



# **NATURAL VALUES MANAGEMENT PLAN**

## **FOR**

# **AUSTRALIAN BLUEGUM PLANTATIONS**



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## Objective

Describes the systematic process for identifying, assessing, managing, and monitoring natural property values such as biodiversity, water, soil, social and Indigenous/Historic heritage\*.

## Scope

This procedure is applicable to the entire Australian Bluegum Plantations (ABP) estate.

## Related Documents

<b>INTERNAL DOCUMENTS</b>
Plantation Management Plan Natural Values Management Registers – WA and GT ABP Koala Management Plan Natural Values of the GT estate – Green Triangle Region "Special Values" Southwest of Western Australia Plantation Estate Environmental Management Priorities for the Australian Bluegum Plantation Estate Assessment for High Conservation and Significant Values Potential Habit Risk Assessment (PHRA) Regional Master Lists for Rare, Threatened and Endangered (RTE) Species Environmental and Social Risk Assessment for Operations and Chemical Pesticides (OP-2708)
<b>EXTERNAL DOCUMENTS</b>
Refer to Appendix 2

## Terms and Definitions

Note all terms with definitions are followed by an \* in the plan.

<b>TERM</b>	<b>DEFINITION</b>
Aboriginal Cultural and/or Indigenous Heritage	Aboriginal Cultural and Indigenous Heritage refers to the elements, both tangible and intangible, that hold significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions.  This could include rock art, ancient caves or burial sites, waterways, ceremonial sites, or scar trees.
Adjacent	Next to or having a common side.
Best Available Information	Data, facts, documents, expert opinions, contact information and results of field surveys, review of publicly available records* or consultations with stakeholders that are most credible, accurate, complete, and/or pertinent and that can be obtained through reasonable effort and costs, subject to the scale and intensity of the management activities and the Precautionary Approach* (Source: FSC® National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN). License code FSC-C019740.

Connectivity	A measure of how connected or spatially continuous a corridor, network, or matrix is. The fewer gaps, the higher the connectivity (Approach (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN))).
Conservation	Management activities designed to maintain the identified environmental or cultural values in existence long-term (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
Controlled Water Catchments	Areas in South West of Western Australia where vegetation clearing is regulated to protect water resources from salinity due to native vegetation removal.
Cultural Significance	<i>'Aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embedded in the place itself, its fabric, setting, use, associations, meanings, records*, related places and related objects. Place may have a range of values for different individuals or groups'</i> (Australia ICOMOS Burra Charter, 2013).
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
Endangered EVC (Victoria only)	EVC where less than 10% of former range OR less than 10% pre-European extent remains (or a combination of depletion, loss of quality, current threats and rarity that gives a comparable status, e.g., 10 to 30% pre -European extent remains and severely degraded).
Environmental Value	<ul style="list-style-type: none"> <li>• Ecosystem* functions (carbon storage and sequestration)</li> <li>• Biological diversity (rare and threatened species, vegetation communities, habitat* features, fauna and flora)</li> <li>• Water resources (water quantity and quality)</li> <li>• Soils (stability)</li> <li>• Atmosphere (air quality)</li> <li>• Landscape values (visual and amenity)</li> </ul> (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
EVC (Victoria only)	Ecological Vegetation Classes (EVC) is a level of classification. An EVC consists of one or several floristic communities that appear to be associated with a recognisable environmental niche. Each EVC is described by a combination of its structure, floristic, life-form and reproductive strategy features, and through an inferred fidelity to particular environmental attributes.
Expert	Someone who has qualifications and/or experience in the subject for which they are being consulted.
Field assessment	Any field visit to the site associated with planning for biodiversity. This is often undertaken in conjunction with survey for other aspects of management. Field assessments should involve the use of standardised techniques and reporting that are relevant to the values being assessed. The intensity of survey effort, expertise of assessors, and survey techniques will vary depending on the result of desktop assessments,

	<p>the intensity of operations, and other factors. Field assessments may result in the need for more detailed targeted surveys and habitat* evaluations.</p> <p>(Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).</p>
Habitat	<p>The place or type or site where an organism or population occurs (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).</p>
High Conservation Value (HCV)	<p><b>HCV* 1 –Species diversity.</b> Concentrations of <i>biological diversity</i> including endemic species, and <i>rare, threatened,</i> or endangered species, that are <i>significant</i> at global, regional or national levels.</p> <p><b>HCV* 2 –Landscape-level <i>ecosystems*</i> and mosaics.</b> Intact forest <i>landscapes*</i> and large <i>landscape</i> -level <i>ecosystems*</i> and <i>ecosystem*</i> mosaics that are <i>significant</i> at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.</p> <p><b>HCV* 3 –Ecosystems* and habitats*.</b> <i>Rare, threatened,</i> or endangered <i>ecosystems*, habitats*</i> or <i>refugia*</i>.</p> <p><b>HCV* 4 –Critical ecosystem* services.</b> Basic <i>ecosystem* services</i> in <i>critical</i> situations, including <i>protection*</i> of water catchments and control of erosion of vulnerable soils and slopes.</p> <p><b>HCV* 5 –Community needs.</b> Sites and resources fundamental for satisfying the basic necessities of <i>local communities</i> or <i>Indigenous Peoples*</i> (for livelihoods, health, nutrition, water, etc.), identified through <i>engagement</i> with these communities or <i>Indigenous Peoples</i>.</p> <p><b>HCV* 6 –Cultural values.</b> Sites, resources, <i>habitats*</i> and <i>landscapes</i> of global or national cultural, archaeological, or historical significance, and/or of <i>critical</i> cultural, ecological, economic or religious/sacred importance for the traditional cultures of <i>local communities</i> or <i>Indigenous Peoples</i>, identified through <i>engagement</i> with these <i>local communities</i> or <i>Indigenous Peoples</i>.</p> <p>(Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).</p>
Historic Heritage	<p>Relate to the occupation and use of Australia since the arrival of European and other migrants, including pre-1788 Asian and European exploration, contact and settlement sites. Examples include rare remnants of early convict history, contact sites, pastoral properties, small remote settlements and large urban areas, engineering works, factories and defence facilities, shipwreck and archaeological sites (Australia Government, 2016).</p>
Interim Biogeographic Regionalisation for Australia (IBRA)	<p>A biogeographic regionalisation of Australia developed by the Australian Government (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).</p>
Indigenous Heritage	<p>Aboriginal and Torres Strait Islander heritage which extends back across many tens of thousands of years and is of continuing significance, creating, and maintaining links between the people and the land. Examples include occupation sites, rock art, carved trees, places with known spiritual values, important water or landscapes laded with</p>

	meaning to people from that Country, and places with contemporary value to Indigenous people (Australian Government, 2016).
Intact Forest Landscapes	Seamless mosaic of forest and naturally treeless ecosystems* within the zone of current forest extent, which exhibit no remotely detected signs of human activity or habitat* fragmentation and is large enough to maintain all native biological diversity, including viable populations of wide-ranging species (Source: Intact Forest Landscapes, 2006-2017).
MU (Management Unit)	Management Unit.
Old Growth Forest	Ecologically mature forest where the effects of disturbances are now negligible (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
Precautionary Approach	An approach requiring that when the available information indicates that management activities pose a threat of severe or irreversible damage to the environment or a threat to human welfare, The Organisation will take explicit and effective measures to prevent the damage and avoid the risks to welfare, even when the scientific information is incomplete or inconclusive, and when the vulnerability and sensitivity of environmental values* are uncertain.  (Source: Based on Principle 15 of Rio Declaration on Environment and Development, 1992, and Wingspread Statement on the Precautionary Principle of the Wingspread Conference, 23–25 January 1998).
Prescribed Wells Area	Certain areas within South Australia prescribed in order to control future water extraction processes.
Protection	See Conservation* definition.
Public Drinking Water Source Areas (PDWSA)	Public drinking water source areas supply potable water to urban and rural communities throughout Western Australia. These areas encompass the catchments of surface water bodies like dams and reservoirs, as well as the recharge zones for groundwater sources such as wells.
Record	Confirmed sighting.
Representative Sample Areas (RSAs)	Portions of the management unit* delineated for the purpose of conserving or restoring viable examples of an ecosystem* that would naturally occur in that geographical region.  (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
Refugia	An isolated area where extensive changes, typically due to changing climate or disturbances such as those caused by humans, have not occurred and where plants and animals typical of a region may survive.  (Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)).
Significant Values	Values that do not warrant HCV* status but do require some form of note or management.
Special Water Supply Catchment Areas	Formally recognised and declared catchments in Victoria that provide water resources for drinking and domestic water supply purposes.

## Identify and Assess Natural Values\*

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### Identify

#### 5-Year Assessment

Every 5 years, an assessment of ABP's estate is undertaken by an environmental consultant. This assessment provides the following for each region.

- A regional overview (situation analysis diagram) of key conservation\* values and assets. See Appendix 1.
- Current status/condition and threats of these values.
- Opportunities/challenges and key management strategies.
- Identification and mapping of High Conservation Value (HCV)\* (excluding HCV 5 and 6) and important waterways and wetlands.

#### Other Assessments

Outside of the external assessment, internal assessments are completed at acquisition and/or pre-harvest using the Assessment for High Conservation\* and Significant Values\* template.

#### Aboriginal Cultural\* and Indigenous\* Heritage

At acquisition and/or prior to harvesting of ABP sites, relevant Aboriginal Cultural and/or Indigenous heritage\* sources are consulted as part of the Assessment for High Conservation\* and Significant Values\* for each property. Appendix 2 provides more information on these sources. Further due diligence which may include consultation with relevant local Aboriginal Cultural and/or Indigenous groups may be required if a site is identified during this process. Land acquisition is conditional upon the results of the cultural heritage check. Cultural heritage sites are recorded in the relevant Natural Values Management Register. In the event of a previously unknown site being discovered during operations, the following will occur. ABP employees and contractors are told about this process during their induction.

1. All works will cease immediately.
2. The area will be secured to prevent consequential damage.
3. The ABP Supervisor/Representative will be notified.
4. The ABP Supervisor/Representative will consult with relevant Indigenous groups or authorities about the long-term protection\* of the site.
5. Work will recommence only after approval by ABP has been given.

In Western Australia (WA), the Aboriginal Cultural Heritage Guidelines are used to guide the due diligence process. Where applicable, The Aboriginal Heritage Due Diligence Guidelines and the Burra Charter: The Australia ICOMOS Charter of Places of Cultural Significance 1999 will also be used to guide the above.

#### Historic Heritage

Prior to property acquisition and/or harvesting of ABP sites the Environmental Manager/ABP employees will identify any known historic heritage\* areas as part of the Assessment for High Conservation\* and Significant Values\*. See examples of sources used in Appendix 2.



### Environmental Values\*

At acquisition and/or harvesting of ABP sites the Environmental Manager and/or ABP employees will identify any known environmental values\* as part of the Assessment for High Conservation\* and Significant Values\* using information from existing Natural Values Management Registers; considering sources listed in Appendix 2 and through consultation with ABP operations.

Records\* of searches are saved to relevant property folders.

### Water

At acquisition and/or harvesting of ABP sites the Environmental Manager and/or ABP employees will identify any public drinking water source areas\*, controlled water catchments\* and other water values as part of the Assessment for High Conservation\* and Significant Values\* considering sources listed in Appendix 2 and through consultation with ABP operations.

Records\* of searches and consultation are saved to relevant property folders.

### Regional Catchment Goals

In consultation with relevant stakeholders listed in Appendix 2, any authorised regional catchment goals are identified where available and recorded into the relevant Natural Values Management Register.

### EVCs

For Victorian plantations, the endangered EVC\* layer from the Biodiversity Mapping Tool is overlaid with the plantation. Endangered EVCs\* intersecting with plantations is assessed by desktop or field and displayed on the Environment and Hazard Maps. These areas are to be treated as strict exclusion zones from forest operations. There are certain EVCs that meet the criteria of HCV\* and are displayed as HCV\* on the plantation maps. These are EVC 55\_61, 55\_63, 651, 649, 653, 920 and 897.

### Endangered, Critically Endangered, Rare and Threatened Species

Best available information\* is used to identify specific locations of habitat\* for endangered, critically endangered, rare, and threatened species. Identifying specific locations of habitat\* for endangered and critically endangered species may also use expert\* opinion and/or field surveys.

Following acquisition of property and during pre-harvest assessments a list of endangered, critically endangered, rare, or threatened species known or likely to occur within or adjacent\* to the property is made from the following:

- Federal Government's Protected Matters Report: and either
- Victoria's Department of Environment, Land, and Water Protection\* (DELWP) Nature Kit;
- Western Australia's Department of Biodiversity, Conservation\* and Attractions (DBCA) NatureMap; or
- South Australia's Department for Environment and Water (DEW) NatureMap.

Each of these species is then assessed using the Potential Habitat\* Risk Assessment (PHRA). The process for this is shown in Diagram 1 of Appendix 3.

\*Best Available Information\* includes where applicable:

- 1) Mapping or other assessment, including surveys and consultation of database records\*, of rare and threatened species and their habitat\* known or likely to occur in the Management Unit\* that may be negatively affected by management activities, including an assessment of known and likely locations and habitat locations.
- 2) A review of the assessment of rare and threatened species undertaken by a locally knowledgeable expert\* independent of The Organisation.
- 3) Pre-harvest surveys and/or habitat\* assessments.
- 4) An assessment of the adequacy and currency of Best Available Information\* in identifying species, impacts and management response, and further information that may need to be acquired.
- 5) Consultation with relevant expert\* or knowledgeable stakeholders.

Source: FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)

The PHRA uses conservation\* status and habitat\*/distribution information for each species to determine the risk of specified locations of habitat\* being present within or adjacent\* to ABP's managed area. Risk ranges from low to very high. Conservation\* status, habitat\* and distribution information can be found in the regional master Rare, Threatened and Endangered (RTE) lists. When assessing for habitat\*, past land use for example clearing, grazing, farming etc. and local or expert\* knowledge is considered. The PHRA also helps to determine the likelihood of impact of ABP's operations on any identified habitat\*.

Note: Potential habitat\* for cockatoos

During the PHRA process, the Environmental Manager, Environmental Forester and/or other ABP representative will check the property for habitat\* and any potential nesting sites i.e., large hollow bearing trees. When checking, a hollow with a minimum diameter of 10cm and minimum height above ground of 2m should be considered (Groom, 2010).

If a potential tree is identified, the tap-and-flush method (Birdlife n.d.) can be used. The tap-and-flush method is considered the quickest and most effective method of confirming hollow use by Cockatoos (Birdlife n.d.). Each tree is initially knocked two to three times at the base with a large stick or similar, with the intention of flushing out the cockatoo. The impact of this tree tapping-and flushing is minimal; disturbance is limited to Cockatoos who are likely to climb to the top of a hollow to investigate the source of the noise. Given each tree is only tapped at maximum three times, this is unlikely to have a negative effect on the bird's behaviour or breeding success.

If a tree is identified as potential habitat\* during the breeding season (Black Cockatoos - October; Forest Red-tailed Black Cockatoos (FRTBC) – any time of the year with peaks in April to June and August to October; CBC – July to late February/early March (DoEE, 2017)), or there is doubt as to whether habitat\* is being used, then an expert\* may be engaged for further advice.

### **Assess, Consult and Document**

The Environmental Manager and/or other ABP Representative will assess each of the identified values for significance using the criteria listed in Appendix 4 as a guide. The assessment of each value needs to consider the following.

1. Consult the Best Available Information\* (BAI)\* to identify relevant datasets and prepare lists and maps of potential HCV\* accordingly. See Appendix 2 for examples of BAI.
2. Consult experts\* and other knowledgeable stakeholders to identify High Conservation Values (HCV\*).
3. Undertake a threat assessment\* of management activities on identified HCV\*.
4. Identify management required to maintain and/or enhance identified HCV\*.
5. Develop a program of 'periodic monitoring' and adaptive management\* as required.
6. Consult stakeholders on assessment, management, and monitoring. Records of consultation are logged into the Stakeholder Register of the Integrated Management System (IMS).
7. Finalise assessment and implement management and monitoring plan.

Representative Sample Areas (RSA) are selected as part of the HCV\* assessment process. Each RSA is selected to reflect a particular native ecosystem\* of the landscape. Once HCV\*, other values and RSA have been confirmed details of their location, values, threats, management, and monitoring are recorded in the relevant Natural Values Management Register, and then communicated to ABP employees via email and/or regional meetings. Where appropriate, results are made publicly available through industry forums and community workshops.

Regional Natural Values Booklets are an additional resource to communicate values and educational resources for ABP employees and contractors. Booklets are updated as required. In addition to the booklets, ABP employees and contractors are made aware of values through inductions, environment and hazard maps and harvest plans.

### **Management of High Conservation\*, RSA and Other Values**

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Each identified HCV\* and RSA including resources and habitat\* of rare and threatened species are maintained, protected, or enhanced and its management outlined in the relevant Natural Values Management Register. Primarily areas of HCV\*, RSA and other values are excluded from our key operations. Where available, recovery plans, conservation\* advice and/or equivalent instruments are considered when developing management prescriptions for rare and threatened species. To ensure this information is up to date, ABP will use the following sources.

#### WA – Department of Biodiversity, Conservation and Attractions

Approved recovery plans

Plants, Animals and Ecological Communities

<https://www.dbca.wa.gov.au> - management/threatened-species-and-communities

#### VIC – Department of Energy, Environment and Climate Action (DEECA)

<https://www.environment.vic.gov.au/conserving-threatened-species/threatened-list>

#### SA – Department for Environment and Water

Plants - <https://www.environment.sa.gov.au/topics/plants-and-animals/threatened-species-and-ecological-communities/threatened-species/threatened-plant-species>

Animals - <https://www.environment.sa.gov.au/topics/plants-and-animals/threatened-species-and-ecological-communities/threatened-species/threatened-animal-species>

Ecological communities - <https://www.environment.sa.gov.au/topics/plants-and-animals/threatened-species-and-ecological-communities/threatened-ecological-communities>

#### Species Profile and Threats Database (SPRAT)

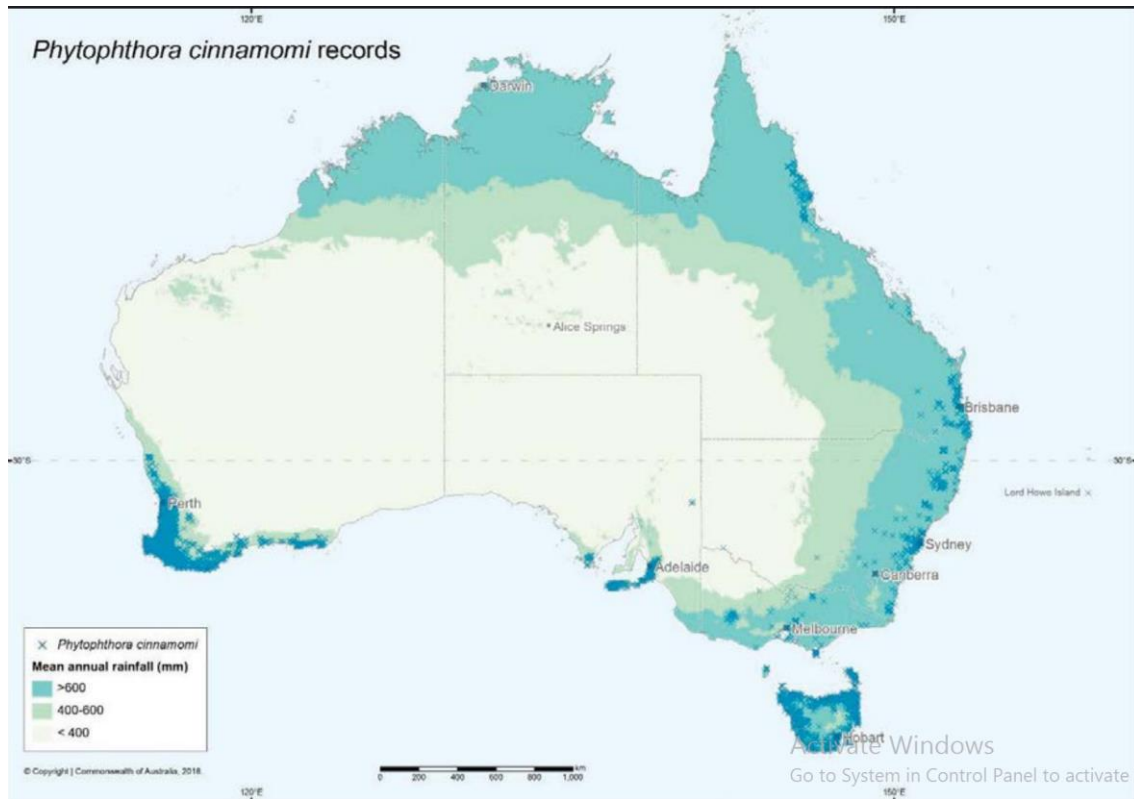
<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

## Threats

The following section provides information on the key threats across the ABP estate.

### Dieback

Australian biodiversity assets are threatened by the spread of *Phytophthora spp.*, commonly referred to as dieback. Susceptible plants may die out completely where infection is present. Figure 1 below shows the location of *Phytophthora cinnamomi* records\* throughout Australia.



**Figure 1.** Records of *P. cinnamomi* throughout Australia (Commonwealth of Australia, 2018a)

*P. cinnamomi* is found throughout areas of Mediterranean climate which receive above 600 mm annual rainfall. Where annual rainfall is between 400 mm and 600 mm, *P. cinnamomi* tends to be confined to stream systems and road verges (especially table drains).

Figure 1 shows dieback is widespread throughout the southwest, great southern regions of WA, extending between Eneabba and Esperance. More than 40% of plant species in this region are susceptible to dieback and once infected are killed. There is also records\* of dieback from the Grampians in Victoria, however the spread of dieback has not been comprehensively documented in Victoria. Common native plants that are susceptible include Jarrah, Banksia, Grass trees, Zamia palms, Dryandra and Hakea species.

Signs that plant death could be caused by *Phytophthora* include:

- Lines, groups, or localised areas of plant deaths are more likely to be caused by *P. cinnamomi* than odd, scattered individual plant deaths in otherwise healthy vegetation.
- An edge effect. Edge effects are most obvious when there is a clear distinction between healthy and diseased vegetation.
- Old deaths and recently killed plants, that is, an 'age range' in the deaths. This is because *Phytophthora* moves from plant to plant over time, killing each plant as it goes.

- Plant deaths that are localised within a distinct area of the property often at a low-lying water accumulating area. Lines, groups, or localised areas of plant deaths are more likely to be caused by Phytophthora than odd scattered individual plant deaths in otherwise healthy vegetation.
- Signs of the disease in a range of susceptible plant species.
- Something that could have introduced the disease, for example a track, road or vehicle activity.

ABP has assessed the risk of operational activities spreading dieback as high in WA and as moderate within the Green Triangle (GT). The 'Framework for Hygiene Management Planning' in Appendix 5, outlines the assessment process that all ABP blocks are assessed against prior to activities commencing.

In general, the following standard hygiene strategies are recommended across all high-risk areas (SCNRM, 2011).

1. Restrict activities to dry soil conditions whenever possible and/or low rainfall months (Nov-Mar). 'Dry' means at a level where there is no significant pickup of soil/gravel/mud from road/track surfaces. This practice will reduce the time needed for vehicle clean down at hygiene points.
  2. Ensure all vehicles/equipment/footwear are free of soil prior to entering and exiting bushland or adjacent\* areas and clean down between sites.
  3. Minimise soil disturbance wherever possible.
  4. Develop plan for traffic management to protect uninfected areas.
  5. Develop plan for movement between sites within bushland area to flow from non-infested to infested areas.
  6. Only un-infested raw material are used for all earthworks within dieback free or protectable areas and/or in-situ material in uninterpretable areas.
  7. ABP employees to attend a dieback information workshop prior to commencement of on-ground works.
- The following provides more information on dieback.

Dieback has been identified in the EPBC Act as a threatening process. As outlined in the *Threat abatement plan for disease in natural ecosystems\* caused by Phytophthora cinnamomi* (Commonwealth of Australia, 2018b), Commonwealth, State, Territory, and local Governments have identified priorities listed to better inform the threat of *P. cinnamomi* in Australia. As these priorities are completed, ABP will ensure that the information obtained is incorporated into future revisions of this Natural Values Management Plan as '*The costs of on-ground survey and sample analyses have made the initial mapping or updating of maps expensive and only applicable ahead of major operations requiring disease demarcation* (Commonwealth of Australia, 2014a).'

Western Australia – Department of Biodiversity, Conservation and Attractions (DBCA)

<https://www.dbca.wa.gov.au/parks-and-wildlife-service/threat-management/plant-diseases/phytophthora-dieback>

[Project Dieback](#)

Green Triangle (GT)

[L:\ABP\HSEC\GT\Environmental Management\Dieback](#)

Where dieback is present in the GT, and there is a threat it could be spread, ABP will operate in accordance with the Victorian Code of Practice for Timber Plantations (2014) and the Guidelines for Plantation Forestry in South Australia (2009), and appropriate hygiene measures are implemented.

## ***Myrtle Rust***

The primary biosecurity threat to ABP is Myrtle Rust. ABP's management response is guided by the 4 categories for emergency plant pests and diseases according to [Plant Health Australia](#) (PHA). The Australian plantation industry is signatory to the Emergency Plant Pest Response Deed, which is a legally binding agreement between PHA, the Australian Government, all state and territory governments and national plant industry body signatories.

## ***Weeds/Wildlings***

A significant threat to HCV\*s, especially those associated with heathy and herb-rich woodlands is the invasion of habitat\* altering weeds.

*Bulbous Canary Grass (Phalaris aquatic)* and other exotic perennial grasses and herbs are typically the greatest threat to grassy woodland systems and other vegetation types on clay soils as well as many threatened plant species.

Declared weeds and Weeds of National Significance (WONS) are controlled as per legislative requirements. Control of regional priority, such as Sydney Golden Wattle and agricultural weeds is undertaken in consultation with relevant stakeholders and where it is cost effective to do so. Wildings are monitored through property inspections and control programs discussed, prioritised, and actioned at regional operational meetings.

## ***Feral Animals***

Fox, rabbit, pig, cat, deer, and dog control programs are undertaken in accordance with schedules outlined in the Natural Values Management Registers and in conjunction with community programs (eg. conservation\* action plans, catchment group programs); If there is an increase in numbers which threaten natural areas and the fauna they support or where a population is of concern to neighbours. Where possible to improve effectiveness, programs are undertaken in conjunction with stakeholder programs.

## ***Illegal Firewood Collection***

Manage illegal access to prevent the loss of native vegetation and important hollow nesting trees (dead and alive) by locking gates, installing cameras, and pursuing enforcement, where possible. Instances of illegal firewood collection are recorded in the IMS.

## ***Fencing and Stock Exclusion***

Livestock is considered a threat to all natural values and are excluded. There may be exceptions in cases of weed/biomass management where grazing is prescribed through a management plan. However, expert\* advice should be sought (e.g. Catchment Management Authority) prior to treatment.

## ***Climate Change***

ABP recognises climate change is likely to have a negative impact on threatened and non-threatened native flora and fauna communities. ABP is committed to protecting these communities and in some cases enhance them, to protect their significance.

## ***Disturbance via Plantation Establishment and Harvesting Activities***

Forestry operations have potential in limited situations to impact threatened species. Where this is identified in planning processes, ABP assess the type and scale of impact and determine appropriate management prescriptions to minimise impacts. Management prescriptions are developed in consultation

with experts\* with knowledge of these species and may also involve interested or affected stakeholders. Management prescriptions may involve changes to timing of operations, herbicide use, exclusion of threatened species sites or additional monitoring. Examples of threatened species where additional practices have been used include Brolga (*Grus rubicunda*), South-eastern Red-tailed Black Cockatoo (*Calyptorhynchus banksia graptogyne*), Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) and Baudin's Cockatoo (*Calyptorhynchus baudinii*).

### ***Isolated Native Paddock Trees and Plantation Site Competition (GT)***

ABP plantations were established on farmland where many paddock trees or small groups of remnant trees were present. These trees are protected under ABP's management system and often provide important habitat\* for hollow dwelling or breeding species. Isolated and small groups of native trees are protected through the use of buffers which exclude planting of blue gums and minimising any machinery access. While these buffers are effective for standard rotation plantations (harvested at around 12 to 15 years of age), older plantations or plantations established with smaller tree buffers may compete with native retained trees for site resources including light and moisture. Potential impacts to native trees can include canopy loss or sometimes tree death. ABP review buffer distances at re-establishment of plantations to reduce potential for impacts on retained paddock trees. ABP are also transitioning older plantations (20 to 25 years of age) to standard shorter rotations in the GT which is expected to reduce site competition between blue gums and native retained trees.

### **Other Management**

#### ***Standing and Fallen Dead Wood Habitats\****

Standing and fallen dead wood habitats\* are generally retained as they provide important habitat for birds, bats, and other fauna. Large dead trees with tree hollows are protected by Environmental Significance Overlays in parts of the GT (West Wimmera Shire and Glenelg Shire) due to their importance as nesting habitat\* for the South-eastern Red-tailed Black Cockatoo, therefore permits are required for tree removal in these areas. If there is a particular circumstance where a standing tree may need to be removed in any jurisdiction, independent advice from the relevant authority will be obtained before removal. Further information can be found at <http://www.redtail.com.au/>.

#### ***Fauna***

Monitoring tools and techniques such as cameras may be used to help identify any fauna that may be inhabiting the remnant vegetation on ABP properties. Results may inform PHRA and management processes.

#### ***Koala Program***

Koalas are currently protected in Victoria under the Wildlife Act 1975 and the Prevention of Cruelty to Animals Act 1986. ABP has been issued with an authorisation to disturb koalas under Section 28A (1A) of the Wildlife Act 1975 by the Department of Energy, Environment and Climate Action (DEECA). ABP is actively involved and represented on the Koala Leadership Committee. Koalas currently reside in some of ABP's estate located within the GT and may be at risk from harvesting and silviculture activities. To mitigate these risks and meet the requirements of ABP's Koala Management Plan, ABP engages dedicated koala spotting and welfare contractors, who implement the requirements of the Koala Management Plan. These requirements include surveying; controlling risks; incident reporting; and monitoring of koalas during and post operational activities. Relevant ABP employees and contractors working in these areas are trained in accordance with the requirements of this Plan. In pursuit of continuous improvement, ABP regularly undertakes a review of its performance against the Plan and implements strategies to minimise harm to Koalas.

### ***Native Vegetation, Wetlands and Natural Ecosystems\****

Remnant native vegetation, wetlands, and other natural ecosystems\* are treated as strict exclusion zones when undertaking forest operations. They have the same level of protection\* as HCV\*, however the management and monitoring requirements may differ. Controlling high impact weeds, rabbits, fencing, stock exclusion or grazing are the most common management tools as outlined above. Decisions on what management is to be applied depends on location, extent, degree of threat, budget/cost, inclusion in other programs, and community involvement. HCV\* has priority over other values.

In the GT region native grasslands are highly threatened. Prior to new plantations (greenfield i.e., conversion of pasture to forestry) being established, existing grassland mapping will be consulted. A more detailed on ground assessment may be required where grasslands are likely to occur on new plantations.

Seasonal herbaceous wetlands are another important value for the GT region requiring careful consideration when new plantations are established or rotated, as the footprint of these wetlands' changes dramatically in wet conditions. Where wetlands are likely to occur, existing wetland mapping will be consulted, and more detailed assessment performed to map the full extent of wetlands and provide appropriate setbacks. In many cases wetland hydrology has been modified by historical drainage and can be restored by installing weirs. The above actions should be considered for high value wetlands where interventions are likely to be cost effective.

Riparian zone vegetation buffers of wetlands and other waterways are carefully maintained and considered for enhancement or restoration projects.

### ***Cultural Heritage (includes Indigenous and Historic Heritage\*)***

Primarily areas of cultural significance\* are fenced where appropriate and managed in accordance with the Natural Values Management Register.



## ***Soil and Water Protection\****

Soil and water protection\* are vital to ensure the ongoing sustainability of the land resource. ABP will take reasonable steps to mitigate any real or potential offsite environmental and or social impacts.

### *Soil*

Operational procedures and controls ensure measures are in place to evaluate the potential impacts on the soil prior to commencing operations and to take any necessary actions to manage these risks. During operations and once they have been completed, monitoring takes place to evaluate the effectiveness of the controls and revise them if necessary.

#### 1. Soil Erosion

Under normal circumstances, forestry operations on ABP's blue gum plantations do not produce a significant risk of erosion. Soil erosion can be caused by forestry operations. ABP actively manages soil erosion through the implementation of the following procedures.

- Land Preparation
- Plantation Access and Roding Specifications
- Harvest Operation
- Harvest Planning

#### 2. Nutrient Retention

ABP monitors the nutrient status of the plantations through foliar sampling and/or soil analysis and can apply fertiliser to sites that are deficient in nutrients. Forestry practices are conducted to take nutrient status into consideration. The following procedures outline how residues are managed and soil nutrients are maintained.

- Harvest Operation
- Nutrition Procedure
- Research (external and Internal)
- Harvest Planning

#### 3. Compaction

Soil compaction may occur on our operations due to excessive skidding or machinery traversing the same terrain frequently. Methods to minimise compaction include using broadcast slash and minimising movement over the same tracks. The following procedures outline how residues are managed.

- Land Preparation
- Harvest Operation
- Harvest Planning

#### 4. Pollution

Soil pollution may occur during operations through accidental discharge (spill) of fuels, oils, pesticides, and fertiliser. ABP has developed the following procedures to substantially reduce the risk of accidental discharge and to clean up and properly dispose of contaminated soil if accidental discharge of pollutants occurs.

- Employee and contractor inductions
- Spill Response Plan
- Weed and Pest Control
- Nutrition Procedure
- Harvest Planning

## Water

Forestry activities have the potential to interact both positively and negatively with aquatic resources. ABP's planning and management of plantations will look to mitigate and/or eliminate potential negative impacts while considering positive aspects of forestry and any relevant legislation, guidelines and codes of practice including the following:

### Western Australia

- [WQPN 121 - Plantations in public drinking water source areas](#)
- [WQPN-6-Vegetation-buffers-to-sensitive-water-resources](#)
- Section 4.4 'Plantations within Public Drinking Water Source Areas' - Code of Practice for Timber Plantations in Western Australia.

### South Australia

- Environment Protection (Water Quality) Policy 2015
- Natural Resources Management Act 2004
- Section 4.1.2 'Water Resources' - Guidelines for Plantation Forestry in South Australia 2009
- Water Quality – Environmental Protection Authority (EPA) South Australia

### Victoria

- Water Act 1989
- Catchment and Land Protection Act 1994
- Section 3.2.1 'Environmental Values in Private Native Forests' - Code of Practice for Timber Production 2014
- Regulatory controls to protect Victoria's waters – Environmental Protection Authority (EPA) Victoria

Water pollution may be caused by soil erosion or the uncontrolled discharge of chemicals. To minimise/prevent chemical runoff, ABP establishes and maintains buffer or planting setback zones in accordance with relevant Codes of Practice, which aim to improve the condition of native riparian vegetation.

1. Water pollution is caused in part by soil particles entering the water because of soil erosion. Correct planning, especially on certain sites where there is a greater risk of erosion and subsequent water pollution is essential. Correct use of setbacks and buffers is also essential to protect water quality. ABP has the following procedures to substantially reduce the risk of water pollution from soil particles entering the water.
  - Land Preparation
  - Plantation Access and Roading Specifications
  - Harvest Operation
  - Harvest Planning
2. Water pollution from hydrocarbons, pesticides, and fertilisers. Accidental spillage or leakage is detrimental to aquatic flora and fauna and can impair water quality. Training and safety are of primary importance to ensure correct use of pesticides and fertilisers. ABP has the following procedures to substantially reduce the risk of water pollution from chemicals entering the water.
  - Employee and contractor inductions
  - Spill response Plan
  - Weed and Pest Control
  - Nutrition Procedure

## **Remediation**

If soil, water, or remnant vegetation is harmed, it will be documented as an incident on ABP's Integrated Management System (IMS). The incident will then be investigated which will include the identification of contributing factors and corrective actions. Should remediation be required, the following options may be used depending on type and severity of the impact.

- Ensure access has been made safe.
- Consult expert\*/relevant stakeholder(s) where required.
- Modification/redirection/management of run off through slash retention, chopper rolling, drainage works, and spray exclusion zones.
- Undertake active remediation (revegetation/restoration) which can include replanting of native species or weed control; or leave the vegetation to naturally regenerate.
- Increase buffers where historic forestry or farming activities have insufficient buffers and setbacks.

When remediation is not possible ABP will work through a process to ensure a fair outcome. The mechanisms for resolving grievances and providing fair process to local communities can be found in the Stakeholder Engagement and Dispute Resolution Policy and Procedure.

## **Prescribed Burning**

Natural areas for ecological burning programs are identified during plantation monitoring, annual HCV\* assessments and in consultation with ABP employees and relevant environmental stakeholders. A burn plan and report are completed by the Silvicultural department. ABP in consultation with local landowners and authorities such as Department of Biodiversity, Conservation and Attractions; Department of Environment, Water, Land and Planning; Department of Fire and Emergency Services (DFES), Country Fire Authority (CFA) and Country Fire Services (CFS) will give consideration to any state legislative requirements, the objectives of the burn, plant and animal species known or presumed to be present, and the potential fire hazard of the native vegetation and adjacent\* land use.

At least 48 hours before a burn, neighbours, and local brigades (if in restricted fire period) are notified by the relevant Silvicultural Forester. Permits are obtained where required. On the morning of the impending burn, a spot weather forecast with 4-day outlook will be obtained from the Bureau of Meteorology ensuring the optimum weather requirements outlined in the burn plan are met i.e., Suitable wind speed/direction, temperature, and relative humidity. Once it is clear weather conditions are favourable, confirmation should then be given to the local Fire Control Officer that the burn will proceed. This should be done on the morning of the fire, prior to any lighting.

Once it has been confirmed the burn will go ahead, roadside signs will be erected where required. All personnel participating in the burn will have the appropriate training and personal protection\* equipment (PPE). All ABP employees and contractors involved in the burn are made aware of the burn plan, lighting pattern and be in constant communication with the burn supervisor.

## **Other Burns**

There are various ways fires can start and enter land under ABP's management. For example, lightning strikes, neighbours undertaking burning operations that have escaped or machine fires. Post burn, areas of remnant vegetation will be monitored to assist with management of these areas. Completed burn plans and reports are saved electronically and in hard copy.

## ***Regional Catchment Goals and Hydrological Flows***

Forest operations are managed to ensure hydrological flows are in accordance with any authorised regional goals, where available. Where these goals are not available, the adverse environmental impacts of changes in hydrological flows will be minimised by ensuring the following are considered.

- The long term and short-term disturbances to hydrological flows relative to the existing situation.
- The environment impacts of both increased and reduced hydrological flows.

Any goals and management thereof are documented in the relevant state Natural Values Management Register.

## ***Rehabilitation, Enhancement, and Restoration***

Where possible, ABP engages in surveying, rehabilitation, enhancement, and restoration of areas with HCV\*, RSA or other values. When selecting areas for such work the following are considered in consultation with relevant stakeholders:

- Benefit to biodiversity protection\* and community
- Cost and availability of funding
- Cost effectiveness
- Condition ratings
- Ecosystem\* representativeness and significance
- Ownership of the land
- Size and connectivity\*
- The potential to create wildlife corridors

Any regeneration activities must be undertaken in accordance with relevant Standard requirements and detailed records\* including suitable selection of trees species and weed management maintained.

## ***Wildlife Corridors***

Wildlife corridors are managed considering the presence of rare and threatened species within the ecological landscape. This will be done in consultation with relevant stakeholders; management documents (such as Recovery Action Plans and Conservation Advice); and spatial data. Management of biodiversity and environmental works will consider wildlife corridors and habitat\* connectivity\* on a landscape scale to plan effectively and implement projects that are of benefit.

## **Monitoring**

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### ***HCV\****

Periodic monitoring is carried out to assess changes in the status and condition of HCV\*. Initial monitoring regimes are established based on expert\* assessments such as the one conducted by Future Ecosystems\* as referenced in this plan. These regimes are recorded in the relevant Natural Values Management Register. Interested stakeholders can provide input into ABP's monitoring program through directly speaking with an ABP employee; referring to the contact section on the ABP website or during consultation periods where the Natural Values Management Plan is circulated for comment.

Assessments of HCV\*s and RSAs\* are performed periodically. A reduction in assessment frequency to biennially (every other year) can be considered if the following criteria are met:

- HCV\* has no new or emerging threats such as increasing weeds/pest species or disease etc.
- There are no new or immediate threats to vegetation structure or biodiversity.
- No management activities have been performed that require ongoing monitoring i.e., weed/pest control, revegetation etc.

Assessments are undertaken by ABP employees and/or consultants using the HCV\* Assessment form. The HCV\* Assessment Form records\* the following:

- Connectivity\* on a local, regional and landscape scale.
- Vegetation structure, cover and condition adapted from Keighery (1994) and Trudgen (1988) in WA and Keighery (1994) in the GT.
- Presence/estimated density of hollow bearing trees.
- Fire age.
- Evidence of threatened species and positive/negative indicator species.
- Presence/condition of cultural heritage and any relevant threats.
- Presence/abundance/disturbance of weed and pest species.
- Presence and extent of disease.
- Evidence of physical threats such as firewood theft, erosion, grazing, fire etc.
- Permanent photo record\* points.
- Management Activities (weed/pest control, prescribed burn, revegetation etc.)
  - Recommended/required management actions.
  - Prescribed management and whether it has been conducted.
  - Whether the management conducted has achieved its objective and the outcome was a consequence of management.

If current management practices are found to be ineffective or there has been a significant change, a review is conducted, and management is altered/improved where required in consultation with employees and relevant stakeholders.

### ***Other Values***

Other values are monitored during the year as part of routine plantation inspections.

### ***Offsite Impacts***

Offsite impacts such as fire, weeds, soil erosion, spray drift and wildings are monitored during the year through routine plantation inspections, operations and as part of HCV\* monitoring.

### ***External Monitoring Programs***

Where available ABP will review results from external monitoring programs and consider these when developing management and monitoring regimes. Some examples include:

- [Red Tailed Black Cockatoo Recovery Project](#)
- Carnaby's Black Cockatoo Recovery Project
- Conservation\* Action Planning (CAP) programs
- Catchment group community coordinated programs eg. Fox-off, weed control

## Training

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Contractors and employees are made aware of any values at inductions using the regional Natural Values Booklets and environment and hazard maps. After this time meetings, newsletters, maps, plans and bulletins are used to communicate any additional values or changes.

ABP employees will also undergo cultural heritage awareness training every five years.

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## Appendix 1 – Conservation Assets and Values

The below tables describe the different conservation\* assets (broad ecosystem\* or habitat types) of the GT (see table 1a) and the Western Australian (see table 1b) regions and lists important values or “nested assets” associated with each asset, including threatened species, and threatened ecological communities.

Table 1a. Conservation\* Assets and Values for the GT estate (Source: Environmental Management Priorities for the Australian Bluegum Plantation Estate).

Value/Ecosystem	Description	Nested species (Associated Threatened/Declining Species and Assemblages)
<b>Threatened ground-dwelling fauna (heathy and herb-rich woodland habitat*)</b>	Typically dominated by <i>Eucalyptus baxteri</i> or <i>E. arenacea</i> in association with a diverse heathy understorey layer. Relatively well-represented vegetation communities associated with nutrient-poor Quaternary or Tertiary-derived low dune systems. Key refuge habitat* for critical weight range mammals (mammals weighing between 35-5500g).	<p><b>Ground-dwelling fauna:</b> Southern brown bandicoot, Long nosed potoroo, Common dunnart, Swamp antechinus, Heath mouse, Smoky mouse, Silky mouse, Eastern pygmy-possum, Striped worm-lizard, swamp skink</p> <p><b>Woodland birds:</b> SE Red-tailed black cockatoo, Scarlet robin, Flame robin</p> <p><b>Threatened orchids:</b> Eg. Limestone spider-orchid, swamp diuris, Metallic sun-orchid, Merran's sun-orchid, Mellblom's spider-orchid</p>
<b>Plains Open Woodlands and Grasslands</b>	WOODLAND BIRDS	<p><b>Woodland Birds:</b> Diamond firetail, Spotted quail-thrush, Brown treecreeper, (SE subspecies), Barking owl, Hooded robin, Crested shrike-tit, Western Gerygone, Speckled warbler, Jacky winter, Black-eared cuckoo, Crested bell-bird, Restless flycatcher, Plains wanderer, Bush Stone Curlew, Painted button-quail, Brown quail</p> <p><b>Arboreal mammals:</b> Yellow-bellied glider, Sugar glider, Feather-tail glider, Western pygmy possum</p> <p><b>Threatened flora:</b> Large white spider-orchid, Elegant spider-orchid, Fringed sun-orchid, Inflated sun-orchid, Globe-hood sun-orchid, Hairy tails, Wavy swamp Wallaby-grass</p> <p><b>Threatened plant communities:</b> Grassy ecosystems* are highly underrepresented in remaining native vegetation. Natural Temperate Grassland of the Victorian Volcanic Plain is EPBC listed as Critically Endangered</p>

Value/Ecosystem	Description	Nestled species (Associated Threatened/Declining Species and Assemblages)
<b>SE Red-tailed Black Cockatoo Nesting Trees (large, old trees)</b>	Includes large old trees with hollows. Important areas include the Corndale and Powers Creek and other areas within 2km of remnant vegetation.	Other hollow dependent fauna including birds and bat
<b>Waterways and Riparian areas</b>	Includes rivers and creeks associated with a diverse range of vegetation communities.	<p><b>Woodland birds:</b> Regent parrot, Barking owl, Brown tree creeper</p> <p><b>Aquatic fauna:</b> Glenelg spiny cray, Ewan's pygmy-perch, Yarra pygmy-perch, Variegated pygmy-perch, Dwarf galaxias, Platypus, Glenelg mussel, Endemic snail species, Growling grass frog, Latham's Snipe, Nankeen night-heron</p> <p><b>Threatened flora:</b> <i>Eremophila bignonia</i>, <i>Lepidium monoplocoides</i></p> <p><b>Threatened plant communities:</b> Floodplain Riparian Woodlands, Riverine Grassy Woodland, Escarpment Shrubland</p>
<b>Freshwater Wetlands</b>	Includes seasonally inundated wetland communities (shallow ephemeral wetlands) and semi-permanent freshwater wetlands.	<p><b>Aquatic birds:</b> Brolga, Australasian bittern, Royal spoonbill, Fairy Tern, Whiskered tern, Intermediate egret, Great egret, Buff-banded rail, Spotless crane, Australian spotted crane, Blue-billed duck, Musk duck, Hardhead, Australasian shoveller, Pied cormorant (and others)</p> <p><b>Amphibians:</b> Growling grass frog, Brown toadlet</p> <p><b>Threatened flora:</b> Wetland blown grass, Ivy-leaf duckweed, Wavy swamp wallaby-grass</p> <p><b>Threatened communities:</b> Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains is EPBC -listed as Critically Endangered</p>



Table 1b. Conservation\* Assets and Values for the Western Australian estate (Source: Environmental Management Priorities for the Australian Bluegum Plantation Estate).

Asset/Ecosystem	Description	Nested Assets (Associated Threatened/Declining Species and Assemblages)
Jarrah-Marri Forests and Woodlands	Jarrah/Marri varies from Forest to Low Woodland occurring on a range of soil types including granites, laterites and deep sands. The dominant overstorey species are Jarrah ( <i>Eucalyptus marginata</i> ) and Marri ( <i>Corymbia calophylla</i> ), which are important food sources for several threatened Black Cockatoos. Large old trees produce hollows which are known to be a limiting resource for cockatoos. Understorey species include banksias and other proteaceous plants, sheoaks, grass trees, melaleucas & tea trees and a range of acacias and members of the pea family.	<p><b>Threatened black cockatoos:</b> Forest Red-tailed Black Cockatoo, Carnaby's Cockatoo, Baudin's Cockatoo. All three taxa are thought to be declining, with Baudin's Cockatoo in serious decline</p> <p><b>Threatened fauna:</b> Western ringtail possum (<i>Psuedocheirus occidentalis</i>) occurs mainly within woodlands east of Albany up to Two People's Bay, within 20km of Albany coastline and west to Denmark</p> <p><b>Threatened flora:</b> <i>Banksia brownii</i>, <i>Banksia goodii</i>. All trees provide feeding habitat*. Large, old trees provide critical nesting habitat* for threatened cockatoos</p>
Karri forests	Karri ( <i>E. diversifolia</i> ) forests are tall forests occurring in cooler, wetter areas on loamy soils, often in association with underlying limestone. They are associated with a diverse shrubby understorey including ferns, orchids, fungi and other mesic species.	<p><b>Threatened birds:</b> Muir's Corella (<i>Cacatua pastinator pastinator</i>)</p> <p><b>Threatened flora:</b> <i>Caladenia harringtoniae</i>, <i>Kennedia glabrata</i>, <i>Reedia spathacea</i></p> <p><b>Ground-dwelling fauna:</b> Quenda, Chuditch, Tammar Wallaby</p>
Mallee Heath communities	Low open woodlands or scrubs with a diverse (often rich in proteaceous shrubs), variously dominated by <i>E. tetragona</i> , <i>E. redunca</i> or <i>E. marginata</i> . Healthy heathlands and particularly proteaceous rich communities provide copious amounts of nectar and pollen, an important food source for native birds, mammals and insect species throughout the year, particularly during autumn and winter when other food sources are limited. They are very susceptible to the plant pathogen <i>Phytophthora cinnamomi</i> (dieback) and to other disturbances such as fire, weeds and fertiliser drift.	<p><b>Nectar-dependent fauna:</b> Western Pygmy Possum, Honey Possum, birds and bats</p> <p><b>Threatened black cockatoos:</b> (important feeding habitat*): Forest Red-tailed Black Cockatoo, Carnaby's Cockatoo, Baudin's Cockatoo</p> <p><b>Ground-dwelling fauna:</b> Black-gloved (or western brush) Wallaby (<i>Macropus irma</i>)</p>

Asset/Ecosystem	Description	Nested Assets (Associated Threatened/Declining Species and Assemblages)
Coastal vegetation	Low closed woodlands or scrubs, variously dominated by <i>E. staeri</i> , Acacia shrublands or mixed heathlands. Proteaceous-rich communities provide copious amounts of nectar and pollen, an important food source for native birds, mammals and insect species throughout the year.	<p><b>Threatened ecological communities:</b> <i>Banksia coccinea</i> Shrubland/<i>Eucalyptus staeri</i>/Sheoak Open Woodland (Community 14a)</p> <p><b>Nectar-dependent mammals:</b> Western Ringtail Possum (Critically Endangered), Western Pygmy Possum, Honey Possum</p> <p><b>Threatened Flora:</b> <i>Lysinema lasianthum</i>, <i>Pleurophascum occidentale</i></p>
Waterways, Riparian areas and associated wetlands	A number of important waterways occur in the region and are associated with ABP plantations, including Hay River, Sleeman Creek, Kalgan River, King River and Marbelup Brook. Waterways and riparian areas tend to occur in more productive parts of the landscape and provide important habitat* for terrestrial animals such as birds and mammals as well as aquatic life.	<p>Wandoo vegetation communities (restricted to Kalgan River floodplain areas in this region)</p> <p><b>Hollow-dependent fauna:</b> Carnaby's Cockatoo (nesting habitat*), Brush-tailed Phascogale (Near Threatened, WA), Red-tailed Phascogale (EPBC Endangered)</p> <p><b>Ground-dwelling fauna:</b> Quenda, Chuditch</p>
Ground dwelling fauna	<p>Tammar Wallaby, Black-gloved Wallaby, Quenda, Chuditch.</p> <p>Susceptible to a range of threats including habitat* loss and degradation (esp. loss of understorey cover), habitat* fragmentation and predation by foxes and cats. A large-scale fox baiting program in the region has assisted the recovery of these species.</p>	

## Appendix 2 - Values and Tools Used for Identification

Environmental values* – HCV* Subcategories		
Value to be Identified	Source of Information	Features
<b>HCV1 - Species diversity. Concentrations of biological diversity including endemic species, and rare, threatened, or endangered species, that are significant at global, regional or national levels.</b>		
<b>1.1</b> Areas that contain significant concentrations of rare and threatened species or that contain habitat* critical to the survival and long-term viability of these species	Protected Matters Search Tool <a href="https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels">https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels</a>	A reporting tool that provides regional information including: <ul style="list-style-type: none"> <li>• World heritage properties</li> <li>• Australian Heritage sites</li> <li>• RAMSAR sites</li> <li>• National protected areas</li> <li>• Commonwealth heritage</li> <li>• Nationally Important Wetlands</li> <li>• Reserves and Conservation* Areas</li> <li>• Threatened species</li> <li>• Threatened ecological communities</li> </ul>
	NatureKit (Victoria) <a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a> Nature Maps (South Australia) <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a> Dandjoo (Western Australia) <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a>	Native vegetation overlays Threatened species Information on parks, reserves and other protected areas IBRA*s
	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) <a href="https://www.speciesplus.net/#/">https://www.speciesplus.net/#/</a>	A list of endangered species under threat from international trade
<b>1.2</b> Areas that contain centres of endemism	NatureKit (Victoria) <a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a> Nature Maps (South Australia) <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a> Dandjoo (Western Australia) <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a>	Native vegetation overlays Threatened species Information on parks, reserves and other protected areas IBRA*s
	Atlas of Living Australia <a href="https://www.ala.org.au/">https://www.ala.org.au/</a>	Species records* and distribution data

	<p>Species Profiles and Threats Database (SPRAT)</p> <p><a href="http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl">http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</a></p>	Recovery/action plans of threatened species
<p><b>1.3</b> Areas that contain significant concentrations of rare species that are poorly reserved at the IBRA* region scale</p>	<p>NatureKit (Victoria)</p> <p><a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p> <p>NatureMap (South Australia)</p> <p><a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a></p> <p>Dandjoo (Western Australia)</p> <p><a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	Native vegetation overlays Threatened species Information on parks, reserves and other protected areas IBRA*s
	<p>Species Profiles and Threats Database (SPRAT)</p> <p><a href="http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl">http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</a></p>	Recovery/action plans of threatened species
	<p>Biodiversity Hotspots</p> <p><a href="https://www.cepf.net/our-work/biodiversity-hotspots">https://www.cepf.net/our-work/biodiversity-hotspots</a></p>	Detailed list of biodiversity hotspots and relevant threats
<p><b>1.4</b> Areas with mapped significant seasonal concentrations of species</p>	<p>Birdlife International Data Zone</p> <p><a href="http://datazone.birdlife.org/home">http://datazone.birdlife.org/home</a></p>	Important bird areas (IBAs)
	<p>RAMSAR</p> <p><a href="https://www.ramsar.org/about/wetlands-of-international-importance-ramsar-sites">https://www.ramsar.org/about/wetlands-of-international-importance-ramsar-sites</a></p>	Wetlands of international importance
	<p>Protected Matters Search Tool</p> <p><a href="https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels">https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels</a></p>	<p>A reporting tool that provides regional information including:</p> <ul style="list-style-type: none"> <li>• World heritage properties</li> <li>• Australian Heritage sites</li> <li>• RAMSAR sites</li> <li>• National protected areas</li> <li>• Commonwealth heritage</li> <li>• Nationally Important Wetlands</li> <li>• Reserves and Conservation* Areas</li> <li>• Threatened species</li> <li>• Threatened ecological communities</li> </ul>
	<p>Species Profiles and Threats Database (SPRAT)</p> <p><a href="http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl">http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</a></p>	Recovery/action plans of threatened species
<p><b>1.5</b> Areas of high species/communities' diversity</p>	<p>NatureKit (Victoria)</p> <p><a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p>	Native vegetation overlays Threatened species Information on parks, reserves and other protected areas

	<p>Nature Maps (South Australia)  <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a></p> <p>Dandjoo (Western Australia)  <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	IBRA*s
<b>1.6</b> Refugia*	<p>Google Scholar  <a href="https://scholar.google.com.au/">https://scholar.google.com.au/</a></p>	Search scholarly articles and resources
<p><b>HCV2 - Landscape level ecosystems and mosaics. Intact forest landscapes* and large level ecosystems and ecosystem* mosaics that are significant at global, regional, or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.</b></p>		
<p><b>2.1</b> Landscape-level native forests with successional stages, forest structures, and species composition that are similar in distribution and abundance to native forests that have experienced minimal human disturbance, excluding traditional Indigenous management regimes</p>	<p>NatureKit (Victoria)  <a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p> <p>Nature Maps (South Australia)  <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a></p> <p>Dandjoo (Western Australia)  <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	<p>Native vegetation overlays, threatened species Information on parks, reserves and other protected areas, IBRA*s</p>
	<p>Protected Matters Search Tool  <a href="https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels">https://pmst.awe.gov.au/#/map?lng=131.52832031250003&amp;lat=-28.671310915880834&amp;zoom=5&amp;baseLayers=Imagery,ImageryLabels</a></p>	<p>A reporting tool that provides regional information including:</p> <ul style="list-style-type: none"> <li>• World heritage properties</li> <li>• Australian Heritage sites</li> <li>• RAMSAR sites</li> <li>• National protected areas</li> <li>• Commonwealth heritage</li> <li>• Nationally Important Wetlands</li> <li>• Reserves and Conservation* Areas</li> <li>• Threatened species</li> <li>• Threatened ecological communities</li> </ul>
<p><b>2.2</b> Forests recognised as being regionally significant at the bioregion or larger scale in formally recognised reports or peer-reviewed journals, due to the unusual landscape-scale biodiversity values provided by size and condition of the forest relative to regional forest land cover and land use trends</p>	<p>Google Scholar  <a href="https://scholar.google.com.au/">https://scholar.google.com.au/</a></p>	Search scholarly articles and resources
	<p>Global Forest Watch  <a href="https://www.globalforestwatch.org/">https://www.globalforestwatch.org/</a></p>	Change in global forest cover
	<p>Wikipedia – Significant forests of Australia  <a href="https://en.wikipedia.org/wiki/Forests_of_Australia">https://en.wikipedia.org/wiki/Forests_of_Australia</a></p>	List, details, and distribution of significant Australian forests
<p><b>2.3</b> Forests that provide regionally significant habitat*</p>	<p>NatureKit (Victoria)</p>	Native vegetation overlays Threatened species

<p>connectivity* between larger forest areas and/or refugia*</p>	<p><a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a> Nature Maps (South Australia) <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a> Dandjoo (Western Australia) <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	<p>Information on parks, reserves and other protected areas IBRA*s</p>
<p>Google Maps / Google Earth</p>		<p>Satellite imagery</p>
<p><b>2.4</b> Intact Forest Landscapes*, wilderness areas, forests that are roadless, and/or have not been affected by forest management activity</p>	<p>Intact Forest Landscapes* Search Tool <a href="http://intactforests.org/world.webmap.html">http://intactforests.org/world.webmap.html</a></p>	<p>Interactive map of intact forest landscapes*</p>
<p><b>HCV3 – Ecosystems* and Habitats*. Rare, Threatened, or Endangered Ecosystems*, Habitats* or Refugia*.</b></p>		
<p><b>3.1</b> Ecosystems* (including rainforests) that are threatened, depleted, or poorly reserved at the IBRA* bioregion scale, or are subject to threatening processes predicted to substantially reduce their extent and function</p>	<p>Protected Matters Search Tool</p>	<p>A reporting tool that provides regional information including:</p> <ul style="list-style-type: none"> <li>• World heritage properties</li> <li>• Australian Heritage sites</li> <li>• RAMSAR sites</li> <li>• National protected areas</li> <li>• Commonwealth heritage</li> <li>• Nationally Important Wetlands</li> <li>• Reserves and Conservation* Areas</li> <li>• Threatened species</li> <li>• Threatened ecological communities</li> </ul>
	<p>NatureKit (Victoria) <a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a> Nature Maps (South Australia) <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a> Dandjoo (Western Australia) <a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	<p>Native vegetation overlays Threatened species Information on parks, reserves and other protected areas IBRA*s</p>
<p><b>3.2</b> Areas for conservation* of important genes or genetically distinct population</p>	<p>Species Profiles and Threats Database (SPRAT) <a href="http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl">http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</a></p>	<p>A reporting tool that provides regional information including:</p> <ul style="list-style-type: none"> <li>• World heritage properties</li> <li>• Australian Heritage sites</li> <li>• RAMSAR sites</li> <li>• National protected areas</li> <li>• Commonwealth heritage</li> </ul>

		<ul style="list-style-type: none"> <li>Nationally Important Wetlands</li> <li>Reserves and Conservation* Areas</li> <li>Threatened species</li> <li>Threatened ecological communities</li> </ul>
<b>3.3</b> Old-growth forest	<p>Wikipedia – Significant forests of Australia</p> <p><a href="https://en.wikipedia.org/wiki/Forests_of_Australia">https://en.wikipedia.org/wiki/Forests_of_Australia</a></p>	List, details and distribution of significant Australian forests
<b>3.4</b> Remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes	<p>NatureKit (Victoria)</p> <p><a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p> <p>Nature Maps (South Australia)</p> <p><a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a></p> <p>Dandjoo (Western Australia)</p> <p><a href="https://dandjoo.bio.wa.gov.au/">https://dandjoo.bio.wa.gov.au/</a></p>	Native vegetation overlays Threatened species Information on parks, reserves and other protected areas IBRA*s
<p><b>HCV* 4 Critical Ecosystem*Services. Basic Ecosystem* Services in critical situations, including protection* of water catchments and control of erosion of vulnerable soils and slopes.</b></p>		
<b>4.1</b> Areas that provide protection* from flooding	<p>Australian Soil Resource Information Centre</p> <p><a href="http://www.asris.csiro.au/index.html">http://www.asris.csiro.au/index.html</a></p>	Soil data
<b>4.2</b> Areas that provide protection* from erosion	<p>Australian National Soil Information System</p> <p><a href="https://ansis.net/">https://ansis.net/</a></p>	
<b>4.3</b> Areas that provide barriers to the spread of destructive fires	<p>Victorian Resources Online</p> <p><a href="http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vrohome">http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vrohome</a></p>	Government natural resources
<b>4.4</b> Areas that provide clean water catchments	<p>Natural Resources (SA)</p> <p><a href="https://www.naturalresources.sa.gov.au/home">https://www.naturalresources.sa.gov.au/home</a></p> <p>Spatial Data Download (WA)</p> <p><a href="https://www.epa.wa.gov.au/spatial-data">https://www.epa.wa.gov.au/spatial-data</a></p>	
	<p>Victoria</p> <p>Special water supply catchment areas</p> <p><a href="https://www.water.vic.gov.au/catchments/special-water-supply-catchment-areas">https://www.water.vic.gov.au/catchments/special-water-supply-catchment-areas</a></p>	Information on Victoria’s Special water supply catchment areas*
	<p>Victoria</p> <p>NatureKit</p> <p><a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p>	Mapping tool providing water data

	<p><u>South Australia</u> NatureMaps <a href="https://www.environment.sa.gov.au/topics/science/naturemaps">https://www.environment.sa.gov.au/topics/science/naturemaps</a></p>	Mapping and geographic information of South Australia's water resources
	<p><u>South Australia</u> Water Connect (Connect to EnviroData SA) Water Resource Assessments Default <a href="https://www.waterconnect.sa.gov.au/Systems/GSR/Pages/Default.aspx">https://www.waterconnect.sa.gov.au/Systems/GSR/Pages/Default.aspx</a></p>	Information on South Australia's water resources
	<p><u>South Australia</u> Water Allocation Plan for the Lower Limestone Coast Prescribed Wells Area <a href="https://cdn.environment.sa.gov.au/landscape/docs/lc/lc_wap_amended_29_june_2019_no_appendices.pdf">https://cdn.environment.sa.gov.au/landscape/docs/lc/lc_wap_amended_29_june_2019_no_appendices.pdf</a></p>	Information on South Australia's Lower Limestone Coast Prescribed Wells Area* outlining environmental water provisions such as setback distances for commercial forests
	<p><u>South Australia</u> Lower Limestone Coast PWA Unconfined aquifer 2017 Groundwater level and salinity status report <a href="https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Lower_Limestone_Coast_PWA_Unconfined_GSR_2017.pdf">https://www.waterconnect.sa.gov.au/Content/Publications/DEW/Lower_Limestone_Coast_PWA_Unconfined_GSR_2017.pdf</a></p>	Information on South Australia's Limestone Coast region's Prescribed Wells Areas* (PWA) groundwater levels and salinity status.
	<p><u>Western Australia</u> Public Drinking Water Source Areas <a href="https://www.wa.gov.au/service/natural-resources/water-resources/public-drinking-water-source-areas">https://www.wa.gov.au/service/natural-resources/water-resources/public-drinking-water-source-areas</a></p>	Information about Western Australia's public drinking water source areas
	<p><u>Western Australia</u> Country Areas Water Supply Act (CAWS Act) clearing controls (Controlled Catchment Areas) <a href="https://www.wa.gov.au/service/natural-resources/water-resources/country-areas-water-supply-act-clearing-controls">https://www.wa.gov.au/service/natural-resources/water-resources/country-areas-water-supply-act-clearing-controls</a></p>	Information on CAWS Act clearing controls and controlled catchment areas
	<p><u>Western Australia</u> Drinking Water Source Protection Reports <a href="https://www.wa.gov.au/organisation/department-of-water-and-environmental-regulation/drinking-water-source-protection-reports">https://www.wa.gov.au/organisation/department-of-water-and-environmental-regulation/drinking-water-source-protection-reports</a></p>	Published reports on public drinking water source areas around Western Australia

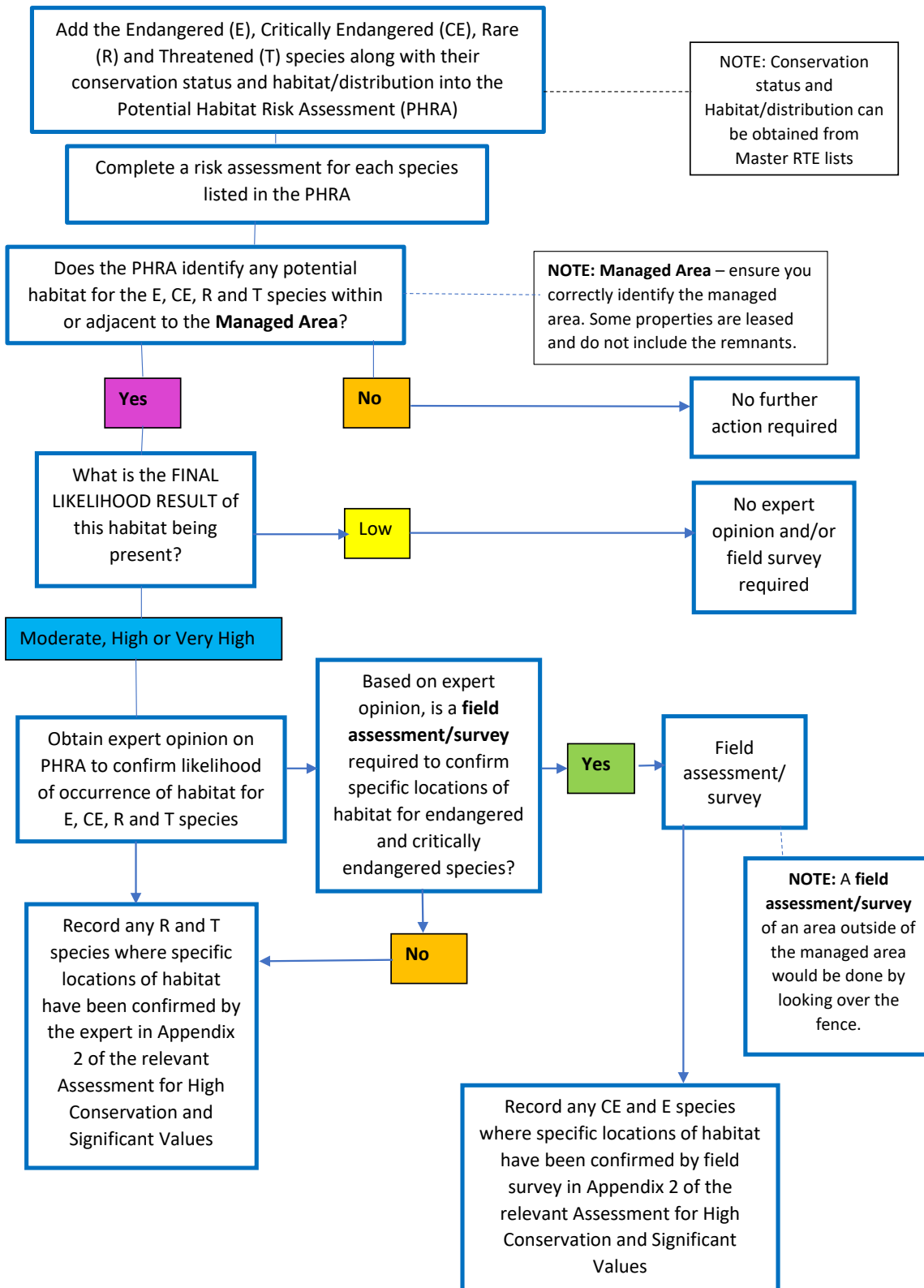


	<p><u>Western Australia</u> Water Quality Protection Notes WQPN 121 - Plantations in public drinking water source areas <a href="https://www.wa.gov.au/government/publications/wqpn-121-plantations-public-drinking-water-source-areas">https://www.wa.gov.au/government/publications/wqpn-121-plantations-public-drinking-water-source-areas</a></p> <p>WQPN-6 - Vegetation buffers to sensitive water resources <a href="https://www.wa.gov.au/government/publications/wqpn-6-vegetation-buffers-sensitive-water-resources">https://www.wa.gov.au/government/publications/wqpn-6-vegetation-buffers-sensitive-water-resources</a></p>	<p>Water quality protection note on reducing contamination risks in tree plantations</p> <p>Water quality protection note about the use of vegetated buffers to reduce the risk of contaminant impact on water quality</p>
<p><b>HCV* 5 Community needs. Sites and resources fundamental for satisfying the basic necessities of local communities or Indigenous Peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or Indigenous Peoples.</b></p>		
<p><b>5.1</b> Unique/main sources of water fundamental for drinking and other daily uses</p> <p><b>5.2</b> Unique/main sources of water fundamental for the irrigation of subsistence food crops</p> <p><b>5.3</b> Food and medicines fundamental for local traditional Indigenous uses</p>	<p>Victorian Resources Online <a href="http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vrohome">http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vrohome</a></p> <p>Natural Resources (SA) <a href="https://www.naturalresources.sa.gov.au/home">https://www.naturalresources.sa.gov.au/home</a></p> <p>Spatial Data Download (WA) <a href="https://www.epa.wa.gov.au/spatial-data">https://www.epa.wa.gov.au/spatial-data</a></p>	<p>Government natural resources</p>
	<p><u>Victoria</u> Code of Practice for Timber Production 2014 <a href="https://www.forestsandreserves.vic.gov.au/forest-management/code-of-practice-for-timber-production-2014">https://www.forestsandreserves.vic.gov.au/forest-management/code-of-practice-for-timber-production-2014</a></p>	<p>Guidance on Victoria's water quality by providing the requirements that need to be observed</p>
	<p><u>Victoria</u> NatureKit <a href="https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit">https://maps2.biodiversity.vic.gov.au/Html5viewer/index.html?viewer=NatureKit</a></p>	<p>Mapping tool providing water data</p>
	<p><u>Western Australia</u> Public Drinking Water Source Areas <a href="https://www.wa.gov.au/service/natural-resources/water-resources/public-drinking-water-source-areas">https://www.wa.gov.au/service/natural-resources/water-resources/public-drinking-water-source-areas</a></p>	<p>Information about Western Australia's public drinking water source areas</p>
	<p><u>Western Australia</u> Country Areas Water Supply Act (CAWS Act) clearing controls (Controlled Catchment Areas) <a href="https://www.wa.gov.au/service/natural-resources/water-resources/country-">https://www.wa.gov.au/service/natural-resources/water-resources/country-</a></p>	<p>Information on CAWS Act clearing controls and controlled catchment areas</p>

	<a href="#">areas-water-supply-act-clearing-controls</a>	
	<p><u>Western Australia</u> Drinking Water Source Protection Reports <a href="https://www.wa.gov.au/organisation/departments-of-water-and-environmental-regulation/drinking-water-source-protection-reports">https://www.wa.gov.au/organisation/departments-of-water-and-environmental-regulation/drinking-water-source-protection-reports</a></p>	Published reports on public drinking water source areas around Western Australia
	<p><u>Western Australia</u> Water Quality Protection Notes WQPN 121 - Plantations in public drinking water source areas <a href="https://www.wa.gov.au/government/publications/wqpn-121-plantations-public-drinking-water-source-areas">https://www.wa.gov.au/government/publications/wqpn-121-plantations-public-drinking-water-source-areas</a> WQPN-6 - Vegetation buffers to sensitive water resources <a href="https://www.wa.gov.au/government/publications/wqpn-6-vegetation-buffers-sensitive-water-resources">https://www.wa.gov.au/government/publications/wqpn-6-vegetation-buffers-sensitive-water-resources</a></p>	<p>Water quality protection note on reducing contamination risks in tree plantations.</p> <p>Water quality protection note about the use of vegetated buffers to reduce the risk of contaminant impact on water quality.</p>
	<p><u>South Australia</u> Limestone Coast Prescribed Areas 2020–21 water resources assessment <a href="https://www.waterconnect.sa.gov.au/Content/Publications/DEW/LimestoneCoast_2020_21_WRA_TN.pdf">https://www.waterconnect.sa.gov.au/Content/Publications/DEW/LimestoneCoast_2020_21_WRA_TN.pdf</a></p>	Technical note providing information on locations and assessment of water resource areas in South Australia's Limestone Coast Area to help identify the resource condition.
<p><b>HCV* 6 Cultural values. Sites, resources, habitats* and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or Indigenous Peoples, identified through engagement* with these local communities or Indigenous Peoples.</b></p>		
<p><b>6.1</b> Aesthetic values</p> <p><b>6.2</b> Historic values of global or national cultural or archaeological significance</p> <p><b>6.3</b> Long term research sites</p> <p><b>6.4</b> Social (including economic) values</p> <p><b>6.5</b> Spiritual and cultural values</p>	<p>Indigenous (Australia) <a href="https://www.indigenous.gov.au/">https://www.indigenous.gov.au/</a> Aboriginal Cultural Heritage Register (Vic) <a href="https://www.aboriginalvictoria.vic.gov.au/victorian-aboriginal-heritage-register">https://www.aboriginalvictoria.vic.gov.au/victorian-aboriginal-heritage-register</a> Aboriginal Heritage (SA) <a href="https://www.agd.sa.gov.au/aboriginal-affairs-and-reconciliation/aboriginal-heritage/aboriginal-heritage-registers-and-the-central-archive/register-of-aboriginal-sites-and-objects">https://www.agd.sa.gov.au/aboriginal-affairs-and-reconciliation/aboriginal-heritage/aboriginal-heritage-registers-and-the-central-archive/register-of-aboriginal-sites-and-objects</a> Aboriginal Heritage (WA) <a href="https://www.dplh.wa.gov.au/information-and-services/aboriginal-heritage">https://www.dplh.wa.gov.au/information-and-services/aboriginal-heritage</a> ACHknowledge Portal (WA) <a href="https://achknowledge.dplh.wa.gov.au/">https://achknowledge.dplh.wa.gov.au/</a></p>	Indigenous heritage* legislation, information, and registers

	<p>Native Title Party (WA)  Wagyl Kaip Southern Noongar  Aboriginal Corporation  Contact: Lisa Smith  08 8166 1940  <a href="mailto:kaya@wagulkaip.org.au">kaya@wagulkaip.org.au</a></p>	
	<p>Heritage Council (WA)  <a href="http://inherit.stateheritage.wa.gov.au/Public/">http://inherit.stateheritage.wa.gov.au/Public/</a></p>	<p>Western Australian heritage places</p>
	<p>Heritage Council Victoria  <a href="https://vhd.heritagecouncil.vic.gov.au/">https://vhd.heritagecouncil.vic.gov.au/</a></p>	<p>Victorian heritage places</p>
	<p>Nature Maps (SA)  <a href="http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps">http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&amp;viewer=naturemaps</a></p>	<p>State and commonwealth heritage places</p>
	<p>UNESCO – World Heritage list  <a href="http://whc.unesco.org/en/statesparties/au">http://whc.unesco.org/en/statesparties/au</a></p>	<p>Australian world heritage sites</p>
	<p>Heritage Places (Aus)  <a href="http://www.environment.gov.au/heritage/heritage-places">http://www.environment.gov.au/heritage/heritage-places</a></p>	<p>Australian heritage places</p>

### Appendix 3 – Potential Habitat\* Risk Assessment (PHRA) Process for Identifying Specific Locations of Habitat\* for Endangered, Critically Endangered, Rare and Threatened Species



High Conservation Value (HCV)	
Criteria	Guidance for Assessment
<p><b>HCV 1 –Species diversity.</b> Concentrations of biological diversity including endemic species, and rare, threatened, or endangered species, that are significant at global, regional, or national levels.</p> <p><b>Best available information*</b> to include where applicable:</p> <ul style="list-style-type: none"> <li>• Recovery plans and related documents</li> <li>• <i>Habitat*</i> mapping</li> <li>• Databases</li> <li>• Peer reviewed journal articles</li> <li>• Reports by government bodies and credible institutions, organisations, and experts*</li> <li>• Expert* research and advice (including for high SIR operations, provided by a locally knowledgeable expert* independent of the organisation)</li> <li>• Expert* and knowledgeable stakeholder data</li> <li>• Field surveys</li> </ul>	
<p><b>HCV1.1 Areas that contain significant concentrations of rare and threatened species or that contain habitat* critical to the survival and long-term viability of these species</b></p>	<p>Does the MU* contain (or likely to contain) several species listed as rare, threatened, or endangered in accordance with International Union for Conservation of Nature (IUCN), under the EBPC Act or regional legislation and/or other requirements?</p> <p><b>YES = HCV</b></p>
	<p>Does the property contain habitat* critical to the survival and long-term viability of these species?</p> <p><b>YES = HCV</b></p>
<p><b>HCV1.2 Areas that contain centres of endemism</b></p>	<p>Are there several endemic species that are likely to occur within the MU* area?</p> <p><b>YES = HCV</b></p>
<p><b>HCV1.3 Areas that contain significant concentrations of rare species that are poorly reserved at the IBRA* region scale</b></p>	<p>Does the MU* have specific areas where there are a significant number of multiple species or where is a proportionately large population of an individual species?</p> <p><b>YES = HCV</b></p>
<p><b>HCV1.4 Areas with mapped seasonal concentrations of species</b></p>	<p>Does the MU* have areas important to the lifecycle or migration paths of migratory and communal breeding species?</p> <p><b>YES = HCV</b></p>
<p><b>HCV1.5 Areas of high species/communities' diversity</b></p>	<p>Does the MU* contain areas where there is a high diversity of species and communities?</p> <p><b>YES = HCV</b></p>
<p><b>HCV1.6 Refugia*</b></p>	<p>Does the MU* have an isolated area where extensive changes, typically due to changing climate or disturbances such as those caused by humans, have not occurred and where plants and animals typical of a region may survive?</p> <p><b>YES = HCV</b></p>

**HCV2 –Landscape-level ecosystems\* and mosaics.** *Intact forest landscapes\** and large *landscape\**-level *ecosystems\** and *ecosystem\** mosaics that are *significant\** at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

Best available information\* to use where applicable:

- Mapping and other data on forest cover, age, succession, structure, species composition, habitat\* connectivity\*, anthropogenic disturbance, roadless areas, wilderness, and intact forests
- Peer reviewed journals, government or expert\* reports and data identifying significant landscape\*-level forests
- For Intact Forest Landscapes\*, mapping and data from Global Forest Watch and World Resource Institute.

**HCV2.1**

**Landscape-level native forests with successional stages, forest structures, and species composition that are similar in distribution and abundance to *native forests\** that have experienced minimal human disturbance, excluding traditional *Indigenous\** management regimes.**

Does the MU\* contain areas:

- In close proximity to each other;
- Thousands or tens of thousands of hectares in size;
- Have similar successional stages, structure, species composition;
- Similar in distribution and abundance to native forests; and
- Have experienced minimal human disturbance

**YES = HCV**

**HCV2.2 Forests recognised as being regionally significant at the bioregion or larger scale in formally recognised reports or peer-reviewed journals, due to the unusual *landscape\*-scale\** biodiversity values provided by size and condition of the forest relative to regional forest land cover and land use trends.**

Does the MU\* contain forests that are thousands or tens of thousands of hectares in size which are formally recognised reports or peer reviewed journals, due to the unusual landscape scale biodiversity values provided by size and condition of the forest relative to regional forest land cover and land use trends?

**YES = HCV**

**HCV2.3 Forests that provide regionally significant *habitat\* connectivity\** between larger forest areas and/or *refugia\**.**

Does the MU\* contain areas of forest that are thousands of tens of thousands in size which provide significant habitat\* connectivity\* between larger forest areas and/or refugia\*?

**YES = HCV**

**HCV2.4 *Intact Forest Landscapes\**, wilderness areas, forests that are roadless, and/or have not been affected by forest management activity.**

Does the MU\* contain areas of intact forest landscapes\*, wilderness areas, forests that are roadless and/or have not been affected by forest management activity?

**YES = HCV**

**HCV 3 –*Ecosystems\** and *habitats\**.** Rare\*, threatened, or endangered *ecosystems\**, *habitats\** or *refugia\**.

Best available information\* to use where applicable:

- *Ecosystem\* protection\** and conservation\* status at IBRA\*\* scales
- Old-growth forest\*
- Forest cover and disturbance
- Forest maturity

<ul style="list-style-type: none"> <li>Anthropogenic disturbance at the landscape scale.</li> </ul>	
<b>HCV3.1 Ecosystems* (including rainforests) that are threatened, depleted, or poorly reserved at the IBRA* bioregion scale, or are subject to threatening processes predicted to substantially reduce their extent and function.</b>	<b>Does the MU*:</b> Contain particular ecosystems* that are threatened, depleted or poorly reserved at the IBRA* bioregion scale or subject to threatening processes predicted to substantially reduce their extent and function? <b>YES = HCV</b>
<b>HCV3.2 Areas for conservation* of important genes or genetically distinct populations.</b>	Does the MU* contain areas for conservation* of important genes or genetically distinct populations? <b>YES= HCV</b>
<b>HCV3.3 Old-growth forest*.</b>	Does the MU* contain old growth forest*? <b>YES = HCV</b>
<b>HCV3.4 Remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes.</b>	Does the MU* have remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes*? <b>YES = HCV</b>
<b>HCV 4 –Critical ecosystem* services.</b> Basic <i>ecosystem* services*</i> in critical situations, including <i>protection*</i> of water catchments and control of erosion of vulnerable soils and slopes. Best available information* to use where applicable: <ul style="list-style-type: none"> <li>Flood risk</li> <li>Soil erodibility and erosion risk</li> <li>Fire risk and behaviour in the landscape</li> <li>Water catchment location and water quality.</li> </ul>	
<b>HCV4.1 Areas that provide protection from flooding.</b>	Does the MU* contain areas that provide protection* from flooding? <b>YES = HCV</b>
<b>HCV4.2 Areas that provide protection from erosion.</b>	Does the MU* fall within an existing erosion protection* prioritisation scheme or critical erosion area? (Critical erosion areas would include where there is a risk of serious erosion, landslides and avalanches).  If YES, does the MU* play a critical role in protecting against erosion? (The MU* will <b>NOT</b> play a critical role if the MU* only contains a small area of vulnerable soils or the topographic situation of the MU* protects against severe erosion). <b>IF YES = HCV</b>
<b>HCV4.3 Areas that provide barriers to the spread of destructive fires</b>	Is the MU* within a high-risk fire area? <b>If yes</b> does the FMU: Contain forest types that naturally act as a barrier to fire? <b>YES=HCV</b>  Contain areas covered by forest types too small to act as barriers against uncontrolled destructive fire? YES. <b>DOES NOT = HCV</b>  Contain human settlements or communities within or adjacent* to the MU? <b>YES=HCV</b>

<p><b>HCV4.4 Areas that provide clean water catchments</b></p>	<p>Does the MU*: Fall within identified critical catchment or watershed areas? If YES, does the MU* play a critical role in protecting the catchment area? (The FMU will play a critical role is the catchment area is not largely forested or the FMU covers a large proportion of the catchment). <b>IF YES = HCV</b></p>
<p><b>HCV 5 –Community needs.</b> Forest areas fundamental to meeting basic needs of <i>local communities*</i> (eg. subsistence, health). Best available information* to use where applicable: Mapping, reports, expert* and stakeholder* consultation and other data on unique and primary sources of water for daily uses and the location of areas that provide traditional food and medicines.</p>	
<p><b>HCV5.1 Unique/main sources of water fundamental for drinking and other daily uses.</b></p>	<p>Does the MU* contain unique and/or main sources of water fundamental for drinking and other daily uses? <b>YES = HCV</b></p>
<p><b>HCV5.2 Unique/main sources of water fundamental for the irrigation of subsistence food crops.</b></p>	<p>Does the MU* contain unique and/or main sources of water fundamental for the irrigation of subsistence food crops? <b>YES = HCV</b></p>
<p><b>HCV5.3 Food and medicines fundamental for local traditional Indigenous uses.</b></p>	<p>Does the MU* contain food and medicines fundamental for local traditional Indigenous uses? <b>YES = HCV</b></p>



**HCV 6 –Cultural values.** Sites, resources, *habitats*\* and landscapes of global or national cultural, archaeological, or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or Indigenous Peoples, identified through engagement with these local communities or Indigenous Peoples.

Best available information\* to use where applicable:

- Mapping
- Reports
- Databases
- Field surveys
- \* and knowledgeable *stakeholder*\* consultation.

<b>HCV6.1 Aesthetic values.</b>	Does the MU* contain areas that have aesthetic value? <b>YES = HCV</b>
<b>HCV6.2 Historic values of global or national cultural or archaeological significance.</b>	Does the MU* contain sites that have historic values of global or national, cultural or archaeological significance? <b>YES = HCV</b>
<b>HCV6.3 Long term research sites.</b>	Does the MU* contain sites that are used for long term research? <b>YES = HCV</b>
<b>HCV6.4 Social (including economic) values.</b>	Does the MU* contain area of social and economic value? <b>YES = HCV</b>
<b>HCV6.5 Spiritual and cultural values.</b>	Does the MU* contain areas of spiritual and cultural value? <b>YES = HCV</b>

## Appendix 5 – Framework for Hygiene Management Planning

