

***Phytophthora* Dieback Hygiene Management Plan –
Clean Energy Link North project**

Prepared for Western Power

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Abbreviations and Acronyms

COE	Clean on Entry
DBCA	Department of Biodiversity, Conservation and Attractions, WA Government
DHMP	Dieback Hygiene Management Plan
Dieback Interpreter's Manual	FEM047 Phytophthora Dieback Interpreter's Manual for lands managed by the Department
DPaW	former Department of Parks and Wildlife (now DBCA), WA Government
FEMD	Forest and Ecosystem Management Division of DBCA, WA Government
GPS	Global Positioning System
WA	Western Australia

Executive Summary

Western Power commissioned Terratree to undertake a *Phytophthora* Dieback (Dieback) Hygiene Management Plan (DHMP) for the Clean Energy Link North project (hereafter referred to as ‘the assessment area’) to install a new transmission line structure within the North Metropolitan Area. The assessment area is a linear corridor along Western Power’s transmission line infrastructure between Northern Terminal and Neerabup Terminal, spanning approximately 35 km, covering 413.8 ha, including 171.8 ha of native vegetation. It partly intersects with the Gngangara-Moore River State Forest and several Bush Forever Sites. The construction work will require native vegetation to be cleared, and basic raw materials will be used. To avoid potentially devastating impacts on biodiversity, appropriate hygiene management practices must be implemented during access and construction works conducted in the assessment area. Effective hygiene management will help to minimise the risk of spreading Dieback both within the assessment area itself, but also into protectable areas adjacent to, or down-gradient of the assessment area.

The development of this DHMP follows the *Phytophthora* Dieback assessment of the assessment area, with a 50 metres (m) buffer applied to the corridor centreline to include both the area within and the surrounding vegetation. In total, 413.8 ha of vegetation was assessed comprehensively by Terratree between February 27th and July 11th, 2025.

The purpose of this DHMP is to:

- To provide over-arching management guidelines for contractors and staff accessing the assessment area during ground disturbance activity.
- Inform design to minimise the risk of spreading the Dieback outside of the assessment area

The objective of the DHMP is to define management actions and responsibilities to prevent the spread of Dieback outside of the assessment area and surrounding vegetation, particularly downslope of the assessment area during ground disturbance.

The DHMP addresses the risk associated with soil and surface water movement within the assessment area to manage the risk of vectoring Dieback into protectable areas adjacent to, and down-gradient of the assessment area. The risk assessments are undertaken in accordance with *Phytophthora Dieback Management Manual FEM079* (DBCA 2020).

Although the likelihood of the pathogen residing in soil with Excluded area is low, a precautionary approach to hygiene management is recommended. The risk of inadvertently transporting Dieback increases during wet conditions as soil and vegetative material can easily adhere to vehicles and machinery in wet conditions. Clean-down requirements are considerably less onerous during dry soil conditions as soil and vegetative

material does not adhere as readily to vehicles and machinery and is less likely to be transported. Therefore, vehicular and machinery access should be restricted to 'dry soil conditions' in the first instance.

If staff and contractors are adequately informed, and the DHMP is implemented, the risk of introducing or spreading the pathogen into or within protectable areas will be minimised.

Terratree makes the following recommendations to ensure the Dieback management strategy for the clearing and construction works of the Clean Energy Link North project is correctly implemented:

- Provide Green Card training to key personnel for example: environmental personnel, field supervisors and earth-moving machinery operators, to ensure compliance with the Dieback management strategy.
- Provide clear instruction to staff and contractors about hygiene requirements when leaving the assessment area.
- Signage should be installed to clearly identify Hygiene inspection areas and clean down points within the assessment area.
- Conduct inspections of machinery and vehicles to ensure that they are free of soil and vegetative materials when leaving site.
- Implement green bridges and sumps to minimise risk of spreading Dieback to adjacent protectable areas of native vegetation.
- Use only soils, road base or vegetation from known Dieback-free areas for construction.
- Implement the proposed contingencies to address instances where the environmental objectives for managing Dieback are not being achieved.

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1 Introduction

Western Power commissioned Terratree Pty Ltd (Terratree) to undertake a *Phytophthora* Dieback (Dieback) Hygiene Management Plan (DHMP) for the Clean Energy Link North project (hereafter referred to as ‘the assessment area’) to install new transmission line structure within the North Metropolitan Area. The assessment area is a linear corridor along Western Power’s transmission line infrastructure between Northern Terminal and Neerabup Terminal, spanning approximately 35 kilometres (km), covering 413.8 hectares (ha), including 171.8 ha of native vegetation. It partly intersects with the Gnangara-Moore River State Forest and several Bush Forever Sites. The construction work will require native vegetation to be cleared, and basic raw materials will be used. To avoid potentially devastating impacts on biodiversity, appropriate hygiene management practices must be implemented during access and construction works conducted in the assessment area. Effective hygiene management will help to minimise the risk of spreading Dieback both within the assessment area itself, but also into protectable areas adjacent to, or down-gradient of the assessment area.

The development of this DHMP follows the *Phytophthora* Dieback assessment of the assessment area, with a 50 metres (m) buffer applied to the corridor centreline to include both the area within and the surrounding vegetation. In total, 413.8 ha of vegetation was assessed comprehensively by Terratree between February 27th and July 11th, 2025.

The purpose of this DHMP is to:

- To provide over-arching management guidelines for contractors and staff accessing the assessment area during ground disturbance activity.
- Inform design to minimise the risk of spreading the Dieback outside of the assessment area

The objective of the DHMP is to define management actions and responsibilities to prevent the spread of Dieback outside of the assessment area and surrounding vegetation, particularly downslope of the assessment area during ground disturbance.

The DHMP addresses the risk associated with soil and surface water movement within the assessment area to manage the risk of vectoring Dieback into protectable areas adjacent to, and down-gradient of the assessment area. The risk assessments are undertaken in accordance with *Phytophthora Dieback Management Manual FEM079* (DBCA 2020).

1.1 Regulatory Context

Phytophthora Dieback management is required under several regulatory mechanisms, including:

- *Environmental Protection Act* (1986) Part V S.50A 'Serious Environmental Harm' provisions
- Projects being assessed under the Western Australian *Environmental Protection Act 1986*, which requires the Department of Biodiversity, Conservation and Attractions (DBCA) and/or Department of Mines, Industry Regulation and Safety to comment on Dieback management and provides these agencies with the right to impose conditions on new approvals.
- the Federal *Environment Protection and Biodiversity Conservation Act 1999*, which lists *Phytophthora* Dieback as a Key Threatening Process.

1.2 Approach

The DHMP has been prepared in accordance with best practice management techniques described in the following publications:

- Corporate Policy Statement No. 3: Management of *Phytophthora* Disease (DPaW 2015)
- *Phytophthora* Dieback Management Manual (DBCA 2020).

The DHMP includes:

- A comprehensive risk assessment of potential disease vectors and proposed activities within the assessment area (**Appendix B**)
- Recommendations for hygiene requirements and locations of clean on entry point (COE), clean down point (W), and management point (M) that consider the level of risk to biodiversity values in the surrounding landscape.

2 Potential Impacts and Risk Assessment

2.1 Potential Impacts

Potential impacts on biodiversity as a result of the spread of Dieback include the following:

- A significant decline in species richness
- Altered vegetation structure with the loss of keystone species such as Banksias
- Temporary or permanent decline in vegetation cover which can lead to erosion and loss of nutrients.
- Loss of fauna foraging habitat, particularly Proteaceous genera including Banksia, Isopogon and Petrophile
- The potential loss of Threatened and/or Priority flora species and ecological communities if they occur within the affected areas and areas susceptible to Dieback.

Water-gaining sites are at a higher risk of being infested with *Phytophthora* spp. as flagellated zoospores can travel through water or moist substrate. It is possible, however, for the pathogen to survive as stromata, or thick-walled chlamydospores, in resistant plant species in upland areas during summer, and reproduce when conditions become more favourable for survival (Crone *et al.* 2012).

Non-autonomous spread of Dieback can occur if the disease occurrence has not been managed appropriately. Without hygiene control measures, there is a high risk of Dieback being spread into Uninfested areas of native vegetation during ground disturbance activities. If Dieback is spread into Uninfested areas, the pathogen will have a significant impact on biodiversity. Susceptible species will become infected and die, with flow-on effects impacting ecosystem function and resilience.

The risk of transporting infected soil increases significantly during wet conditions when soil and vegetative material can easily adhere to vehicles and machinery. In dry conditions, the risk of transporting infected soil is reduced but not eliminated.

In addition to spreading the pathogen within the disturbance area, there is potential to introduce the pathogen into adjacent and down-gradient receiving areas. This down-gradient spread can occur if drainage lines within or adjacent to the assessment area become contaminated with the pathogen, or infected soil is transported off-site into Uninfested areas.

In the context of the project, introduction and non-autonomous spread of the pathogen could occur in areas adjacent to the assessment area if the disease risk has not been assessed and is not managed appropriately during both wet and dry soil conditions.

2.2 Protectable Areas

In accordance with the Dieback Interpreters Guidelines (FEMD 2015), 'protectable areas' are defined as areas of native vegetation that meet the following criteria:

- Have been determined to be free of the *Phytophthora* spp. pathogen by a registered Dieback Interpreter (all susceptible indicator plant species are healthy, and no plant disease symptoms normally attributed to *Phytophthora* Dieback are evident).
 - Are situated in areas receiving more than 600mm rainfall a year or those that are water-gaining sites (for example, granite outcrops, impeded drainage or engineering works which aggregate rainfall) in the 400-600 mm a year rainfall range.
 - Consists of areas where human vectors are controllable (e.g. not an open road, private property); and
 - Are positioned in the landscape and are of sufficient size such that a qualified Dieback Interpreter judges that the pathogen will not autonomously engulf them in the short term (a period of a few decades)
- or
- Includes areas of high conservation and/or socio-economic value (for example, a small uninfested area with a known population of a susceptible species of Threatened flora) (FEMD 2015, page 113).

Further to this definition, protectable areas may also include uninterpretable areas. Uninterpretable areas that meet the protocols for identifying protectable areas (DBCA 2020) are managed as being both infested and uninfested so that the pathogen is neither imported into nor exported from these areas.

2.3 Risk Assessment Methodology

The Dieback risk assessment is a qualitative two-tier process. 'Likelihood' assesses risk in terms of the *Phytophthora* pathogen being spread as a result of a particular activity, depending on where and when that activity occurs. 'Consequences' are assessed in terms of potential impacts on biodiversity and ecological function if the pathogen is introduced into a protectable area. Definitions of the 'likelihood' and 'consequence' categories are presented in **Appendix A (Table 4 and Table 5)**. The overall Dieback risk rating is determined by inputting both the likelihood and consequence ratings into the risk matrix for the three different soil moisture categories: dry, moist, and wet.

2.4 Risk Assessment

A risk assessment for the proposed construction work that determines the risk based on 'likelihood' and 'consequence' of introducing or spreading *Phytophthora* was undertaken in accordance with the *Phytophthora Dieback Management Manual* (DBCA 2020). The 'likelihood' of introducing or spreading Dieback during the construction work is rated as 'very likely' due to the proposed use of heavy vehicles and machinery for the construction works. The potential 'consequence' of introducing or spreading Dieback is rated as 'significant' due to the potential to infest all other protectable areas and the predicted high impact on many susceptible species within the Gngara-Moore River State Forest and Bush Forever Sites from the construction works. Consequently, the combined overall Dieback risk for the proposed construction work is rated as 'high' under dry, moist, and wet soil conditions (**Appendix B**).

3 Management Strategy

3.1 Hygiene Management Principles and Objectives

The Dieback Management Hierarchy of Control (**Diagram 1**) illustrates efficient prioritisation in Dieback management. Dieback cannot be effectively managed unless disease occurrence mapping is current and clearly identifies protectable areas. Undertaking ground disturbance activities during dry soil conditions will significantly reduce the risk of spreading a Dieback and reduce the time taken to ensure vehicles and machinery are clean of soil and vegetative materials.

Soil movement is a major consideration when managing Dieback in projects that have significant soil movement. The basic principle is to only move soil to areas of equal or greater risk, in terms of the likelihood of the pathogen being present and potential impacts on biodiversity. For example, soil from an Infested area should not be moved to an Uninfested, Uninterpretable, or Excluded area.

HIERARCHY OF DIEBACK CONTROLS

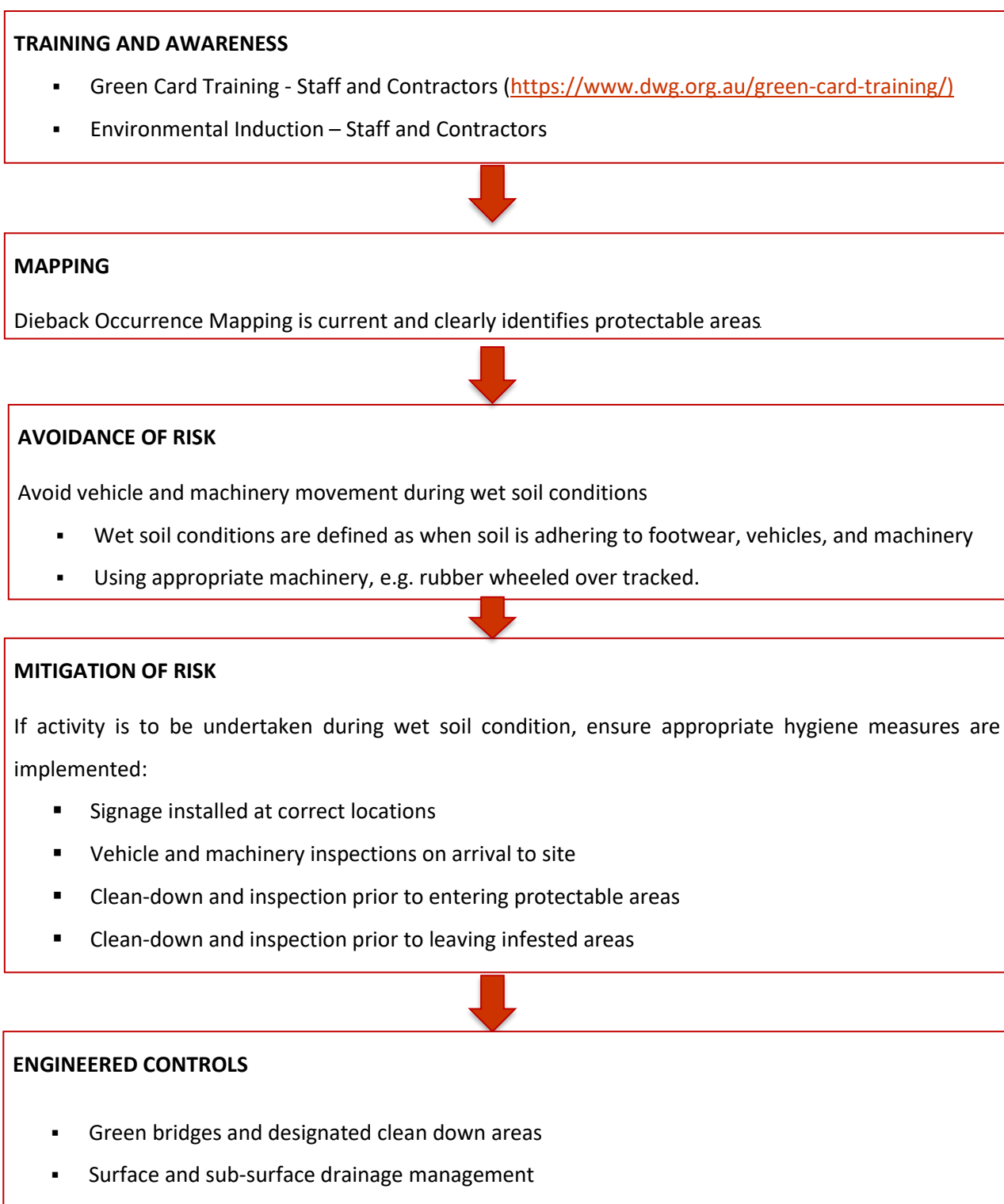


Diagram 1: Dieback Management Hierarchy of Control illustrating efficient prioritisation in Dieback management

Table 1 lists the *Phytophthora* Dieback management objectives, management actions during each phase (pre-construction, construction, and operation), key personnel with the responsibility of management actions and reporting.

Table 1: *Phytophthora* Dieback Management Actions

Objectives	Management Actions	Key personnel with responsibility for actions	Reporting System
Objective 1	Ensure education, awareness, and control measures for Dieback management are communicated to personnel and contractors		
Training	<ul style="list-style-type: none"> Awareness of environmental issues, including Dieback management, is communicated to personnel through presentations in safety meetings and toolbox sessions. Posters and maps of infestation areas are to be displayed around the site. Dieback management is discussed at daily production meetings, as required. Ensure all relevant personnel undertake Green Card training and environmental induction. 	Environmental Specialist	Audit
Support	Provide advice and support to ensure implementation of appropriate Dieback management strategies.	Environmental Specialist	
Objective 2	Prevent the spread of existing <i>Phytophthora</i> infestations outside the assessment area		
Vehicle and Equipment Hygiene	<ul style="list-style-type: none"> Unacceptably dirty vehicles and equipment (including footwear) will be refused entry to the assessment area. Vehicle and machinery inspections should be undertaken by Green Card holder using the DBCA vehicle and machinery inspection sheet, or Western Power Vehicle and equipment environmental inspection register. A record should be kept of all inspections (Appendix C). 	Environmental Specialist	Audit
	All vehicles and machinery will adhere to hygiene requirements for each Dieback occurrence category, as outlined in Table 2 .	All Personnel and Contractors	Audit
Access and Signage	<ul style="list-style-type: none"> Vehicles and machinery are not permitted to access the surrounding native vegetation beyond the assessment area. Dieback signage should be installed around the assessment area (Section 3.3.2). 	All Personnel and Contractors	Audit
Importation of Materials	<ul style="list-style-type: none"> Only soils, road base or vegetation from known Dieback-free areas are to be allowed on site. Importation of these materials is on the condition that the risk associated with these materials has been determined to be 'low'. 	Construction Manager	Audit

Objectives	Management Actions	Key personnel with responsibility for actions	Reporting System
	<ul style="list-style-type: none"> ▪ Blue metal which has no soil fraction can be used as the risk of containing the pathogen is 'low'. 		

3.2 Access Management

The Dieback Management Hierarchy of Control states that vehicular and machinery access should be restricted to 'dry soil conditions' in the first instance. If unavoidable, measures should be implemented to mitigate the risk of spreading Dieback into protectable areas. These measures include vehicle and machine hygiene control measures and inspections.

3.3 Hygiene Control Measures

Hygiene management requires that all vehicles and machinery be:

- Clean on Entry when entering Uninfested areas from any other hygiene classification.
- Clean on Exit when exiting Infested or Unprotectable areas into:
 - Uninfested Protectable areas
 - Uninterpretable Protectable area
 - Excluded Protectable areas
- Clean on Exit when exiting Excluded areas into:
 - Uninfested Protectable areas
 - Uninterpretable Protectable areas

Table 2 presents the hygiene requirement for each Dieback occurrence category present within the assessment area. (**Note:** There are no areas classified as Uninterpretable within the assessment area).

Figure 1 to **Figure 6** present the hygiene requirements and locations of clean on entry point (COE), clean down point (W), and management point (M) within the assessment area.

Table 2: Dieback Occurrence categories and hygiene management requirement

Dieback Occurrence Category	Clean on Entry	Clean on Exit	Comment
Uninfested	✓		Clean on Entry for areas determined to be Protectable
Infested		✓	Follow hygiene procedures to ensure clean-down effluent (in wet/moist soil conditions) is kept within Infested area
Excluded		✓	Management will depend on results on risk assessment to determine the risk of the Excluded area being infested and potential impacts to biodiversity.

All vehicles and machinery arriving on-site will be required to go directly to a quarantine hold point. Vehicles will not be permitted to leave the quarantine area until they have been inspected by personnel who hold a current Green Card and confirmed as being clean of soil and vegetative material. The hygiene inspection should use the *Machinery and Vehicle Hygiene Inspection Checklist* (FEM080) (**Appendix C**) to undertake the inspection. A quarantine inspection point should be established (**Diagram 2**).

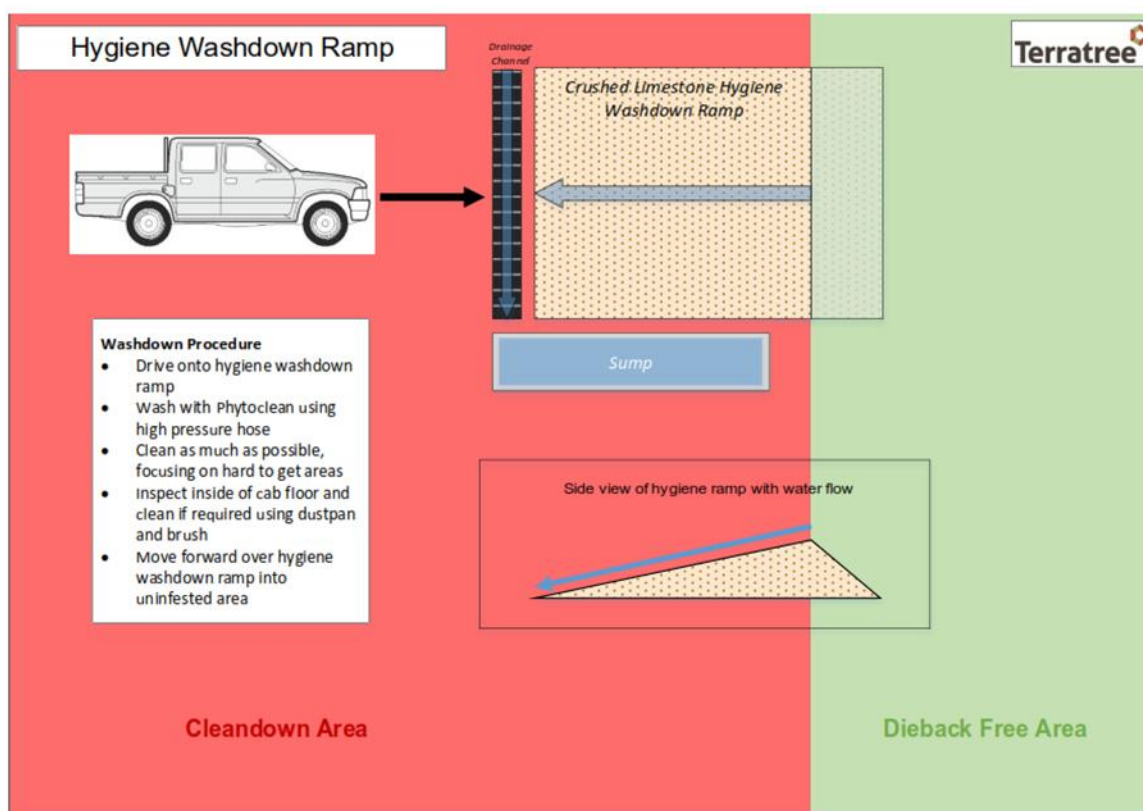


Diagram 2: Layout of vehicle and machinery hygiene inspection and clean-down area.

Hygiene requirements vary considerably depending on whether the work is to be conducted during wet or dry soil conditions. Wet conditions are defined as the situation where soil is adhering to vehicles and machinery. Conversely, in dry soil conditions, soil will not be adhering to vehicles and machinery. Clean-down

requirements are considerably less onerous during dry soil conditions as soil and vegetative material does not adhere to vehicles and machinery. Operating in dry soil conditions will mitigate the need to clean down vehicles and machinery to, however should wet clean downs be required then effluent will need to be directed away from areas of protectable native vegetation and drainage lines, or captured and treated with Phytoclean, or allowed to evaporate (**Appendix C**).

The biggest risk to native vegetation is that through incorrect disposal of effluent. Potentially infected waste material from vehicle/machinery clean down could drain into protectable native vegetation within and adjacent to the assessment area. Native vegetation within the broader landscape will be put at risk if appropriate effluent management is not implemented which includes directing effluent away from areas of protectable native vegetation and drainage lines.

3.3.1 Record Keeping

Records of all vehicular and machinery inspections should be kept for compliance and auditing purposes.

3.3.2 Signage

Dieback signage should be installed to clearly identify:

- Dieback status
- Hygiene inspection area
- Clean down point
- Restricted access signage for bushland areas adjacent to native vegetation surrounding the assessment area.

3.3.3 Field Hygiene Kits

All operational light vehicles should carry a field hygiene kit. The kit enables staff to undertake vehicle clean-down in the field when required by hygiene management protocols for each Dieback occurrence category.

The kit should include the following items and be checked on a regular basis to ensure that material quantities are adequate:

- 20 litres (L) of water
- 8 L methylated spirits or Phytoclean and sealed container to store
- 8-10 L spraying unit
- Hand spray bottles
- Hard bristle scrubbing brush
- Scrapers

- Long-handled scrubbing brush
- Dustpan and brush (for interior cleaning)

While all field staff should undertake Green Card training, which demonstrates correct clean-down techniques, the basic principles are:

1. Vehicle movement should be avoided within protectable areas during wet soil conditions.
2. Vehicles and machinery should be maintained clean but should always be inspected when entering protectable areas.
3. All soil and vegetative materials adhering to the vehicle or machine entering a protectable area should be removed by dry brushing, spraying, disinfecting, or a combination of these methods.
4. The interior of vehicles should be checked and cleaned if required so that the cab is free from soil and vegetative materials.

3.3.4 Green Bridges

A green bridge typically comprises of section of track and or road construction using Dieback free material placed over the Infested and or Uninterpretable soil or track, developing a surface that is free from Dieback. The construction materials for a green bridge need to be suitable for the effectiveness of mitigating risk, effective material include but are not limited to, blue metal, crushed blue rock, and uninfested gravel or crushed limestone. The green bridge shall be constructed with adequate thickness and stability to avoid contact and contamination between the carrier and the infested material beneath.

Green bridges can be utilised to provide uninfested access between protectable areas where narrow or small Infested or Excluded sections intersect with larger Uninfested areas. It reduces the need for multiple clean down points in close proximity during operations that traverses multiple Dieback boundaries along linear infrastructure alignments. This approach helps reduce the risk of spreading Dieback associated with access requirements for powerline maintenance and construction.

Figure 1, Figure 4 and Figure 5 present the locations where green bridges are recommended to be constructed.

3.3.5 Sumps

There are two types of sumps that can be used for in-field vehicle and machinery clean down:

1. Containment sump

This type of sump is lined with the intention that the effluent captured and then evaporate. This is suitable during the warmer months or where the effluent will be pumped and or transported to another area for disposal. This type of sump is appropriate to prevent effluent draining into protectable areas of native vegetation.

2. Infiltration sump

This type of sump is not lined and captures the effluent allowing it to infiltrate into the soil profile. This type of sump is only appropriate where the potential for impacts to vegetation either directly or indirectly is low (i.e. a Completely Degraded areas).

3.4 Contingencies

Table 3 sets out the triggers and remedial actions to address instances where the environmental objectives for managing Dieback are not being achieved.

Table 3: Triggers and remedial action should environmental objectives not be achieved

Trigger	Action	Responsibility
Non-adherence to hygiene procedure (to be recorded as Environmental Incident) e.g. vehicles not washed down as required, breaches of access controls	<ul style="list-style-type: none"> ▪ Raise an incident card ▪ Investigate cause and assess risk to protectable areas. ▪ Review procedures, (hygiene measures, training, signage etc.) ▪ Monitor the effectiveness of remedial actions taken. 	Site Supervisor Environmental Specialists
Observations suggest the possibility that Dieback has been introduced into an area	<ul style="list-style-type: none"> ▪ Identify potential source(s) and vector(s). ▪ Investigate through sampling and assessment if the pathogen is present (if present, determine species type) ▪ Update operational maps if required ▪ Review management controls, seeking further advice from relevant authorities if required. ▪ Implement revised Dieback control methods and continue monitoring 	Site Supervisor Environmental Specialists
Evidence of Dieback has been introduced into areas adjacent to the assessment area	<ul style="list-style-type: none"> ▪ Immediately notify adjacent landowners and relevant authorities ▪ Establish cause and instigate remedial measures (including vector control management) ▪ Monitor the effectiveness of remedial actions taken 	Site Supervisor Environmental Specialists

4 Conclusion and Recommendations

Although the likelihood of the pathogen residing in soil with Excluded area is low, a precautionary approach to hygiene management is recommended. The risk of inadvertently transporting Dieback increases during wet conditions as soil and vegetative material can easily adhere to vehicles and machinery in wet conditions. Clean-down requirements are considerably less onerous during dry soil conditions as soil and vegetative material does not adhere as readily to vehicles and machinery and is less likely to be transported. Therefore, vehicular and machinery access should be restricted to 'dry soil conditions' in the first instance.

If staff and contractors are adequately informed and trained (i.e. Green Card), and the DHMP is implemented, the risk of introducing or spreading the pathogen into or within protectable areas will be minimised.

Terratree makes the following recommendations to ensure the Dieback management strategy for the clearing and construction works of the Clean Energy Link North project is correctly implemented:

- Provide Green Card training to key personnel for example: environmental personnel, field supervisors and earth-moving machinery operators, to ensure compliance with the Dieback management strategy.
- Provide clear instruction to staff and contractors about hygiene requirements when leaving the assessment area.
- Signage should be installed to clearly identify the Hygiene inspection areas and clean down points within the assessment area.
- Conduct inspections of machinery and vehicles to ensure that they are free of soil and vegetative materials when leaving site.
- Implement green bridges and sumps to minimise risk of spreading Dieback to adjacent protectable areas of native vegetation.
- Use only soils, road base or vegetation from known Dieback-free areas for construction.
- Implement the proposed contingencies to address instances where the environmental objectives for managing Dieback are not being achieved.

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Glossary of Terms (adapted from FEMD 2015)

Assessment - (*Phytophthora* occurrence) any combination of activities including detection, diagnosis (interpretation), mapping and demarcation of *Phytophthora* Dieback disease in natural ecosystems.

Chlamydospores – a thick walled big resting spore of several kinds of fungi. It is a life stage that survives in unfavourable conditions, such as dry or hot seasons.

Diagnosis - a determining or analysis of the cause or nature of a problem or situation.

Dieback (*Phytophthora*) - in the south-west of Western Australia, a disease of plants caused by infection by the soil-borne organisms of the genus *Phytophthora*, of which *P. cinnamomi* is the most widespread.

Dieback (*Phytophthora*) Interpretation - the method of determining *Phytophthora* Dieback infestation using procedures in the Dieback Interpreter's Manual (Forest and Ecosystem Management Division (2015). FEM047 *Phytophthora* Dieback Interpreter's manual for lands managed by the department. Version 1.0. Department of Parks and Wildlife, Perth, Western Australia).

Dieback (*Phytophthora*) Interpreter - a registered person who conducts *Phytophthora* Dieback interpretation.

Disease - the combination of a pathogen, host and correct environmental conditions, which results in disease symptoms or death of a host.

Environment - the sum of all external factors that act on an individual organism during its lifetime.

Excluded area - an area that has been disturbed to an extent that it is not assessable and therefore excluded from Dieback interpretation.

Infested area - an area that an accredited Dieback Interpreter has determined has plant disease symptoms consistent with the presence of the pathogen *Phytophthora cinnamomi*.

Pathogen - any organism or factor causing disease within a host.

***Phytophthora* Dieback** - a term referring to the disease symptoms caused by *Phytophthora* species in susceptible vegetation.

***Phytophthora* Dieback Management Map** - the map prepared as part of 'protectable' areas *Phytophthora* Dieback management planning process. It records details of planned management actions.

***Phytophthora* Dieback Management Plan** - the document (includes appended maps) that describes and controls how human access to uninfested 'protectable' areas is to be managed so that the role of humans as vectors in establishing new centres of infestation will be reduced to the lowest possible level.

Protectable area - an area of land managed by the landowner where hygiene management rules for the plant pathogen *Phytophthora*, including clean on entry, will apply. These areas are generally free of disease.

Stromata - The connective tissue framework of an organ, gland or other structure, as distinguished from the tissues performing the special function of the organ or part.

Susceptible - influenced or able to be harmed by *Phytophthora Dieback*.

Symptom - a phenomenon that arises from and accompanies a particular disease or disorder and serves as an indication of it.

Uninfested area - an area that an accredited *Dieback Interpreter* has determined to be free of plant disease symptoms that indicate the presence of *Phytophthora Dieback*.

Uninterpretable area - an area situated in locations receiving >600 mm rainfall per year or are water-gaining sites (e.g. granite outcrops, impeded drainage or engineering works that aggregate rainfall) in the 400-600 mm per year rainfall zone where indicator plants are absent or too few to determine the presence or absence of disease caused by *Phytophthora Dieback*.

Unprotectable area - a disease-free area that is likely to become infested within a given time.

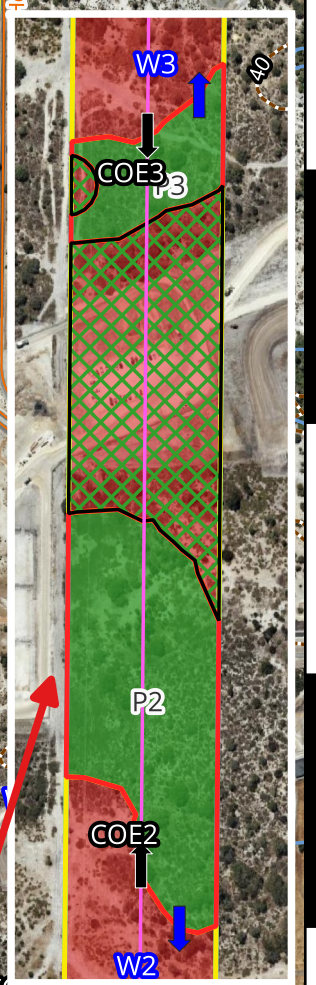
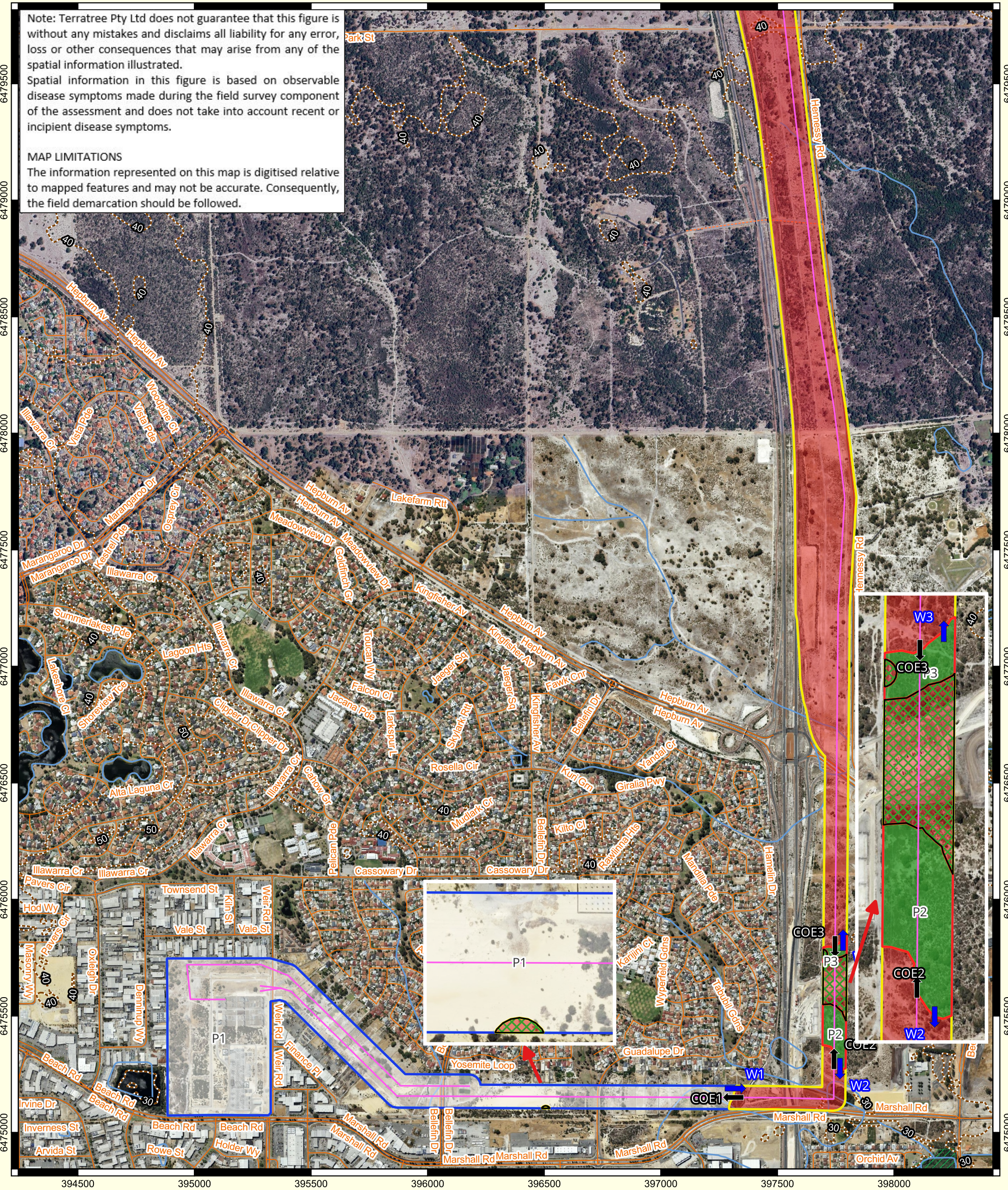
Vector - any agent that acts as a carrier or transporter.

Figures

Figure 1 to 6: Dieback Hygiene Management Maps for CELN

Note: Terratree Pty Ltd does not guarantee that this figure is without any mistakes and disclaims all liability for any error, loss or other consequences that may arise from any of the spatial information illustrated. Spatial information in this figure is based on observable disease symptoms made during the field survey component of the assessment and does not take into account recent or incipient disease symptoms.

MAP LIMITATIONS
The information represented on this map is digitised relative to mapped features and may not be accurate. Consequently, the field demarcation should be followed.

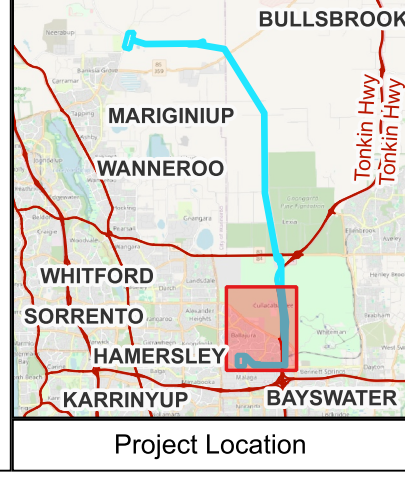


- Legend**
- Northern Terminal (NT) to Neerabup Terminal (NBT) Assessment Area
 - NT-NBT Centreline
 - Watercourse Line
 - Contour (10 m)
 - Miscellaneous Road
 - Local Road
 - State Road

- Phytophthora Occurrence**
- Infested
 - Uninfested
 - Excluded

- Hygiene Requirement**
- Clean on Entry into Uninfested
 - Clean on Exit from Infested/Unprotectable
 - Clean on Exit from Infested/Unprotectable

- Hygiene Management**
- Clean on Entry Point (COE) and Direction of entry
 - Clean Down Location (W) and Direction of effluent
 - Green Bridge



Dieback Hygiene Management Map
2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project

0 250 500 750 1,000 m

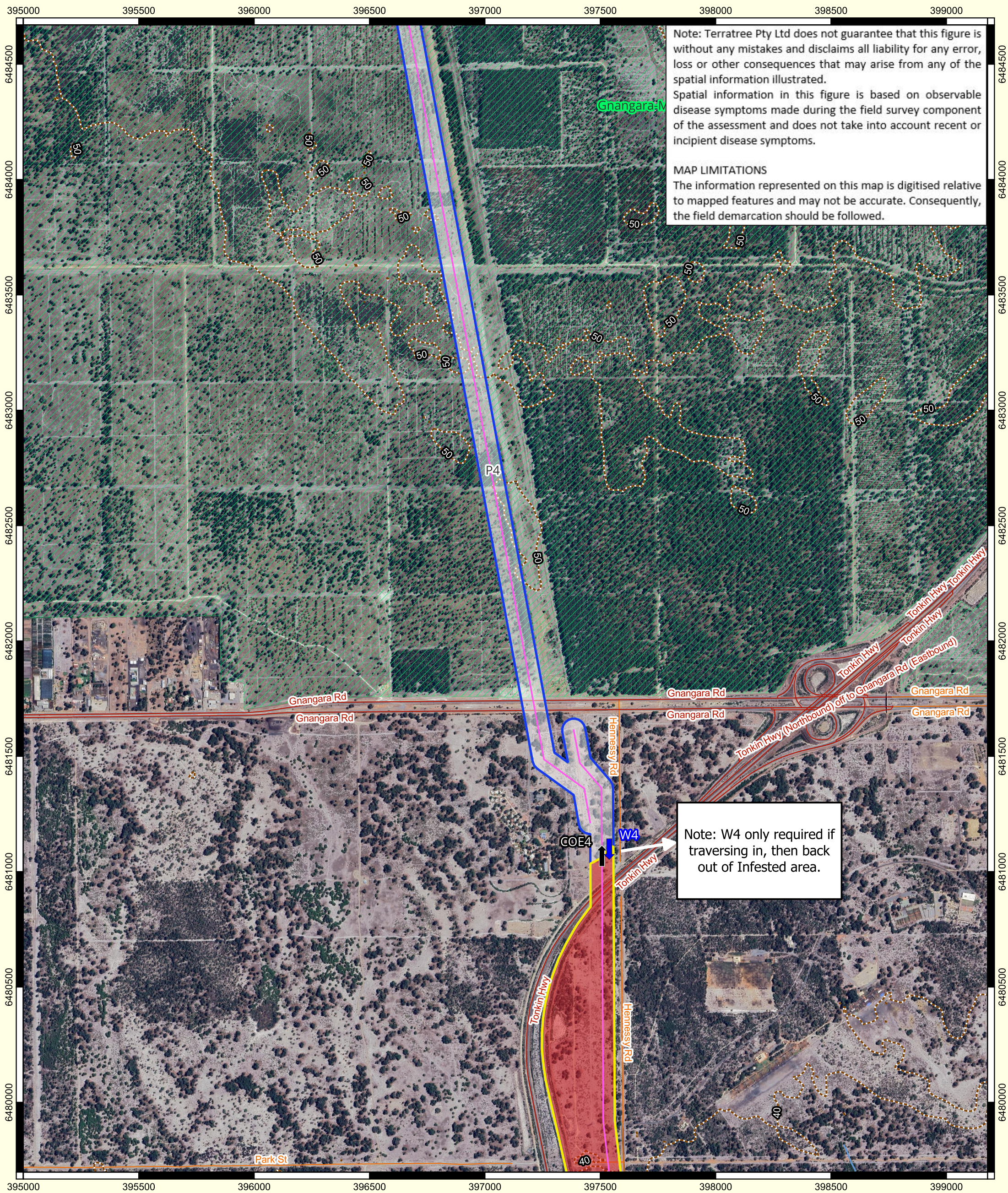
N

Datum: GDA 1994 Scale: 1:15,000 at A3
Projection: MGA Zone 50

Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002
Expiry: 11/07/2026	Prepared: N.L	
	Review: J.G	
	Revision:	

Figure 1

Terratree



Legend

- Northern Terminal (NT) to Neerabup Terminal (NBT) Assessment Area
- NT-NBT Centreline
- Gngangara-Moore River State Forest
- Watercourse Line
- Contour (10 m)
- Miscellaneous Road
- Local Road
- State Road

Phytophthora Occurrence

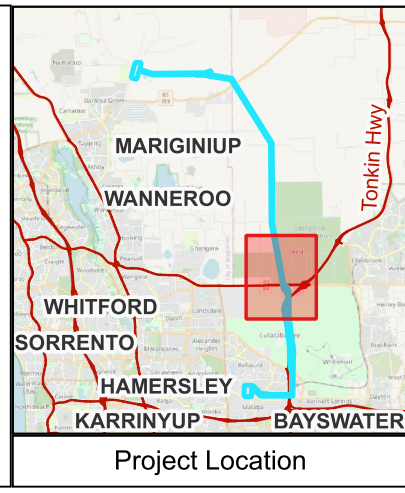
- Infested
- Excluded

Hygiene Requirement

- Clean on Exit from Infested/Unprotectable
- Clean on Exit from Excluded

Hygiene Management

- Clean on Entry Point (COE) and Direction of entry
- Clean Down Point (W) and Direction of effluent



Dieback Hygiene Management Map
2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project

0 250 500 750 1,000 m

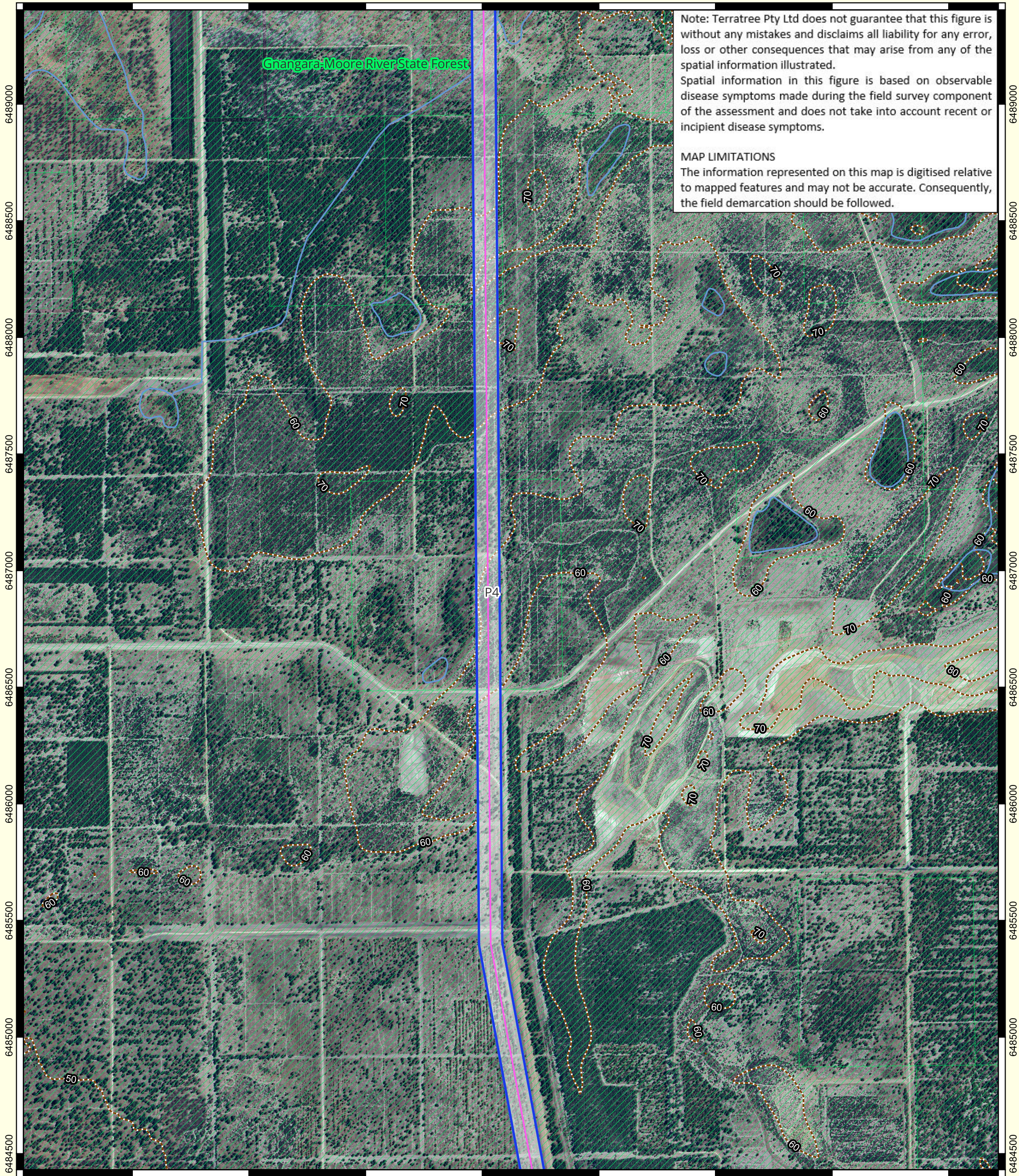
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Datum: GDA 1994
 Projection: MGA Zone 50

Scale: 1:15,000 at A3

Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002
Expiry: 11/07/2026	Prepared: N.L	
Figure 2	Review: J.G	
	Revision:	

395000 395500 396000 396500 397000 397500 398000 398500

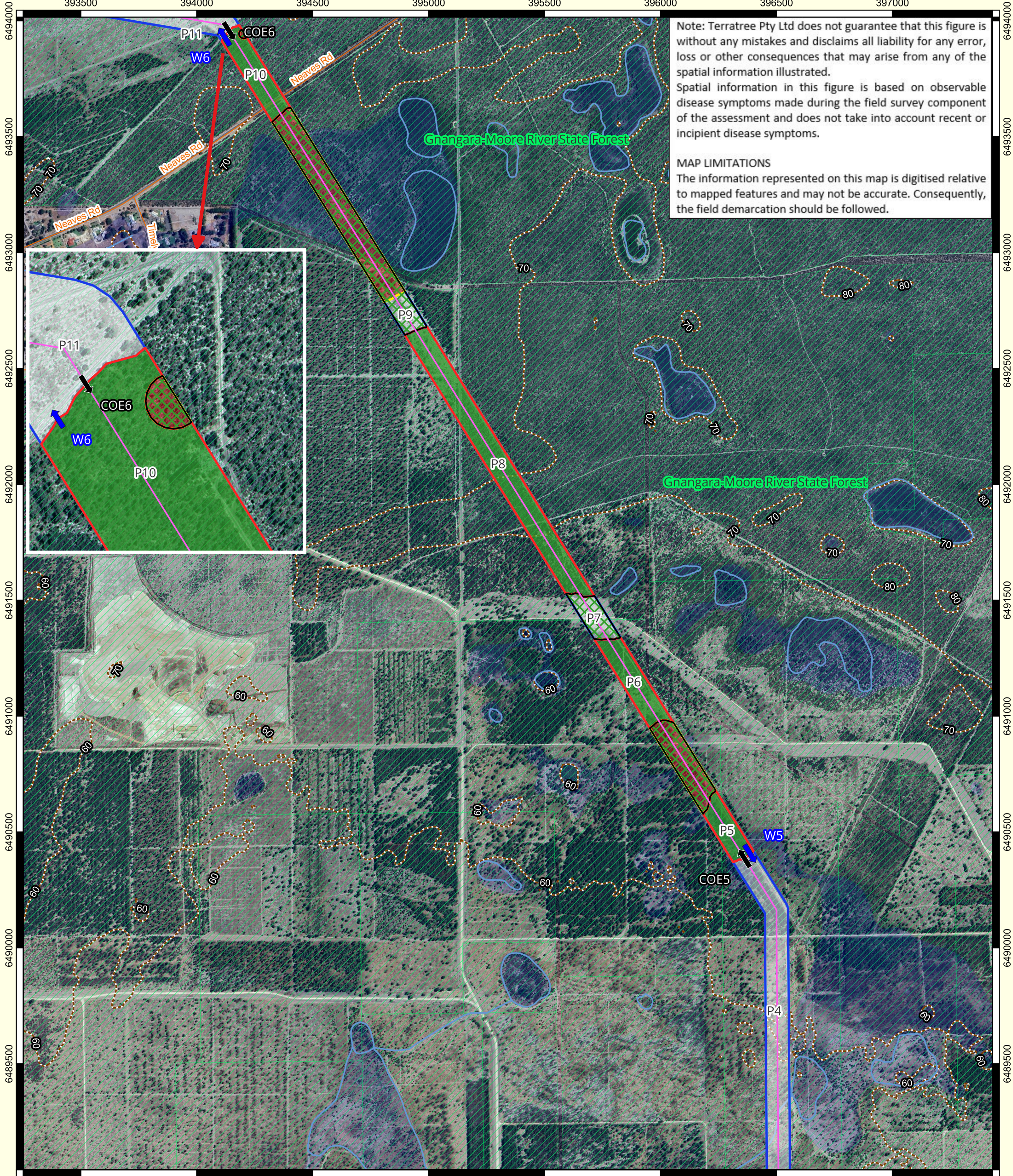


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MAP LIMITATIONS
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395000 395500 396000 396500 397000 397500 398000 398500

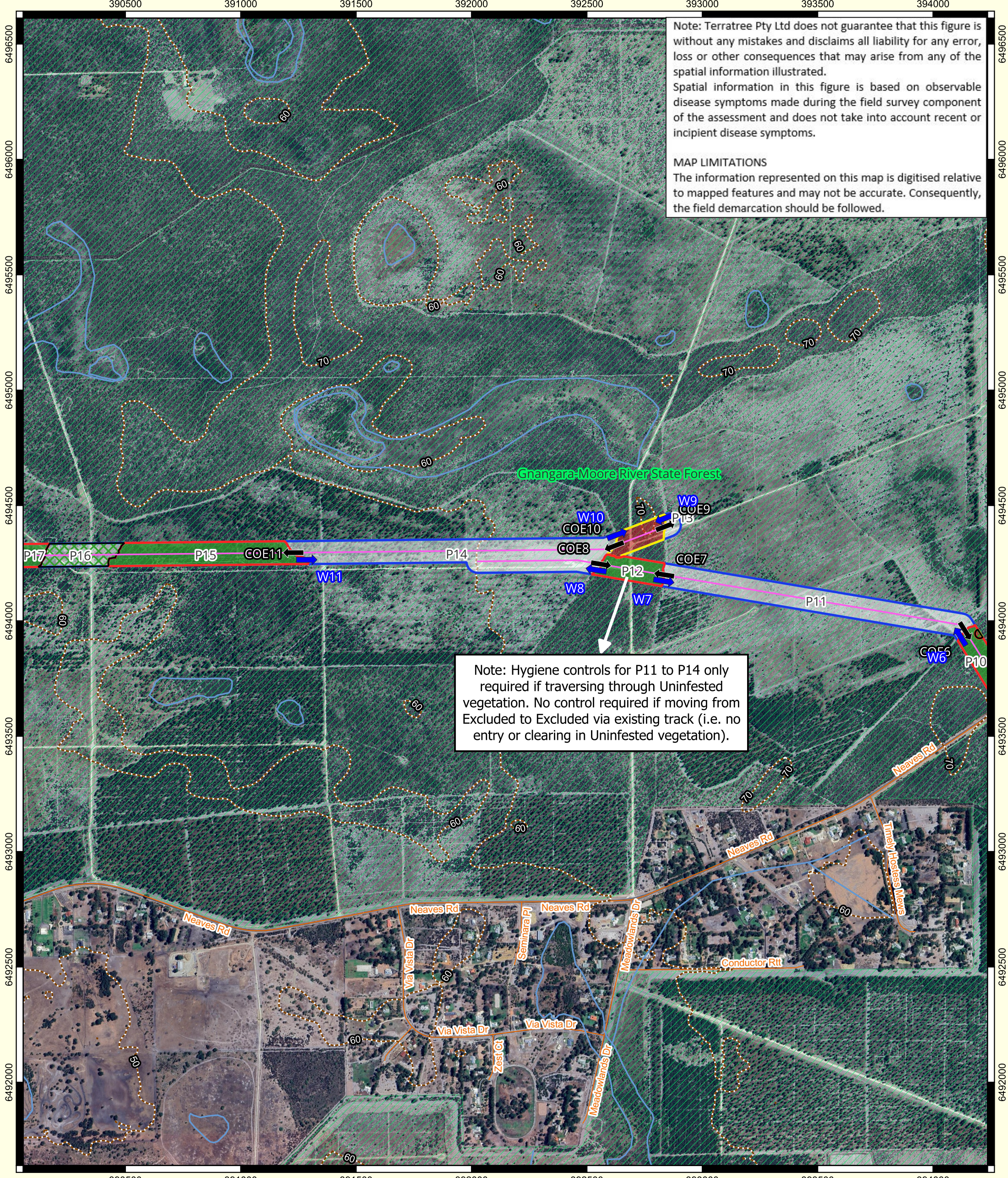
<p>Legend</p> <ul style="list-style-type: none"> Northern Terminal (NT) to Neerabup Terminal (NBT) Assessment Area NT-NBT Centreline Gnangara-Moore River State Forest Watercourse Line Contour (10 m) Miscellaneous Road Local Road State Road 	<p>Phytophthora Occurrence</p> <ul style="list-style-type: none"> Excluded 	<p>Hygiene Requirement</p> <ul style="list-style-type: none"> Clean on Exit from Excluded 	<p style="text-align: center;">Project Location</p>	<p style="text-align: center;">Dieback Hygiene Management Map 2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project</p> <div style="text-align: center;"> <p>0 250 500 750 1,000 m</p> </div> <div style="text-align: center;"> <p>N</p> </div> <p>Datum: GDA 1994 Scale: 1:15,000 at A3 Projection: MGA Zone 50</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Date: 11/07/2025</td> <td style="width: 25%;">Interpreter: J.G, N.L</td> <td style="width: 50%;">Project #: T25002</td> </tr> <tr> <td>Expiry: 11/07/2026</td> <td>Prepared: N.L</td> <td></td> </tr> <tr> <td></td> <td>Review: J.G</td> <td></td> </tr> <tr> <td></td> <td>Revision:</td> <td></td> </tr> </table> <p style="text-align: center;">Figure 3</p> <div style="text-align: right;"> </div>	Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002	Expiry: 11/07/2026	Prepared: N.L			Review: J.G			Revision:	
Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002														
Expiry: 11/07/2026	Prepared: N.L															
	Review: J.G															
	Revision:															



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MAP LIMITATIONS
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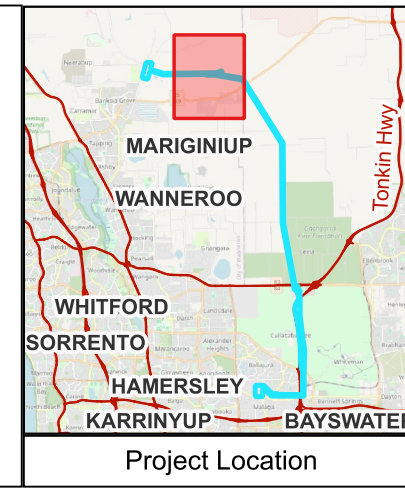
Legend 		<p>Project Location</p>	Dieback Hygiene Management Map 2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project	
<p>0 250 500 750 1,000 m</p> <p>Datum: GDA 1994 Scale: 1:15,000 at Projection: MGA Zone 50 A3</p> <p>Date: 11/07/2025 Interpreter: J.G, N.L Project #: T25002 Expiry: 11/07/2026 Prepared: N.L Review: J.G Revision:</p>			<p>Figure 4</p>	

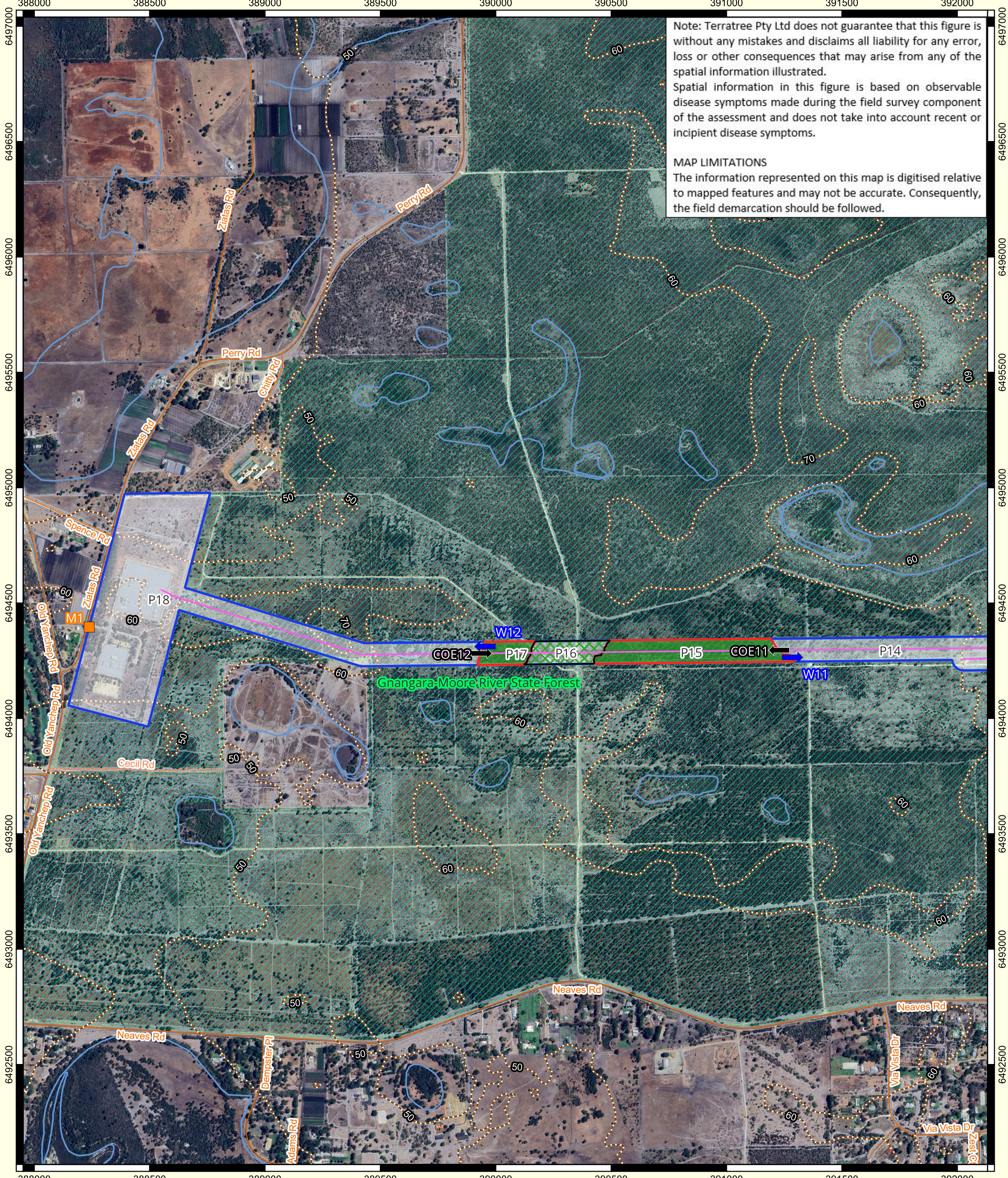


Note: Terratree Pty Ltd does not guarantee that this figure is without any mistakes and disclaims all liability for any error, loss or other consequences that may arise from any of the spatial information illustrated. Spatial information in this figure is based on observable disease symptoms made during the field survey component of the assessment and does not take into account recent or incipient disease symptoms.

MAP LIMITATIONS
The information represented on this map is digitised relative to mapped features and may not be accurate. Consequently, the field demarcation should be followed.

Note: Hygiene controls for P11 to P14 only required if traversing through Uninfested vegetation. No control required if moving from Excluded to Excluded via existing track (i.e. no entry or clearing in Uninfested vegetation).

<p>Legend</p> <ul style="list-style-type: none"> Northern Terminal (NT) to Neerabup Terminal (NBT) Assessment Area NT-NBT Centreline Gngangara-Moore River State Forest Watercourse Line Contour (10 m) Miscellaneous Road Local Road State Road 	<p>Phytophthora Occurrence</p> <ul style="list-style-type: none"> Infested Uninfested Excluded <p>Hygiene Requirement</p> <ul style="list-style-type: none"> Clean on Entry into Uninfested Clean on Exit from Infested/Unprotectable Clean on Exit from Excluded 	<p>Hygiene Management</p> <ul style="list-style-type: none"> Clean on Entry Point (COE) and Direction of entry Clean Down Point (W) and Direction of effluent Green Bridge 	 <p>Project Location</p>	<p>Dieback Hygiene Management Map 2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project</p> <p>0 250 500 750 1,000 m</p> <p>Datum: GDA 1994 Scale: 1:15,000 at Projection: MGA Zone 50 A3</p> <table border="1"> <tr> <td>Date: 11/07/2025</td> <td>Interpreter: J.G, N.L</td> <td>Project #: T25002</td> </tr> <tr> <td>Expiry: 11/07/2026</td> <td>Prepared: N.L</td> <td></td> </tr> <tr> <td></td> <td>Review: J.G</td> <td></td> </tr> <tr> <td></td> <td>Revision:</td> <td></td> </tr> </table> <p>Figure 5</p> <p>Terratree</p>	Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002	Expiry: 11/07/2026	Prepared: N.L			Review: J.G			Revision:	
Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002														
Expiry: 11/07/2026	Prepared: N.L															
	Review: J.G															
	Revision:															



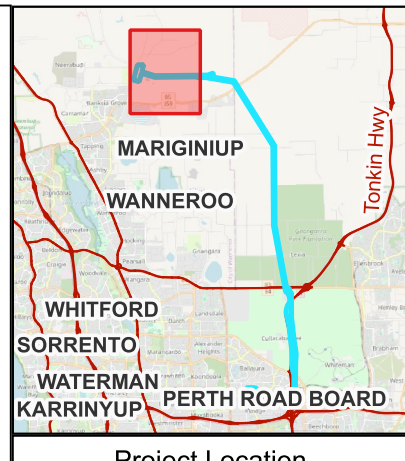
Note: Terratree Pty Ltd does not guarantee that this figure is without any mistakes and disclaims all liability for any error, loss or other consequences that may arise from any of the spatial information illustrated.

Spatial information in this figure is based on observable disease symptoms made during the field survey component of the assessment and does not take into account recent or incipient disease symptoms.

MAP LIMITATIONS
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Legend

- Northern Terminal (NT) to Neerabup Terminal (NBT) Assessment Area
 - NT-NBT Centreline
 - Gyangara-Moore River State Forest
 - Watercourse Line
 - Contour (10 m)
 - Miscellaneous Road
 - Local Road
 - State Road
- Phytophthora Occurrence**
 - Uninfested
 - Excluded
- Hygiene Requirement**
 - Clean on Exit from Infested/Unprotectable
 - Clean on Exit from Excluded
- Hygiene Management**
 - Clean on Entry Point (COE) and Direction of entry
 - Clean Down Point (W) and Direction of effluent
 - Management Point (M)
 - Green Bridge



Dieback Hygiene Management Map
2025 Comprehensive Linear Dieback Assessment - Clean Energy Link North Project

0 250 500 750 1,000 m

N

Datum: GDA 1994 Scale: 1:10,000 at
Projection: MGA Zone 50 A3

Date: 11/07/2025	Interpreter: J.G, N.L	Project #: T25002
Expiry: 11/07/2026	Prepared: N.L	
	Review: J.G	
	Revision:	

Figure 6

Terratree

Appendices

Appendix A: Risk Assessment Methodology

The risk assessment of the different activities was undertaken by asking the following two questions:

- 1) What is the likelihood of *Phytophthora* being spread as a result of a particular activity and where/when that activity occurs?
- 2) What are the potential consequences in terms of impacts to biodiversity if infected material is vectored into protectable vegetation (uninfested and uninterpretable)?

Table 4: Dieback Likelihood Ratings

LIKELIHOOD RATING		
Descriptor	Definition	Probability
Very unlikely	<p>The event may occur only in exceptional circumstances</p> <p>For example:</p> <ul style="list-style-type: none"> ▪ The activity is not being undertaken within a protectable area ▪ Dieback occurrence mapping is current ▪ Hygiene controls measures (clean down locations) in place ▪ Activities occur only during 'dry soil conditions' (i.e. when soil is not adhering to boots, vehicles and machinery); and ▪ Person(s) undertaking the activity have the required training and awareness about Dieback (e.g. Green Card holder (staff); or environmental induction (contractor) 	<5%
Unlikely	<p>The event could occur at some time</p> <p>For example:</p> <ul style="list-style-type: none"> ▪ Dieback occurrence mapping is current ▪ Hygiene controls measures (vehicle and equipment inspections and clean down locations & signage) in place ▪ Activities occur only during 'dry soil conditions' (i.e. when soil is not adhering to boots, vehicles and machinery) ▪ and ▪ Person(s) undertaking the activity have the required training and awareness about Dieback (e.g. Green Card holder (staff); or environmental induction (contractor) 	6<24%

LIKELIHOOD RATING		
Descriptor	Definition	Probability
Possible	<p>The event should occur at some time</p> <p>For example:</p> <ul style="list-style-type: none"> ▪ Dieback occurrence mapping is not current ▪ No hygiene controls measures (vehicle and equipment inspections and clean down locations & signage) in place ▪ Activities occur only during 'dry soil conditions' (i.e. when soil is adhering to boots, vehicles and machinery) if occurring within protectable areas ▪ Person(s) undertaking the activity have the required training and awareness about Dieback (e.g. Green Card holder (staff); or environmental induction (contractor) 	25-49%
Likely	<p>The event will probably occur in most circumstances</p> <p>For example:</p> <ul style="list-style-type: none"> ▪ Dieback occurrence mapping is not current ▪ No Hygiene controls measures (vehicle and equipment inspections and clean down locations & signage) in place ▪ Activities occur within, upslope or immediately adjacent to protectable areas during 'wet soil conditions' (i.e. when soil is adhering to boots, vehicles and Person(s) undertaking the activity don't have the required training and awareness about Dieback (e.g. Green Card holder (staff); or environmental induction (contractor)machinery) ▪ Soil movement is likely to occur 	50-74%
Very likely	<p>The event is expected to occur in most circumstances</p> <p>For example:</p> <ul style="list-style-type: none"> ▪ Dieback occurrence mapping is not current ▪ Vehicles and machinery arrive on site dirty and are not inspected ▪ No Hygiene controls measures (vehicle and equipment inspections and clean down locations) in place ▪ Activities undertaken across boundaries (infested and uninfested areas) during 'wet soil conditions' (i.e. when soil is adhering to boots, vehicles and machinery) and 	>75%

LIKELIHOOD RATING		
Descriptor	Definition	Probability
	<ul style="list-style-type: none"> ▪ Person(s) undertaking the activity do not have the required training and awareness about Dieback (e.g. Green Card holder (staff); or environmental induction (contractor)). ▪ Soil movement will occur across boundaries 	

Table 5: Dieback Consequence Rating

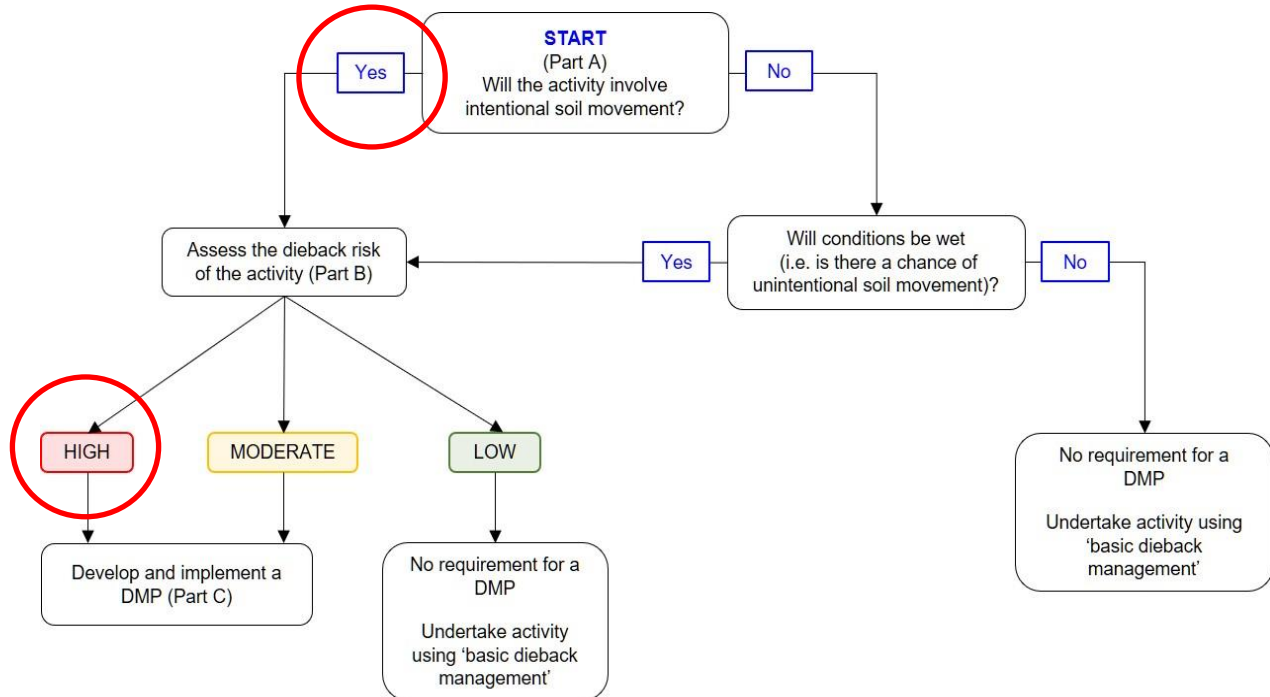
CONSEQUENCE RATING	
Descriptor	Environment
Insignificant	Limited damage to area of low significance. Example: a spot infestation in area of little or no biodiversity value (Degraded or Completely Degraded (WAPC 2000) native vegetation).
Minor	Minor effects on biological or physical environment. Example: Spot infestation into a small area (<4ha) with a low proportion of susceptible species (e.g. a wetland area dominated by <i>Melaleuca</i> , <i>Lepidosperma</i> and <i>Juncus</i> spp. with scattered <i>Banksia littoralis</i>).
Intermediate	Moderate effects on the local environment. Example: Dieback spread into an area that has a high proportion of susceptible species (e.g. Banksia woodland) but has been determined to be unprotectable due to size (<4ha) or proximity to known infestation(s).
Significant	Very serious, long-term localised impact on biodiversity and ecosystem function. Example: <i>Phytophthora cinnamomi</i> introduced into protectable area (>4 ha <50 ha) of urban bushland or area of high conservation values (e.g. an area that has Priority Flora species or Ecological Community and or significant fauna habitat values that are susceptible to Dieback).
Severe	Critical widespread impact on biodiversity and ecosystem function. Example: <i>Phytophthora cinnamomi</i> spread into large conservation reserve (>50ha) or into an area with critical values (e.g. Threatened (Declared Rare) Flora species or Threatened Ecological Communities or significant fauna habitat values that are susceptible to Dieback).

Appendix B: *Phytophthora* Dieback Risk Assessment and Management Plan Form



PART A: DISTURBANCE ACTIVITY

The decision tree below will help determine if the activity constitutes a disturbance and requires a risk assessment (Part B), and the risk assessment will determine if a DMP is required (Part C).



Details of disturbance activity

Region/District of activity:	Swan Coastal District	Date of activity: <i>(give date range if a prolonged activity)</i>	2025 - 2028
Location of site of activity: <i>(Forest Block, Reserve or coordinates)</i>	Northern Terminal to Neerabup Terminal; Gnangara State Forest	Disease Risk Area: <i>(yes or no)</i>	No
Vegetation type/complex:	Eucalypt woodlands and Banksia woodlands		
Description of the activity: <i>(timber harvesting, road upgrade etc.)</i>	Installation of new transmission line infrastructure		
Proponent of the activity: <i>(DBCA, FPC, MRWA, Water Corp. etc.)</i>	Western Power		
Departmental objective for dieback management:	To minimise the potential for the introduction or spread of dieback associated with planned disturbance activities.		

Indicate what parts of the form have been completed for the activity described above:

Part	Purpose	Requirement	Tick parts completed
B	Risk Assessment	To be completed if decision tree in Part A indicates that intentional or unintentional soil movement will occur during the activity.	✓
C	DMP	To be completed if risk is assessed in Part B to be 'High' or 'Moderate'	✓
		Dieback Management Plan No. <i>Allocated by District</i>	



PART B: RISK ASSESSMENT

Step 1: MOISTURE conditions

Higher moisture during a disturbance activity increases the likelihood that soil will stick to a carrier (e.g. vehicles, equipment and/or footwear). Tick the box adjacent to the moisture conditions that are forecast for the period of the activity. If the activity will continue for an extended period, planning should consider the highest possible risk (wettest) conditions that may occur. If the activity is planned for dry conditions but the conditions change to become wetter prior to or during the activity, a contingency plan is required.

Dry soil	where dust forms when exposed soil is disturbed	<input checked="" type="checkbox"/>
Moist soil	where soil is damp but does not stick to tyres, equipment and/or footwear	<input checked="" type="checkbox"/>
Wet soil	where soil and moisture combine so that soil sticks to tyres, equipment and/or footwear	<input checked="" type="checkbox"/>

Step 2: Determine the LIKELIHOOD of introducing or spreading dieback

Circle the description in each column that best describes the activity. An activity may fit between descriptions, in which case write a description into the appropriate blank cell.

The overall likelihood rating is determined by the criteria with the highest rating.

Disturbance type (e.g. action)	Introduction of raw material	Access	Complexity of activity	Extent of activity	Duration of activity	Drainage	Unmanaged access	Likelihood rating
Heavy earth moving, tracked vehicles	Infested or unknown raw material	Access crosses water (irrespective of frequency)			Activity area disturbed & map expired so impossible to revalidate boundaries		Increased public access in area of high public use	Very likely
Soil disturbance over a distance		Activity requires frequent access to site	Highly complex - Multiple operational and Dieback boundaries	Vehicle traverses several mini-catchments	Activity extends over several wet seasons	Surface water increased		Likely
Soil disturbance at single points	Crushed rock with no organic fraction		Complex		Activity occurs during a single wet season		Increased public access, but access restricted and/or site remote	Possible
Rubber tyred vehicle, bicycle	'High confidence' uninfested raw material	Activity requires infrequent access to site		Single mini-catchment	Entry in short timeframe under dry conditions	Minimal increase in surface water		Unlikely
Human, animal traffic	No Introduced raw materials		Not complex	Point or human traffic	Single entry in short timeframe under dry conditions		Activity does not alter frequency of access to site	Very unlikely

Step 3: Determine the CONSEQUENCE of introducing or spreading dieback

Determine the potential CONSEQUENCE that introducing or spreading dieback may cause by going through the table below systematically and circling the description in each column that best estimates the consequence.

The overall consequence rating is determined by the criteria with the highest rating.

Area put at risk	Predicted impact	Biodiversity and sensitive areas at risk	Consequence rating
Ongoing potential ¹ to completely infest all protectable areas in activity landscape unit ²	Predicted very high impact: (majority of species at the activity area are susceptible and/or introducing dieback will result in extinction of species or populations) or Wet areas which contain any <i>Banksia</i> species or jarrah	>1 threatened/priority plant or animal species, critical habitat, TEC and/or Ramsar wetlands that is susceptible to dieback and/or Old-growth jarrah forest	Severe
Potential to infest all protectable areas in activity landscape unit ¹	Predicted high impact: (many susceptible species and/or introducing the pathogen will result in loss of populations or localised extinction of species) or Where predicted impact cannot be determined, jarrah forest on upland areas	At least one threatened/priority plant or animal species, critical habitat, TEC and/or Ramsar wetlands that is susceptible to dieback and/or Sensitive neighbouring property	Significant
Potential to infest more than 5% of any protectable area or 4 ha's (whichever is greater – assessor may set a lower minimum protectable area where appropriate)	Predicted moderate impact: (moderate numbers of susceptible species and/or introducing the pathogen will result in a reduction in species/populations)		Intermediate
	Predicted low impact (low numbers of susceptible species)	Fauna Habitat Zones	Minor
No protectable areas estimated within any related landscape unit and/or The area is already infested ³	No susceptible species and/or the activity area is in the 'excluded' category. or Introducing dieback will have no impact discernible outside natural variation ³	No threatened/priority plant or animal species; critical habitat; TEC; and/or Ramsar wetlands that are susceptible to dieback. or As the activity area is already infested there will be no increased risk to threatened species and communities present ³	Insignificant

¹ Ongoing potential for an area to become infested occurs when the disturbance activity involves construction of permanent infrastructure e.g. roads or camp sites especially high in the landscape

² Landscape unit is an area bounded by features such as creeks, ridges, saddles, open roads and/or freehold land

³ Provide a map showing evidence that area is infested and attach to the risk assessment

Step 4: Determine the overall dieback RISK rating

- Refer to the table below that corresponds to the soil MOISTURE conditions (Step 1)
- Circle where the LIKELIHOOD rating (Step 2) intersects the CONSEQUENCE rating (Step 3)

This is the overall dieback RISK rating for the activity.

DRY SOIL		CONSEQUENCE				
LIKELIHOOD	Disturbance examples	Insignificant	Minor	Intermediate	Significant	Severe
Very likely	tracked machines ripping, pushing soil	Low	Moderate	High	High	High
Likely	snigging/light surface skim over distance	Low	Moderate	Moderate	High	High
Possible	installing posts, exploration drilling	Low	Low	Moderate	Moderate	High
Unlikely	driving with rubber tyres	Low	Low	Low	Moderate	Moderate
Very unlikely	walking	Low	Low	Low	Low	Low

MOIST SOIL		CONSEQUENCE				
LIKELIHOOD	Disturbance examples	Insignificant	Minor	Intermediate	Significant	Severe
Very likely	tracked machines ripping, pushing soil	Low	High	High	High	High
Likely	snigging/light surface skim over distance	Low	Moderate	High	High	High
Possible	installing posts, exploration drilling	Low	Moderate	Moderate	High	High
Unlikely	driving with rubber tyres	Low	Low	Low	Moderate	High
Very unlikely	walking	Low	Low	Low	Moderate	Moderate

WET SOIL		CONSEQUENCE				
LIKELIHOOD	Disturbance examples	Insignificant	Minor	Intermediate	Significant	Severe
Very likely	tracked machines ripping, pushing soil	Low	High	High	High	High
Likely	snigging/light surface skim over distance	Low	High	High	High	High
Possible	installing posts, exploration drilling	Low	Moderate	High	High	High
Unlikely	driving with rubber tyres	Low	Moderate	Moderate	High	High
Very unlikely	walking	Low	Low	Low	Moderate	Moderate

Step 5: Can the RISK be reduced by altering the activity or conditions?

If the risk rating is 'High' consideration should be given to:

- Cancelling the activity which avoids the risk; or
- Postponing the activity until conditions are dry for activities scheduled during moist or wet conditions.

If cancelling or postponing is not possible the activity should be re-assessed to determine if the risk can be reduced by altering some of the parameters of the activity. For example, tyred machinery generally causes less soil disturbance and are easier to clean, compared to tracked machines which cause more damage and pick up soil in the cleats which is hard to remove. Refer to the appendices for further guidance on reducing risk associated with an activity.



Step 6: Determine requirements based on RISK rating

Tick the box adjacent to the RISK rating of the activity as determined by the risk table.

High	<ul style="list-style-type: none"> Complete Part C based on valid comprehensive dieback interpretation with Regional Manager (or delegate) approval before implementation, and sign-off after close-out Green Card training¹ for all proponents and contractors involved in activity 	✓
Moderate	<ul style="list-style-type: none"> Complete Part C based on valid comprehensive dieback interpretation OR conditional dieback occurrence information with Regional Manager (or delegate) approval before implementation, and sign-off after close-out Green Card training¹ for proponent and contractors involved in activity 	
Low	<ul style="list-style-type: none"> Part C not required. Activity can proceed using basic dieback management Green Card training¹ for all proponents and contractors involved in activity 	

¹ Green Card training is mandatory for nominated departmental staff

Step 7: Risk Assessment sign-off

	Full Name	Position	Signature	Date
Risk Assessment conducted by:	Joe Grehan	Principal Ecologist and Dieback Interpreter		31/07/2025
Risk Assessment checked by: <i>(Regional Manager or delegate)</i>				

Additional comments or conditions:



PART C: DIEBACK MANAGEMENT PLAN

Dieback Management Plan No.
Allocated by District

Step 1: Dieback occurrence information & map *(supervising officer/proponent)*

Valid comprehensive occurrence information		or	Conditional occurrence information	
Interpreter report/map no. and/or name	Is the assessment evidence DHSO endorsed? Joe Grehan and Norman Lai		Source	

Step 2: DMP meeting *(supervising officer/proponent)*

Date:		Convened by:	
Attended by:			

Step 3: Risk management tactics *(supervising officer/proponent)*

Tactic no.		To be implemented <i>(✓= required)</i>	Implemented <i>(initialled when complete)</i>	Checked <i>(initialled when checked)</i>
	TACTICS TO BE DEPLOYED <i>Refer to the Appendices in the Phytophthora Dieback Management Manual for guidance</i>			
MOISTURE CONDITIONS				
1	Moisture conditions as per Part B/Step1 dry <input checked="" type="checkbox"/> moist <input checked="" type="checkbox"/> wet <input checked="" type="checkbox"/>			
2	Contingency in event that conditions become wetter than those planned for before or during the activity:			
	• postpone/cease activity	<input checked="" type="checkbox"/>		
	• fall back to low risk area (e.g. infested area)	<input checked="" type="checkbox"/>		
	• risk reassessed and new DMP developed based on wetter conditions	<input checked="" type="checkbox"/>		
PROTECTABLE AREAS <i>(and other management boundaries)</i>				
3	Protectable area (and management unit boundaries within them) have been established in the field and are identified as P <input type="text" value="1"/> to P <input type="text" value="18"/> on the attached dieback management map	<input checked="" type="checkbox"/>		
4	Management boundaries (unrelated to Protectable Areas) have been established in the field and identified on the management map e.g. mini-catchments, impact etc.			
HYGIENE				
5	Clean on Entry (COE) points and No Soil Movement (NSM) roads identified on map and signs installed in-field (record COE numbers in appropriate boxes):			
	<input type="text"/> COE road access <input type="text" value="12"/> COE entering vegetation / protectable areas	<input checked="" type="checkbox"/>		
6	<input type="text"/> COE gates installed and indicated on map against COE no.			



Tactic no.	TACTICS TO BE DEPLOYED <i>Refer to the Appendices in the Phytophthora Dieback Management Manual for guidance</i>		To be implemented <small>(✓= required)</small>	Implemented <small>(initialled when complete)</small>	Checked <small>(initialled when checked)</small>
7	<input type="text"/> turnarounds for COE points, numbered and marked on map				
8	COE points <input type="text"/> will be closed to Type <input type="text"/> when the operation is to cease for <input type="text"/> weeks, and on completion of all <input type="text"/> activities all temporary COE will be closed to Type <input type="text"/> by the proponent				
9	Cleandown points established in field and indicated on map How is effluent to be managed for wet cleandown? <i>W1 to W12. Effluent directed away from Uninfested/Protectable areas into high risk areas</i>		✓		
10	Machines and vehicles with portable hygiene kits		✓		
11	Records kept (circle relevant): <input checked="" type="checkbox"/> COE <input type="checkbox"/> clean down <input type="checkbox"/> NSM		✓		
12	Management points (if applicable) numbered on map. Provide detail below on the decision or action that must be taken at each management point: M1: <i>Hygiene inspection</i> M2:		✓		
TRAINING AND COMMUNICATION					
13	Staff/contractors with Green Card training		✓		
14	DMP briefings (circle relevant): <input checked="" type="checkbox"/> at commencement <input type="checkbox"/> weekly <input checked="" type="checkbox"/> daily <input checked="" type="checkbox"/> other		✓		
DISTURBANCE					
15	Machinery type(s): <i>Traxcavator, excavators, loaders, drills, piling rigs, cranes, winches, etc</i>	Machine Nos: <input type="text"/> TBC	✓		
RAW MATERIALS					
16	Type: <i>Blue metal and sand</i>	Supplier/Source: <i>TBC</i>	✓		
17	Status (attach evidence):		✓		
ACCESS					
18	Disease Risk Area permit obtained if required (attach copy)				
19	Access route planned to place least amount of protectable area downslope at risk, and shown on map				
20	Road maintenance uses tactics to mitigate harm to protectable areas:	use interpreted boundaries			
21		push soil downslope only			
22		clean bucket, shovel, auger after digging culverts/holes			
23		use uninfested/low risk material to patch road			
24	<input type="text"/> roads to be closed, each road closure is numbered and marked on map				
25	Each road closure has been constructed to effectively control access				
26	Roads effectively closed/rehabilitated within <input type="text"/> weeks of end of activity				
27	Road construction uses tactics to mitigate harm to protectable areas:	located in infested/unprotectable categories when possible			
28		low in profile			
29		high crown for better drainage			
30		deep roadside drains & coarse material to minimise erosion			
31		mitre/offshoot drain preferentially located towards base of the slope			



Tactic no.	TACTICS TO BE DEPLOYED <i>Refer to the Appendices in the Phytophthora Dieback Management Manual for guidance</i>		To be implemented <small>(✓= required)</small>	Implemented <small>(initialled when complete)</small>	Checked <small>(initialled when checked)</small>
32	'Green bridge' implemented (mark on map) Figure 1 , Figure 4 , and Figure 5		✓		
33	Activity to be undertaken using split-phase (provide detail):				
DURATION					
34	Duration of activity >1 year, engage Interpreter to recheck the boundaries		✓		
EXTENT					
35	Divide area into management units for work in dry, moist or wet (circle relevant)				
36	Select factors to be used to split dry, moist and wet soil management units	1	Protectability		
37		2	Presence of biodiversity values		
38		3	Predicted impact		
39		4	Potential for spread		
40		5	Machine/vehicle floatation		
41		6	Access prone to bogging		
42		7	Ability to control unmanaged access		
43		8	Distance from roads		
44	Operate to mini-catchments				
DRAINAGE					
45	Drainage directed away from protectable areas, and drainage points numbered and marked on map				
46	Imported water	Source:			
47		Disinfectant type and dosage:			
WEEDS					
48	In areas infested with Declared/Prohibited or very high to moderate priority weeds, which are marked on the map, the proponent (circle appropriate): a) will not enter area b) will clean down machinery when leaving area				
ADDITIONAL CONDITIONS					



Step 4: Dieback management map checklist *(supervising officer/proponent)*

Tactics decided on above should be clearly marked on the map using the symbols in brackets. Each point will have a unique no. (e.g. COE1; COE2; X1) and the total number recorded below (e.g. total 2 COE points; 1 road closure)
Note: staff and contractors in the field must be briefed and supplied with a management map

DMP No. recorded on management map <input type="text"/>	Road drainage points (D): No. <input type="text"/>
Protectable areas and/or management units <input type="text"/>	Roads/areas with 'No Soil Movement' (NSM): No. <input type="text"/>
'Clean on Entry' points (COE): No. <input type="text"/>	Road closures (X): No. <input type="text"/>
COE with gates (COE with gates): No. <input type="text"/>	Turnarounds and roads for rehab. (map legend)
Management points (M): No. <input type="text"/>	Access route (map legend)
Clean down locations (W): No. <input type="text"/>	

Step 5: Proponent sign-off *(external i.e. non-DBCA proponent)*

I, the undersigned, agree to implement the above DMP:

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Full Name	Position	Agency/Organisation	Signature	Date

Step 6: DMP approval *(Regional Manager or delegate)*

I, the undersigned, have reviewed the Risk Assessment and approved the DMP:

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Full Name	Position	Signature	Date
Comment <i>(if required)</i>			

Step 7: DMP close-out *(supervising officer/proponent)*

All tactics identified in the DMP were implemented as approved?

Yes

No

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Full Name	Position	Signature	Date
Comment <i>(if required)</i>			

Step 8: DMP sign-off *(Regional Manager or delegate)*

I, the undersigned, am satisfied that the DMP has been implemented and closed-out as approved:

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Full Name	Position	Signature	Date
Comment <i>(if required)</i>			



Step 9: Document management checklist

Records ticked below are filed in the following location:

	Dieback occurrence information (Interpretation report and map) have been uploaded to DAS . If a DAS is not required, then forward FEM079 and occurrence information to Forest Management Branch at femweb@dbca.wa.gov.au
	Dieback Management Map
	Dieback Risk Assessment and Management Plan form (Parts A, B and C)
	COE and clean down records
	Disease Risk Area permit

Appendix C: Machinery and Vehicle Hygiene Inspection Checklist (DBCA-FEM080)

Important notes

- A 'carrier' has the potential to 'carry' soil harbouring *Phytophthora* and act as a vector of disease. Carriers include but are not restricted to: machinery, vehicles, equipment, motorbikes, bicycles, footwear and horse's hooves
- Taking a dirty carrier onto DBCA estate may constitute a breach of the Conservation and Land Management Act 1984 & Regulations
- All inspections should be undertaken by DBCA staff (or endorsed delegate) who have undertaken Green Card training
- See overleaf for DBCA standards for methods of cleandown, disinfectants and standards for cleandown and Clean on Entry points

Vehicle registration or machine type:

Organisation:

Driver's name:

Make and Model:

BUSH FIRE ACT COMPLIANT (circle appropriate) YES / NO

General condition of vehicle on arrival and or prior to inspection:

The DBCA hygiene standard: Carrier is completely free of clods of soil, slurry, mud, and plant material

All vehicles and machines (incl. trailers)	NA	Compliant	Not Compliant	Comment / Instruction	Initial
SOIL & MUD CHECK					
Wheels: tyre tread incl. inside wheels					
Tracks					
Fenders: mud flaps, wheel arches					
Underneath: diff, axel, chassis, suspension, belly-plate, spare tyre					
Outside: running boards (under), towbar, bull bar, bumper, grill, all panels, spare tyre					
Bucket, blade, forks					
Rippers					
Inside: cab (mats) tray, between cab & tray					
OTHER CHECKS					
Hygiene kit onboard: brush and rubbish bag					
Fluid leaks (oils, hydraulics) etc					
Weeds and/or seeds					
Other (describe):					

SIGN-OFF

This carrier has been inspected and, in relation to DBCA's hygiene standard, it (tick the appropriate box):

meets the standard

meets the standard after cleandown

does not meet the standard

Inspector's name	Signature	Date	Time	Agency

Machinery & Vehicle Hygiene Inspection Checklist FEM080(Ancillary information)

Cleandown type		Method	Application examples	Standard	Notes
WET CLEANDOWN	Washdown	High pressure water	Suitable for large carriers and all types of soil	The carrier is completely free of clods of soil, slurry, mud and plant material	Washdown to standard is difficult in the field
	Wash	Footbath, hand sprayers	Suitable for small carriers, and all types of soil		Disinfectant may be used after soil and organic matter has been removed Wet cleandown produces potentially infested effluent that should not be disposed of into intact native vegetation
DRY CLEANDOWN	Blowdown	Compressed air (available on trucks with air brakes, low loaders)	Suitable for large and small carriers. Suitable for slightly moist soil, sand, dry clay.		These methods will result in an accumulation of potentially infested waste material which should be disposed of appropriately
	Brushdown	Broom, brush or cloth	Not suitable for mud, slurry, compacted soil or trapped vegetation		
	Shakedown	Agitation			
	Pick-off	Tools (e.g. crowbar or spike)	Suitable for large and small carriers to remove dried/compacted soil or trapped vegetation		Generally used in conjunction with other cleandown methods

Cleandown point standard

1	Physical separation during cleaning between the carrier and the ground and effluent
2	Permanent cleandown point: effluent contained, treated and/or removed to waste
3	Temporary cleandown point: locate facility at entry to protectable area; contain effluent or confine it within infested/unprotectable area, and direct it away from the path of traffic
4	Appropriate equipment available to reach the required standard of cleanliness
5	Safe access for cleaner and inspector
6	Appropriate signage

Disinfectant	Examples of appropriate use	Application rate
Methylated spirit	After complete removal of soil, spray small items such as footwear or tools liberally Disinfecting tools between taking soil/tissue samples is imperative to prevent cross-contamination	70 per cent in water
Phytoclean® (sold as 10% active ingredient)	Foot-bath for footwear, or dip small equipment/tools after removal of soil	1:10 dilution (i.e. 100mL in 1L water)
	Disinfecting machinery/vehicles or recycled culverts after complete removal of soil	1:50 dilution (i.e. 200mL in 10L water)
Chlorine dioxide tablets	This method may be used to treat large volumes of potentially infested water such as effluent collected and contained in a washdown facility	3 ppm in water left for a minimum of 4 minutes before use

If using disinfectant complete a [Job Safety Analysis](#) and follow relevant MSDS

'Clean on Entry' point standard

1	COE point established prior to opening a COE road or commencement of the activity
2	Place for the carrier to stop safely and provide a safe environment for inspection
3	Provision for carrier to turn around ¹ or otherwise exit safely without encroaching on surrounding native vegetation if hygiene standard not met
4	Appropriate signage
5	Gates installed to control access where appropriate
6	Use of Machinery & Vehicle Hygiene Inspection Checklist form (Appendix 19) to record inspection and outcome where appropriate
7	Clearly marked on dieback management maps where appropriate