

High Conservation Value Assessment and Management Plan for the Lenah Estate

April 2022



SFM acknowledges the traditional custodians of the land which we manage. We show our respect to their culture and their elders, past, present and emerging who have managed the land in the past.



Lenah Estate HCV Assessment and Management Plan

Queries, comments and feedback welcomed.

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1 Introduction

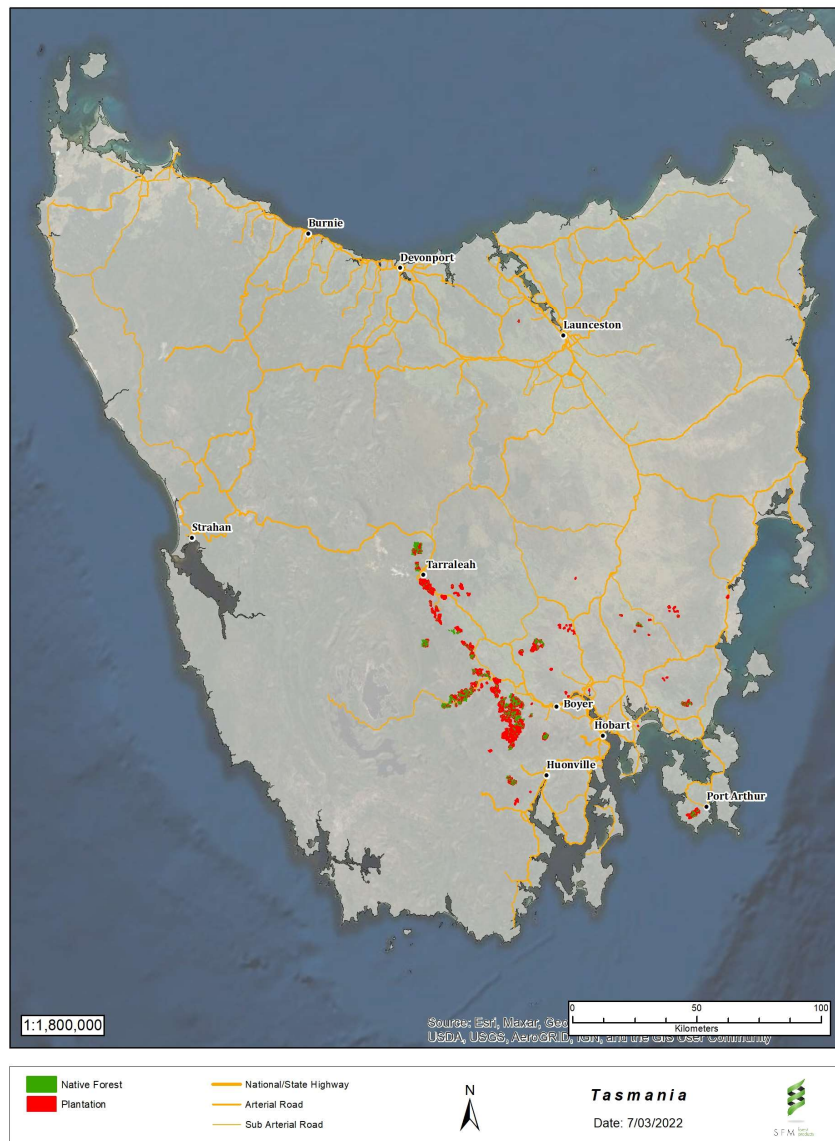
This High Conservation Values (HCV) Assessment and Management Plan aims to describe the –

- HCVs present on Lenah Estate;
- details on the assessment process engaged in identifying the HCVs;
- stakeholder engagement in HCV identification and management;
- current and future assessment, monitoring and management programs.

1.1 Overview of the Lenah Estate

SFM is the appointed Property Manager for the Lenah Estate forest resource located in Tasmania. Lenah Estate is owned by Lenah Estate Pty Ltd, a company established by New Forests Asset Management Pty Ltd (New Forests), the Fund Manager for the Australia New Zealand Forest Fund 3 (ANZFF3). Most of the Lenah Estate is located in southern Tasmania extending into the Derwent Valley, Huon Valley and Tasman Peninsula (Figure 1).

Figure 1: Forest Management Unit



The Lenah Estate forest resource is part of SFM's FSC® certified Forest Management Group Scheme. Table 1 provides a summary of the break down of the Lenah Estate.

Table 1. Lenah Estate

	Area (Hectares)
Plantation	18,284.4
Native Vegetation	5809.4
Infrastructure / Other	1812.5
Total	25,906.3

1.2 Scope

The *High Conservation Values (HCV) Assessment and Management Plan* applies to Lenah Estate freehold land and plantation areas managed by SFM under long term management agreements. Where significant changes occur across the Lenah Estate Forest Management Unit, this plan will be reviewed and updated as necessary.

The HCV Assessment and Management Plan should also be read in conjunction with the SFM Forest Management Plan and internal Planning / Operational procedures.

1.3 Biodiversity in Tasmania

Tasmania is a diverse landscape with a temperate maritime climate containing many complex ecosystems. It has a diverse range of vegetation types, from alpine shrublands, native grassland and buttongrass moorlands to tall wet eucalypt forest and rainforest.

Almost half of Tasmania's land area is covered by forest. Native vegetation in Tasmania is grouped into numerous broad categories (e.g. Kitchener & Harris 2013):

- rainforest and related scrub (including “cool temperate rainforest”);
- wet eucalypt forest (including “mixed forest”);
- dry eucalypt forest and woodland;
- non-eucalypt forest and woodland (including silver wattle forest, blackwood swamp forest, Oyster Bay pine forest, sheoak forest and other swamp forest types);
- highland treeless vegetation;
- moorland, sedgeland and rushland (including “buttongrass” plains);
- native grassland;
- scrub, heathland and coastal complexes;
- saltmarsh, wetland and peatland (including Sphagnum peatland);
- wet sclerophyll forest; and
- dry sclerophyll forest.

There are some 13,500 known species of fauna, flora and fungi in Tasmania, with many more yet to be identified and described. Tasmania has more than 600 species of flora and fauna formally listed as threatened on the *Tasmanian Threatened Species Protection Act 1995* and/or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*. Some of these species are originally endemic only to Tasmania, while others were previously more widely distributed, but have become extinct on mainland Australia.

1.4 Land use history in Tasmania

Tasmania has been the homeland to Aboriginal people for many thousands of years. Since European settlement in the early 1800s, most parts of Tasmania have undergone extensive change with the clearing of natural vegetation, including forests, for agriculture, infrastructure, establishment of plantations and urban settlement.

Forestry and agriculture are the major rural commercial land uses in Tasmania, with smaller areas used for mining. Nature conservation areas, in the form of national parks and other reserves, make up approximately 50% of Tasmania's land area (3.43 million ha at 30 June 2018).

1.5 Legislative context and requirements

Forestry activities in Tasmania are regulated under the *Forest Practices Act 1985* and *Forest Practices Regulations 2017*. Both these pieces of legislation are administered by an independent statutory authority, the Forest Practices Authority (FPA), which forms part of what is known as the Forest Practices System. Forest practices in Tasmania must be authorised by a certified and legally binding Forest Practices Plan (FPP), prepared in accordance with the

current version of the *Forest Practices Code* (FPC). The FPC provides practical guidelines and prescriptions to ensure management and protection of the natural and cultural values of the forest during forest operations.

There are additional codes of practice that apply to forest practices in Tasmania, including:

- Quarry Code of Practice 2017; and
- Forest Safety Code 2021 (approved code of practice enforced by the Work Health and Safety Act 2012 and associated Regulations).

Additionally, two State government policies should be considered when planning and conducting forest practices:

- State Policy on the Protection of Agricultural Land (2009); and
- State Policy on Water Quality Management (1997).

The requirements of many of the key pieces of legislation relevant to the management of High Conservation Values (HCVs) are incorporated into the requirements of the Forest Practices System. Many of these key pieces of legislation are also applicable to areas that are not subject to forestry operations, but which also contain HCVs.

Table 2. Acts and Regulations relevant to the management of HCVs

Legislation	Purpose	Responsible agency
<i>State legislation</i>		
<i>Aboriginal Heritage Act 1975</i>	To provide for the identification and protection of all Aboriginal relics (sites).	Aboriginal Heritage Tasmania within Department of Natural Resources and Environment Tasmania (NRET)
<i>Agricultural and Veterinary Chemicals (Control of Use) Act 1995</i>	Controls the handling and use of agricultural and veterinary chemicals in Tasmania.	Biosecurity Tasmania (NRET)
<i>Agricultural and Veterinary Chemicals (Control of Use) Regulations 2012</i>	Defines requirements for neighbour notifications, operator training, handling and storage of chemicals, penalties for non-compliance with the Act.	Biosecurity Tasmania (NRET)
<i>Animal Welfare Act 1993</i>	Ensure animals are not treated cruelly (addresses game control).	Department of Natural Resources and Environment Tasmania (NRET)
<i>Environmental Management and Pollution Control Act 1994</i>	Establishes duty of care on everyone to prevent or minimise environmental harm. Defines potentially harmful activities requiring assessment and approval. Identifies the notification requirements for environmental incidents.	Environment Protection Authority (EPA) within Department of Natural Resources and Environment Tasmania (NRET)
<i>Firearms Act 1996</i>	To provide for the regulation, registration and control of firearms.	Tasmania Police
<i>Fire Service Act 1979</i>	To provide for the prevention and extinguishing of fires for the protection of life and property in Tasmania. Provides for the control and use of fire in the urban and rural environment.	Tasmania Fire Service
<i>Forest Practices Act 1985</i>	Establishes the <i>Forest Practices Code</i> and forest practices system to provide for the sustainable management of forest values on any land subject to forest practices. Provides for the establishment of Private Timber Reserves on private land to provide security of long-term forestry use for landowners.	Forest Practices Authority (Department of State Growth)
<i>Forest Practices Regulations 2017</i>	Supports implementation of the <i>Forest Practices Act 1985</i> , including situations for which a Forest Practices Plan is not required. Also defines "vulnerable land".	Forest Practices Authority (Department of State Growth)
<i>Historic Cultural Heritage Act 1995</i>	To identify, assess and protect historic (post European settlement) cultural heritage.	Heritage Tasmania within Department of Natural Resources and Environment Tasmania (NRET)
<i>Land Use Planning and Approvals Act 1993 and Land Use Planning and Approvals Amendment (Tasmanian Planning Policies and Miscellaneous Amendments) Act 2018)</i>	Provides for land use planning and approvals except for forest practices specifically regulated by the <i>Forest Practices Act 1985</i> .	Tasmanian Planning Commission
<i>Nature Conservation Act 2002</i>	Promotes and provides for the objective of conservation in relation to the use or development of land. This Act also provides for the establishment of permanent covenants for conservation purposes.	Department of Natural Resources and Environment Tasmania (NRET)

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Legislation	Purpose	Responsible agency
	Schedule 3A of the Act lists vegetation types (forest and non-forest) considered threatened, which links to the definition of "vulnerable land" under the <i>Forest Practices Regulations 2017</i> .	
<i>Threatened Species Protection Act 1995</i>	Provides for the conservation and management of scheduled threatened species of flora and fauna.	Department of Natural Resources and Environment Tasmania (NRET)
<i>Weed Management Act 1999 (& Biosecurity Act 2019)</i>	Requires landowners to destroy, prevent breeding of, control, eradicate or reduce spread of designated declared weeds depending on the requirement for listed weed species.	Department of Natural Resources and Environment Tasmania (NRET)
Commonwealth legislation		
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>	To preserve and protect areas and objects of particular significance to Indigenous people in accordance with their traditions when there is no effective protection under state or territory law.	Department of Agriculture, Water and the Environment
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	The Australian Government's central piece of legislation for the protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of national environmental significance.	Department of Agriculture, Water and the Environment

1.6 Precautionary Approach

The precautionary approach can be described as a strategy to manage a range of potential risks conservatively where underlying scientific understanding and knowledge is limited. The principle acknowledges that there is a social, economic and environmental responsibility to avoid or diminish harm.

The FSC-STD-AUS-01-2018 identifies the Precautionary Approach as:

"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)"

SFM will take the Precautionary Approach where required to ensure severe or irreversible damage is not incurred.

2 Assessment of High Conservation Values

2.1 High Conservation Value Forest

All natural vegetation areas have value from an environmental, cultural or social perspective. Where these values are particularly significant, they may meet the definition of High Conservation Values (HCVs) provided in the Glossary of the *FSC National Forest Stewardship Standard of Australia (FSC-STD-AUS-01-2018 EN)*. Annex G of this Standard provides a framework for identifying each of the six HCV categories across a landscape. Where such HCVs exist in a forest landscape, that forest can be considered a High Conservation Value Forest (HCVF). Other vegetation types may also support HCVs, and can be termed High Conservation Value Areas.

2.2 High Conservation Value categories

Table 3 describes the six FSC HCV classification categories.

Table 3. High Conservation Value classification (as per *FSC-STD-AUS-01-2018 EN*)

HCV category	Description
HCV 1	Species diversity. Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.
HCV 2	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.
HCV 3	Ecosystems and habitats. Rare, threatened, or endangered ecosystems, habitats or refugia.
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.

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Lenah Estate HCV Assessment and Management Plan

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.
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.

2.3 Evaluating High Conservation Values

SFM are committed to delivering sustainable forest management outcomes within the LE. This commitment incorporates the identification of HCVs, and where required, their maintenance and/or enhancement. Several information sources have been interrogated to identify and evaluate HCVs throughout the LE.

These sources include:

- Forest Practices Plans (identification of HCVs in specific operations);
- public information sources (including the *Natural Values Atlas* and *TasVeg*);
- SFM's data; and
- consultation with qualified experts and other relevant stakeholders to firstly prioritise, then appropriately and adequately monitor HCVs throughout the LE to ensure values are maintained and where applicable enhanced.

SFM has also initiated a monitoring program within its natural forest areas, to capture quantifiable data that can be used to demonstrate that values are maintained and/or enhanced over time.

2.3.1 Forest Practices Plans

During the operational planning process for Forest Practices Plans (FPPs), an evaluation must be undertaken to identify natural and cultural values. This evaluation involves consulting available databases, and field verification, both within the boundary of the operational area and surrounding land. The evaluation involves analysis of:

- biodiversity (flora and fauna);
- cultural heritage, both Aboriginal and Non Aboriginal;
- geomorphology;
- soil and water values; and
- visual landscape

The evaluation initially involved a desktop review of available datasets to determine if significant values are known or likely to be present, and whether operational constraints are required to manage the identified values. Field verification will then be conducted to confirm the presence of identified or potential natural and/or cultural values, including potential habitat for various species. Field verification may also identify values that were not identified by the original desktop review.

Where required by the Forest Practices System, these natural and cultural values evaluations must be submitted for review and advice from disciplinary specialists at the Forest Practices Authority (FPA). These specialists provide recommendations for management prescriptions to be incorporated within the FPP.

Management prescriptions that are designed to protect the natural or cultural value from adverse impacts from operational activity are then included within the FPP, which is a legally binding document. These management prescriptions must be adhered to during the harvesting, site preparation, establishment and/or roading activity. Regular monitoring of operations is undertaken by SFM supervisors, and mandatory reporting of compliance to the FPA is undertaken at the end of each discrete operational phase of the operation.

Implementing prescriptions in the FPP and Forest Practices Code, and liaising with Forest Practices Authority specialists and other government land management agencies, ensures natural values are considered and managed during the course of operational activities and across the adjacent landscape.

2.3.2 High Conservation Value assessment and verification program

SFM has undertaken a diligent assessment process to verify and validate HCVs across the Lenah Estate. Objectives of the assessment program included:

- identification of HCVs that either occur within or are positioned adjacent to the LE that could be impacted by SFM management activities and require special protection;
- establishment of management objectives and application of operational controls to ensure identified HCVs are maintained and/or enhanced.
- training of staff and operators in the management of HCVs;

- monitoring to determine the effectiveness of management activities with respect to maintenance and/or enhancement these values; and
- integration of the HCV assessment and monitoring program into the SFM management system.

To ensure transparency is achieved during the assessment process, SFM has engaged an independent ecological expert to validate the identified HCV locations while assessing the extensive natural vegetation coverage retained throughout the estate. The objective of utilising an independent technical expert is to validate SFM's plan to maintain and enhance native vegetation and consider further improvements to methodologies. The process is fundamentally one of continual improvement.

2.3.3 *Natural vegetation assessment and monitoring program*

SFM has implemented a program of assessment and monitoring of natural vegetation areas throughout the LE. This field-based program uses a number of field-based elements to continually improve the knowledge about potential HCVs throughout the LE. Some of these key elements are described below.

HCV Monitoring

- Conservation Monitoring Audit will be completed for each HCV value identified i.e. threatened native vegetation community, threatened flora species, threatened fauna species, Aboriginal or non Aboriginal cultural heritage site etc
- The first step is to locate the HCV value in the field and inspect the entire perimeter of the area.
- If new and emerging threats are identified during the monitoring (such as weed infestations, pest animal activity, or other threats) they will be recorded. Actions to maintain or enhance HCV area will be adjusted accordingly (see threat assessment below).

HCV Monitoring Intensity

Conservation Values Monitoring Audit will be completed on all HCVs identified. Where possible, the Conservation Values monitoring Audit will be done on at least an annual basis.

HCV Monitoring Results

The HCV Monitoring results will be analysed on an annual basis. The results are to be used in an adaptive conservation management approach, with scheduled review of planning documents and tools i.e. Estate Plans / GIS to include any identified changes to the management of identified HCV's.

HCV Monitoring results are to be collated and a summary report lodged on the SFM Website on at least a 5-yearly basis, as required by the FSC certification standard.

2.3.4 Threat Assessment.

SFM has identified the following potential threats to HCVs across the LE, and implement the following controls.

Table 4. Threat and Impact Analysis to HCV's

Threat	Impact	Control
Pest plants and animals	Damage to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems	LE monitoring, wash down protocols, eradication and control programs
Plant diseases/ pathogens	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity of vegetation communities	LE monitoring, wash down protocols
Unplanned fire	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	Fire preparedness and prevention works, quick fire response and suppression
Population/habitat fragmentation; Habitat loss and degradation	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Alteration/removal of structural integrity/elements of vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	LE monitoring, working with regulators to prosecute offenders, operations managed and monitored to ensure protection of breeding habitat And that further fragmentation does not occur within the scope and control of SFM management control
Illegal removal of forest products	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	LE monitoring, working with regulators to prosecute offenders
Damage to values by illegal vehicles	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems, Impacts to Aboriginal and non-Aboriginal heritage values	LE monitoring, working with regulators to prosecute offenders
Flood, storms, drought	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	Adequately constructed crossings, adequately managed road network with appropriate drainage
Forest operations (roading, harvesting, spraying, etc)	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	SFM operations managed and monitored to ensure that none of SFM's operations negatively impact on HCVs

Threat	Impact	Control
Soil compaction, erosion, landslides/ mass movement events; Water pollution/ contamination; Water course sedimentation and turbidity; Altered hydrology function	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	SFM will construct and maintain infrastructure (including hydrological feature crossings) in a manner that minimises adverse biodiversity and environmental impacts. Specifically, it will consider biodiversity/HCV values, migration patterns of key species and aquatic and riparian zone habitats.
Soil and water values degradation and contamination	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems	Implementation of legislative controls on operations and LE monitoring.
Water quantity impacts	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems	Implementation of legislative controls on operations and LE monitoring.
Damage to geomorphological features	Damage to and/or removal of native and/or threatened species habitat; Damage or death to native and/or threatened fauna; Damage to soil and water values; Impacts to Aboriginal and non-Aboriginal heritage values; Damage and/or destruction of biodiversity in aquatic ecosystems	Implementation of legislative controls on operations and LE monitoring.
Illegal removal/ destruction of wildlife	Damage to and/or removal of native and/or threatened species habitat; Damage or death to native and/or threatened fauna	LE monitoring, working with regulators to prosecute offenders
Rubbish dumping	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems	LE monitoring, working with regulators to prosecute offenders
Trespassing	Damage or death to native and/or threatened flora and/or threatened or non-threatened vegetation communities; Damage to and/or removal of native and/or threatened species habitat; Alteration to the structural integrity/elements of vegetation communities; Damage or death to native and/or threatened fauna; Damage to soil and water values; Damage and/or destruction of biodiversity in aquatic ecosystems; Impacts to Aboriginal and non-Aboriginal heritage values	LE monitoring, working with regulators to prosecute offenders
Destruction/degradation of cultural heritage values	Impacts to Aboriginal and non-Aboriginal heritage values	LE monitoring. Report instances where this is having a serious detrimental effect to regulatory authorities, working with regulators to prosecute offenders

3 Sources of Information used in HCV Assessment

The HCV assessment program has been developed using internal and external data sources, with ongoing input from government departments and various other stakeholders.

3.1 High Conservation Values (HCV) Evaluation Framework

FSC Australia has produced GIS data, tools and other resources, representing a minimum set of requirements, which have been used to assist SFM in the identification and assessment of HCVs. The *HCV Evaluation Framework (Annex G of FSC-STD-AUS-01-2018 EN)* provides additional breakdown of the six HCV categories into specific values.

SFM acknowledges that the lack of mapped records of a given value is not evidence of their absence, and therefore apply the precautionary approach. If data, surveys or vegetation mapping are lacking or inconclusive, further information will be gathered.

In Tasmania the *Natural Values Atlas*, a spatial database maintained by the Department of Natural Resources and Environment Tasmania (NRET), holds significant information on the HCV elements including inventories of protected areas, locations of threatened species, locations of threatened vegetation communities, and other values such as geoconservation sites. This database will be checked regularly to ensure all known values within are identified. As new values are identified, they are submitted for inclusion in the Natural Values Atlas to ensure there is one point of truth for information pertaining to threatened species and communities within Tasmania.

TASVEG (the Digital Vegetation Map of Tasmania) depicts the extent of more than 150 vegetation communities. TASVEG is a resource that underpins legislated native vegetation conservation provisions, policy, vegetation management agreements and monitoring at both State and Commonwealth levels. TASVEG is continually revised and updated as areas are ground-truthed.

3.2 Geographic Information Systems

SFM's GIS incorporates detailed site records and other information captured by employees during estate management operations. The internal datasets are maintained and updated to demonstrate that the spatial coverage is continually improved. External databases consulted include:

- threatened species distributions (administered by NRET);
- Conserve Database (administered by Sustainable Timber Tasmania (STT));
- Digital Vegetation Map of Tasmania (TASVEG administered by NRET);
- Biodiversity Values Database (administered by FPA);
- Threatened Fauna Adviser (TFA) (administered by FPA) [FPA 2014];
- Forest Botany Manuals (administered by FPA) [FPA 2005];
- Natural Values Atlas (NVA) database (administered by NRET);
- Aboriginal Heritage Register (AHR) (administered by Aboriginal Heritage Tasmania (AHT)); and
- Tasmanian Heritage Register (administered by Heritage Tasmania).

Use of the above datasets enable SFM to adopt a landscape-level approach to threatened species and cultural heritage management, where appropriate.

3.3 Stakeholders and Stakeholder Engagement

The involvement of a range of stakeholders in the assessment of HCVs is critical for ensuring such values are appropriately identified and managed. Many stakeholders are widely experienced and knowledgeable. Broadly speaking there are two types of stakeholders:

- affected parties – those directly affected by activities; and
- interested parties – those with a special interest in aspects of forest management or a particular HCV.

As a component of the identification and development of management strategies for HCVs, SFM will continue to undertake consultation with a range of stakeholders. Stakeholders include, but are not limited to, representatives from the local communities, community groups, direct neighbours, industry groups, customers, contractors, forest users, Aboriginal groups, State/Commonwealth regulators, special interest non-government organisations, including environmental non-government organisations (ENGOS).

SFM's stakeholder engagement takes the form of:

- affected and interested stakeholders will be identified, including groups that may not have equal opportunities to access information;
- names and contact details of stakeholders will be maintained in a stakeholder database;
- the consultation process will be open to parties claiming an interest in or affected by the implementation of this plan;
- stakeholders can access a copy of the plan via the SFM website www.sfmes.com.au

4 Summary of HCVs

Table 5. Summary of area of HCVs identified

HCV Category	Present	Area (ha)
<i>HCV 1 - Species diversity.</i> Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.	Yes	162.7
<i>HCV 2 - Landscape-level ecosystems and mosaics.</i> 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.	No	-
<i>HCV 3 - Ecosystems and habitats.</i> Rare, threatened, or endangered ecosystems, habitats or refugia.	Yes	685.7
<i>HCV 4 - Critical ecosystem services.</i> Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.	No	-
<i>HCV 5 - Community needs.</i> 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.	No	-
<i>HCV 6 - Cultural values.</i> 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.	Yes	2.2
TOTAL		850.6

With further reference to HCVs 1-3, the breakdown of allocation of parts to these HCVs and sub-categories within them is shown in Table 4.

Table 6. Further detail summary of area of HCVs identified in categories 1-3

HCV Type	Area (ha)	Comments
HCV 1.1		
Threatened fauna: wedge-tailed nest reserves	42.1	
Threatened fauna: swift parrot habitat	118.1	swift parrot area counted in both HCV 1.1 & 1.4
Threatened flora	2.7	
HCV 1.1 TOTAL	162.7	<i>area obtained from dissolved shapefile polygon</i>
HCV 1.4		
Swift parrot habitat	118.1	swift parrot area counted in both HCV 1.1 & 1.4
HCV 1.4 TOTAL	118.1	
HCV 3.1		
Conservation covenants	346.5	
Threatened vegetation	244.4	
HCV 3.1 TOTAL	582.0	<i>area obtained from dissolved shapefile polygon</i>
HCV 3.2		
<i>Eucalyptus cordata</i>	11.7	
HCV 3.3		
Old-growth (desktop review)	218.6	

5 HCV 1 – Species Diversity

HCV 1 is fully described as:

“Species diversity: concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.”

HCV 1 targets “species diversity” through consideration of various sub-values.

Table 7. HCV 1 sub-values as per Annex G of *FSC-STD-AUS-01-2018 EN*

HCV Sub-value	Description as per Annex G
HCV 1.1	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
HCV 1.2	Areas that contain centres of endemism
HCV 1.3	Areas that contain significant concentrations of rare species that are poorly reserved at the IBRA (version 7) bioregional scale
HCV 1.4	Areas with mapped significant seasonal concentrations of species
HCV 1.5	Areas of high species/communities diversity
HCV 1.6	Refugia

5.1 HCV 1.1

5.1.1 Preamble

HCV 1.1 is fully described as:

“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.”

5.1.2 Interpretation

For the purposes of describing HCV 1.1, “rare and threatened species” are taken to refer to those listed under any status on the TSPA and/or the EPBCA. While SFM recognises that there are also many species of fauna and flora not formally listed on the TSPA and/or EPBCA that may be considered as “rare” or “threatened” by a particular agency, organisation or individual, it is also acknowledged that there are existing legislative (administrative) systems under both the TSPA and EPBCA to review the conservation status of species.

The concept of “significant concentrations” is somewhat difficult to interpret, and therefore any species considered as “threatened” is classified herein as potentially significant. However, it is challenging to then allocate parts of the estate to HCV 1.1 in an equitable manner.

5.1.3 Analysis of HCV 1.1

Allocation of species and/or habitat to HCV 1.1 – flora

All point locations with a precision greater than ± 100 m are defined as HCV 1.1, noting that lower precision records are not realistically able to be identified as being within the estate.

Table 8. Summary of listed flora species.

Species	TSPA EPBCA	Location	HCV Area (ha)	Comments
<i>Odidia achlaena</i> golden everlastingbush		Gordon Sugarloaf, Nugent [Lenah Freehold NG]	1.8	HCV 1.1 area: informal reserve previously identified for this species
<i>Pimelea curviflora</i> var. <i>gracilis</i> slender curved riceflower	r -	Dunnys Dam Access Road (off Fourteen Mile Road), Bronte Park [Lenah Freehold FM]	-	HCV 1.1 area: not allocated – extent of populations unverified and likely to be incorrectly identified (site is outside expected range for this species)
<i>Pimelea flava</i> subsp. <i>flava</i> yellow riceflower	r -	Moogara Road, Uxbridge [Lenah Freehold UX]	-	HCV 1.1 area: not allocated – point locations defining current known distribution (found over 350 m distance)
<i>Pimelea flava</i> subsp. <i>flava</i> yellow riceflower	r -	Gordon Sugarloaf, Nugent [Lenah Freehold NG]	0.9	HCV 1.1 area: informal reserve previously identified for this species
<i>Pomaderris phyllicifolia</i> subsp. <i>phyllicifolia</i> narrowleaf dogwood	r	Byers Road/Woodsdale Back Road, Woodsdale [Private JV TK]	-	HCV 1.1 area: not allocated – one point location with accuracy ± 100 m that may or may not occur within the plantation area, but also a number of records located in the neighbouring area
		TOTAL	2.7	

Table 9. Summary of listed flora species located within 200 m

Species	TSPA EPBCA	Status	Location	Comments
<i>Barbarea australis</i> riverbed wintercress	e EN	e	River Derwent, downstream of Wayatinah Dam [STT JV CO]	Found in riparian area of the River Derwent and unlikely to be in the LE.
<i>Carex capillacea</i> yellowleaf sedge	r -	-	Clarence River, Fourteen Mile Road, Bronte Park [Lenah Freehold FM]	Clarence River forms northern boundary of Lenah Freehold FM, found in riparian area just outside LE.
<i>Epacris virgata</i> pretty heath	v -	e	Birchs Bay [Private JV CH]	Found within native forest to the northwest (20-100 m) and to the south (150-200 m) of the LE boundary. Possibly could be found on firebreaks.
<i>Eucalyptus perriniana</i> spinning gum	r -	-	Spinning Gum Conservation Area, Hungry Flats, Tunnack [Private JV TK]	Located to the northwest of the LE boundary (softwood plantation) but not immediately adjoining. Unlikely to be found immediately adjoining the LE in this area.
<i>Eucalyptus perriniana</i> spinning gum	r -	-	Pelham Tier, Pelham [Lenah Freehold PE]	Located 150-200 m from the LE boundary. Area southeast of Dickinsons Road in the southeast section of this LE property possibly contains potential habitat.
<i>Lepidosperma tortuosum</i> twisting rapiersedge	r -	-	Hungry Flats, Tunnack [Private JV TK]	Located to the northwest of the LE boundary. Unlikely to be in the LE.
<i>Pimelea flava</i> subsp. <i>flava</i> yellow riceflower	r -	-	Styx Road, Tyenna [STT JV TN]	Recorded on old logging track to west of LE boundary, possibility that it may occur on plantation firebreaks and within edge of the plantation.
<i>Pimelea flava</i> subsp. <i>flava</i> yellow riceflower	r -	-	Between West Uxbridge Road & Styx River, Uxbridge [STT JV SX]	Located in native vegetation to the north of the LE boundary, possibility that it may occur on plantation firebreaks and within edge of the plantation.
<i>Pimelea flava</i> subsp. <i>flava</i> yellow riceflower	r -	-	Uxbridge [Lenah Estate UX]	Locally abundant on tracks and firebreaks in native forest & plantation on adjoining property (occurs within the LE further to the east).
<i>Pomaderris elachophylla</i> Small-leaf dogwood	v -	-	Florentine Road, Wayatinah [STT JV CO]	Recorded in wet sclerophyll forest to the east of LE plantation area, unlikely to occur in the LE at this location.
<i>Pomaderris elachophylla</i> Small-leaf dogwood	v -	-	Compton Road, Lonnvale [STT JV RU]	Located on opposite site of Compton Road in native vegetation; some possibility this species could be found around the plantation edges in the LE.
<i>Senecio squarrosus</i> leafy fireweed	r -	-	Holmes Creek, Ouse [Lenah Freehold DW]	Located just outside the LE boundary (±100 m accuracy, David Ziegeler record); possibility this species could occur in the LE.
<i>Westingia angustifolia</i> Narrowleaf westringia	r -	e	Birchs Bay [Private JV CH]	Found within native forest to the northwest (20-100 m) and to the south (150-200 m) of the LE boundary, possibly could be found on firebreaks.
<i>Xerochrysum bicolor</i> East coast paperdaisy	r -	-	North of Dunnys Creek, Bronte Park [Lenah Freehold FM]	Located just outside Lenah Freehold FM (±100 m accuracy, Fred Duncan record), possibly associated with grassland areas that occur within LE.

Allocation of species and/or habitat to HCV 1.1 – fauna

Table 10 indicates threatened fauna known to occur, or likely to occur (based on predicted range), within the estate.

Table 10. Summary of listed fauna species

Species	TSPA EPBCA	Status	Known Sites	Range Boundaries
<i>Accipiter novaehollandiae</i> grey goshawk	e -		0 records within LE; 3 additional discrete sites within 200 m of LE	CORE: 17,932 ha POTENTIAL: 25,974 ha
<i>Amelora acontistica</i> chevron looper moth	v -		0 records within LE	POTENTIAL: 16 ha
<i>Antipodia chaostola</i> tax. <i>leucophaea</i> chaostola skipper	e EN	e	0 records within LE	POTENTIAL: 3,276 ha
<i>Aquila audax</i> subsp. <i>fleayi</i> wedge-tailed eagle (Tasmanian)	e EN	e	3 nest sites within LE; additional 11 nest sites within 200 m of LE	POTENTIAL: 25,974 ha
<i>Astacopsis gouldi</i> giant freshwater crayfish	v VU	e	0 records within LE	POTENTIAL: 99 ha
<i>Botaurus poiciloptilus</i> australasian bittern	- EN		0 records within LE	POTENTIAL: not modelled

NB: All printed copies of this document are uncontrolled. Refer to the electronic copy on the Management System for the latest version.

Species	TSPA EPBCA	Status	Known Sites	Range Boundaries
<i>Catadromus lacordairei</i> green-lined ground beetle	v -		0 records within LE	POTENTIAL: 21 ha
<i>Dasyurus maculatus</i> subsp. <i>maculatus</i> spotted-tailed quoll	r VU		1 record within LE (1 sighting; 0 dens) representing 1 discrete site; additional 1 discrete site within 200 m of LE (2 sightings; 1 camera; 1 carcass; 0 dens)	POTENTIAL: 25,974 ha
<i>Dasyurus viverrinus</i> eastern quoll	- EN		45 records within LE (36 sightings; 9 capture; 0 dens) representing 27 discrete sites; additional 10 discrete sites within 200 m of LE (8 sightings; 1 capture; 1 carcass; 0 dens)	CORE: 25,035 ha
<i>Galaxias fontanus</i> swan galaxias	e EN	e	0 records	POTENTIAL: 21 ha
<i>Haliaeetus leucogaster</i> white-bellied sea-eagle	v -		0 records within LE	POTENTIAL: 25,974 ha
<i>Lathamus discolor</i> swift parrot	e CR	be	0 records within LE	CORE: 2,548 ha POTENTIAL: 15,002 ha
<i>Lissotes latidens</i> broad-toothed stag beetle	e EN	e	0 records within LE	KNOWN: 542 ha POTENTIAL: 542 ha
<i>Lissotes menalcas</i> mt mangana stag beetle	v -	e	1 record representing 1 discrete site within LE additional 8 discrete sites within 200 m of LE	KNOWN: 5,099 ha POTENTIAL: 6,189 ha
<i>Litoria raniformis</i> green and gold frog	v VU		0 records within LE	CORE: 32 ha POTENTIAL: 4,075 ha
<i>Oreixenica ptunarra</i> ptunarra brown butterfly	v EN	e	0 records within LE	POTENTIAL: 948 ha
<i>Pardalotus quadragintus</i> forty-spotted pardalote	e EN	e	0 records within LE	POTENTIAL: 1,092 ha
<i>Pasmaditta jungermanniae</i> Cataract Gorge pinhead snail	v -	e	0 records within LE	POTENTIAL: 21 ha
<i>Perameles gunnii</i> subsp. <i>gunnii</i> eastern barred bandicoot	- VU		3 records within LE (3 sightings; 0 dens) representing 3 discrete sites; 0 additional discrete sites within 200 m of LE	CORE: 2,961 ha POTENTIAL: 6,990 ha
<i>Phrantela pupiformis</i> freshwater snail (Tyenna River)	r -	e	5 records representing 5 discrete sites within LE; 1 additional discrete site within 200 m of LE	KNOWN: 3,384 ha
<i>Plesiothele fentoni</i> Lake Fenton trapdoor spider	e -	e	0 records within LE	POTENTIAL: 428 ha
<i>Prototroctes maraena</i> Australian grayling	v VU		0 records within LE	POTENTIAL: 21,589 ha
<i>Pseudalmenus chlorinda</i> tax. <i>myrsilus</i> Tasmanian hairstreak butterfly	r -	e	0 records within LE	POTENTIAL: 939 ha
<i>Pseudemoia pagenstecheri</i> tussock skink	v -		0 records within LE	POTENTIAL: 22,346 ha
<i>Pseudomys novaehollandiae</i> New Holland mouse	v EN		0 records within LE	POTENTIAL: 52 ha
<i>Sarcophilus harrisii</i> tasmanian devil	e EN	e	39 records within LE (2 scat; 32 sightings; 5 carcass; 0 dens) representing 15 discrete sites; additional 9 discrete sites within 200 m of LE (2 sightings; 2 camera; 5 carcass; 0 dens)	POTENTIAL: 25,974 ha
<i>Tyto novaehollandiae</i> subsp. <i>castanops</i> masked owl (Tasmanian)	e VU	e	0 records within LE; 2 additional discrete sites within 200 m of LE (2 sightings; 0 roost/nest sites)	CORE: 22,346 ha POTENTIAL: 25,974 ha

While all threatened fauna species are recognised as HCV1.1, only certain areas of the estate have been allocated specifically to particular species.

A total of 160.2 hectares of the estate is allocated formally to HCV 1.1 for threatened fauna values. This area will be adjusted annually as the extent of habitat values are refined, and new sites are located. Additional areas may also be allocated for species such as the Tasmanian devil, grey goshawk, and masked owl as habitat features such as den and nest sites are either located within the estate and/or database and GIS information is updated.

Table 11. Allocation of parts of the estate to HCV 1.1 – threatened fauna values

Species	Description and rationale	Area (ha)
<i>Aquila audax</i> subsp. <i>fleayi</i> wedge-tailed eagle (Tasmanian)	Within the LE, there 3 nest sites reported and an additional 11 nest sites within 200 m of LE. The subspecies is listed at both the State and Commonwealth level and is endemic to Tasmania. Nest reserves are required for the species through the management recommendations delivered through the FPA's <i>Threatened Fauna Adviser</i> . A minimum nominal reserve based on a 180 m radius around the nest site (10 ha) is allocated to each nest. Some of this nominal reserve may be outside the LE. Nests located outside the LE may also have the nominal 180 m reserve extend to within the LE. The area allocated to HCV 1.1 is based on the nominal reserve area for each nest site.	42.1
<i>Lathamus discolor</i> swift parrot	There are no reported nest sites from within or adjacent to the FTMLE. For habitat analysis refer also to HCV 1.4 (data transferred from Table xxx to this table).	118.1

Allocation of sites to HCV 1.1 – conservation covenant areas

The estate contains five conservation covenants, protected for a range of values under the Forest Conservation Fund (Table 10). The Forest Conservation Fund (FCF) was developed under the Tasmanian Community Forest Agreement and was aimed at targeting old growth and under reserved forest communities on private land for reservation purposes. Table 10 includes information on the identified values of the covenant areas allocated to HCV 1.1 because of the original intent of the reserved areas (i.e. old-growth forest, combination of threatened vegetation, under-reserved vegetation and habitat for threatened flora and fauna). With further review, some of these areas may get re-allocated to other HCV categories and sub-categories.

Table 12. Description of conservation covenants & their HCV values

Name	Area (ha)	Description of values in reserve	Possible HCV category
FCF #201 The Point	57.4	old-growth and non old-growth <i>Eucalyptus rodwayi</i> forest and woodland (DRO) old-growth <i>Eucalyptus subcrenulata</i> wet forest (WSU) highland grassy sedge land, a threatened vegetation community (MGH) <i>Sphagnum</i> peatland, a threatened vegetation community (ASP)	HCV 3.1 HCV 3.3
FCF #200 Kinvarra	158.9	old-growth and non old-growth <i>Eucalyptus pulchella</i> dry forest and woodland (DPU) old-growth and non old-growth <i>Eucalyptus globulus</i> grassy forest and woodland (DGL) old-growth <i>Eucalyptus obliqua</i> dry forest (DOB) old-growth and non old-growth <i>Eucalyptus viminalis</i> grassy forest and woodland (DVG) this vegetation community and stand structure is potential nesting and foraging habitat for the swift parrot (<i>Lathamus discolor</i>) and nesting habitat for the masked owl (<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>)	HCV 1.1 HCV 1.4 HCV 3.1 HCV 3.3
FCF #202 Maydena	9.7	old-growth and non old-growth <i>Leptospermum - Melaleuca</i> swamp forest (NLM) old-growth and non old-growth <i>Acacia melanoxylon</i> swamp forest on flats (NAF) this vegetation community and stand structure is potential nesting habitat for the grey goshawk (<i>Accipiter novaehollandiae</i>)	HCV 3.1 HCV 3.3
FCF #196 Mt Lloyd	24.3	old-growth <i>Eucalyptus delegatensis</i> dry forest and woodland (DDE) old-growth and non old-growth <i>Eucalyptus globulus</i> grassy forest and woodland (DGL) old-growth and non old-growth <i>Eucalyptus obliqua</i> dry forest (DOB) this vegetation community and stand structure is potential nesting and foraging habitat for the swift parrot (<i>Lathamus discolor</i>) and nesting habitat for the masked owl (<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>)	HCV 1.1 HCV 1.4 HCV 3.1 HCV 3.3
FCF #195 Fentonbury	96.2	<i>Eucalyptus ovata</i> forest and woodland, a threatened vegetation community (DOV) old-growth and non old-growth <i>Eucalyptus obliqua</i> dry forest (DOB) old-growth and non old-growth <i>Eucalyptus pulchella</i> dry forest and woodland (DPU) this vegetation community and stand structure is potential nesting and foraging habitat for the swift parrot (<i>Lathamus discolor</i>) and nesting habitat for the masked owl (<i>Tyto novaehollandiae</i> subsp. <i>castanops</i>)	HCV 1.1 HCV 1.4 HCV 3.1 HCV 3.3
	346.5	TOTAL	

5.1.4 Management

All sites and species

From a strategic perspective, the size and location of the estate, coupled with the substantial area of natural vegetation within it, results in the potential for many of Tasmania's threatened species to occur within or adjacent to the estate. Most threatened species within the estate are dependent on natural ecosystems e.g. natural vegetation or stream systems. A limited number of threatened flora and fauna also occur in plantation forests.

Operational areas

At an operational level, plantation management activities have the potential to impact on surrounding natural vegetation areas and threatened species locations and habitats. For forestry operations and activities, the *Forest Practices Code* requires detailed evaluation of threatened species (known and potential) and the development of management strategies to ensure the protection and management of threatened species and their habitat prior to the certification of forest practices plans (FPPs). The *Forest Practices Code* also provides for general biodiversity management through the application of streamside reserves, consideration and management for adjacent reserved areas, requirements for washdown control measures to prevent the introduction of weeds and disease, and consideration of factors such as potential hybridisation between natural species and introduced tree species.

While it is not practical to describe specific management related to all species classified as HCV 1.1, the general approach to management of threatened species in operational areas will be as follows:

- Database review;
- Field verification; and
- Specialist advice.

5.2 HCV 1.2

5.2.1 Preamble

HCV 1.2 is fully described as:

“Areas that contain centres of endemism.”

5.2.2 Interpretation

Annex G of FSC-STD-AUS-01-2018 EN does not provide specific guidance on the definition of “centres of endemism”. During the *Regional Forest Agreement* assessment process, it was recognised that Tasmania did not include specific areas of vertebrate endemism at scales practical to measure except at the whole-of-State level (PLUC 1997a) and “centres of endemism” were described (Mesibov 1996; PLUC 1997a).

5.2.3 Analysis of HCV 1.2

No parts of the Lenah Estate are allocated to HCV 1.2.

5.2.4 Management

Not applicable.

5.3 HCV 1.3

5.3.1 Preamble

HCV 1.3 is fully described as:

“Areas that contain significant concentrations of rare species that are poorly reserved at the IBRA region scale.”

5.3.2 Interpretation

In Tasmania, the *Tasmanian Threatened Species Protection Act 1995* includes a specific category of “rare” species, which are “a taxon of native flora or fauna may be listed as rare if it has a small population in Tasmania that is not endangered or vulnerable but is at risk”. This definition is considered to at least partly meet the intent of “rare species” under the HCV 1.3.

For the purposes of this analysis, the *Interim Biogeographic Regionalisation for Australia (IBRA) Version 7* has been used (CofA 2012), based on regions defined within Tasmania, rather than considering Tasmania as a single bioregion. If “rare” species are interpreted broadly to include any species that are listed on the TSPA and/or EPBCA, the extent of the estate allocated to HCV 1.3 would be equivalent to HCV 1.1. However, HCV 1.3 considers these matters at a finer scale.

5.3.3 Analysis of HCV 1.3

The analysis under HCV 1.1 clearly indicates that no parts of the estate supports “significant concentrations of rare species” in terms of those listed on the TSPA and/or EPBCA.

Another possible source of information on “rare” vascular flora species in Tasmania, especially at the bioregional scale of consideration, is *Reservation Status of Tasmanian Native Higher Plants* (Lawrence et al. 2008). This identified twelve categories of indications of comprehensiveness, representativeness and adequacy of reservation as follows:

1	Fully reserved	All records occur within the CAR reserve system.
2	Partially reserved 1	Examples reserved in all bioregions in which the species occurs.
3a	Partially reserved 2	Reserved in half or more bioregions in which the species occurs.
3b	Partially reserved 3	Reserved in less than half the bioregions in which the species occurs.
4	Not reserved	Was not record within the CAR reserve system.
5	No data	There were no observations for the species recorded in the NVA as at 2005.
6	Not in a reserve >1,000 ha	Was not recorded in any CAR reserve greater than 1,000 ha
7	Not in a reserve >500 ha	Was not recorded in any CAR reserve greater than 500 ha
8	Not in a dedicated formal reserve	There are no records occurring in any dedicated formal reserve.
9	Reserved only in private reserves	All the records in reserves occur only in private reserves.
10	Reserved only in informal reserves	All the records in reserves occur only in informal reserves.
11	Reserved only in the WHA	All records in reserves occur only within the Tasmanian World Heritage Area.
12	Potential stochastic risk	Potentially has restricted distribution within a single or adjoining reserve(s).

Of these categories, species classified above as 3b and 4 have been selected and shown in Table 13 with commentary on relevance to the Lenah Estate.

Table 13. Poorly reserved vascular flora species: categories 3b & 4 as per Lawrence et al. (2008) that may occur on the Lenah Estate.

Species	Status Reserve Category	Relevance to Lenah Estate
<i>Acacia derwentiana</i> derwent wattle	4	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. not technically HCV 1.3. However, if present, treat as HCV 1.3 because it is localised to a limited number of river systems (but would be naturally excluded due to riparian habitat).
<i>Elatine gratioloides</i> waterwort	3b	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Lepidosperma globosum</i> stiff swardsedge	3b	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Oxalis radicata</i> stoutroot woodsorrel	4	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Persicaria praetermissa</i> arrow waterpepper	3b	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Portulaca oleracea</i> common purslane	4	May occur in LE (occurs as a “weed” of disturbed ground in Tasmania). If present, will not occur as “significant concentrations of rare species”.
<i>Schoenus absconditus</i> hidden bogsedge	3b	May occur in LE. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Senecio prenanthoides</i> common fireweed	3b	Likely to occur in LE. This is a widespread and common species but at the time of Lawrence et al. (2008), it was under-recorded. If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Thelymitra simulata</i> collared sun-orchid	3b	May occur in LE. Species poorly understood – may be of hybrid origin and part of a wider complex of taxa requiring taxonomic review (M. Wapstra pers. comm.). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Thelymitra viridis</i> green sun-orchid	4	May occur in LE. This is a widespread, species but at the time of Lawrence et al. (2008), it was under-recorded (M. Wapstra pers. comm.). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Thelymitra x irregularis</i> crested sun-orchid	3b	May occur in LE. This is a hybrid taxon of low conservation concern as both putative parents are not listed as threatened because both are widespread and common (M. Wapstra pers. comm.). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Typha domingensis</i> slender cumbungi	3b	May occur in LE (mainly in farm dams and fire-fighting ponds). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.
<i>Typha orientalis</i> broadleaf cumbungi	3b	May occur in LE (mainly in farm dams and fire-fighting ponds). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.

Species	Status Reserve Category	Relevance to Lenah Estate
<i>Wolffia australiana</i> tiny duckweed	3b	May occur in LE (mainly in farm dams and fire-fighting ponds as a component of “duckweed”). If present, will not occur as “significant concentrations of rare species” i.e. will not be HCV 1.3.

5.3.4 Management

Refer to HCV 1.1.

5.4 HCV 1.4

5.4.1 Preamble

HCV 1.4 is fully described as:

“Areas with mapped significant seasonal concentrations of species.”

5.4.2 Interpretation

Areas with significant seasonal concentrations of species are areas important to the lifecycle or migration paths of migratory and communal breeding species.

5.4.3 Analysis of HCV 1.4

In Tasmania, HCV 1.4 has the greatest relevance to the seasonal migration patterns of birds (some marine migrations not relevant to the forest landscape also occur). Known and potential breeding and foraging habitat for *Lathamus discolor* (swift parrot) occurs on the Lenah Estate. An assessment of migratory birds is provided in Table 14.

Table 14. List of migratory birds to Tasmania

Species	Status	Migratory Behaviour	Reason not considered HCV 1.4
little egret (<i>Egretta garzetta</i>)	TSPA: not listed EPBCA: not listed	Rare but regular autumn-winter visitor to Tasmania. Habitat is swamps, estuaries, lagoons and farm dams.	Activities within commercial parts of LE unlikely to impact on habitat.
great egret (<i>Ardea alba</i>)	TSPA: not listed EPBCA: Migratory Marine Species	Uncommon but regular autumn-winter visitor to Tasmania. Habitat is swamps, estuaries, lagoons and farm dams.	Activities within commercial parts of LE unlikely to impact on habitat.
cattle egret (<i>Ardea ibis</i>)	TSPA: not listed EPBCA: Migratory Marine Species	Common and regular autumn-winter visitor to Tasmania. Habitat is pastures, paddocks and farm dams.	Activities within commercial parts of LE unlikely to impact on habitat.
swamp harrier (<i>Circus approximans</i>)	TSPA: not listed EPBCA: not listed	Most Tasmanian birds migrate north during winter. Habitat is open country, pastures, crops, reedbeds and coastal. Breeds in Tasmania (nests in grasslands, wetlands, paddocks and crops).	Activities within commercial parts of LE unlikely to impact on habitat.
Latham's snipe (<i>Gallinago hardwickii</i>)	TSPA: not listed EPBCA: Migratory Wetland Species	Breeds in far east Russia, Kuril Islands and Japan. A regular migrant to eastern Australia (including Tasmania) during the southern summer. Habitat is freshwater wetlands with dense cover of rushers or grass tussocks, also margins of lakes, rivers and swamps. Does not breed in Tasmania.	Activities within commercial parts of LE unlikely to impact on habitat.
blue-winged parrot (<i>Neophema chrysostoma</i>)	TSPA: not listed EPBCA: not listed	Summer migrant. Breeds in Tasmania (nests in tree hollows). Habitat is generally grassy woodland, heathland and grassy paddocks but also shares habitat with the orange-bellied parrot (coastal saltmarshes).	Some parts of the native vegetation within the LE could be utilised by this species, Utility could extend to peripheral habitats such as old pastures, regenerating cleared land and other such habitats. Some indications of a potentially significant decline in this species in Tasmania since 2000 (Newman & Ashby 2018). However, activities within commercial parts of LE unlikely to impact on habitat.

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Species	Status	Migratory Behaviour	Reason not considered HCV 1.4
orange-bellied parrot (<i>Neophema chrysogaster</i>)	TSPA: endangered EPBCA: Critically Endangered	Winters on coasts of Victoria and South Australia. Spring-summer resident in Tasmania, where it breeds in tree hollows in southwest Tasmania. Coastal saltmarsh vegetation important on migratory path down west coast.	Activities within commercial parts of LE unlikely to impact on habitat.
pallid cuckoo (<i>Cuculus pallidus</i>)	TSPA: not listed EPBCA: not listed	A regular spring and summer migrant. Habitat is open woodland, gardens and agricultural land with trees. Breeds in Tasmania (brood parasite of mainly robins and honeyeaters).	Activities within commercial parts of LE unlikely to impact on habitat.
fan-tailed cuckoo (<i>Cacomantis flabelliformis</i>)	TSPA: not listed EPBCA: not listed	A summer visitor to Tasmania. Habitat is forest and woodland, parks and gardens. Breeds in Tasmania (brood parasite of mainly robins and honeyeaters).	Activities within commercial parts of LE unlikely to impact on habitat.
Horsfields bronze-cuckoo (<i>Chrysococcyx basalidis</i>)	TSPA: not listed EPBCA: not listed	A summer visitor to Tasmania. Habitat is open woodland, scrub, parks and gardens. Breeds in Tasmania (brood parasite of small birds).	Activities within commercial parts of LE unlikely to impact on habitat.
shining bronze-cuckoo (<i>Chrysococcyx lucidus</i>)	TSPA: not listed EPBCA: not listed	A summer visitor to Tasmania. Habitat is forest, woodland, parks, gardens and scrub. Breeds in Tasmania (brood parasite of small birds).	Activities within commercial parts of LE unlikely to impact on habitat.
white-throated needletail (<i>Hirundapus caudacutus</i>)	TSPA: not listed EPBCA: Vulnerable, Migratory Terrestrial Species	A common summer migrant to eastern Australia, occasionally Tasmania. Breeds in Asia.	Activities within any part of LE unlikely to impact on habitat.
fork-tailed swift (<i>Apus pacificus</i>)	TSPA: not listed EPBCA: Migratory Marine Species	Extremely rare vagrant to Tasmania.	Activities within any part of LE unlikely to impact on habitat.
striated pardalote (<i>Pardalotus striatus</i>)	TSPA: not listed EPBCA: not listed	Migrates to Tasmania in spring-summer, where it breeds in tree hollows, in excavated tunnels, cliffs and artificial structures. Habitat is forest and woodland.	Activities within commercial parts of LE unlikely to impact on habitat.
flame robin (<i>Petroica phoenicea</i>)	TSPA: not listed EPBCA: not listed	Partial spring migrant to Tasmania. Habitat is dry forest and woodland.	Activities within commercial parts of LE unlikely to impact on habitat.
satin flycatcher (<i>Myiagra cyanoleuca</i>)	TSPA: not listed EPBCA: Migratory Terrestrial Species	A common spring-summer migrant. Breeds in Tasmania. Habitat is forest.	Activities within commercial parts of LE unlikely to impact on habitat.
grey fantail (<i>Rhipidura fuliginosa</i>)	TSPA: not listed EPBCA: not listed	A common summer migrant, although many overwinter. Breeds in Tasmania. Habitat is forest and scrub.	Activities within commercial parts of LE unlikely to impact on habitat.
black-faced cuckoo-shrike (<i>Coracina novaehollandiae</i>)	TSPA: not listed EPBCA: not listed	A common summer migrant, although some may overwinter. Breeds in Tasmania. Habitat is open forest and woodland, scrub, orchards and gardens.	Activities within commercial parts of LE unlikely to impact on habitat.
dusky woodswallow (<i>Artamus cyanopterus</i>)	TSPA: not listed EPBCA: not listed	A common summer migrant. Breeds in Tasmania. Habitat is forest and woodland, coastal scrub and wooded farmland.	Activities within commercial parts of LE unlikely to impact on habitat.
welcome swallow (<i>Hirundo neoxena</i>)	TSPA: not listed EPBCA: not listed	A common summer migrant. Breeds in Tasmania (generally under artificial structures). Habitat variable.	Activities within commercial parts of LE unlikely to impact on habitat.
tree martin (<i>Hirundo nigricans</i>)	TSPA: not listed EPBCA: not listed	A common summer migrant. Breeds in Tasmania (usually in tree hollows). Habitat variable but usually wooded areas, often near water.	Activities within commercial parts of LE unlikely to impact on habitat.
clamorous reed-warbler (<i>Acrocephalus stentoreus</i>)	TSPA: not listed EPBCA: not listed	An uncommon summer migrant, generally restricted to the north of the State. Habitat is dense reedbeds and other dense vegetation near freshwater, such as willows. May breed in Tasmania.	Activities within commercial parts of LE unlikely to impact on habitat.
silveryeye (<i>Zosterops lateralis</i>)	TSPA: not listed EPBCA: not listed	Most birds migrate north during winter (many overwinter and never migrate). Breeds in Tasmania. Habitat variable.	Activities within commercial parts of LE unlikely to impact on habitat.

Swift parrot

HCV 1.4 is most relevant to the swift parrot (*Lathamus discolor*), classified as Critically Endangered and Endangered, respectively, on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Tasmanian *Threatened Species Protection Act 1995*. This species over-winters on mainland Australia but migrates into Tasmania in spring to take advantage of a foraging resource and to breed in the State, before migrating back to mainland Australia in early autumn (e.g. Saunders & Tzaros 2011). Significant habitat is all potential breeding habitat within the south east potential breeding range and the north west breeding areas.

Table 15. Parts of the estate potentially allocated to HCV 1.4 (swift parrot habitat)

LE block code	Potential foraging habitat ¹ (ha)	Total potential foraging & nesting habitat ²
LL	0.0	34.3
GH	21.1	35.9
UX	3.8	3.8
NG	1.1	7.1
HI	25.6	36.9
TOTAL	51.6	118.1

¹ DGL, DOV & WGL communities present in LE or identified as "swift parrot habitat blue gum" in covenant documents

² overlap occurs and some areas are both potential foraging & nesting habitat

5.4.4 Management

Refer to HCV 1.1 in relation to the swift parrot.

5.5 HCV 1.5

5.5.1 Preamble

HCV 1.5 is fully described as:

"Areas of high species/communities diversity."

5.5.2 Interpretation

Annex G of FSC-STD-AUS-01-2018 EN does not provide specific guidance in relation to HCV 1.5.

5.5.3 Analysis of HCV 1.5

For the purposes of this analysis, HCV 1.5 has been subsumed into HCV 1.1, 1.2 & 1.3, as well as HCV 3.1. No parts of the estate are allocated to HCV 1.5.

5.5.4 Management

Refer to HCV 1.1 (threatened fauna) and HCV 3.1 (threatened vegetation types).

5.6 HCV 1.6

5.6.1 Preamble

HCV 1.6 is fully described as:

"Refugia."

5.6.2 Interpretation

For the purposes of this analysis, the concept of refugia in relation to the Tasmanian setting is divided into two categories: glacial refugia and contemporary refugia.

5.6.3 Analysis of HCV 1.6

Glacial refugia

Glacial refuge-dependent forests are those that occur in climatic and/or topographic refuges that retain elements of the climatic regime prior to last glacial period (PLUC 1997a). Kirkpatrick & Fowler (1998) identified likely glacial refugia in Tasmania (Table 13), noting that none of these broadly-defined areas coincide with any part of the Lenah Estate.

Contemporary refugia

Contemporary refugia contain communities that are strongly associated with climatic and topographic factors that confer a degree of protection from endangering processes such as fire and disease. These refugia have two important roles: they provide locations for the conservation of species and communities, and they provide sources for population expansion if limiting conditions abate. Refugia are considered increasingly important in the face of projected climate change.

Information on contemporary refugia was compiled as part of the *Regional Forest Agreement* assessment for Tasmania (PLUC 1997a), identifying substantial areas that met particular criteria (Table 14). None of these coincide substantially with any part of the Lenah Estate.

5.6.4 Management

Not applicable.

6 HCV 2 – Landscape-Level Ecosystems and Mosaics

HCV 2 is fully described as:

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.

Table 16. HCV 2 sub-values as per Annex G of FSC-STD-AUS-01-2018 EN

HCV sub-value	Description as per Annex G
HCV 2.1	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
HCV 2.2	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
HCV 2.3	Forests that provide regionally significant habitat connectivity between larger forest areas and/or refugia
HCV 2.4	Intact Forest Landscapes, wilderness areas, forests that are roadless, and/or have not been affected by forest management activity

HCV 2 includes areas that are in (or close to) what might be called their “natural” condition. Such areas have a relatively full complement of the species that are appropriate to the habitat. HCV 2 designation may arise because the intact forest area is unusually large and therefore of high value due to its contribution to wilderness or landscape values.

The general approach in assessing for HCV 2 is to compare forest characteristics (such as extent and intensity of harvest practices, forest communities, successional stages, structures, and species composition and abundance) with native forests that have only been subject to natural disturbance processes or minimal human intervention. Aerial photography or satellite images of the surrounding landscape should also be considered.

6.1 HCV 2.1

6.1.1 Preamble

HCV 2.1 is fully described as:

“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.”

6.1.2 Interpretation

The High Quality Wilderness mapping produced during the Regional Forest Agreement was used to identify parts of the State lacking disturbance and with a high biophysical naturalness rating.

6.1.3 Analysis of HCV 2.1

No areas of HCV 2.1 have been identified within the Lenah Estate. This is consistent with the context of the estate being mainly on private land, generally surrounded by other private land, and substantial parts having been modified through various land use practices (mainly commercial wood production).

6.1.4 Management

Not applicable.



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6.2 HCV 2.2

6.2.1 Preamble

HCV 2.2 is fully described as:

“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.”

6.2.2 Interpretation

Regionally significant forest is significant due to its size, condition, and/or importance to biodiversity conservation. Factors to consider include: (1) rarity of forests of this size and quality within the region, and (2) less affected by anthropogenic factors than similar areas in the region.

6.2.3 Analysis of HCV 2.2

No sources were identified that provide information on possible regionally significant landscape-scale biodiversity values potentially present within the estate. On this basis, no areas of HCV 2.2 have been identified.

6.2.4 Management

Not applicable.

6.3 HCV 2.3

6.3.1 Preamble

HCV 2.3 is fully described as:

“Forests that provide regionally significant habitat connectivity between larger forest areas and/or refugia.”

Forests that may be classified as refugia are considered under HCV 1.6 (refugia).

6.3.2 Interpretation

Wildlife Habitat Strips (WHS) were extensively established on State forest during the 1990s to create connectivity. These were designed to meet the intent and specifics of the *Forest Practices Code* and were appropriately coded on the Management Decision Classification system (Orr & Gerrand 1998). While some larger private properties may warrant establishment of WHSs, these are applied on a case-by-case basis through consultation with the Forest Practices Authority on an as-needs basis. No such WHSs are present within the private portion of the estate.

6.3.3 Analysis of HCV 2.3

No areas of HCV 2.3 have been identified.

6.3.4 Management

Not applicable.

6.4 HCV 2.4

6.4.1 Preamble

HCV 2.4 is fully described as:

“Intact Forest Landscapes, wilderness areas, forests that are roadless, and/or have not been affected by forest management activity.”

6.4.2 Interpretation

An Intact Forest Landscape (IFL) is a 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 (IFL 2017). A global map of IFL areas is maintained by the Intact Forest Landscapes website group (IFL 2017).

6.4.3 Analysis of HCV 2.4

The IFL indicative area approaches the edge of the estate in the upper River Derwent area, where it appears the IFL area is “fuzzily” defined as approximating the river’s course. All parts of the estate in this region are plantation and no areas are indicated as native vegetation intended for wood production. On this basis, no areas of HCV 2.4 have been identified.

6.4.4 Management

Not applicable.

7 HCV 3 – Ecosystems and Habitats

HCV 3 is described as:

Ecosystems and habitats. Rare, threatened, or endangered ecosystems, habitats or refugia

The focus of HCV 3 is forests that are in rare, threatened or endangered ecosystems, or that contain such ecosystems.

Table 17. HCV 3 sub-values as per Annex G of FSC-STD-AUS-01-2018 EN

HCV sub-value	Description as per Annex G
HCV 3.1	Ecosystems (including rainforests) that are threatened, depleted or poorly reserved at the IBRA (version 7) bioregional scale, or are subject to threatening processes predicted to substantially reduce their extent and function
HCV 3.2	Areas for conservation of important genes or genetically distinct populations
HCV 3.3	Old-growth forest
HCV 3.4	Remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes

For the purposes of this analysis, “ecosystems and habitats” are interpreted in the broader sense of the terms, that is, more in relation to ecosystems and vegetation types, rather than as specific habitats of particular flora or fauna species, as the latter are covered by HCV1.

7.1 HCV 3.1

7.1.1 Preamble

HCV 3.1 is described as:

“Ecosystems (including rainforests) that are threatened, depleted or poorly reserved at the bioregion scale, or are subject to threatening processes predicted to substantially reduce their extent and function.”

7.1.2 Interpretation

SFM considers it most relevant and appropriate to apply TASVEG classifications in consideration of HCV 3.1 because it is the mapping layer that is maintained by the Tasmanian Department of Natural Resources and Environment Tasmania (NRET) and relates most closely to the requirements of legislation such as the Tasmanian *Nature Conservation Act 2002*, the Tasmanian *Forest Practices Act 1985* and associated *Forest Practices Regulations 2017*. In addition, SFM recognises other systems of vegetation classification that may have relevance to HCV 3.1, specifically Threatened Ecological Communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

SFM has used vegetation mapping units as a practical surrogate for “ecosystems and habitat” (in a broad sense). HCV 3.1 makes specific reference to “rainforests” as part of the concept of “ecosystems”. Only some State-described (i.e. TASVEG) rainforest vegetation mapping units are formally listed as threatened under Schedule 3A of the Tasmanian Nature Conservation Act 2002.

7.1.3 Analysis of HCV 3.1

The extent of every TASVEG mapping unit within the estate was analysed by overlaying the estate data with the most up-to-date TASVEG layer (TASVEG 4.0). While the limitations of the TASVEG mapping layer are well understood, it is the most appropriate baseline on which to consider HCV 3.1, until all areas have been field-verified.

The area of native vegetation potentially allocated to HCV 3.1 is divided into six broad categories:

- (1) State-listed vegetation types;
- (2) EPBCA-listed Threatened Ecological Communities;
- (3) all rainforest and related TASVEG mapping units;
- (4) under-represented non-threatened vegetation communities;
- (5) parts of the LE subject to formal conservation covenants; and
- (6) State-listed threatened vegetation types adjoining Joint Venture parts of the LE.

State-listed vegetation types

Table 18 lists all TASVEG mapping units identified within the Lenah Estate.

Table 18. Area of TASVEG mapping units.

TASVEG code	TASVEG name	IBRA 7.0 bioregion code				NCA	EPBCA
		TSE	TSR	TNM	TOTAL		
ASF	freshwater aquatic sedgeland and rushland	0	3.4	0	3.4	threatened	
DAC	<i>Eucalyptus amygdalina</i> coastal forest and woodland	2.1	0	0	2.1		
DAD	<i>Eucalyptus amygdalina</i> forest and woodland on dolerite	3.4	14.0	0.1	17.5		
DCR	<i>Eucalyptus cordata</i> forest	0	12.4	0	12.4		
DDE	<i>Eucalyptus delegatensis</i> dry forest and woodland	3.1	149.8	0	152.9		
DDP	<i>Eucalyptus dalrympleana</i> - <i>Eucalyptus pauciflora</i> forest and woodland	0	225.4	0	225.4		
DGL	<i>Eucalyptus globulus</i> dry forest and woodland	1.4	0	0	1.4	threatened	
DOB	<i>Eucalyptus obliqua</i> dry forest	136.9	504.7	0	641.6		
DOV	<i>Eucalyptus ovata</i> forest and woodland	0	3.8	0	3.8	threatened	CR
DPD	<i>Eucalyptus pauciflora</i> forest and woodland on dolerite	0	22.9	0	22.9		
DPU	<i>Eucalyptus pulchella</i> forest and woodland	282.0	373.8	0	655.7		
DRO	<i>Eucalyptus rodwayi</i> forest and woodland	0	55.2	0	55.2		
DTD	<i>Eucalyptus tenuiramis</i> forest and woodland on dolerite	17.2	11.2	0	28.4		
DTO	<i>Eucalyptus tenuiramis</i> forest and woodland on sediments	191.4	1.5	0	192.8	threatened	
DVG	<i>Eucalyptus viminalis</i> grassy forest and woodland	2.5	7.9	0	10.4		
GPH	highland <i>Poa</i> grassland	0	32.8	0	32.8	threatened	
GSL	lowland grassy sedgeland	0	0.4	0	0.4		
MBS	buttongrass moorland with emergent shrubs	0	29.1	0	29.1		
MGH	highland grassy sedgeland	0	10.2	0	10.2	threatened	
NAD	<i>Acacia dealbata</i> forest	8.2	137.0	0	145.3		
NAV	<i>Allocasuarina verticillata</i> forest	1.4	0	0	1.4		
NBA	<i>Bursaria</i> - <i>Acacia</i> woodland and scrub	3.2	27.4	0	30.6		
RMS	<i>Nothofagus</i> - <i>Phyllocladus</i> short rainforest	0	18.5	0	18.5		
RMT	<i>Nothofagus</i> - <i>Atherosperma</i> rainforest	0	13.4	0	13.4		
RMU	<i>Nothofagus</i> rainforest (undifferentiated)	0	5.8	0	5.8		
SBR	broad-leaf scrub	5.6	40.1	0	45.6		
SHS	subalpine heathland	0	13.7	0	13.7		
SHW	wet heathland	0	1.9	0	1.9		
SLL	<i>Leptospermum lanigerum</i> scrub	0	18.1	0	18.1		
SLS	<i>Leptospermum scoparium</i> heathland and scrub	0	0.5	0	0.5		
SMR	<i>Melaleuca squarrosa</i> scrub	0.6	0	0	0.6		
WDA	<i>Eucalyptus dalrympleana</i> forest	0	176.9	0	176.9		
WDB	<i>Eucalyptus delegatensis</i> forest with broad-leaf shrubs	0	332.0	0	332.0		
WDL	<i>Eucalyptus delegatensis</i> forest over <i>Leptospermum</i>	0	4.0	0	4.0		
WDR	<i>Eucalyptus delegatensis</i> forest over rainforest	0	775.5	0	775.5		
WDU	<i>Eucalyptus delegatensis</i> wet forest (undifferentiated)	0	225.4	0	225.4		
WGL	<i>Eucalyptus globulus</i> wet forest	0.2	21.1	0	21.3		
WOB	<i>Eucalyptus obliqua</i> forest with broad-leaf shrubs	116.8	307.9	0	424.6		
WOL	<i>Eucalyptus obliqua</i> forest over <i>Leptospermum</i>	1.3	1.2	0	2.5		
WOU	<i>Eucalyptus obliqua</i> wet forest (undifferentiated)	38.7	386.2	0.3	425.2		
WRE	<i>Eucalyptus regnans</i> forest	26.4	316.8	0	343.3		
WSU	<i>Eucalyptus subcrenulata</i> forest and woodland	0	4.4	0	4.4		
TOTAL		842.4	4286.3	0.4	5128.9		

At this stage of analysis, all areas mapped as putatively threatened vegetation mapping units are included in HCV 3.1. However, a future analysis of HCV 3.1 may include a consideration of a vegetation condition assessment score derived from formal vegetation condition assessments (VCAs) undertaken in accordance with *A Manual for Assessing Vegetation Condition in Tasmania* (Michaels 2006).

Table 19. Area of threatened TASVEG mapping units

TASVEG code	TASVEG Name	Area (ha)	Comments
ASF	freshwater aquatic sedgeland and rushland	3.4	Polygons: 5 Comments: Identified from past FPP planning work. ASF is quite variably mapped and all polygons are likely to require verification to confirm as ASF (or some other form of threatened wetland mapping unit), with particular emphasis on the area of each patch.

TASVEG code	TASVEG Name	Area (ha)	Comments
DGL	<i>Eucalyptus globulus</i> dry forest and woodland	1.4	Polygons: 1 Comments: This mapping unit has particular relevance as it has a strong association with the Critically Endangered (EPBCA) swift parrot. Field verification is considered essential. Additional areas are likely to be present (e.g. past FPP information that documents potential swift parrot foraging habitat that states it contains blue gum, two conservation covenants list DGL as being present but TASVEG mapping does not reflect this).
DOV	<i>Eucalyptus ovata</i> forest and woodland	3.8	Polygons: 1 Comments: This mapping unit has particular relevance as it has a strong association with the Critically Endangered (EPBCA) swift parrot. Field verification is considered essential. This community is known to be poorly mapped. Potential for other small areas of this community to be identified with field verification.
DTO	<i>Eucalyptus tenuiramis</i> forest and woodland on sediments	192.8	Polygons: 18 Comments: DTO is a variably mapped community, often vastly over-mapped. It can co-occur with a range of other vegetation communities that may have a similar aerial photography "signature". Field verification is considered essential. Field verification could result in this area reducing by 25-50%.
GPH	highland <i>Poa</i> grassland	32.8	Polygons: 7 Comments: This mapping unit has particular relevance as it has a strong association with the Endangered (EPBCA) ptunarra brown butterfly. Field verification is considered essential. Needs field verification to firm up the total area of this community (potentially could increase in size but still expected to be <50 ha). Located on one property (Lenah freehold FM) of which part is covered by a conservation covenant.
MGH	highland grassy sedgeland	10.2	Polygons: 4 Comments: Field verification is considered essential because this community is often poorly-mapped due to occurring in a mosaic with other subalpine non-forest vegetation communities Located on the same property as GPH (Lenah freehold FM). Almost all of the mapped MGH is contained within the conservation covenant.
TOTAL		244.4	

EPBCA-listed vegetation types

The listings of Threatened Ecological Communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* usually only include indicative maps of their distribution. Therefore, the most appropriate TASVEG equivalent mapping units are used to consider sites that may support the EPBCA-listed entities. It is not considered appropriate to map these areas as HCV 3.1 until they have been field-verified as present and meeting the specific key diagnostic characteristics and condition thresholds because this is a recognised part of the process of identifying the EPBCA-listed entities.

The TASVEG mapping units identified that may be allocable, with commentary on their possible extent within the estate, currently estimated at approximately **3.8 ha**.

Table 20. Commonwealth-based threatened ecological communities

Vegetation nomenclature follows listings as per schedules of the EPBCA for Threatened Ecological Communities; TASVEG refers to equivalent mapping units under TASVEG 4.0 classification, if available (+ suggests it may occur in more than one TASVEG mapping unit)

Full name	Status	Possible TASVEG equivalents	Comments
<i>Eucalyptus ovata</i> - <i>Callitris oblonga</i> Forest	VU	DOV, SRI+	Only one polygon of DOV has been identified (see Table xxx). No DOW or WBR mapped (unlikely from within LE). Polygon of DOV needs field verification to confirm if it meets the thresholds of the EPBCA-listed entity (size, condition, composition, etc.).
Tasmanian Forests and Woodlands Dominated by Black Gum or Brookers Gum (<i>Eucalyptus ovata</i> / <i>E. brookeriana</i>)	CR	DOV & DOW WBR	Areas of DOV are identified from the LE so this TEC is potentially present.
Alpine Sphagnum Bogs and Associated Fens	EN	ASP	No areas of ASP are identified from the LE. Small areas may be present on Lenah Freehold FM but unlikely to equate to any significant area.
Lowland Native Grasslands of Tasmania	CR	GPL, GTL+	No areas of GPL or GTL are identified from the LE. Some small areas may be present but unlikely to equate to any significant area.
Giant Kelp Marine Forests of South East Australia	EN	n/a	Not applicable.
Subtropical and Temperate Coastal Saltmarsh	VU	AHS, ARS, ASS, AUS	Not applicable.

Rainforest

In Tasmania, rainforests are classified within the TASVEG classification system in the super-category of “rainforest and related scrub”, which includes 16 individual mapping units. None have been mapped within the estate.

Table 21. Area of all TASVEG rainforest and related scrub mapping units

TASVEG code	TASVEG name	Area (ha)	Comments
RMS	<i>Nothofagus - Phyllocladus</i> short rainforest	18.5	Initial examination of aerial imagery indicates much of the area allocated to RMS may be better classified as RMT (or more likely, a non-rainforest community). Field verification will be required to confirm this.
RMT	<i>Nothofagus - Atherosperma</i> rainforest	13.4	Initial examination of aerial imagery indicates much of the area allocated to RMT may be better classified as a non-rainforest community because of the presence of a eucalypt canopy. Field verification will be required to confirm this.
RMU	<i>Nothofagus</i> rainforest (undifferentiated)	5.8	Areas of RMU would be allocated to other mapping units (most likely RMT if such patches are indeed rainforest). Field verification will be required to confirm this.
TOTAL		37.7	

Under-represented non-threatened vegetation communities by IBRA

To take account of the concept of ecosystems (including rainforests) that are threatened, depleted or poorly reserved at the IBRA (version 7) bioregional scale”, an additional analysis was undertaken. Native vegetation within the estate is essentially only found in two bioregions: South East (TSE) & Southern Ranges (TSE). In the absence of field verification of what are all relatively small areas, no sites are allocated to HCV 3.1 on the basis of under representation at a bioregional level.

Table 22. Non-threatened vegetation communities that have <20% reserved or <1,000 ha total area in bioregion: Southern Ranges (TSR)

TASVEG name & code	Area (ha)	Reserved area (ha)	% Reserved	Under-represented reason	Area in LE (ha)	Comment
<i>Eucalyptus cordata</i> forest (DCR)	80	40	56	<1,000 ha	12.4	This patch is allocated to HCV.
<i>Eucalyptus tenuiramis</i> forest and woodland on dolerite (DTD)	300	100	36	<1,000 ha	11.2	Initial review indicates this site is incorrectly mapped and will be DTO because the geology is mapped as sandstone, not dolerite, and there are slivers of DTO mapped adjacent. Field verification needed before allocation to HCV 3.1 is considered warranted.
<i>Eucalyptus viminalis</i> grassy forest and woodland (DVG)	700	80	12	<20% reserved & <1,000 ha	7.9	This is a poorly mapped community, both generally and more specifically within the LE. An initial review suggests that 0.3 ha is not DVG (mapping issues) but the other 7.6 ha has potential to be DVG. Field verification needed before allocation to HCV 3.1 is considered warranted.
lowland grassy sedgeland (GSL)	60	2	3	<20% reserved & <1,000 ha	0.4	This very small area resulted from past clearing. Field verification needed before allocation to HCV 3.1 is considered warranted (unlikely – either not GSL or anthropogenic).
<i>Bursaria - Acacia</i> woodland and scrub (NBA)	200	80	51	<1,000 ha	27.4	This is a poorly mapped community, both generally and more specifically within the LE, with some areas showing an obvious canopy of eucalypts (i.e. unlikely to be NBA) – probably that only ca. 2-5 ha may be actual NBA. Field verification needed before allocation to HCV 3.1 is considered warranted.
<i>Leptospermum scoparium</i> heathland and scrub (SLS)	700	400	62	<1,000 ha	0.5	This is a challenging community because it is one of the scrub mapping units that have had reallocations and as such, all polygons usually require some level of field verification. In this case, initial review suggests this very small areas is a poorly regenerated site post-harvesting & more likely to be a different (but probably widespread mapping unit). Field verification needed before allocation to HCV 3.1 is considered warranted.

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TASVEG name & code	Area (ha)	Reserved area (ha)	% Reserved	Under-represented reason	Area in LE (ha)	Comment
<i>Eucalyptus globulus</i> wet forest (WGL)	4,100	700	17	<20% reserved	21.1	This could be allocated to HCV 3.1 but has already been allocated to a HCV as potential swift parrot habitat. Field verification needed before allocation to HCV 3.1 is considered warranted.

Table 23. Non-threatened vegetation communities in the LE that have <20% reserved or <1,000 ha total area in bioregion: South East (TSE)

TASVEG name & code	Area (ha)	Reserved area (ha)	% Reserved	Under-represented reason	Area in LE (ha)	Comment
<i>Eucalyptus viminalis</i> grassy forest and woodland (DVG)	59,900	8,300	14	<20% reserved	2.5	This is a poorly mapped community, both generally and more specifically within the LE. An initial review suggests all polygons are essentially mapping issues, viz. long narrow strips. Field verification needed before allocation to HCV 3.1 is considered warranted.
<i>Bursaria - Acacia</i> woodland and scrub (NBA)	10,300	600	6	<20% reserved	3.2	This is a poorly mapped community, both generally and more specifically within the LE, with some areas showing an obvious canopy of eucalypts (i.e. unlikely to be NBA) – likely mapping errors as mostly long narrow strips. Field verification needed before allocation to HCV 3.1 is considered warranted.
<i>Melaleuca squarrosa</i> scrub (SMR)	300	100	44	<1,000 ha	0.6	An initial review of aerial imagery indicates it is possible this polygon is <i>Melaleuca ericifolia</i> swamp forest (TASVEG code: NME), which would be allocated to HCV 3.1 as a threatened mapping unit. Field verification needed before allocation to HCV 3.1 is considered warranted.
<i>Eucalyptus obliqua</i> forest over <i>Leptospermum</i> (WOL)	1,000	200	20	<20% reserved	1.3	located on top of hill (SW of Tunnel Hill Tasman Peninsula), unlikely to be WOL

Eucalyptus cordata is endemic to southeastern Tasmania with approximately half of its populations occurring on unreserved private land. Two patches occur in the UX block, one of which includes by far the tallest extant population of *Eucalyptus cordata* on record.

Table 24. *Eucalyptus cordata* vegetation community occurrences on the Lenah Estate

Block	Population name	Area (ha)
UX	Feils Creek	9.1
UX	Smiths Road	2.6
TOTAL		11.7

Conservation covenants

The estate has five areas subject to formal conservation covenants established under the Tasmanian *Nature Conservation Act 2002*. Until field verification has been undertaken, all of the covenant area will be included within HCV 3.1 to reflect the under-represented and threatened vegetation communities purportedly present in these areas. Old-growth areas and swift parrot habitat are included within the conservation covenants where other mapping sources have identified these values being present.

Table 25. Extent of formal conservation covenants

Location	Area (ha)
FCF conservation covenant #196 Mt Lloyd	24.38
FCF conservation covenant #200 Kinvarra	158.86
Part of FCF conservation covenant #201 The Point	10.52
Part of FCF conservation covenant #201 The Point	34.31
Part of FCF conservation covenant #201 The Point	3.28
Part of FCF conservation covenant #201 The Point	9.30
FCF conservation covenant #195 Fentonbury	96.19
Part of FCF conservation covenant #202 Maydena	9.68
TOTAL	346.52

Threatened vegetation adjoining Joint Ventures (JV)

The inclusion of the presence of possible threatened vegetation adjacent to the JV part of the estate is a conservative approach to considering possible HCV 3.1. The areas included in this section are not formally included in the summary tables of HCV 3.1 as they are not technically within the estate. Their inclusion is considered warranted, to highlight sites where field verification of adjacent HCV 3.1 may be prudent to inform management activities within the estate.

There are only 2 JVs where the threatened vegetation could be considered within/between plantation areas. Of note is one JV near Hamilton (Private JV, Block Cose PE) that is interspersed and surrounded by DTO (with initial aerial imagery confirming mapping looks correct).

Table 26. Threatened vegetation that adjoins (within 100 m) the JV boundary

TASVEG code	TASVEG name	Area (ha)	Comments
DAS	Eucalyptus amygdalina forest and woodland on sandstone	49.4	
DOV	Eucalyptus ovata forest and woodland	3.4	
DTO	Eucalyptus tenuiramis forest and woodland on sediments	213.0	The extent of DTO is likely to be substantially over-mapped
SBR/SRE	riparian scrub	0.3	
A**	wetlands	2.8	
TOTAL		289.9	

7.1.4 Management

All areas allocated to HCV 3.1 will be managed for their conservation value. In practice this means:

- no clearance and conversion of any areas of HCV 3.1 will be undertaken;
- no native forest harvesting of any areas of HCV 3.1 will be undertaken;
- management within areas allocated to HCV 3.1 will be undertaken to minimise the ecological impact but may include prescribed burning, weed management and routine management activities (e.g. track and firebreak maintenance).

The areas allocated to HCV 3.1 will be progressively reviewed by field verification of native vegetation within the estate and consideration of the application of vegetation condition score thresholds. In addition, the areas of rainforest vegetation will be managed for their conservation values, as per the management guidelines provided above for areas allocated to HCV 3.1, noting that rainforest areas should not require prescribed burning to maintain their ecological condition and most areas are likely to be substantially weed-free.

7.2 HCV 3.2

7.2.1 Preamble

HCV 3.2 is described as:

“Areas for conservation of important genes or genetically distinct populations.”

7.2.2 Interpretation

Annex G of FSC-STD-AUS-01-2018 EN does not provide specific guidance on the HCV 3.2. SFM acknowledges that there may be genetically distinct populations of species of fauna and other flora genera within Tasmania.

7.2.3 Analysis of HCV 3.2

The potential presence of HCV 3.2 was analysed by reviewing information in Williams & Potts (1996) and cross-referencing *Eucalyptus* species with the possible presence and likely impacts of management activities.

Table 27. Possible genetic conservation issues within Tasmanian *Eucalyptus* species that may be present on the Lenah Estate.

Species	Status EPBCA TSPA endemic	Present in LE	HCV
<i>Eucalyptus amygdalina</i> Labill.	- e	Known from LE. Intergrades with several species. Form on dolerite in the Eastern Tiers recognised as the "half-barked peppermint" (Kirkpatrick & Potts 1987).	Areas of dry sclerophyll forests dominated by <i>Eucalyptus amygdalina</i> on some substrates would be mapped as the TASVEG units DAS and DAZ, which are classified as HCV 3.1 – none identified from LE. The LE is unlikely to support the east coast form (i.e. the "half barked" clinal occurrence).
<i>Eucalyptus cordata</i> Labill. subsp. <i>cordata</i>	- e	Limited potential within LE. All occurrences considered important due to limited distribution and usually highly localised extent. Often considered to warrant listing under the TSPA.	If patches of <i>Eucalyptus cordata</i> forest (TASVEG code: DCR) are identified, these will be treated as HCV 3.2. Isolated occurrences of the species would routinely be excluded from commercial wood production activities through the FPP process.
<i>Eucalyptus cordata</i> subsp. <i>quadrangulosa</i> D.Nicolle, B.M.Potts & McKinnon	- e	Known from LE.	As above.
<i>Eucalyptus dalrympleana</i> Maiden subsp. <i>dalrympleana</i> ¹	- e?	Known from LE. Intergrades with <i>Eucalyptus viminalis</i> .	Species is widespread and well-reserved. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna).
<i>Eucalyptus delegatensis</i> R.T.Baker subsp. <i>tasmaniensis</i> Boland	- -e	Known from LE.	Species is widespread and well-reserved. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna).
<i>Eucalyptus globulus</i> Labill. subsp. <i>globulus</i>	- - -	Known from LE.	Some areas of dry sclerophyll forests dominated by <i>Eucalyptus globulus</i> have been mapped as the TASVEG unit DGL, which is classified as HCV 3.1. Wet forest occurrences mapped as the TASVEG unit WGL are also allocated to HCV as potential swift parrot habitat).
<i>Eucalyptus obliqua</i> L'Hér.	- - -	Will be widespread in LE.	Species is widespread and well-reserved. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna).
<i>Eucalyptus ovata</i> Labill. var. <i>ovata</i> ³	- - -	Known from LE.	Areas of forest dominated by <i>Eucalyptus ovata</i> will be mapped as the TASVEG unit DOV, which are classified as HCV 3.1.
<i>Eucalyptus pauciflora</i> Sieber ex Spreng. subsp. <i>pauciflora</i>	- - -	Likely limited occurrences in LE.	Potential allocation to HCV 3.2 if field-verified populations are detected. No known patches at present.
<i>Eucalyptus perriniana</i> F.Muell. ex Rodway	r - e?	Minor potential for species in LE (e.g. Pelham Tier area). Hybridises with <i>Eucalyptus nitens</i> .	Potential allocation to HCV 3.2 if field-verified populations are detected. No known patches at present.
<i>Eucalyptus pulchella</i> Desf.	- e	Known from LE.	Species is widespread and well-reserved. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna).
<i>Eucalyptus regnans</i> F.Muell.	- - -	Known from LE.	Species is widespread and well-reserved. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna).
<i>Eucalyptus rodwayi</i> R.T.Baker & H.G.Sm.	- e	Likely to occur in LE. Populations in far northwest and Eastern Tiers may be genetically distinct.	Potential allocation to HCV 3.2 if field-verified populations are detected. Some DRO known from LE, which is routinely excluded from clearance and conversion either by total exclusion or by silvicultural techniques that maintain the community. No particular reason to allocate to HCV 3.2 (unless field verification indicates features warranting such e.g. also old-growth or supports threatened flora or fauna). Occurs in The Point conservation covenant area, apparently as old-growth WSU. Allocated to HCV 1.1.
<i>Eucalyptus rubida</i> H.Deane & Maiden subsp. <i>rubida</i>	- -	Potential to occur in LE.	Potential allocation to HCV 3.2 if field-verified populations are detected. No known patches at present.

Species	Status EPBCA TSPA endemic	Present in LE	HCV
<i>Eucalyptus subcrenulata</i> Maiden & Blakely	- - e	Known from LE.	Occurs in The Point conservation covenant area, apparently as old-growth WSU. Allocated to HCV 1.1.
<i>Eucalyptus tenuiramis</i> Miq.	- - e	Likely to be widespread in LE. LE does not coincide with recognised genetically interesting sites such as Randalls Bay, Alma Tier, Tasman Peninsula (coastal sites such as capes Pillar, Hauy and Raoul) and south coast.	Some areas of dry sclerophyll forests dominated by <i>Eucalyptus tenuiramis</i> will be mapped as the TASVEG unit DTO, which are classified as HCV 3.1.
<i>Eucalyptus viminalis</i> Labill. subsp. <i>viminalis</i>	- - -	Widespread in LE.	Areas of wet sclerophyll forest dominated by <i>Eucalyptus viminalis</i> will be mapped as the TASVEG unit WVI, which would be classified as HCV 3.1.

¹ Nicolle & Jones (2018) recognise the Tasmanian material as *E. dalrympleana* Maiden subsp. Tasmania (*Nicolle 4293*), and as an endemic taxon

² Nicolle & Jones (2018) recognise this taxon at specific rank as *E. pseudoglobulus* Naudin

³ Nicolle & Jones (2018) recognise this taxon at subspecific rank as *E. ovata* Labill. subsp. *ovata*

⁴ Nicolle & Jones (2018) bring this taxon into synonymy with *E. viminalis* Labill. subsp. *viminalis*

In summary, while the estate may include some forests supporting *Eucalyptus* species with a genetic composition of some significance, no specific areas are allocated to HCV 3.2.

7.2.4 Management

While no areas of HCV 3.2 have been formally identified, SFM acknowledges that management activities have the potential to contribute to the maintenance and/or enhancement of genetic resources. To maintain and/or enhance HCV 3.2 values within and adjacent to the estate, SFM will:

- maintain the structure and composition of all areas of *Eucalyptus*-dominated vegetation (this does not preclude management such as native forest silviculture, prescribed burning and weed management); and
- consider the potential for gene flow between *Eucalyptus nitens* and species such as *E. ovata*, *E. brookeriana*, *E. globulus*, *E. viminalis* and *E. perriniana* through the planning requirements indicated through the forest practices system, which is outlined in: *Management of Gene Flow from Plantation Eucalypt Species* (FPA 2009).

7.3 HCV 3.3

7.3.1 Preamble

HCV 3.3 is described as:

“Old-growth forest”

7.3.2 Interpretation

SFM considers the HCV definitions to effectively coincide with those used during the Commonwealth-Tasmania *Regional Forest Agreement*.

7.3.3 Analysis of HCV 3.3

The potential presence of HCV 3.3 was analysed by using the publicly available map of old-growth forest produced during the Commonwealth-Tasmania *Regional Forest Agreement* and subsequent updates.

Based on the available old-growth mapping and the revision process, **218.6 ha** is allocated to HCV 3.3.

Table 28. Extent of possible old-growth forest, by IBRA 7.0 bioregion

Bioregion	Area (ha)
Southern Ranges	131.1
South East	87.5
Northern Midlands	-
Total	218.6

7.3.4 Management

The extent allocated to HCV 3.3 will be progressively updated as field verification of old-growth patches is undertaken. Prior to any works within a patch of forest notionally mapped as old-growth and therefor potentially HCV 3.3, field verification will be undertaken.

With the exception of roadside maintenance works, SFM will not undertake clearance and conversion or native forest harvesting in any forests identified as HCV 3.3 (old-growth forests). Only management activities compatible with the long-term conservation value of such forests will be undertaken (e.g. weed management).

7.4 HCV 3.4

7.4.1 Preamble

HCV 3.4 is described as:

“Remnant vegetation in heavily cleared landscapes and mature forest in degraded landscapes”

7.4.2 Interpretation

Annex G of FSC-STD-AUS-01-2018 EN does not provide specific guidance on the HCV 3.4. SFM recognises that there is no specific definition of “remnant vegetation” that can be easily applied so will use other available mapping layers to maximise the opportunity to capture remnants in any management regime.

7.4.3 Analysis of HCV 3.4

No specific analysis of the potential presence of HCV 3.4 has been undertaken because any patch of native vegetation, irrespective of its size or condition, will be managed for its conservation value. Therefore, no areas have been specifically allocated to HCV 3.4.

7.4.4 Management

While no areas of HCV 3.4 have been formally identified, SFM acknowledges that management activities have the potential to contribute to the maintenance of native forest remnants.

To maintain and/or enhance HCV 3.4 values within and adjacent to the estate, SFM will not undertake clearance and conversion or native forest silviculture in any forests identified as remnant native vegetation (potential HCV 3.4). Only management activities compatible with the long-term conservation value of such vegetation will be undertaken (e.g. prescribed burning, weed management).

8 HCV 4 – Critical Ecosystem Services

HCV 4 is described as:

“Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes”

Table 29. HCV 4 sub-values as per Annex G of *FSC-STD-AUS-01-2018 EN*

HCV sub-value	Description as per Annex G
HCV 4.1	Areas that provide protection from flooding
HCV 4.2	Areas that provide protection from erosion
HCV 4.3	Areas that provide barriers to the spread of destructive fires
HCV 4.4	Areas that provide clean water catchments

Forests can be considered critical to ecosystem services if they protect against severe floods or drought, loss of water for domestic, farming and industrial uses, loss of fisheries and spawning areas and/or changes to hydrology degrading a protected area. Based on the analyses described below, no areas have been allocated to HCV 4.

8.1 HCV 4.1

8.1.1 Preamble

HCV 4.1 is fully described as:

“Areas that provide protection from flooding”

8.1.2 Interpretation

Numerous articles have been produced regarding the amount and type of water (surface water versus ground water) used by plantations. An increase in plantations (or forest cover) within a given catchment will reduce runoff from that catchment and conversely, a decrease in plantations (or forest cover) within a given catchment will increase runoff from that catchment (Vertessy et al. 2002; Benyon & Doody 2004; Brown et al. 2005).

SFM has adopted a conservative figure of 15% cover of plantations within the catchment as a trigger point for further analysis. Note this figure does not account for other land uses within the catchment.

8.1.3 Analysis of HCV 4.1

NRET has defined 48 planning and management water catchment boundaries within Tasmania (NRET 2005). SFM manages plantations within 12 of these catchments. None of these 12 catchments have a total plantation area (i.e. managed by SFM or by other managers) of greater than 15%.

Table 30. Area of Lenah Estate within each catchment.

Catchment	Total Catchment Area (ha)	Total Plantation Area in Catchment Area (ha)	Total Plantation Area as % of Catchment Area	Lenah Managed Plantation Area in Catchment Area (ha)	Lenah Managed Plantation Area as % of Catchment Area
Clyde	113,014	4,822	4.3%	507.3	0.45%
Derwent Estuary - Bruny	127,402	330	0.3%	24.7	0.02%
Huon	391,432	12,947	3.3%	627.8	0.16%
Jordan	125,334	3,239	2.6%	287.6	0.23%
Little Swanport	88,581	2,191	2.5%	227.5	0.26%
Lower Derwent	160,863	17,688	11.0%	10,601.80	6.60%
Meander	157,657	1,154	7.3%	18.8	0.01%
Ouse	150,091	4,788	3.2%	70.2	0.05%
Pitt Water - Coal	97,017	3,595	3.7%	521.1	0.54%
Processor	115,538	6,953	6.0%	129	0.11%
Tasman	95,826	5,275	5.5%	647.2	0.67%
Upper Derwent	352,441	14,117	4.0%	4,658.9	1.32%

8.1.4 Management

Based on the catchment analysis, and the management strategies available to SFM to manage their impacts in these catchments, no areas have been allocated to HCV 4.1.

Measures and management prescriptions have been developed to mitigate the impact of SFM operations and activities within catchments. These include undertaking an annual catchment-based analysis for SFM-scheduled harvesting within this catchment for the financial year. Where harvesting levels are greater than 5% of the catchment area in a given year, management strategies are employed to disperse planned harvesting and establishment activities in time and space, where practicable. This ensures that the harvest operational area threshold is not exceeded within the identified catchment.

8.2 HCV 4.2

8.2.1 Preamble

HCV 4.2 is fully described as:

“Areas that provide protection from erosion”

8.2.2 Interpretation

Forest areas can be considered critical to erosion control if they are located in areas with risks of severe erosion and/or landslides. Under this HCV classification a forest area may be considered to be HCV where it is critical in protecting against severe erosion and instability.

8.2.3 Analysis of HCV 4.2

The estate is generally not located in areas where there are risks of severe erosion and / or landslides. There are localised areas where there are small areas of highly erodible soils and therefore there is the potential for erosion associated with forest management activities. The provisions of the FPC require that for each forest operation an assessment of soil types is undertaken, and management prescriptions included in the FPP to minimise the risk of erosion. Based on this analysis, and the management strategies available to SFM to manage their impacts on erodible soils, no areas have been allocated to HCV 4.2.

8.2.4 Management

The estate does not contain any forest areas critical to erosion control measures. However, topography, elevation, and soil type are taken into consideration when planning for operational activity. Maintaining, and where appropriate, extending streamside reserves, using the appropriate harvesting system for a site (for example excluding ground-based harvesting machinery on highly-erodible, steep slopes) are management prescriptions that can be implemented to mitigate erosion and implement sustainable forest management practices.

8.3 HCV 4.3

8.3.1 Preamble

HCV 4.3 is fully described as:

“Areas that provide barriers to the spread of destructive fires”

8.3.2 Interpretation

Forest areas that provide a barrier to destructive fires include areas such as rainforests, wet gullies and areas of wet forest communities within and adjacent to drier forest types. In some instances, plantations can act as barriers to the spread of destructive fires due to the structural distribution of fuel vertically. Under this HCV, a forest area may be considered HCV if it is located in an area where there is a high risk of uncontrolled destructive fire, and where the forest area can be demonstrated to provide a barrier to the spread of such fires.

8.3.3 Analysis of HCV 4.3

According to Annex G of FSC-STD-AUS-01-2018, HCV 4 is focused on basic ecosystem services in critical situations. The notion of criticality here refers to the importance and risk for natural resources and environmental and socioeconomic values. No areas have been identified as a barrier in an area of high risk of uncontrolled destructive wildfire, i.e. a critical situation. Based on this analysis, and the management strategies to manage the impacts of planned and unplanned fire, no areas have been allocated to HCV 4.3.

8.3.4 Management

The approach of the SFM fire management program is consistent with meeting legislative requirements and minimising the risk of destructive landscape-level wildfires occurring. This is implemented through preparing a Fire Management Action Plan, staff training, maintaining fire suppression resources, contractor preparedness, installing and maintaining firebreaks, implementing fuel reduction programs including, where required, low intensity fuel reduction burns in natural vegetation areas.

8.4 HCV 4.4

8.4.1 Preamble

HCV 4.4 is fully described as:

“Areas that provide clean water catchments”

8.4.2 Interpretation

Examples of potential impacts on water catchments include sedimentation, increased erosion, nutrient level fluctuations, turbidity, hydrological flows, and water temperature. Measures adopted to mitigate these impacts includes the retention of streamside vegetation; the season and timing of operations; appropriate duration between harvesting cycles; exclusion of areas with high potential for risk of erosion, and selection of appropriate harvesting and site preparation machinery considered.

8.4.3 Analysis of HCV 4.4

The effectiveness of any buffer in filtering sediment is directly related to the adjacent land use, and site conditions associated with geology, erodibility, rainfall intensity of an area, slope, and ground vegetation cover within the buffer.

The current FPC provisions have resulted from rigorous scientific research and stakeholder consultation. The FPC requires additional water mitigation measures to be implemented where operations are located within 2 km upstream of town or domestic water intakes.

Removal of plantation forest cover requires streamside reserves or machinery exclusion zones to remain adjacent to watercourses. Water quality can also be influenced during plantation establishment operations when using pesticides. SFM ensures applications exceed all legislative responsibilities for pesticide handling and application. Only qualified operators are permitted to carry out spraying operations.

Based on this analysis, and the management strategies available to SFM to manage the impacts on water quality, no areas have been allocated to HCV 4.4.

8.4.4 Management

With respect to water yield, typically an increase in water yield occurs in the period immediately following the removal of plantation cover. The most appropriate technique to minimise the fluctuations in water yield is to disperse harvesting and establishment spatially in the landscape. SFM ensures that the 5% of catchment threshold is not exceeded when scheduling and managing harvesting programs.

There is also a suite of silvicultural management tools that are available at an operational level to maintain and protect water catchments, including:

- spot cultivation (low impact machinery and minimal disturbance of soil during site preparation activity);
- slash retention (reduce erosion on susceptible soil profiles);
- no burning regime (generation of siltation barriers); and
- construction of cross drains/grips (impede water velocity on susceptible sites).

Where threatened species are located and are dependent on particular hydrological conditions to survive, operational prescriptions are adopted to mitigate any potential impact on these values. A similar principle is adopted where highly erodibility soils are present, requiring increased protection measures.

SFM is embarking on a process of evaluating riparian zones during the operational planning process, and general property assessments, to identify priority areas for revegetation and/or rehabilitation programs to ensure enhancement of water catchments occurs in a structured and co-ordinated manner.

9 HCV 5 – Community Needs

HCV 5 is fully described as:

“Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)”

Table 31. HCV 5 sub-values as per Annex G of *FSC-STD-AUS-01-2018 EN*

HCV sub-value	Description as per Annex G
HCV 5.1	Unique/main sources of water fundamental for drinking and other daily uses
HCV 5.2	Unique/main sources of water fundamental for the irrigation of subsistence food crops
HCV 5.3	Food and medicines fundamental for local and traditional indigenous uses

This HCV is relevant where the forest area provides the resources for basic needs or livelihood of local communities. A forest area may be considered HCV if a high proportion of the community’s needs come from the forest and there is no readily available, affordable and acceptable alternative, or if it provides a critical natural resource.

The *Common Guidance for the Identification of High Conservation Values* (Brown et al. 2017) provides the following indicators of high likelihood for HCV 5:

- access to health centres or hospitals is difficult;
- most houses are built from, and household tools made from, locally available traditional/natural materials;
- there is little or no water and electricity infrastructure;
- people have a low capacity to accumulate wealth (i.e. living “day to day”);
- farming and livestock raising are done on a small or subsistence scale;
- indigenous hunter-gatherers are present;
- there is presence of permanent or nomadic pastoralists;
- hunting and/or fishing is an important source of protein and income; and
- a wild food resource constitutes a significant part of the diet, either throughout the year or only during critical seasons.

Based on these indicators, no areas meeting the description of HCV5 have been identified. However, the sustainable management and production of certified timber products from a plantation resource does represent a basic economic need to an important socio-economic sector of the local community – including employees, contractors and sub-contractors.



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9.1 HCV 5.1, 5.2 & 5.3

9.1.1 Preamble

HCV 5.1 is fully described as:

“Unique / main sources of water fundamental for drinking and other daily uses”

HCV 5.2 is fully described as:

“Unique / main sources of water fundamental for the irrigation of subsistence food crops”

HCV 5.3 is fully described as:

“Food and medicines fundamental for local and traditional indigenous uses”

9.1.2 Interpretation

Engagement with interested and affected stakeholders was conducted.

9.1.3 Analysis of HCV 5.1, 5.2 and 5.3

HCV 5.1 & 5.2

With specific reference to water meeting the basic fundamental needs (HCVs 5.1 & 5.2), commercial extraction of water is primarily drawn downstream of the estate through the issuing of licences by NRET’s Water Management Branch. Quantities allocated are based on calculated sustainable flow methodologies incorporating rainfall, terrain and land use in each catchment.

HCV 5.3

All harvesting of products is subject to formal commercial agreements, licences, or contracts issued by SFM. Throughout the estate, it is confirmed that:

- no medicinal products are sourced; and
- no food crop production exists.

9.1.4 Management

HCV 5.1 & 5.2

SFM manages plantation areas within a catchment to ensure water quantity availability is not materially impacted. Prescriptions are included within operational plans. Infrastructure associated with pipelines, dam construction and licence and other associated management responsibilities are overseen internally by SFM. The access to water values has been considered and comprehensively analysed within the sections above discussing HCV 4.

No specific management prescriptions have been identified. Subsistence based communities do not exist in Tasmania, so no management prescriptions relating to HCV 5.2 are required.

HCV 5.3

Game control is undertaken on a commercial basis to control browsing, not to provide a fundamental food resource to local communities. Where game control occurs on a recreational basis, it occurs for a discretionary source of meat (or food). Appropriate permits are required prior to any form of game control taking place.

Collection of pepper berries, and nectar, from natural vegetation, is managed sustainably for commercial endeavours, rather than providing a fundamental source for local consumption.

Many recreational and research project activities occur but are not categorised as basic or fundamental needs of communities.

10 HCV 6 – Cultural Values

HCV 6 is described as:

“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.”

Table 32. HCV 6 sub-values as per Annex G of *FSC-STD-AUS-01-2018 EN*

HCV sub-value	Description as per Annex G
HCV 6.1	Aesthetic value
HCV 6.2	Historic values of global or national cultural or archaeological significance
HCV 6.3	Long term research sites
HCV 6.4	Social (including economic) values
HCV 6.5	Spiritual and cultural values

10.1 HCV 6.1

10.1.1 Preamble

HCV 6.1 is described as:

“Aesthetic value”

10.1.2 Interpretation

The FPA visual analysis processes require identification and management of aesthetic values to be carried out during operational planning of individual coupes. The forest practices system provides for a comprehensive assessment of aesthetic values throughout the landscape of Tasmania for forestry operations.

10.1.3 Analysis of HCV 6.1

The FPA visual analysis planning process ensures that forestry activities, where visible:

- a. are integrated into the landscape;
- b. ensure that the degree of visual change is appropriate to the character of the scenery and the public viewing circumstances; and
- c. try to avoid visual exposure and impact.

There are no areas considered important for aesthetic values, and meeting the objectives of HCV 6.1.

10.1.4 Management

The risk-based evaluation visual analysis process for operational planning follows the structured FPC framework.

10.2 HCV 6.2

10.2.1 Preamble

HCV 6.2 is fully described as:

“Historic values of global or national cultural or archaeological significance”

Tasmania has been the homeland for the Aboriginal people for thousands of years. SFM recognises the importance of land and traditional sites to these Aboriginal people. SFM recognises that Aboriginal people may have interests in the estate for:

- access to the area for traditional purposes, such as ceremonies;
- visits to important sites;
- gathering of traditional resources, such as ochre and food; and
- education to teach law and customs.

No Aboriginal communities live on the land covered by the LE.

Historic sites refer to significant sites dating from non-Aboriginal occupation since 1802. These may include homes, work places, roads, bridges and the like. SFM has recognised that much of the estate under its management contains places of significance in Tasmania’s history.

SFM has both historic and Aboriginal cultural heritage sites within the Lenah Estate.

10.2.2 Interpretation

The *Forest Practices Code 2021* (and preceding versions) requires that forest practices will be conducted in a manner that respects and manages Aboriginal and historic cultural heritage through prescription or reservation in accordance with legislative requirements and the Duty of Care provisions. The cultural heritage of all ethnic groups will be considered in all stages of forest management. The need for consultation with stakeholders is acknowledged.

Protection of cultural heritage should be achieved through identification, recording and assessment, and subsequent management by prescription or reservation.

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10.2.3 Analysis of HCV 6.2

Areas of HCV 6.2 have been identified throughout the estate, from database searches, operational planning, and externally-prepared management plans. SFM is committed to consultation and engagement with the Tasmanian Aboriginal community and with local communities affected by its forest management activities.

The extent of HCV 6.2 is approximately 2.2 ha. This consists of areas in which cultural heritage values have been identified and are being managed and protected within operational plantation areas, as well as areas of natural forest set aside for the management of cultural values.

Table 33. HCV 6.2 – Cultural Heritage Values

Cultural heritage value	Total area (ha)
Aboriginal cultural heritage	0.72
Non-Aboriginal cultural heritage	1.50

The most significant historic cultural heritage sites are related to timber getting activities such as log haulers, tramways, sawmills, huts/camps and historic roads. Seventy four historic sites have been identified within the estate with varying levels of significance. The convict built Dawsons Road runs through parts of the estate and the road and its associated infrastructure have been well documented by Kostoglou (1996). The number of Aboriginal sites is confidential, and can not be disclosed.

10.2.4 Management

Tasmania has a rich history of Aboriginal occupation and this is reflected in the large number of relic sites located across the State. The estate contains a number of Aboriginal heritage sites including isolated artefacts, small and large artefact scatters, rock shelter sites and stone quarries. SFM will attempt to engage with traditional Aboriginal groups to develop mutually beneficial protocols and outcomes. Aboriginal Heritage Tasmania (AHT) – a division of NRET – regulates Tasmania’s unique Aboriginal heritage and manages the Aboriginal Heritage Register (AHR) as legislated in the *Aboriginal Heritage Act 1975*.

The *Procedures for Managing Aboriginal Cultural Heritage when preparing Forest Practices Plans (PACH)* is used to address Aboriginal cultural heritage aspects of forest management in Tasmania. Where any legal rights, cultural responsibilities and contested rights are identified, SFM will work with both the regulator (if appropriate) and the Aboriginal community to ensure mutually beneficial outcomes are achieved.

Non-Aboriginal cultural heritage is regulated through Tasmanian cultural heritage legislation, primarily the *Historic Cultural Heritage Act* and through the *Forest Practices Code*. Old huts and structures, tramways, sawmills, boilers, engines, artefacts, fireplaces, settlements and boundary markers, have been identified within the estate, with prescriptions developed to ensure that these values are maintained and/or enhanced. Historic heritage sites are managed within buffered reserved areas that provide protection from operational activity. All known sites are spatially recorded on the SFM GIS database.

The FPA provides comprehensive instructions on recording and managing historic sites in the publication *Procedures for Managing Historic Cultural Heritage when Preparing Forest Practices Plans*.

Unanticipated discoveries of Aboriginal heritage items or sites, or Non-Aboriginal cultural heritage sites that were not identified in the planning stage, but found during an operation, are provided safety by the imposing of exclusion zones before operations may be continued.

10.3 HCV 6.3

10.3.1 Preamble

HCV 6.3 is fully described as:

“Long term research sites”

10.3.2 Interpretation

SFM is not aware of any long-term research sites within the estate.

10.3.3 Analysis of HCV 6.3

Collaborative research with identified experts has ensured SFM can gain knowledge complementary with sustainable management principles throughout the estate. SFM have contributed to long-term research undertaken on other companies estates. There are no long-term research sites on the Lenah Estate.

10.3.4 Management

SFM actively considers long-term research opportunities through formal processes that assists in strategic planning of clear objectives and targets to meet sustainable forest management outcomes both internally and externally.

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Lenah Estate HCV Assessment and Management Plan

10.4 HCV 6.4

10.4.1 Preamble

HCV 6.4 is fully described as:

“Social (including economic) values”

10.4.2 Interpretation

Many of the natural values addressed within other classifications could be considered as having social and/or economic values throughout the estate. SFM has internal documented public access guidelines to safely ensure activities are undertaken whilst encouraging stakeholder participation that will not compromise sustainable forest management outcomes.

10.4.3 Analysis of HCV 6.4

SFM interacts with the community and stakeholders via phone calls, face-to-face meetings and email communication.

All harvesting of non-timber forest products is subject to formal commercial agreements, licences, or contracts issued by SFM. Collection of native pepper berries, and nectar, from natural vegetation, is managed sustainably for commercial endeavours. Hunting within targeted areas is undertaken for recreational purposes in a safe, structured fashion.

Numerous recreational activities are actively encouraged by SFM.

No areas are allocated formally to HCV 6.4.

10.4.4 Management

Where recreational / community sites are identified, SFM will work proactively with the relevant stakeholder group to ensure that, where possible, mutually beneficial outcomes can be achieved. SFM provides access to non-timber forest product stakeholders (e.g. apiarists and native pepper berry enthusiasts) in a structured and fair manner.

The sustainable management and production of certified timber products does represent a basic economic need to an important socio-economic sector of the local community – including employees, contractors and sub-contractors.

10.5 HCV 6.5

10.5.1 Preamble

HCV 6.5 is fully described as:

“Spiritual and cultural values”

10.5.2 Interpretation

Social and cultural values can arguably co-occur other HCV classifications from HCV 1-6. No areas have been classified as solely HCV 6.5.

10.5.3 Analysis of HCV 6.5

Some stakeholders could consider Aboriginal cultural heritage as important for its *spiritual* value. To avoid duplication, areas containing these values have not been further classified as HCV 6.5, but rather as HCV 6.2.

10.5.4 Management

Not applicable.

11 Plan Review

This plan will be reviewed every five years. However, if SFM becomes aware through new information or legislative changes that may affect known HCVs or add additional values, then the HCV Assessment and Management Plan will be updated accordingly.

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13 Abbreviations/Acronyms

BVD	<i>Biodiversity Values Database</i> (FPA)
CFEV	Conservation of Freshwater Ecosystem Values (NRET)
EPBCA	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
LE	Forest Management Tasmania Lenah Estate
FPA	Tasmanian Forest Practices Authority
FPC	<i>Forest Practices Code 2020</i>
FPO	Forest Practices Officer
FPP	Forest Practices Plan
FSC	Forest Stewardship Council
HCV	High Conservation Value
HCVF	High Conservation Value Forest
IBRA	Interim Biogeographic Regionalisation for Australia
NVA	<i>Natural Values Atlas</i> (NRET)
NRET	Natural Resources and Environment Tasmania
REM	Regional Ecosystem Model
RFA	Commonwealth – Tasmanian <i>Regional Forest Agreement</i>
SFM	SFM Lenah Estate
TSPA	Tasmanian <i>Threatened Species Protection Act 1995</i>