Australian Government

Department of Climate Change, Energy, the Environment and Water

Nature Repair Market

Enhancing Native Vegetation method - proposed design

Consultation paper

October 2025

Cataloguing data

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This publication is available at https://consult.dcceew.gov.au/env-methods-nature-repair-market.

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Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

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1.Consultation process

The Department of Climate Change, Energy, the Environment and Water (the department) is developing proposed methodology determinations (methods) for the Nature Repair Market. This consultation paper outlines proposed policy settings and design elements of an Enhancing Native Vegetation (ENV) method.

This paper does not represent settled policy positions of the Australian Government, nor does it specify the provisions that would ultimately form the method as a legislative instrument. The final design of the ENV method may vary from this paper following consultation, continued method development and legislative drafting. The final ENV method will need to comply with the *Nature Repair Act 2023* (the Act) and the *Nature Repair (Biodiversity Assessment) Instrument 2025* (the BAI).

The development of the ENV method has drawn on technical input and advice from subject matter experts at the Australian National University and the CSIRO. The department has also drawn on broader technical and expert advice, such as advice on implementing the BAI provided by the Biodiversity Assessment Expert Reference Group.

Subject to this consultation and further method development, the department will seek advice from the Nature Repair Committee on the ENV method. In considering its advice to the Minister for the Environment and Water (the Minister), the Committee is required by Section 56 of the Act to publicly consult on a detailed outline of the method. The Committee will invite stakeholders to provide feedback on whether the proposed ENV method complies with the biodiversity integrity standards in Section 57 of the Act. Committee consultation is anticipated to occur in the first half of 2026, and the final ENV method is expected to be legislated in mid-late 2026.

1.1.Have your say public submissions

The department is seeking feedback on this document through its online consultation platform - the Have Your Say platform. Further details are on the department's website at https://consult.dcceew.gov.au/env-methods-nature-repair-market.

You are welcome to provide feedback on the full scope of the proposed method set out in this consultation paper, or you may limit your feedback to particular sections.

Consultation questions to guide your submission are set out in Section 10.

To provide feedback:

- read this consultation paper
- upload your submission via the Have Your Say consultation platform.

You can choose to answer all the questions in Section 10, just those that matter to you, or address other matters in your submission. Please attach any supporting information or evidence where relevant.

If you are unable to submit your feedback through the consultation hub, email naturerepairmarketmethods@dcceew.gov.au. If you would like to be added to our mailing list to receive Nature Repair Market updates, subscribe.

Please submit your feedback **by 10:00pm AEDT 4 November 2025**.

2.The Nature Repair Market

The Nature Repair Market is a voluntary national biodiversity market established under the Act. The market provides a framework for individuals and organisations to undertake nature repair projects to deliver verifiable biodiversity outcomes.

The design and delivery of the market is underpinned by integrity and transparency and includes a legislated independent advisory committee to review proposed methods, a public register setting out key details of each project, and assurance and enforcement by an independent regulator. The market is built on strong legislative and science-based frameworks to give investors and land managers confidence in the scheme.

The department is responsible for the Act and oversees policy, including method development. The Clean Energy Regulator (CER) is responsible for project application and approval processes, the public register of project details and ensuring compliance with scheme requirements.

Eligible participants in the Nature Repair Market include land managers, farmers, First Nations people and organisations, conservation groups and investors.

To participate in the market, proponents need to design a project that meets the requirements of a Nature Repair Market method (see Section 2.1). Project proponents, the persons or entities legally responsible for the project, apply to CER to register their project. The CER ensures proponents deliver their project in accordance with the method and can issue a biodiversity certificate once the project meets conditions set out in the method.

2.1.Methods

Methods are legislative instruments made under the Act that set out how registered biodiversity projects must be carried out, and other matters.

Methods outline project requirements, including:

- the conditions a project must meet to be registered
- the conditions a project must meet for a biodiversity certificate to be issued
- monitoring and reporting
- when to notify the CER
- record keeping
- information that must be listed on the biodiversity market register.

Methods must meet:

- requirements under Section 45 of the Act
- the biodiversity integrity standards defined in Section 57 of the Act
- requirements in the BAI.

This ensures methods are evidence-based, informed by science and set requirements to assess and describe project outcomes in a consistent and comparable way.

The department leads the development of methods. The department engages with experts to provide technical analysis to inform method development and consults broadly with interested stakeholders.

The Minister formally makes methods for the Nature Repair Market. The Nature Repair Committee provides advice to the Minister on the integrity of methods.

The first method for the Nature Repair Market is the *Nature Repair (Replanting Native Forest and Woodland Ecosystems) Methodology Determination* 2025 (the Replanting method). The Replanting method sets requirements for projects that enhance biodiversity in native species by replanting native forest and woodland ecosystems in modified landscapes.

Over time, further methods will be designed to enhance and protect biodiversity across a range of Australian landscapes and support broad participation in the market. More information on methods is available at: Methods for the Nature Repair Market - DCCEEW

2.2. Biodiversity Assessment Instrument (BAI)

The BAI sets requirements for how Nature Repair Market methods define and describe biodiversity and its improvements.

The BAI sets out how methods and projects must:

- describe and assess biodiversity outcomes using a standard set of characteristics
- meet minimum requirements for assessing sites
- use classifications and consistent terminology so projects can be compared
- appropriately interact with First Nations knowledge, values and data, consistent with the Act.

The BAI provides a consistent way to assess registered biodiversity projects and describe the resulting biodiversity outcomes.

The BAI ensures transparency and consistency for Nature Repair Market projects. It enables investors to compare activities and the outcomes of projects that use different methods.

2.2.1Variable biodiversity project characteristics

One of the ways the BAI sets requirements for methods to describe biodiversity and its improvements is through the consistent use of five variable biodiversity project characteristics (variable characteristics).

Each variable characteristic covers an aspect of a biodiversity project that can be measured or reported to provide information relating to the project. For example, the level of protection or enhancement of biodiversity resulting from the project, assessment of progress towards the project's biodiversity outcome or the status of biodiversity in the project area.

The five variable characteristics provided under the BAI are:

- **ecosystem condition:** enhancing the quality of the ecosystem
- **impact of threats:** removing or reducing the impact of threats to biodiversity in native species
- **commitment to protection:** enhancing the protection of biodiversity in native species in the project area
- **threatened species:** improving the capability of the project area to support threatened species
- **culturally significant entities:** protect or enhance culturally significant aspects of the project area.

Characteristics are not mutually exclusive. A single activity may provide benefit under multiple characteristics.

The intent of the five standard variable biodiversity project characteristics is to enable comparison of different types of projects with different objectives. Investors can use this information to judge which aspects of a project are most important to them.

3.Method Overview

3.1.Summary of ENV method requirements

The ENV method would be designed consistent with the legislative requirements of the Act and the BAI. It would also share some features of the Replanting method.

The ENV method would apply to projects that restore, enhance and/or maintain native vegetation in modified landscapes of eastern and south-western Australia. Project starting ecosystem condition states would range from highly degraded to intact. Restoration, enhancement and/or maintenance of native vegetation increases biodiversity by improving the extent and condition of native vegetation and supporting connectivity of habitat for native species in the landscape.

The ENV method would set requirements for how a project is to be implemented, including obligations applying to the person or entity responsible for the project (the project proponent). It would set the requirements for measuring and reporting indicators for the state of ecosystems in the project and changes in biodiversity. This information provides the evidence the CER needs to make decisions, such as issuing a biodiversity certificate. This means that biodiversity certificates are only issued for a genuine environmental benefit that would be unlikely to occur in the absence of the project.

The ENV method would allow for projects that:

- restore native vegetation through revegetation and facilitated regeneration
- enhance the ecosystem condition of remnant vegetation for biodiversity, and/or
- maintain the ecosystem condition of good-quality remnant vegetation.

Projects would comprise one or more activity areas to deliver those management objectives, and all projects would involve the protection of native vegetation in the relevant activity areas for the duration of the permanence period. The ENV method would allow projects involving different combinations of areas with any of the three management objectives set out above, targeting vegetation in different condition states. This approach provides greater flexibility for landholders and project proponents to participate in the Nature Repair Market, as ecosystems with varied condition states are often found within single properties.

The broad scope of the ENV method allows flexibility in the design of projects to restore, enhance and/or maintain native vegetation. This reduces transaction costs for project proponents by avoiding the need to register separate projects for native vegetation at different points along the ecological condition spectrum, and under different methods.

3.2. Alignment with the Replanting method

The ENV method builds on the Replanting method, covering the same area of Australia's landscape (eligible regions) and using similar features, including approaches to:

- monitoring
- vegetation classification
- assignment of reference ecosystems
- the culturally significant entity biodiversity project characteristic.

The use of stratification for projects is also similar, where both methods require project areas to be stratified into activity areas based on:

- ecological similarity (native vegetation type and starting condition state)
- restoration target states appropriate to the project.

The ENV and Replanting methods use similar indicators of ecosystem condition. The progress of each indicator for ecosystem condition is assessed relative to the expected value of the indicator in an undegraded version of the relevant reference ecosystem (benchmark values).

While there are similarities, the expanded scope of the ENV method (more ecosystem types and various starting ecosystem condition states compared with the Replanting method), requires different approaches to method structure and provisions. The main areas of difference are set out below:

- The ENV method would cover multiple ecosystem types, including native rainforests, forests, woodlands, grasslands, heathlands, shrublands and forblands. In contrast, the Replanting method is confined to native forests and woodlands that meet the definition of forest consistent with the definition in Australia's National Greenhouse Gas Accounts (trees ≥2m that provide crown cover ≥20% over an area ≥0.2ha).
- The starting ecosystem condition of vegetation included in the ENV method could be anywhere on the spectrum from cleared to intact, whereas the Replanting method only applies to ecosystems that have been comprehensively cleared.

- The starting states would need to be defined with reference to multiple vegetation strata (ground layer, mid-storey, dominant canopy), because the starting ecosystem condition of native vegetation included in ENV projects can vary so widely. This differs from the Replanting method which defines the starting state based on the ground layer.
- The range of eligible ecosystems and potential starting states under the ENV method means the required management interventions to achieve the desired biodiversity outcome are highly variable. They may involve combinations of different activities undertaken at different intensities and at different times. In contrast, the Replanting method is focused on plantings, with other complementary management activities being undertaken to support the establishment and maintenance of the plantings.
- In setting counterfactual scenarios, the ENV method would accommodate certain situations where the ecosystem condition of the vegetation is likely to improve over time, even in the absence of a project (i.e. an increasing counterfactual). The Replanting method assumes that, in the absence of the project, the vegetation would remain in its starting condition (static counterfactual).
- In projects involving the enhancement and/or maintenance of remnant vegetation, the desired changes in ecosystem condition can be subtle, particularly when compared to replanting cleared forests and woodlands, and may not involve a change in condition state.
    - The department is considering how the ENV method could accommodate projects that enhance ecosystem condition without resulting in a condition state change.
    - The indicators of ecosystem condition in these ecosystems can also vary significantly in response to seasonal variability within and between years (e.g. wet and dry periods). The combination of these issues—relatively small improvements in indicators that vary from season-to-season and year-to-year due to seasonal factors—can make it hard to determine whether the desired biodiversity outcome for ecosystem condition has been achieved. That is, measured change in the indicators may be due to seasonal factors (e.g. a wet period) rather than the project activities. Seasonal factors may also make the biodiversity outcome vulnerable to reversal.
    - These issues will be considered as the method is developed further.

- Another point of difference from the Replanting method is the adoption of more variable biodiversity project characteristics in the ENV method.
  - The Replanting method only adopted the mandatory ecosystem condition biodiversity project characteristic and the culturally significant entity characteristic. These two characteristics would be included in the ENV method, and the department is considering how the following characteristics could also be included:
    - capability of the project area to support threatened species (optional for proponents)
    - commitment to protection of biodiversity in native species (optional for proponents).

Like the Replanting method, many of the requirements for the ENV method would be facilitated by the department's Platform for Land and Nature Repair (PLANR). This makes it easier for proponents to scope potential projects and the likely benefits to biodiversity.

The information to be included in the biodiversity market register required under the ENV method would largely or entirely mirror the Replanting method. This includes:

- the site assessment report
- the project plan (including the project location and identity of the suitably qualified person)
- starting and forecast scores for the project
- starting ecosystem condition states and nominated restoration target states

3.3.The Ecological Knowledge System

The Ecological Knowledge System (EKS) provides the science and environmental information to support the Nature Repair Market. The EKS has been established by the department in partnership with CSIRO. It supports the market by:

- establishing a transparent and authoritative source of information, biodiversity assessment and forecasting capability
- making it easier for market participants to access the ecological information they need.

The design of the method would draw on ecological knowledge synthesised in state and transition models (STMs). It also would use the National Biodiversity Assessment System (NBAS) to calculate contribution to biodiversity persistence.

STMs developed in the EKS would be used to define eligible starting and target ecosystem condition states in the method. The ENV method would require project areas to be stratified into activity areas based on starting ecosystem condition state, the relevant reference ecosystem and the restoration target state (see Section 5.2). This is important because the management actions required to restore, enhance and maintain native vegetation would differ depending on the type of ecosystem and its starting condition state. For example, replanting a diversity of native plant species may be an appropriate management action where native vegetation has been previously cleared and replaced. However, where native vegetation still dominates, removal of threats such as weeds, pests and herbivory to enable natural recruitment of native plant species and ecosystem condition improvement may be more appropriate.

Different ecosystem condition states also differ in their contribution to conserving biodiversity. An ecosystem in reference condition (with a condition score of 1) has the capacity to support all biodiversity that is expected to occur naturally in that ecosystem (if we ignore considerations of spatial scale). An ecosystem with a condition score of 0 (ecosystem completely removed) has no functional capacity to support the biodiversity that is expected to occur naturally in that ecosystem.

The ENV method would use the NBAS to provide a nationally consistent approach to assessing the contribution of a project to conserving biodiversity (see Section 5.5). The NBAS can help market participants compare the benefits of different types of projects. This includes projects that may differ in size, location or types of ecosystems.

3.4. Indigenous knowledge and values

The ENV method would adopt the approach taken in the Replanting method for provisions relating to use of Indigenous knowledge, values and data.

Similar to the Replanting method, these provisions would apply where the project proponent nominates a culturally significant entity for the project, or, where the project design or implementation is influenced by Indigenous knowledge or values. For example, for the purpose of culturally informed project design where:

- an ENV project proposes to include, or be informed by, Indigenous knowledge or values, or Indigenous data, in relation to the project's design or implementation
- the knowledge, values or data would be informed by engagement with relevant Aboriginal persons or Torres Strait Islanders.

The project proponent would need to provide:

- evidence that they have obtained the appropriate attribution for, and consent (permission) for the use of, the knowledge, values or data

- evidence that culturally appropriate approaches are being used for the collection, interpretation, use, recording and governance of that knowledge or those values
- information relating to how the project design and implementation includes or is informed by the knowledge, values or data.

The term relevant Aboriginal persons or Torres Strait Islanders, for a project area, would be defined to mean the Aboriginal persons or Torres Strait Islanders who have a demonstrated connection to the land or waters on or in which the project area is located.

The purpose of these provisions is to ensure that, if a project proponent chooses to use Indigenous knowledge, values or data in the design or implementation of their project, they are required to do so in a culturally appropriate way, including obtaining appropriate consents (permissions) and attributions. This includes the storage and protection of the knowledge, values or data.

Section 8.3 provides further information about culturally significant entities.

4.Eligibility

4.1.Eligible regions

The project area for an ENV project must be located wholly in one or more eligible regions, as delineated in the eligible region map (Map 1). The list of the eligible regions of Australia in which an ENV project could occur would be identical to the list of eligible IBRA[1] subregions provided in Schedule 1 of the Replanting method.

These eligible regions have been selected because they contain landscapes that have historically experienced widespread clearing of native vegetation. Areas of remnant vegetation have often been degraded by a variety of land uses, pressures such as pests and weeds, and can suffer from low levels of ecological connectivity. The restoration, enhancement and maintenance of native vegetation in these regions is a conservation priority because they contain high concentrations of threatened species and ecological communities.

Map 1. Eligible regions map

[1] Department of Climate Change, Energy, the Environment and Water (2024). Interim Biogeographic Regionalisation for Australia (IBRA) Version 7 (Regions). Available at https://fed.dcceew.gov.au/datasets/erin::interim-biogeographic-regionalisation-for-australia-ibra-version-7-regions/about

4.2. Eligible vegetation types

The method would focus on primarily terrestrial habitats, and a list of eligible Native Vegetation Information System (NVIS) Major Vegetation Groups (MVGs) is provided in Table 1 (Section 5.2.2).

Wetlands with emergent woody vegetation would be eligible (excluding intertidal systems), as they are often areas of particularly high biodiversity, including:

- vegetated (palustrine) wetlands (e.g., swamps and marshes), floodplains and riparian areas
- coastal land on the landward side of the high-water mark.

4.3. Ineligible vegetation types

The ENV method would not apply to land under seas or inland waters, including lacustrine wetlands and mangroves. Lacustrine wetlands are characterised by open water, typically found in lakes, reservoirs, or large, modified systems like farm dams. They are defined by their size and their dominance by open water, which can be standing or slow-moving. Intertidal and aquatic ecosystems (other than vegetated wetlands described above) would also not be included.

Projects involving these vegetation types would require a different method design and involve different data and system considerations. The department is engaging with experts to inform development of such potential methods.

5.Project requirements

5.1.Ecosystem condition assessment

All projects would be required to measure and assess the change in the ecosystem condition variable biodiversity project characteristic as a result of the project activities. The ecosystem condition of an activity area or sub-area for the ENV method would be the quality of its ecosystem, measured in terms of its biotic and abiotic characteristics, in comparison with the undegraded reference ecosystem for the activity area or sub-area.

- Section 5.2 of this paper sets out an approach to stratification of activity areas which would be undertaken during a starting state assessment.
- Section 5.4 specifies ecosystem condition indicators used to:
  - assess starting ecosystem condition states
  - monitor change in ecosystem condition by measuring changes in the structure, function and composition of the ecosystem, relative to a benchmark value.
- Section 5.5 outlines an approach to forecasting change in ecosystem condition and contribution to biodiversity persistence due to the implementation of the project.

5.2.Stratification

Stratification is an important early stage of project development involving assessment and evaluation of the potential project area for stratification into activity areas and sub-areas. Proponents need to settle on activity areas within the project area where the proposed project activities would be carried out.

Appropriate stratification is necessary at this stage to identify the biodiversity values of the project area and assess starting ecosystem condition state. Stratification also supports consistent project monitoring and reporting by allowing data to be collected and reported using permanent sampling plots within each activity area.

Each activity area must consist of land that shares the same broad characteristics in terms of MVG of reference ecosystem types, starting ecosystem condition state and restoration target.

The ENV method would require project areas to be stratified into activity areas based on:

- Major Vegetation Groups (MVGs)
- starting ecosystem condition state, in two vegetation layers (namely the dominant stratum and the subsidiary stratum)
- restoration target, involving the planned restoration, enhancement and/or maintenance of one or both of the vegetation strata.

5.2.1 Identification of reference ecosystem(s) and Major Vegetation Groups

The first step in the stratification process would involve classification of the vegetation community or communities. This step is where a reference ecosystem is assigned to an activity area or sub-area. An activity area can contain more than one reference ecosystem, defined at the vegetation association level, (NVIS level 5 or 6), provided they are from the same MVG. Each activity area could only contain one MVG to ensure accurate measurement and assessment of ecosystem condition, and project design. Activity areas with multiple MVGs would not be allowed.

Proponents would use the reference ecosystem as a model to design projects that work towards re-establishment of the natural ecosystem structure, composition and function that is appropriate to the project area. This doesn’t mean the targeted biodiversity outcome for the project would always be to achieve the reference state.

The ENV method would set out a procedure for the assignment of reference ecosystems as is used in the Replanting method. This requires accessing the Prescribed Vegetation Classification System (PVCS) and undertaking field assessment to designate a reference ecosystem. As with the Replanting method, the ENV method would also allow for an adjusted reference ecosystem to account for environmental changes over time.

The dataset used in the PVCS is primarily derived from the NVIS and the state-based vegetation classifications from which the NVIS is assembled. It provides information on the native ecosystems in eligible areas and their natural distributions.

The ENV method would require the assignment of a reference ecosystem to be undertaken by a suitably qualified person. They would need to provide justification of the selection of a particular reference ecosystem based on the PVCS, appropriate field survey information and other evidence. This includes, where appropriate, consideration of likely climate impacts and the use of climate resilient reference ecosystems.

5.2.2Starting ecosystem condition state

The second step in the stratification process involves the placement of land areas with the same MVG into starting ecosystem 'condition states', based on prescribed indicators listed in Table 4.

The ENV method would require native vegetation in an activity area to be of a consistent starting ecosystem condition, allowing for a degree of variability in condition. For these purposes, the method would require proponents to assess ecosystem condition using prescribed biodiversity indicators following procedures below and in Appendix A. Stratification into areas with uniform starting ecosystem condition is important for accurately forecasting and assessing the progress towards the biodiversity outcome for the project.

The ecosystem condition indicators provide a measure of the condition of the vegetation for biodiversity in the dominant and subsidiary strata. The vegetation layers that make up the dominant and subsidiary strata are defined with reference to MVG 'structural groups' – the MVG structural groups are clusters of MVGs that share structural similarities (Table 1). For example, for the *Open forests to open woodlands* MVG structural group, the tree canopy is the dominant strata, and the subsidiary strata is comprised of the mid-storey and ground layers.

Based on the indicators for each stratum, land areas would need to be assigned to 'starting ecosystem condition states' drawn from STMs. The procedure for the assignment of areas to starting ecosystem condition states is summarised in Appendix B.

The proposed approach, where vegetation layers are combined into two strata, reduces the complexity of the stratification process and number of required activity areas. In turn this reduces transaction costs for proponents, for example, by reducing the number of required sampling plots and associated sampling and monitoring effort. The approach also ensures direct alignment with the EKS.

Table 1. MVG structural groups

MVG Structural Group	Major Vegetation Groups
1. Rainforests and vine thickets	• MVG 1 - Rainforests and vine thickets
2. Open forests to open woodlands	• MVG 2 - Eucalypt tall open forests • MVG 3 - Eucalypt open forests • MVG 4 - Eucalypt low open forests • MVG 5 - Eucalypt woodlands • MVG 6 - Acacia forests and woodlands • MVG 7 - Callitris forests and woodlands • MVG 8 - Casuarina forests and woodlands • MVG 9 - Melaleuca forests and woodlands • MVG 10 - Other forests and woodlands • MVG 11 - Eucalypt open woodlands • MVG 12 - Tropical eucalypt woodlands/grasslands • MVG 13 - Acacia open woodlands • MVG 14 - Mallee woodlands and shrublands • MVG 31 – Other open woodlands • MVG 32 – Mallee open woodlands and sparse mallee shrublands
3. Shrublands	• MVG 15 - Low closed forests and tall closed shrublands • MVG 16 - Acacia shrublands • MVG 17 - Other shrublands • MVG 18 – Heathlands • MVG 22 - Chenopod shrublands, samphire shrublands and forblands
4. Grasslands and herbfields	• MVG 19 - Tussock grasslands • MVG 20 - Hummock grasslands • MVG 21 - Other grasslands, herblands, sedgelands and rushlands

5.2.3Restoration target states and transition types for MVG structural groups

The third step in the stratification process is to determine the restoration target states for activity areas under the method drawn from state and transition models specific to each MVG structural group. The combination of starting and target states is then used to identify the type of transition being proposed, classified by four transition types summarised in Table 2.

Depending on the starting ecosystem condition state of each activity area (and the dominant and subsidiary strata respectively), there are restrictions on the restoration target states that can be selected. These limits on the target states available to proponents reflect the biophysical constraints on enhancement of biodiversity condition. In other words, only certain transition pathways are possible, while others are unlikely or impossible depending on the ecosystem. Permitted restoration target states and corresponding transition types for the relevant MVG structural group and starting ecosystem state are provided in Appendix C (Tables C1, C2, C3 and C4).

This approach means that proponents are only able to select restoration target states that are appropriate to the activity area based on starting ecosystem condition state and the relevant reference ecosystem. It provides a consistent way of determining the project outcome for ecosystem condition and certificate issuance thresholds.

By selecting appropriate and achievable restoration targets during project planning, the likelihood of a registered project being issued with a biodiversity certificate can accurately be assessed by the CER.

Different transition types result in different thresholds for certificate issuance and recognition of reversals (see Section 9 and Appendix D). These ecosystem condition states and thresholds will be subject to ongoing refinement before the final method instrument is made.

Table 2. Transition types

Code	Description	STM transition
M	Maintain ecosystem condition of good-quality remnants	No transition to a different STM condition state
E1	Enhancement of ecosystem condition	No transition to a different STM condition state
E2	Moderate enhancement of ecosystem condition	With transition to a nearby STM condition state
E3	Substantial enhancement of ecosystem condition	With transition to a materially different STM condition state

Transition types have been devised to encompass four broad categories of vegetation enhancement that are typical of biodiversity conservation projects:

- **M** - maintenance of good quality native vegetation where subtle changes in ecosystem condition occur but these changes do not shift vegetation into a different STM condition state.
- **E1** - subtle improvement in the ecosystem condition of moderate quality native vegetation with no shift into a different STM condition state.
- **E2** - moderate improvement in the ecosystem condition of native vegetation across a broader condition spectrum and involving a shift into a nearby STM condition state.
- **E3** – substantial improvement in the ecosystem condition of native vegetation across a broader condition spectrum and involving a shift into a materially different STM condition state.

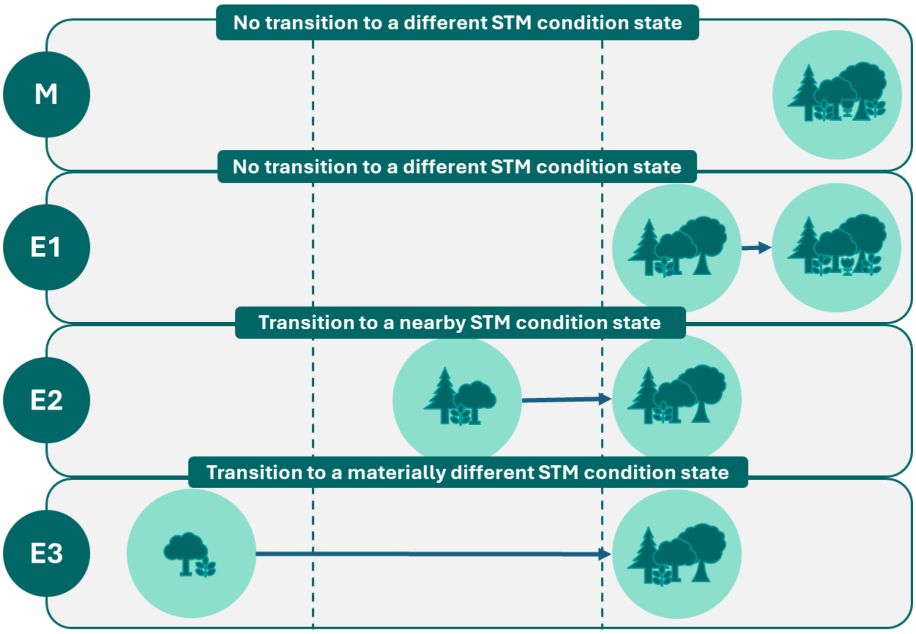
Only activity areas comprised of good-quality remnant vegetation could seek to maintain ecosystem condition (reflecting the limited scope for improvement). There would be no expectation of transition to a higher STM condition state, and the target state is the same as the starting state (transition type M). For vegetation in effectively undegraded condition, this is the only option. The method would set minimum condition thresholds for adoption of M and E1 transition types, using the appropriate STMs.

In all other cases, the projects would need to involve restoration of native vegetation and/or an enhancement in the ecosystem condition of the vegetation. However, proponents could choose different levels of enhancement (transition types E1, E2 or E3), depending on their resources and the scope for improvement in the ecosystem.

An example of an activity area applying an E1 transition would be where there is an increase in shrub cover or a decrease in weed cover, but not enough to transition to a different state. Transition types E2 and E3 apply where target states require a more material change in ecosystem condition and involve transitions to a different state. An activity area applying an E3 transition may be restoring native ecosystems in cleared areas through revegetation.

Each activity area can have only one target state and accompanying transition type. Areas with the same MVG and same starting ecosystem condition but different restoration target states must be separated into different activity areas.

Figure 1: A diagram of the four transition types.

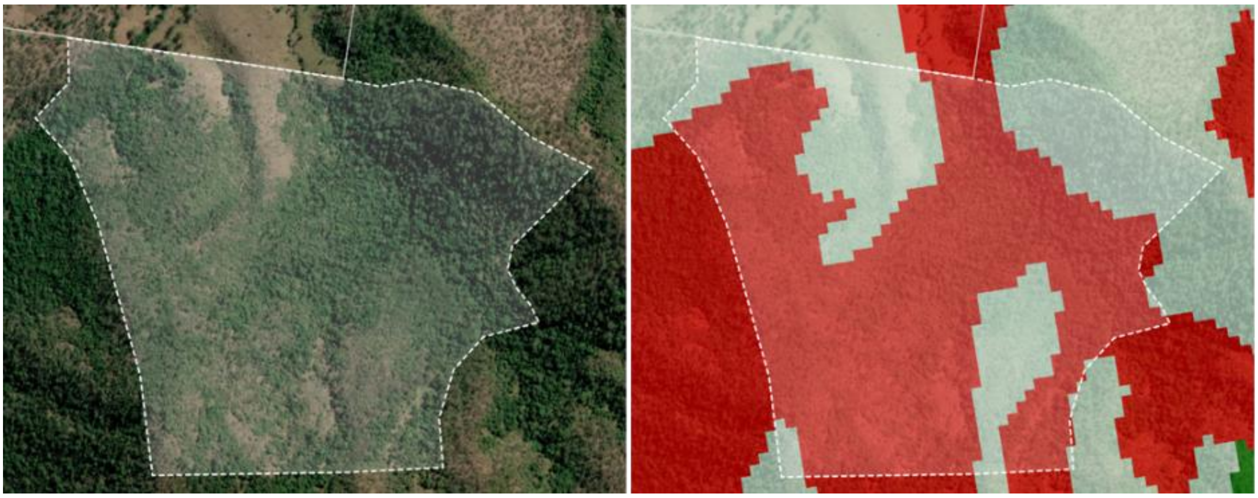


5.3.Hypothetical example project

An example of project stratification under the proposed ENV method is shown in Figures 2 and 3 below, for a hypothetical ENV project.

The aim of the project is to enhance the ecosystem condition of eucalypt woodland and rainforest. The project area contains a mixture of pre-clearing vegetation types from two major vegetation groups. Specifically, eucalypt woodlands and rainforests.

Figure 2: Example project area (boundary is dashed line), showing pre-clearing MVG distributions. Red = rainforest, grey-green = eucalypt woodland



Areas of the two MVGs must be stratified into separate activity areas, with further subdivision according to broad starting ecosystem condition states, which are confirmed using field data, and proponent selected target condition states. The combination of starting and target ecosystem condition states determines the transition type for each area, and sets the thresholds for certificate issuance. This results in 6 activity areas shown in Figure 3, with details in Table 3.

Figure 3: Example project activity areas, identifying areas with common pre-clearing MVG, starting ecosystem condition state and target state

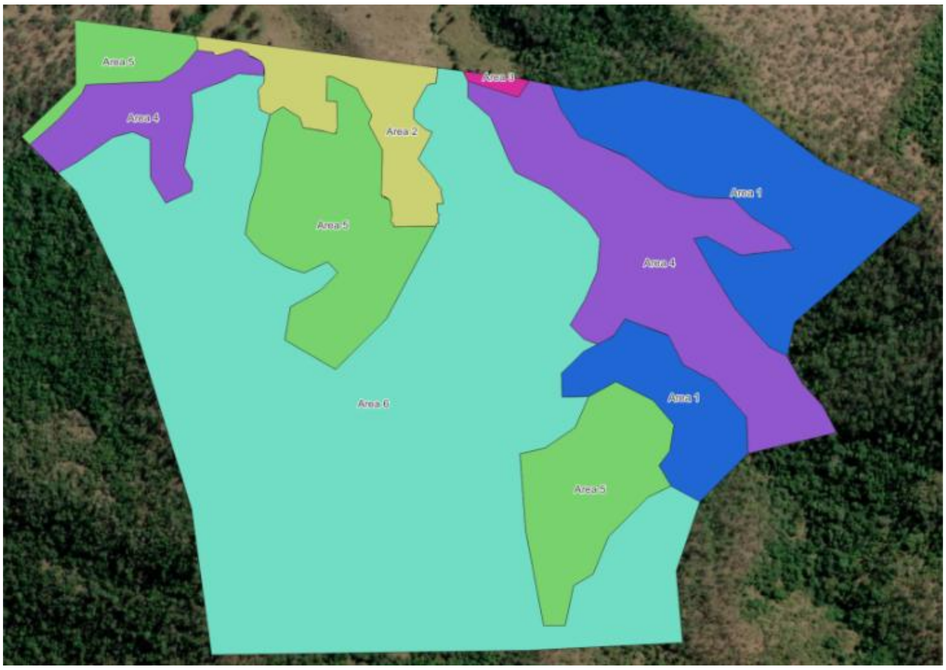


Table 3. Activity areas with ecosystem condition states for start and targets (Appendix B), and corresponding transition types (see Appendix C)

Activity area	MVG group	Starting state description	Starting state	Target state	Transition type
Area 1	2	Good condition eucalypt woodlands	2.7	2.7	M
Area 2	1	Cleared eucalypt woodlands with sparse regrowth	2.22	2.14	E1
Area 3	2	Cleared rainforest with little regeneration	1.22	1.8	E3
Area 4	1	Good condition rainforest	1.7	1.7	M
Area 5	2	Regrowing eucalypt woodlands	2.14	2.14	E1
Area 6	1	Degraded rainforest	1.15	1.8	E3

5.4.Ecosystem condition indicators

The ENV method would require the condition of ecosystems to be assessed and monitored using 13 ecosystem condition indicators, listed in Table 4.

The ecosystem condition indicators measure the capacity of ecosystems to support their native biota by comparing their structure, composition and function to undegraded 'reference' versions of the same ecosystem types. They have been chosen for their ability to communicate broad-based ecological condition change within projects and their ability to demonstrate the project progress towards the restoration target state nominated by project proponents. As with the Replanting method, indicators need to be compared to reference values (benchmarks) specific to the relevant reference ecosystem for each sampling plot, representing the expected value for the ecosystem in an undegraded state. These would be sourced from published benchmarks or would require data collection where published sources are not available.

The starting value for each indicator of ecosystem condition would be measured during a starting state assessment. Repeat measures of indicator values would be required at least every five years for each reporting period to track project progress towards the restoration target states.

The indicators that apply to an activity area depend on the MVG structural group to which the MVG in the activity area belongs. This ensures the indicators are suitable to the MVG in which they are applied.

The ENV method would contain indicators for multiple vegetation layers and lifeforms (e.g. ground layer, mid-storey, tree layer, emergent trees and shrubs etc). The indicators for the different layers and lifeforms are combined to determine the starting ecosystem condition states for the dominant and subsidiary layers, as detailed in Appendix B. The details of these indicators will be subject to ongoing refinement before the final method instrument is made. The requirement to assess and monitor indicators for the different vegetation layers and lifeforms enables robust assessment of the condition states. It also facilitates adaptative management of activity areas and ensures interested third parties, including certificate buyers, can better understand the ecosystem condition of the vegetation for biodiversity.

Table 4. Ecosystem condition indicators

Indicator	Rainforests (Group 1)	Forests & Woodlands (Group 2)	Shrublands (Group 3)	Grasslands (Group 4)
Canopy height (in metres)	✓	✓	✓	
Crown cover from native plants in dominant stratum (%)	✓	✓	✓	
Crown cover from non-native plants in the dominant stratum (%)	✓	✓	✓	
Density of large trees (no.)	✓	✓		
Crown cover from native plants in mid-storey layer (%)	✓	✓		
Crown cover from non-native plants in the mid-storey layer (%)	✓	✓		
Ground cover from sub-category A1, A2 and A3 plants as proportion of total ground cover from category A plants (%) (note 1)	✓	✓	✓	✓
Ground cover from sub-category A1a plants as a proportion of total ground cover from category A plants (%)				✓
Ground cover from sub-category A4 and A5 plants as a proportion	✓	✓	✓	✓

Indicator	Rainforests (Group 1)	Forests & Woodlands (Group 2)	Shrublands (Group 3)	Grasslands (Group 4)
of total ground cover from category A plants (%)				
Recruitment of species from dominant stratum (no. of recruiting canopy species)	✓	✓		
Cover of native emergent trees or shrubs (where they are part of the reference ecosystem) (%) (note 2)			✓	✓
Cover of non-native emergent trees or shrubs measured as a departure from reference (where emergent trees or shrubs are part of the reference ecosystem) (%)			✓	✓
Native species richness index by life form (native tree, shrub, vine, grass and herbaceous vascular plant species other than grasses) (%)	✓	✓	✓	✓

Note 1: Category A and sub-category A1 to A5 plants adopt the same classification used in the Replanting method. These definitions are:

- Category A plant means a living ground layer vascular plant
  - subcategory A1 plant means a living grass from a species that is native to the local area
  - subcategory A2 plant means a living herbaceous vascular plant, other than a grass, from a species that is native to the local area
  - subcategory A3 plant means a living woody plant within the ground layer (less than 1 metre tall) from a species that is native to the local area; this may be a seedling, a vine or a small plant of a native tree or shrub species
  - subcategory A4 plant means a living ground layer plant from a species that is not native to the local area, other than a non-pasture crop species and
  - subcategory A5 plant means a living ground layer plant from a non-native non-pasture crop species.

Note 2: This is relevant when an occasional tree or shrub is present in those MVGs. In the other MVGs, trees and shrubs are counted in the dominant or subsidiary strata.

5.4.1Ecosystem condition monitoring

The proposed approach for measurement and monitoring of ecosystem condition indicators is provided in Appendix A. This includes detailed procedures used to:

- determine the starting values of ecosystem condition indicators for activity areas
- determine the STM starting ecosystem condition state
- monitor progress of the indicators towards the threshold values and nominated restoration targets.

For cleared activity areas that are subject to revegetation, monitoring requirements for ecosystem condition will be similar to those in the Replanting method. For remnant activity areas, where more intensive monitoring can be required to detect changes in condition, especially in good condition remnant vegetation, the ENV method would require monitoring every three years from commencement, then twice within five years after certificate issuance thresholds are met; once in first two years after thresholds met, once after four to five years.

All projects would be required to monitor activity areas after certificate issuance for the permanence period at least every 5 years.

5.5.Forecasting ecosystem benefits

The ENV method would set a period of 25 years within which the biodiversity outcome for ecosystem condition for all projects covered by the method is intended to be achieved. This requirement enables forecast benefits to be compared across different ENV projects.

This period provides confidence in the achievement of the outcome given unpredictable impacts from climate variability and change.

Forecasting the benefits associated with projects involves two key elements:

- setting counterfactual scenarios for each activity area (i.e. the likely ecosystem condition of the vegetation in the absence of the project)
- forecasting change in ecosystem condition and contribution to biodiversity persistence.

5.5.1Counterfactual scenarios for ecosystem condition

A counterfactual scenario for a biodiversity project is a scenario describing what would have happened, or would be likely to happen, in the absence of the project. Counterfactual scenarios are important in the measurement or assessment of change in ecosystem condition that is attributable to the project activities.

For instance, where the counterfactual scenario for the project is static, the measured change in ecosystem condition can reasonably be attributed to the project. An example of a static counterfactual scenario is where, in the absence of the project, the ecosystem condition of the project area would remain unchanged.

In contrast, where the counterfactual scenario for the project is not static (either declining or increasing), the measured change in ecosystem condition would need to be compared with the change that would have happened without the project – and the difference between these two variables is the change that can reasonably be attributed to the project.

The ENV method would specify a process for the proponent to establish the counterfactual scenario against which any change, or forecast change, in ecosystem condition of their project is to be assessed. This would require identification of counterfactual scenarios for each applicable stratum (dominant and subsidiary), based on the MVG structural group. This is important because the strata may have different trajectories in the absence of a project, in addition to variation between MVG structural groups. Given the diversity of MVGs, there may be circumstances in which certain MVGs need a specific process for determining the counterfactual scenario, or the method might specify the counterfactual in some circumstances. These details are under development.

For example, in a native forest with substantial young regrowth of canopy species following a past clearing event or major natural disturbance (e.g. a stand replacing fire), the regrowth of canopy species would often be likely to continue to develop in the absence of the project (increasing counterfactual). This means not all the measured change in ecosystem condition could reasonably be attributed to the project. The forecast ecosystem condition score would need to account for the improvement to ecosystem condition that would occur in the absence of the project. Where there is a non-static counterfactual, that is the forecast change relative to the counterfactual.

In contrast, the mid-storey and ground layer may reasonably be expected to remain in their current ecosystem condition, unless there is a material change in management or other intervention (static counterfactual). The improvement in ecosystem condition attributable to the project for this stratum would be the difference between the starting ecosystem condition score and the forecast ecosystem condition score.

Requiring counterfactual scenarios to be set for each strata ensures these differences in likely trajectory can be accounted for in forecast ecosystem condition scores.

5.5.2Forecasting ecosystem condition and contribution to biodiversity persistence

As part of a starting state assessment, the proponent would be required to calculate the following scores for each activity area including the:

- starting ecosystem condition score for the activity area
- forecast ecosystem condition score for the activity area
- starting contribution to biodiversity persistence score for the activity area
- forecast contribution to biodiversity persistence score for the activity area.

For the purposes of forecasting change in ecosystem condition, the method would use four STMs, one for each MVG structural group.

The modelling is simplified by using the starting ecosystem condition state for the activity areas and the accompanying target state and transition type. This avoids the need to model specific project activities as activity areas are assumed to achieve their nominated restoration target.

For activity areas with M restoration targets (maintenance of ecosystem condition), there is no change in ecosystem condition state, therefore there will be no difference between the starting and forecast ecosystem condition scores. These scores reflect the current and continued contribution of the activity area to protecting and maintaining the ecosystem condition of these areas. Project benefit could also be conveyed through commitment to protection.

For activity areas with targets corresponding to E2 and E3 transitions, the forecast ecosystem benefits would be modelled using a change in ecosystem condition state (set by STMs) relative to the counterfactual.

For activity areas with targets corresponding to E1 transitions, ecosystem benefits would be based on a partial transition to an improved state. The modelling of this E1 transition is still to be determined.

The NBAS provides a nationally consistent approach to assessing the current and expected contribution of an area to biodiversity persistence following successful implementation of project activities. It integrates information from STMs, national spatial datasets and on-ground project data. The NBAS calculates the project's contribution to biodiversity persistence scores at a system/national level. The biodiversity persistence score is a function of the ecosystem condition score for the area, the contribution of the area to enhancing connectivity across the broader landscape, and the conservation significance of the reference ecosystem types in the area. For full details of how NBAS metrics are currently calculated please refer to EKS technical documentation available on CSIRO's website. The current version of NBAS can be accessed through PLANR.

6.Project activities

ENV projects would involve undertaking management interventions, known as project activities, to restore, enhance and/or maintain the ecosystem condition of native vegetation and optionally to enhance or protect other variable characteristics (see Section 8).

There would be five eligible project activities under the method that could be undertaken upon the recommendation of a suitably qualified person. The department is also considering a possible habitat enhancement activity for projects adopting the capability to support threatened species biodiversity project characteristic (see Section 8).

Projects could involve a combination of eligible activities for example, restoration of degraded native vegetation in one activity area, and maintenance of good condition native vegetation in another activity area. The choice of which project activities are undertaken, and how they are undertaken, including technique and intensity, would need to be informed by the ecosystem condition of the activity area and the nature of the prevailing threats. Other factors informing project design would include targeted activities to enhance or protect other variable biodiversity project characteristics, and the cost-effectiveness of relevant management options.

Proponents would be required to undertake one or more of the following project activities in each activity area:

- **Enhanced grazing control**: elimination or reduction in grazing pressure to facilitate regrowth of native species (e.g. grazing-sensitive shrubs, grasses, lichens, mosses etc), improve ecosystem structure and function, and reduce soil compaction, erosion, nutrient enrichment and weed threats.
- **Enhanced weed control**: management interventions to reduce the density and spread of plants that are not native to the local area, particularly high impact weeds such as perennial grasses and herbs, annual grasses and herbs, vines and woody species.
- **Enhanced pest control**: humane management of introduced pests or overabundant native species in accordance with state and territory laws, to reduce impacts on native flora and fauna.
- **Infill planting**: planting native species within remnant vegetation to restore lost species or structure, either through direct seeding, broadcast seeding, the establishment of a tube stock or a combination of these methods.

- **Revegetation through environmental planting and/or facilitated regeneration**: planting or natural regeneration of native species in cleared areas to reduce threats to ecosystem condition, expand the extent of the ecosystem and enhance connectivity. Planting may be carried out through direct seeding, broadcast seeding, the establishment of a tube stock or a combination of these methods.

While proponents have a choice of project activities, specific project and complementary activities must be undertaken in certain circumstances. Notably, in activity areas involving revegetation of cleared land, the proponent must:

- maintain the plantings or regeneration for the permanence period (which may require staggered or remedial plantings)
- undertake appropriate complementary activities to support the establishment and maintenance of the plantings and/or regeneration and minimise threats to the achievement of the biodiversity outcome.

6.1. Grazing management

The ENV method would contain specific requirements concerning grazing management, which are intended to minimise the risks posed by grazing to biodiversity values. The requirements are intended to:

- prevent introduction of grazing into areas that have not been grazed for a substantial period (i.e. 3 years)
- where an area has been grazed more recently, and will continue to be grazed, ensure an adequate minimum rest period (i.e. 3 months) during the primary growth period to allow for recruitment prior to the resumption of grazing.

The length of time for the grazing exclusion window is intended to be broad enough to capture seasonal and interspecific variation in recruitment.

Requirements would include the following:

- Livestock grazing must not be undertaken for the duration of the permanence period in any activity area that was not subject to livestock grazing in the 3 years prior to the date of the project application.
- In activity areas that were grazed by domestic stock in the 3 years prior to the date of the project application, livestock must be excluded from the area for at least 3 consecutive months during the optimal plant growth period for the relevant Natural Resource Management (NRM) region.

- The project proponent must ensure that livestock grazing is not undertaken in any activity area in which revegetation activities are undertaken until the plantings or regeneration have become established, so that 90% of individual trees and shrubs (for species with mature heights of 2m or more) that comprise the plantings in the activity area have reached 1.5m. For plantings that do not include trees or shrubs expected to exceed 2m in height, grazing must not occur until individuals of 80% of species included in the planting have been observed flowering at least once.
- Where grazing pressure (including from livestock, vertebrate pests and overabundant native species) presents a threat either to the establishment of the project, or to the achievement of the project outcome – the project proponent must manage the grazing pressure appropriately, in a manner that is consistent with any applicable Commonwealth, State or Territory laws or policies.

6.2. Beyond requirements of law

Under the Act, the biodiversity integrity standards are intended to ensure that the Nature Repair Market only supports genuine and verifiable enhancement and protection of biodiversity. The first integrity standard requires that a biodiversity project must be designed to result in enhancement or protection of biodiversity in native species (whether the effect on biodiversity occurs within or outside the project area) that would be unlikely to occur if the project was not carried out.

The proposed ENV method settings would support compliance with the first integrity standard by making eligibility contingent on the applicable project activities going beyond what is required by law.

Going beyond existing legal requirements could involve the addition of a new project activity in a project area (e.g. infill plantings) or an increase in the intensity of a pre-existing project activity (e.g. an increase in the intensity of weed and/or pest control).

The method would require project proponents to describe activities in the project plan that are already legally required. It would also require information about any legal agreements or contracts applying to each proposed activity area that impose obligations related to the protection or management of the land. Project proponents would need to explain how the ENV project would be designed to result in the enhancement or protection of biodiversity that would be unlikely to occur if the project was not carried out. This could include explaining how:

- the project’s activities would deliver biodiversity outcomes that go beyond what would be expected under existing legal agreements or contracts, and/or

- the project is only being carried out due to the incentive provided by the scheme, and/or
- the project will provide an incentive to undertake activities to maintain or improve existing biodiversity that have not been financially viable before.

The department is considering whether a further provision may be appropriate in some circumstances – specifying that activities would need to go beyond what was occurring on the land over the 3-years prior to the date of the project application.

6.3. Suitably qualified person

The project activities selected for each activity area must be recommended by a suitably qualified person. As per the Replanting method, this would be a person who:

- has an appropriate qualification in ecology or botany, or in another subject relevant to the ENV project
- has at least 3 years post-qualification experience working as an ecologist or botanist, or in another profession relevant to the ENV project
- has worked as an ecologist or botanist, or in another profession relevant to the ENV project, within the previous 3 years.

The department intends that this definition be open to a wider interpretation, particularly of the terms “qualification” and “profession”. This is to encompass qualifications and professions other than tertiary education institutions (such as First Nations knowledge holders). The definition also leaves flexibility that another “relevant” qualification or profession be sufficient. We would welcome feedback on this in response to the applicable consultation question (section 10).

6.4. Complementary activities

In addition to the project activities listed above, proponents may undertake complementary management activities if those activities:

- support the restoration, enhancement or maintenance of native vegetation and
- do not threaten the achievement of the project outcome.

Complementary activities must be detailed in the project plan. The suitably qualified person responsible for the preparation of the project plan also must certify that the activities satisfy the dot points above.

6.4.1Use of fire

Fire has long played an important role in the Australian landscape and when used correctly can have ecological and cultural benefits. The department is considering how fire would be used in the ENV method, subject to existing laws and standards, building on the replanting method and previous stakeholder feedback. Use of fire as a complementary activity could be implemented in conjunction with, or as part of, other eligible project activities. For example, fire may be used as part of an overall strategy for weed control, or to encourage flowering or germination of particular plant species.

The department is considering three options for how fire could be implemented as a complementary activity.

Option 1 – approach builds on Replanting method

Option 1 would see use of fire provisions modified from those in the Replanting method which act as a backstop, or guardrail, against over-burning while leaving some discretion for projects to use fire as considered appropriate. Where management actions involve the use of fire and those actions are not undertaken to mitigate risks to life, property or biodiversity (including risks from a bushfire or potential bushfire) taken in accordance with relevant Commonwealth, State or Territory laws, the project proponent would need to ensure that:

- burning does not take place within an activity area involving revegetation activities where environmental plantings or regeneration are less than 5 years old
- burning does not take place within an activity area more than once every 7 years
- burning must not affect more than 20% of any single activity area more than once every 5 years, unless limited to the ground layer for the express purpose of removing weed seedbanks
- burning must not be undertaken for 5 years following a bushfire event (bushfire event is defined for these purposes as a wildfire or a prescribed burn undertaken in response to an imminent threat from bushfire).

This option would enable use of fire as part of project management, subject to the conditions above, all applicable permits, and with a fire management plan detailed in the project plan.

Fire regimes vary greatly between different ecosystems and vegetation communities, and so a risk with this option is that these provisions may not be fit for purpose across all scenarios.

Option 2 – approach tailored for major vegetation groups

Option 2 could provide specific use of fire requirements similar to those in option 1, but with requirements tailored to each MVG structural group. For example, use of fire would not be a permissible complementary activity in rainforests (i.e. ecosystems in MVG structural group 1) while it would be allowed in other MVG structural groups with, for example minimum fire intervals that vary between those groups. MVG structural group 4 (grasslands) would be more frequent than option 1, for example.

Option 3 – approach tailored for individual projects

Option 3 could leave use of fire requirements up to the discretion of the suitably qualified person (including with involvement of the relevant Aboriginal persons or Torres Strait Islanders) due to their relevant knowledge of the project area. This could include specified site-assessment requirements to minimise risk and maximise benefits, and ensuring use of fire is appropriate to the project area.

A risk with Option 3 is that inappropriate fire regimes may be recommended and used in some circumstances. This risk could be mitigated by specified requirements for relevant information to be provided in a fire management plan such as:

- details around the frequency and extent of burning
- details on the seasonality of each ecosystem and a justification for when burns will be conducted
- details on how the extent of burns will be controlled
- explanation of the evidence justifying the burning regime
- details on engagement with/involvement of relevant Aboriginal persons or Torres Strait Islanders for the project area, and evidence of consent (permission) to use any Indigenous knowledge in relation to cultural burning
- evidence that any relevant laws and standards have been complied with.

The fire management plan would be prepared as part of the project plan by a suitably qualified person.

Use of Indigenous knowledge relating to cultural fire would need to comply with provisions for interacting with Indigenous knowledge and values in the BAI and the Act.

6.5.Project plan

A project plan would be required to be submitted with an application to register an ENV project. It would need to be maintained and in force for the duration of the permanence period and be updated upon becoming incorrect or out-of-date.

An important function performed by project plans is the matching of project activities with the biodiversity values and threats at the site. The project plan would need to demonstrate that activities would be undertaken using the most effective methods and to an appropriate standard. This would include any actions intended to increase the capability of the project area to support threatened species or threatened ecological communities.

The project plan would need to be prepared and/or certified by a suitably qualified person. It would need to include a program of actions in relation to each activity area, that if implemented, would be likely to restore, enhance or maintain the ecosystem condition of the native vegetation for biodiversity in the activity area. Where relevant, the project plan would need to include justification and any evidence relied upon in the design of the program of actions including any standards or guidance materials (e.g. conservation advice or recovery plans).

6.5.1Climate change considerations

The BAI requires that the project plan identifies how the proponent will reduce the risk (if any) of climate change effects on the biodiversity outcomes of the project.

In the context of the ENV method, the risks posed by climate change relate primarily to:

- the long-term survival and persistence of plantings
- deterioration in the ecosystem condition of remnant native vegetation.

While there are general guidelines for increasing climate resilience in revegetation[2], and in some regions detailed guides are available[3], the lack of a consistent source of information

[2] Hancock, N., Harris, R., Broadhurst, L. and Hughes, L. 2018. Climate-ready revegetation. A guide for natural resource managers. Version 2. Macquarie University, Sydney. Accessible from: http://anpc.asn.au/resources/climate_ready_revegetation

[3] For example Brunswick Valley Landcare (2024). Climate Resilient Landscapes A Planting Guide for The Richmond Valley. Accessible from https://richmondvalley.nsw.gov.au/wp-content/uploads/2024/05/FINAL-Climate-Resilient-Landscapes_edition2_V04.

means that the ENV method cannot be too prescriptive or regionally specific in managing risks of climate change to plantings specifically, and project biodiversity outcomes in general. Instead, the method can require the proponent to identify climate-related risks by drawing on available climate projections and, where relevant, consider factors such as planting diversity, provenance and selecting species that are likely to thrive in a changed climate in planning and undertaking plantings. The project plan provisions could require the identification of data sources and/or tools used in the assessment of climate change vulnerability.

Climate change could adversely affect the ecosystem condition of remnant vegetation through multiple avenues, including by increasing the severity of natural disturbance events (e.g. worsening droughts, more extreme floods and storms), increasing seasonal variability, reducing plant water availability (i.e. decreased precipitation and increased evapotranspiration) and changing the distribution of weeds and pests. In principle, ENV projects should help mitigate these risks by improving the management of remnant vegetation and associated threats.

The following method components have been included to help manage the risks posed by climate change on project outcomes:

- Proponents would be required to review and update the project plan upon it becoming out of date or incorrect. This would facilitate adaptive management to address new and emerging threats, including those associated with climate change.
- For projects with remnant vegetation activity areas, the issuance of biodiversity certificates would be contingent on the biodiversity indicators reaching or exceeding the issuance thresholds and for the indicators being held above the thresholds for at least 5 years. The 5-year delay in issuance is intended to provide increased confidence that the improvements would be able to be maintained over the permanence period, including in the face of climate change.
- The method would include notification requirements to ensure proponents take corrective action in the event that ecosystem condition indicators fall below certificate issuance thresholds, after the biodiversity certificate has been issued.

7.Permanence period

The permanence period sets the time for which the project (and the biodiversity affected by the project) must be monitored and protected.

The Act provides for a mandatory permanence period of 25 (Type A) or 100 years (Type B) unless the method establishes a Type C permanence period. A Type C permanence period commences at the date of registration and ends at the end of the period ascertained in accordance with the methodology determination that covers the project.

The department is considering whether the ENV method could establish a Type C permanence period of between 25 and 100 years. Establishment of a Type C permanence period in this way would be designed to provide flexibility for different circumstances of different projects, while retaining a minimum period of 25 years. For example, a proponent may wish to commit to more than a 25 year permanence period, but less than 100 year permanence period and so may nominate a 50 year permanence period.

8. Variable biodiversity project characteristics

8.1. Variable characteristics in the ENV method

The following variable characteristics would be included in the ENV method:

- ecosystem condition of each of the activity areas (mandatory for a project)
- culturally significant entities of the project area (optional for a project).

This means that:

- all projects under the ENV method would be required to measure, and assess the change in, ecosystem condition as a result of the project activities
- project proponents would be able to nominate to measure, and assess the change in, a culturally significant entity as a result of the project. This would be subject to appropriate engagement with, and knowledge consent (permission) from, the relevant Aboriginal persons or Torres Strait Islanders for the project area.

The department is also considering:

- how the capability to support threatened species characteristic could be included in the proposed ENV method (optional for a project)
    - Project proponents would be able to nominate to measure, and assess the change in, capability to support threatened species, as a result of the project.
- whether it is appropriate and feasible to also include the commitment to protection of biodiversity characteristic (optional for a project)
    - Project proponents could potentially nominate to measure, and assess the change in, commitment to protection, as a result of the project.

8.2. Ecosystem condition

The BAI establishes ecosystem condition as a variable biodiversity project characteristic that is mandatory for all biodiversity projects covered by methods to which the BAI applies. ENV method requirements relating to ecosystem condition are set out in Sections 5 and 9.

8.3. Culturally significant entities

The BAI requires that methods must require or enable project proponents to nominate culturally significant entities that are relevant to the project.

The Replanting method sets out a detailed approach to this characteristic that was informed by advice from First Nations experts involved in development of the BAI. In that method, if a project nominates to enhance or protect culturally significant entities in the project area (and has appropriate knowledge consent (permission) obtained and evidenced from relevant Aboriginal or Torres Strait Islanders), the proponent must:

- identify the activities of the project that will contribute to change in the culturally significant entities
- identify indicators for measuring and tracking change in the culturally significant entities
- describe the starting value, threshold value and forecast value of the indicators of the culturally significant entities
- establish a locally relevant process for the culturally appropriate verification of change to the culturally significant entities, consistent with available guidance
- demonstrate with evidence, that they have appropriately engaged with the relevant Aboriginal persons or Torres Strait Islanders in relation to the above details, and that they are implementing the project in line with the consent (permission) for use of any Indigenous knowledge.

The ENV method would adopt the approach taken to this characteristic in the Replanting method.

8.4. Capability to support threatened species

The eligible region for the ENV method contains a high number of threatened species and threatened ecological communities. This means projects under the ENV method would have significant potential to support the conservation and recovery of threatened species and threatened ecological communities, especially by improving the extent and ecosystem condition of native vegetation.

Inclusion of the threatened species characteristic in this method would enable comparison of projects informed by a score representing the project’s contribution to the conservation and recovery of threatened species. Higher scores for this characteristic could increase the value of these projects to investors.

The threatened species characteristic focuses on potential benefits of the project to threatened species and threatened ecological communities that would benefit from the project. For the purposes of this characteristic, the term 'threatened species' is defined in the BAI as being "a species or ecological community that is categorised as threatened (however described) under a law of the Commonwealth, a State or a Territory."

The threatened species characteristic would not be a mandatory requirement of the ENV method. A proponent may choose to use the threatened species characteristic where the proponent would like to promote the project's benefits to threatened species to potential investors.

The characteristic would be used to transparently and consistently describe the benefits for relevant threatened species and threatened ecological communities from:

- general ecosystem condition enhancement through improved habitat quality or increased potential habitat
- implementing targeted activities that will promote their recovery, such as addressing a key threat or planting and protecting important foraging or nesting habitat.

Possible requirements for the threatened species characteristic under the ENV method are set out in the following Sections. In the following Sections the term 'threatened species' is used to encompass both threatened species and threatened ecological communities, as defined in the BAI.

The requirements set out in the following Sections align, in broad terms, with requirements set out in the BAI. The detail of how these requirements will be met in the method is still under consideration but is likely to include aspects outlined below.

8.4.1Starting state assessment

Assessments of the capability of the project area to support threatened species could require some or all the following:

- identification of which threatened species are relevant to the project area, via consideration of factors such as:
  - the threatened species known to be present
  - habitat suitability for threatened species, including by considering the relevance of the reference ecosystem for the threatened species, how the species might interact with the habitat, and the presence or absence of any important habitat features

    - potential future habitat suitability for threatened species considering the positive impact from project activities and forecast climate change, or
    - a combination of the above where there are different threatened species relevant to a project area
- a measure of importance, such as species listing status or whether the project area contains a high proportion of the threatened species or habitat features important for the threatened species, and/or
- identification of appropriate indicators for the threatened species relevant to the project, considering key habitat features or elements.

The starting state assessment for the threatened species characteristic would be informed by:

- information from monitoring for the ecosystem condition characteristic, as per Section 5
- desktop assessment of existing research and authoritative data sources, such as relevant conservation advices and recovery plans established for threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999.* (EPBC Act*).*

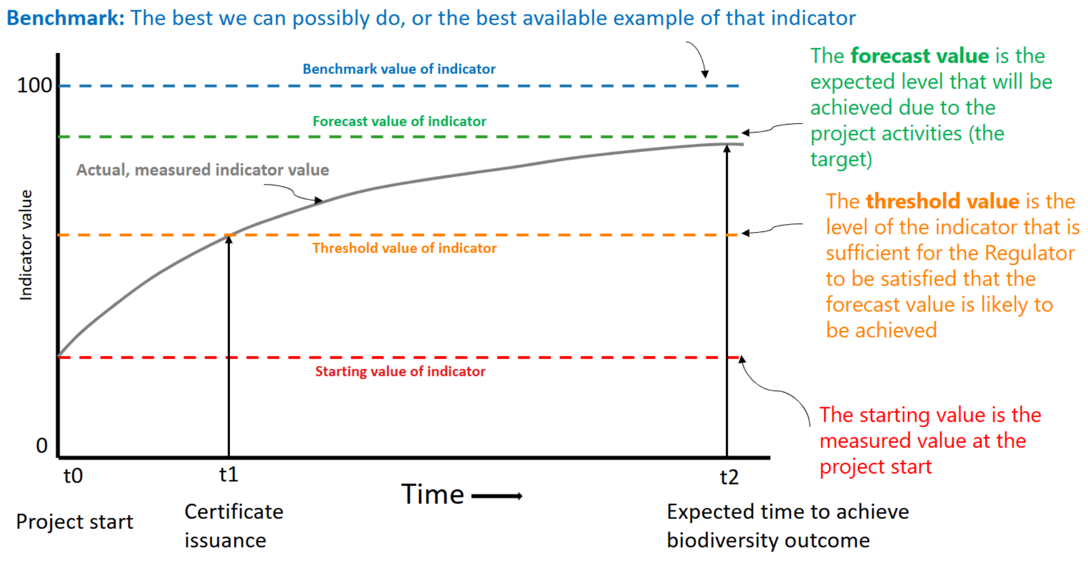
8.4.2Indicators

To measure the capability of an activity area to support threatened species, and the change in that capability due to the project, the ENV method would require characteristic-specific indicators.

As for ecosystem condition, indicators are measured in comparison to a *benchmark value*, which is the highest value an indicator could achieve, or best example of that indicator (e.g. the value of the indicator in the reference ecosystem).

The starting state assessment would identify a *starting value* for each indicator relative to a *benchmark value*. The proponent would need to set a *forecast value* for each indicator to be met by the project, and the *threshold value* for issuance of the certificate, in accordance with any processes or requirements specified in the method.

Figure 4: Relationship between starting, threshold, forecast and benchmark values of indicators.



The proposed indicators for this characteristic are:

- improvement in ecosystem condition, where that ecosystem is known habitat for the relevant threatened species and improvement in ecosystem condition is likely to be of benefit to the species
- improved availability or quality of habitat features or elements (e.g. foraging or roosting habitat) relevant to the threatened species and their use of the habitat, and/or
- reduction in threats relevant to the threatened species.

8.4.3Scoring system

The BAI requires the method to implement a scoring system for projects applying the threatened species characteristic. A scoring system enables meaningful comparison of different ENV projects, and projects covered under different methods, based on their capability to support threatened species.

A scoring system may be represented by qualitative values (for example, ‘low’, ‘medium’, ‘high’, or a star-based rating system). Each project would have a starting project-level threatened species score and forecast project-level threatened species score, enabling the benefit from the project to be clearly identified. A project-level score is likely to be made up of:

- a measure of the importance of the characteristic to the activity area as identified in the starting state assessment. This measure will not change as a result of the project activities
- indicators that measure the change in the capability of activity areas to support threatened species.

Scenario 1 – Threatened species benefit from general ecosystem condition enhancement

A proponent registers an ENV project to improve biodiversity values by protecting and enhancing a large patch of remnant forest. A desktop assessment of the project area and of relevant conservation planning documents, supported by on ground evidence, identifies:

- three threatened ground-dwelling mammals (listed vulnerable under the EPBC Act) that occur either in the project area or in a connected forest as relevant to the project, as they would benefit from habitat enhancement that would increase habitat connectivity for the species.
- that through enhanced ecosystem condition, the project area also has the potential to be suitable habitat for two threatened bird species (listed endangered under the EPBC Act) where habitat is a limiting factor, that are known to occur within the region.

The proponent selects indicators of ecosystem condition as per the ENV ecosystem condition characteristic, including of the different strata that is relevant to the ground dwelling mammals and canopy-dwelling birds.

The scoring system considers both the amount of benefit (measured by the indicators), and the importance of the project to threatened species (as measured in the starting state assessment, e.g. number of species, listing statuses, and significance of the site to the species). The proponent generates a forecast project-level threatened species characteristic score, which will be recorded on the register, alongside the starting project-level score. This informs investors in a quantifiable and comparable way of the benefits the project provides to the capability to support threatened species and ecological communities.

The proponent monitors the indicators and reports that the relevant indicators reach the threshold value. This allows the CER to be satisfied the forecast value will be achieved and issue a certificate.

Scenario 2 – Targeted activities to benefit a specific threatened species

A proponent registers an ENV project to revegetate native ecosystems on partially cleared land. The starting state assessment indicates that the reference ecosystem is a threatened ecological community, which provides suitable habitat for a threatened bird species, listed as endangered under the EPBC Act. There is a recent recorded observation of the species in habitat adjacent to the project area. The project aims to restore the ecological community which is at the edge of its range and enhance habitat for the threatened bird species. The conservation advice for the bird species indicates it has specific foraging requirements. The activity area does not currently meet these requirements.

The proponent undertakes general activities to improve the ecosystem condition of the activity area. The proponent makes specific project activity choices to benefit the species informed by conservation advice including:

- planting specific foraging grasses for the species in the understory
- undertaking feral cat control, as cats are a known key threat to the species.

The enhancement in ecosystem condition benefits both the threatened ecological community by bringing it above the condition threshold to meet key diagnostic criteria to be considered a threatened ecological community, as well as the threatened bird species. The targeted design of the project activities specifically enhances the capability of the project area to support the threatened bird species.

The proponent selects and monitors indicators of ecosystem condition as per the ENV ecosystem condition characteristic that are relevant to the benefits for the threatened ecological community and the threatened bird species. The proponent also selects indicators that measure the increase in ground cover of the specific foraging grasses, measure cat abundance and indicators relevant to key diagnostic criteria for the ecological community.

The scoring system considers both the amount of benefit (measured by the indicators), and the importance of the project to threatened species (as measured in the starting state assessment, e.g. number of species, listing statuses, and significance of the site to the species). The proponent generates a forecast project-level threatened species characteristic score, which will be recorded on the register, alongside the starting project-level score. This informs investors in a quantifiable and comparable way of the benefits the project provides to the capability to support threatened species and ecological communities.

The proponent monitors the indicators and reports when the relevant indicators reach the threshold value. This allows the CER to be satisfied the forecast value will be achieved and issue a certificate.

The detailed design of the capability to support threatened species variable biodiversity project characteristic – including indicators and the scoring system – is still being worked through. Following stakeholder feedback and expert advice, the proposed indicators and scoring system will be settled for use in the ENV method. Details provided above may be subject to change and improvement.

8.5. Commitment to protection characteristic

One of the objectives for the ENV method is maintenance of good-quality native vegetation (see Section 3.1) This means that projects under the ENV method have significant potential to contribute to long-term protection of biodiversity, where there is a commitment from the proponent to do so.

Inclusion of the commitment to protection characteristic in this method could help proponents clearly communicate their project's contribution to protection of biodiversity. This may be particularly important for projects where there is limited observable change in ecosystem condition and the main project benefit would be conveyed through commitment to protection.

The commitment to protection characteristic would be optional for proponents and would not be a mandatory requirement of the ENV method. A proponent may choose to use the characteristic where the proponent would like to promote the project's protection contribution to potential investors.

The detailed design of the commitment to protection characteristic – including indicators and the scoring system – is being developed in the context of the proposed Protect and Conserve method. When this characteristic is further developed the department will consider its appropriateness for inclusion in the ENV method.

9. Certificate application and issuance

9.1. Conditions to apply for a certificate

The ENV method would set conditions for an application to be made for a biodiversity certificate when:

(1) for all activity areas in the project, each indicator of ecosystem condition has reached the specified threshold value in Appendix D for the prescribed number of sampling plots

(2) the application includes a statement to this effect and supporting evidence in the form of a monitoring report demonstrating achievement of threshold values has been met

(3) a minimum of 5 years has passed since project registration and the requirements in (1) have been satisfied in two or more consecutive monitoring reports.

The department will consider the appropriateness these requirements alongside certificate issuance requirements for the proposed Protect and Conserve method.

The period of 5 years before an application can be made is intended to provide a high degree of confidence that threshold values have been met and maintained over two reporting periods.

For projects with remnant vegetation activity areas, the issuance of biodiversity certificates would be contingent on the biodiversity indicators reaching or exceeding the issuance thresholds and for the indicators being held above the thresholds for at least 5 years. The 5-year delay in issuance is intended to provide increased confidence that the improvements will be able to be maintained over the permanence period, including in the face of climate change.

To account for natural site variability, the ENV method would set different thresholds depending on the size of relevant activity areas. These thresholds are:

- for activity areas <10 hectares in size—each threshold value must have been reached in 100% of the permanent sampling plots in the activity area
- for activity areas ≥10 hectares in size – each threshold value must have been reached in ≥75% of the permanent sampling plots in the activity area.

For projects which engage with additional variable biodiversity project characteristics, thresholds for each applicable characteristic would also need to be met by a project prior to the application and issuance of a biodiversity certificate.

9.2.Conditions for a certificate to be issued

The ENV method would set conditions to be met for a certificate to be issued by the CER. The CER would need to be satisfied that, for each activity area, the threshold value has been met for each indicator of ecosystem condition from the applicable MVG structural group provided in Appendix D (Tables D1, D2, D3 and D4). The threshold values represent the maintenance or change in ecosystem condition for the project that is sufficient for the CER to be satisfied that the project outcome for ecosystem condition is likely to be achieved.

Threshold values for other variable biodiversity characteristics must also be met, for projects which engage with characteristics in addition to ecosystem condition.

10. Consultation questions

Overarching questions:

1. Will the proposed Enhancing Native Vegetation method support the objective of restoring, enhancing and/or maintaining native vegetation in modified Australian landscapes? If not, how could it best be improved?
2. Do the proposed settings for the method appropriately balance integrity (ensuring the market recognises demonstrable biodiversity outcomes that are based on evidence) with usability for project proponents? In answering this, note that users would usually be supported in developing projects under a method through the CER's website, information products, and spatial information systems like PLANR.gov.au.

The department would welcome specific feedback on the following:

3. The approaches to assessing change in ecosystem condition (section 5) and the project activities (section 6). This includes any feedback on the appropriate minimum thresholds for using M and E1 transition types.
4. The definition of a 'suitably qualified person' who performs an important role in the method. Are there people or scenarios that should be supported in performing this role under the method, but may be excluded by the proposed definition in (section 6.3)?
5. Should projects only need to show that activities or project outcomes are 'beyond the requirements of law' (section 6.2)?
    a. Should there be an additional requirement specifying that activities would need to go beyond what was occurring on the land over the 3-years prior to the date of the project application?
    b. Are there circumstances where grazing (section 6.1) could reasonably be introduced in circumstances where it hasn't been undertaken in the 3 years prior?
6. How use of fire could be incorporated in the method, drawing on the options presented in section 6.4.1. In particular, feedback could focus on:
    a. Do the proposed provisions provide flexibility for cultural and ecological fire?
    b. What provisions might be needed to protect Indigenous knowledge and values if requirements relating to cultural burning are defined?
    c. What would be important inclusions in a fire management plan?
    d. What expertise should a suitably qualified person have to develop a fire management plan?
    e. What additional monitoring requirements if any should be included for a project that uses fire?
7. The potential method settings for the capability to support threatened species characteristic, which covers both threatened species and threatened ecological communities.

a. What information should be required for the starting state assessment, to determine whether a species or ecological community is relevant to the project?

b. Does the proposed approach capture the suite of potential benefits a project can provide to threatened species and ecological communities? Would it be practical to implement this approach?

c. What is the minimum confidence threshold required to determine that the species is relevant, and the selected indicators are suitable for demonstrating a genuine benefit for the species? In what circumstances would on-ground assessment or data be necessary?

d. Are there important elements of the characteristic that should hold more weight in the scoring system? How important is the presence of a threatened species or ecological community compared to potential presence?

e. What expertise should a suitably qualified person have for selecting appropriate indicators, for the capability to support threatened species characteristic, during the starting state assessment?

11.Appendix A: Measurement of ecosystem condition indicators

Establishing permanent sampling plots

Project proponents must establish permanent 50m x 10m sampling plots in each activity area. The sampling plots are used for three main purposes:

- to determine the starting values of the indicators for the activity areas
- to determine the STM starting ecosystem condition state and
- to monitor progress of the indicators towards the threshold values and nominated restoration targets.

The number of required sampling plots in an activity area is a function of its size (Table A1).

Table A1. Number of required sampling plots, by activity area size (in hectares)

Size of activity area	Required number of sampling plots
1 hectare or less	1
Between 1 and 5 hectares	2
Between 5 and 10 hectares	3
Between 10 and 50 hectares	4
Between 50 and 100 hectares	5
100 hectares or larger	7

The sampling plots must be representative of at least 90% of the activity area.

The location of the sampling plots must be determined using a three-step procedure:

1. Subdivide the activity area into equal portions, 1 for each required sampling plot.
2. In each portion, randomly select the location of a sampling plot of 50m x 10m.
3. If necessary, discard the selected locations, and randomly select new ones until the selected locations are, between them, representative of at least 90% of the activity area.

Monitoring techniques

Five monitoring techniques are required to be used in each sampling plot to measure the value of each ecosystem condition indicator.

Measuring canopy height

The height of the canopy must be estimated by:

- select 3 or more representative native trees from the canopy layer in each sampling plot and
- measuring their heights using a clinometer or hypsometer.

Measuring large tree density

The density of large trees must be estimated by:

- identifying trees with a diameter at breast height ≥20cm** in each sampling plot using a diameter tape or similar measuring tape and
- counting the number of those trees.

Diameter at breast height (DBH) means the diameter of the tree trunk(s) measured 1.4m from the ground. Where a tree has multiple trunks at the measured height, the diameter at breast height is the sum of the diameter of all trunks at that height.

**The DBH cut-off value for large trees can be either 20cm or the cut-off specified in an applicable benchmark value for the reference ecosystem.

Point intercept method

The point intercept method must be applied in each sampling plot to assess the number of plant species, the proportion of ground area covered by each plant species and the crown cover provided by native and non-native plant species in canopy and mid-storey layers.

Quadrat method

The quadrat method must be applied in each sampling plot to assess the number of plant species, and the proportion of ground area covered by each plant species in each activity area.

Plot survey method

Plot surveys must be conducted in each sampling plot. These involve:

- a survey of the entirety of the sampling plot and
- the identification and recording of the number and identity of all plant species and
- for activity areas comprised of MVGs from MVG structural groups 1 and 2, identify whether there is any recruitment of plant species from the canopy layer in the reference ecosystem, with plants defined as recruiting when they are ≤2 metres in height (where recruitment is identified, the species of the recruiting plants must be recorded).

Calculating ecosystem condition indicator values

The data collected using the monitoring techniques above are used to calculate ecosystem condition indicator values. The calculations required to obtain indicator values are summarised in Table A2.

Table A2. How to calculate ecosystem condition indicator values

Indicator	How to calculate the value of each ecosystem condition indicator using data collected in permanent sampling plots	Applicable MVG Structural Group
Canopy height (in meters)	Calculate the value of this indicator as the average height of the measured trees or shrubs forming the dominant canopy.	1, 2, 3
Density of large trees	Calculate the value of this indicator as the total number of trees with diameter at breast height either ≥ 20 cm or an applicable benchmark value for the reference ecosystem.	1,2
Crown cover from native plants in the dominant stratum (as a percentage)	Using the data from the point intercept method, calculate the value of this indicator by: a. adding the number of sample points that fall beneath crowns of native plants in the dominant stratum in the sampling plot and b. multiplying the result by two to derive the percentage crown cover.	1, 2, 3
Crown cover from native plants in the mid-storey layer (as a percentage)	Using the data obtained from the point intercept method, calculate the value of this indicator by: a. adding the number of sample points that fall beneath crowns of native plants in the mid-storey layer in the sampling plot and b. multiplying the result by two to derive the percentage crown cover.	1,2
Crown cover from plants in the dominant stratum provided by non-native plants (as a percentage)	Using the data obtained from the point intercept method, calculate the value of this indicator by: a. adding the number of sample points that fall beneath crowns of non-native plants in the dominant stratum in the sampling plot and b. multiplying the result by two to derive the percentage crown cover.	1,2,3

Indicator	How to calculate the value of each ecosystem condition indicator using data collected in permanent sampling plots	Applicable MVG Structural Group
Crown cover from plants in the mid-storey layer provided by non-native plants (as a percentage)	Using the data obtained from the point intercept method, calculate the value for this indicator by: a. adding the number of sample points that fall beneath crowns of non-native plants in the mid- storey layer in the sampling plot and b. multiplying the result by two to derive the percentage crown cover.	1,2
Ground cover from sub-category A1, A2 and A3 plants as a proportion of total ground cover from category A plants. AND Ground cover from sub-category A1a plants as a proportion of total ground cover from category A plants. AND	Step 1 Using the data obtained from the point intercept method, calculate the percentage of ground cover from category A plants that is provided by plants from each of subcategories A1, A2, A3, A4, and A5 for a sampling plot by: a. adding the number of sampling points in the sampling plot assigned to each of subcategory A1, A2, A3, A4 and A5 and b. dividing the sum for each subcategory by the total number of sampling points in the sampling plot assigned to category A plants. Step 2 Using the data obtained from the quadrat method, calculate the percentage of ground cover from category A plants that is provided by plants from each of subcategories A1, A2, A3, A4, and A5 for a sampling plot by: a. for each quadrat—calculating the percentage of ground cover from category A plants that is provided by plants from subcategories A1, A2, A3, A4 and A5 in the sampling plot and	1,2,3,4

Indicator	How to calculate the value of each ecosystem condition indicator using data collected in permanent sampling plots	Applicable MVG Structural Group
Ground cover from sub-category A4 and A5 plants as a proportion of total ground cover from category A plants.	b. for each subcategory—adding the percentage from each quadrat in the sampling plot and divide by the total number of quadrats in the sampling plot. Step 3 Calculate the value (as a percentage) for ground cover from category A plants that is provided by plants from subcategories A1, A2, A3, A4 and A5 for the sampling plot using the means from steps 1 and 2 by: a. for each subcategory—adding the percentage derived from Step 1 to the percentage derived from Step 2 and b. dividing the result by 2.	
Recruitment of species from dominant stratum	Calculate the value of this indicator as the number of recruiting canopy species.	1,2
Cover of native emergent trees or shrubs (where they are part of the reference ecosystem)	Using the data obtained from the point intercept method, calculate the value of this indicator by: a. adding the number of sample points that fall beneath crowns of relevant native emergent trees and shrubs in the sampling plot and b. multiplying the result by two to derive the percentage crown cover.	3,4
Cover of non-native emergent trees or shrubs	Using the data obtained from the point intercept method, calculate the value of this indicator by: a. adding the number of sample points that fall beneath crowns of non-native emergent trees and shrubs in the sampling plot and	3,4

Indicator	How to calculate the value of each ecosystem condition indicator using data collected in permanent sampling plots	Applicable MVG Structural Group
	b. multiplying the result by two to derive the percentage crown cover.	
Native species richness index by life form (native tree, shrub, vine, grass and herbaceous vascular plant species other than grasses)	Step 1 For each permanent sampling plot, calculate the overall native species richness index reference value for the sampling plot by adding the relevant benchmark values for all the sub- indicators—numbers of species of trees, shrubs, vines, grasses and other herbaceous vascular plant other than grasses (herbs). *For example: if the relevant benchmark values are 3 species of trees, 3 species of shrubs, 0 species of vines, 2 species of grasses and 2 species of other herbs, the overall compositional reference value is calculated as = 3 trees + 3 shrubs + 0 vines + 2 grasses + 2 herbs = 10.* Step 2 For each permanent sampling plot, calculate a native species richness contribution value for each sub-indicator covered by the native species richness index indicator by comparing the number of native species in each life form in the sampling plot with the relevant benchmark value of the corresponding sub-indicator. If the number of native species in a life form is less than or equal to 150% of the relevant benchmark value, the native species richness contribution value for that life form for the sampling plot is the number of native species recorded. If the number of native species recorded is more than 150% of the relevant benchmark value for that life form, the native species richness contribution value for that life form for the sampling plot is the first whole number that is less than 150% of the benchmark indicator.	1,2,3,4

Indicator	How to calculate the value of each ecosystem condition indicator using data collected in permanent sampling plots	Applicable MVG Structural Group
	For example: if the relevant benchmark value for trees is 3 species and the sampling plot has 5 species, the native species richness contribution value for trees (i.e. the number of tree species that count in assessing compliance) is 4 species, being the first whole number less than 150% of the benchmark indicator. Step 3 Calculate the average native species richness index value for the activity area by: a. adding the native species richness contribution value for each life form from each sampling plot (as calculated in step 2) and b. dividing the sum by the overall native species richness reference benchmark values for the sampling plot and c. averaging the overall native species richness reference benchmark values for each sampling plot in the activity area. *For example: if the sampling plot has 1 shrub, 2 vines, 7 grasses and 1 herb, and the reference values for the plot are 3 shrubs, 1 vine, 4 grasses and 2 herbs, the value is (1+1+6+2+/(3+1+4+2)=100%.* Step 4 Where the activity area has more than one sampling plot – calculate the value for the overall native species richness index indicator for the activity area by averaging the native species richness contribution values for each sampling plot in the activity area.	

12. Appendix B: Determining the STM starting ecosystem condition state

Under the ENV method, activity areas are assigned to starting states using a three-step process:

Step 1: Identify the class for the dominant layer.

Step 2: Identify the class for the subsidiary layer.

Step 3: Assign the starting state using the combination of dominant and subsidiary condition classes for the relevant MVG structural group.

The rules governing these steps are detailed below. Note that these will be subject to ongoing refinement, informed by expert input, before being finalised for the method.

Step 1: Identify the class for the dominant layer

Structural group 1 (Rainforests and vine thickets): Tree layer is the dominant layer

a. if canopy height and cover are both >75% of reference, and non-native cover in canopy layer <5% of total cover, and native species richness index for tree life form is >75% -> Canopy class A: close to reference.

b. canopy does not satisfy (a), and canopy height and cover >25% of reference, and non-native cover in canopy layer <50% of total canopy cover, and native species richness index for tree life form is >25%, and characteristic tree species are present -> Canopy class B: modified canopy.

c. canopy does not satisfy (a) or (b), and canopy is not a plantation of species other than native canopy species, but is either predominantly exotic (>75% of canopy cover is non-native species) or has collapsed (i.e. >90% of trees are dead and there is no recruitment) -> Canopy class D: collapsed/transformer canopy.

d. canopy does not satisfy (a), (b) or (c) and is a cultivated plantation of species other than native rainforest species -> Canopy class E: cultivated canopy.

e. canopy does not satisfy (a), (b), (c) or (d), and cover of canopy species is >25% of reference (e.g. there is an established cohort of regenerating native canopy species following past clearing or similar significant disturbance from fire, drought or other cause -> Canopy class C1: recovering highly modified/absent canopy.

f. canopy does not satisfy (a), (b), (c), (d) or (e) -> Canopy class C2: static highly modified/absent canopy.

Structural Group 2 (Open forests to open woodlands): Tree layer is the dominant layer

a. if canopy height and cover are both >75% of reference, and density of large trees >75% of reference, and non-native cover in canopy layer <5% of total cover, and characteristic native canopy species are present -> Canopy class A: close to reference.

b. canopy does not satisfy (a), and canopy height and cover >25% of reference, and non-native cover in canopy layer <50% of total canopy cover, and characteristic native canopy species are present -> Canopy class B: modified canopy.

c. canopy does not satisfy (a) or (b), and canopy is not a plantation but is either predominantly exotic (>75% of canopy cover is non-native species) or has collapsed (i.e. >90% of trees are dead and there is no recruitment) -> Canopy class D: collapsed/transformer canopy.

d. canopy does not satisfy (a), (b) or (c) and is a cultivated plantation -> Canopy class E: cultivated canopy.

e. canopy does not satisfy (a), (b), (c) or (d), and cover of canopy species is >25% of reference (e.g. there is an established cohort of regenerating native canopy species following past clearing or similar significant disturbance from fire, drought or other cause -> Canopy class C1: recovering highly modified/absent canopy.

f. canopy does not satisfy (a), (b), (c), (d) or (e) -> Canopy class C2: static highly modified/absent canopy.

Structural group 3 (Shrublands): Shrub layer is the dominant layer

a. if shrub canopy height and cover are both >75% of reference, and non-native cover in shrub layer <5% of total cover, and characteristic native shrub species are present -> Canopy class A: close to reference.

b. shrub layer does not satisfy (a), and shrub layer height and cover >25% of reference, and non-native cover in shrub layer <50% of total cover, and characteristic native shrub species are present -> Canopy class B: modified canopy.

c. shrub layer does not satisfy (a) or (b), and system is not a plantation but is either predominantly exotic (>75% of woody cover is non-native species) or has collapsed (i.e. >90% of shrubs are dead and there is no recruitment) -> Canopy class D: collapsed/transformer canopy.

d. shrub layer does not satisfy (a), (b) or (c) and is a cultivated plantation -> Canopy class E: cultivated canopy.

e. shrub layer does not satisfy (a), (b), (c) or (d), and cover of shrubs is >25% of reference (e.g. there is an established cohort of regenerating, native shrub layer species following past clearing or similar significant disturbance from fire, drought or other cause -> Canopy class C1: recovering highly modified/absent canopy.

f. shrub layer does not satisfy (a), (b), (c), (d) or (e) -> Canopy class C2: static highly modified/absent canopy.

Structural group 4 (Grasslands and herbfields): ground layer is dominant layer

a. if non-native cover in ground layer is <5% of total ground-layer cover, native species richness index for life forms excluding trees is >75%, and characteristic native species are present -> Ground layer class A: close to reference.

b. does not satisfy (a), and non-native cover in ground layer <50% of total cover, native species richness index for life forms excluding trees is >25%, and some characteristic native species are present -> Ground layer class B: modified.

c. does not satisfy (a) or (b), and ground layer is either predominantly exotic (>75% of cover is non-native species) or has collapsed (i.e. no characteristic species remaining) -> Ground layer class D: collapsed/transformer.

d. ground layer does not satisfy (a), (b) or (c) -> Ground layer class C: highly modified.

Step 2: Identify the classes for the subsidiary layer

Structural group 1 (Rainforests and vine thickets): subsidiary layer comprised of ground layer and other lifeforms

a. ground layer cover of non-native species is <5% of total ground layer plant cover, and native species richness index for life forms other than trees is >75% -> Subsidiary layers class A – close to reference.

b. does not satisfy (a), and cover of non-native species in ground layer <50% of ground layer plant cover, and native species richness index for life forms other than trees > 25% -> Subsidiary layer class B: modified.

c. does not satisfy (a) or (b), and has native species richness index for life forms other than trees > 5%, and cover of native species in ground layer >25% of total ground layer plant cover -> Understorey class C: highly modified.

d. does not satisfy (a), (b) or (c) -> Understorey class D: collapsed/transformed.

Structural group 2 (Open forests to open woodlands): Subsidiary layer comprised of ground layer and mid-storey

a. cover of non-native species in ground layer and mid-storey are <5% of plant cover in each layer, and native species richness index > 75% -> Understorey class A: close to reference understorey.

b. does not satisfy (a), and cover of non-native species in ground layer and mid-storey are both <50% of plant cover in each, and native species richness index > 25% -> Understorey class B: modified understorey.

c. does not satisfy (a) or (b), and has native species richness index > 5%, and cover of native species in ground layer >25% of total ground layer plant cover -> Understorey class C: highly modified.

d. does not satisfy (a), (b) or (c) -> Understorey class D: collapsed/transformed.

Structural group 3 (Shrublands): Subsidiary layer comprised of ground layer and emergent trees

a. cover of exotic species in ground layer and emergent layer are <5% of plant cover in each layer, cover and height of emergent trees are >75% of reference (where applicable), and native species richness index (for all lifeforms combined) > 75% -> Subsidiary class A: close to reference.

b. does not satisfy (a), and cover of exotic species in ground layer and emergent layer <50% of plant cover in each, and native species richness index (all lifeforms) > 25% -> Subsidiary class B: modified understorey.

c. does not satisfy (a) or (b), and is not an improved pasture, and has native species richness index > 5%, and cover of native species in ground layer >25% of total ground layer plant cover -> Subsidiary class C: highly modified.

d. does not satisfy (a), (b) or (c) -> Subsidiary class D: collapsed/transformed.

Structural group 4 (Grasslands and herbfields): subsidiary layer comprised of emergent trees and shrubs

a. cover of non-native species in shrub and tree layers is <5% of plant cover in each layer, cover and height of trees and shrubs are >75% of reference, and native species richness index for trees and shrubs (combined) > 75% -> Subsidiary class A: close to reference.

b. does not satisfy (a), and cover of non-native species in shrub and tree layers <50% of plant cover in each, and native species richness index for trees and shrubs > 25% -> Subsidiary class B: modified.

c. does not satisfy (a) or (b), and has native species richness index for trees and shrubs > 5%, and cover of native species in ground layer >25% of total ground layer plant cover -> Subsidiary class C: highly modified.

d. does not satisfy (a), (b) or (c) -> Subsidiary class D: collapsed/transformed.

Step 3: Assign the starting state using the combination of dominant and subsidiary condition classes for the relevant MVG structural group

Identify the starting state for each activity area by looking up the combination of dominant and subsidiary condition classes for the relevant structural group in the tables below.

Structural group 1 (Rainforests and vine thickets): Starting states based on condition classes for dominant layer (tree layer) and subsidiary layer (ground layer and other lifeforms)

	Dominant class A	Dominant class B	Dominant class C1	Dominant class C2	Dominant class D	Dominant class E
Subsidiary class A	1.1 Close to reference tree layer and subsidiary layers	1.2 Modified tree layer with close to reference subsidiary layers	1.3 Recovering highly modified tree layer with close to reference subsidiary layers	1.4 Static highly modified tree layer with close to reference subsidiary layers	1.5 Transformed tree layer with close to reference subsidiary layers	1.6 Cultivated tree layer with close to reference subsidiary layers
Subsidiary class B	1.7 Close to reference tree layer with modified subsidiary layers	1.8 Modified tree layer with modified subsidiary layers	1.9 Recovering highly modified tree layer with modified subsidiary layers	1.10 Static highly modified tree layer with modified subsidiary layers	1.11 Transformed tree layer with modified subsidiary layers	1.12 Cultivated tree layer with modified subsidiary layers
Subsidiary class C	1.13 Close to reference tree layer with highly modified subsidiary layers	1.14 Modified tree layer with highly modified subsidiary layers	1.15 Recovering highly modified tree layer with highly modified subsidiary layers	1.16 Static highly modified tree layer with highly modified subsidiary layers	1.17 Transformed tree layer with highly modified subsidiary layers	1.18 Cultivated tree layer with highly modified subsidiary layers
Subsidiary class D	1.19 Close to reference tree layer with transformed subsidiary layers	1.20 Modified tree layer with transformed subsidiary layers	1.21 Recovering highly modified tree layer with transformed subsidiary layers	1.22 Static highly modified tree layer with transformed subsidiary layers	1.23 Transformed tree layer with transformed subsidiary layers	1.24 Cultivated tree layer with transformed subsidiary layers

Structural group 2 (Open forests to open woodlands): Starting states based on condition classes for dominant layer (tree layer) and subsidiary layer (ground layer and mid-storey)

	Canopy class A	Canopy class B	Canopy class C1	Canopy class C2	Canopy class D	Canopy class E
Understorey class A	2.1 Close to reference canopy and understorey	2.2 Modified canopy with close to reference understorey	2.3 Recovering highly modified canopy with close to reference understorey	2.4 Static highly modified canopy with close to reference understorey	2.5 Transformed canopy with close to reference understorey	2.6 Cultivated canopy with close to reference understorey
Understorey class B	2.7 Close to reference canopy with modified understorey	2.8 Modified canopy with modified understorey	2.9 Recovering highly modified canopy with modified understorey	2.10 Static highly modified canopy with modified understorey	2.11 Transformed canopy with modified understorey	2.12 Cultivated canopy with modified understorey
Understorey class C	2.13 Close to reference canopy with highly modified understorey	2.14 Modified canopy with highly modified understorey	2.15 Recovering highly modified canopy with highly modified understorey	2.16 Static highly modified canopy with highly modified understorey	2.17 Transformed canopy with highly modified understorey	2.18 Cultivated canopy with highly modified understorey
Understorey class D	2.19 Close to reference canopy with transformed understorey	2.20 Modified canopy with transformed understorey	2.21 Recovering highly modified canopy with transformed understorey	2.22 Static highly modified canopy with transformed understorey	2.23 Transformed canopy with transformed understorey	2.24 Cultivated canopy with transformed understorey

Structural group 3 (Shrublands): Starting states based on condition classes for dominant layer (shrub layer) and subsidiary layer (ground layer and emergent trees)

	Canopy class A	Canopy class B	Canopy class C1	Canopy class C2	Canopy class D	Canopy class E
Subsidiary class A	3.1 Close to reference shrub layer and subsidiary layers	3.2 Modified shrub layer with close to reference subsidiary layers	3.3 Recovering highly modified shrub layer with close to reference subsidiary layers	3.4 Static highly modified shrub layer with close to reference subsidiary layers	3.5 Transformed shrub layer with close to reference subsidiary layers	3.6 Cultivated shrub layer with close to reference subsidiary layers
Subsidiary class B	3.7 Close to reference shrub layer with modified subsidiary layers	3.8 Modified shrub layer with modified subsidiary layers	3.9 Recovering highly modified shrub layer with modified subsidiary layers	3.10 Static highly modified shrub layer with modified subsidiary layers	3.11 Transformed shrub layer with modified subsidiary layers	3.12 Cultivated shrub layer with modified subsidiary layers
Subsidiary class C	3.13 Close to reference shrub layer with highly modified subsidiary layers	3.14 Modified shrub layer with highly modified subsidiary layers	3.15 Recovering highly modified shrub layer with highly modified subsidiary layers	3.16 Static highly modified shrub layer with highly modified subsidiary layers	3.17 Transformed shrub layer y with highly modified subsidiary layers	3.18 Cultivated shrub layer with highly modified subsidiary layers
Subsidiary class D	3.19 Close to reference shrub layer with transformed subsidiary layers	3.20 Modified shrub layer with transformed subsidiary layers	3.21 Recovering highly modified shrub layer with transformed subsidiary layers	3.22 Static highly modified shrub layer with transformed subsidiary layers	3.23 Transformed shrub layer with transformed subsidiary layers	3.24 Cultivated shrub layer with transformed subsidiary layers

Structural group 4 (Grasslands and herbfields): Starting states based on condition classes for dominant layer (ground layer) and subsidiary layer (emergent trees and shrubs)

	Dominant class A	Dominant class B	Dominant class C	Dominant class D
Subsidiary class A	4.1 Close to reference ground layer and subsidiary layers	4.2 Modified ground layer with close to reference subsidiary layers	4.3 Highly modified ground layer with close to reference subsidiary layers	4.4 Transformed ground layer with close to reference subsidiary layers
Subsidiary class B	4.5 Close to reference ground layer with modified subsidiary layers	4.6 Modified ground layer with modified subsidiary layers	4.7 Highly modified ground layer with modified subsidiary layers	4.8 Transformed ground layer with modified subsidiary layers
Subsidiary class C	4.9 Close to reference ground layer with highly modified subsidiary layers	4.10 Modified ground layer with highly modified subsidiary layers	4.11 Highly modified ground layer with highly modified subsidiary layers	4.12 Transformed ground layer with highly modified subsidiary layers
Subsidiary class D	4.13 Close to reference ground layer with transformed subsidiary layers	4.14 Modified ground layer with transformed subsidiary layers	4.15 Highly modified ground layer with transformed subsidiary layers	4.16 Transformed ground layer with transformed subsidiary layers

13. Appendix C: Restoration target states and transition types for MVG structural groups

Project proponents must nominate a restoration target state that the project is intended to achieve by 25 years for each activity area, selected in accordance with tables C1, C2, C3 and C4 below.

Depending on the starting ecosystem condition state of each activity area (and the dominant and subsidiary strata respectively), there are restrictions on the restoration target states that can be selected. Only certain transition pathways are possible, with others being unlikely or impossible depending on the ecosystem. Other factors may also influence nomination of restoration target such as restoration goals, project funding and availability of seed stock.

Permitted restoration target states and corresponding transition types for the relevant MVG structural group and starting ecosystem state are provided below in tables C1, C2, C3 and C4 – categorised by MVG structural group.

Targets and transition types will be subject to ongoing refinement, informed by expert input, before being finalised for the method.

Table C1. Permitted restoration target states and corresponding transition types for MVG structural group 1 (Rainforests and vine thickets)

STM starting ecosystem condition state	Target state - no state change (M & E1)	Target state - transition type E2	Target state - transition type E3
1.1 Close to reference tree layer and subsidiary layers	M	-	-
1.2 Modified tree layer with close to reference subsidiary layers	M	-	1.1
1.3 Recovering highly modified tree layer with close to reference subsidiary layers	M	1.2	-
1.4 Static highly modified tree layer with close to reference subsidiary layers	M	1.3	1.2
1.5 Transformed tree layer with close to reference subsidiary layers	M	1.3	1.2
1.6 Cultivated tree layer with close to reference subsidiary layers	M	1.3	1.2
1.7 Close to reference tree layer with modified subsidiary layers	M	-	1.1
1.8 Modified tree layer with modified subsidiary layers	M	1.7	1.1, 1.2
1.9 Recovering highly modified tree layer with modified subsidiary layers	E1	1.8	1.2, 1.3
1.10 Static highly modified tree layer with modified subsidiary layers	E1	1.8, 1.9	1.3, 1.4
1.11 Transformed tree layer with modified subsidiary layers	E1	1.8, 1.9, 1.10	1.2, 1.3, 1.4, 1.5
1.12 Cultivated tree layer with modified subsidiary layers	-	1.8, 1.9	1.2, 1.3, 1.4, 1.5
1.13 Close to reference tree layer with highly modified subsidiary layers	M	-	1.7
1.14 Modified tree layer with highly modified subsidiary layers	E1	1.8	1.7, 1.13

1.15 Recovering highly modified tree layer with highly modified subsidiary layers	E1	1.14	1.8, 1.9
1.16 Static highly modified tree layer with highly modified subsidiary layers	-	1.14, 1.15	1.8, 1.9
1.17 Transformed tree layer with highly modified subsidiary layers	-	1.14, 1.15	1.8, 1.9
1.18 Cultivated tree layer with highly modified subsidiary layers	-	1.15	1.8, 1.9, 1.14
1.19 Close to reference tree layer with transformed subsidiary layers	-	1.13	1.7
1.20 Modified tree layer with transformed subsidiary layers	-	1.14	1.8, 1.13
1.21 Recovering highly modified tree layer with transformed subsidiary layers	-	1.14, 1.15	1.8, 1.9
1.22 Static highly modified tree layer with transformed subsidiary layers	-	1.14, 1.15	1.8, 1.9
1.23 Transformed tree layer with transformed subsidiary layers	-	1.14, 1.15	1.8, 1.9
1.24 Cultivated tree layer with transformed subsidiary layers	-	1.14, 1.15	1.8, 1.9

Table C2. Permitted restoration target states and corresponding transition types for MVG structural group 2 (Open forests to open woodlands)

STM starting ecosystem condition state	Target state - no state change (M & E1)	Target state - transition type E2	Target state - transition type E3
2.1 Close to reference canopy and understorey	M	-	-
2.2 Modified canopy with close to reference understorey	M	-	2.1

2.3 Recovering highly modified canopy with close to reference understorey	M	2.2	-
2.4 Static highly modified canopy with close to reference understorey	M	2.2, 2.3	-
2.5 Transformed canopy with close to reference understorey	M	2.3	2.3
2.6 Cultivated canopy with close to reference understorey	M	2.3	2.2
2.7 Close to reference canopy with modified understorey	M	-	2.1
2.8 Modified canopy with modified understorey	M	2.7	2.1, 2.2
2.9 Recovering highly modified canopy with modified understorey	E1	2.8	2.2, 2.3
2.10 Static highly modified canopy with modified understorey	E1	2.8, 2.9	2.3, 2.4
2.11 Transformed canopy with modified understorey	E1	2.8, 2.9, 2.10	2.2, 2.3, 2.4, 2.5
2.12 Cultivated canopy with modified understorey	-	2.8, 2.9	2.2, 2.3, 2.4, 2.5
2.13 Close to reference canopy with highly modified understorey	M	-	2.7
2.14 Modified canopy with highly modified understorey	E1	2.13	2.7, 2.8
2.15 Recovering highly modified canopy with highly modified understorey	E1	2.14	2.8, 2.9
2.16 Static highly modified canopy with highly modified understorey	-	2.14, 2.15	2.8, 2.9
2.17 Transformed canopy with highly modified understorey	-	2.14, 2.15	2.8, 2.9
2.18 Cultivated canopy with highly modified understorey	-	2.15	2.8, 2.9, 2.14
2.19 Close to reference canopy with transformed understorey	-	2.13	2.7
2.20 Modified canopy with transformed understorey	-	2.14	2.8, 2.13
2.21 Recovering highly modified canopy with transformed understorey	-	2.14, 2.15	2.8, 2.9

2.22 Static highly modified canopy with transformed understorey	-	2.14, 2.15	2.8, 2.9
2.23 Transformed canopy with transformed understorey	-	2.14, 2.15	2.8, 2.9
2.24 Cultivated canopy with transformed understorey	-	2.14, 2.15	2.8, 2.9

Table C3. Permitted restoration target states and corresponding transition types for MVG structural group 3 (Shrublands)

STM starting ecosystem condition state	Target state - no state change (M & E1)	Target state - transition type E2	Target state - transition type E3
3.1 Close to reference shrub layer and subsidiary layers	M	-	-
3.2 Modified shrub layer with close to reference subsidiary layers	M	-	3.1
3.3 Recovering highly modified shrub layer with close to reference subsidiary layers	M	3.2	-
3.4 Static highly modified shrub layer with close to reference subsidiary layers	M	3.2, 3.3	-
3.5 Transformed shrub layer with close to reference subsidiary layers	M	3.3	3.3
3.6 Cultivated shrub layer with close to reference subsidiary layers	M	3.3	3.2
3.7 Close to reference shrub layer with modified subsidiary layers	M	-	3.1
3.8 Modified shrub layer with modified subsidiary layers	M	3.7	3.1, 3.2
3.9 Recovering highly modified shrub layer with modified subsidiary layers	E1	3.8	3.2, 3.3
3.10 Static highly modified shrub layer with modified subsidiary layers	E1	3.8, 3.9	3.3, 3.4

3.11 Transformed shrub layer with modified subsidiary layers	E1	3.8, 3.9, 3.10	3.2, 3.3, 3.4, 3.5
3.12 Cultivated shrub layer with modified subsidiary layers	-	3.8, 3.9	3.2, 3.3, 3.4, 3.5
3.13 Close to reference shrub layer with highly modified subsidiary layers	M	-	3.7
3.14 Modified shrub layer with highly modified subsidiary layers	E1	3.13	3.7, 3.8
3.15 Recovering highly modified shrub layer with highly modified subsidiary layers	E1	3.14	3.8, 3.9
3.16 Static highly modified shrub layer with highly modified subsidiary layers	-	3.14, 3.15	3.8, 3.9
3.17 Transformed shrub layer with highly modified subsidiary layers	-	3.14, 3.15	3.8, 3.9
3.18 Cultivated shrub layer with highly modified subsidiary layers	-	3.15	3.8, 3.9, 3.14
3.19 Close to reference shrub layer with transformed subsidiary layers	-	3.13	3.7
3.20 Modified shrub layer with transformed subsidiary layers	-	3.14	3.8, 3.13
3.21 Recovering highly modified shrub layer with transformed subsidiary layers	-	3.14, 3.15	3.8, 3.9
3.22 Static highly modified shrub layer with transformed subsidiary layers	-	3.14, 3.15	3.8, 3.9
3.23 Transformed shrub layer with transformed subsidiary layers	-	3.14, 3.15	3.8, 3.9
3.24 Cultivated shrub layer with transformed subsidiary layers	-	3.14, 3.15	3.8, 3.9

Table C4. Permitted restoration target states and corresponding transition types for MVG structural group 4 (Grasslands and herbfields)

STM starting ecosystem condition state	Target state - no state change (M & E1)	Target state - transition type E2	Target state - transition type E3
4.1 Close to reference ground layer and subsidiary layers	M	-	-
4.2 Modified ground layer with close to reference subsidiary layers	M	-	4.1
4.3 Highly modified ground layer with close to reference subsidiary layers	M	4.2, 4.3	-
4.4 Transformed ground layer with close to reference subsidiary layers	M	4.3	4.2
4.5 Close to reference ground layer with modified subsidiary layers	M	4.1	
4.6 Modified ground layer with modified subsidiary layers	M	4.2	4.5, 4.1
4.7 Highly modified ground layer with modified subsidiary layers	E1	4.3	4.2, 4.6
4.8 Transformed ground layer with modified subsidiary layers	E1	4.4	4.7, 4.3
4.9 Close to reference ground layer with highly modified subsidiary layers	M	4.5	4.1
4.10 Modified ground layer with highly modified subsidiary layers	E1	4.6	4.2, 4.5
4.11 Highly modified ground layer with highly modified subsidiary layers	-	4.7	4.6, 4.10, 4.3, 4.2
4.12 Transformed ground layer with highly modified subsidiary layers	-	4.8	4.7, 4.4, 4.3, 4.11
4.13 Close to reference ground layer with transformed subsidiary layers	M	4.9	4.5
4.14 Modified ground layer with transformed subsidiary layers	E1	4.10	4.6, 4.9, 4.13, 4.5
4.15 Highly modified ground layer with transformed subsidiary layers	-	4.11	4.10, 4.14, 4.7, 4.6
4.16 Transformed ground layer with transformed subsidiary layers	-	4.12	4.8, 4.15, 4.11, 4.7

14. Appendix D: Threshold values for issuance of a biodiversity certificate for transition types

Note: Proposed thresholds for some indicators within M transitions allow for small declines in apparent condition to allow for seasonal variability and other factors beyond project control that may affect those indicators, but would not represent substantial reductions in habitat quality. Thresholds will be subject to ongoing refinement, informed by expert input, before being finalised for the method.

Table D1. Certificate issuance threshold values MVG structural group 1 (Rainforests and vine thickets)

Indicator	M	E1	E2	E3
Tree canopy height of native vegetation (in metres)	90% of initial value	Initial value	5% above lower threshold of target state (i.e. 30% or 80% of reference if the threshold is 25% or 75%)	Lower threshold of target state
Crown cover from native plants in the tree stratum (as a percentage)	75% of initial value	Initial value	5% above lower threshold of target state	Lower threshold of target state
Density of large trees	75% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state
Crown cover from plants in the canopy layer (dominant stratum) provided by non-	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value

native plants, as a percentage of total cover				
Ground cover from sub-category A4 and A5 plants as a proportion of total ground cover from category A plants.	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value
Recruitment of species from dominant stratum	Initial value	33%	Lower threshold of target state	Lower threshold of target state
Native species richness index for tree life form	90% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state
Native species richness index for lifeforms other than trees	90% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state

Table D2. Certificate issuance threshold values MVG structural group 2 (Open forests to open woodlands)

Indicator	M	E1	E2	E3
Canopy height of native vegetation (in metres)	90% of initial value	Initial value	5% above lower threshold of target state (i.e. 30% or 80% of reference)	Lower threshold of target state

Crown cover from native plants in the canopy layer (as a percentage)	75% of initial value	Initial value	5% above lower threshold of target state	Lower threshold of target state
Density of large trees	75% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state
Crown cover from native plants in the mid-storey layer (as a percentage)	75% of initial value	Initial value	50% of reference for relevant reference ecosystem	50% of reference for relevant reference ecosystem
Crown cover from plants in the canopy layer (dominant stratum) provided by non-native plants, as a Percentage of total canopy layer cover	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value
Crown cover from plants in the mid-storey layer provided by non-native plants, as a percentage of total mid-storey cover	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value
Ground cover from sub-category A4 and A5 plants as a proportion of total ground cover from category A plants.	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value

Recruitment of species from dominant stratum	Initial value	33%	Lower threshold of target state	Lower threshold of target state
Native species richness index (all lifeforms combined: tree, shrub, vine, grass and herbaceous vascular plant species other than grasses)	90% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state

Table D3. Certificate issuance threshold values MVG structural group 3 (Shrublands)

Indicator	M	E1	E2	E3
Shrub canopy height (in metres)	90% of initial value	Initial value	5% above lower threshold of target state (i.e. 30% or 80% of reference)	Lower threshold of target state
Crown cover from native plants in the shrub canopy layer (as a percentage)	75% of initial value	Initial value	5% above lower threshold of target state	Lower threshold of target state
Crown cover from plants in the canopy layer (dominant stratum) provided by non-native plants (as a percentage of total cover)	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value

Ground cover from sub-category A4 and A5 plants as a proportion of total ground cover from category A plants	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value
Recruitment of species from dominant stratum	Initial value	33%	Lower threshold of target state	Lower threshold of target state
Cover of emergent trees	75% of initial value	75% of initial value	Lower threshold of target state	Lower threshold of target state
Cover of non-native emergent trees	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	Lower threshold of target state	Lower threshold of target state
Native species richness index by life form (native tree, shrub, vine, grass and herbaceous vascular plant species other than grasses)	90% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state

Table D4. Threshold values MVG structural group 4 (Grasslands and herbfields)

Indicator	M	E1	E2	E3
Ground cover from sub-category A4 and A5 plants as a proportion of total ground cover from category A plants.	The larger of 5% or 50% of initial value	The larger of 5% or 50% of initial value	The smaller of the lower threshold for the target state or the initial value	The smaller of the lower threshold for the target state or the initial value
Cover of emergent trees or shrubs	75% of initial value	75% of initial value	Lower threshold of target state	Lower threshold of target state
Cover of non-native emergent trees	The larger of 5% of total cover or 50% of the initial value	The larger of 5% of total cover or 50% of the initial value	Lower threshold of target state	Lower threshold of target state
Native species richness index by life form (native tree, shrub, vine, grass and herbaceous vascular plant species other than grasses)	90% of initial value	Initial value	Lower threshold of target state	Lower threshold of target state