
Disease impact	The degree of harm caused by Phytophthora Dieback (high, moderate, low).
Excluded area	An area of high disturbance where natural vegetation is unlikely to recover
Host	A plant species that may be infested with the pathogen but not cause disease.



Indicator species	Plant species susceptible to Phytophthora disease and reliably show early symptoms.
Infection	The invasion of the disease to an individual plant and not the population
Infestation	The invasion of the disease into a population of plants.
Infested	An area that a registered interpreter has determined is expressing disease symptoms that indicate the presence of the pathogen <i>Phytophthora cinnamomi</i> .
Incipient disease	A disease that is not visibly symptomatic
Interpretation	Determining disease presence or absence in natural ecosystems using observable factors.
Not yet resolved	Phytophthora occurrence diagnosis cannot be made because of inconsistent evidence
Pathogen	Phytophthora species
Phytophthora occurrence assessment	The entire scope of work that relates to the delivery of a Phytophthora occurrence map and report
Project area	The proponent's area of interest, including; the area where disturbance activities could occur, including access and egress to activity areas
Protectable area	Portions of the Project Area over which hygiene management rules for the plant pathogen <i>Phytophthora</i> , including clean on entry, will apply. These areas are generally free of disease
Susceptible	Likely or liable to be harmed by Phytophthora pathogen
Uninfested	An area that a registered interpreter has determined may be free of plant disease symptoms that indicate the presence of the pathogen <i>Phytophthora cinnamomi</i> .
Uninterpretable	A natural area with inadequate visible symptoms present to make a diagnosis.
Temporarily uninterpretable	A naturally vegetated area that has had disturbance and is likely to recover from that disturbance in the short term
Unprotectable	A disease-free area that is likely to become infested within a given time.
Vector	Any agent that acts as a carrier or transporter

3.0 Phytophthora Dieback

3.1 What is Dieback

- Dieback is a microscopic water mold that attacks plant roots and kills plants. Plants die because they can no longer take up water and nutrients.
- When plants die, the animals that depend on them are also affected.
- The dieback disease spreads by root-to-root contact, and by movement of water and soil contaminated with the water mould.

3.2 Dieback management practices

- Areas of forest at high risk of infection by dieback
- Access to DRA is controlled

All vehicles (Alcoa, Contractors and Sub-Contractors) accessing the DRA must display a DRA sticker to demonstrate that they are authorised to travel within the area.

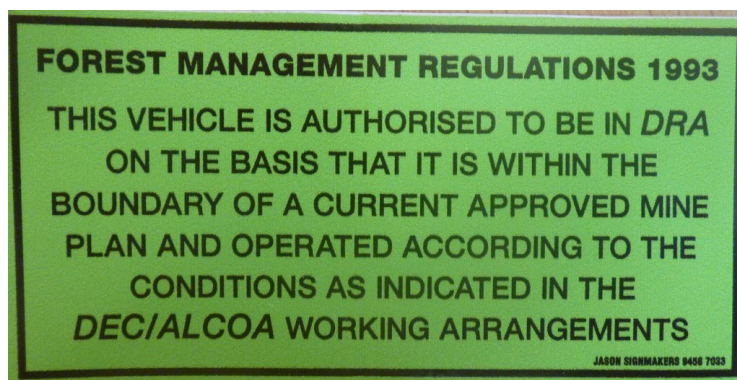


Figure 1 Forest Management Sticker Required for Forest Activities

3.3 Demarcation

- Alcoa commissioned Glevan Consulting to conduct a dieback assessment within the Myara North region. The presence of dieback is variable through the Myara North region. Refer to Table 1 for dieback mapping categories. ArcGIS shapefiles will be provided to the geotechnical contractor.
- Phytophthora Dieback is demarcated in the field using Dayglow Pink 25mm tape. Two types of demarcation encountered are disease edge and Road crossings.



Figure 2 - Road Crossing




Figure 3 - Disease Edge Demarcation and Uninterpretable Demarcation

3.4 Dieback Categories

Glevan Consulting have marked dieback categories in accordance with the demarcation described in the previous section. A description of the dieback categories is included in the table below.

Table 1: Dieback Mapping Categories

Dieback Status	Tape Colour (knot facing into specified category)	Risk of spreading dieback disease
DIEBACK (Disease present)	Day-Glo Pink	Highest
UNINTERPRETABLE (Insufficient number of indicator species present)	Pink and Black Tiger	
DIEBACK-FREE (Disease not detected)		Lowest



3.5 Access

All light and heavy vehicles must be clean on entry to the Myara North region. The geotechnical contractor will be required to clean down light and heavy vehicles in accordance with the procedures in the next section. Clean down will be required when moving between the following dieback categories:

- Dieback to Uninterpretable;
- Dieback to Dieback Free; and
- Uninterpretable to Dieback Free.

Glevan Consulting has completed dieback mapping of the proposed geotechnical test locations and access routes. The geotechnical contractor must use the access routes as identified by Glevan Consulting. The access routes are included in the ArcGIS shapefiles.

3.6 Clean Down

The processes of brush down and washdown are known as clean down.

BRUSH DOWN if soil on vehicle is dry.

Brushing down is usually only sufficient during summer when soil is dry and when there are no clods of dirt on the equipment.

- USE a brush / spade to remove any dry clods of soil.



- Ensure all visible soil is removed, especially from the underside. Large equipment should ensure that scraper bowls are empty and dozer cleats and tine are free of clods of soil.

If you try to brush down and the dirt smears and doesn't come off:

WASHDOWN if soil is caked on or is moist / wet.

1. USE ramps, conveyor belting or pads, if available, when washing down heavy machinery. This may require driving front wheels onto ramp / pads and washing down, then driving rear wheels onto ramps/pads and washing down. Ensure that before you drive away the ramp is hosed off to remove mud from sticking back on the tyres. This minimises the amount of mud / soil picked up by clean tracks / tyres as the vehicle or machinery moves into the dieback-free area.
2. USE washdown unit to clean vehicle / machinery.
3. REMOVE caked on mud and soil with high pressured spray from washdown unit. Spades or wire brushes can also be used to help clean down.
4. JACK tracked machinery off the pad.
5. ROTATE the tracks and wash them down while rotating. This is a two person job. Large logs may be positioned at the line as a ramp to assist in washdown of dozers.
6. REMEMBER to remove mud and soil from cleats and the underside of protection plates on tracked vehicles.
7. MOVE vehicle / machinery forward during washdown to ensure proper cleaning of the wheels and to prevent mud accumulating on the washdown area.

How Clean is Clean Enough?

The aim of clean-down is to minimise the amount of dieback-infested soil into Fallow Suspect or dieback-free areas. Vehicles and equipment should be cleaned of all visible soil and mud before proceeding.

Figure 4 Clean Down Examples

Focus on the tyres, mudguards and the underside of the vehicle

3.7 Incidents

Always report any breach, accidental or otherwise, of washdown procedures to your Alcoa Responsible Person (ARP) or Alcoa Project Engineer. This information is important to allow corrective actions and to help understand the causes of dieback spread. Alcoa will record and investigate all incidents and ensure any corrective actions are implemented.

3.8 Roles and Responsibilities

The Alcoa Construction Manager is responsible for:

- Reviewing and approving the Contractor's Job Safety Analysis Form;
- Coordinating a pre-start briefing with the Contractor;
- Ensuring incidents are investigated and recorded within Alcoa's incident management system; and
- Advising the Alcoa Environmental Representative of any incidents which relate to non-compliance with this plan.

The Alcoa Environmental Representative will be responsible for:

- Reviewing the environmental and heritage elements of the JSA;
- Attending the pre-start briefing with the Contractor to ensure all personnel are aware of the requirements of this plan;
- Monitoring Alcoa and Contractor compliance with this plan; and
- Investigating incidents relating to non-compliance with this plan.



The Contractor Site Supervisor will be responsible for:

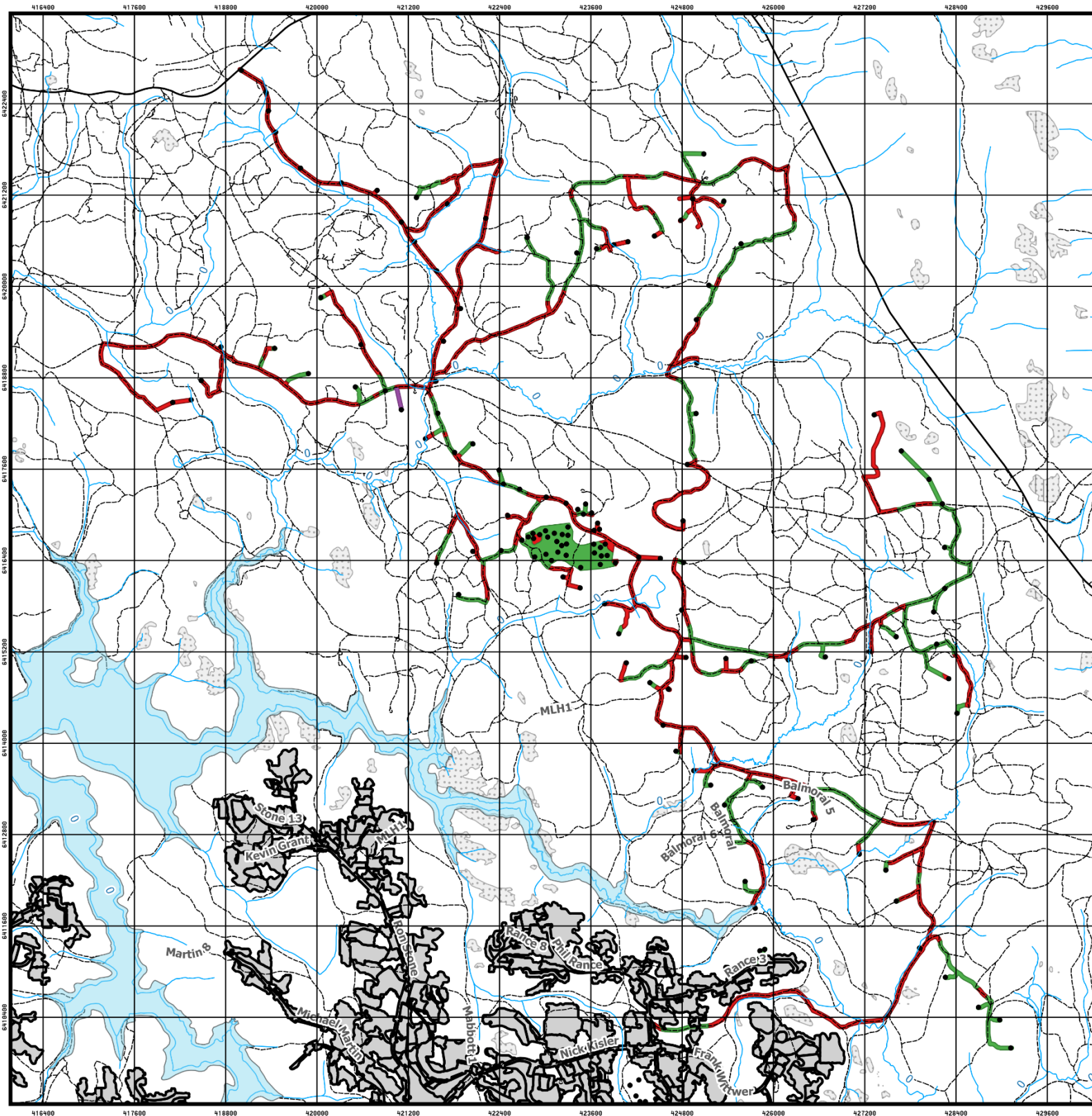
- Preparing a JSA for Alcoa approval prior to commencement of work;
- Attending the pre-start briefing with Alcoa;
- Ensuring Contractor and subcontractor personnel comply with the requirements of this plan;
and
- Reporting any incidents to the Alcoa Construction Manager as soon as possible.

All contractor and subcontractor employees will be responsible for:

- Complying with the requirements of this plan; and
- Immediately reporting any non-compliance to the Contractor Site Supervisor.



Phytophthora Occurrence Map



Phytophthora Dieback Occurrence Map

Alcoa World Alumina
Geotechnical Investigation

Legend

- Phytophthora Dieback Occurrence
 - █ Infested
 - █ Uninfested
 - █ Uninterpretable
- Roads & Tracks
 - Sealed
 - - - Tracks
 - - - Tracks
 - - - Tracks
- Other
 - Investigation Locations
- Geotech Drilling
 - █ Excluded
- HUN Clearing
 - █ Excluded
 - Huntly Haul Roads 09/03/21
 - Roads
- Streams & Dams
 - ▒ Major_Dams
 - ▒ Streams
 - ▒ Stream_Names
 - ▒ Rock Outcrops

Assessment Completion	04/2023
Interpreter(s)	LB
Map expiry date	04/2024

Phytophthora Dieback Occurrence Category	Area Statement	
	Protectable Vegetation (Hectares)	Unprotectable Vegetation (Hectares)
Infested	267.9	267.9
Uninfested	201.9	
Uninterpretable	1.7	
Temporarily Uninterpretable		
Not Yet Resolved		
Assessed Area Total	483.5	
Excluded Area		
Project Area Total	483.5	

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