



Department of **Biodiversity,
Conservation and Attractions**



Procedure for the Auditing of *Phytophthora* Occurrence Assessments

Version: 1.01

Last Updated: 29 November 2023

Approved by: Executive Director,
Conservation and Ecosystem
Management Division

Custodian: Plant Diseases Program Leader

Review date: 30 October 2024

Version number	Date approved	Approved by	Brief Description
1.0	27/10/23	K. Ireland I. Moore N. Ashburner T. Mennen	All aspects relating to auditing standards removed from FEM068 and relocated to this document. Consultation with <i>Phytophthora</i> Dieback Interpreters and stakeholders undertaken, and feedback incorporated.
1.01	29/11/23	K. Ireland	Minor edits following stakeholder feedback, including Figure 1 update with correct terminology and all hyperlinks updated

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Department of **Biodiversity,
Conservation and Attractions**



Procedure for the Auditing of Phytophthora Occurrence Assessments

Plant Diseases Program

Conservation and Ecosystem Management Division

FEM068-A

Plant Disease Series

October 2023

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October 2023

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The recommended reference for this publication is:
Department of Biodiversity, Conservation and Attractions, 2023, *Procedure for the Auditing of Phytophthora Occurrence Assessments*, Department of Biodiversity, Conservation and Attractions, Perth.

This document is available in alternative formats on request.

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1 Introduction

Phytophthora dieback (dieback; caused by *Phytophthora cinnamomi*) is the major plant disease threat to the biodiversity of south-west Western Australia (WA). The Department of Biodiversity, Conservation and Attractions (DBCA) manages large areas of land supporting dieback susceptible environmental and cultural assets on behalf of the WA State Government.

Phytophthora Occurrence Assessments (assessments) underpin most hygiene management protocols outlined in the [Phytophthora Dieback Management Manual](#) (FEM079), to prevent and minimise the *spread of dieback during approved high-risk disturbance operations* on lands managed under the *Conservation and Land Management Act 1984* (CALM Act lands, as defined in the CALM Act). Mitigating the risk of spreading dieback during disturbance activities relies on managing protectable (disease-free) areas separately from other categories. As a way of maintaining their disease-free status through management, DBCA audits assessments against a list of Assessable Standards (standards), which are defined within the *Phytophthora Dieback Interpreters' Manual for lands managed by the department* (FEM047; PDIM).

The primary audience for this document is persons or stakeholders involved in procuring assessments on CALM Act lands, those conducting assessments, and/or undertaking dieback management activities.

2 Objective

The objective of this document is to outline the DBCA auditing process and requirements for *Phytophthora* Occurrence Assessments (assessments). These assessments are a requirement for undertaking high-risk disturbance operations (as defined in the Dieback Management Planning Form within the [Phytophthora Dieback Management Manual](#) (FEM079)) on CALM Act lands.

This objective supports [Corporate Policy Statement No. 3 - Managing Phytophthora Dieback](#), by providing a method for maintaining standards of interpretation.

3 Scope

This procedure will not introduce any new methods or standards for interpretation but details the proponent's responsibility that *Phytophthora* occurrence assessments conducted, on their behalf, on CALM Act lands meet the required standards.

Where any direct or perceived conflict exists between this procedure (FEM068-A) and the *Phytophthora Dieback Interpreter's Manual for lands managed by the department* (FEM047; PDIM), or the *System Guidelines for Phytophthora Dieback Interpreter Registration* (FEM068), this procedure shall prevail.

4 Legislation

DBCA has responsibilities for the conservation and protection of biodiversity and biodiversity components under the *Biodiversity Conservation Act 2016* (BC Act). Under the CALM Act, land must also be managed to protect the value of the land to the culture and heritage of Aboriginal persons. DBCA manages plant diseases via the functions of the CEO under section 33(1)(d) and Part VII of the CALM Act.

Within forest Disease Risk Areas (DRA), DBCA regulates activities contributing to the spread of *Phytophthora* dieback under Part 16 of the *Forest Management Regulations 1993*. These are the operative regulations for managing risk, controlling access, and establishing quarantine stations within DRA.

5 Administration

This procedure is administered by DBCA's Plant Diseases Program, within Ecosystem Health Branch (EHB) of Conservation and Ecosystem Management Division (CEMD). Within the Plant Diseases Program, the Disease Hygiene and Standards Officer (DHSO) or delegates monitor and audit these requirements for compliance. The primary point of contact for all enquiries relating to this document is the Disease Hygiene and Standards Officer (DHSO) (dhs@dbca.wa.gov.au).

Operational and resource constraints may affect timelines outlined in this document from time to time. DBCA will work with and communicate this to proponents and will provide updated timelines and outcomes as soon as is reasonably possible.

6 Confidentiality

Subject to compliance with any requirement to disclose by any applicable law, or if requested by a Minister of the State Government of Western Australia, DBCA will only use and disclose reports or evidence data provided for the purposes defined within this procedure. Evidence data collected by Interpreters from the private sector and submitted for the purposes of auditing remains the property of the contractor and will not be sold, shared, distributed, or uploaded to corporate or public databases.

DBCA, through Forest Management Branch (FMB), is the custodian of all *P. cinnamomi* occurrence data obtained in relation to CALM Act lands.

It is acknowledged that DBCA has no ownership of or claim to information or data obtained from lands that it does not manage. DBCA will not sell, share, distribute, or upload this information or data without the prior written consent of the proponent.

7 Review

It is intended that this document is reviewed after 12-months of implementation. Subsequent review dates will be within a five-year period.

8 Associated documents and resources

The department develops and promotes a range of resources to guide dieback management which should be read and utilised in conjunction with this procedure:

- [Corporate Policy No. 3: Management of *Phytophthora* Disease](#) (2022)
- Procedures for the use of Work Improvement Notices and Notifications. Advisory Note No. 4 (2022)
- [Phytophthora Dieback Management Manual](#) FEM079 (October 2020)
- *Phytophthora* Dieback Management during Bushfire Suppression. DBCA Fire Management Services Branch FIRE SOP 103 (January 2020)
- *Phytophthora* Dieback Interpreter's Manual for Lands Managed by the Department FEM047 (March 2015)
- Dieback Working Group Inc. – [Best Practice Guidelines for Management of *Phytophthora* Dieback in the Basic Raw Materials Industries](#) (2021)
- Ecosystem Health Branch & Plant Diseases Program intranet and [Phytophthora Dieback](#) internet webpages
- Green Card training course in dieback awareness and basic management
- Dieback Management Planning course

9 Procedure for the auditing of *Phytophthora* occurrence assessments

An overview of the full *Procedure for the Auditing of Phytophthora Occurrence Assessments* is provided in Figure 1. The procedure has three phases:

Phase 1. *Phytophthora* Occurrence Assessment and Endorsement.

Phase 2. Dieback Management Planning (DMP) and DMP Audits (conducted primarily through the department's Disturbance Approval System (DAS)).

Phase 3. Disturbance Operation

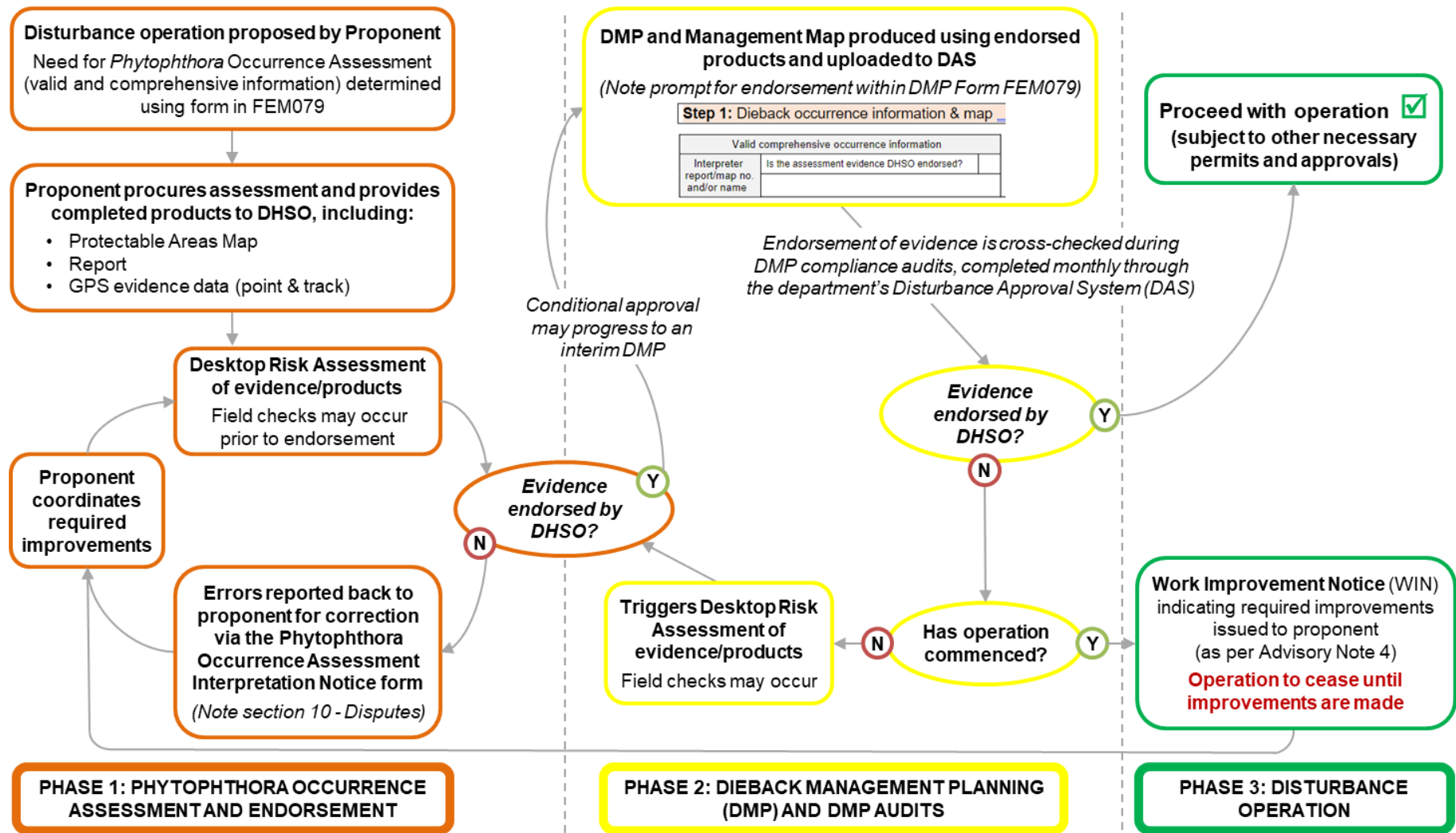


Figure 1: Procedure for the auditing of *Phytophthora* occurrence assessments. DHSO = Disease Hygiene Standards Officer. DMP = Disease Management Plan.

Phase 1: Assessment and endorsement

Assessments are undertaken when a proponent requires valid comprehensive information to proceed with a proposed disturbance operation on CALM Act lands. The requirement for valid comprehensive information is determined using Part B of the [Dieback Risk Assessment & Management Plan form](#) (in FEM079).

Once an assessment has been completed, and prior to the commencement of Dieback Management Planning and operations, the proponent will provide the attachments listed below, via email to the DHSO for auditing and endorsement:

- Protectable Areas Map must contain a legend that contains the name or registration numbers of Interpreters involved, with the lead Interpreter listed first.
- *Phytophthora* Occurrence Assessment report, which includes:
 - sample maps with results overlaying occurrence categories (if not already shown on the Protectable Areas Map), and
 - copies of all sample result forms as received from a laboratory, or appropriate analogue (summary table).
- Dieback category boundaries (.shp and .gpx formats).
- Consolidated updated and final GPS point and track evidence data (.shp and .gpx formats). For non-conventional GPS symbols, a legend must be supplied.

Where the above items are not supplied, as detailed, proponents will be required to obtain and submit the required data/information prior to the endorsement process commencing.

Assessment audits are conducted against 10 criteria, outlined in section 12. These criteria correlate with the Assessable Standards described in the *Phytophthora Dieback Interpreters' Manual* (FEM047). Significant errors detected through the auditing process will reflect a breach in standards which may correlate to one or more of these criteria. When auditing an assessment, the DHSO will assess evidence data and how this is represented in the final map product.

All assessment audits will begin with a desktop risk assessment, calculating the likelihood and consequence of the assessment containing significant errors based on the evidence data. This will determine the need for a field audit. The DHSO will either endorse the assessment evidence or provide feedback with required improvements through a *Phytophthora* Occurrence Assessment Interpretation Notice (Interpretation Notice; Appendix 1).

Products with endorsed evidence are approved for use during dieback management planning. Products requiring changes will be resubmitted to the DHSO for endorsement after changes have been made. All results from desktop risk assessments and field auditing will be provided directly to the proponent.

Desktop risk assessments

Desktop risk assessments are used to calculate the likelihood of assessments containing significant errors. The risk assessment also considers environmental, cultural and ecological consequences, so that the overall risk rating may be higher in areas where significant environmental or cultural values are under threat from disease spread. Factors contributing to likelihood and consequence during desktop risk assessments are summarized in Tables 1 and 2.

Table 1: Factors contributing to an increased likelihood of assessment error.

Likelihood	Reasoning ^a	Potential triggers
Very likely	Discrepancies found that suggest errors	Positive sample or prior infested mapping in a mapped uninfested area. Data incomplete or not supplied. Evidence of falsified data or data manipulation.
Likely	Concerns and issues noted, indicating errors are likely	Interpreter organisation has had recent repeat breaches of a number of standards. Areas mapped as unprotectable/infested do not follow desktop evident drainage or likely vectors. Dieback assessment issues are reported to DBCA. Interpreter does not have relevant supplementary skills (Appendix 3).
Possible	Lack of evidence collection suggests that errors are possible	Missing samples or Indicator Species Death (ISD) information in upper regions of new infestations. Lack of samples for area or vegetation type, or poor-quality evidence data. Map categories conflict with prior mapping in or adjacent to mapped areas without evidence to support conflict.
Unlikely	Poor technique or method	Technique and method suggests lack of familiarisation with the area or lack of understanding of the vegetation type. Inconsistencies in the work. Poor consultation with clients or poor use of landscape units.
Very unlikely	Inexperience means risk of error is increased	Inexperienced in interpretation of various categories. Frequently inactive, has new trainees or working in unfamiliar bioregions. Recently registered and is lead Interpreter for assessment, lacks supervision, or assessment unchecked by a more experienced Interpreter.

^a Primary reason expected to inform likelihood rating

Table 2: Factors contributing to an increased consequence of assessment error. Modified from Phytophthora Dieback Management Manual (FEM079) Part B: Risk Assessment Step 3.

Consequence	Area at risk	Predicted impact	Biodiversity/sensitive areas at risk
Severe	Ongoing potential to completely infest all protectable areas in activity landscape unit	Very high: 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, threatened ecological community (TEC) and/or Ramsar wetlands that is susceptible to dieback and/or Old-growth jarrah forest
Significant	Potential to infest all protectable areas in activity landscape unit	High: 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 or cultural values
Intermediate	Potential to infest more than 5% of any protectable area or 4 ha (whichever is greater – assessor may set a lower minimum protectable area where appropriate)	Moderate: Moderate numbers of susceptible species and/or introducing the pathogen will result in a reduction in species/populations	
Minor		Low: Low numbers of susceptible species	Fauna habitat zones
Insignificant	No protectable areas estimated within any related landscape unit and/or The area is already infested	Very low: No susceptible species and/or the activity area is in the 'excluded' category. or Introducing dieback will have no impact discernible outside natural variation	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

A risk estimation matrix (Table 3) is used to combine the likelihood of assessment error (Table 1) with the potential consequences (Table 2) to determine the overall desktop risk assessment risk rating (Table 4). Ratings and their outcomes are assigned based on the evidence data and reported back to the proponent in writing within 5 business days of all assessment products being received by the DHSO. Different risk ratings apply based on soil conditions for the approved operation (Table 3).

If contradictory information is found the DHSO may conclude that the initial evidence is insufficient or inaccurate and request additional evidence.

Table 3: Risk matrices for dry, moist and wet soil conditions. Unless informed by the proponent, default will be to the wet soil matrix.

DRY SOIL		CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Intermediate	Significant	Severe	
Very likely	Moderate	Moderate	High	High	High	
Likely	Moderate	Moderate	Moderate	Moderate	High	
Possible	Low	Low	Moderate	Moderate	Moderate	
Unlikely	Low	Low	Low	Moderate	Moderate	
Very Unlikely	Low	Low	Low	Low	Low	

MOIST SOIL		CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Intermediate	Significant	Severe	
Very likely	Moderate	Moderate	High	High	High	
Likely	Moderate	Moderate	Moderate	High	High	
Possible	Low	Moderate	Moderate	Moderate	High	
Unlikely	Low	Low	Low	Moderate	Moderate	
Very Unlikely	Low	Low	Low	Low	Low	

WET SOIL		CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Intermediate	Significant	Severe	
Very likely	Moderate	High	High	High	High	
Likely	Moderate	Moderate	High	High	High	
Possible	Moderate	Moderate	Moderate	High	High	
Unlikely	Low	Low	Moderate	Moderate	High	
Very Unlikely	Low	Low	Low	Moderate	Moderate	

Table 4: Outcomes for desktop risk assessment risk ratings.

Risk rating	Outcome
Low	Automatic endorsement of the evidence will be provided within a short time period. Random field audits may still occur by negotiation between the proponent and the DHSO, but not where the timeframe for commencing operations will be impacted.
Moderate	If resources allow, the DHSO will field audit the assessment. If no field audit occurs, the evidence will be provisionally endorsed and may be used to develop an interim DMP.
High	The DHSO will place these assessments at highest priority to field audit. In exceptional circumstances where endorsement cannot be provided within a suitable time frame, the DHSO may provide provisional endorsement by negotiation with the proponent.

Field auditing

Field audits occur as per the above risk ratings (Table 4), using the following framework:

- Target sections of the assessment, include where:
 - previous interpretation information contradicts the assessment.
 - there is a lack of sample or point evidence data.
 - best practice may not have been followed during the assessment.
 - certain vegetation types are known to contain subtle disease expression.
 - there are areas that are mapped as a category although another category is more dominant.
 - there are infested or uninterpretable boundaries that lack supporting evidence data.
 - significant ecological or cultural assets are under threat from disease spread.
- Record information using GPS, maps, photos and in writing.

To avoid extending the period required for auditing, the DHSO will:

- collect samples only where required.
- not adjust demarcation lines (except by prior agreement).

If no significant errors are found during the field audit, the evidence will be endorsed and the proponent will be informed in writing (Appendix 2).

Provisional endorsement

In circumstances where field audits cannot be undertaken within 10 business days, operations may commence on provisional grounds. The DHSO will liaise with the proponent and negotiate the terms of the provisional endorsement, which could include:

- development of an interim DMP based on the agreed terms.
- commencing operations during dry soil conditions (typically November to April inclusive, when not raining). While the operation is still provisional, works will need to cease while it is raining or during wet soil conditions.
- commencing low-risk sections of the operation where possible, and the higher-risk sections can be avoided for a period until the DHSO has endorsed the evidence for the full assessment.

Where operations were permitted to start based on provisional endorsement and these requirements are not adhered to:

- a Work Improvement Notice (WIN) may be issued to the proponent instructing them to cease the operation, and
- the DHSO will field audit the assessment.

Breaches in standards and Phytophthora Occurrence Assessment Interpretation Notices

When standards are breached that could lead to unsatisfactory environmental and ecological outcomes, a *Phytophthora* Occurrence Assessment Interpretation Notice (Appendix 1) will be issued to the proponent. This notice will contain information on the standards breached, the nature of the resulting error, and the improvements required for the operation to proceed. It is the duty of the proponent to procure the services of an Interpreter to make any required improvements.

Once improvements have been made, all updated attachments relating to the assessment must be resubmitted to the DHSO for review following the above procedure.

New areas of improvement may be identified in the follow up review which will be communicated via the above procedure.

Phase 2: Dieback Management Planning and DMP Audits

The [Dieback Risk Assessment & Management Plan form \(in FEM079\)](#) is the framework used by DBCA to:

- assess dieback risk associated with planned disturbance activities in the vulnerable zone,
- document how those risks will be minimised, and
- verify that approved dieback management actions have been implemented according to the plan.

Dieback management planning should not proceed without endorsement of assessment evidence. Following the endorsement and auditing process, changes to elements of disease management may be required.

Advisory Note 4: Procedures for the use of Work Improvement Notices and Notifications

This procedure has been integrated with *Advisory Note 4: Procedures for the use of Work Improvement Notices and Notifications*.

Appendix 5 within the Advisory Note 4 procedure, states that ‘*all evidence data, reports and maps are to be provided to the proponent and then made available to DBCA,*’ and that when ‘*Dieback assessment boundaries are incorrectly demarcated in the field, or incorrectly indicated on a map or evidence data submitted with the map don’t match with final map products*’ the follow-up action is for DBCA to ‘*suspend operations until the proponent presents evidence obtained from Interpreters and is assessed as accurate by the DBCA Disease and Hygiene Standards Officer, who can conclude that all required improvements are completed appropriately.*’

In the context of this procedure, Advisory Note 4 comes into effect when:

- a planned disturbance operation that required valid comprehensive information has commenced or is about to commence, and the assessment evidence has not been endorsed by the DHSO; or
- a proponent has breached the provisional grounds for commencement of an operation provided by the DHSO.

It is the intention of DBCA that Notifications and WINs issued through Advisory Note 4 are minimised through the process of endorsing assessments prior to DMP and operations commencing.

Auditing of Dieback Management Plans through the Disturbance Approval System (DAS)

Where a DMP is required, the completed form is uploaded to the DAS as a part of the approvals process for the disturbance operation. Separate to this procedure, these approved plans are audited by the DHSO to ensure that dieback risk has been assessed correctly, and that hygiene protocols described are being implemented successfully in the field.

To ensure that assessments have been endorsed prior to the commencement of Dieback Management Planning, all DMP forms will be checked to see that evidence has been endorsed.

To indicate that endorsement has been provided, a prompt is included in the DMP form, relating to *Step 1: Dieback Occurrence Information and Map* (in the *Valid Comprehensive Occurrence Information* tick box):

'Is assessment evidence endorsed by the DHSO?'

If the evidence has been endorsed, and the DHSO has a record of the endorsement, then the operation can proceed.

If the assessment has not been endorsed, the following may apply:

1. Where disturbance has not yet commenced, the DHSO will:
 - a) ask the proponent if they wish to continue the operation, if not, the proponent will be asked to withdraw their disturbance operation request, or
 - b) inform the proponent not to commence the operation until evidence data for the dieback assessment is supplied and endorsed by the DHSO,
 - c) inform the DBCA Regional Manager or delegate of the breach, and
 - d) require the proponent to engage a registered Interpreter to complete a dieback assessment and supply the assessment evidence data to the DHSO for auditing prior to commencement of the operation.
2. Where the proponent has already commenced the disturbance operation:
 - a. the proponent and DBCA Regional Manager will be informed,
 - b. the DHSO will request the assessment evidence and conduct a desktop risk assessment and/or field audit, and
 - c. a WIN will be issued to the proponent instructing them to cease the operation.
3. Where a breach similar to any of those presented above is discovered after the completion of the operation, but where the proponent has used dieback information that has not been endorsed by the DHSO*; the DHSO will:
 - a) issue a WIN to the proponent,
 - b) request the proponent engage a registered Interpreter to perform a baseline dieback assessment for future monitoring purposes on undisturbed vegetation directly adjacent the recently completed work,
 - c) record the breach in the DMP audit,
 - d) notify the relevant DBCA district, and
 - e) return to monitor and record disease spread within the project area within the next 3 years.

**Scenario 3 will not be applied retrospectively and is only relevant to DMPs written after the publication of this procedure.*

Drafting and issuing Work Improvement Notices (WINs)

Refer to *Advisory Note No.4 Section 5.2: Drafting and issuing WINs*. WINs may be issued through the DBCA Regional Manager responsible for the area within which the disturbance occurs, or through the Manager Ecosystem Health Branch.

Phase 3: Disturbance Operation

Once the DHSO has endorsed the assessment evidence, a DMP is produced, and approval through the DAS is granted, the proponent may commence the operation.

Where evidence data was previously endorsed by the DHSO and it is found after commencement of the operation that the field work is incorrect to the point of jeopardising the effectiveness of hygiene management during the operation, the DHSO will:

- notify the DBCA Regional Manager delegate,
- instruct the proponent to cease the operation, and
- field audit the assessment and provide a *Phytophthora* Occurrence Assessment Interpretation Notice, within 10 business days.

10 Disputes

Where a disagreement arises over the information and/or requested improvements within an Interpretation Notice, the proponent may choose to challenge the requested improvements. The process for this situation is:

- A request is made to the DHSO to meet in the field. The Interpreter who completed the assessment in question may be invited by the proponent to attend this meeting.
- Where an agreement is reached in the field that the *Phytophthora* Occurrence Assessment Interpretation Notice is accurate, then the improvements will be made via the proponent.
- Where an agreement is reached in the field that the *Phytophthora* Occurrence Assessment Interpretation Notice is inaccurate, then an amendment will be made and provided by email within 5 business days.

If no agreement can be reached to resolve the dispute at the first meeting, three arbiters will be engaged to objectively assess the dispute:

- The proponent will nominate a registered Interpreter other than the Interpreter whose assessment is under dispute to represent them in a second field meeting. The department will nominate two registered Interpreters to represent DBCA.
- Only the arbiters meet in the field to assess the interpretation area.
- A final decision is made by the three arbiter Interpreters.
- One of the DBCA Interpreters involved will report the outcome and the report is sent by email to all five parties involved.

It is the responsibility of the proponent to cover costs associated with engaging their representative, and the responsibility of the department to cover costs associated with the DBCA Interpreters. If the arbiters who determine the Interpretation Notice are inaccurate, the proponent may recoup the cost of engaging their arbiter from the DBCA at a maximum rate of the [DHSO daily mentoring fee](#) for the period that the Interpreter representative is required in the field.

11 Responsibilities

What	How	Who	When
Determine whether obtaining dieback information is a requirement	Using the <i>Phytophthora Dieback Management Manual</i> (FEM079) risk assessment, determine whether comprehensive valid, or conditional dieback information is required	Proponent/ supervising officer of the disturbance activity	Prior to any disturbance works and planning
Determine the dieback status of the proposed area of disturbance	Using the <i>Phytophthora Dieback Interpreter's Manual for land's managed by the department</i> (FEM047), undertake dieback assessment and provide relevant products to the proponent/supervising officer	Dieback Interpreter registered by the department	Prior to any disturbance works and planning
Submit dieback assessment products for monitoring and auditing purposes	Forward assessment products including field evidence data to DHSO for auditing requirements immediately upon submission by Interpreter	Proponent supervising officer of the disturbance activity	Upon completion of the assessment and prior to planning or any disturbance works
Audit and quality control. Endorsement of assessment	Undertake desktop or field audit of final dieback assessment for endorsement for the proponent	DHSO or delegate	Within 5 business days of submission for low-risk assessments, and within 10 business days for medium and high-risk assessments
Action required improvements (if applicable)	If applicable, any required improvements detailed in <i>Phytophthora Occurrence Assessment Interpretation Notice</i> (Appendix 1) must be completed and the assessment resubmitted for endorsement	Proponent/ supervising officer of the disturbance activity	Prior to any planning and disturbance works
Complete a Dieback Management Plan (DMP) for the disturbance activity	Using the endorsed dieback assessment and the <i>Phytophthora Dieback Management Manual</i> (FEM079), complete a DMP for the disturbance activity	Proponent/ supervising officer of the disturbance activity	After dieback assessment is endorsed and prior to any disturbance works
DMP monitoring and compliance	Monitor and record compliance for approved DMPs, both in the Disturbance Assessment System (DAS) and on site	DHSO or delegate	Monthly (in DAS); During and/or post disturbance (on site)

What	How	Who	When
Identify areas that require future monitoring	From information obtained during field audits, DMP monitoring and site visits, record hygiene breaches and standards failure to monitor and record for disease spread	DHSO or delegate	During and/or post disturbance

12 Standards

Standards for interpretation are defined by the *Phytophthora Dieback Interpreters' Manual* (FEM047; PDIM). For the purposes of this procedure, these standards have been condensed into 10 criteria and 12 causative factors.

Criteria for product compliance combine PDIM standards with the potential to directly result in disease spread during operations. The importance of meeting these criteria to achieve effective hygiene management is indicated by the severity rating of either major or moderate. Causative factors relate to PDIM standards that underpin best practice methodology. Causative factors will therefore contribute to product compliance, but not be directly associated with severe outcomes such as disease spread during operations.

Major criteria:

1. No exaggerated infestations
2. No missed infestations
3. Data has integrity and is without fabrication
4. Basic Raw Materials (BRM) assessment and recommendations applied correctly

Moderate criteria:

5. Client needs verified and met (demarcation, map, report)
6. Uninfested/uninterpretable categories applied correctly
7. Protectable and unprotectable applied correctly
8. Sample technique and strategy supports diagnosis
9. Not yet resolved category applied correctly
10. Impact assessment applied correctly

Causative factors:

- A. Distinguishes dieback symptoms from other causes of plant death
- B. GPS evidence data supports disease categories
- C. All available historical information considered
- D. Demarcation clear in field
- E. Buffer free of infestation

- F. Appropriate buffer width
- G. Rationalisation applied correctly
- H. Map information is accurate and complete
- I. Report information is accurate and complete
- J. Transects applied correctly
- K. Linear assessment methods applied correctly
- L. Excluded category applied correctly

Table 5: Criteria for product compliance and their relevant causative factors and Phytophthora Dieback Interpreters' Manual (FEM047; PDIM) Assessable Standards.

	No.	Criteria for product compliance	Causative factors	PDIM (FEM047)	
				Standards	Sections
Major criteria	1	No exaggerated infestations	A, B, C, F, G, L	3, 4, 5, 9, 15, 25, 43	6, 7, 8, 10
	2	No missed Infestations	B, C, E, J, K, L	5, 7, 9, 25, 36, 37, 38, 40, 43	6, 7, 8
	3	Data has integrity and is without fabrication	B, H, I	5, 11, 25, 27, 28, 29, 30, 31, 32, 33	6, 8, 14
	4	Basic Raw Materials (BRM) assessment and recommendations applied correctly	B, C, L	5, 9, 25, 43, 44, 46	6, 7, 8, 13
Moderate criteria	5	Client needs verified and met (demarcation, map, report)	D, E, F, G, H, I, K, L	2, 13, 14, 15, 16, 17, 27, 28, 29, 30, 31, 32, 33, 34, 35, 38, 39, 40, 43	5, 8, 10, 13, 14, 16
	6	Uninfested/Uninterpretable categories applied correctly	B, C, J, L	5, 8, 9, 12, 36, 37, 40, 43,	6, 7, 8, 9
	7	Unprotectable/Protectable applied correctly	B, C, E, F, G, L	5, 9, 12, 15, 25, 50	6, 7, 9, 10, 13
	8	Sample technique and strategy supports diagnosis	A, B, C, E, F	4, 5, 6, 9, 15, 18, 19, 20, 21, 22, 23, 24, 25, 41, 42, 45	6, 7, 8, 10, 11, 13
	9	Not yet resolved category applied correctly	A, B, C	4, 5, 9, 25, 47, 48	6, 7, 13
	10	Impact assessment applied correctly	A, C, D	4, 9, 49	6, 7, 12

13 Annual Reporting

All breaches in standards will be recorded, and the DHSO will provide the Interpreter organisation with a summary at the end of the registration period.

For DBCA employees, the annual update will be sent to the Interpreter's supervisor. For FMB, their annual report will be sent to the Disease Hygiene Coordinator and Branch Manager.

A summary of audits will be provided to the EHB Branch Manager for the Executive Director, CEMD annually.

14 Proponents operating on non-DBCA managed lands

Proponents operating on non-departmental lands will at times engage a DBCA registered Interpreter to conduct *Phytophthora* Occurrence Assessments. The proponent has an option to submit the final products supplied for auditing if they require additional quality assurance. The initial endorsement following a desktop risk assessment is free of charge. If considered high risk, the proponent may request a field audit to be undertaken by the DHSO at a cost. Field audits are not a re-assessment by the DHSO, but are a targeted review of high-risk areas, anomalies, and areas where evidence data does not support mapping and demarcation.

For further information, direct enquiries to the DHSO.

Appendices

Appendix 1: *Phytophthora* Occurrence Assessment Interpretation Notice

The *Phytophthora* Occurrence Assessment Interpretation Notice (Interpretation Notice) template is shown here. Blue text is used to identify guidelines for completing the Notice.

Phytophthora Occurrence Assessment Interpretation Notice



Department of **Biodiversity,
Conservation and Attractions**



Enquiries:
Phone:
Email:
Reference code:

Assessment name

District

Area of project (Ha)

Proponent name

Proponent representative name/contact

Date of issue:

INTERPRETATION NOTICE – Assessment name

The Disease Hygiene Standards Officer (DHSO), Plant Diseases Program, Ecosystem Health Branch, Department of Biodiversity, Conservation and Attractions (DBCA), administers the system for registration of *Phytophthora* Dieback Interpreters and is responsible for auditing *Phytophthora* Dieback Occurrence Assessments prior to disturbance activities.

A *Phytophthora* Occurrence Assessment Interpretation Notice is activated when there is a breach in the major or moderate rated criteria for product compliance. The Interpretation Notice is issued to the proponent who engaged the interpreter organisation.

It is the responsibility of the proponent that the improvements (as per the attached Table 1) are made by a registered dieback Interpreter before commencement of soil disturbance operations can occur.

Please note, improvements listed in Table 1 may include breaches in core criteria; when these criteria are placed in the Corrective Actions column, they will require improvement as well.

Once improvements are made, supporting evidence must be sent by the proponent to dhs@dbca.wa.gov.au

The DHSO (or delegate) will check the newly submitted evidence to ensure all improvements were made as itemised to satisfaction. If in this process information provided by the proponent is incomplete or inaccurate, or if new breaches in Criteria for Product Compliance are found, the DHSO (or delegate) will reissue a new *Phytophthora* Occurrence Assessment Interpretation Notice.

Please refer to breaches in criteria for Product Compliance in Table 1 below.

Table 1: Criteria for product compliance that require improvement. Improvements required described in corrective actions column.

Breach No.	Criterion breached ^a	Severity ^a	Details of breach in product compliance	Causative factors ^a	Corrective actions	Due date for improvements
Numbering to identify individual breaches within a single Notice. List in order of descending severity.	Identify breached standard.	Major or Moderate only.	Describe breach in product compliance. Include GPS coordinates, snips of dieback map sections and photos to clearly indicate areas of concern.	Identify likely causative factors and reasoning for criteria breach.	Describe improvements needed to address the breach in product compliance.	Proponent to fill in this column

^a See Section 12 of the *Procedure for the Auditing of Phytophthora Occurrence Assessments* (FEM068-A).

Appendix 2: Risk assessment results

Complete evidence sets are submitted for desktop endorsement to the Disease Hygiene Standards Officer (DHSO) by proponents who wish to perform disturbance operations. This occurs after handover of dieback interpretation information from Interpreters, prior to planning.

Evidence endorsement assessment will only commence after complete evidence sets (i.e., Protectable Areas Map, report and GPS point and track data) are supplied. This assessment is a desktop endorsement on the evidence supporting diagnosis and may result in a field check.

An example of a risk assessment result is shown in Table A2.1.

Table A2.1 Example risk assessment result

Assessment – example 2023 – 1 Solia 5			
<p>Has the Interpreter supplied all the evidence required?</p> <ul style="list-style-type: none"> If no, the assessment will be categorised as high risk and field checked, causing possible delays to endorsement. If yes, delays due to field checks will not occur unless major or moderate nonconformities are found. <p>For quality assurance, some low-risk assessments may be field checked when mutually convenient for the Plant Diseases Program and proponent. No delay to operations should apply.</p> <p>Field check results should be supplied within two weeks. Contact the DHSO for enquiries.</p>			
<p>1. DHSO Endorsement (Mark result)</p>	<p><input type="checkbox"/> Yes Disturbance operation may commence</p>	<p><input checked="" type="checkbox"/> Conditional Proponents must adhere to conditions. (Section 3 below)</p>	<p><input type="checkbox"/> No Work cannot commence until a field check has been completed</p>
<p>2. Risk Rating (Mark result)</p>	<p>Low</p> <p><input type="checkbox"/></p>	<p>Moderate (Endorsement at DHSO discretion)</p> <p><input checked="" type="checkbox"/></p>	<p>High</p> <p><input type="checkbox"/></p>
<p>3. Conditional Approvals (mark all that apply): Disturbance operations may commence planning/operation, subject to the following conditions:</p> <p><input checked="" type="checkbox"/> Operation ceases prior to June to avoid wet soil conditions.</p> <p><input type="checkbox"/> Operation can proceed except within high-risk areas defined in attached map.</p> <p><input type="checkbox"/> Other please specify:</p> <p>_____</p> <p>_____</p>			
<p>4. Conditional approval review (after DHSO field check has occurred):</p> <p>Date of review: _____ Reviewing Officer: _____</p> <p><input type="checkbox"/> This <i>Phytophthora</i> occurrence assessment (assessment) has since been field checked and is endorsed by the DHSO*.</p> <p>No major or moderate nonconformities were detected.</p> <p>Works may now commence without being subject to above conditions.</p>			
<p>Disclaimer</p> <p>* Proponents should note that field checks are not a re-assessment by the DHSO, but are a targeted review of high-risk areas, anomalies, and areas where evidence does not support diagnosis.</p> <p>* Operations proceeding without endorsement, or any breaches in agreement between the Plant Diseases Program and the proponent will result in a field check by default. If operations have commenced, a Work Improvement Notice (WIN) will be issued, resulting in works ceasing and delays occurring while checks and improvements are completed.</p>			

Appendix 3: Supplementary skillset definitions

Dieback impact mapping

This refers to the mapping of *Phytophthora* Dieback impact where the area expresses current high or very high impact categories. In areas not yet infested, the proponent may require impact mapping be allocated based on predicted impact. Predicted impact is based on the expected impact over time and requires that Interpreters differentiate between vegetation and landform types, combined with local physical characteristics indicating the area could express high or very high impact disease expression. Through the application of these categories a change in management and operational activities can be recommended.

Areas of low interpretability

The low interpretability zone is the description of an area prone to subtle disease expression. This zone is within the mean annual rainfall band of 400-600 mm/year, which includes parts of Geraldton Sandplains, Avon Wheatbelt, Mallee and Esperance Plains bioregions. Mapping *Phytophthora* Dieback becomes seasonally difficult in these areas due to drought and unreliable sample results. Within this zone, Interpreters have the option to use the temporary 'Not Yet Resolved' (NYR) category, to allow for the reinterpretation of the area to occur when seasonal changes are conducive to sampling. With low interpretability assessments, a large number of symbols are used to record the increased number of observations that are required for this assessment type (Appendix 4).

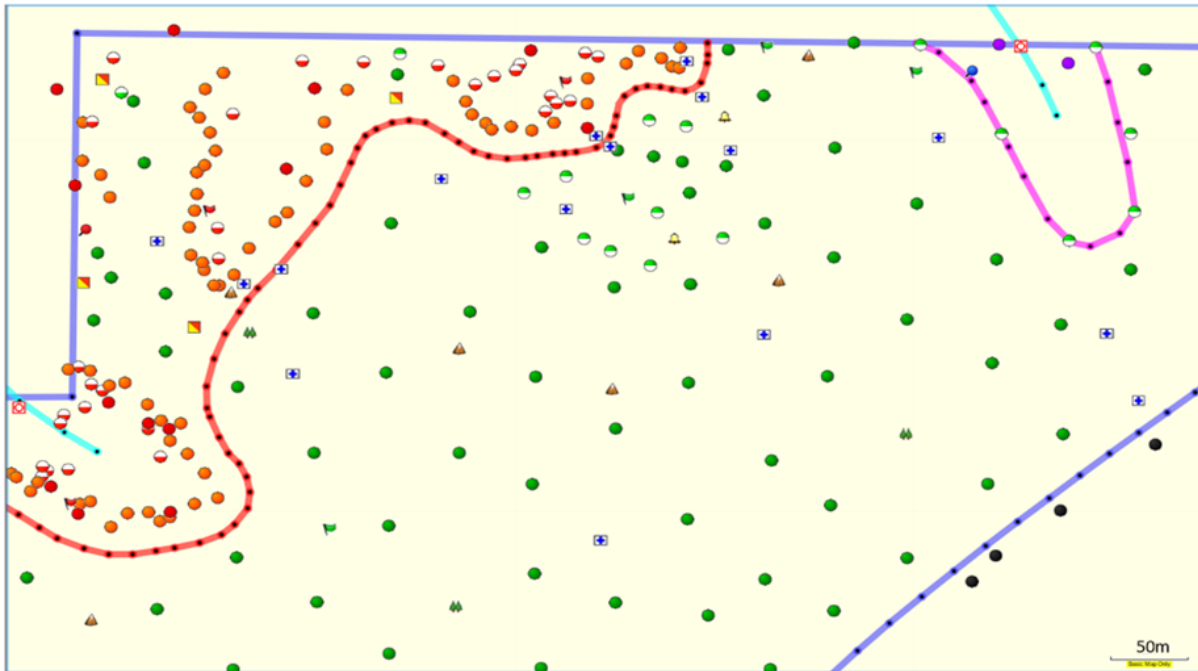
Karri regrowth

When a *Phytophthora* Dieback occurrence assessment is required in karri forest regenerated post 1960, interpreters will use karri-regrowth assessment procedures. Prior to the practice of hygiene management in karri, infested material is known to have been placed into uninterpretable areas, the unprotectable category for these areas are frequently assigned. As with areas of low interpretability assessments, a large number of symbols are used to record the increased number of observations that are required for this assessment type (Appendix 4).

Mining rehabilitation

This involves the interpretation of an area which was managed using appropriate hygiene. Interpreters in this assessment type will often determine protectable status by assessing the adjacent undisturbed areas and using principles derived from other types of dieback assessments. A large number of symbols are used to record the increased number of observations that are required for this assessment type (Appendix 4).

Appendix 4: Example of expanded symbology for evidence collection, including for supplementary skillsets



<p>Black text - core evidence</p> <p>Purple text – used in karri, low interpretability and mine rehab skillset</p> <p>↑</p> <ul style="list-style-type: none"> Positive Sample Old Pc tape or blazing Indisputable infested evidence only Infested edge death directly adjoins uninfested Deaths possibly/probably Pc Unprotectable above symbols are not found in protectable areas Area unresolved (Not yet resolved category) Other Phytophthora sample result Armillaria Death examined, not Pc related Shale Gravel pit Landing Deep snig tracks from wet operation Feral animal disturbance, pig trenches Excluded category Permanent uninterpretable Old Uninterpretable tape/blaze Temporarily uninterpretable Uninterpretable, has the odd healthy indicator Marginal uninfested/uninterpretable Sample Negative Uninfested Highly interpretable, no ISD's visible <p>↓</p>	<p>Drainage</p> <p>↑</p> <ul style="list-style-type: none"> Stream crossing/Bridge Water course/stream Surface Water Culvert/Drain Sump Ridge, hilltop or highest point 	<p>Temporary points – not used in final data</p> <ul style="list-style-type: none"> Tapes installed Sample site flagged Indicator death, uncommitted in category Sample taken result pending Transect start/finish
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Glossary

Term	Definition
Assessable Standards	A set of standards considered benchmarks when conducting <i>Phytophthora</i> occurrence assessments on CALM Act lands. Interpreters will use these standards to monitor and measure the products they produce and the procedures undertaken during assessment.
Advisory Note 4	An internal document to outline the procedures for issuing and managing Notifications and Works Improvement Notices.
Assessments	<i>Phytophthora</i> dieback occurrence assessments.
Buffer	An intervening area reducing the risk of interaction. In <i>Phytophthora</i> Occurrence Assessment this refers to the area between the edge of visible disease symptoms and demarcation.
CALM Act lands	'Public land' as defined in section 81 of the <i>Conservation and Land Management Act 1984</i> : <ul style="list-style-type: none"> a State forest or timber reserve; and any land vested in the Crown and not contracted to be granted or transferred in fee simple and includes — <ul style="list-style-type: none"> land of which pastoral leases are held under Part 7 of the <i>Land Administration Act 1997</i>; land held as mining tenements under the <i>Mining Act 1978</i>; and any land reserved or dedicated under the <i>Land Administration Act 1997</i> but the care, control and management of which are placed with some person other than the Crown.
Clean down	The practice of physically removing any material from a carrier that could harbour <i>Phytophthora</i> and other contaminants, such as weed seeds. There are two main types of clean down: wet (e.g. washing) and dry (e.g. brushing and blowing).
COE	'Clean on Entry' which is the requirement and practice of ensuring a carrier is clean before passing a designated point.
Consequence	The potential impact of <i>Phytophthora</i> if it is introduced to and becomes established in an uninfested area.
Demarcation	The physical installation and representation of boundaries between hygiene categories after interpretation.
DHSO	The Disease Hygiene Standards Officer (DHSO) is the Ecosystem Health Branch officer responsible for auditing dieback assessments, Dieback Management Plans (DMPs), and identifying areas for future monitoring.
Dieback	See <i>Phytophthora</i> Dieback
Dieback Management Plan(s)	Are plans put in place to minimise the introduction or spread of <i>Phytophthora</i> and other pests and diseases. DBCA use the form in FEM079 as the proforma for Dieback Management Plans which list the tactics and measures to be put in place to minimise risk.
Dieback risk	Likelihood and consequence of <i>Phytophthora</i> being introduced to an uninfested area and becoming established to cause dieback.
Dieback status	Refers to whether an area is infested, uninfested, uninterpretable or unknown as assessed by a registered <i>Phytophthora</i> Dieback Interpreter.
Disturbance activity	An activity in which soil is intentionally or unintentionally disturbed and/or moved, or where <i>Phytophthora</i> is likely to be transported.

Term	Definition
DMP	See Dieback Management Plan(s)
Dry	Conditions where dust forms when exposed soil is disturbed.
Endorsement	Written confirmation from the DHSO (or delegate) stating that the Dieback assessment evidence data and products are considered appropriate with low risk of misdiagnosis of <i>P. cinnamomi</i> .
Hygiene	Practices centered around the cleaning and standards of cleanliness for carriers, to reduce the likelihood that <i>Phytophthora</i> will spread from infested areas and be introduced to uninfested areas.
Infested	A dieback occurrence category for an area that an Interpreter has determined is infested with <i>Phytophthora cinnamomi</i> through a systematic assessment.
Interpretation	See <i>Phytophthora</i> occurrence assessment
Interpretation notice	A <i>Phytophthora</i> Occurrence Assessment Interpretation Notice is activated when there is a breach in the major or moderate rated criteria for product compliance. The Interpretation Notice is issued to the proponent who engaged the interpreter organisation.
Interpreter	See Registered <i>Phytophthora</i> Dieback Interpreter
Likelihood	In the context of a dieback risk assessment, the probability that <i>Phytophthora</i> will be introduced to an uninfested area. In the context of risk assessments performed on assessment evidence, the probability of misdiagnosis of <i>P. cinnamomi</i> or of missed <i>P. cinnamomi</i> infestations.
Moist	Conditions where soil is damp but does not stick to carriers.
<i>Phytophthora</i>	<i>Phytophthora</i> is a genus of plant pathogens. Over 40 species of <i>Phytophthora</i> have been detected in Western Australia including <i>Phytophthora cinnamomi</i> , which is considered one of the greatest threats to the biodiversity of the south-west of the State.
<i>Phytophthora</i> dieback (dieback)	The common name for the disease in native ecosystems caused by plant pathogens from the genus <i>Phytophthora</i> .
Registered <i>Phytophthora</i> dieback Interpreter (Interpreter)	Refers to an experienced individual who is registered by DBCA following successful evaluation to undertake occurrence assessments to detect, diagnose and map the presence of <i>Phytophthora</i> in the landscape.
PDIM	The <i>Phytophthora</i> Dieback Interpreters Manual is the manual which describes the procedures and standards registered Interpreters use to undertake <i>Phytophthora</i> Dieback Assessments.
<i>Phytophthora</i> occurrence assessment (Interpretation)	A systematic assessment of an area, undertaken by a registered <i>Phytophthora</i> dieback Interpreter, to detect, diagnose and map the presence of <i>Phytophthora</i> . Also referred to as 'interpretation'.
Proponent	For the purposes of <i>Phytophthora</i> management, a person or entity who proposes disturbance activities within the vulnerable zone
Protectable	Protectable areas are areas deemed to be uninfested or uninterpretable and able to be managed to reduce likelihood of an incursion of <i>Phytophthora</i> .
Standards	A set of assessable qualities and metrics which must be met for a <i>Phytophthora</i> occurrence assessment to be endorsed.

Term	Definition
Uninterpretable	Uninterpretable is the collective name for the following dieback occurrence categories: Permanently uninterpretable; Temporarily uninterpretable; Not Yet Resolved; Excluded. In all cases the dieback status is unknown because there are insufficient signs and symptoms of disease, or insufficient indicator species present to enable an Interpreter to determine if the area is uninfested or infested.
Uninfested	An area that an Interpreter has determined to be free of plant disease symptoms that indicate the presence of <i>Phytophthora cinnamomi</i> .
Unprotectable	Areas that are generally infested, or uninterpretable and uninfested but are likely to be engulfed by autonomous spread of the pathogen in the short term. A Registered Interpreter makes a preliminary recommendation that an area is unprotectable and it is reviewed and finalised by a Regional Manager (or delegate).
Valid comprehensive dieback occurrence information	Information that is valid (less than 12 months old) and has been collected by an Interpreter through a comprehensive and structured field assessment of the signs and symptoms of disease, coupled with targeted sampling of soil/plant tissue.
Vulnerable zone	The area of the south-west of Western Australia where dieback occurs when <i>Phytophthora</i> is present. The zone includes all areas of the south-west land division, west and south of the 400 mm rainfall isohyet.
Wet	Conditions where soil and moisture combine so that soil sticks to carriers.